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HS2

High Speed Rail (Crewe – Manchester) Environmental Statement

Volume 5: Appendix TR-003-00004

Traffic and transport

MA04: Broomedge to Glazebrook

Transport Assessment Part 3

M288

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Department for Transport

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16 Broomedge to Glazebrook (MA04)

16.1 Description of the Proposed Scheme

16.1.1 The Proposed Scheme through the Broomedge to Glazebrook (MA04) area comprises a 7.3km section of the HS2 West Coast Main Line (WCML) connection. The route will extend north-eastwards from the boundary with the Pickmere to Agden and Hulseheath area (MA03) to the east of Lymm, passing west of Partington before crossing the Manchester Ship Canal and ending at the boundary with the Risley to Bamfurlong area (MA05).

16.1.2 The route of the Proposed Scheme will comprise the following features in the MA04 area:

- viaducts for a total length of 2.6km (the Bridgewater Canal viaduct, River Bollin West viaduct, Manchester Ship Canal viaduct, Glazebrook (Railway) viaduct and M62 West viaduct);
- cutting for a total length of 1.1km (the Warburton cutting); and
- embankments for a total length of 3.6km (Lymm North embankment, Heatley South embankment, Heatley North embankment, Warburton embankment, Glazebrook South embankment and Glazebrook North embankment).

16.1.3 The key transport issues within MA04 are related to the construction of the Proposed Scheme, including construction traffic, temporary and permanent changes to highways and public rights of way (PRoW) and possessions on the conventional rail network. In addition, in order to construct the Proposed Scheme, there will be a number of construction compounds within the MA04 area.

16.1.4 The following changes to the existing road network will be required to accommodate the Proposed Scheme in the area:

- temporary and permanent road realignments, including Warrington Lane, Spring Lane, Wet Gate Lane, the A6144 Paddock Lane, the A57 Manchester Road and Dam Head Lane; and
- temporary and permanent road closures, including Agden Lane, Dam Head Lane, Warrington Lane, Spring Lane and Manchester Road.

16.1.5 Bus services use a number of routes which will be affected by the Proposed Scheme and these services will be diverted onto alternative routes.

16.1.6 The temporary and permanent closure, diversion and realignment of PRoW and roadside footways will also be required, notably Warrington Lane; Footpath Lymm 43 (Cheshire Ring Canal Walk); Spring Lane; Wet Gate Lane; Footpath Warburton 8; Footpath Warburton 4 and Footpath Warburton 37; National Route 62; Footpath Warburton 11; Bridleway Partington 6; Manchester Ship Canal informal footpath; Manchester Road; Footpath Rixton-with-

Glazebrook 7; Footpath Rixton-with-Glazebrook 8; Footpath Rixton-with-Glazebrook 9; and Footpath Rixton-with-Glazebrook 14.

16.1.7 A full description of the assessment methodology is set out Volume 2, Section 2 of the Environmental Statement, with specific details and exceptions outlined in the following sections.

16.2 Proposed Scheme construction description

Introduction

16.2.1 This section provides an overview of the construction traffic and transport impacts for the section of the Proposed Scheme that will pass through the MA04 area.

16.2.2 Construction of the Proposed Scheme is expected to commence in 2025 with construction activity continuing to 2038 (although activity in 2038 will be limited to testing and commissioning). Construction activities have been assessed against 2030 baseline traffic flows, irrespective of when they occur during the construction period.

Construction activities and phasing

16.2.3 Details of the main construction works and the time periods when each compound is operational are summarised in the indicative construction programme. For the construction programme refer to Volume 2, Community Area report: Broomedge to Glazebrook (MA04) area, Section 2.

16.2.4 A complete description of the works associated with the Proposed Scheme in the MA04 area is provided in Volume 2, Section 2. The construction works will be carried out throughout the site for the majority of the construction period. The overall programme has been outlined on a year by year basis. The key construction activities, along with their start dates, are provided in Table 16-1.

Table 16-1: Key highway construction activities in the MA04 area

Activity	Community Area (CA)	Start Date
Area Advance Works	MA04	2025 Q2
Warrington Lane realignment	MA04	2030 Q3
A6144 Paddock Lane overbridge and realignment	MA04	2028 Q1
Manchester Ship Canal viaduct	MA04	2027 Q2
Glazebrook (Railway) viaduct	MA04	2027 Q2
Dam Head Lane realignment	MA04	2027 Q3
Bridgewater Canal viaduct	MA04	2028 Q3
Wet Gate Lane realignment	MA04	2027 Q2
Spring Lane underbridge	MA04	2028 Q1

Compounds and construction sites

16.2.5 The Proposed Scheme will be constructed from compounds. This will include main compounds that manage and coordinate the work from satellite compounds. Where material is required to be transferred from site haul movements to highway movements this will be undertaken through transfer nodes.

16.2.6 Table 16-2 summarises the expected average and peak workforce (site workers plus staff) at each construction compound in the MA04 area. The location of the construction compounds and the associated construction heavy goods vehicle (HGV) routes are shown in Volume 5, Traffic and Transport Map Book, Map Series TR-08.

Table 16-2: Assumed workforce at construction sites in the MA04 area

Compound type	Compound name	Number of site workers (peak)	Number of staff (peak)	Total workforce (site plus staff)	
				Average	Peak
Satellite	A56 Lymm Road satellite compound[1]	85	60	107	145
Satellite	Bridgewater Canal satellite compound	78	45	96	123
Satellite	Wet Gate Lane satellite compound	60	45	89	105
Satellite	River Bollin West viaduct satellite compound	80	45	103	125
Satellite	Warburton embankment satellite compound	148	84	121	225
Satellite	A6144 Paddock Lane satellite compound	80	45	90	125
Satellite	Manchester Ship Canal viaduct south satellite compound	105	45	104	150
Satellite	Manchester Ship Canal viaduct central satellite compound	70	45	96	115
Main	Manchester Ship Canal viaduct north main compound	135	90	160	225
Satellite	Glazebrook Railway south satellite compound	80	45	110	125
Satellite	Glazebrook Railway north satellite compound	60	45	94	105

16.2.7 Table 16-3 provides details of the compound set up date and the duration of active use. The duration of active use excludes any period where there are no substantial workforce trips or movement of materials to and from the compound.

16.2.8 Table 16-3 also provides a summary of the HGV and car/light goods vehicle (LGV) access trips at each compound in the peak month of activity and during the busy period. For each compound, the peak month of activity is the month within which HGV traffic is at its highest for that compound. The busy period is the period during which HGV traffic serving that

[1] Also reported in Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03), Section 14, Traffic and transport.

compound will be greater than 50% of the HGV traffic in the peak month. Two-way trips refer to the total number of vehicle movements in both directions. The average daily combined two-way vehicle trips[2] for the busy period is the lower end of the range shown in Table 16-3 and the average daily combined two-way vehicle trips for the peak month is the upper end of the range shown. The estimated duration of busy period is also provided.

Table 16-3: Typical vehicle trip generation for construction site compounds in the MA04 area

Compound type	Compound name	Indicative start/set up date (years/ quarter)	Estimated duration of active use (years/ months)	Average daily combined two-way car/LGV trips during busy period and within peak month of activity	Average daily combined two-way HGV trips during busy period and within peak month of activity	Estimated duration of busy period (months)
Satellite	A56 Lymm Road satellite compound[3]	2027 Q2	4 years and 6 months	237-362	69 - 80	6
Satellite	Bridgewater Canal satellite compound	2027 Q4	4 years	168-216	73 - 94	7
Satellite	Wet Gate Lane satellite compound	2027 Q2	4 years and 9 months	202-216	74 - 84	6
Satellite	River Bollin West viaduct satellite compound	2027 Q3	3 years and 6 months	181-218	87 - 98	6
Satellite	Warburton embankment satellite compound	2027 Q2	5 years and 3 months	284-428	197 - 274	4
Satellite	A6144 Paddock Lane satellite compound	2027 Q4	3 years and 6 months	158-218	81 - 96	8
Satellite	Manchester Ship Canal viaduct south satellite compound	2027 Q2	4 years and 3 months	196-262	119 - 126	3
Satellite	Manchester Ship Canal viaduct central satellite compound	2027 Q2	4 years and 3 months	123-148	37 - 50	10
Main	Manchester Ship Canal viaduct north main compound	2027 Q2	4 years and 3 months	219-296	101 - 126	11
Satellite	Glazebrook Railway south satellite compound	2027 Q2	3 years	188-212	46 - 58	5
Satellite	Glazebrook Railway north satellite compound	2027 Q2	3 years and 6 months	163-184	69 - 84	6

[2] Two-way trips refer to the total number of vehicle movements in both directions (i.e. with 200 westbound (or arriving) vehicles and 100 eastbound (or departing), there would be 300 two-way trips).

[3] Also reported in Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03), Section 14, Traffic and transport.

16.2.9 The indicative construction programme in Volume 2, Section 2 illustrates how the phasing of activities at different compounds will generally be staggered and that construction activities at individual compounds may not occur over the whole duration presented in Table 16-3.

Construction HGV routes

16.2.10 Construction vehicle movements required to construct the Proposed Scheme will include the delivery of plant and materials, movement of excavated materials and site workforce trips. Works will include utilities diversions, earthworks, and the construction of underpasses, viaducts, bridges and highways.

16.2.11 HGV have been routed, where reasonably practicable, along the strategic or primary road network, although some access locations will be via secondary roads. Where reasonably practicable, the use of the local road network has been limited to site set up, access for environmental surveys and ongoing servicing (including refuse collection and general deliveries).

16.2.12 The location of the compounds and the associated construction HGV routes are shown on the Volume 5, Traffic and transport Map Book, Map Series TR-08. Table 16-4 summarises the construction HGV routes to and from each compound to the main road network. For some compounds, Table 16-4 includes multiple construction HGV routes. This is either because the construction HGV route varies depending on the origin/destination of the trip or because the construction HGV route varies over time to account for changes to the highway network through the construction period.

16.2.13 The average daily combined two-way HGV trips reported in Table 16-3 represent the total number of HGV movements to and from each compound during the busy period and in the peak month of activity on all of the available construction HGV routes combined. Where multiple construction HGV routes are shown in Table 16-4, the split of construction traffic between the available construction HGV routes will vary based on the point in the construction programme and the origin/destination of the construction HGV traffic.

Table 16-4: Construction HGV routes for construction compounds in the MA04 area

Compound name(s)	Access routes to / from compound(s) to main road network
Bridgewater Canal satellite compound	Spring Lane, Bradshaw Lane, B5159 Mill Lane and A6144 Mill Lane
Wet Gate Lane satellite compound	Wet Gate Lane, B5159 Mill Lane and A6144 Mill Lane
River Bollin West viaduct satellite compound	A6144 Paddock Lane (to be used before opening of the A6144 Paddock Lane realignment) A6144 Paddock Lane realignment (to be used after opening of the A6144 Paddock Lane realignment)
Warburton embankment satellite compound	On-site construction traffic route, A6144 Paddock Lane (to be used before opening of the A6144 Paddock Lane realignment) On-site construction traffic route, A6144 Paddock Lane realignment (to be used after opening of the A6144 Paddock Lane realignment)

Compound name(s)	Access routes to / from compound(s) to main road network
A6144 Paddock Lane satellite compound	Paddock Lane and A6144 Paddock Lane (to be used before opening of the A6144 Paddock Lane realignment) Paddock Lane and A6144 Paddock Lane realignment (to be used after opening of the A6144 Paddock Lane realignment)
Manchester Ship Canal viaduct south satellite compound	On-site construction traffic route, A6144 Warburton Lane (to be used before opening of the A6144 Warburton Lane realignment) On-site construction traffic route, A6144 Warburton Lane realignment (to be used after opening of the A6144 Warburton Lane realignment)
Manchester Ship Canal viaduct central satellite compound	A57 Manchester Road
Manchester Ship Canal viaduct north main compound	On-site construction traffic route, Manchester Road, B5212 Glazebrook Lane and A57 Manchester Road
Glazebrook Railway south satellite compound	Dam Head Lane, Dam Lane, Manchester Road, B5212 Glazebrook Lane and A57 Manchester Road
Glazebrook Railway north satellite compound	Dam Head Lane, Dam Lane, Manchester Road, B5212 Glazebrook Lane and A57 Manchester Road (to be used before closure of Dam Head Lane) Dam Head Lane, B5212 Glazebrook Lane and A57 Manchester Road (to be used after closure of Dam Head Lane)

16.2.14 Table 16-5 summarises the peak daily construction traffic flows associated with the Proposed Scheme, both in HGV and total vehicles, on roads within the MA04 area that form part of construction HGV routes. In the MA04 area, the main construction HGV routes from the Strategic Road Network (SRN) are: the M6 junction 21; the M60 junction 8; the M60 junction 10; the M60 junction 11; the A6144 Mill Lane/Bent Lane/Paddock Lane/Warburton Lane/Manchester Road/Carrington Lane/Carrington Spur; the A57 Manchester Road/Cadishead Way/Liverpool Road; the B5159 Mill Lane; the B5212 Glazebrook Lane/Holcroft Lane; the B5214 Trafford Boulevard; Agden Lane; Warrington Lane; Spring Lane; Wet Gate Lane; Bradshaw Lane; Dam Lane; Dam Head Lane; Manchester Road; Salford Western Gateway; and Trafford Way.

Table 16-5: MA04 peak daily construction traffic flow

Location	Direction*	Daily peak HGV vehicles	Daily peak all vehicles
Bradshaw Lane (between B5159 Burford Lane and Wet Gate Lane)	EB	65	79
	WB	65	136
B5159 Mill Lane (between Bradshaw Lane and Wet Gate Lane)	NB	65	158
	SB	65	267
Wet Gate Lane (between B5159 Mill Lane and Bradshaw Lane)	EB	52	212
	WB	52	328
B5159 Mill Lane (between Wet Gate Lane and A6144 Birch Brook Road)	NB	79	232
	SB	79	288
A6144 Mill Lane (between B5159 Mill Lane and B5159 Townfield Lane)	NB	79	194
	SB	79	287
A6144 Bent Lane (between B5159 Townfield Lane and A6144 Paddock Lane realignment)	EB	140	473
	WB	140	217

Location	Direction*	Daily peak HGV vehicles	Daily peak all vehicles
A6144 Paddock Lane realignment (between A6114 Bent Lane and A6144 Warburton Lane)	EB	112	653
	WB	112	566
A57 Manchester Road (between Moat Lane and M6 Junction 21)	EB	79	505
	WB	79	225
A57 Manchester Road (between Chapel Lane and Moat Lane)	EB	79	505
	WB	79	225
A6144 Warburton Lane (between Paddock Lane realignment and Moss Lane)	NB	155	499
	SB	155	586
A57 Manchester Road (between Chapel Lane and Warburton Bridge Road)	EB	79	418
	WB	79	139
A57 Manchester Road (between Warburton Bridge Road and Manchester Road)	EB	79	160
	WB	79	227
A6144 Warburton Lane (between Moss Lane and Chapel Lane)	NB	234	559
	SB	234	646
Manchester Road (between A57 Manchester Road and Dam Lane)	NB	6	31
	SB	6	29
A57 Manchester Road (between Manchester Road and B5212 Glazebrook Lane)	NB	79	103
	SB	79	182
Dam Lane (between School Lane and Manchester Road)	EB	36	160
	WB	36	147
Manchester Road (between Dam Lane and B5212 Glazebrook Lane)	NB	30	151
	SB	30	138
A57 Manchester Road (between B5212 Glazebrook Lane and Liverpool Road)	EB	79	246
	WB	79	339
B5212 Glazebrook Lane (between Manchester Road and A57 Manchester Road)	NB	132	305
	SB	132	269
A6144 Warburton Lane (between Chapel Lane and Moss Lane)	EB	234	519
	WB	234	606
Dam Lane (between School Lane and Dam Head Lane)	EB	36	40
	WB	36	40
A57 Cadishead Way (between Liverpool Road and B5311 Fairhills Road)	EB	79	246
	WB	79	339
B5212 Glazebrook Lane (between Manchester Road and Bank Street)	NB	42	251
	SB	42	175
A6144 Manchester Road (between B5158 Flixton Road and Moss Lane)	EB	234	519
	WB	234	606
B5212 Glazebrook Lane (between Dam Head Lane and Bank Street)	EB	42	175
	WB	42	251
Dam Head Lane (between B5212 Glazebrook Lane and Bank Street)	EB	42	137
	WB	42	174
B5212 Glazebrook Lane (between Bank Street and Dam Head Lane)	EB	42	175
	WB	42	251

Location	Direction*	Daily peak HGV vehicles	Daily peak all vehicles
A6144 Carrington Lane (between A6144 Carrington Lane and B5158 Flixton Road)	EB	154	206
	WB	154	297
A6144 Carrington Spur (between A6144 Carrington Lane and M60 junction 8)	EB	154	221
	WB	154	299
Salford Western Gateway (between Trafford Way and B5214 Trafford Boulevard)	EB	37	71
	WB	37	56
Salford Western Gateway (between Trafford Way and A57 Liverpool Road)	EB	37	45
	WB	107	284
A57 Liverpool Road (between B5320 Liverpool Road and M60 junction 11)	NB	79	239
	SB	79	332

** NB = northbound; SB = southbound; EB = eastbound; and WB = westbound*

Traffic management, road closures and diversions

16.2.15 The construction of the Proposed Scheme has been planned to limit disruption to travellers due to traffic management, road closures or diversions. Nonetheless, the construction of the Proposed Scheme will require the temporary closure or restriction of and/or diversion of some existing highways as well as traffic management. where temporary closures are necessary and no temporary alternative route is provided, the general approach is to undertake the closures for short discrete periods to ensure that the impact on users is minimised, insofar as reasonably practicable. Transport Assessment, Part 1 (see Volume 5: Appendix TR-001-00000) Section 4 sets out the general approach to mitigation for construction which includes constructing new roads prior to the closure of any existing roads where reasonably practicable.

