South Station Place
Appendices A

PATRICK PROPERTIES

A New Net Carbon Zero Public Transport-Led Community and Employment Hub

Appendices A

1. Transport Appraisal Report
2. Warrington Draft Local Plan & Local Transport Plan 4 Consultation
3. Ecology Technical Note: South Station Place, Birchwood
4. Landscape & Visual Greenbelt Review
5. Landscape & Visual Technical Note
6. Flood Risk Associated with the Birchwood Mixed-Use Development Site
7. Hydrological and Hydrogeological Risk Assessment
8. Preliminary Site Investigation to Identify the extent of Peat with the Underlying soils Birchwood Station South, Warrington
9. Noise Screening Assessment
10. Air Quality Assessment
11. South Station Place, Birchwood Socio-Economic Assessment

1. Transport Appraisal Report

vectos.

TRANSPORT APPRAISAL REPORT

Patrick Properties

South Station Place Masterplan, Birchwood, on behalf of Patrick Properties

November 2021

VN212061

Transport Appraisal Report

Report control

Document:	Transport Appraisal Report
Project:	South Station Place Masterplan, Birchwood, on behalf of Patrick Properties
Client:	Patrick Properties
Job number:	VN212061
File origin:	N:\Vectos Job Data\2021\VN212061 Birchwood South Masterplan\Docs\Reports\1. Transport Appraisal Report\Transport Appraisal Report.docx

Document checking

Primary Author:	Tom Reader	Initialled:	TR
Contributor:	Charlie Jones	Initialled:	CJ
Review by:	Phil Tilby	Initialled:	PT

Issue	Date	Status	Checked for issue
1	07.10.2021	Issue_01	PT
2	12.11.2021	Issue_02	PT

Contents

Drawings

Appendices

Appendix A	Framework Masterplan – Patrick Properties Development Area
Appendix B	Framework Masterplan – Wider Development Area
Appendix C	2021 M6 Junction 21 Traffic Survey Data
Appendix D	National Highways Email Correspondence on Nicol Avenue
Appendix E	TRICS Report – Industrial
Appendix F	TRICS Report – Warehousing / Logistics
Appendix G	Park & Ride Survey Data
Appendix H	Traffic Flow Diagrams
Appendix I	TEMPro Growth Factors
Appendix J	Junctions Modelling Output – Site Access Roundabout
Appendix K	LinSig Modelling Outputs – Site Access Signal Junction

1 Introduction

1.1 Vectos is providing transport and highways advice to Patrick Properties in support of a proposed strategic development on land to the south of Birchwood and to the east of the M6 in Warrington, Cheshire. The site is currently comprised of predominantly agricultural land.

1.2 The development site comprises of the Patrick Properties land ownership and neighbouring landowners. Vectos are acting on behalf of Patrick Properties, but it should be noted that this transport appraisal also considers the wider development area that includes the neighbouring landowners within the site boundary.

1.3 A masterplanning exercise has been undertaken to demonstrate how the overall site can be developed to provide a development comprising a Park and Ride (P&R) facility with a community hub connected to Birchwood Rail Station and around 273,465sq.m (approximately 2,943,548sq.ft) of B2 industrial and B8 logistics floorspace. Patrick Properties are proposing to open up the southern approach to Birchwood Railway Station as part of a mixed use, public transport-led development proposal, to be known as South Station Place, and their development proposals at the site comprise of the P&R facility and around 152,957sq.m (approximately 1,646,415sq.ft) of industrial and logistics floorspace.

1.4 This report forms part of representations being made to Warrington Borough Council (WBC) as part of the emerging Local Plan preparation process and seeks to demonstrate a proposed access strategy options and sets out an approach for demonstrating the deliverability of the proposed masterplan proposals in transport terms. Some initial dialogue has taken place with Highways Officers from WBC regarding the site, and a first meeting has been held with National Highways (formerly Highways England) on 7th September 2021 to discuss the proposals in the context of M6 Junction 21, the wider Strategic Road Network and the Nicol Avenue bridge.

1.5 **Figure 1.1** shows an overview of the approximate site boundary.

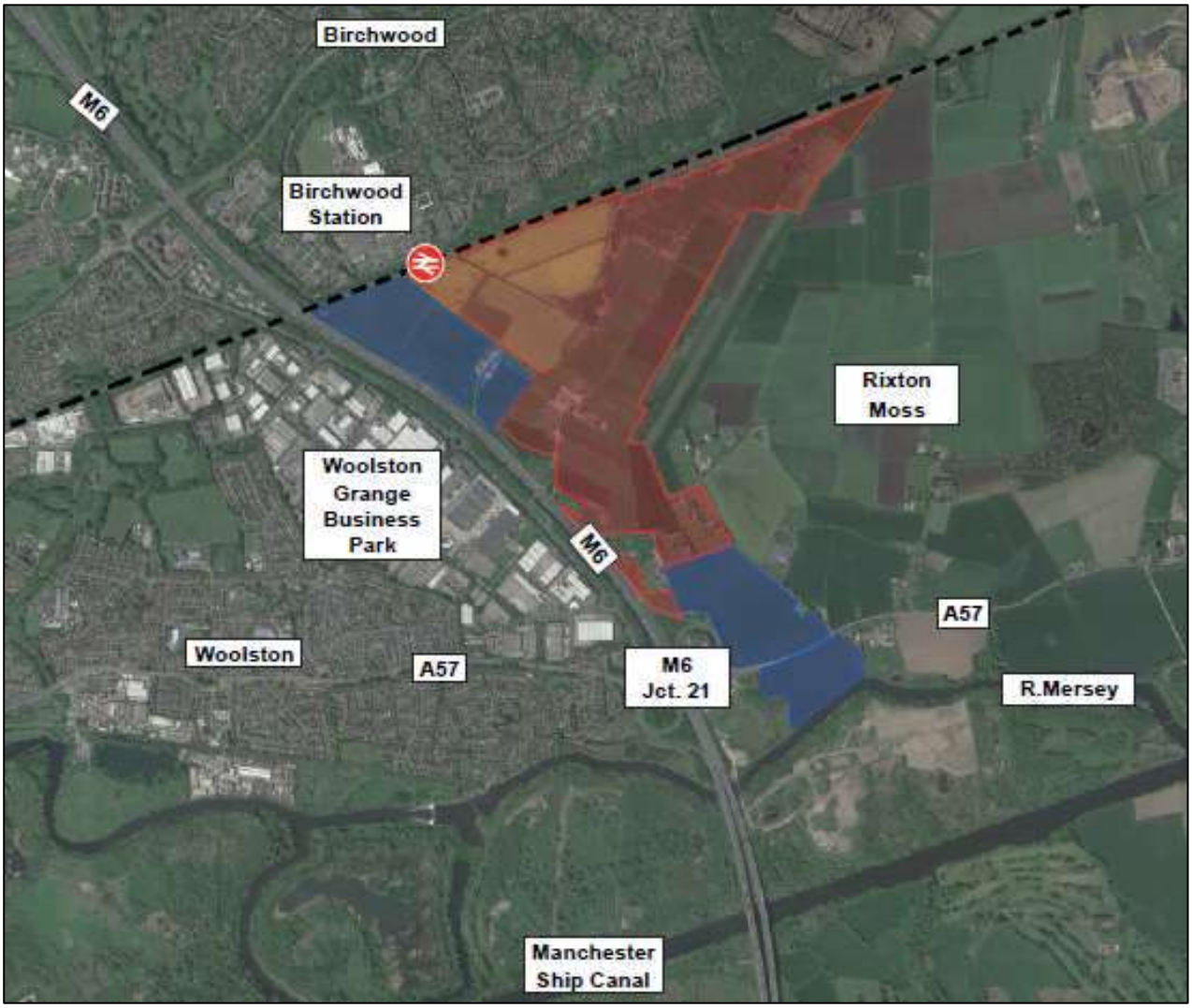


Figure 1.1: Site Boundary

1.6 It can be seen that the site is bordered by the M6 to the west, the Liverpool to Manchester rail line to the north, an airstrip and agricultural / moss land to the east, and to the south by the A57 and the River Mersey. The M6 Junction 21, also known as the Woolston Interchange, lies to the southwest of the site and the A57 Manchester Road extends eastwards from the junction, bisecting the southern part of the site. The site is at the edge of the existing settlement, with Woolston residential area and the Grange Industrial Estate to the west on the other side of the M6 and Birchwood to the north on the other side of the rail line, including the southern residential area and Birchwood Shopping Centre.

1.7 There are several existing residential and commercial premises within the proposed development area and at the edge of the site, which are included in the masterplan to remain in-situ. These existing uses at the site will benefit from the infrastructure improvements that will be realised both on-site and in the surrounding area from the proposed development.

Scope of Report

1.8 This report provides a review of the existing transport conditions in and around the site, establishing the baseline and future baseline conditions that would set the context for development at this site and identifying constraints and opportunities in respect of access to the site by all transport modes. This includes consideration of the potential access strategy options to serve the redeveloped site and initial consideration of the potential effects of development upon highway capacity in the immediate vicinity on the A57. A high-level review of the sustainable accessibility of the site has also been undertaken. The report draws upon a desktop study, a site visit on 13th August 2021 and traffic surveys that have been undertaken during September 2021.

1.9 Following this introduction, Section 2 provides a preliminary review of the existing conditions in the vicinity of the site including the local highway network. Section 3 then provides an overview of the accessibility of the site by sustainable travel modes and potential opportunities for improvements to both internal and external pedestrian and cycling facilities.

1.10 Section 4 considers the potential vehicular access strategy options to serve the site and section 5 provides an initial forecast of traffic generation associated with the development proposals, along with a high-level commentary on highway capacity effects including at the M6 Junction 21. A summary is provided in Section 6.

2 Site Location and Existing Transport Conditions

Site Location

2.1 **Figure 2.1** shows the site within the local highway network context in more detail, with the Patrick Properties framework masterplan included at **Appendix A** to this report, and the wider development area framework masterplan is in **Appendix B**.

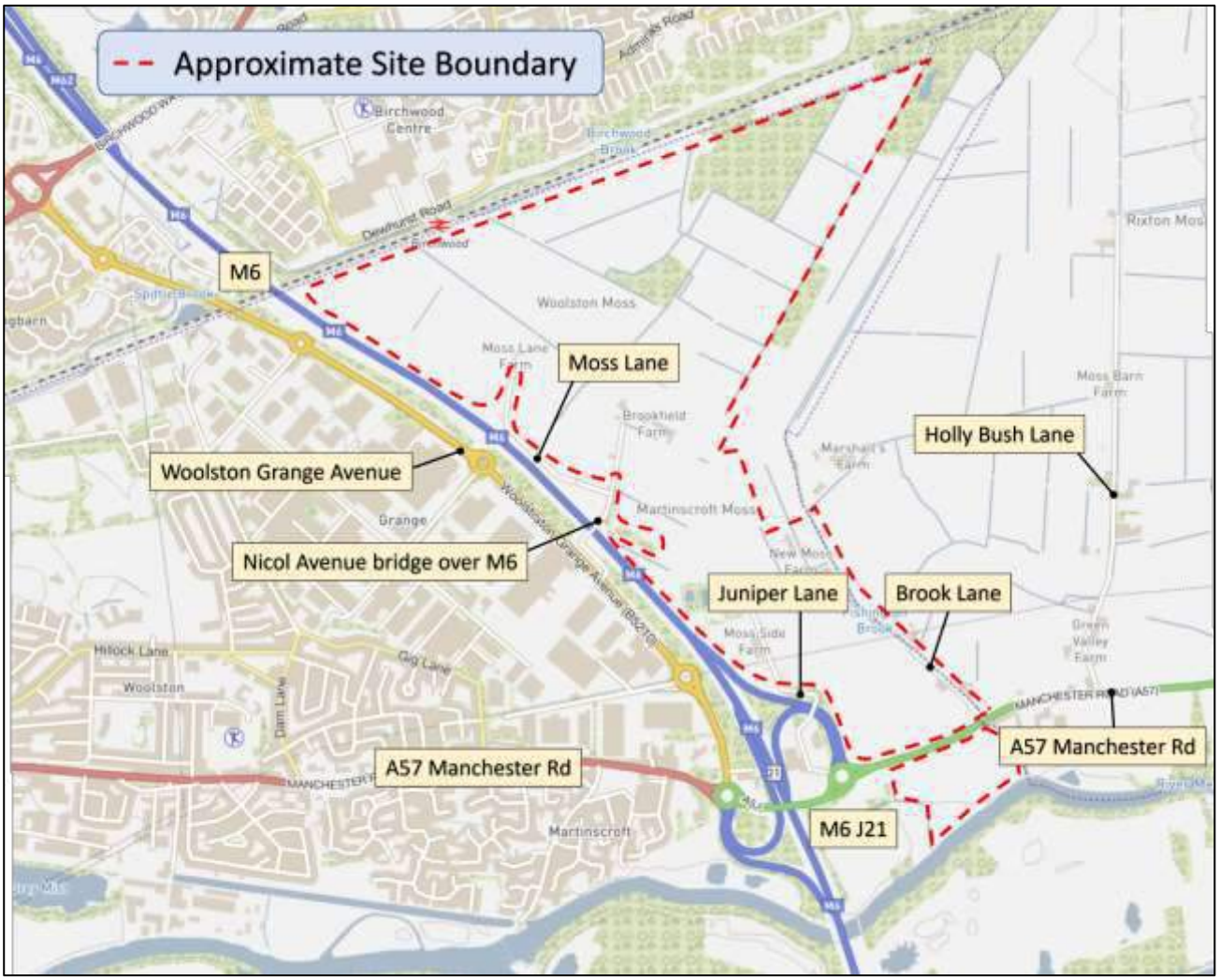


Figure 2.1: Plan Showing Extent of the Site

2.2 Figure 2.1 shows that the site has frontage with the A57 Manchester Road to the east of the M6 Junction 21. There are several existing access points leading into the site. Two of these are at the southern end of the site: Brook Lane, which forms a priority junction with the A57 Manchester Road and Juniper Lane that is accessed via the Woolston Interchange eastern dumbbell roundabout, and which forms a bridge crossing over the M6 southern mainline slip roads. There is also an access road (Nicol Avenue) connecting to Woolston Grange Avenue via a bridge crossing of the M6 along the western side of the site.

2.3 The M6 Junction 21 lies to the southwest of the site boundary. This junction provides for all movements onto and off the M6, via a dumbbell priority roundabout arrangement incorporating the

A57 and B5210 Woolston Grange Avenue. The roundabouts are separated by a span over the M6 carriageway. The site is conveniently located to provide good access to the Strategic Road Network due to the proximity of the M6 Junction 21. To the north of the site the M6 Junction 21A is the Croft Interchange with the M62, and to the south the M6 Junction 20/20A is the Lymm Interchange with the M56 and the A50.

2.4 It is clear from the site location plan that the site is also particularly well located in relation to Birchwood Rail Station, which is identified for a P&R development in the updated WBC Infrastructure Delivery Plan (IDP) (2021) for the emerging Local Plan. In addition, the Cheshire Line Committee (CLC) line (capacity and service improvements) and Birchwood Station P&R public transport infrastructure schemes are identified as Later Phases of Northern Powerhouse Rail and Further Potential Interventions of the Transport for the North (TfN) Investment Programme. The WBC Fourth Local Transport Plan (LTP) (2019) refers to schemes and packages of interventions in the TfN Investment Programme that are relevant to Warrington, and these include the CLC line improvements, Birchwood P&R and the M6 improvements from Junctions 19 to 21A that are future potential priorities supported by TfN.

Warrington Council and National Highways Highway Boundary Review

2.5 Adopted highway boundary plans have been obtained from WBC, and the relevant extract is included below in **Figure 2.2** for the A57 adjacent to the site. WBC have advised that the section of Juniper Lane (coloured orange) is not part of the Council's adopted public highway.