16.2.16 Where site haul routes, created adjacent to the route of the Proposed Scheme, cross the existing road network, traffic control measures will be implemented and could include the provision of temporary signals or roundabouts, which will be removed on completion of the works. These traffic control measures are not expected to have a substantial impact on traffic flows and delays for vehicle occupants and non-motorised road users.

16.2.17 Utility works have been assessed in detail where they are major and where the traffic and transport impacts from the works separately, or in combination with other works, will be greater than other construction activities arising within the area. Minor utility works are expected to result in only localised traffic and pedestrian diversions, which will often be of short-term duration. No additional substantial impacts from these works are expected. Similarly, other minor works will involve a low level of use of local roads. Such use is not expected to give rise to substantial construction traffic impacts.

16.2.18 Permanent road closures are addressed in the operational assessment.

Public Rights of Way, closures and diversions

16.2.19 The construction of the Proposed Scheme will require the temporary closure of and/or diversion of some existing footpaths and roadside footways as well as some bridleways. The impact on footpaths (including roadside footways), cycle ways and bridleway links along the route of the Proposed Scheme has been reduced, insofar as reasonably practicable, through the design process. TA, Part 1 (TR-001-00000), Section 4 sets out the general approach to mitigation for construction which includes constructing new PRoW and roadside footways prior to the closure of any existing PRoW or roadside footways, where reasonably practicable.

16.2.20 As with highways, where site haul routes, created adjacent to the route of the Proposed Scheme, cross the existing PRoW network, active control measures will be implemented to manage the safety of PRoW users and could include staffed crossings and the provision of temporary gates or signals, which will be removed on completion of the works. These control measures are not expected to have a substantial impact on delays for pedestrian, cyclist or equestrian users of the network.

16.3 Proposed Scheme assessment of construction impacts

Key construction transport issues

16.3.1 The construction assessment takes account of all of the impacts of the Proposed Scheme in the MA04 area. The temporary traffic and transport impacts in this area will include:

- construction and workforce vehicle movements to and from the various construction compounds;
- road closures, realignments and diversions;
- alternative routes for PRoW and roadside footways; and
- possessions on the conventional rail network.

16.3.2 The construction assessment has also considered any impacts in this area that arise from construction of the Proposed Scheme in the adjoining CA.

Highway network

Highway diversions, realignments and closures

16.3.3 Temporary road or lane closures and associated diversions will be required in a number of locations including:

- Warrington Lane – temporary closure of a section of Warrington Lane between Spring Lane and Lymm Marina. The temporary closure will enable the permanent realignment

of a 214m section of Warrington Lane, 9m south of its existing alignment, to accommodate the construction of Bridgewater Canal viaduct. A diversion route for vehicular traffic will be provided via the A56 Lymm Road and B5159 Burford Lane for one year and nine months, increasing journey length by up to 2.5km;

- Spring Lane – temporary realignment of a section of Spring Lane to the east of Wet Gate Lane. The temporary realignment will enable the construction of Heatley South embankment and Spring Lane underbridge. Traffic will be diverted via the southern part of the Little Heatley accommodation access and a temporary section of new road. The temporary section of new road will be provided for two years, resulting in a change in journey length of less than 100m;
- Wet Gate Lane – temporary closure of Wet Gate Lane to the east of Wet Gate Farm during the construction of highway tie-ins with the Wet Gate Lane realignment. Traffic will be diverted via Bradshaw Lane, the B5159 Mill Lane and Wet Gate Lane for three months, resulting in a change in journey length of less than 100m;
- A57 Manchester Road – temporary realignment of a section of the A57 Manchester Road to the west of the junction with B5212 Glazebrook Lane during the construction of Manchester Ship Canal viaduct. The A57 Manchester Road will be temporarily realigned approximately 40m south of its existing alignment for three months, resulting in a in a change in journey length of less than 100m. Following completion of the viaduct, the A57 Manchester Road will be reinstated along its existing alignment; and
- Manchester Road – temporary closure of a section of Manchester Road between the B5212 Glazebrook Lane and Dam Lane during the construction of Manchester Ship Canal viaduct. Traffic will be diverted via the A57 Manchester Road and Manchester Road to the south of Dam Lane for a period of three months. A temporary right-turn facility will be constructed at the junction of the A57 Manchester Road and Manchester Road, to the south of the village of Hollins Green, where movements are currently restricted. The facility will accommodate users travelling from the A57 Manchester Road (westbound) and the B5212 Glazebrook Lane. The temporary diversion will increase journey length by up to 649m.

16.3.4 These may involve lane closures and partial lane closures under traffic control for the tie-in of the new alignments, intermittent lane restrictions and temporary road closures. Closures and diversions will be restricted to short-term overnight and/or weekend closures where reasonably practicable.

16.3.5 Permanent realignments, diversions and closures are considered under the operational assessment.

Strategic and local road network traffic flows

16.3.6 During the construction period a number of roads will be affected by the construction of the Proposed Scheme. An assessment of the impact of construction related vehicle movements and temporary diversions has been undertaken and is detailed below. The construction traffic flows outlined in the following sections represent the average daily number of

construction vehicle movements in the peak month on each section of road across the whole construction period. These peak traffic flows will not necessarily occur concurrently, as impacts on different parts of the network will occur at different times.

16.3.7 Traffic flows during construction of the Proposed Scheme have been derived by overlaying forecasts of construction traffic flows on the 2030 future baseline traffic flows.

16.3.8 Table 16-6 and Table 16-7 set out the traffic flows for the 2030 future baseline and the Proposed Scheme on the roads most affected by construction of the Proposed Scheme for the AM and PM peak hour. In both time periods, the percentage changes in HGV flows are generally higher than the percentage changes in all traffic flows as a result of the relatively low number of HGV movements in the future baseline. Due to the simplified way in which the road network is represented in the strategic models, the use of some local roads may not be precisely reflected in the forecast traffic flows during construction of the Proposed Scheme, however, this is not expected to change the conclusions of the assessment.

16.3.9 Traffic flows on all other roads are either unaffected from the future baseline or there are only small changes in traffic flows (HGV or all vehicles of less than 10%) compared to the future baseline daily flow.

16.3.10 It should be noted that, unless identified in the next section of this report relating to junction impacts, these increases in traffic will not result in material increases in congestion or delay.

Table 16-6: 2030 future baseline and Proposed Scheme construction traffic (vehicles), AM peak hour (08:00–09:00)

Location	Direction	2030 baseline flows		Proposed Scheme flows[4]		Proposed Scheme - actual flow change from 2030 baseline		Proposed Scheme - % change from 2030 baseline	
		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
Crouchley Lane (between Mag Lane and A56 Higher Lane)	NB	29	0	33	0	4	0	14%	0%
	SB**	0	0	0	0	0	0	0%	0%
B5159 Burford Lane (between A56 Higher Lane and Stage Lane)	NB	226	0	231	0	5	0	2%	0%
	SB	70	0	162	0	92	0	131%	0%
Bradshaw Lane (between B5159 Burford Lane and Wet Gate Lane)	EB	5	0	15	7	10	7	200%	0%
	WB	3	0	11	7	8	7	267%	0%
Stage Lane (between B5159 Burford Lane and Sandy Lane)	EB	13	0	13	0	0	0	0%	0%
	WB	24	1	24	1	0	0	0%	0%
B5159 Mill Lane (between Bradshaw Lane and Wet Gate Lane)	NB	223	5	230	11	7	6	3%	120%
	SB	241	5	344	12	103	7	43%	140%
Wet Gate Lane (between B5159 Mill Lane and Bradshaw Lane)	EB	11	0	91	5	80	5	727%	0%
	WB	11	0	18	5	7	5	64%	0%
B5160 Station Road (between Barns Lane and B5160 Paddock Lane)	NB	205	4	205	13	0	9	0%	225%
	SB	192	2	352	7	160	5	83%	250%
B5159 Mill Lane (between Wet Gate Lane and A6144 Birch Brook Road)	NB	223	5	232	12	9	7	4%	140%
	SB	241	5	348	13	107	8	44%	160%
B5160 Paddock Lane (between Barns Lane and B5160 Station Road)	EB	274	3	566	8	292	5	107%	167%
	WB	211	5	222	14	11	9	5%	180%
B5160 Dunham Road (between B5160 Paddock Lane and Barns Lane)	NB	211	5	222	14	11	9	5%	180%
	SB	274	3	566	8	292	5	107%	167%

[4] For all tables that reference the Proposed Scheme flows these are the baseline flows plus the equivalent Proposed Scheme flows.

Location	Direction	2030 baseline flows		Proposed Scheme flows[4]		Proposed Scheme - actual flow change from 2030 baseline		Proposed Scheme - % change from 2030 baseline	
		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
A6144 Mill Lane (between B5159 Mill Lane and B5159 Townfield Lane)	NB	847	8	857	16	10	8	1%	100%
	SB	451	7	555	14	104	7	23%	100%
B5160 Dunham Road (between Barns Lane and Gorsey Lane)	EB	274	3	566	8	292	5	107%	167%
	WB	211	5	206	14	-5	9	-2%	180%
B5160 Dunham Road (between Gorsey Lane and A6144 Warburton Lane)	EB	274	3	566	8	292	5	107%	167%
	WB	211	5	206	14	-5	9	-2%	180%
A6144 Bent Lane (between B5159 Townfield Lane and A6144 Paddock Lane realignment)	EB	1,137	9	1,268	23	131	14	12%	156%
	WB	548	7	592	21	44	14	8%	200%
A6144 Warburton Lane (between Paddock Lane realignment and Moss Lane)	NB	767	6	786	22	19	16	2%	267%
	SB	485	6	696	21	211	15	44%	250%
A6144 Warburton Lane (between Moss Lane and Chapel Lane)	NB	867	6	892	29	25	23	3%	383%
	SB	517	11	734	34	217	23	42%	209%
Dam Lane (between School Lane and Manchester Road)	EB	73	0	124	5	51	5	70%	0%
	WB	192	2	257	7	65	5	34%	250%
Manchester Road (between Dam Lane and B5212 Glazebrook Lane)	NB	68	2	119	7	51	5	75%	250%
	SB	253	5	316	10	63	5	25%	100%
B5212 Glazebrook Lane (between Manchester Road and A57 Manchester Road)	NB	397	12	484	25	87	13	22%	108%
	SB	507	13	530	26	23	13	5%	100%
A6144 Warburton Lane (between Chapel Lane and Moss Lane)	EB	941	12	970	36	29	24	3%	200%
	WB	703	15	898	39	195	24	28%	160%
Dam Lane (between School Lane and Dam Head Lane)	EB	59	2	4	4	-55	2	-93%	100%
	WB	15	2	4	4	-11	2	-73%	100%
	EB	950	12	979	36	29	24	3%	200%

Location	Direction	2030 baseline flows		Proposed Scheme flows[4]		Proposed Scheme - actual flow change from 2030 baseline		Proposed Scheme - % change from 2030 baseline	
		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
A6144 Manchester Road (between B5158 Flixton Road and Moss Lane)	WB	689	15	883	39	194	24	28%	160%
Dam Head Lane (between B5212 Glazebrook Lane and Bank Street)	EB	17	1	22	5	5	4	29%	400%
	WB	55	0	119	4	64	4	116%	0%
Salford Western Gateway (between Trafford Way and B5214 Trafford Boulevard)	EB	932	69	922	78	-10	9	-1%	13%
	WB	504	30	638	126	134	96	27%	320%
Trafford Way (between B5214 Trafford Boulevard and Old Park Lane)	EB	401	38	399	38	-2	0	0%	0%
	WB	34	9	45	23	11	14	32%	156%
Salford Western Gateway (between Trafford Way and A57 Liverpool Road)	EB	787	88	758	88	-29	0	-4%	0%
	WB	1,221	81	1,446	279	225	198	18%	244%

*** Some traffic movements may not be precisely reflected due to the simplified way in which the road network is represented in the strategic traffic models, however, this is not expected to change the conclusions of the assessment.*

Table 16-7: 2030 future baseline and with the Proposed Scheme construction traffic (vehicles), PM peak hour (17:00–18:00)

Location	Direction	2030 baseline flows		Proposed Scheme flows[5]		Proposed Scheme - actual flow change from 2030 baseline		Proposed Scheme - % change from 2030 baseline	
		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
Crouchley Lane (between Mag Lane and A56 Higher Lane)	NB	73	2	112	2	39	0	53%	0%
	SB**	0	0	0	0	0	0	0%	0%
B5159 Burford Lane (between A56 Higher Lane and Stage Lane)	NB	198	0	204	0	6	0	3%	0%
	SB	62	0	59	0	-3	0	-5%	0%
Bradshaw Lane (between B5159 Burford Lane and Wet Gate Lane)	EB	3	0	11	7	8	7	267%	0%
	WB	3	0	42	7	39	7	1300%	0%
Stage Lane (between B5159 Burford Lane and Sandy Lane)	EB	10	0	10	0	0	0	0%	0%
	WB	52	1	145	1	93	0	179%	0%
B5159 Mill Lane (between Bradshaw Lane and Wet Gate Lane)	NB	149	2	199	8	50	6	34%	300%
	SB	309	5	316	12	7	7	2%	140%
Wet Gate Lane (between B5159 Mill Lane and Bradshaw Lane)	EB	11	0	17	5	6	5	55%	0%
	WB	11	0	148	5	137	5	1245%	0%
B5160 Station Road (between Barns Lane and B5160 Paddock Lane)	NB	324	7	345	9	21	2	6%	29%
	SB	209	3	272	12	63	9	30%	300%
B5159 Mill Lane (between Wet Gate Lane and A6144 Birch Brook Road)	NB	149	2	229	10	80	8	54%	400%
	SB	309	5	317	13	8	8	3%	160%
B5160 Paddock Lane (between Barns Lane and B5160 Station Road)	EB	241	3	291	12	50	9	21%	300%
	WB	338	9	346	11	8	2	2%	22%
B5160 Dunham Road (between B5160 Paddock Lane and Barns Lane)	NB	338	9	346	11	8	2	2%	22%
	SB	241	3	291	12	50	9	21%	300%

[5] For all tables that reference the Proposed Scheme flows these are the baseline flows plus the equivalent Proposed Scheme flows.