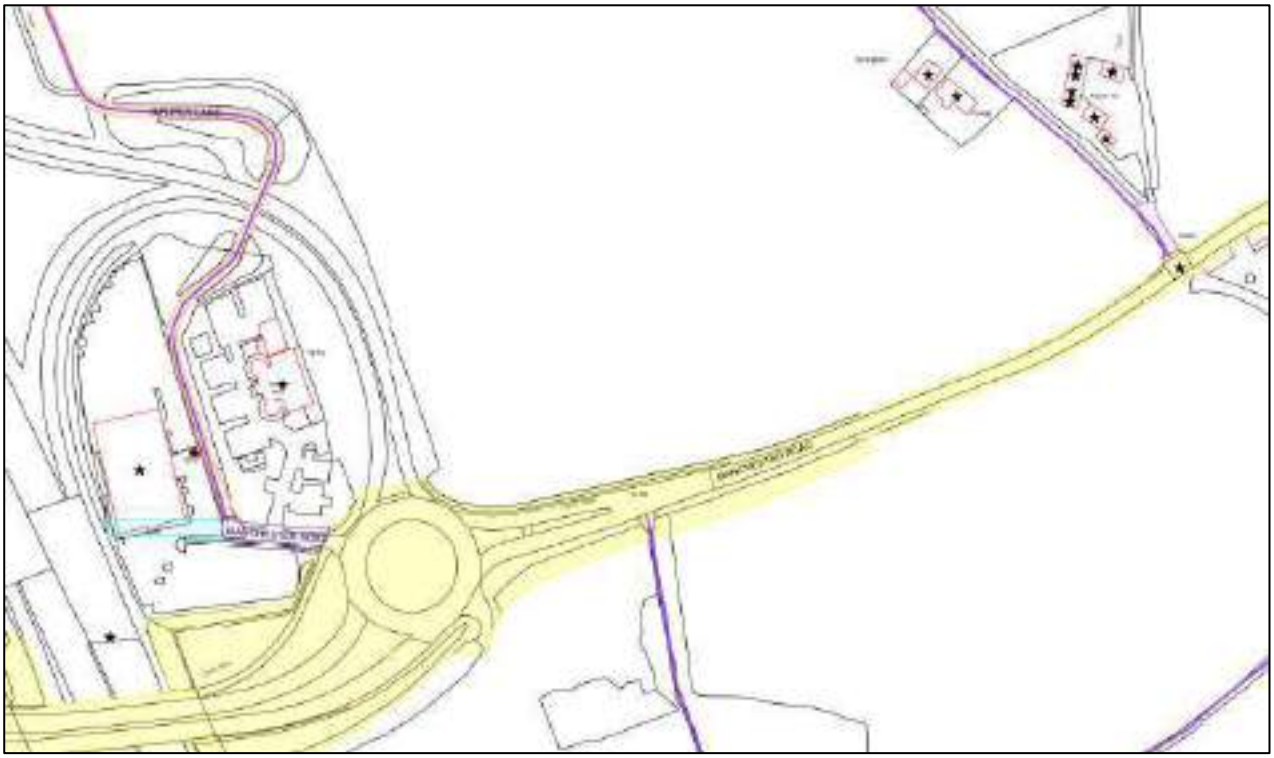


Figure 2.2: A57 Adopted Highway Boundary Extents

2.6 WBC have also provided a highway boundary plan for Woolston Grange Avenue including Nicol Avenue, and WBC have advised that Nicol Avenue (coloured orange) is not part of the Council's

adopted public highway. The relevant extract is included below in **Figure 2.3** for Nicol Avenue into the site.

Figure 2.3: WBC Highway Boundary Extract – Nicol Avenue

2.7 National Highways Highway Boundary mapping has been reviewed for the M6 in the vicinity of the site and this appears to indicate that the Nicol Avenue approaches either side of the M6 (coloured light blue) are within the National Highways title and the Nicol Avenue bridge at the M6 is within the National Highways highway boundary (coloured dark blue within the red line). The relevant screenshot is shown below in **Figure 2.4**. The National Highways title ends to the north of the junction with Moss Lane, and the existing rights of access in relation to this highway route will be reviewed further as part of the development of the detailed access and site layout proposals.

2.8 The land ownership of the landscaping strip between Woolston Grange Avenue (WBC adopted highway boundary) and the M6 (National Highways title and highway boundary including Nicol Avenue) on either side of Nicol Avenue belongs to Warrington Borough Council. In summary, the WBC and National Highways adopted highway boundaries and land ownerships in the vicinity of Nicol Avenue provide the potential for positive future discussions with regard to opportunities for

proposed highway improvements to this existing access route into the site, including the junction with Woolston Grange Avenue.

Figure 2.4: National Highways Highway Boundary Redline Extract – Nicol Avenue
Source – https://highways.maps.arcgis.com/apps/webappviewer/index.html?id=6db7a2db20d04c79ab2abe7947f8cc06

Surrounding Highway Network

A57 Manchester Road

2.9 The A57 Manchester Road extends east from the M6 Junction 21 forming the southern boundary of the site. It provides a strategic connection between Warrington and Manchester, approximately 14 miles to the east. In the vicinity of the site, the A57 Manchester Road is a two-way single lane carriageway approximately 7m in width and is subject to a 50mph speed limit. Street lighting is present along the route.

2.10 There is a narrow footway along the northern side of the carriageway adjacent to the site boundary, varying in width but in general providing around 1m effective width, with grass verge or hedge appearing to have encroached into the footway space in places, to reduce its effective width. This is evident in **Figure 2.5**, with the lighting column indicating the back of the footway. There is no footway on the south side of the A57 to the east of the westbound bus stop at the M6 Junction 21 eastern roundabout.

Figure 2.5: A57 Manchester Road Adjacent to the Site Looking West

Brook Lane

2.11 Brook Lane forms a priority junction arrangement on the northern side of the A57 Manchester Road. It is an informally surfaced road that provides an access point into the site, serving a small number of dwellings and businesses including the Rixton Dog School. A small section of Brook Lane is adopted highway, comprising the first circa 30m from the edge of Manchester Road. It is around 7m in width along this 30m section, narrowing to around 4m further into the site.

2.12 There are no footways or street lighting along Brook Lane although a Public Right of Way (PRoW) extends north along Brook Lane from Manchester Road.

M6 Junction 21 Woolston Interchange

2.13 The M6 Junction 21 'Woolston Interchange' provides for all movements onto and off the M6, via a dumbbell roundabout arrangement incorporating the A57 and B5210 Woolston Grange Avenue, and both roundabouts are priority-controlled. They are separated by a span over the M6 carriageway of approximately 290m. The current arrangement of Junction 21 is shown in **Figure 2.6**.

Figure 2.6: Plan View of M6 Junction 21 Woolston Interchange

B5210 Woolston Grange Avenue

2.14 The B5210 Woolston Grange Avenue provides a connection between the A57 and Birchwood to the north, also providing access to the Grange Industrial Estate. It is subject to a 40mph speed limit and is a dual carriageway standard road with a kerbed central reserve, except for the section between Kingsland Grange and Hardwick Grange. There are several roundabouts along this route. There are no footways or cycle infrastructure along Woolston Grange Avenue, except to the north of the Longbarn Boulevard junction.

Nicol Avenue

2.15 Woolston Grange Avenue provides access to Nicol Avenue, with a left-in left-out only access on the southbound carriageway as shown in **Figure 2.7**.

Figure 2.7: Nicol Avenue

2.16 Nicol Avenue forms a bridge crossing of the M6 and provides access to Moss Lane and Woolston Nursery. There is no footway provision or cycle infrastructure along Nicol Avenue. There is also an absence of street lighting and it is not part of the WBC adopted highway boundary. Nicol Avenue varies in width from around 5.5m at its widest, to around 3m where it becomes more of a track further into the site to the north of Moss Lane. It is around 4.5m in width on the bridge span, and the horizontal alignment of the Nicol Avenue carriageway on the west side of the M6 comprises of two 90 degree bends on the approach to the bridge.

Existing Traffic Conditions

2.17 A traffic count survey was undertaken at the M6 Junction 21 dumbbell roundabouts during the weekday morning and evening peak periods on Tuesday 14th September 2021.

2.18 The turning count surveys revealed the following network peak hours for traffic movements across both of the junctions:

- AM peak hour: 07:30-08:30.
- PM peak hour: 16:30-17:30.

2.19 The western roundabout experienced the greatest traffic flows and the total flows across the junction for the peak hours as summarised in **Table 2.1**.

	Western Roundabout	Eastern Roundabout	Total
AM Peak	3730	2588	6318
PM Peak	3895	2752	6647

Table 2.1: Junction 21 Dumbbell Roundabout Recorded Peak Hour Traffic Flows

2.20 Table 2.1 shows that the evening peak was the busier peak, with around 5% more traffic passing through the junction than in the morning peak hour.

2.21 The western roundabout accommodates over 1,000 more movements than the eastern roundabout in both peaks.

2.22 The surveyed flows along on the A57 Manchester Road eastern arm of the eastern roundabout (i.e. adjacent to the site) are summarised in **Table 2.2**.

	A57 Eastbound		A57 Westbound		Two-way	
	All Vehs	HGVs	All Vehs	HGVs	All Vehs	HGVs
AM Peak	722	38	672	94	1394	132
PM Peak	820	56	733	19	1553	75

Table 2.2: A57 Manchester Road in Vicinity of the Site – Recorded Peak Hour Traffic Flows

2.23 It can be seen from Table 2.2 that the flows along the A57 in the vicinity of the site are relatively even in both directions during both weekday peak hours, but with a higher eastbound flow. Total two-way flows are 1,394 in the morning peak and 1,553 in the evening peak. HGVs comprise around 10% of traffic during the morning peak hour and around 5% during the evening peak hour.

2.24 The traffic survey data is included as **Appendix C** to this report. Key trends that can be observed from the traffic flow figures at the dumbbell roundabouts are as follows:

- There is a large flow of traffic in the AM peak coming from the M6 south and travelling straight ahead at the western dumbbell roundabout onto Woolston Grange Avenue. This is likely associated with the Grange Industrial Estate, which will be a major employment trip generator in the area and also potentially Birchwood Park to the north that can be accessed via this route. The evening peak shows a large movement in the reverse direction from Woolston Grange Avenue to the M6 south, via the eastern dumbbell roundabout.

- Of the traffic arriving to the eastern dumbbell roundabout from the A57 eastern arm, the majority goes straight ahead westbound to the western dumbbell roundabout. This is the case in both peaks.

- Of the traffic travelling eastbound on the A57 from the M6 Junction 21 eastern dumbbell roundabout, the majority has travelled straight ahead at the eastern dumbbell from the western dumbbell roundabout.

- The Manchester Road minor road access on the eastern dumbbell roundabout (leading to Juniper Lane) attracts 53 vehicles in the morning peak hour, with 15 vehicles departing from this arm of the junction. In the evening peak, this arm is busier, with 47 arrivals and 58 departures. The evening peak is likely to be busier due to the activity associated with the

Juniper Farm pub / restaurant that is accessed from this arm of the junction, and it also serves the Mercedes-Benz car dealership.

2.25 Observations from the traffic survey reveal that the eastern dumbbell roundabout operated without any notable queuing on any of the junction arms in the morning peak. Similarly in the evening peak period, the roundabout was operating under free flow conditions.

2.26 At the western dumbbell roundabout, observations from the survey revealed that the roundabout operated under generally free flow conditions but there was some queuing on the M6 northbound off-slip approach to the junction and the A57 eastbound approach in the morning peak. It is understood that this junction does sometimes experience congestion issues in the peak periods and significant queues can form on the M6 off-slip approach, and the existing capacity of this roundabout is a concern of both WBC and National Highways. WBC have advised that as part of a recent resurfacing improvement scheme at the western dumbbell roundabout, signal ducting has also been installed that facilitates the potential for the future signalisation of the junction.

2.27 Reference can also be made to Google Maps which provides an overview of typical traffic speeds and the operation of the local highway network during different times of the day. The typical traffic conditions for a Monday morning at 08:30 in the area are illustrated in **Figure 2.8**.

Figure 2.8: Typical Traffic Conditions During a Monday Morning Peak (08:30)

2.28 It is noted from Figure 2.8 that the A57 Manchester Road in the vicinity of the site is shown to be free flowing, with the M6 Junction 21 also operating without any significant queuing, reflecting the observations of the traffic survey.

2.29 Some queuing is indicated to the east of the site on the westbound carriageway approaching the A57 Manchester Road/Warburton Bridge Road priority junction. The local network surrounding the site appears to be otherwise operating under relative free flow conditions in the weekday peak periods.

2.30 The typical traffic conditions for a Monday evening at 17:15 in the area are illustrated in **Figure 2.9**.

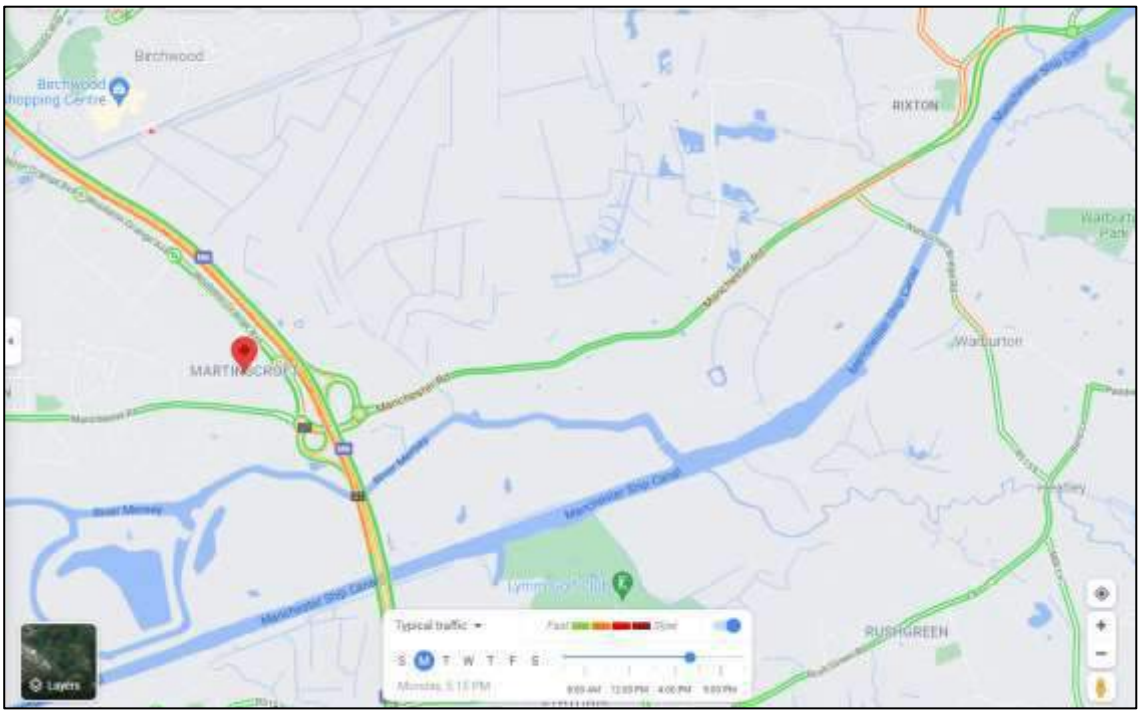


Figure 2.9: Typical Traffic Conditions During a Monday Evening Peak (17:15)

2.31 It can be seen from Figure 2.9 that during the weekday evening peak there is some queuing indicated on the M6 northbound carriageway in the vicinity of Junction 21, however the dumbbell roundabouts at Junction 21 appear to be relatively free flowing, as does the A57 in the vicinity of the site. This again reflects the observations of the traffic survey at M6 Junction 21.

Future Highway Schemes

2.32 National Highways have advised that a Smart Motorway scheme on the section of the M6 that includes Junction 21 could be expected to come forward as part of the Road Investment Strategy (RIS) 3, which would be post 2025, and the M6 Junctions 19 to 21A highway improvement scheme is also identified in the Warrington LTP4 and the TfN Investment Programme. The South Station Place Masterplan and any associated highway improvements will need to align and integrate with any committed road schemes on both the strategic and local networks that are brought forward by National Highways and WBC.

Highway Safety Review

2.33 Personal injury accident data has been obtained from the Crashmap.co.uk online database for the highway network focused around the site. The accident data covers the most recent five-year period for which data is available (2015 – June 2020).