Location	Direction	2030 baseline flows		Proposed Scheme flows[5]		Proposed Scheme - actual flow change from 2030 baseline		Proposed Scheme - % change from 2030 baseline	
		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
A6144 Mill Lane (between B5159 Mill Lane and B5159 Townfield Lane)	NB	538	4	598	12	60	8	11%	200%
	SB	734	3	745	10	11	7	1%	233%
B5160 Dunham Road (between Barns Lane and Gorsey Lane)	EB	241	3	291	12	50	9	21%	300%
	WB	338	9	346	11	8	2	2%	22%
B5160 Dunham Road (between Gorsey Lane and A6144 Warburton Lane)	EB	241	3	291	12	50	9	21%	300%
	WB	338	9	346	11	8	2	2%	22%
A6144 Bent Lane (between B5159 Townfield Lane and A6144 Paddock Lane realignment)	EB	720	4	781	18	61	14	8%	350%
	WB	984	3	1,001	17	17	14	2%	467%
A6144 Warburton Lane (between Paddock Lane realignment and Moss Lane)	NB	637	2	805	17	168	15	26%	750%
	SB	688	2	707	17	19	15	3%	750%
A6144 Warburton Lane (between Moss Lane and Chapel Lane)	NB	684	6	859	29	175	23	26%	383%
	SB	861	4	887	27	26	23	3%	575%
Dam Lane (between School Lane and Manchester Road)	EB	61	0	123	5	62	5	102%	0%
	WB	141	0	216	5	75	5	53%	0%
Manchester Road (between Dam Lane and B5212 Glazebrook Lane)	NB	72	0	132	4	60	4	83%	0%
	SB	176	0	250	4	74	4	42%	0%
B5212 Glazebrook Lane (between Manchester Road and A57 Manchester Road)	NB	556	6	576	19	20	13	4%	217%
	SB	318	6	386	19	68	13	21%	217%
A6144 Warburton Lane (between Chapel Lane and Moss Lane)	EB	760	7	912	30	152	23	20%	329%
	WB	959	4	987	27	28	23	3%	575%
Dam Lane (between School Lane and Dam Head Lane)	EB	20	1	4	4	-16	3	-80%	300%
	WB	31	1	4	4	-27	3	-87%	300%
	EB	747	7	898	30	151	23	20%	329%

Location	Direction	2030 baseline flows		Proposed Scheme flows[5]		Proposed Scheme - actual flow change from 2030 baseline		Proposed Scheme - % change from 2030 baseline	
		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
A6144 Manchester Road (between B5158 Flixton Road and Moss Lane)	WB	956	4	985	27	29	23	3%	575%
Dam Head Lane (between B5212 Glazebrook Lane and Bank Street)	EB	25	0	74	4	49	4	196%	0%
	WB	18	0	25	4	7	4	39%	0%
Salford Western Gateway (between Trafford Way and B5214 Trafford Boulevard)	EB	830	14	827	21	-3	7	0%	50%
	WB	503	27	554	48	51	21	10%	78%
Trafford Way (between B5214 Trafford Boulevard and Old Park Lane)	EB	306	42	318	55	12	13	4%	31%
	WB	156	14	173	35	17	21	11%	150%
Salford Western Gateway (between Trafford Way and A57 Liverpool Road)	EB	501	22	509	30	8	8	2%	36%
	WB	1,606	69	1,652	121	46	52	3%	75%

*** Some traffic movements may not be precisely reflected due to the simplified way in which the road network is represented in the strategic traffic models, however, this is not expected to change the conclusions of the assessment.*

Junction performance

16.3.11 Junction capacity analysis has been undertaken for the AM and PM peak hours comparing junction operation in the 2030 future baseline scenario with the Proposed Scheme.

16.3.12 The following tables and commentary set out the performance at junctions where there is the potential for the Proposed Scheme to have substantial impacts, including new temporary junctions and those junctions where temporary changes are proposed.

16.3.13 Junctions which experience an impact as a result of the Proposed Scheme, but where the layout is not changed are generally identified using the following criteria:

- the Ratio of Flow to Capacity (RFC), Degree of Saturation (DoS) or Volume over Capacity (VoC) for an approach arm increases to over 87% during the construction of the Proposed Scheme; and
- the RFC, DoS or VoC for an approach arm increases by 2% or more from the baseline.

16.3.14 Similarly, junctions which experience a beneficial impact as a result of the Proposed Scheme, but where the layout is not changed are generally identified using the following criteria:

- the RFC, DoS or VoC for an approach arm is over 87% during the baseline; and
- the RFC, DoS or VoC for an approach arm decreases by 2% or more during the construction of the Proposed Scheme.

16.3.15 The results are presented from south to north through the MA04 area, firstly for junctions on the strategic road network, followed by junctions on other roads. The 2030 future baseline results are included for comparison. The models developed to assess the existing and future baseline have been used, except where otherwise stated.

16.3.16 It should be noted that the assessments consider the peak level of construction traffic in each location and these conditions will not be present across the whole construction period.

M6 junction 21/A57 Manchester Road

16.3.17 The M6 junction 21/A57 Manchester Road is a grade-separated junction, comprising two dumbbell roundabouts:

- M6 junction 21/A57 Manchester Road (eastern roundabout); and
- M6 junction 21/A57 Manchester Road/B5210 Woolston Grange Avenue (western roundabout).

16.3.18 The two junctions are considered separately below.

M6 junction 21/A57 Manchester Road (eastern roundabout)

16.3.19 Table 16-8 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-8: M6 junction 21/A57 Manchester Road (eastern roundabout) 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU*/hr	RFC	Q**, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
A57 Manchester Road (west)	1,280	0.52	1	1,395	0.57	1
Juniper Lane	-	-	-	-	-	-
M6 Off Slip	723	0.37	1	861	0.45	1
A57 Manchester Road (east)	1,190	0.57	1	1,216	0.58	1
Access Road	-	-	-	-	-	-
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
A57 Manchester Road (west)	1,714	0.62	2	1,779	0.65	2
Juniper Lane	-	-	-	-	-	-
M6 Off Slip	884	0.45	1	886	0.45	1
A57 Manchester Road (east)	709	0.34	1	763	0.37	1
Access Road	-	-	-	-	-	-

**PCU = Passenger Car Unit*

**Q = Queue

16.3.20 The assessment shows that in the AM and PM peak hours the junction operates well within capacity in both the future baseline and with the Proposed Scheme.

16.3.21 The change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as RFC and queue lengths at this junction.

M6 junction 21/A57 Manchester Road/B5210 Woolston Grange Avenue (western roundabout)

16.3.22 Table 16-8 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-8: M6 junction 21/A57 Manchester Road/B5210 Woolston Grange Avenue (western roundabout) junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
B5210 Woolston Grange Avenue	916	0.37	1	971	0.39	1
A57 Manchester Road (east)	1,126	0.43	1	1,135	0.43	1
M6 Off Slip	1,763	0.72	3	1,822	0.75	3
A57 Manchester Road (west)	920	1.14	49	962	1.27	85
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
B5210 Woolston Grange Avenue	1,806	0.71	3	1,853	0.73	3
A57 Manchester Road (east)	1,070	0.44	1	1,094	0.46	1

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
M6 Off Slip	1,039	0.43	1	1,097	0.46	1
A57 Manchester Road (west)	703	0.48	1	724	0.51	1

16.3.23 The assessment shows that in the AM peak hour the junction operates over capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates well within capacity in both the future baseline and with the Proposed Scheme.

16.3.24 The change in traffic due to construction of the Proposed Scheme will increase the RFC on the A57 Manchester Road (west) approach from 1.14 in the future baseline to 1.27 in the AM peak hour, with a corresponding change in queue length from 49 PCU in the future baseline to 85 PCU.

16.3.25 In the PM peak hour, the change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as RFC and queue lengths.

M60 junction 8/A6144 Carrington Spur

16.3.26 Table 16-9 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-9: M60 junction 8/A6144 Carrington Spur junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
M60 southbound off-slip	794	0.35	1	710	0.32	1
A6144 Carrington Spur	1,511	0.60	2	1,448	0.56	1
M60 northbound off-slip	472	0.26	0	541	0.32	1
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
M60 southbound off-slip	934	0.52	1	960	0.60	2
A6144 Carrington Spur	797	0.29	1	885	0.35	1
M60 northbound off-slip	837	0.37	1	1,014	0.45	1

16.3.27 The assessment shows that in the AM peak hour the junction operates well within capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates well within capacity in both the future baseline and with the Proposed Scheme.

16.3.28 The change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as RFC and queue lengths at this junction.

M60 junction 10/B5214 Trafford Boulevard/B5214 Barton Road junction

16.3.29 Table 16-10 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-10: M60 junction 10/B5214 Trafford Boulevard/B5214 Barton Road junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	VoC	Q, PCU	Flow, PCU/hr	VoC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
M60 southbound off-slip	792	53%	9	787	53%	9
B5214 Trafford Boulevard	661	46%	7	690	48%	7
M60 northbound off-slip	897	82%	10	994	90%	11
B5214 Barton Road	1,621	105%	15	1,626	106%	15
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
M60 southbound off-slip	643	48%	8	622	47%	8
B5214 Trafford Boulevard	1,334	47%	12	1,334	47%	12
M60 northbound off-slip	839	101%	12	846	102%	12
B5214 Barton Road	1,215	94%	17	1,299	100%	17

16.3.30 The assessment shows that in the AM peak hour the junction operates over capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates over capacity in both the future baseline and with the Proposed Scheme.

16.3.31 The change in traffic due to construction of the Proposed Scheme will increase the VoC on the M60 northbound off-slip approach from 82% in the future baseline to 90% in the AM peak hour, with a corresponding change in queue length from 10 PCU in the future baseline to 11 PCU.

16.3.32 The change in traffic due to construction of the Proposed Scheme will increase the VoC on the B5214 Barton Road approach from 94% in the future baseline to 100% in the PM peak hour, with no change in corresponding queue length.

M60 junction 11/A57 Liverpool Road/Brookhouse Avenue

16.3.33 Table 16-11 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-11: M60 junction 11/A57 Liverpool Road/Brookhouse Avenue junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	VoC	Q, PCU	Flow, PCU/hr	VoC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
M60 southbound off-slip	869	96%	10	895	99%	11
A57 Liverpool Road (east)	1,026	79%	11	1,064	82%	12
WGIS Link Road	726	47%	6	727	47%	6
A57 Liverpool Road (west)	10	0%	0	10	0%	0
Brookhouse Avenue	568	65%	2	551	63%	2
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
M60 southbound off-slip	1,395	94%	14	1,379	93%	13
A57 Liverpool Road (east)	930	96%	11	929	96%	11
WGIS Link Road	1,049	68%	8	1,026	66%	8
A57 Liverpool Road (west)	12	1%	0	12	1%	0
Brookhouse Avenue	296	36%	1	290	35%	1

16.3.34 In the 2030 future baseline, the M60 northbound off slip is removed and replaced with the WGIS link road. This leads to the A57 Liverpool Road (west) being downgraded at one end and as such, a reduced flow.

16.3.35 The assessment shows that in the AM peak hour the junction operates close to capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates close to capacity in both the future baseline and with the Proposed Scheme.

16.3.36 The change in traffic due to construction of the Proposed Scheme will increase the VoC on the M60 southbound off-slip approach from 96% in the future baseline to 99% in the AM peak hour, with a corresponding change in queue length from 10 PCU in the future baseline to 11 PCU.

16.3.37 The change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as VoC and queue lengths in the PM peak hour.

A56 Higher Lane/B5159 Burford Lane/B5159 High Legh Road

16.3.38 Table 16-12 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-12: A56 Higher Lane/B5159 Burford Lane/B5159 High Legh Road junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	VoC	Q, PCU	Flow, PCU/hr	VoC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
B5159 Burford Lane	72	15%	1	164	34%	3
A56 Higher Lane (east)	323	23%	3	338	24%	3
B5159 High Legh Road	397	84%	7	406	96%	7
A56 Higher Lane (west)	232	17%	4	233	17%	4
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
B5159 Burford Lane	62	16%	1	59	15%	1
A56 Higher Lane (east)	790	57%	5	852	62%	5
B5159 High Legh Road	317	103%	5	327	104%	6
A56 Higher Lane (west)	164	12%	2	156	11%	2

16.3.39 The assessment shows that in the AM peak hour the junction operates within capacity in the future baseline and close to capacity with the Proposed Scheme. In the PM peak hour, the junction operates over capacity in both the future baseline and with the Proposed Scheme.

16.3.40 The change in traffic due to construction of the Proposed Scheme will increase the VoC on the B5159 High Legh Road approach from 84% in the future baseline to 96% in the AM peak hour, with no change in corresponding queue length.

16.3.41 In the PM peak hour, the change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as VoC and queue lengths.

A6144 Birch Brook Road/A6144 Mill Lane/B5169 Mill Lane junction

16.3.42 Table 16-13 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-13: A6144 Birch Brook Road/A6144 Mill Lane/B5169 Mill Lane junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
B5159 Mill Lane (left)	21	0.04	0	21	0.04	0
B5159 Mill Lane (right)	164	0.45	1	177	0.49	1
A6144 Birch Brook Road	744	0.21	1	748	0.23	1
A6144 Mill Lane (left)	179	0.00	0	275	0.00	0
A6144 Mill Lane (ahead)	226	0.00	0	226	0.00	0
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
B5159 Mill Lane (left)	25	0.04	0	33	0.06	0

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
B5159 Mill Lane (right)	105	0.23	0	162	0.35	1
A6144 Birch Brook Road	262	0.07	0	262	0.07	0
A6144 Mill Lane (left)	110	0.00	0	123	0.00	0
A6144 Mill Lane (ahead)	243	0.00	0	245	0.00	0

16.3.43 The assessment shows that in the AM peak hour the junction operates well within capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates well within capacity in both the future baseline and with the Proposed Scheme.

16.3.44 The change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as RFC and queue lengths at this junction.

Local network change in the Warburton area

16.3.45 There are a number of permanent changes to the local road network in the Warburton area as part of the Proposed Scheme. Details of the permanent changes are presented in the operational assessment at Section 16.5. Where the new or modified junctions are proposed during the construction phase, the operational performance of both the existing and new junction layouts are presented.

A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road

16.3.46 Initially, the A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road junction will remain in its existing form. However, later in the construction period the junction will be permanently modified as part of the Proposed Scheme. It will become a three-arm priority controlled roundabout in the same location as the existing junction to improve flow following the closure of the A6144 Paddock Lane to the west. The permanent junction layout will be implemented during construction of the Proposed Scheme and has therefore been assessed for 2030 AM and PM peak hours using Junctions 9 software.

16.3.47 The existing junction has been modelled in three parts. Table 16-14, Table 16-15, and Table 16-16 summarise the results of the changes to the performance of the existing junction as a result of the Proposed Scheme.

Table 16-14: A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results, northern part of the junction

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (existing layout)**		
A6144 Warburton Lane (north)	519	-	-	543	-	-

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
Dunham Road Slip (left and right)	36	0.14	0	36	0.15	0
A6144 Paddock Lane (south) (ahead and right)	865	0.00	0	944	0.00	0
17:00–18:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (existing layout)**		
A6144 Warburton Lane (north)	740	-	-	925	-	-
Dunham Road Slip (left and right)	70	0.27	0	70	0.34	1
A6144 Paddock Lane (south) (ahead and right)	527	0.00	0	538	0.00	0

Table 16-15: A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results, eastern part of the junction

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (existing layout)**		
Dunham Road Slip (left and right)	92	0.17	0	92	0.18	0
B5160 Dunham Road (east) (ahead and right)	168	0.08	0	172	0.09	0
B5160 Dunham Road (west) (ahead and left)	370	-	-	507	-	-
17:00–18:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (existing layout)**		
Dunham Road Slip (south) (left and right)	51	0.08	0	51	0.09	0
B5160 Dunham Road (east) (ahead and right)	402	0.17	0	417	0.19	0
B5160 Dunham Road (west) (ahead and left)	157	-	-	332	-	-

Table 16-16: A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results, western part of the junction

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (existing layout)**		
A6144 Warburton Lane (north)	427	-	-	451	-	-
B5160 Dunham Road (east) (left and right)	132	0.23	0	133	0.24	0
A6144 Paddock Lane (west) (ahead and right)	1,235	1.31	202	1,446	1.65	519
17:00–18:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (existing layout)**		
A6144 Warburton Lane (north)	689	-	-	874	-	-
B5160 Dunham Road (east) (left and right)	332	0.68	2	347	0.80	4
A6144 Paddock Lane (west) (ahead and right)	684	0.57	3	699	0.67	4

16.3.48 The assessment of the existing layout shows that in the AM peak hour the junction operates over capacity in both the future baseline and with the Proposed Scheme. In the PM peak

hour, the junction operates well within capacity in the future baseline and within capacity with the Proposed Scheme.

16.3.49 The change in traffic due to construction of the Proposed Scheme will increase the RFC on the A6144 Paddock Lane (west) (ahead and right) approach to the western part of the junction from 1.31 in the future baseline to 1.65 in the AM peak hour, with a corresponding change in queue length from 202 PCU in the future baseline to 519 PCU.

16.3.50 In the PM peak hour, the change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as RFC and queue lengths.

16.3.51 The assessment of the proposed layout considers the period after the opening of the permanent junction layout, but prior to the closure of A6144 Paddock Lane and the opening of the A6144 Paddock Lane realignment, which is when the junction is forecast to carry the highest traffic flows. Table 16-17 summarises the results of the performance of the modified junction as a result of the Proposed Scheme during this interim period, which will only occur for a short period prior to opening of the A6144 Paddock Lane realignment.

Table 16-17: A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road junction 2030 with the Proposed Scheme junction capacity assessment results (proposed layout)

Approach	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**With Proposed Scheme (proposed layout)**		
A6144 Warburton Lane	538	0.55	1
B5160 Dunham Road	169	0.21	0
A6144 Paddock Lane	1,446	1.10	85
17:00–18:00	**With Proposed Scheme (proposed layout)**		
A6144 Warburton Lane	910	0.78	1
B5160 Dunham Road	402	0.72	0
A6144 Paddock Lane	635	0.54	45

16.3.52 The proposed junction operates over capacity with the Proposed Scheme with a maximum RFC of 1.10 on the A6144 Paddock Lane approach in the AM peak hour with an associated queue length of 85 PCU. In the PM peak hour, the assessment shows that this junction operates within capacity with a maximum RFC of 0.78 on the A6144 Warburton Lane approach with an associated queue length of one PCU.

A6144 Bent Lane/A6144 Paddock Lane/Paddock Lane

16.3.53 During the initial construction stages, the A6144 Bent Lane/A6144 Paddock Lane/Paddock Lane junction will remain as per the existing layout. Table 16-18 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-18: A6144 Bent Lane/A6144 Paddock Lane/Paddock Lane junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (existing layout)**		
A6144 Paddock Lane (ahead and right)	558	0.86	7	592	0.96	16
A6144 Bent Lane (left)	2	0.00	0	9	0.00	0
A6144 Bent Lane (ahead)	730	0.00	0	824	0.00	0
Paddock Lane (left)	515	1.08	31	525	1.21	56
Paddock Lane (right)	2	1.08	1	9	1.18	2
17:00–18:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (existing layout)**		
A6144 Paddock Lane (ahead and right)	1,014	1.18	102	1,025	1.22	121
A6144 Bent Lane (left)	9	0.00	0	16	0.00	0
A6144 Bent Lane (ahead)	334	0.00	0	370	0.00	0
Paddock Lane (left)	356	0.61	2	366	0.66	2
Paddock Lane (right)	9	0.09	0	16	0.20	0

16.3.54 The assessment shows that in the AM and PM peak hours the junction operates over capacity in both the future baseline and with the Proposed Scheme.

16.3.55 The change in traffic due to construction of the Proposed Scheme will increase the RFC on the Paddock Lane (left) approach from 1.08 in the future baseline to 1.21 in the AM peak hour, with a corresponding change in queue length from 31 PCU in the future baseline to 56 PCU. The change in traffic will also increase the RFC on the Paddock Lane (right) from 1.08 in the future baseline to 1.18, with a corresponding change in queue length from one PCU to two PCU. The change in traffic will increase the RFC on the A6144 Paddock Lane (ahead and right) from the 0.86 in the future baseline to 0.96, with a corresponding change in queue length from seven PCU to 16 PCU. In the PM peak hour, the change in traffic due to construction of the Proposed Scheme will increase the RFC on the A6144 Paddock Lane (ahead and right) approach from 1.18 in the future baseline to 1.22, with a corresponding change in queue length from 102 PCU in the future baseline to 121 PCU.

16.3.56 The A6144 Paddock Lane will be realigned to the north as a result of the Proposed Scheme, forming a four-arm priority controlled (give way) roundabout with the A6144 Bent Lane/A6144 Paddock Lane/Paddock Lane. Table 16-19 summarises the results of the changes to the performance of the junction with the proposed roundabout layout as a result of the Proposed Scheme.

Table 16-19: A6144 Bent Lane/A6144 Paddock Lane realignment/Paddock Lane junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**With Proposed Scheme (proposed layout)**		
A6144 Paddock Lane realignment (north)	584	0.39	1
A6144 Paddock Lane (east)	11	0.01	0
A6144 Bent Lane	763	0.68	2
Paddock Lane	658	0.75	3
17:00–18:00	**With Proposed Scheme (proposed layout)**		
A6144 Paddock Lane realignment (north)	1,040	0.67	2
A6144 Paddock Lane (east)	85	0.14	0
A6144 Bent Lane	358	0.34	1
Paddock Lane	418	0.39	1

16.3.57 The assessment shows that the modified junction operates within capacity in the 2030 future baseline with the Proposed Scheme with a maximum RFC of 0.75 on the Paddock Lane approach in the AM peak hour with an associated queue length of three PCU. In the PM peak hour, the junction operates well within capacity with a maximum RFC of 0.67 on the realigned A6144 Paddock Lane realignment (north) approach with a queue length of two PCU.

A6144 Warburton Lane/A6144 Paddock Lane realignment

16.3.58 The A6144 Warburton Lane/A6144 Paddock Lane realignment junction will be a new four-arm priority controlled (give way) junction as part of the Proposed Scheme to provide connectivity of the realignment with the A6144 Warburton Lane. The A6144 Paddock Lane will be realigned to form the southern arm of the roundabout. The western arm from the roundabout is to provide access to the Telecommunication site with low traffic flows and is not included in the Junctions 9 model. The junction will be implemented during construction of the Proposed Scheme. Table 16-20 summarises the performance of the junction as a result of the Proposed Scheme.

Table 16-20: A6144 Warburton Lane/A6144 Paddock Lane realignment junction 2030 with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**With Proposed Scheme**		
A6144 Warburton Lane (north)	580	0.37	1
A6144 Warburton Lane (east)	1035	0.82	4
A6144 Paddock Lane realignment	29	0.02	0
Telecommunications site access (west)	-	-	-
17:00–18:00	**With Proposed Scheme**		
A6144 Warburton Lane (north)	875	0.55	1
A6144 Warburton Lane (east)	627	0.49	1

Approach	Flow, PCU/hr	RFC	Q, PCU
A6144 Paddock Lane realignment	29	0.02	0
Telecommunications site access (west)	-	-	-

16.3.59 The assessment shows that the junction operates within capacity with the Proposed Scheme with a maximum RFC of 0.82 on the A6144 Warburton Lane (east) approach in the AM peak hour with an associated queue length of four PCU. In the PM peak hour, the junction operates well within capacity with a maximum RFC of 0.55 on the A6144 Warburton Lane (north) approach with an associated queue length of one PCU.

A57 Manchester Road/Manchester Road

16.3.60 Initially, the A57 Manchester Road/Manchester Road junction will remain in its existing form. However, later in the construction period the junction will be temporarily modified as part of the Proposed Scheme.

16.3.61 Due to the temporary closure of a section of Manchester Road between B5212 Glazebrook Lane and Dam Lane, during the construction of the Manchester Ship Canal viaduct, a temporary right-turn facility will be constructed at the A57 Manchester Road/Manchester Road junction, where movements are currently restricted. The temporary facility will accommodate users travelling from the A57 Manchester Road (westbound) and the B5212 Glazebrook Lane. Temporary traffic management will be installed at the junction including signalisation.

16.3.62 Table 16-21 summarises the results of the changes to the performance of the existing junction as a result of the Proposed Scheme.

Table 16-21: A57 Manchester Road/Manchester Road junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (existing layout)**		
Manchester Road (left)	34	0.10	0	34	0.10	0
Manchester Road (right)	183	0.50	1	185	0.52	1
A57 Manchester Road (east) (ahead)	665	0.00	0	704	0.00	0
A57 Manchester Road (east) (right)	0	0.00	0	0	0.00	0
A57 Manchester Road (west) (left)	22	0.00	0	28	0.00	0
A57 Manchester Road (west) (ahead)	724	0.00	0	726	0.00	0
17:00–18:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (existing layout)**		
Manchester Road (left)	24	0.07	0	24	0.07	0
Manchester Road (right)	15	0.07	0	28	0.16	0
A57 Manchester Road (east) (ahead)	823	0.00	0	825	0.00	0
A57 Manchester Road (east) (right)	0	0.00	0	0	0.00	0

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
A57 Manchester Road (west) (left)	53	0.00	0	62	0.00	0
A57 Manchester Road (west) (ahead)	1,107	0.00	0	1,116	0.00	0

16.3.63 The assessment shows that in the AM and PM peak hours the existing junction operates well within capacity in both the future baseline and with the Proposed Scheme.

16.3.64 The change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as RFC and queue lengths at this junction.

16.3.65 Table 16-22 summarises the results of changes to the performance of the A57 Manchester Road/Manchester Road junction as a result of the Proposed Scheme, while the temporary junction layout and traffic management is in place. The temporary arrangements will be in place for a period of three months.

Table 16-22: A57 Manchester Road/Manchester Road junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	DoS	Queue, PCU
08:00–09:00	**With Proposed Scheme (temporary layout)**		
Manchester Road (left and right)	276	116%	27
A57 Manchester Road (east) (ahead and right)	1,157	114%	68
A57 Manchester Road (west) (left and ahead)	750	115%	69
17:00–18:00	**With Proposed Scheme (temporary layout)**		
Manchester Road (left and right)	124	105%	12
A57 Manchester Road (east) (ahead and right)	1,041	127%	151
A57 Manchester Road (west) (left and ahead)	1,177	121%	156

16.3.66 The assessment shows that the temporary junction operates over capacity in the 2030 with a maximum DoS of 116% on the Manchester Road (left and right) approach in the AM peak hour with an associated queue length of 27 PCU. In the PM peak hour, the maximum DoS of 127% is on the A57 Manchester Road (east) (ahead and right) approach with a queue length of 151 PCU.

A57 Manchester Road/B5212 Glazebrook Lane/Manchester Road

16.3.67 This network comprises two junctions in proximity, which have therefore been modelled together and are reported separately below.

A57 Manchester Road/B5212 Glazebrook Lane

16.3.68 Initially, the A57 Manchester Road/B5212 Glazebrook Lane junction will be temporarily modified (temporary layout 1) to accommodate the Manchester Ship Canal viaduct central satellite compound access, located to the south of the A57 Manchester Road. The modified junction will comprise a new fourth arm to the south of the junction, a temporary left-turn lane on the A57 Manchester Road (east) approach and a temporary right-turn lane on the

A57 Manchester Road (west) approach. Two lanes for ahead movements will be retained on both the east and west approaches of the A57 Manchester Road. Following completion of the construction of the Proposed Scheme the junction will revert to its existing layout.

16.3.69 Table 16-23 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme, after the opening of the initial temporary construction layout (temporary layout 1).

Table 16-23: A57 Manchester Road/B5212 Glazebrook Lane junction (temporary layout 1) 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU
08:00–09:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (temporary layout 1)**		
B5212 Glazebrook Lane (north) (nearside) (left)	325	69%	9	316	81%	9
B5212 Glazebrook Lane (north) (offside) (ahead* and right)	166	34%	4	187	50%	4
A57 Manchester Road (east) (nearside) (left* and ahead)	467	39%	6	517	40%	6
A57 Manchester Road (east) (offside) (ahead and right)	366	69%	9	544	81%	14
Manchester Ship Canal viaduct central satellite compound access* (left, ahead and right)	-	-	-	2	1%	0
A57 Manchester Road (west) (nearside) (left and ahead)	360	66%	9	374	78%	11
A57 Manchester Road (west) (offside) (ahead and right*)	377	67%	10	387	78%	11
17:00–18:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (temporary layout 1)**		
B5212 Glazebrook Lane (north) (nearside) (left)	204	69%	6	258	93%	11
B5212 Glazebrook Lane (north) (offside) (ahead* and right)	123	40%	3	136	50%	3
A57 Manchester Road (east) (nearside) (left* and ahead)	726	53%	9	727	52%	8
A57 Manchester Road (east) (offside) (ahead and right)	293	68%	8	588	94%	20
Manchester Ship Canal viaduct central satellite compound access* (left, ahead and right)	-	-	-	21	7%	1
A57 Manchester Road (west) (nearside) (left and ahead)	553	69%	12	576	92%	18
A57 Manchester Road (west) (offside) (ahead and right*)	589	70%	13	609	93%	19

** Lane/movement only present in temporary layout 1*

16.3.70 The assessment shows that in the AM peak hour the junction operates well within capacity in the future baseline and over capacity with the Proposed Scheme (temporary layout 1). In the

PM peak hour, the junction operates well within capacity in the future baseline and over capacity with the Proposed Scheme.

16.3.71 The change in traffic due to construction of the Proposed Scheme in the PM peak hour will increase the DoS on the A57 Manchester Road (east) (offside) (ahead and right) approach from 68% in the future baseline to 94%, with a corresponding change in queue length from eight PCU in the future baseline to 20 PCU. The change in traffic will also increase the DoS on the A57 Manchester Road (west) (offside) (ahead and right) approach from 70% in the future baseline to 93%, with a corresponding change in queue length from 13 PCU to 19 PCU. The change in traffic will also increase the DoS on the B5212 Glazebrook Lane (north) (nearside) (left) approach from 69% in the future baseline to 93%, with a corresponding change in queue length from 6 PCU to 11 PCU.

16.3.72 Later in the construction period the junction will be further modified for a period of three months (temporary layout 2), to accommodate the temporary realignment of the A57 Manchester Road, to the west of the A57 Manchester Road/B5212 Glazebrook Lane junction. This will require temporary traffic management comprising the closure of one ahead lane on the A57 Manchester Road (east) approach and one ahead lane on the A57 Manchester Road (west) approach. Following the re-opening of the A57 Manchester Road alignment, the junction will revert to temporary layout 1 until the cessation of Manchester Ship Canal viaduct central satellite compound, as which point it will revert to its existing layout.

16.3.73 Table 16-24 summarises the results of the changes to the performance of the junction, during the temporary realignment of the A75 Manchester Road (temporary layout 2).

Table 16-24: A57 Manchester Road/B5212 Glazebrook Lane junction (temporary layout 2) 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU
08:00–09:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (temporary layout 2)**		
B5212 Glazebrook Lane (nearside) (left)	325	69%	9	305	117%	34
B5212 Glazebrook Lane (offside) (ahead* and right)	166	34%	4	176	66%	5
A57 Manchester Road (east) (temporary left turn lane) (left*)	-	-	-	18	1%	0
A57 Manchester Road (east) (nearside) (ahead)**	467	39%	6	-	-	-
A57 Manchester Road (east) (offside) (ahead and right)	366	69%	9	1,047	120%	117
Manchester Ship Canal viaduct central satellite compound (left, ahead and right)*	-	-	-	2	1%	0
A57 Manchester Road (west) (nearside) (left and ahead)**	360	66%	9	-	-	-
A57 Manchester Road (west) (offside) (ahead)**	377	67%	10	-	-	-

Approach	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU
A57 Manchester Road (west) (left, ahead and right)*	-	-	-	750	122%	93
17:00–18:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (temporary layout 2)**		
B5212 Glazebrook Lane (nearside) (left)	204	69%	6	258	145%	51
B5212 Glazebrook Lane (offside) (ahead* and right)	123	40%	3	125	67%	4
A57 Manchester Road (east) (temporary left turn lane) (left*)	-	-	-	1	0%	0
A57 Manchester Road (east) (nearside) (ahead)**	726	53%	9	-	-	-
A57 Manchester Road (east) (offside) (ahead and right)	293	68%	8	1,303	151%	268
Manchester Ship Canal viaduct central satellite compound (left, ahead and right)*	-	-	-	23	12%	1
A57 Manchester Road (west) (nearside) (left and ahead)**	553	69%	12	-	-	-
A57 Manchester Road (west) (offside) (ahead)**	589	70%	13	-	-	-
A57 Manchester Road (west) (left, ahead and right)*	-	-	-	1,175	149%	235

** Lane/movement only present in temporary layout 2*
***Existing lane/movement not present in temporary layout 2 due to temporary traffic management*

16.3.74 The assessment shows that in the AM peak hour the junction operates well within capacity in the future baseline and over capacity with the Proposed Scheme (temporary layout 2). In the PM peak hour, the junction operates well within capacity in the future baseline and over capacity with the Proposed Scheme.