2.34 A location plot of these accidents from Crashmap is provided in **Figure 2.10**.

Figure 2.10: Accident Location Plot (2015-June 2020)

2.35 It can be seen from Figure 2.10 that there have been just two accidents along the A57 in the vicinity of the site, both close to the Brook Lane junction. One of these resulted in serious injury and one resulted in slight injury. It should be noted that the A57 is identified as a road safety 'Red Route' with signs repeated along the route, however the section of the A57 that runs adjacent to the site frontage appears to benefit from a good recent accident record.

2.36 The accident record at the M6 Junction 21 is roundabouts is relatively good with just three accidents on the eastern roundabout and eight on the western roundabout. All of these resulted in slight injury except from one on the eastern roundabout that resulted in serious injury.

2.37 The accident record on Woolston Grange Avenue in the vicinity of the site is also relatively good with just three accidents recorded, all resulting in slight injury. There were no accidents recorded at the Nicol Avenue junction.

2.38 Only one accident involved a cyclist, which was one of the slight accidents that occurred at the roundabouts, however none of the accidents around the site involved a pedestrian.

2.39 In summary, the accident record does not reveal any significant safety concerns that would need to be addressed in relation to the development proposals at the site and the associated access strategy proposals.

Summary

2.40 The site is bordered by the M6 to the west, the Liverpool to Manchester rail line to the north, an airstrip and agricultural / moss land to the east, and to the south by the A57 and the River Mersey. The M6 Junction 21, also known as the Woolston Interchange, lies to the southeast of the site and the A57 Manchester Road extends eastwards from the junction, bisecting the southern part of the site. The site is at the edge of the existing settlement, with Woolston residential area and Grange Industrial Estate to the west on the other side of the M6 and Birchwood Shopping Centre and residential area to the north on the other side of the rail line.

2.41 The site is well located in respect of the future proposals for the CLC line improvements, Birchwood P&R (also in the WBC IDP (2021) for the emerging Local Plan) and the M6 improvements from Junctions 19 to 21A that are identified in the Warrington LTP4 and the TfN Investment Programme.

2.42 The site has frontage with the A57 Manchester Road to the east of the M6 Junction 21. There are several existing access points leading into the site. Two of these are at the southern end of the site: Brook Lane, which forms a junction with the A57 Manchester Road and Manchester Road / Juniper Lane that is accessed via the Woolston Interchange eastern dumbbell roundabout, and which forms a bridge crossing over the M6 southern mainline slip roads. There is also an access road (Nicol Avenue) connecting to Woolston Grange Avenue via a bridge crossing of the M6 along the western side of the site.

2.43 A review of adopted highway boundary information shows that the A57 and Woolston Grange Avenue are part of the WBC adopted public highway, and that the Nicol Avenue approaches either side of the M6 are within the National Highways title and the Nicol Avenue bridge at the M6 is within the National Highways adopted boundary. The WBC and National Highways adopted highway boundaries and land ownerships in the vicinity of Nicol Avenue provide the potential for positive future discussions with regard to opportunities for proposed highway improvements to this existing access route into the site, including the junction with Woolston Grange Avenue.

2.44 The site is conveniently located to provide good access to the Strategic Road Network due to the proximity of the M6 Junction 21, and the A57 and Woolston Grange Avenue offer good local road network connections including to Birchwood and Warrington to the north and west respectively.

2.45 The existing conditions on the local highway network have been reviewed through a desktop review and on-site observations and a traffic survey at the M6 Junction 21, and the highway network in the vicinity of the site appears to operate satisfactorily in respect of the eastern dumbbell roundabout. It is understood that the western roundabout does sometimes experience congestion issues in the peak periods and significant queues can form on the M6 off-slip approach, and the existing capacity of this roundabout is a concern of both WBC and National Highways.

2.46 The accident record does not reveal any significant safety concerns that would need to be addressed in relation to the development proposals at the site and the associated access strategy proposals.

3 Accessibility Audit

3.1 The accessibility of the site by sustainable travel modes is assessed within this section.

3.2 It is anticipated that the development proposals would be likely to include the provision of some amenities on-site, such as open space / play area and community hub facilities as part of the Birchwood Station P&R scheme, which will help to internalise these associated trip movements within the site, which would reduce the need for employees to travel.

3.3 Where travelling further afield is unavoidable, there are good existing and potential future opportunities for travel to be undertaken by sustainable modes and these are outlined below.

Bus Accessibility

3.4 The site is accessible by bus, with existing bus stops provided at Birchwood Rail Station (to be accessed via new connection(s) with footbridge infrastructure at the station and new pedestrian and cycling linkages through the site) to the north and also along the A57 Manchester Road to the south. There are several bus services that operate from these stops providing direct connections to destinations such as Warrington Town Centre, the northern suburbs of Warrington and Shudehill in Manchester City Centre. The regular services operating from these stops are summarised in **Table 3.1**.

Service	Route	Typical Weekday Frequency	Operating hours	Sat	Sun
Birchwood Station					
17 – Warrington's Own Buses	Birchwood – Callands via Hilden Island, Westbrook, Gemini	30 mins	06:07 – 22:39	✓	✓
25 – Warrington's Own Buses	Warrington – Gorse Covert via Orford, Locking Stumps,	30 mins	05:42 – 22:44	✓	✓
28 – Warrington's Own Buses	Warrington – Leigh via Padgate, Birchwood, Culcheth	60 mins	05:54 – 19:16	✓	-
A57 Manchester Road					
100 – Go North West	Manchester – Salford Shopping Centre – Eccles – intu Trafford Centre – Irlam – Warrington	60 mins	05:50 – 00:18	✓	✓

Table 3.1: Bus Service Summary

3.5 It can be seen from Table 3.1 that the services operating from these stops provide regular services throughout the day, particularly the 17 and 25 from Birchwood Rail Station which provide a 30-minute service, and also run at weekends.

3.6 The bus stop at Birchwood Rail Station provides a flag post, timetable information, a raised boarding kerb and bus cage markings. The bus stops on the A57 adjacent to the M6 Junction 21 eastern dumbbell roundabout comprise simple flag post arrangements with on-carriageway bus cage markings, and the central island on the A57 east arm of the roundabout comprises of dropped kerbs to assist pedestrians crossing the A57 to access the westbound bus stop. There are also a pair of bus stops on the A57 located immediately to the east of Brook Lane, however these comprise of minimal infrastructure provision including no footway on the south side of the carriageway.

3.7 It is therefore considered that the northern and southern parts of the site are served by bus, particularly the northern part of the site which benefits from proximity to the buses serving Birchwood Rail Station. The bus stops on the A57 are of a relatively poor standard but could potentially be upgraded as part of the sustainable transport strategy for the site. It should be noted that the proposed P&R facility at the northern end of the site linked to Birchwood Rail Station would include proposals for better bus access and interchange facilities, and this would significantly improve the bus connectivity of the site. Given the strategic scale of the proposed development, the sustainable transport strategy will also consider the potential for both diverting existing bus services into the site from the A57 and increasing bus service provision to serve the area.

Future Public Transport Consideration

3.8 WBC's LTP4, which was adopted in December 2019, includes a plan to identify options for a mass transit network for Warrington and it is understood that Light Rail/Tram and Bus Rapid Transit systems are two of the options that are being considered. The South Station Place Masterplan development would be co-ordinated with any proposals for a mass transit network that includes Birchwood, when plans are brought forward by WBC.

Rail Accessibility

3.9 Birchwood Rail Station lies at the northern boundary of the site, affording excellent opportunity for trips generated by the development to be made by rail. The station is served predominantly by Northern services, however it is also served by the occasional East Midlands Railway service which extends between Liverpool and Norwich. There are services which operate approximately once every 15 minutes in the weekday morning peak hour (08:00-09:00) towards Warrington Central and Liverpool Lime Street, and also services which operate approximately once every 30 minutes towards Manchester. These are local services and call at nearby destinations such as Padgate, Glazebrook, Irlam and Flixton.

3.10 A rail investment study undertaken by Network Rail in 2019 ('*How to accommodate forecast growth on the CLC corridor', October 2019*) identified potential improvements at Birchwood Rail Station to help accommodate expected future growth on the Liverpool – Manchester corridor. One of the options considered includes new rail infrastructure at Birchwood (new turn-back facility) to provide better service frequencies at the station, and the development proposals would complement these station improvements to maximise the benefits of the rail improvements. There is a further turn-back

proposal for Warrington West Station to facilitate an increase in services passing right across Warrington Town. These proposed turn-backs would allow services to effectively terminate in Warrington at some point as they travel from both Liverpool and Manchester and turn, and the impact would be shorter running times for each service so that the number of train movements and thus available journeys can be increased.

3.11 Whilst the main station entrance is on the northern side of the station there are two overbridge crossings allowing passengers to access the southern platform. A combined pedestrian / cycle path runs from Kingsland Grange and Sage Close to the west of Woolston Grange Avenue to the east parallel to the railway line and adjacent to the northern boundary of the site, to connect into the southern side of Birchwood Railway Station. The path provides a connection between the Grange Industrial Estate, the residential areas to the north and west and the railway station southern platform, and the proposed development would link into this pedestrian / cycle path route and provide improvements to this existing infrastructure.

3.12 Cycle parking is provided at the station and the bus stop at the railway station provides a good level of service to nearby destinations. There is also a small taxi rank located to the immediate northeast of the station.

3.13 The development proposals include a new P&R facility with a community hub connected to Birchwood Rail Station to the south. A new southern entrance to the station would be provided and the public footbridge linking the northern and southern sides would be improved. The P&R facilities would include new public realm, retail and community amenities, improved bus interchange facilities, a 300-space car park to the south of the station (with the potential to increase the car parking provision in the future), electric vehicle charging points, new cycle parking shelters and rail turn-backs incorporated either side of the station for services to and from Manchester and Liverpool. Such improvements would further increase the attractiveness of rail as a key mode for trips to and from the site and also provide wider accessibility benefits for Birchwood and Warrington. The Birchwood Rail Station P&R proposal also facilitates a potential opportunity to incorporate a Mobility Hub as part of the South Station Place Masterplan to increase the uptake of active travel, low emissions and shared transport. The Mobility Hub would act as a convenient interchange at a neighbourhood level providing first and last mile connectivity with public transport, demand responsive transport (for example, taxi and app based travel), car clubs, bike, eBike share and other services, whilst offering amenities such as electric vehicle charging points, cycle storage, workspaces, wifi, cafés and bike repair. This can help reduce car use and car ownership, improve air quality, healthy lifestyles and affordability.

3.14 The Birchwood Rail Station P&R is identified in the updated WBC IDP in 2021 for the emerging Local Plan, the Warrington LTP4 and the TfN Investment Programme, and the South Station Place Framework Masterplan is aligned and supports the P&R proposal.

Pedestrian and Cycle Accessibility

3.15 The main pedestrian desire lines to and from the site will be for connections to the north and west of the site, where there are existing facilities, residential and employment areas.

3.16 There is a range of everyday amenities and facilities within Birchwood Shopping Centre to the north of the site, which could be reached via the footbridge crossing of the rail line that is proposed to

become a direct link as part of the development proposals. The development parcels within the northern parts of the site would therefore be within a 1km walk of facilities including supermarkets, takeaways, a veterinary practice, various retailers and Birchwood Medical Centre, Birchwood Community High School and College. Office employment premises are also located in this area including a National Highways Office, Your Housing Group and First Recruitment Group.

3.17 There are also several existing cycle paths and shared-use facilities that can be accessed on the north side of Birchwood Rail Station, which would assist in facilitating trips from the site to Birchwood, Birchwood Park and Risley by active travel modes.

3.18 The combined pedestrian / cycle path leading west from Birchwood Rail Station provides a link towards the residential areas of Woolston and Padgate. This is shown in **Figure 3.1** which is an extract of the Warrington Cycle Map.

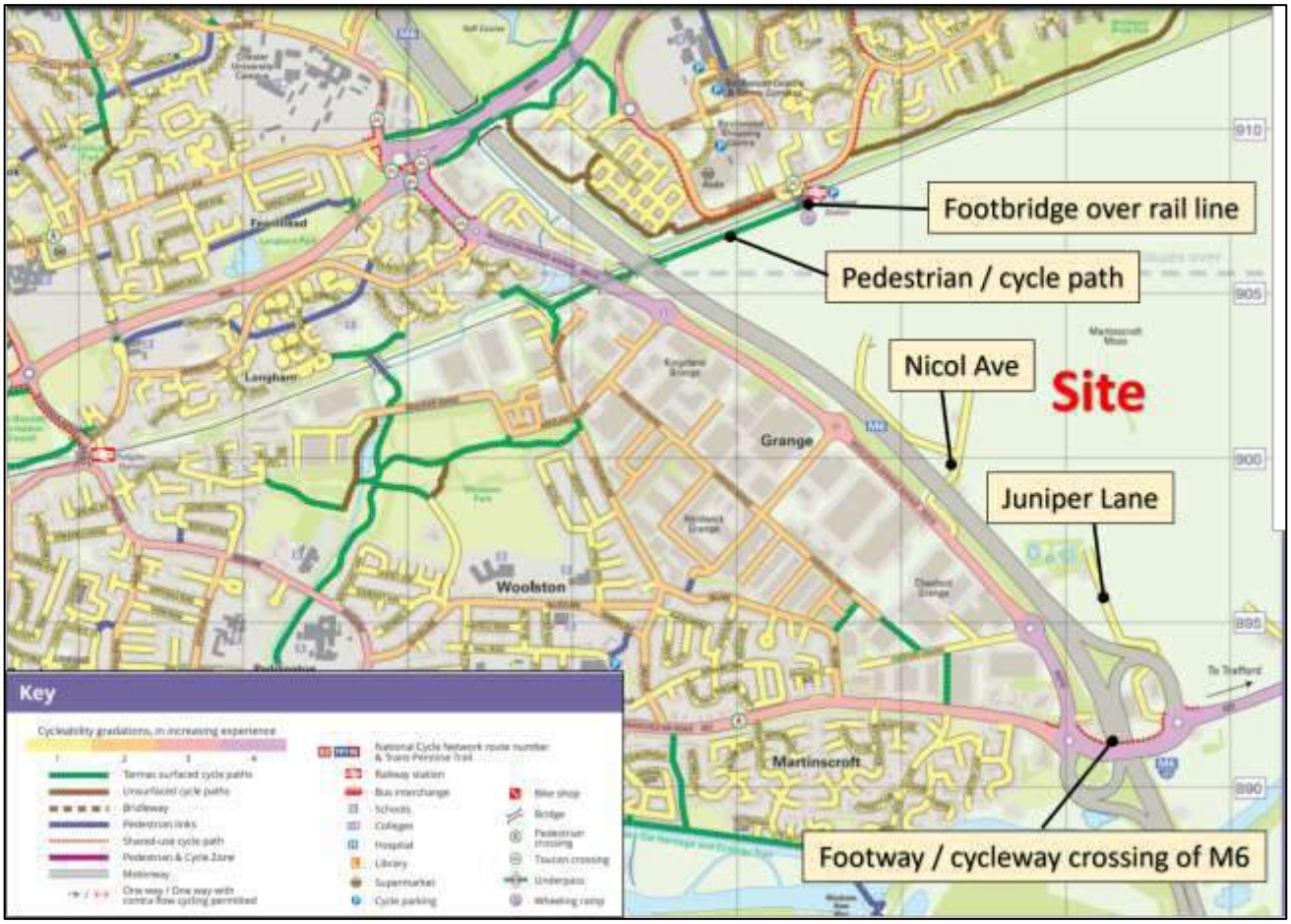


Figure 3.1: Extract from Warrington Cycle Map Showing Footway and Cycling Connections

3.19 To the south of the site the A57 has a footway along the northern side of the carriageway which varies in width but in general provides around 1m width, with grass verge or hedge appearing to have encroached into the footway space in places, to reduce its effective width. It is considered that the footway could easily be widened adjacent to the site to provide an improved facility for pedestrians, including new footway provision on the south side of the A57 carriageway along the site frontage and new crossing points. The footway extends westwards to the M6 Junction 21, and

widens to provide a shared footway / cycleway facility as it crosses the M6 on the northern side of the A57 extending to the west side of the western dumbbell roundabout, although it should be noted that there are no controlled crossing facilities for pedestrians and cyclists on the approaches to the roundabouts at the motorway junction. The shared footway / cycleway route on the A57 to the west of the site and through the M6 Junction 21 is shown in **Figures 3.2 and 3.3**.