16.3.75 The change in traffic and the temporary removal of one ahead lane on the A57 Manchester Road (west) and the A57 Manchester Road (east) approaches due to construction of the Proposed Scheme will increase the DoS on the A57 Manchester Road (west) approach from 67% in the future baseline to 122% in the AM peak hour, with a corresponding change in queue length from nine PCU in the future baseline to 93 PCU. The changes in traffic and temporary junction modifications will also increase the DoS on the A57 Manchester Road (east) approach from 69% in the future baseline to 120% in the AM peak hour, with a corresponding change in queue length from nine PCU in the future baseline to 117 PCU. The changes in traffic and temporary junction modifications will also increase the DoS on the nearside lane of the B5212 Glazebrook Lane (left) approach from 69% in the future baseline to 117% in the PM peak hour, with a corresponding change in queue length from nine PCU in the future baseline to 34 PCU.

16.3.76 The changes in traffic and temporary junction modifications due to construction of the Proposed Scheme in the PM peak hour will increase the DoS on the A57 Manchester Road (east) approach from 68% in the future baseline to 151%, with a corresponding change in

queue length from eight PCU in the future baseline to 268 PCU. The changes in traffic and temporary junction modifications will also increase the DoS on the A57 Manchester Road (west) approach from 69% in the future baseline to 149%, with a corresponding change in queue length from 12 PCU to 235 PCU. The changes in traffic and temporary junction modifications will also increase the DoS on the B5212 Glazebrook Lane (north) (nearside) (left) approach from 69% in the future baseline to 145%, with a corresponding change in queue length from 6 PCU to 51 PCU.

B5212 Glazebrook Lane/Manchester Road.

16.3.77 The B5212 Glazebrook Lane/Manchester Road will remain as a priority controlled T-junction throughout the construction period. The junction has been assessed as part of a network, which includes modifications to the adjacent A57 Manchester Road/B5212 Glazebrook Lane junction.

16.3.78 Table 16-25 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme, after the opening of the initial temporary construction layout (temporary layout 1).

Table 16-25: B5212 Glazebrook Lane/Manchester Road junction (temporary layout 1) 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU
08:00–09:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (temporary layout 1)**		
B5212 Glazebrook Lane (south) (left and ahead)	461	24%	0	652	28%	0
Manchester Road (left and right)	59	15%	0	42	14%	1
B5212 Glazebrook Lane (north) (ahead and right)	586	47%	2	709	59%	14
17:00–18:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (temporary layout 1)**		
B5212 Glazebrook Lane (south) (left and ahead)	553	28%	0	866	29%	0
Manchester Road (left and right)	78	17%	0	159	30%	1
B5212 Glazebrook Lane (north) (ahead and right)	308	21%	0	390	31%	4

16.3.79 The change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as DoS and queue lengths in the AM and PM peak hours.

16.3.80 Table 16-26 summarises the results of the changes to the performance of the junction, during the temporary realignment of the A75 Manchester Road (temporary layout 2).

Table 16-26: B5212 Glazebrook Lane/Manchester Road junction (temporary layout 2) 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU
08:00–09:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (temporary layout 2)**		
B5212 Glazebrook Lane (south) (left and ahead)	461	24%	0	662	34%	0
Manchester Road (left and right)	59	15%	0	55	24%	1
B5212 Glazebrook Lane (north) (ahead and right)	586	47%	2	744	67%	15
17:00–18:00	**2030 future baseline (existing layout)**			**With Proposed Scheme (temporary layout 2)**		
B5212 Glazebrook Lane (south) (left and ahead)	553	28%	0	888	44%	0
Manchester Road (left and right)	78	17%	0	159	57%	2
B5212 Glazebrook Lane (north) (ahead and right)	308	21%	0	423	46%	5

16.3.81 The change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as DoS and queue lengths in the AM and PM peak hours.

A6144 Manchester New Road/A6144 Manchester Road/Manchester Road/Moss Lane

16.3.82 Table 16-27 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme. The Manchester Road approach is a local road with low traffic flow and is not included within the SATURN model.

Table 16-27: A6144 Manchester New Road/A6144 Manchester Road/Manchester Road/Moss Lane junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
A6144 Manchester Road	425	0.51	1	466	0.58	1
Moss Lane	520	0.64	2	520	0.67	2
A6144 Manchester New Road	436	0.96	11	535	1.18	52
Manchester Road	-	-	-	-	-	-
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
A6144 Manchester Road	911	1.10	57	955	1.15	82
Moss Lane	303	0.51	1	448	0.77	3
A6144 Manchester New Road	173	0.30	0	214	0.37	1
Manchester Road	-	-	-	-	-	-

16.3.83 The assessment shows that in the AM peak hour the junction operates close to capacity in the 2030 future baseline and over capacity with the Proposed Scheme. In the PM peak hour, the junction operates over capacity in both the future baseline and with the Proposed Scheme.

16.3.84 The change in traffic due to construction of the Proposed Scheme will increase the RFC on the A6144 Manchester New Road approach from 0.96 in the future baseline to 1.18 in the AM peak hour, with a corresponding change in queue length from 11 PCU in the future baseline to 52 PCU. In the PM peak hour, the change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as RFC and queue lengths.

A6144 Carrington Lane/A6144 Carrington Spur/Banky Lane

16.3.85 Table 16-28 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-28: A6144 Carrington Lane/A6144 Carrington Spur/Banky Lane junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
A6144 Carrington Lane (west) (ahead, left and right)	924	134%	176	967	137%	196
A6144 Carrington Spur (ahead, left and right)	942	133%	195	1,037	135%	228
Banky Lane (left, right and ahead)	11	27%	1	11	27%	1
A6144 Carrington Lane (south) (right, left and ahead)	1,473	134%	317	1,489	138%	347
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
A6144 Carrington Lane (west) (ahead, left and right)	803	121%	113	845	121%	117
A6144 Carrington Spur (ahead, left and right)	1,370	122%	213	1,411	123%	225
Banky Lane (left, right and ahead)	12	29%	1	12	29%	1
A6144 Carrington Lane (south) (right, left and ahead)	866	120%	109	866	122%	116

16.3.86 The assessment shows that in the AM peak hour the junction operates over capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates over capacity in both the future baseline and with the Proposed Scheme.

16.3.87 The change in traffic due to construction of the Proposed Scheme will increase the DoS on the A6144 Carrington Lane (south) approach from 134% in the future baseline to 138% in the AM peak hour, with a corresponding change in queue length from 317 PCU in the future baseline to 347 PCU.

16.3.88 The change in traffic due to construction of the Proposed Scheme in the AM peak hour will increase the DoS on the A6144 Carrington Lane (west) approach from 134% in the future baseline to 137%, with a corresponding change in queue length from 176 PCU in the future baseline to 196 PCU.

16.3.89 The change in traffic due to construction of the Proposed Scheme in the AM peak hour will increase the DoS on the A6144 Carrington Spur approach from 133% in the future baseline to 135%, with a corresponding change in queue length from 195 PCU in the future baseline to 228 PCU.

16.3.90 In the PM peak hour, the change in traffic due to construction of the Proposed Scheme will increase the DoS on the A6144 Carrington Lane (south) approach from 120% in the future baseline to 122%, with a corresponding change in queue length from 109 PCU in the future baseline to 116 PCU.

A6144 Carrington Lane/B5158 Flixton Road

16.3.91 Table 16-29 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-29: A6144 Carrington Lane/B5158 Flixton Road junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
B5158 Flixton Road (left and right)	842	119%	97	860	125%	117
A6144 Carrington Lane (ahead and right)	902	117%	90	939	123%	116
Isherwood Road (left, ahead and right)	102	50%	3	102	45%	2
A6144 Manchester Road (left, ahead and right)	1,025	119%	123	1,122	125%	158
A6144 Manchester Road (internal eastbound) (nearside)	183	18%	1	234	21%	1
A6144 Manchester Road (internal eastbound) (offside)	397	38%	1	443	39%	1
A6144 Manchester Road (internal westbound) (nearside)	129	8%	0	129	8%	0
A6144 Manchester Road (internal westbound) (offside)	924	51%	13	967	51%	13
B5158 Flixton Road left turn slip (internal northbound)	512	36%	2	512	35%	1
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
B5158 Flixton Road (left and right)	766	120%	90	766	139%	138
A6144 Carrington Lane (ahead and right)	1,025	121%	134	1,244	143%	247
Isherwood Road (left, ahead and right)	231	65%	6	231	74%	7
A6144 Manchester Road (left, ahead and right)	843	123%	111	880	143%	169

Approach	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU
A6144 Manchester Road (internal eastbound) (nearside)	134	17%	1	175	21%	1
A6144 Manchester Road (internal eastbound) (offside)	331	39%	2	326	37%	2
A6144 Manchester Road (internal westbound) (nearside)	79	5%	0	79	4%	0
A6144 Manchester Road (internal westbound) (offside)	872	52%	11	915	45%	9
B5158 Flixton Road left turn slip (internal northbound)	514	41%	7	515	39%	1

16.3.92 The assessment shows that in the AM peak hour the junction operates over capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates over capacity in both the future baseline and with the Proposed Scheme.

16.3.93 The change in traffic due to construction of the Proposed Scheme will increase the DoS on the A6144 Carrington Lane approach from 117% in the future baseline to 123% in the AM peak hour, with a corresponding change in queue length from 90 PCU in the future baseline to 116 PCU. The change in traffic due to construction of the Proposed Scheme will also increase the DoS on the B5158 Flixton Road approach from 119% in the future baseline to 125% in the AM peak hour, with a corresponding change in queue length from 97 PCU in the future baseline to 117 PCU. The change in traffic due to construction of the Proposed Scheme will also increase the DoS on the A6144 Manchester Road approach from 119% in the future baseline to 125% in the AM peak hour, with a corresponding change in queue length from 123 PCU in the future baseline to 158 PCU.

16.3.94 The change in traffic due to construction of the Proposed Scheme will increase the DoS on the A6144 Carrington Lane approach from 121% in the future baseline to 143% in the PM peak hour, with a corresponding change in queue length from 134 PCU in the future baseline to 247 PCU. The change in traffic due to construction of the Proposed Scheme will also increase the DoS on the B5158 Flixton Road approach from 120% in the future baseline to 139%, with a corresponding change in queue length from 90 PCU in the future baseline to 138 PCU. The change in traffic due to construction of the Proposed Scheme will also increase the DoS on the A6144 Manchester Road approach from 123% in the future baseline to 143%, with a corresponding change in queue length from 111 PCU in the future baseline to 169 PCU.

A57 Liverpool Road/Salford Western Gateway

16.3.95 Table 16-30 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-30: A57 Liverpool Road/Salford Western Gateway junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	VoC	Q, PCU	Flow, PCU/hr	VoC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
A57 Link Road (nearside) (left)	2	1%	0	0	0%	0
A57 Link Road (centre and offside) (ahead and right)	34	9%	1	52	14%	1
Salford Western Gateway (nearside) (left and ahead)	583	78%	15	794	107%	52
Salford Western Gateway (centre and offside) (ahead and right)	632	78%	16	855	107%	57
Stadium Way (left, ahead and right)	27	10%	1	26	10%	1
A57 Liverpool Road (nearside and centre 1) (left)	42	2%	0	46	3%	0
A57 Liverpool Road (centre 2) (ahead)	691	97%	26	699	98%	28
A57 Liverpool Road (centre 3 and offside) (ahead and right)	762	98%	29	767	99%	31
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
A57 Link Road (nearside) (left)	1	1%	0	1	1%	0
A57 Link Road (centre and offside) (ahead and right)	45	12%	1	54	15%	1
Salford Western Gateway (nearside) (left and ahead)	681	91%	21	754	101%	35
Salford Western Gateway (centre and offside) (ahead and right)	738	91%	22	810	101%	37
Stadium Way (left, ahead and right)	56	16%	1	55	17%	1
A57 Liverpool Road (nearside and centre 1) (left)	20	1%	0	28	2%	0
A57 Liverpool Road (centre 2) (ahead)	607	85%	17	635	90%	19
A57 Liverpool Road (centre 3 and offside) (ahead and right)	671	86%	18	700	90%	21

16.3.96 The assessment shows that in the AM peak hour the junction operates close to capacity in the future baseline and over capacity with the Proposed Scheme. In the PM peak hour, the junction operates close to capacity in the future baseline and over capacity with the Proposed Scheme.

16.3.97 The change in traffic due to construction of the Proposed Scheme will increase the VoC on the nearside, centre and offside lanes of the Salford Western Gateway approach from 78% in the future baseline to 107% in the AM peak hour, with a corresponding change in queue length from 16 PCU in the future baseline to 57 PCU.

16.3.98 In the PM peak hour, the change in traffic due to construction of the Proposed Scheme will increase the VoC on the nearside, centre and offside lanes of the Salford Western Gateway approach from 91% in the future baseline to 101%, with a corresponding change in queue length from 22 PCU in the future baseline to 37 PCU. The change in traffic due to

construction of the Proposed Scheme will also increase the VoC on the centre lane of the A57 Liverpool Road approach from 85% in the future baseline to 90%, with a corresponding change in queue length from 17 PCU in the future baseline to 19 PCU.

B5230 Barton Lane/B5211 Barton Road/B5211 Redclyffe Road/Peel Green Road

16.3.99 Table 16-31 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-31: B5230 Barton Lane/B5211 Barton Road/B5211 Redclyffe Road/Peel Green Road junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	VoC	Q, PCU	Flow, PCU/hr	VoC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
B5211 Barton Road	485	72%	9	476	71%	9
B5230 Barton Lane	546	99%	10	548	99%	10
B5211 Redclyffe Road	499	42%	7	469	39%	7
Peel Green Road	33	74%	1	101	95%	2
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
B5211 Barton Road	100	24%	2	96	23%	2
B5230 Barton Lane	565	67%	8	569	68%	8
B5211 Redclyffe Road	869	77%	15	893	79%	15
Peel Green Road	160	55%	3	164	57%	3

16.3.100 The assessment shows that in the AM peak hour the junction operates close to capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates within capacity in both the future baseline and with the Proposed Scheme.

16.3.101 The change in traffic due to construction of the Proposed Scheme will increase the VoC on the Peel Green Road approach from 74% in the future baseline to 95% in the AM peak hour, with a corresponding change in queue length from one PCU in the future baseline to two PCU. In the PM peak hour, the change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as VoC and queue lengths.

A57 Liverpool Road/Hardy Street/Peel Green Road

16.3.102 Table 16-32 summarises the results of the changes to the performance of the junction as a result of the Proposed Scheme.

Table 16-32: A57 Liverpool Road/Hardy Street/Peel Green Road junction 2030 future baseline and with the Proposed Scheme junction capacity assessment results

Approach	Flow, PCU/hr	VoC	Q, PCU	Flow, PCU/hr	VoC	Q, PCU
08:00–09:00	**2030 future baseline**			**With Proposed Scheme**		
Hardy Street	-	-	-	-	-	-
A57 Liverpool Road (east)	789	93%	10	821	97%	10
Peel Green Road	0	0%	0	0	0%	0
A57 Liverpool Road (west)	462	54%	6	441	52%	5
17:00–18:00	**2030 future baseline**			**With Proposed Scheme**		
Hardy Street	-	-	-	-	-	-
A57 Liverpool Road (east)	730	66%	8	729	66%	8
Peel Green Road	0	0%	0	0	0%	0
A57 Liverpool Road (west)	659	60%	7	633	57%	7

16.3.103 The assessment shows that in the AM peak hour the junction operates close to capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates well within capacity in both the future baseline and with the Proposed Scheme.

16.3.104 The change in traffic due to construction of the Proposed Scheme will increase the VoC on the A57 Liverpool Road (east) approach from 93% in the future baseline to 97% in the AM peak hour, with no change in corresponding queue length.

16.3.105 In the PM peak hour, the change in traffic due to construction of the Proposed Scheme will not result in substantial changes in capacity indicators such as VoC and queue lengths.

Accidents and safety

16.3.106 The impacts on accident and safety risks will not be substantial as no locations with existing safety concerns are likely to experience substantial increases in traffic during construction. Although there will be increases in construction traffic on other links and junctions, none have been identified in the baseline assessment as the location of a known or likely safety concern.

Parking and loading

16.3.107 There will be a temporary loss of off-street car parking along the route of the Proposed Scheme in the MA04 area. This will be the temporary loss of 20 out of 35 parking spaces at The Black Swan public house, located at the junction of Dam Lane and Manchester Road in Rixton, for a period of three months.

Public transport

Local bus services

16.3.108 Local bus services will be affected where they cross the route of the Proposed Scheme and where the Proposed Scheme results in changes to the route taken or where construction traffic or general traffic diversions affect bus services.

16.3.109 The temporary closure of a section of Manchester Road during the construction of the Manchester Ship Canal viaduct will affect three bus services for a duration of four weeks: route 100 (Warrington- Irlam - Trafford Centre - Eccles - Salford – Manchester); route P5 (Irlam - Cadishead - Priestley College); and route 40b (Martinscroft - Hollins Green- Latchford Locks - Lymm, Oughtrington Lane). These bus services will be diverted along the A57 Manchester Road with an increase in journey length of 697m. The frequency and diversion distance of these services are summarised in Table 16-33.

Table 16-33: Diversion of bus routes associated with MA04

Bus route	Frequency (buses per day)	Diversion distance
100	60	697m
P5	2	697m
40b	2	697m

16.3.110 The construction of the Proposed Scheme will not result in disruption to coach services due to temporary closure or diversions. However, increases in traffic on the highway network may result in increases in delay for coach services.

Rail network

16.3.111 There are interfaces with the existing rail network in this area, in particular on the operation of the Liverpool to Manchester Line (via Warrington Central) and its passengers and rail

freight services. The majority of these are, however, expected to have little or no impact on the operation of rail services as they will be relatively minor localised works, such as work on and adjacent to track when not in use. In addition, where rail possessions do have the potential to disrupt services, interventions will be combined where practicable to reduce the frequency of potential disruption.

16.3.112 The construction of the Proposed Scheme, in particular the Glazebrook (Railway) viaduct, is expected to require a number of rail possessions on occasions over a period of up to three years in this area including one possession of up to 27 hours in duration and three possessions each up to 54 hours in duration. The works include the demolition of the existing Dam Head Lane bridge, utility diversions and construction of the Glazebrook (Railway) viaduct.

16.3.113 Disruption to rail users will be reduced by limiting possessions, where reasonably practicable, to existing maintenance periods. Possessions and blockades will affect users of the Liverpool to Manchester Line (via Warrington Central) and will be managed through a combination of measures, which could include diversions and replacement bus services, which will reduce the disruption to the travelling public.

16.3.114 HS2 Ltd will work with Network Rail and the train operating companies and freight operating companies to ensure that disruption to passengers and freight is minimised as far as reasonably practicable and that any need for additional possessions can be reduced with good planning and communication (including appropriate advance notice). This includes measures such as:

- careful programming of works to coincide with possessions that are planned for the general maintenance of the existing railway;
- planning works so that they will be undertaken in short, overnight stages when passenger services will not be disrupted; and
- programming longer closures at weekends or bank holidays to reduce the number of passengers affected.

Public transport interchanges

16.3.115 There are no major public transport interchanges in MA04 and therefore no consequential construction activity impacts on public transport interchange facilities in MA04.

Pedestrians, cyclists and equestrians

16.3.116 The works required to construct the Proposed Scheme will affect routes used by pedestrians, cyclists and equestrians, primarily where construction results in changes to the affected routes. In most cases this will enable the construction of temporary diversions or permanent diversions and over and under-bridges, which will carry the permanent diversions of these PRoW and roadside footways. Pedestrians and other non-motorised users may also be affected by changes in traffic levels due, particularly, to construction

traffic associated with the Proposed Scheme. Roads with substantial changes in traffic levels are listed above.

16.3.117 Locations where routes used by pedestrians, cyclists and equestrians will be temporarily diverted, realigned or closed are shown below. Table 16-34 summarises the temporary diversions, realignments and extensions to PRoW and roadside footways required to accommodate the construction of the Proposed Scheme.

Table 16-34: MA04 construction changes on public rights of way and roadside footways for non-motorised users

PRoW name	Surveyed daily usage	Temporary diversion	Change in distance	Duration
Warrington Lane	Six users	Temporary closure of a section of Warrington Lane during the construction of the realignment. Users will be diverted via the existing Warrington Lane and Footpath Lymm 43/3 (Cheshire Ring Canal Walk).	Increase of up to 1.7km	One year and nine months
Footpath Lymm 43 (Cheshire Ring Canal Walk)	213 users	Managed local access and temporary realignment of a section of Footpath Lymm 43/3 (Cheshire Ring Canal Walk) during construction of the Bridgewater Canal viaduct abutments.	Increase of up to 102m	One year and one month
Spring Lane	Not available	Temporary diversion via the Spring Lane temporary realignment.	Increase of up to 58m	One year and 10 months
Wet Gate Lane	Not available	Temporary closure of Wet Gate Lane where it crosses the route of the Proposed Scheme. Users will be diverted via Bradshaw Lane, the B5169 Mill Lane and the existing Wet Gate Lane.	Increase of up to 1.4km	One month
Footpath Warburton 8	Not available	Managed local access and temporary realignment of a section of Footpath Warburton 8 to the north of the existing alignment during construction of the River Bollin West viaduct. On completion of construction Footpath Warburton 8 will be reinstated along its existing alignment.	Increase of up to 430m	One year and 10 months
Footpath Warburton 4 and Footpath Warburton 37	Not available	Managed local access and temporary diversion of a section of Footpath Warburton 4 and Managed local access and temporary diversion of Footpath Warburton 31/1 to the north of the existing alignments during	Increase of up to 392m	One year and 10 months

PRoW name	Surveyed daily usage	Temporary diversion	Change in distance	Duration
		construction of the River Bollin West viaduct. On completion of construction, Footpath Warburton 4 and Footpath Warburton 37/1 will be reinstated along their existing alignments.		
National Route 62	274 users	Managed local access and temporary diversion of a section of National Route 62 which forms part of the National Cycle Network and the Trans Pennine Trail to the south of the area required for construction of the Proposed Scheme.	Increase of up to 101m	One year and 10 months
Footpath Warburton 11	Two users	Managed local access and temporary diversion of a section of the realigned Footpath Warburton 11 to the north of the area required for construction of the Proposed Scheme.	Increase of up to 964m	Six months
Bridleway Partington 6	Eight users	Managed local access and temporary diversion of a section of Bridleway Partington 6 to the south of the area required for construction of the Proposed Scheme.	Increase of up to 136m	Three years and eight months
Manchester Ship Canal informal footpath	22 users	Managed local access and temporary diversion of the Manchester Ship Canal towpath to the north of the area required for construction of the Proposed Scheme.	Increase of up to 369m	Three years and eight months
Manchester Road	9 users	Temporary closure of a section of Manchester Road between B5212 Glazebrook Lane and Dam Lane during the construction of the Manchester Ship Canal viaduct. Users will be diverted via a temporary route adjacent to the A57 Manchester Road.	Increase of up to 79m	One month
Footpath Rixton-with-Glazebrook 7	95 users	Managed local access and temporary closure of Footpath Rixton-with-Glazebrook 7. Users will be diverted via Dam Lane and Manchester Road.	Increase of up to 219m	Three years and eight months
Footpath Rixton-with-Glazebrook 8	95 users	Managed local access and temporary closure of Footpath Rixton-with-Glazebrook 8/1. Users will be diverted via	Increase of up to 574m	Three years and eight months

PRoW name	Surveyed daily usage	Temporary diversion	Change in distance	Duration
		Manchester Road and Dam Head Lane.		
Footpath Rixton-with-Glazebrook 9	95 users	Managed local access and temporary closure of Footpath Rixton-with-Glazebrook 9. Users will be diverted along a temporary diversion to the east of the Manchester Ship Canal Viaduct North main compound, connecting back with Footpath Rixton-with-Glazebrook 9 approximately 160m south west of Bank Street. Access to Footpath Rixton-with-Glazebrook 9 from Manchester Road will be locally managed during construction of the Manchester Ship Canal viaduct.	Increase of up to 161m	Three years and eight months
Footpath Rixton-with-Glazebrook 14	27 users	Users will temporarily transfer to the permanent Footpath Rixton-with-Glazebrook 14 diversion to the south of the Glazebrook Embankment South. Managed local access and temporary closure of the diversion may be required during construction of the Manchester Ship Canal viaduct.	Increase of up to 384m	Three years and eight months

16.3.118 The busiest routes affected will be the National Route 62 (274 users), Footpath Lymm 43/3 (Cheshire Ring Canal Walk) (213 users), Footpath Rixton-with-Glazebrook 7/1 (95 users), Footpath Rixton-with-Glazebrook 8 (95 users), and Footpath Rixton-with-Glazebrook 9 (95 users).

16.3.119 One of the PRoW/roadside footway routes affected will experience little change in length. A further four changes result in diversions which increase PRoW route length up to 250m. Other PRoW/roadside footway routes experience larger changes in length of diversion, including the longest diversion of up to 1.7km. Other longer diversions include Wet Gate Lane and Footpath Warburton 11 with increases in route length of up to 1.4km and 964m respectively. Of these longer diversions, most had less than five users per day when surveyed, or no survey was undertaken. However, Warrington Lane had six users.

16.3.120 Permanently diverted PRoW and roadside footways are reported under the operational assessment, although these could also be subject to temporary closure, diversion or realignment during construction.

Waterways and canals

16.3.121 The route of the Proposed Scheme will cross over the Bridgewater Canal in the south of the MA04 area and the Manchester Ship Canal to the east of Hollins Green. The construction of the Proposed Scheme will require short duration closures of the Bridgewater Canal of approximately 2-3 days. Multiple short-term closures of the Manchester Ship Canal will be required, comprising six hour closures every week over a period of 15 weeks. HS2 Ltd will work with Peel Ports Group (which also comprises the Bridgewater Canal Company Limited) in relation to the closures of the two canals to ensure that any need for closures can be limited. As the closures will be short-term in nature, the impact on users of the waterway and the associated canal towpath will not be substantial.

16.4 Proposed Scheme operation description

16.4.1 The route of the Proposed Scheme through the MA04 area comprises a 7.3km section of the HS2 WCML connection. The route of the Proposed Scheme will extend north-westwards from the boundary with the Pickmere to Agden and Hulseheath area (MA03) to the east of Lymm, passing west of Partington before crossing the Manchester Ship Canal and ending at the boundary with the Risley to Bamfurlong area (MA05).

16.5 Proposed Scheme assessment of operation impacts

16.5.1 This section provides an overview of the impacts resulting from the operation of the Proposed Scheme. HS2 Phase Two services are expected to commence in 2038. Operation of the Proposed Scheme will not have any cumulative impacts resulting from the operation of the Proposed Scheme with HS2 Phase 2a.

Key operation transport issues

16.5.2 The operational assessment takes account of all of the impacts of the Proposed Scheme in the MA04 area. The main potential operational impacts relate to the diversion, realignment of roads and implementation of new junctions in order to accommodate the Proposed Scheme, together with changes to PRoW.

16.5.3 The maintenance of the Proposed Scheme will generate a limited number of vehicular trips associated with servicing and maintenance, and there will be some minor local reassignment of traffic due to road diversions, but these impacts will not be substantial.

Highway network

Highway diversions, realignments and closures

16.5.4 Table 16-35 summarises the permanent road diversions, realignments and extensions and any new or altered junctions required to accommodate the Proposed Scheme. New or altered junctions are assessed under junction performance.

Table 16-35: MA04 permanent highway diversion/closure/amendment

Highway name/junction	Description	Change/alteration
Agden Lane	Closure of Agden Lane where it is crossed by the route of the Proposed Scheme, with access to properties retained on both sides of the route.	Users will be diverted along Warrington Lane and the A56 Lymm Road, increasing the journey length by 282m.
Warrington Lane	Realignment of a section of Warrington Lane, up to 9m south of its existing alignment for 214m, to accommodate the Bridgewater Canal viaduct.	The realignment of Warrington Lane with result in a change in journey length of less than 100m.
Spring Lane	Realignment of a section of Spring Lane, up to 5m north of its existing alignment for 211m, where it is crossed by the route of the Proposed Scheme via the Spring Lane underbridge.	The realignment of Spring Lane will result in a change in journey length of less than 100m.
Wet Gate Lane	Realignment of Wet Gate Lane, up to 116m to the west of its existing alignment for 509m. The existing Wet Gate Lane will be closed where it is crossed by the route of the Proposed Scheme.	The Wet Gate Lane realignment will reduce the journey length by 166m.
A6144 Paddock Lane	Realignment of the A6144 Paddock Lane, up to 242m north of its current alignment for 535m, crossing the route of the Proposed Scheme on the A6144 Paddock Lane overbridge. The A6144 Paddock Lane realignment comprises the formation of two new roundabout junctions at each end. At the southern end of the realignment, a new four-arm roundabout junction will be formed comprising the existing A6144 Paddock Lane/A6144 Bent Lane/A6144 Paddock Lane realignment/Paddock Lane. At the north of the realignment, a new four-arm roundabout junction will be formed comprising A6144 Warburton Lane/A6144 Paddock Lane Realignment/HS2 maintenance access.	The greatest increase in journey length will be for users travelling between Warburton and Mossbrow, increasing journey length by 844m. For the majority of highway users, travelling between Partington and Heatley, the journey length will reduce by 254m.
A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road	Formation of a new three-arm roundabout at the junction of A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road to replace three existing priority-controlled (give-way) junctions.	The formation of the new junction will result in no change in journey length.
Dam Head Lane	Closure of Dam Head Lane where it is crossed by the route of the Proposed Scheme, with access retained to properties on both the western and eastern side of the route.	Motorised users, cyclists and equestrians will be diverted along Dam Lane, Manchester Road and the B5212 Glazebrook Lane,

Highway name/junction	Description	Change/alteration
		increasing journey length by up to 2km. A new footpath will be provided increasing journey length for pedestrians by 146m.

Network traffic flows

16.5.5 The highway changes set out above together with changes in traffic flows arising from the operation of the Proposed Scheme will result in changes to travel patterns in the area.

Strategic and local road network traffic flows

16.5.6 Traffic flows during operation of the Proposed Scheme have been derived by overlaying forecasts of operational traffic flows on the future baseline traffic flows in 2038 and 2046.

16.5.7 Table 16-36 and Table 16-37 set out the traffic flows on highway links affected by operation of the Proposed Scheme for the weekday AM peak hour (08:00–09:00) for 2038 and 2046 respectively. Table 16-38 and Table 16-39 cover the weekday PM peak hour (17:00–18:00) for 2038 and 2046 respectively. Due to the simplified way in which the road network is represented in the strategic models, the use of some local roads may not be precisely reflected in the forecast traffic flows during operation of the Proposed Scheme, however, this is not expected to change the conclusions of the assessment.