Figure 3.2: Shared Footway / Cycleway Route on A57 Manchester Road at the Western Boundary of the Site

Figure 3.3: Shared Footway / Cycleway Route on A57 Manchester Road at the M6 Junction 21

3.20 There are no dedicated pedestrian or cycle facilities on Juniper Lane or Nicol Avenue including along Woolston Grange Avenue adjacent to the site. However, there are opportunities for providing enhancements to pedestrian and cycling infrastructure within the site and with connections to external routes, and potential improvements to facilitate better access for active travel modes via these existing routes will be reviewed in detail as part of the development of the sustainable transport strategy for the site.

Warrington Local Walking and Cycling Infrastructure Plan (LCWIP) 2019-2029

3.21 It is understood that WBC have produced a LCWIP alongside the LTP4.

3.22 The proposed network improvements are primarily a split between upgrading the existing greenway network to ensure it is fit for purpose and a number of strategic routes including connections between Warrington Town Centre, Woolston and the A57 to the east of the M6. An extract from the proposed network plan within the LCWIP is included as **Figure 3.4**.

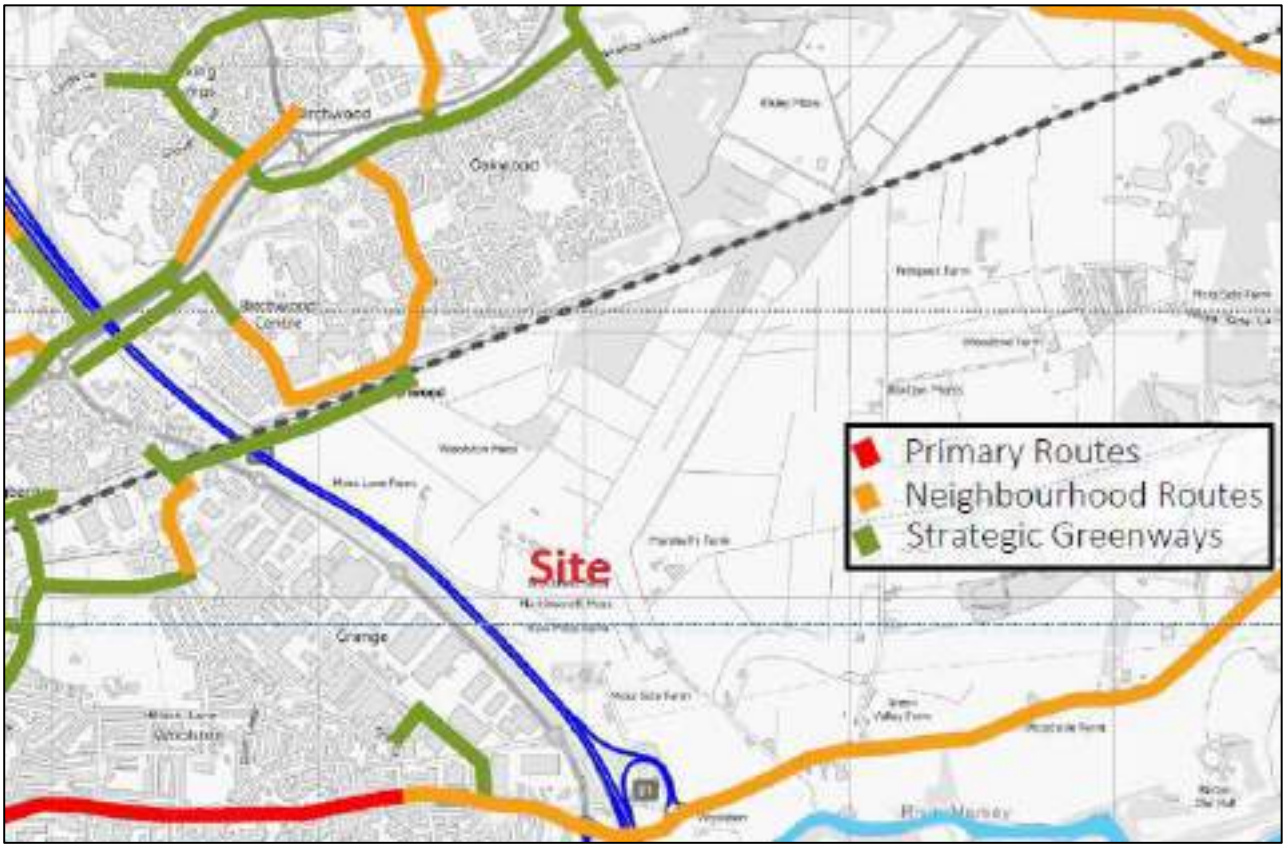


Figure 3.4: Extract from Warrington LCWIP Proposed Network Plan

3.23 The LCWIP routes show a good network in Birchwood to the north of the rail station and there are also proposed pedestrian and cycling infrastructure improvements planned for the A57 between Warrington Town Centre and the site.

3.24 The South Station Place Masterplan will seek to facilitate any LCWIP proposed improvements in this area when plans are brought forward by WBC, as well as proposing to deliver new facilities and / or linkages to existing routes to enhance the pedestrian and cycling infrastructure serving the site.

Public Rights of Way

3.25 There are several PRoW routes that link the site to the surrounding area, and these are shown by the purple lines in **Figure 3.5**.

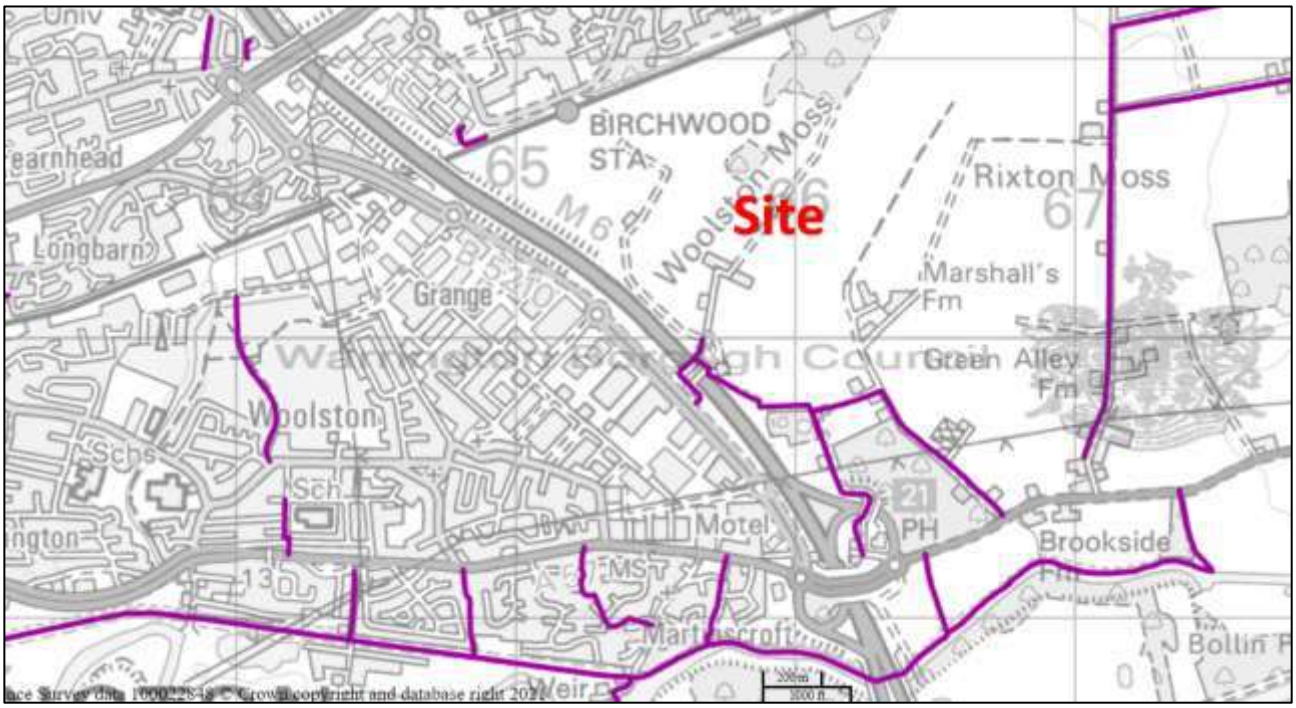


Figure 3.5: Public Rights of Way in the Vicinity of the Site

3.26 It can be seen from Figure 3.5 that Brook Lane, Juniper Lane and Nicol Avenue are all PRoW connections leading into the site, providing links to the south and west. To the south of the A57 there is a PRoW connecting to the Mersey Way footpath that runs along the northern side of the River Mersey. This provides a leisure route that could be convenient for people living and working at the site. The South Station Place Masterplan will incorporate the existing PROW routes as part of the proposals for the internal footway links.

Pedestrian and Cycling Network Improvement Opportunities

3.27 The South Station Place Masterplan proposals provide a significant opportunity to improve the provision of pedestrian and cycling facilities in the area, including upgrades to existing footpaths, new crossings, linkages to external networks and the creation of new internal and external routes (footway and cycleway infrastructure). These potential opportunities are illustrated in **Figure 3.6**.

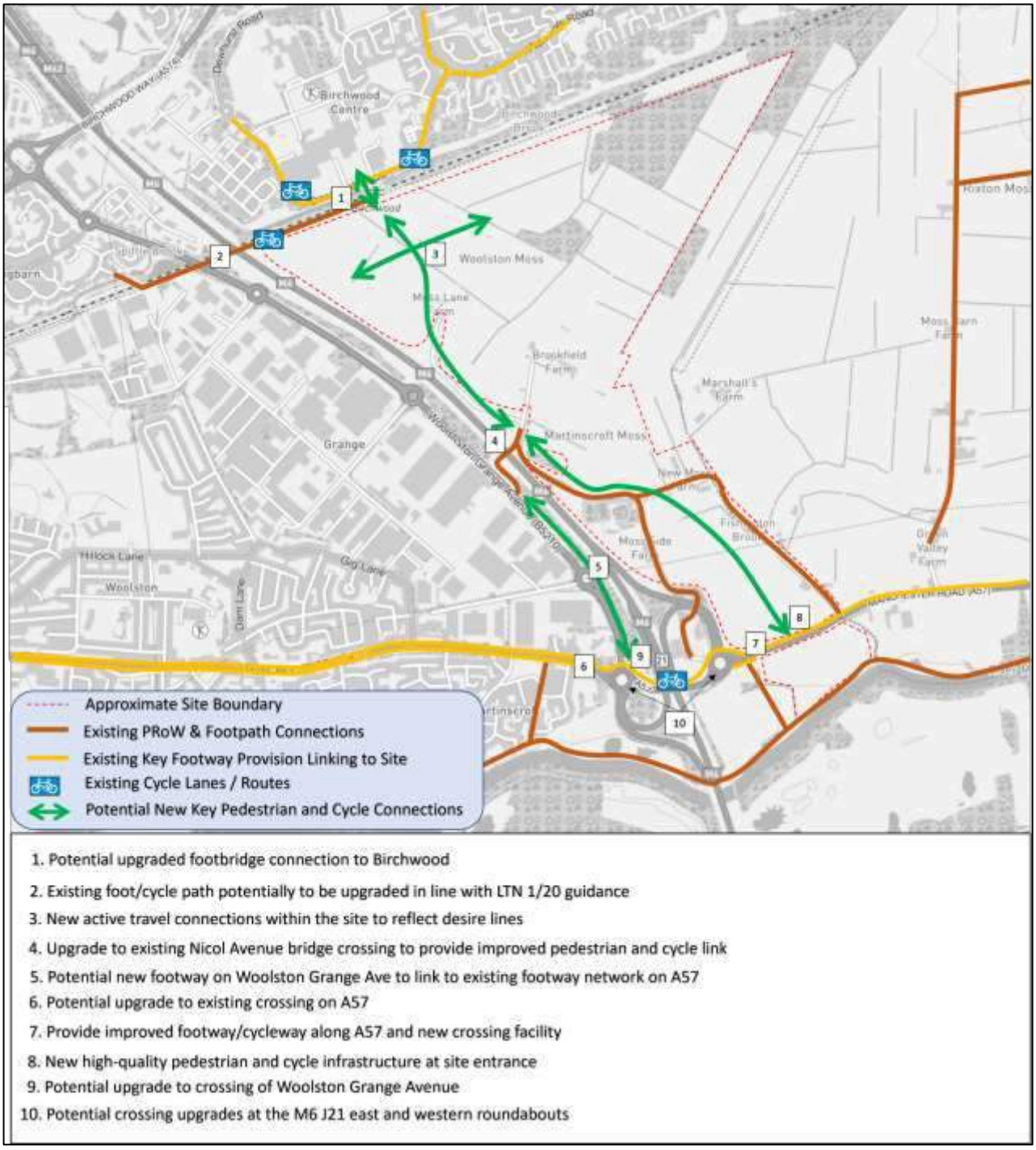


Figure 3.6: Pedestrian and Cycling Network Improvement Potential Opportunities

Summary

3.28 The northern and southern parts of the site are served by bus, particularly the northern part of the site which benefits from proximity to the buses serving Birchwood Rail Station. The bus stops on the A57 are of a relatively poor standard but could potentially be upgraded as part of the sustainable transport strategy for the site. The proposed Birchwood Rail Station P&R at the northern end of the South Station Place Masterplan site would include proposals for better bus access and interchange facilities, and this would significantly improve the bus connectivity of the site. Given the strategic

scale of the proposed development, the sustainable transport strategy will also consider the potential for both diverting existing bus services into the site from the A57 and increasing bus service provision to serve the area. It is understood that the LTP4 included a plan to identify options for a mass transit network for Warrington, and the South Station Place Masterplan development would be co-ordinated with any proposals for a mass transit network that includes Birchwood, when plans are brought forward by WBC.

3.29 Birchwood Rail Station lies at the northern boundary of the site, affording excellent opportunity for trips generated by the development to be made by rail which will be improved by the South Station Place Masterplan proposals, including the provision of a new southern entrance to the station and the public footbridge linking the northern and southern sides would be improved. Such improvements would further increase the attractiveness of rail as a key mode for trips to and from the site and provide wider accessibility benefits for Birchwood and Warrington, and also provide the potential opportunity to incorporate a Mobility Hub as part of the South Station Place Masterplan. The Birchwood Rail Station P&R development proposal is identified in the updated Warrington Council IDP in 2021 for the emerging Local Plan, the Warrington LTP4 and the TfN Investment Programme, and the South Station Place Framework Masterplan is aligned and supports the P&R proposal.

3.30 In addition, Network Rail has identified potential improvements on the CLC corridor to help accommodate expected future growth, and one of the options considered includes the provision of a new turn-back facility at Birchwood Rail Station to provide better service frequencies, and this proposal has also been considered as part of the South Station Place Masterplan.

3.31 The main pedestrian desire lines to and from the site will be for connections to the north and west of the site, where there are existing facilities and employment areas. There are existing connections leading into the site from these areas, including several PRoW routes, and there is good potential to improve these links to enhance the connectivity of the site including new footway / cycleway provision adjacent to the site frontage on the A57. WBC have produced a LCWIP alongside the LTP4 and the proposed network plan shows a good route provision in Birchwood to the north of the rail station and there are also proposed pedestrian and cycling infrastructure improvements planned for the A57 between Warrington Town Centre and the site.

3.32 There is a good level of cycle infrastructure in the vicinity of Birchwood Rail Station including a shared-use path that facilitates a connection between the site and the residential areas of Woolston and Padgate. There is also a shared footway / cycleway across the M6 Junction 21 to assist cyclists in negotiating the junction safely.