16.5.8 Traffic flows on all other links are either unaffected from the future baseline or result in only small changes.

Table 16-36: MA04 impacted links, 2038 AM peak

Location	Direction	2038 baseline flows		2038 Proposed Scheme flows		Proposed Scheme - actual flow change from 2038 baseline		Proposed Scheme - % change from 2038 baseline	
		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
B5159 Burford Lane (between A56 Higher Lane and Stage Lane)	NB	223	0	210	0	-13	0	-6%	0%
	SB	90	0	59	0	-31	0	-34%	0%
A6144 Warburton Lane (between B5160 Dunham Road and A6144 Paddock Lane realignment)	NB	814	6	174	1	-640	-5	-79%	-83%
	SB	516	6	477	4	-39	-2	-8%	-33%
A6144 Paddock Lane realignment (between A6144 Bent Lane and A6144 Warburton Lane)	EB	1,208	9	1,208	9	0	0	0%	0%
	WB	582	7	582	7	0	0	0%	0%
Dam Lane (between School Lane and Manchester Road)	EB	78	0	95	2	17	2	22%	0%
	WB	204	2	267	4	63	2	31%	100%
Manchester Road (between Dam Lane and B5212 Glazebrook Lane)	EB	72	2	89	4	17	2	24%	100%
	WB	269	5	332	7	63	2	23%	40%

Table 16-37: MA04 impacted links, 2046 AM peak

Location	Direction	2046 baseline flows		2046 Proposed Scheme flows		Proposed Scheme - actual flow change from 2046 baseline		Proposed Scheme - % change from 2046 baseline	
		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
B5159 Burford Lane (between A56 Higher Lane and Stage Lane)	NB	250	0	230	0	-20	0	-8%	0%
	SB	105	0	78	0	-27	0	-26%	0%
A6144 Warburton Lane (between B5160 Dunham Road and A6144 Paddock Lane realignment)	NB	860	7	184	1	-676	-6	-79%	-86%
	SB	545	6	503	4	-42	-2	-8%	-33%
A6144 Paddock Lane realignment (between A6144 Bent Lane and A6144 Warburton Lane)	EB	1,275	9	1,275	9	0	0	0%	0%
	WB	615	7	615	7	0	0	0%	0%
Red House Lane (between Sinderland Lane and Henshall Lane)	NB	325	12	275	12	-50	0	-15%	0%
	SB	349	5	320	3	-29	-2	-8%	-40%
Dam Lane (between School Lane and Manchester Road)	EB	82	0	99	2	17	2	21%	0%
	WB	216	2	283	4	67	2	31%	100%
Manchester Road (between Dam Lane and B5212 Glazebrook Lane)	EB	76	2	93	4	17	2	22%	100%
	WB	284	5	351	7	67	2	24%	40%

Table 16-38: MA04 impacted links, 2038 PM peak

Location	Direction	2038 baseline flows		2038 Proposed Scheme flows		Proposed Scheme - actual flow change from 2038 baseline		Proposed Scheme - % change from 2038 baseline	
		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
B5159 High Legh Road (between Kay Lane and A56 Higher Lane)	NB	317	2	323	2	6	0	2%	0%
	SB	269	1	338	1	69	0	26%	0%
A56 Higher Lane (between B5159 Burford Lane and Agden Park Lane)	EB	342	2	307	2	-35	0	-10%	0%
	WB	814	4	702	3	-112	-1	-14%	-25%
A56 Higher Lane (between Crouchley Lane and Oughtrington Lane)	EB	162	1	153	1	-9	0	-6%	0%
	WB	274	2	231	2	-43	0	-16%	0%
A6144 Warburton Lane (between B5160 Dunham Road and A6144 Paddock Lane realignment)	NB	676	2	380	2	-296	0	-44%	0%
	SB	729	2	197	3	-532	1	-73%	50%
A6144 Paddock Lane realignment (between A6144 Bent Lane and A6144 Warburton Lane)	EB	764	4	764	4	0	0	0%	0%
	WB	1,043	3	1,043	3	0	0	0%	0%
Dam Lane (between School Lane and Manchester Road)	EB	65	0	98	1	33	1	51%	0%
	WB	149	0	171	1	22	1	15%	0%
Manchester Road (between Dam Lane and B5212 Glazebrook Lane)	EB	76	0	109	1	33	1	43%	0%
	WB	186	0	208	1	22	1	12%	0%

Table 16-39: MA04 impacted links, 2046 PM peak

Location	Direction	2046 baseline flows		2046 Proposed Scheme flows		Proposed Scheme - actual flow change from 2046 baseline		Proposed Scheme - % change from 2046 baseline	
		All vehicles	HGV	All vehicles	HGV	All vehicles	HGV	All vehicles	HGV
A56 Higher Lane (between B5159 Burford Lane and Agden Park Lane)	EB	341	2	309	2	-32	0	-9%	0%
	WB	825	4	651	3	-174	-1	-21%	-25%
Crouchley Lane (between Mag Lane and A56 Higher Lane)	NB	82	3	111	4	29	1	35%	33%
	SB	0	0	0	0	0	0	0%	0%
A56 Higher Lane (between Crouchley Lane and Oughtrington Lane)	EB	151	1	146	1	-5	0	-3%	0%
	WB	251	2	192	2	-59	0	-24%	0%
B5159 Burford Lane (between A56 Higher Lane and Stage Lane)	NB	269	0	230	0	-39	0	-14%	0%
	SB	95	0	91	0	-4	0	-4%	0%
A6144 Warburton Lane (between B5160 Dunham Road and A6144 Paddock Lane realignment)	NB	712	2	400	2	-312	0	-44%	0%
	SB	767	2	208	3	-559	1	-73%	50%
A6144 Paddock Lane/A6144 Paddock Lane realignment (between A6144 Bent Lane and A6144 Warburton Lane)	EB	805	4	805	4	0	0	0%	0%
	WB	1,098	3	1,098	3	0	0	0%	0%
Dam Lane (between School Lane and Manchester Road)	EB	68	0	102	1	34	1	50%	0%
	WB	157	0	180	1	23	1	15%	0%
Manchester Road (between Dam Lane and B5212 Glazebrook Lane)	EB	80	0	114	1	34	1	43%	0%
	WB	196	0	219	1	23	1	12%	0%

Junction performance

16.5.9 Junction capacity analysis has been undertaken for the weekday AM and PM peak hours comparing junction operation in the 2038 and 2046 future baseline with 2038 and 2046 with HS2.

16.5.10 The following tables and commentary set out the performance at junctions where there is the potential for the Proposed Scheme to have substantial impacts, including new junctions and those where changes are proposed.

16.5.11 The results are presented from south to north through the MA04 area. The 2038 and 2046 future baseline results are included for comparison. The models developed to assess the existing and future baseline have been used, except where otherwise stated.

16.5.12 The junctions assessed in the following section are:

- A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road;
- A6144 Paddock Lane realignment/A6144 Bent Lane/Paddock Lane;
- A6144 Warburton Lane/A6144 Paddock Lane realignment;
- A57 Manchester Road/Manchester Road;
- A57 Manchester Road/B5212 Glazebrook Lane/Manchester Road; and
- A57 Manchester Road/Dam Lane.

Local network change in the Warburton area

16.5.13 As set out in Table 16-33 there are a number of changes to the local road network as part of the Proposed Scheme. Figure 16-1 shows the local network changes introduced as part of the Proposed Scheme in the Warburton area.

A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road junction

16.5.14 The A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road junction will be modified from a network of three linked, three-arm priority controlled T-junctions to a three-arm priority controlled roundabout as a result of the Proposed Scheme. To the west of the junction, the A6144 Paddock Lane will be closed where it crosses the route of the Proposed Scheme and will serve a limited number of properties. Table 16-40 and Table 16-41 summarise the results of the changes to the junction as a result of the Proposed Scheme in both 2038 and 2046.

Figure 16-1: Junction layout diagram (A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road)

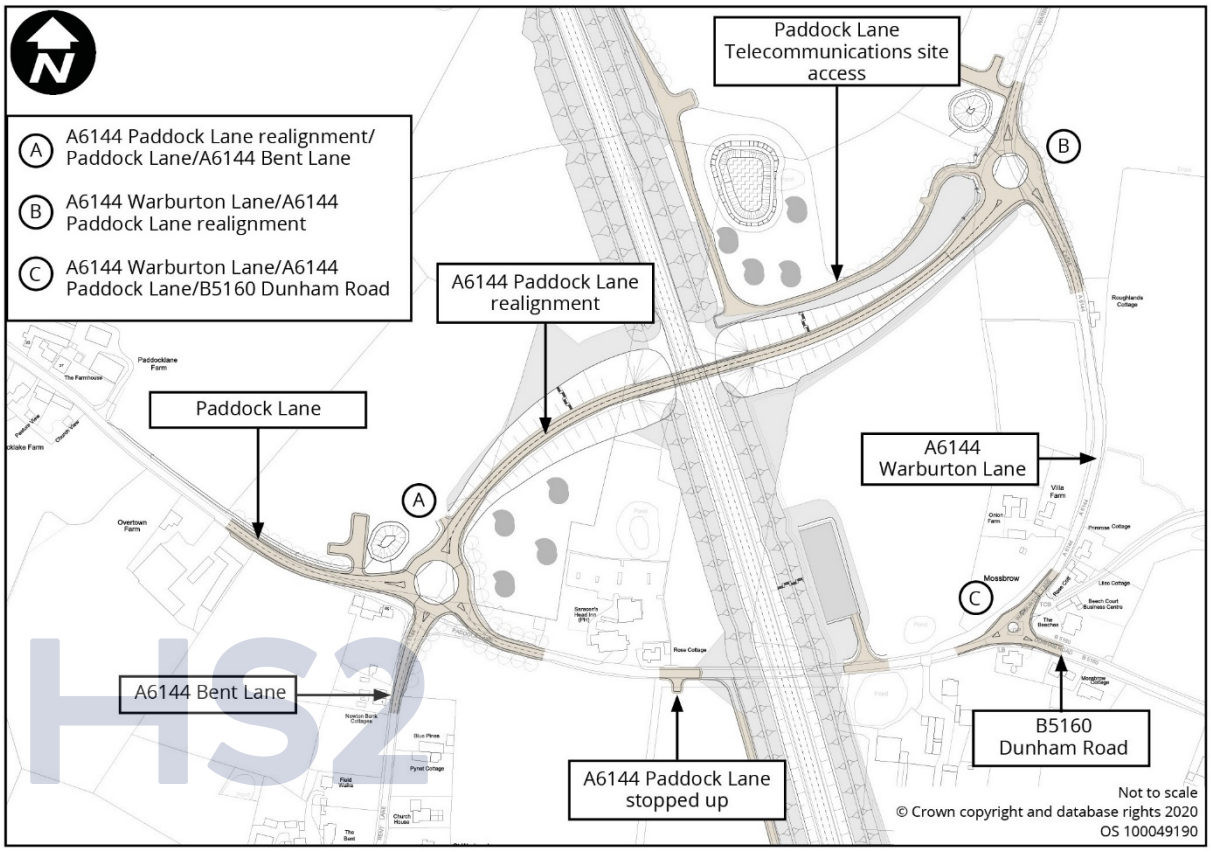

Table 16-40: A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road junction 2038 and 2046 future baseline junction capacity assessment

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2038 future baseline (existing layout)**			**2046 future baseline (existing layout)**		
A6144 Warburton Lane (ahead and left)	912	0.00	0	966	0.00	0
Dunham Road slip (northbound) (right and left)	38	0.15	0	40	0.17	0
Dunham Road slip (southbound) (right and left)	97	0.18	0	102	0.19	0
B5160 Dunham Road (ahead and right)	177	0.09	0	187	0.10	0
B5160 Dunham Road (right and left)	139	0.25	0	147	0.27	0
A6144 Paddock Lane (ahead and right)	1,303	1.39	275	1,380	1.49	362
17:00–18:00	**2038 future baseline (existing layout)**			**2046 future baseline (existing layout)**		
A6144 Warburton Lane (ahead and left)	556	0.00	0	588	0.00	0
Dunham Road slip (northbound) (right and left)	74	0.31	0	78	0.35	1
Dunham Road slip (southbound) (right and left)	54	0.09	0	57	0.10	0

Approach		RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
B5160 Dunham Road (ahead and right)	424	0.18	0	448	0.20	0
B5160 Dunham Road (right and left)	350	0.73	3	370	0.80	4
A6144 Paddock Lane (ahead and right)	722	0.64	3	763	0.71	5

Table 16-41: A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road (proposed roundabout) junction 2038 and 2046 with Proposed Scheme junction capacity assessment

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2038 with the Proposed Scheme (proposed layout)**			**2046 with the Proposed Scheme (proposed layout)**		
A6144 Warburton Lane	490	0.39	1	519	0.41	1
B5160 Dunham Road	177	0.17	0	188	0.18	0
A6144 Paddock Lane	0	0.00	0	0	0.00	0
17:00–18:00	**2038 with the Proposed Scheme (proposed layout)**			**2046 with the Proposed Scheme (proposed layout)**		
A6144 Warburton Lane	221	0.18	0	234	0.19	0
B5160 Dunham Road	424	0.40	1	448	0.42	1
A6144 Paddock Lane	0	0.00	0	0	0.00	0

16.5.15 The modified junction layout and change in traffic due to operation of the Proposed Scheme will decrease the maximum RFC from 1.39 in the 2038 future baseline to 0.00 on the A6144 Paddock Lane approach in the AM peak hour, with a corresponding change in queue length from 275 PCU in the future baseline to no queue. In the PM peak, the model shows that for this junction, the change in traffic due to operation in 2038 of the Proposed Scheme will not result in substantial changes in RFC and queue lengths. The assessment shows that in the AM peak hour the junction operates over capacity in the future baseline and well within capacity with the Proposed Scheme. In the PM peak hour, the junction operates well within capacity in both the future baseline and with the Proposed Scheme. The traffic flow will have a beneficial impact on the operation of the junction in the AM peak hour and a negligible impact on the operation of the junction in the PM peak hour.

16.5.16 The modified junction layout and change in traffic due to operation of the Proposed Scheme will decrease the maximum RFC from 1.49 in the 2046 future baseline to 0.00 on the A6144 Paddock Lane approach in the AM peak hour, with a corresponding change in queue length from 362 PCU to no queue. In the PM peak, the model shows that for this junction, the change in traffic due to operation in 2046 of the Proposed Scheme will not result in substantial changes in RFC and queue lengths. The assessment shows that in the AM peak hour the junction operates over capacity in the future baseline and well within capacity with the Proposed Scheme. In the PM peak hour, the junction operates within capacity in the future baseline and well within capacity with the Proposed Scheme. The traffic flow will have a beneficial impact on the operation of the junction in the AM peak hour and a negligible impact on the operation of the junction in the PM peak hour.

A6144 Bent Lane /A6144 Paddock Lane realignment/Paddock Lane

16.5.17 The A6144 Bent Lane/A6144 Paddock Lane realignment/Paddock Lane will be a modified four-arm priority controlled (give way) roundabout. Figure 16-1 showed the junction layout introduced as part of the Proposed Scheme, with this junction labelled junction A. Table 16-42 summaries the results of the changes to the performance of the junction as a result of the Proposed Scheme in both 2038 and 2046.