3.33 The South Station Place Masterplan proposals provide a significant opportunity to improve the provision of pedestrian and cycling facilities in the area, including upgrades to existing footpaths, new crossings, linkages to external networks and the creation of new internal and external routes (footway and cycleway infrastructure). The bus, cycling and footway infrastructure requirements to serve the area will be reviewed in detail as part of the development of the sustainable transport strategy for the site.

4 Site Access Strategy Options

4.1 The existing access points into the site are not suitable to serve the scale of the development being considered for the site, and it will be necessary to provide at least two points of vehicle access to serve the development areas on either side of the A57 Manchester Road. This would be via new junctions onto the highway network, and / or potentially via improvements to existing points of access. A preliminary feasibility exercise has been undertaken to identify constraints and opportunities as part of reviewing the site access strategy options and potential junction proposals in more detail. This has considered utilising the A57 Manchester Road at the southern end of the site, as well as undertaking an initial desktop appraisal with regard to access from the west of the site from Woolston Grange Avenue. This process along with the resulting preliminary access options to serve the South Station Masterplan proposals are outlined in this section, with consideration given to potential access strategies for the Patrick Properties land ownership as well as the wider development area that includes the neighbouring landowners.

4.2 The following points outline the main principles for informing the proposed access strategies:

- The development proposals north of the A57 should be served by at least two points of access and egress. The parcel to the south of the A57 needs only one access as it would serve a much smaller level of development.
- Roundabout and signalised junction layouts are considered to appropriate to serve the strategic scale of the proposed development.
- There are advantages to incorporating access to the northern and southern parts of the site in a single access junction.
- The available site frontage for new access junctions is limited to one section on the A57 Manchester Road at the southern end of the site between the M6 Junction 21 eastern dumbbell roundabout and Brook Lane, which comprises of around a 400m frontage.
- Access into the site from Woolston Grange Avenue is considered a potential option, which would include improvements to the existing Nicol Avenue highway, the bridge over the M6 and the associated junction with Woolston Grange Avenue.
- At this stage the access strategy proposals are being developed to have minimal reliance or dependence on third parties for land.
- The access strategy proposals need to maximise provision for sustainable transport modes, including footway / cycleway provision and crossing facilities.
- Consideration of any interaction between the site access junctions and effects upon the M6 Junction 21 dumbbell roundabouts will be needed.
- Internal access roads will need to be designed in accordance with the relevant WBC Residential and Industrial Design Guidance.

Access via the A57 Manchester Road

4.3 The site has frontage with the A57 Manchester Road and this presents an opportunity for introducing site access points. The extent of the adopted highway in this area has been obtained from WBC and is shown by the yellow and purple shaded areas in **Figure 4.1**.

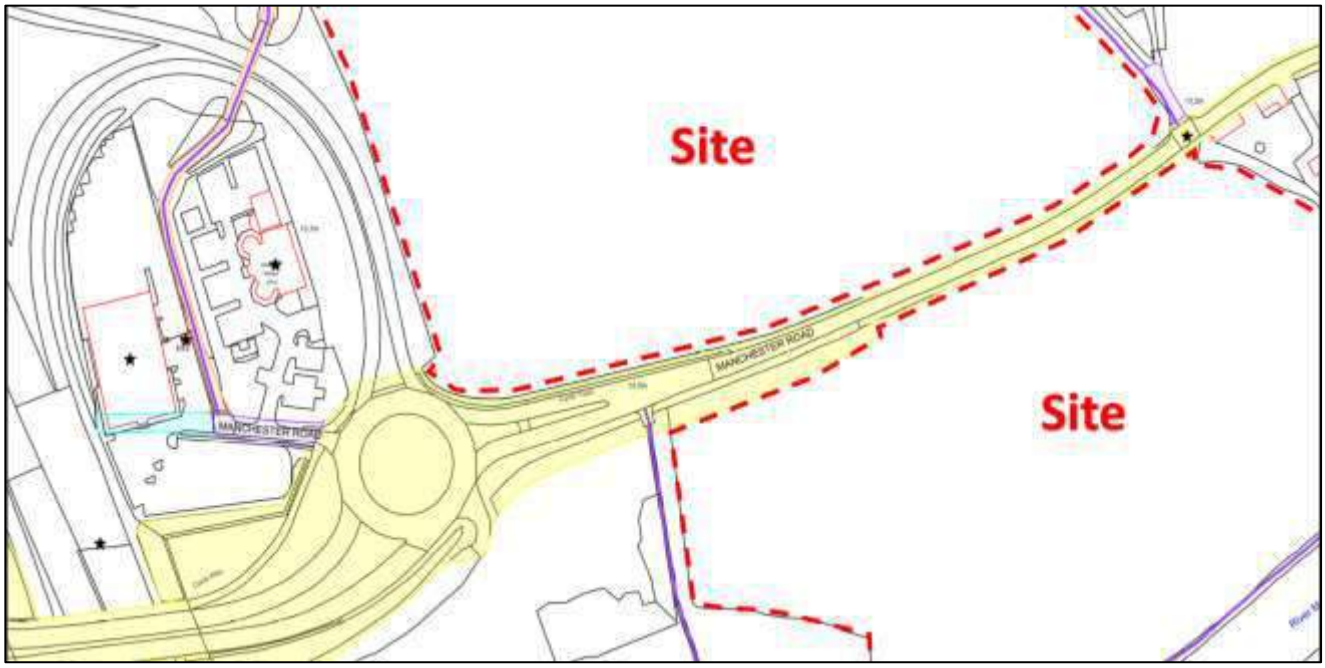


Figure 4.1: Extent of Adopted Highway – A57 in the Vicinity of the Site

4.4 It can be seen from Figure 4.1 that the site abuts the adopted highway on both the northern and southern sides of the A57 for a length of around 260m and 400m on the north side. This area has therefore been the focus for initially reviewing the design feasibility of new site access junction layouts. The design exercise has also been focused upon achieving two separate site accesses to the northern part of the site off this stretch of the A57. It is considered that at least two accesses will be required to serve the scale of proposed development, which would have advantages in terms of reducing capacity requirements at any single junction and also in terms of providing appropriate arrangements for emergency access.

4.5 The road is currently subject to a 50mph speed limit in this section, however the feasibility review of the design of a new four-arm junction in this vicinity shows that it would be difficult to deliver a roundabout along this stretch to meet the design criteria for a 50mph road. This is due to forward visibility requirements and the horizontal alignment of the A57. Also, the feasibility of a 50mph four-arm signalised junction requires visibility and junction spacing requirements that are more onerous, which means that achieving two access junctions onto the A57 site frontage will be significantly constrained.

4.6 It is therefore considered likely that the access strategy for the site would involve the proposal for a speed limit reduction from 50mph to 40mph along the A57 Manchester Road in the vicinity of the site. This is considered feasible as a new junction(s) would naturally enforce lower speeds on this part of the A57 such that the 50mph speed limit would no longer be appropriate, and the site location in close proximity to the M6 Junction 21 will also ensure lower vehicle speeds through this section.

4.7 Several potential access solutions utilising the land available fronting the A57 Manchester Road have been considered as part of the framework masterplan process, seeking to provide an access strategy that delivers the following:

- Appropriate capacity to accommodate forecast future traffic flows.
- Improved cycle and pedestrian facilities.
- A junction arrangement that could facilitate two points of access.

Nicol Avenue Access Overview

4.8 Nicol Avenue is an existing access route into the site from the west via a bridge over the M6 that forms a left in / left out priority junction with Woolston Grange Avenue. The carriageway is around 4.5m in width on the bridge span, and the horizontal alignment of the Nicol Avenue carriageway on the west side of the M6 comprises of two 90 degree bends on the approach to the bridge.

4.9 In early discussions with National Highways about the possibility of utilising Nicol Avenue to serve the development site via an improved access route, they have indicated that they would not object in principle to a possible proposal to upgrade the existing bridge or construct a new bridge structure via Nicol Avenue including the associated highway approaches, subject to any design proposal achieving the necessary technical approvals as set out in the Design Manual for Roads and Bridges (DMRB). Relevant email correspondence between Vectos and National Highways is included as **Appendix D** to this report. The existing Nicol Avenue route from Woolston Grange Avenue is considered to provide an option for emergency access to the site. However, an upgraded route in accordance with the relevant DMRB standards including an improved Woolston Grange Avenue / Nicol Avenue junction arrangement would be beneficial for the access strategy in terms of providing a more direct route to the northern part of the site and the proposed Birchwood Rail Station P&R. The existing rights of access in relation to this highway route will be reviewed further as part of the development of the detailed access and site layout proposals.

4.10 At this stage the feasibility of providing an enhanced access route including a possible bridge improvement into the site from the west via Nicol Avenue is being considered as part of the access strategy. A preliminary desktop review of potential improvement options for the Nicol Avenue bridge at the M6 is summarised in **Table 4.1**.

		Highway alignment will need to be reviewed in line with DMRB to provide an improved / more compliant design given the existing constraints with regard to the horizontal radii on the west approach to the M6 bridge.
• Option A is widen existing structure. • Widening on the northwest side would offer marginal improvement to alignment and visibility.	• Option B is retain existing structure for southbound traffic with verge. • New parallel structure for northbound vehicles and pedestrian cycle provision.	
		
• Option C is a bridge replacement. • Replacement to the northwest would offer improved alignment and visibility. • Option to retain the existing structure for use by pedestrians, cyclists and emergency access.	• Option D is also a bridge replacement. • New bridge to the northwest on a skew would offer an improved horizontal alignment and visibility. • Again, the existing bridge could be retained for pedestrian and cyclist use as required.	

Table 4.1: Summary of Potential Improvement Options for the Nicol Avenue Bridge

Access Options

4.11 Two options that provide two junctions on the A57 have been sketched up to demonstrate potential access solutions, these are as follows, with the corresponding drawings provided at the end of this report:

- New four-arm priority roundabout and three-arm signalised junction including the realignment of the existing A57 carriageway (potential for incorporating realigned Brook Lane access) – Drawing Number VD212061-D102 Rev A.

- New four-arm signalised junction and three-arm signalised junction (Brook Lane existing access retained) – Drawing Number VD212061-D103.2.

4.12 The preliminary roundabout junction layout is designed in accordance with the standards in DMRB CD116 and the preliminary signalised junction layouts are designed in accordance with the standards in DMRB CD123.

4.13 Both options incorporate improved facilities for pedestrian and cyclists in this area, including a footway / cycleway along the northern side of the A57 Manchester Road to tie into the existing provision at the M6 J21 eastern dumbbell roundabout and the footway to the east of Brook Lane. The position of the two pairs of existing bus stops on the A57 site frontage will need to be reviewed with WBC at the next stage when the site access proposals are being designed in more detail. These preliminary junction layouts have been developed to demonstrate access strategy principles and potential access solutions to serve the development from the A57.

4.14 Access to the development via an upgraded Nicol Avenue is also an option that is being considered in detail as part of the masterplanning process. The next stage of technical due diligence work will investigate the Nicol Avenue access proposal in more detail, with preliminary highway and structural design work to develop a preferred option giving due cognisance to the following considerations:

- Existing Nicol Avenue bridge condition review.
- Bridges concept design / reuse options (for accommodating articulated HGVs).
- Earthworks, horizontal and vertical highway geometry assessment for Nicol Avenue, including vehicle tracking analysis.
- Nicol Avenue / Woolston Grange Avenue junction improvement options review, to provide a higher capacity arrangement to accommodate right turning movements and the realignment of Woolston Grange Avenue, although the roundabouts on Woolston Grange Avenue either side of the Nicol Avenue junction can also facilitate u-turning movements.
- Consultation with WBC and National Highways to develop the Nicol Avenue access proposals in more detail including land requirements for highway infrastructure improvements. The WBC and National Highways adopted highway boundaries and land ownerships in the vicinity of Nicol Avenue provide the potential for positive future discussions with regard to opportunities for proposed highway improvements to this existing access route into the site, including the junction with Woolston Grange Avenue.

South Station Place – Patrick Properties Land Ownership Access Strategy Overview

4.15 The proposed access strategy for the Patrick Properties site is illustrated in the framework masterplan in Appendix A, which shows two access points serving the site from Woolston Grange Avenue by an upgraded Nicol Avenue route, and via the proposed three-arm signalised junction arrangement on the A57 that incorporates a realigned Brook Lane access as shown in Drawing Number VD212061-D102 Rev A, or Brook Lane could be retained as an emergency access only.

South Station Place – Wider Development Area Access Strategy Overview

4.16 The proposed access strategy for the wider development area is illustrated in the framework masterplan in Appendix B. This indicates serving the site from Woolston Grange Avenue by an upgraded Nicol Avenue route, and via the proposed four-arm priority roundabout and three-arm signalised junction arrangement on the A57 that incorporates a realigned Brook Lane access as shown in Drawing Number VD212061-D102 Rev A, or the two signalised junctions is also a potential option as shown in Drawing Number VD212061-D103.2.

4.17 At this stage, the development proposals are still emerging, access options are still being considered and the final access strategy and junction layout designs will need to be agreed with WBC and National Highways.

Traffic Forecasts and Site Access Capacity Assessment

4.18 For the purposes of this report, a capacity assessment has been undertaken for the new four-arm priority roundabout and three-arm signalised junction option to demonstrate that the preliminary access junction designs for the A57 are appropriate in capacity terms to serve the development proposals. To inform this assessment, an initial traffic forecast exercise has been undertaken, as detailed below.

Traffic Forecasts

4.19 The proposed access option has been subject to a preliminary assessment in capacity terms. To inform this assessment, a set of future year weekday morning and evening peak hour traffic flows have been derived for the A57 Manchester Road, and traffic entering and exiting the site. A future assessment year of 2030 was selected.

4.20 The development trip forecasts have been based upon the following development composition for the site, and this assumes 70% logistics floorspace and 30% industrial floorspace.

	Development North of A57	Development South of A57
Warehousing / Logistics (B8)	179,581sqm	11,844sq.m
Industrial (B2)	76,964sq.m	5,076sq.m
Birchwood Station Park and Ride	300 spaces	-

Table 4.2: Trip Forecasting Development Assumptions

4.21 The traffic forecasts for the industrial land use element have been based on trip rate data derived from the TRICS trip rate database which is a standard method of trip forecasting for new development, and the site sample includes sites with access to public transport facilities to reflect the good public transport services that would be available at this site. The full TRICS report for the industrial development is provided at **Appendix E** to this report and the resulting peak hour trip rates are summarised in **Table 4.3**.

4.22 For the warehousing and logistics development, trip rates agreed recently with National Highways for a logistics development in Cronton Colliery, Knowsley, have been utilised and these are summarised in Table 4.3, with the full TRICS report at **Appendix F**.

	AM Peak (0800-0900)			PM Peak (1700-1800)		
	Arr	Dep	Two-way	Arr	Dep	Two-way
Industrial (trip rate per 100sq.m)	0.340	0.074	0.414	0.064	0.254	0.318
Warehousing / Logistics (trip rate per 100sq.m)	0.114	0.065	0.179	0.040	0.094	0.134

Table 4.3: Trip Rate Summary

4.23 For the proposed Birchwood Station P&R facility, there is no suitable data in the TRICS database and therefore other information has been sourced to provide an indication on the predicted trip generation, specifically a survey of the P&R facility at Hooton, Ellesmere Port, that was undertaken as part of the application for a new P&R and bus interchange at Newton-Le-Willows in 2015. The survey data is provided at **Appendix G** to this report for reference.

4.24 The resulting vehicle trip forecasts are summarised in **Table 4.4**.

	AM Peak			PM Peak		
	Arr	Dep	Two-way	Arr	Dep	Two-way
Development North of A57 Manchester Road						
B8 Warehousing / Logistics	203	116	319	71	168	239
B2 Industrial	260	57	317	49	194	243
Park and Ride (300 space)	108	15	123	11	108	119
North Total	571	188	759	131	470	601
Development South of A57 Manchester Road						
B8 Warehousing / Logistics	14	8	22	5	11	16
B2 Industrial	17	4	21	3	13	16
South Total	31	11	42	8	24	32
Development Total	**602**	**199**	**801**	**139**	**494**	**633**

Table 4.4: Development Peak Hour Trip Forecasts

4.25 It can be seen from Table 4.3 that the development proposals could be expected to generate in the order of 801 two-way trips in the morning peak hour and 633 in the evening peak hour.

4.26 To distribute these vehicle trips at the potential site accesses on the A57 Manchester Road as shown in Drawing Number VD212061-D102 Rev A, the following assumptions have been applied:

- For development north of the A57 Manchester Road, 70% of traffic uses the new roundabout, 30% uses the signalised junction.
- For all development traffic, at the site accesses 20% travels to/from the east and 80% to/from the west on the A57 Manchester Road.

4.27 The 2021 traffic survey flows in the morning and evening peak periods in Passenger Car Units (PCUs) are shown in Figures 1 and 2 at **Appendix H**, and development trip assignment at the site access junctions is shown in Figures 3 and 4.

4.28 To derive the A57 Manchester Road east and westbound mainline traffic flows, the 2021 survey data for this arm of the M6 Junction 21 eastern dumbbell roundabout has been factored up to 2030 levels using the TEMPRO dataset with growth factors for 2021 to 2030 of 1.0643 in the AM peak and 1.0624 in the PM peak. Details of the methodology and growth factors are provided at **Appendix I** to this report. It should be noted that for further junction capacity testing, details of any committed developments in the area should be provided by WBC and included as appropriate in the future year traffic forecasts for the A57 and balanced with the TEMPRO background growth forecasts.

4.29 The resulting 2030 with development traffic flow scenario for the weekday morning and evening peak hours is shown in Figures 5 and 6 at Appendix H respectively.

4.30 The proposed trip rates / methodologies for the development proposals and associated trip distributions on the surrounding highway network will need to be agreed with WBC and National Highways at the next stage of the traffic impact assessment work. The provision of a new turn-back facility at Birchwood Rail Station as part of the CLC corridor improvements would likely have a positive impact in terms of reducing external vehicle trip rates, if this becomes a committed rail scheme. The Birchwood Station P&R traffic generation approach will also need to take into account any emerging strategy or policy considerations of National Highways.

Capacity Assessment

4.31 For the preliminary site access capacity assessment all the proposed development trips are assumed to route via the A57 access junctions.

4.32 The capacity assessment of the proposed four-arm roundabout has been undertaken using Junctions 8 software for the roundabout, and LinSig software for the signalised junction. The traffic flows in PCUs for the assessments are those shown in Figures 5 and 6 at Appendix H.

4.33 The results of the proposed site access roundabout capacity assessment are shown in **Table 4.5**, with full model outputs provided at **Appendix J**.

	AM		PM	
Arm	RFC	Queue	RFC	Queue
Site Access (North)	0.13	0	0.22	0
A57 Westbound	0.52	1	0.63	2
Site Access (South)	0.02	0	0.04	0
A57 Eastbound	0.62	2	0.46	1

Table 4.5: Roundabout Site Access Capacity Results Summary 2030

4.34 It can be seen from Table 4.4 that the site access roundabout junction as presented in Drawing Number VD212061-D102 Rev A would be expected to operate within capacity during both weekday peak hours, with a maximum RFC (Ratio of Flow to Capacity) of 0.63 on the A57 westbound approach arm and associated maximum queue of 2 PCUs.

4.35 The proposed three-arm signalised junction has been tested in LinSig junction capacity modelling software. The results are summarised in **Table 4.6**, with full model outputs at **Appendix K**.

	AM		PM	
Arm	DoS	MMQ	DoS	MMQ
A57 Eastbound	66.6%	13	70.8%	15
Site Access	50.0%	2	71.8%	5
A57 Westbound	60.8%	10	56.5%	10
Practical Reserve Capacity (PRC)	35.1%		25.3%	

Table 4.6: Signalised Site Access Junction Capacity Results Summary 2030

4.36 Table 4.5 shows that a signalised junction arrangement as proposed in Drawing Number VD212061-D102 Rev A could be expected to operate within capacity during both weekday peak hours, with the highest Degree of Saturation (DoS) of 71.8% in the evening peak hour on the site access arm. Maximum queue length is shown as 15 PCUs MMQ (Mean Maximum Queue) which is around 86m in length, and this is on the A57 eastbound arm. This is within the circa 120m of carriageway that is provided between the signalised junction and the roundabout junction in this access option. It should be noted that there is space on the site frontage to the north of the A57 to provide additional lane capacity on this eastbound approach arm to the signals, which would reduce the queue length.

4.37 Based on the preliminary modelling assessment, the proposed four-arm roundabout and three-arm signalised junction site access arrangement on the A57 is expected to operate within capacity.

Summary

4.38 An access feasibility exercise has been undertaken to review the proposed site access options and demonstrate the access strategy principles.

4.39 Access into the site from Woolston Grange Avenue is considered a potential option as part of the access strategy, which would include improvements to the existing Nicol Avenue highway, the bridge over the M6 and the associated junction with Woolston Grange Avenue. In initial discussions with National Highways, they have indicated that they would not object in principle to a possible proposal to upgrade the existing bridge or construct a new bridge structure via Nicol Avenue including the associated highway approaches. A preliminary desktop review of potential improvement options for the Nicol Avenue bridge at the M6 has been undertaken, and the next stage of technical due diligence work will investigate the Nicol Avenue access proposal in more detail.

4.40 Several potential access solutions utilising the land available fronting the A57 Manchester Road have been considered as part of the masterplanning process, and two options for access from the A57 have been presented in this report. The preliminary junction layouts are designed in accordance with the relevant DMRB standards. Both options incorporate improved facilities for pedestrian and cyclists in this area, including a footway / cycleway along the northern side of the A57 Manchester

Road to tie into the existing provision at the M6 Junction 21 eastern dumbbell roundabout and the footway to the east of Brook Lane. The position of the two pairs of existing bus stops on the A57 site frontage will need to be reviewed with WBC at the next stage when the site access proposals are being designed in more detail.

4.41 The proposed access strategy for the Patrick Properties site includes two access points serving the site from Woolston Grange Avenue by an upgraded Nicol Avenue route, and via the proposed three-arm signalised junction arrangement on the A57 that incorporates a realigned Brook Lane access, or Brook Lane could be retained as an emergency access only. The proposed access strategy for the wider development area has also been outlined. At this stage, the development proposals are still emerging, access options are still being considered and the final access strategy and junction layout designs will need to be agreed with WBC.

4.42 A capacity assessment has been undertaken for the new four-arm priority roundabout and three-arm signalised junction option to demonstrate that the preliminary access junction designs for the A57 are appropriate in capacity terms to serve the development proposals. To inform this assessment, an initial traffic forecast exercise has been undertaken to forecast the expected development traffic using the site accesses, along with the mainline A57 Manchester Road traffic flows in a future year scenario of 2030. The proposed trip rates / methodologies for the development proposals and associated trip distributions on the surrounding highway network will need to be agreed with WBC and National Highways at the next stage of the traffic impact assessment work. The Birchwood Station P&R traffic generation approach will also need to take into account any emerging strategy or policy considerations of National Highways.

4.43 The proposed A57 access junctions have been tested using industry-standard capacity modelling software and the modelling results show that the junction designs are expected to operate within capacity in the weekday peak periods in the future year scenario with development traffic.

5 Off-Site Highway Capacity Considerations

5.1 The preliminary capacity assessment of the new four-arm priority roundabout and three-arm signalised junction access option has demonstrated that an access strategy to serve the site with sufficient capacity to accommodate the forecast future traffic flows can be delivered in principle. The effect of the forecast traffic flows generated by the South Station Place Masterplan proposals have also been initially considered in relation to the wider highway network, and further detail is provided within this section. Vectos have outlined an approach for demonstrating the deliverability of the development proposals in terms of the assessment of the highway impacts.

5.2 The site location has significant potential to benefit from access to public transport and particularly rail services. This is in line with National Highways recommendations that growth is planned in sustainable locations that can be accessed by non-car modes of transport, albeit it is acknowledged that the site affords excellent access to the M6 at Junction 21 and therefore there is a requirement to ensure that the transport impacts of this strategic development site are appropriately assessed and considered in respect of the Strategic Road Network.

5.3 Vectos have engaged with WBC to enquire about the existing Warrington Multi-Modal Transport Model (MMTM), which is a strategic traffic model that is being used to inform the Local Plan evidence base. It is understood that the Warrington MMTM is a 2016 based highway and public transport model and the model has been developed using the industry standard SATURN software for the highway side, suitable for demonstrating effects of potential development upon highway links and junctions in a strategic context. At the time of preparing this report, it has not yet been possible to access the SATURN model for the purposes of testing the proposed development site. However, it is intended that the proposed development will be assessed within the Warrington MMTM at the earliest opportunity, in line with the emerging Local Plan testing process for strategic development sites and in agreement with WBC. The Local Plan testing utilising WBC's SATURN model will help inform the strategic traffic impacts of the proposed development and identify cumulative assessment considerations.

5.4 The SATURN modelling is not considered an appropriate tool for assessing specific impacts at local junctions. The SATURN modelling results for the South Station Place Masterplan will not provide sufficient detail to properly assess the impacts of the development trips upon the M6 Junction 21 and other local junctions surrounding the site. More detailed operational analysis using relevant junction models would be required as part of subsequent Local Plan representation submission (Transport Infrastructure Study) and / or a future planning application for the development proposals, which would need to be agreed with both WBC and National Highways.

5.5 It has been established through traffic survey data and the initial forecast development traffic distribution exercise that the majority of site traffic will travel via the M6 Junction 21 dumbbell roundabout arrangement to the west of the site. At this stage, this junction has therefore been the focus of further investigation in terms of capacity.

M6 Junction 21

5.6 The M6 junction 21 'Woolston Interchange' provides for all movements onto and off the M6, via a dumbbell roundabout arrangement incorporating the A57 and B5210 Woolston Grange Avenue.

Both roundabouts are priority-controlled and they are separated by a span over the M6 carriageway. of approximately 290m.

5.7 Observations from the traffic survey reveal that the eastern dumbbell roundabout operated without any notable queuing on any of the junction arms in the morning peak. Similarly in the evening peak period, the roundabout was operating under free flow conditions.

5.8 At the western dumbbell roundabout, observations from the survey revealed that the roundabout operated under generally free flow conditions but there was some queuing on the M6 northbound off-slip approach to the junction and the A57 eastbound approach in the morning peak. It is understood that this junction does sometimes experience congestion issues in the peak periods and significant queues can form on the M6 off-slip approach, and the existing capacity of this roundabout is a concern of both WBC and National Highways.

5.9 All of the major arm approaches provide at least two lanes and there are at least two circulatory lanes at each roundabout.

5.10 The forecast additional traffic generated by the development proposals that would travel via the eastern dumbbell roundabout in each weekday peak hour is summarised in **Table 5.1**. The number of development trips that could potentially route via the western roundabout is also shown, based upon existing turning proportions at the M6 Junction 21, which reveals that around 68% of traffic on the A57 Manchester Road in the vicinity of the site also routes via the western dumbbell roundabout in both peaks.

	Eastern Roundabout		Western Roundabout	
	AM	**PM**	**AM**	**PM**
Development Trips	641	507	435	345

Table 5.1: Forecast Masterplan Development Trips at M6 Junction 21

5.11 It can be seen from Table 5.1 that the number of additional development trips that could be expected to route via the M6 Junction 21 eastern and western dumbbell roundabouts in the weekday morning and evening peak hours is significant, with between 500-700 additional movements at the eastern roundabout in each peak hour, and between 300-500 trips at the western roundabout in each peak hour.

5.12 In terms of a percentage impact, these development flows represent around 18-25% of existing traffic flows at the eastern roundabout, and around 9-12% of existing traffic flows at the western roundabout. Whilst the roundabouts are observed to operate with a reasonable level of spare capacity currently, this forecast scale of change in traffic at each junction is likely to have a considerable impact upon the operation of the junctions and a further modelling study would be required to explore this in more detail. It is noted at this stage, however, that there appear to be feasible options for increasing capacity at the M6 Junction 21 dumbbell roundabouts given the existing priority control arrangements and the extent of WBC adopted highway boundary and National Highways highway boundary / title land around the junction, for example through carriageway widening and signalisation.

5.13 Whilst the WBC SATURN model includes the M6 Junction 21, this is not an appropriate tool for detailed junction capacity testing. Based upon the above analysis and early discussions with National Highways and WBC, it is likely that a micro-simulation model of the junction (VISSIM) would be required to assess the operational effects of the development traffic, including interactions between the two roundabouts and to help develop and test any mitigation scheme that may be required to ensure that the Strategic Road Network is not adversely affected with a severe impact.

Other Off-Site Junctions

5.14 In addition to the M6 Junction 21, based upon the potential traffic generation of the development, it is likely that other off-site junctions may require assessment in terms of capacity. A detailed scope of junction assessment would need to be agreed with WBC and National Highways following the strategic SATURN model testing referred to previously and more detailed trip assignment analysis over a wider area, however it is anticipated that this could include the following:

- A57 Manchester Road / Warburton Bridge Road signal junction.
- M6 J21 merge and diverge arrangements north and southbound.
- Junctions on the A57 Manchester Road corridor to the west of M6 Junction 21.
- M6 Junction 20.

Summary

5.15 The effect of the forecast traffic flows generated by the South Station Place Masterplan proposals have also been initially considered in relation to the wider highway network. The number of additional development trips that could be expected to route via the M6 Junction 21 eastern and western dumbbell roundabouts in the weekday morning and evening peak hours is significant, with between 500-700 additional movements at the eastern roundabout in each peak hour, and between 300-500 trips at the western roundabout in each peak hour. It is likely that a micro-simulation model of M6 Junction 21 would be required to assess the operational effects of development and develop any mitigation scheme that may be required. It is noted at this stage, however, that there appear to be feasible options for increasing capacity at the M6 Junction 21 dumbbell roundabouts, for example through carriageway widening and signalisation.

5.16 WBC have a strategic SATURN model of the Borough that includes the highway network in the vicinity of the site. Whilst it has not been possible to access this to date, it is intended that the proposed development will be assessed within the Warrington MMTM at the earliest opportunity, in line with the emerging Local Plan testing process for strategic development sites and in agreement with WBC. The Local Plan testing utilising WBC's SATURN model will help inform the strategic traffic impacts of the proposed development and identify cumulative assessment considerations.

5.17 The SATURN modelling is not considered an appropriate tool for assessing specific impacts at local junctions. The SATURN modelling results for the South Station Place Masterplan will not provide sufficient detail to properly assess the impacts of the development trips upon the M6 Junction 21 and other local junctions surrounding the site. More detailed operational analysis using relevant junction models would be required as part of subsequent Local Plan representation submission (Transport

Infrastructure Study) and / or a future planning application for the development proposals, which would need to be agreed with both WBC and National Highways.

6 Summary and Conclusion

Summary

6.1 Vectos is providing transport and highways advice to Patrick Properties in support of a proposed strategic development on land to the south of Birchwood and to the east of the M6 in Warrington, Cheshire. The site is currently comprised of predominantly agricultural land.

6.2 A masterplanning exercise has been undertaken to demonstrate how the site can be developed to provide a development comprising a P&R facility with a community hub connected to Birchwood Rail Station and around 273,465sq.m of industrial and logistics floorspace. The development site comprises of the Patrick Properties land ownership and neighbouring landowners. Patrick Properties are proposing to open up the southern approach to Birchwood Railway Station as part of a mixed use, public transport-led development proposal, to be known as South Station Place, and their development proposals at the site comprise of the P&R facility and around 152,957sq.m of industrial and logistics floorspace.

6.3 The site is bordered by the M6 to the west, the Liverpool to Manchester rail line to the north, an airstrip and agricultural land to the east, and to the south by the River Mersey. The M6 Junction 21, also known as the Woolston Interchange, lies to the southeast of the site and the A57 Manchester Road extends eastwards from the junction, bisecting the southern part of the site. The site is at the edge of the existing settlement, with the Grange Industrial Estate to the west on the other side of the M6 and Birchwood Shopping Centre to the north on the other side of the rail line.

6.4 The site is conveniently located to provide good access to the strategic highway network due to the proximity of the M6 Junction 21.