Table 16-42: A6144 Bent Lane /A6144 Paddock Lane realignment/Paddock Lane junction 2038 and 2046 future baseline junction capacity assessment

Approach	Total Flow, PCU/hr	Max RFC	Q, PCU	Total Flow, PCU/hr	Max RFC	Q, PCU	Total Flow, PCU/hr	Max RFC	Q, PCU	Total Flow, PCU/hr	Max RFC	Q, PCU
08:00–09:00	**2038 future baseline (existing layout)**			**2038 with the Proposed Scheme (proposed layout)**			**2046 future baseline (existing layout)**			**2046 with the Proposed Scheme (proposed layout)**		
Realigned A6144 Paddock Lane (north)	-	-	-	590	0.38	1	-	-	-	624	0.40	1
A6144 Paddock Lane (east)	588	0.94	13	0	0.00	0	623	1.02	26	0	0.00	0
A6144 Bent Lane	773	0.00	0	773	0.69	2	818	0.00	0	818	0.73	3
Paddock Lane	545	1.17	53	545	0.63	2	577	1.28	80	577	0.68	2
17:00–18:00	**2038 future baseline (existing layout)**			**2038 with the Proposed Scheme (proposed layout)**			**2046 future baseline (existing layout)**			**2046 with the Proposed Scheme (proposed layout)**		
Realigned A6144 Paddock Lane (north)	-	-	-	1,077	0.69	2	-	-	-	1,139	0.73	3
A6144 Paddock Lane (east)	1,070	1.26	144	0	0.00	0	1,132	1.34	206	0	0.00	0
A6144 Bent Lane	361	0.00	0	361	0.34	1	383	0.00	0	383	0.37	1
Paddock Lane	385	0.66	2	385	0.36	1	407	0.76	4	407	0.38	1

16.5.18 The change in traffic due to operation of the Proposed Scheme will decrease the maximum RFC from 1.17 in the 2038 future baseline to 0.63 with the Proposed Scheme in 2038 on the Paddock Lane approach in the AM peak hour, with a corresponding change in queue length from 53 PCU to two PCU. In the PM peak hour, the maximum RFC will decrease from 1.26 in the 2038 future baseline to 0.00 with the Proposed Scheme in 2038 on the A6144 Paddock Lane (east) approach, with a corresponding change in queue length from 153 PCU to zero PCU. The assessment shows that in the AM and PM peak hours the junction operates over capacity in the future baseline and well within capacity with the Proposed Scheme. The traffic flow will have a beneficial impact on the operation of the junction.

16.5.19 The change in traffic due to operation of the Proposed Scheme will decrease the maximum RFC from 1.28 in the 2046 future baseline to 0.68 with the Proposed Scheme in 2046 on the Paddock Lane approach in the AM peak hour, with a corresponding change in queue length from 80 PCU to two PCU. In the PM peak hour the maximum RFC will decrease from 1.34 in the 2046 future baseline to 0.00 with the Proposed Scheme in 2046 on the A6144 Paddock Lane approach, with a corresponding change in queue length from 206 PCU to zero PCU. The assessment shows that in the AM and PM peak hours the junction operates over capacity in the future baseline and well within capacity with the Proposed Scheme. The traffic flow will have a beneficial impact on the operation of the junction.

A6144 Warburton Lane/A6144 Paddock Lane realignment

16.5.20 The A6144 Warburton Lane/A6144 Paddock Lane realignment junction will be a new four-arm priority controlled (give way) roundabout associated with the diversions around the A6144 Paddock Lane Satellite Compound. The new junction is located approximately 360m north of the existing A6144 Warburton Lane/A6144 Paddock Lane/B5160 Dunham Road junction. Figure 16-1 shows the junction layout introduced as part of the Proposed Scheme, with this junction labelled junction B. Table 16-43 summarises the results of the junction as a result of the Proposed Scheme in both 2038 and 2046.

Table 16-43: A6144 Warburton Lane/A6144 Paddock Lane realignment junction 2038 and 2046 future baseline junction capacity assessment

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
08:00–09:00	**2038 with the Proposed Scheme (proposed layout)**			**2046 with the Proposed Scheme (proposed layout)**		
A6144 Warburton Lane (north)	548	0.41	1	579	0.44	1
A6144 Warburton Lane (east)	177	0.17	0	187	0.18	0
Realigned A6144 Paddock Lane (south)	1,314	0.68	2	1,391	0.72	3
Telecommunications site access (west)	-	-	-	-	-	-
17:00–18:00	**2038 with the Proposed Scheme (proposed layout)**			**2046 with the Proposed Scheme (proposed layout)**		
A6144 Warburton Lane (north)	780	0.53	1	579	0.44	1
A6144 Warburton Lane (east)	424	0.47	1	187	0.18	0

Approach	Flow, PCU/hr	RFC	Q, PCU	Flow, PCU/hr	RFC	Q, PCU
Realigned A6144 Paddock Lane (south)	728	0.38	1	1,391	0.72	3
Telecommunications site access (west)	-	-	-	-	-	-

16.5.21 The assessment shows that the junction operates well within capacity with the Proposed Scheme in 2038 with a maximum RFC of 0.68 on the realigned A6144 Paddock Lane (south) approach in the AM peak hour with an associated queue length of two PCU. In the PM peak hour, the junction operates well within capacity with the Proposed Scheme in 2038.

16.5.22 The assessment shows that in the AM and PM peak hours the junction operates well within capacity with the Proposed Scheme in 2046.

A57 Manchester Road/B5212 Glazebrook Lane/Manchester Road

16.5.23 The A57 Manchester Road/B5212 Glazebrook Lane/Manchester Road junction will be affected due to the closure of Dam Head Lane as a result of the Proposed Scheme. The junction will remain as per the existing layout in the 2038 and 2046 with the Proposed Scheme. This network comprises two junctions in proximity, which have therefore been modelled together and are reported separately below.

A57 Manchester Road/B5212 Glazebrook Lane

16.5.24 Table 16-44 summarises the performance of the junction as a result of the Proposed Scheme in both 2038 and 2046.

Table 16-44: A57 Manchester Road/B5212 Glazebrook Lane junction 2038 and 2046 future baseline junction capacity assessment

Approach	Flow, PCU/ hr	DoS	Q, PCU	Flow, PCU/ hr	DoS	Q, PCU	Flow, PCU/ hr	DoS	Q, PCU	Flow, PCU/ hr	DoS	Q, PCU
08:00–09:00	**2038 future baseline**			**2038 with the Proposed Scheme**			**2046 future baseline**			**2046 with the Proposed Scheme**		
B5212 Glazebrook Lane (north) (nearside) (left)	343	73%	9	317	70%	9	363	77%	10	334	74%	9
B5212 Glazebrook Lane (north) (offside) (right)	175	36%	4	175	37%	4	186	38%	4	186	40%	4
A57 Manchester Road (east) (nearside) (ahead)	493	42%	7	493	41%	7	522	44%	7	522	43%	7
A57 Manchester Road (east) (centre and offside) (ahead and right)	386	73%	10	386	70%	10	409	77%	11	409	74%	11
A57 Manchester Road (west) (nearside) (left and ahead)	380	70%	10	381	70%	10	403	74%	11	404	75%	11
A57 Manchester Road (west) (offside) (ahead)	397	71%	10	406	72%	11	420	75%	11	430	77%	12
17:00–18:00	**2038 future baseline**			**2038 with the Proposed Scheme**			**2046 future baseline**			**2046 with the Proposed Scheme**		
B5212 Glazebrook Lane (north) (nearside) (left)	214	72%	6	214	72%	6	227	76%	7	227	76%	7
B5212 Glazebrook Lane (north) (offside) (right)	130	42%	3	130	42%	3	138	45%	3	138	45%	3
A57 Manchester Road (east) (nearside) (ahead)	766	56%	9	766	56%	9	810	59%	10	810	59%	10
A57 Manchester Road (east) (centre and offside) (ahead and right)	308	71%	8	308	75%	8	327	76%	9	327	76%	9
A57 Manchester Road (west) (nearside) (left and ahead)	585	73%	13	592	72%	13	619	77%	14	627	78%	15
A57 Manchester Road (west) (offside) (ahead)	620	73%	14	636	73%	14	655	77%	15	672	79%	16

16.5.25 The model shows that for this junction, the change in traffic due to operation in 2038 of the Proposed Scheme will not result in substantial changes in DoS and queue lengths in the AM or PM peak hours. The assessment shows that in the AM peak hour the junction operates well within capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates well within capacity in the future baseline and within capacity with the Proposed Scheme. The traffic flow will have a negligible impact on the operation of the junction.

16.5.26 The model shows that for this junction, the change in traffic due to operation in 2046 of the Proposed Scheme will not result in substantial changes in DoS and queue lengths in the AM or PM peak hours. The assessment shows that in the AM peak hour the junction operates well within capacity in both the future baseline and with the Proposed Scheme. In the PM peak hour, the junction operates well within capacity in the future baseline and within capacity with the Proposed Scheme. The traffic flow will have a negligible impact on the operation of the junction.

B5212 Glazebrook Lane/Manchester Road

16.5.27 Table 16-45 summarises the performance of the junction as a result of the Proposed Scheme in both 2038 and 2046.

Table 16-45: B5212 Glazebrook Lane/Manchester Road junction 2038 and 2046 future baseline junction capacity assessment

Approach	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU	Flow, PCU/hr	DoS	Q, PCU
08:00–09:00	**2038 future baseline**			**2038 with the Proposed Scheme**			**2046 future baseline**			**2046 with the Proposed Scheme**		
B5212 Glazebrook Lane (south) (left and ahead)	486	25%	0	496	26%	0	515	27%	0	526	27%	0
Manchester Road (left and right)	62	16%	0	36	9%	0	65	18%	1	36	10%	0
B5212 Glazebrook Lane (north) (ahead and right)	618	50%	3	676	59%	4	655	53%	4	716	63%	6
17:00–18:00	**2038 future baseline**			**2038 with the Proposed Scheme**			**2046 future baseline**			**2046 with the Proposed Scheme**		
B5212 Glazebrook Lane (south) (left and ahead)	583	30%	0	606	31%	0	617	31%	0	642	33%	0
Manchester Road (left and right)	82	19%	0	93	21%	1	87	21%	1	99	23%	1
B5212 Glazebrook Lane (north) (ahead and right)	324	22%	0	336	24%	0	343	24%	0	357	26%	0

16.5.28 The model shows that for this junction, the change in traffic due to operation in 2038 of the Proposed Scheme will not result in substantial changes in DoS and queue lengths in the AM or PM peak hours. The assessment shows that in the AM and PM peak hours the junction operates within capacity in both the future baseline and with the Proposed Scheme. The traffic flow will have a negligible impact on the operation of the junction.

16.5.29 The model shows that for this junction, the change in traffic due to operation in 2046 of the Proposed Scheme will not result in substantial changes in DoS and queue lengths in the AM or PM peak hours. The assessment shows that in the AM and PM peak hours the junction operates within capacity in both the future baseline and with the Proposed Scheme. The traffic flow will have a negligible impact on the operation of the junction.

Accidents and safety

16.5.30 The baseline safety analysis identified no locations which had experienced an accident cluster over a three-year period.

16.5.31 Whilst there are locations in MA04 where there are substantial forecast increases in traffic flows due to the operation of the Proposed Scheme, these will not affect known safety concerns.

16.5.32 New highway links and junctions will be constructed to current standards and/or in keeping with the existing infrastructure. The Proposed Scheme is unlikely to create any new safety concerns.

Parking and loading

16.5.33 There will be a no permanent loss of off-street car parking along the route of the Proposed Scheme in the MA04 area.

Public transport

Local bus services

16.5.34 Local bus services will be affected where the road corridors used cross the route of the Proposed Scheme and where the Proposed Scheme results in changes to the route.

16.5.35 Of the five roads with bus services identified in the existing baseline only one road is affected by the Proposed Scheme. The A6144 Paddock Lane will be realigned, affecting 42 journeys per day on route Cat5 and 25 journeys per day on route Cat5a. However, the diversion does not significantly increase journey distances and will result in a change in journey length of less than 844m for the bus service.

Rail network

16.5.36 There are no local changes to the rail network or operations in this CA as a result of the Proposed Scheme.

Public transport interchanges

16.5.37 There are no substantial impacts on public transport interchange facilities in the MA04 area and no committed proposals for public transport interchange facilities in this area.

Pedestrians, cyclists and equestrians

16.5.38 The operational scheme will affect PRoW and roadside footways used by pedestrians, cyclists and equestrians that cross the route of the Proposed Scheme or where the operation of the Proposed Scheme results in changes to PRoW or roadside footways.

16.5.39 Locations where roads used by pedestrians, cyclists and equestrians are permanently diverted, realigned or reinstated are shown in Table 16-46 and Table 16-47 below. The tables summarise the permanent diversions, realignments and extensions required to PRoW and roads to accommodate the Proposed Scheme.

Table 16-46: MA04 permanent changes to PRoW for non-motorised users

PRoW name	Change in length	Comments
Footpath Warburton 3	Realignment of Footpath Warburton 3, part of the Bollin Valley Way, up to 135m north of its current alignment for 495m, crossing the route of the Proposed Scheme on the Footpath Warburton 3 accommodation overbridge, increasing the length of journey by 184m.	New overbridge
Footpath Warburton 11	Realignment of Footpath Warburton 11, up to 107m north of its current alignment for 285m, crossing the route of the Proposed Scheme under the Manchester Ship Canal viaduct, increasing the length of the journey by 196m.	Passing under viaduct
Footpath Rixton-with-Glazebrook 9	Footpath Rixton-with-Glazebrook 9 will be realigned in three places, twice with increases in journey length to avoid Manchester Ship Canal viaduct piers and diverted at its northern extent resulting in a decrease in journey length to avoid the Glazebrook South embankment. Overall, journey length will decrease by 65m.	Passing under viaduct
Footpath Rixton-with-Glazebrook 14	Diversion of Footpath Rixton-with-Glazebrook 14, up to 416m to the south of its current alignment for 550m, crossing the route of the Proposed Scheme under the Manchester Ship Canal viaduct, increasing the journey length by 210m.	Passing under viaduct
New PRoW	Creation of a new PRoW footpath, 350m in length to connect the retained section of Dam Head Lane on the western side of the route of the Proposed Scheme to Bank Street, passing under the Glazebrook (Railway) viaduct.	Footpath to provide pedestrian route. Cyclists and equestrians will be required to utilise the on-road route via Dam Lane, Manchester Road and the B5212 Glazebrook Lane

Table 16-47: MA04 permanent changes to roads for non-motorised users

PRoW name	Change in length	Comments
Agden Lane	Agden Lane will be permanently closed for all users. Users will be diverted along Agden Lane to the A56 Lymm Road and Warrington Lane, increasing journey length by 282m.	None
Warrington Lane	Realignment, approximately 214m in length, to pass under the Bridgewater Canal viaduct with tie-ins to the existing road, resulting in a change in journey length of less than 10m.	Passing under viaduct
Spring Lane	Realignment of Spring Lane where it crosses the route of the Proposed Scheme, resulting in a change in journey length of less than 10m.	New underbridge
Wet Gate Lane	Realignment, up to 116m to the west of its existing alignment for 509m. The existing Wet Gate Lane will be closed where it crosses the	None

PRoW name	Change in length	Comments
	route of the Proposed Scheme. Journey length will decrease by 166m.	
A6144 Paddock Lane	The A6144 Paddock Lane to be closed where it crosses the route of the Proposed Scheme. Users will be diverted along the realigned A6144 Paddock Lane and the existing alignment, increasing journey length by up to 832m.	New overbridge
Dam Head Lane	Closure of Dam Head Lane, with access retained to Rose Cottage on the western side of the route. Users will be diverted along a new section of footpath connecting Dam Head Lane with Bank Street, increasing the length of the journey by up to 146m for pedestrians and around 2km for cyclists and equestrians.	Passing under viaduct. Cyclists and equestrians will be required to utilise the on-road route via Dam Lane, Manchester Road and the B5212 Glazebrook Lane.

16.5.40 Within these diversions and reinstatements, two of the routes affected experience either no change in length, or the routes become shorter (Footpath Rixton-with-Glazebrook 9 and Wet Gate Lane). A further seven changes result in diversions which increase route length up to 210m on PRoW and roads.

16.5.41 One route experiences larger changes in the length of diversions up to 832m, between Warburton and Mossbrow, which is associated with the A6144 Paddock Lane closure.

16.5.42 In the case of Dam Head Lane, local access for some users will be retained, avoiding lengthy highways diversion by using a new footpath route between the retained section of Dam Head Lane on the western side of the route of the Proposed Scheme and Bank Street. This results in a reduced diversion route length of 146m. Cyclists and equestrians will be required to utilise the on-road route via Dam Lane, Manchester Road and the B5212 Glazebrook Lane, resulting in additional distance of around 2km to these less distance-sensitive users.

Waterways and canals

16.5.43 The operation of the Proposed Scheme will not impact upon navigable waterways or canals in the MA04 area.

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