6.5 The existing conditions on the local highway network have been reviewed through a desktop review, on-site observations and traffic surveys, and the WBC and National Highways highway boundary information has been reviewed adjacent to the site.

6.6 The accident record does not reveal any significant safety concerns in the immediate vicinity of the site that would need to be addressed in relation to the development proposals.

6.7 The site is well located in respect of the future proposals for the CLC line improvements, Birchwood P&R (also in the WBC IDP (2021) for the emerging Local Plan) and the M6 improvements from Junctions 19 to 21A that are identified in the Warrington LTP4 and the TfN Investment Programme.

6.8 The northern and southern parts of the site are served by bus, particularly the northern part of the site which benefits from proximity to the buses serving Birchwood Rail Station. The bus stops on the A57 are of a relatively poor standard but could potentially be upgraded as part of the sustainable transport strategy for the site. It should be noted that the proposed P&R facility at the northern end of the site linked to Birchwood Rail Station would include proposals for better bus access and interchange facilities, and this would significantly improve the bus connectivity of the site. Given the strategic scale of the proposed development, the sustainable transport strategy will also consider the potential for both diverting existing bus services into the site from the A57 and increasing bus service

provision to serve the area, including co-ordination with any proposals for a mass transit network as set out in the Warrington LTP4.

6.9 Birchwood Rail station lies at the northern boundary of the site, affording excellent opportunity for trips generated by the development to be made by rail. The development proposals include a new P&R facility with a community hub connected to Birchwood Rail Station. A new southern entrance to the station would be provided and the public footbridge linking the northern and southern sides would be improved. The South Station Place Masterplan would also include new public realm, retail and community amenities, improved bus interchange facilities, a 300-space car park to the south of the station (with the potential to increase the car parking provision in the future), electric vehicle charging points, new cycle parking shelters and rail turn-backs incorporated either side of the station for services to and from Manchester and Liverpool. Such improvements would further increase the attractiveness of rail as a key mode for trips to and from the site and also provide wider accessibility benefits for Birchwood and Warrington, and also provide the potential opportunity to incorporate a Mobility Hub as part of the South Station Place Masterplan.

6.10 The main pedestrian desire lines to and from the site will be for connections to the north and west of the site, where there are existing facilities and employment areas. There are existing connections leading into the site from these areas, including several PRoW routes, and there is good potential to improve these links to enhance the connectivity of the site in conjunction with the Warrington LCWIP proposed improvements for the pedestrian and cycling route network. There is a good level of cycle infrastructure in the vicinity of Birchwood Rail Station including a shared-use path that facilitates a connection between the site and the Grange Industrial Estate to the west. There is also a shared footway / cycleway across the M6 Junction 21 to assist cyclists in negotiating the junction safely. The South Station Place Masterplan proposals provide a significant opportunity to improve the provision of pedestrian and cycling facilities in the area, including upgrades to existing footpaths, new crossings, linkages to external networks and the creation of new internal and external routes (footway and cycleway infrastructure), and potential opportunities have been outlined in this report.

6.11 An access feasibility exercise has been undertaken to review the proposed site access options and demonstrate the access strategy principles. Access into the site from Woolston Grange Avenue is considered a potential option as part of the access strategy, which would include improvements to the existing Nicol Avenue highway, the bridge over the M6 and the associated junction with Woolston Grange Avenue. In initial discussions with National Highways, they have indicated that they would not object in principle to a possible proposal to upgrade the existing bridge or construct a new bridge structure via Nicol Avenue including the associated highway approaches, and the next stage of technical due diligence work will investigate the Nicol Avenue access proposal in more detail.

6.12 Several potential access solutions utilising the land available fronting the A57 Manchester Road have been considered as part of the masterplanning process, and two options have been presented in this report. The preliminary junction layouts are designed in accordance with the relevant DMRB standards. Both options incorporate improved facilities for pedestrian and cyclists in this area, including a footway / cycleway along the northern side of the A57 Manchester Road to tie into the existing provision at the M6 Junction 21 eastern dumbbell roundabout and the footway to the east of Brook Lane. The position of the two pairs of existing bus stops on the A57 site frontage will need to be reviewed with WBC at the next stage when the site access proposals are being designed in more detail.

6.13 The proposed access strategy for the Patrick Properties site includes two access points serving the site from Woolston Grange Avenue by an upgraded Nicol Avenue route, and via the proposed three-arm signalised junction arrangement on the A57 that incorporates a realigned Brook Lane access, or Brook Lane could be retained as an emergency access only. The proposed access strategy for the wider development area has also been outlined in this report. At this stage, the development proposals are still emerging, access options are still being considered and the final access strategy and junction layout designs will need to be agreed with WBC.

6.14 A capacity assessment has been undertaken for the new four-arm priority roundabout and three-arm signalised junction option to demonstrate that the preliminary access junction designs for the A57 are appropriate in capacity terms to serve the development proposals, with the modelling testing 100% of the proposed development trips routing via the A57 access junctions. The proposed A57 access junctions have been tested using industry-standard capacity modelling software and the modelling results show that the junction designs are expected to operate within capacity in the weekday peak periods in the future year scenario with development traffic.

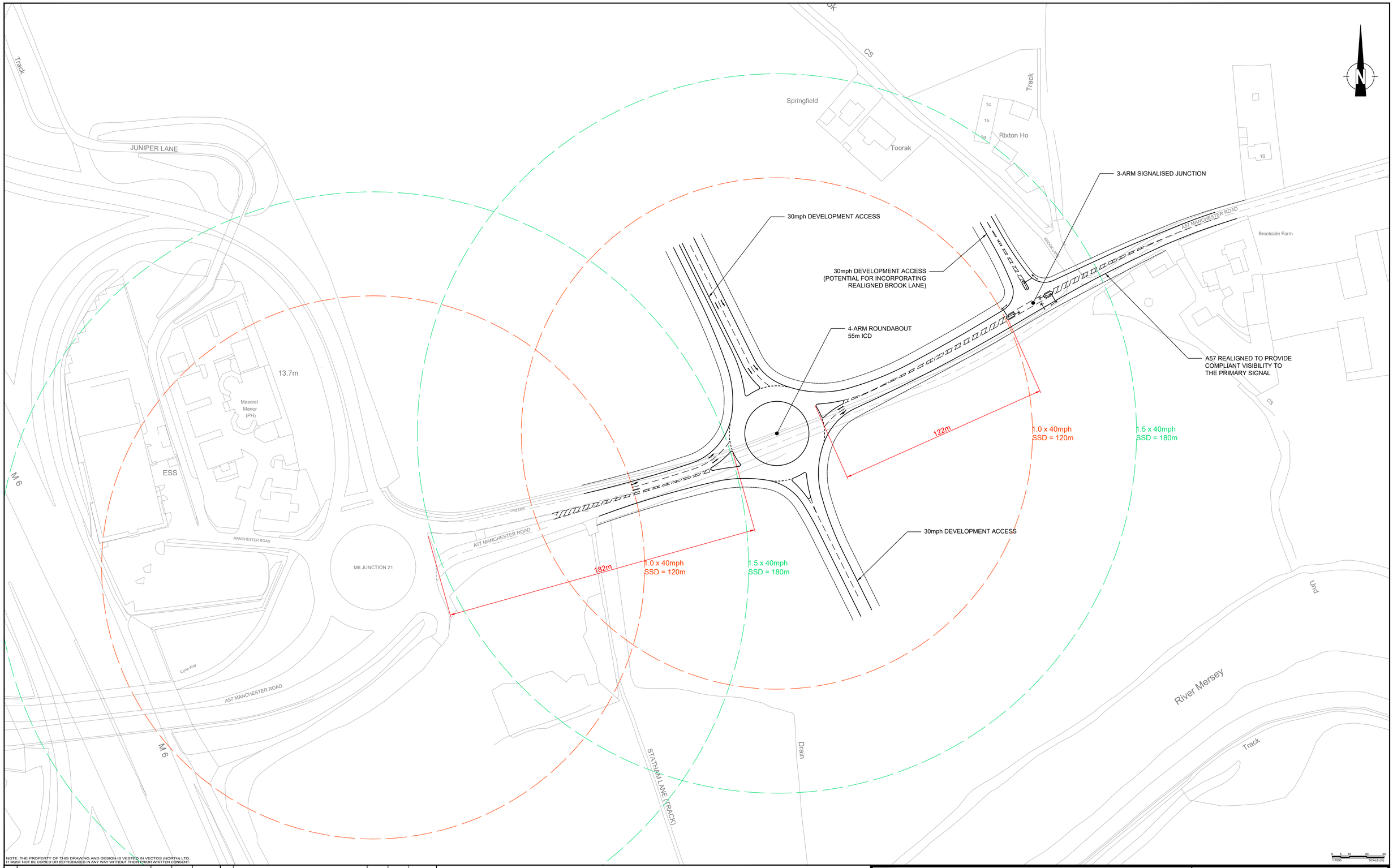
6.15 The effect of the forecast traffic flows generated by the South Station Place Masterplan proposals have also been initially considered in relation to the wider highway network. The number of additional development trips that could be expected to route via the M6 Junction 21 eastern and western dumbbell roundabouts in the weekday morning and evening peak hours is significant, with between 500-700 additional movements at the eastern roundabout in each peak hour, and between 300-500 trips at the western roundabout in each peak hour. It is likely that a micro-simulation model of M6 Junction 21 would be required to assess the operational effects of development and develop any mitigation scheme that may be required. It is noted at this stage, however, that there appear to be feasible options for increasing capacity at the M6 Junction 21 dumbbell roundabouts, for example through carriageway widening and signalisation.

6.16 It is intended that the proposed development will be assessed within the Warrington SATURN model at the earliest opportunity, in line with the emerging Local Plan testing process for strategic development sites and in agreement with WBC. The Local Plan testing utilising WBC's SATURN model will help inform the strategic traffic impacts of the proposed development and identify cumulative assessment considerations. More detailed operational analysis using relevant junction models would be required as part of subsequent Local Plan representation submission (Transport Infrastructure Study) and / or a future planning application for the development proposals to properly assess the impacts of the development trips upon the M6 Junction 21 and other local junctions surrounding the site, which would need to be agreed with both WBC and National Highways.

Conclusion

6.17 In summary, this report forms part of representations being made to WBC as part of the Local Plan preparation process to demonstrate the deliverability of the proposed masterplan proposals in transport terms and set out proposed access strategies for the Patrick Properties land ownership, as well as the wider development area that includes the neighbouring landowners. Vectos have also outlined an approach for demonstrating the deliverability of the development proposals in terms of the assessment of the highway impacts on the strategic and local road networks.

Drawings



REV.	DETAILS	DRAWN	CHECKED	DATE
A	Add mainline splitter islands, RT reservoir for signal junction	DLB	PT	29.09.21

REV.	DETAILS	DRAWN	CHECKED	DATE
.	.	.	.	.

Notes:

1. THE CURRENT SPEED LIMIT FOR THE A57 IS 50mph.
2. THE PROPOSED SCHEME IS DESIGNED TO 40mph (DESIGN SPEED 70kph).

DRAFT

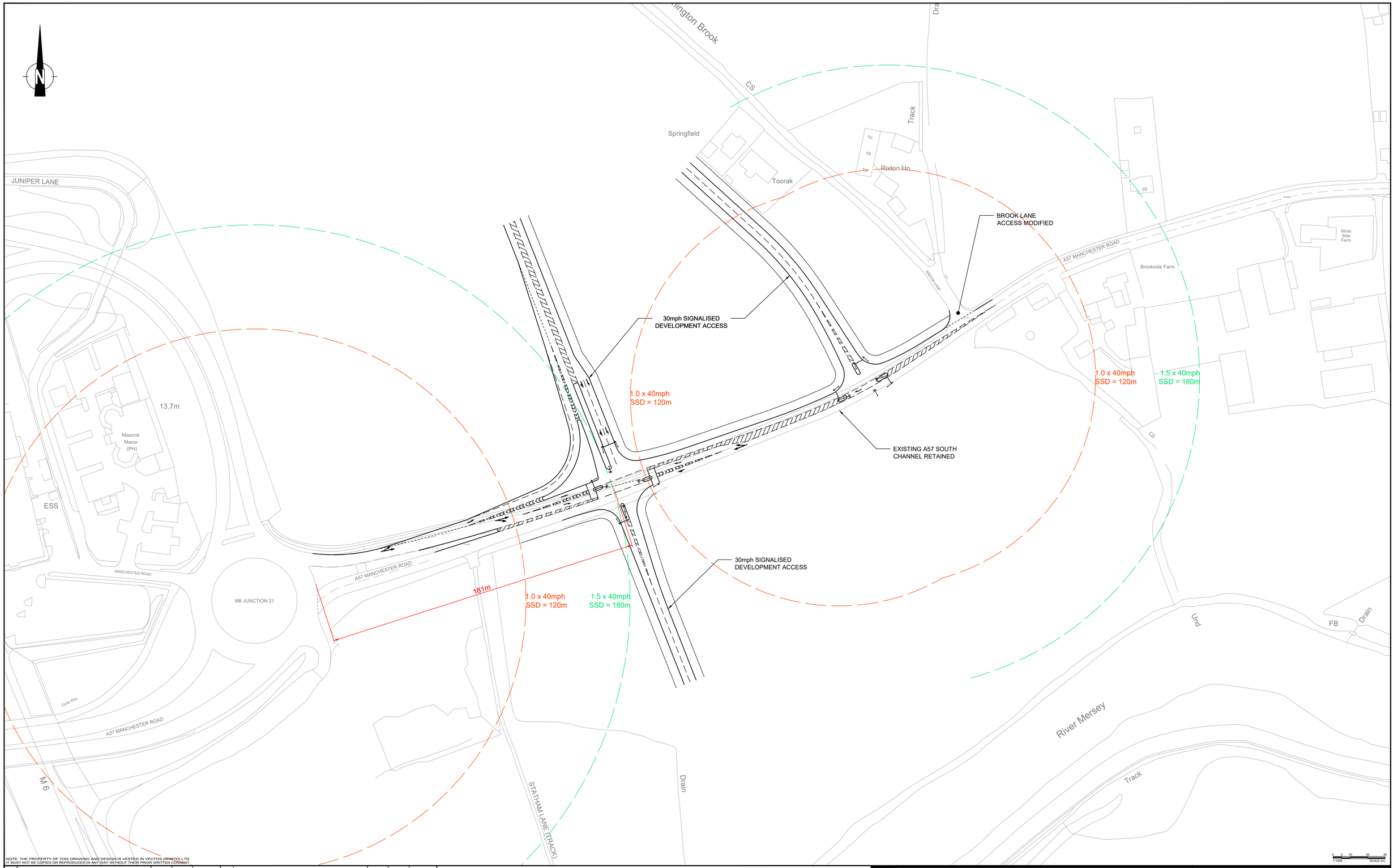
PROJECT:
Birchwood South Masterplan

CLIENT:
Patrick Properties

DRAWING TITLE:
Potential A57 Access
40mph Roundabout + 3-Arm Signalised Junction

vectos
transport planning specialists
4th Floor Oxford Place, 61 Oxford Street, Manchester, M1 6EQ
0161 228 1008 e: manchester@vectos.co.uk

DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
DLB	PT	SPE 2021	1:1000 at A1	VD212061-D102	A



REV.	DETAILS	DRAWN	CHECKED	DATE	REV.	DETAILS	DRAWN	CHECKED	DATE
A	-	.	.	.	.	.	.	.	.

Notes:

1. THE CURRENT SPEED LIMIT FOR THE A57 IS 50mph.
2. THE PROPOSED SCHEME IS DESIGNED TO 40mph (DESIGN SPEED 70kph).

DRAFT

PROJECT: Birchwood South Masterplan

CLIENT: Patrick Properties

DRAWING TITLE:

Potential A57 Access
Two Signalised Access off Existing Alignment

vectos transport planning specialists
4th Floor Oxford Place, 61 Oxford Street, Manchester, M1 6EQ
0161 228 1008 e: manchester@vectos.co.uk

DRAWN:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
DLB	PT	OCT 2021	1:1000 at A1	VD212061-D103.2	-

Appendices

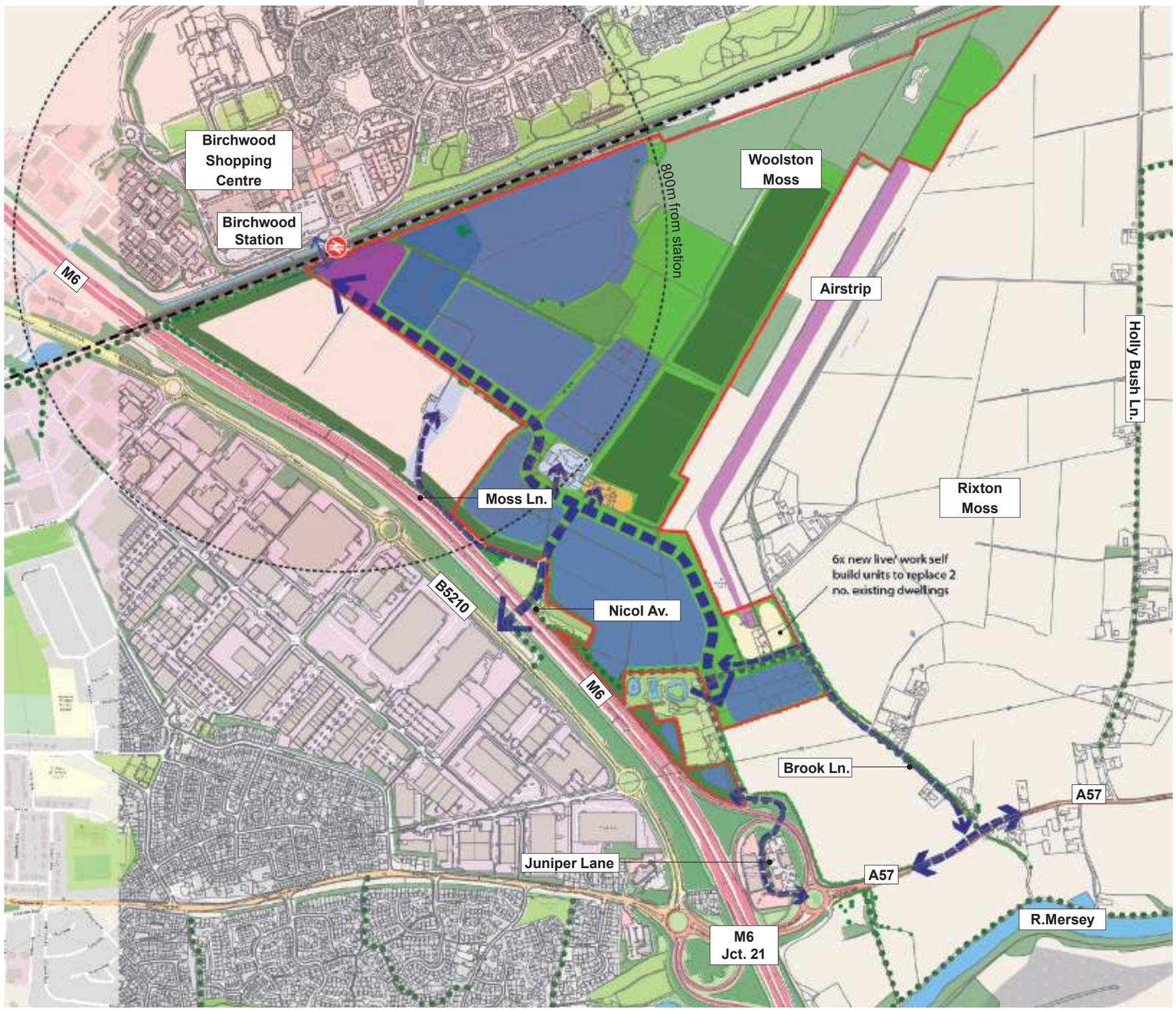
vectos.

Appendix A

Framework Masterplan – Patrick Properties Development Area

Proposals

Framework Masterplan



Key

- Indicative Site Boundary
- Employment use - business hub
- Employment development
- Existing employment uses - light industrial
- Existing residential uses
- Existing airstrip
- Station facilities/ Local Centre
- Proposed primary access TBC
- Possible secondary accesses TBC
- Proposed Open Space
- Land reserved for noise mitigation / buffer
- Retained organic farmland
- Surface water
- Tree belt/ hedgerow
- Tree
- Existing Woodland
- Existing Open Space
- PRoW
- Rail line extension reserve land
- Existing ditch and 5m offset

N

0m 100m 250m 500m

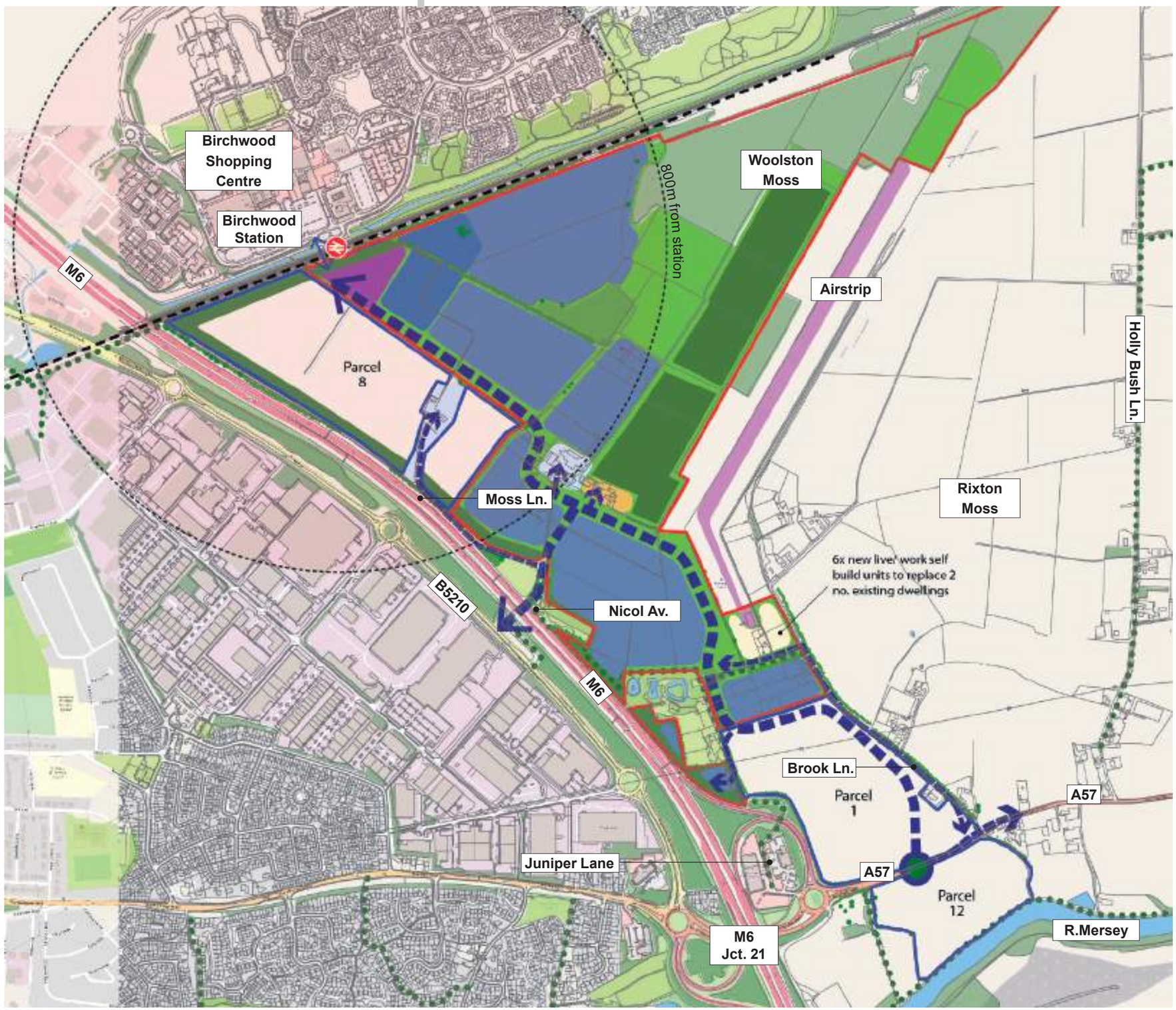
vectos.

Appendix B

Framework Masterplan – Wider Development Area

Proposals

Framework Masterplan



Key

- Indicative Site Boundary
- Employment use - business hub
- Employment development
- Land controlled by others
- Existing employment uses - light industrial
- Existing residential uses
- Existing airstrip
- Station facilities/ Local Centre
- Proposed primary access TBC
- Possible secondary accesses TBC
- Proposed Open Space
- Land reserved for noise mitigation / buffer
- Retained organic farmland
- Surface water
- Tree belt/ hedgerow
- Tree
- Existing Woodland
- Existing Open Space
- PRoW
- Rail line extension reserve land
- Existing ditch and 5m offset

N

0m 100m 250m 500m

vectos.

Appendix C

2021 M6 Junction 21 Traffic Survey Data

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.1: Left from B5210 Woolston Grange Avenue to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	1	49	0	11	3	5	0	69	76.40
0645 - 0700	0	0	52	0	25	5	3	0	85	91.40
0700 - 0715	0	1	69	0	25	4	6	0	105	114.20
0715 - 0730	1	1	78	1	30	4	5	0	120	127.10
Hourly Total	**1**	**3**	**248**	**1**	**91**	**16**	**19**	**0**	**379**	**409.10**
Hourly Average	**0.25**	**0.75**	**62.00**	**0.25**	**22.75**	**4.00**	**4.75**	**0.00**	**94.75**	**102.28**
0730 - 0745	0	1	76	0	32	6	7	0	122	133.50
0745 - 0800	0	1	78	0	29	3	2	0	113	116.50
0800 - 0815	0	0	72	2	35	4	10	0	123	138.00
0815 - 0830	0	0	74	1	38	2	10	0	125	139.00
Hourly Total	**0**	**2**	**300**	**3**	**134**	**15**	**29**	**0**	**483**	**527.00**
Hourly Average	**0.00**	**0.50**	**75.00**	**0.75**	**33.50**	**3.75**	**7.25**	**0.00**	**120.75**	**131.75**
0830 - 0845	0	0	74	1	34	2	6	0	117	125.80
0845 - 0900	0	0	63	0	24	8	7	0	102	115.10
0900 - 0915	0	0	58	0	29	5	2	0	94	99.10
0915 - 0930	0	0	40	1	26	3	4	0	74	80.70
Hourly Total	**0**	**0**	**235**	**2**	**113**	**18**	**19**	**0**	**387**	**420.70**
Hourly Average	**0.00**	**0.00**	**58.75**	**0.50**	**28.25**	**4.50**	**4.75**	**0.00**	**96.75**	**105.18**

Session Total	**1**	**5**	**783**	**6**	**338**	**49**	**67**	**0**	**1249**	**1356.80**
Session Average	**0.08**	**0.42**	**65.25**	**0.50**	**28.17**	**4.08**	**5.58**	**0.00**	**104.08**	**113.07**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.1: Left from B5210 Woolston Grange Avenue to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	83	0	17	3	2	0	105	109.10
1545 - 1600	0	0	105	1	21	6	1	0	134	138.30
1600 - 1615	0	1	150	0	19	4	6	0	180	189.20
1615 - 1630	0	1	133	2	19	3	4	0	162	168.10
Hourly Total	**0**	**2**	**471**	**3**	**76**	**16**	**13**	**0**	**581**	**604.70**
Hourly Average	**0.00**	**0.50**	**117.75**	**0.75**	**19.00**	**4.00**	**3.25**	**0.00**	**145.25**	**151.18**
1630 - 1645	0	1	174	1	23	1	6	0	206	213.70
1645 - 1700	0	1	162	1	17	2	2	0	185	188.00
1700 - 1715	0	0	171	0	13	2	3	0	189	193.90
1715 - 1730	0	1	163	3	14	4	6	0	191	200.20
Hourly Total	**0**	**3**	**670**	**5**	**67**	**9**	**17**	**0**	**771**	**795.80**
Hourly Average	**0.00**	**0.75**	**167.50**	**1.25**	**16.75**	**2.25**	**4.25**	**0.00**	**192.75**	**198.95**
1730 - 1745	0	0	155	0	7	0	4	0	166	171.20
1745 - 1800	0	0	105	0	10	1	4	0	120	125.70
1800 - 1815	0	1	108	0	7	0	4	0	120	124.60
1815 - 1830	0	0	74	0	4	0	1	0	79	80.30
Hourly Total	**0**	**1**	**442**	**0**	**28**	**1**	**13**	**0**	**485**	**501.80**
Hourly Average	**0.00**	**0.25**	**110.50**	**0.00**	**7.00**	**0.25**	**3.25**	**0.00**	**121.25**	**125.45**

Session Total	**0**	**6**	**1583**	**8**	**171**	**26**	**43**	**0**	**1837**	**1902.30**
Session Average	**0.00**	**0.50**	**131.92**	**0.67**	**14.25**	**2.17**	**3.58**	**0.00**	**153.08**	**158.53**

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.2: Southbound from B5210 Woolston Grange Avenue to M6 Slips Roads								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	6	0	2	0	4	0	12	17.20
0645 - 0700	0	0	3	0	8	5	2	0	18	23.10
0700 - 0715	0	0	7	0	9	2	7	0	25	35.10
0715 - 0730	0	0	7	0	20	4	8	0	39	51.40
Hourly Total	**0**	**0**	**23**	**0**	**39**	**11**	**21**	**0**	**94**	**126.80**
Hourly Average	**0.00**	**0.00**	**5.75**	**0.00**	**9.75**	**2.75**	**5.25**	**0.00**	**23.50**	**31.70**
0730 - 0745	0	0	12	0	16	4	2	0	34	38.60
0745 - 0800	0	0	10	0	4	5	4	0	23	30.70
0800 - 0815	0	0	9	1	8	2	5	0	25	32.50
0815 - 0830	0	0	7	0	10	9	3	0	29	37.40
Hourly Total	**0**	**0**	**38**	**1**	**38**	**20**	**14**	**0**	**111**	**139.20**
Hourly Average	**0.00**	**0.00**	**9.50**	**0.25**	**9.50**	**5.00**	**3.50**	**0.00**	**27.75**	**34.80**
0830 - 0845	0	0	4	0	11	1	4	0	20	25.70
0845 - 0900	0	0	5	1	7	2	6	0	21	29.80
0900 - 0915	0	0	5	1	8	2	5	0	21	28.50
0915 - 0930	0	0	7	0	8	3	4	0	22	28.70
Hourly Total	**0**	**0**	**21**	**2**	**34**	**8**	**19**	**0**	**84**	**112.70**
Hourly Average	**0.00**	**0.00**	**5.25**	**0.50**	**8.50**	**2.00**	**4.75**	**0.00**	**21.00**	**28.18**

Session Total	**0**	**0**	**82**	**3**	**111**	**39**	**54**	**0**	**289**	**378.70**
Session Average	**0.00**	**0.00**	**6.83**	**0.25**	**9.25**	**3.25**	**4.50**	**0.00**	**24.08**	**31.56**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.2: Southbound from B5210 Woolston Grange Avenue to M6 Slips Roads								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	33	1	10	5	1	0	50	53.80
1545 - 1600	0	0	39	0	16	3	5	0	63	71.00
1600 - 1615	0	1	70	0	14	0	3	0	88	91.30
1615 - 1630	0	0	44	0	11	2	2	0	59	62.60
Hourly Total	**0**	**1**	**186**	**1**	**51**	**10**	**11**	**0**	**260**	**278.70**
Hourly Average	**0.00**	**0.25**	**46.50**	**0.25**	**12.75**	**2.50**	**2.75**	**0.00**	**65.00**	**69.68**
1630 - 1645	0	0	81	0	13	1	4	0	99	104.70
1645 - 1700	1	0	53	0	4	2	1	0	61	62.50
1700 - 1715	0	1	79	0	10	0	3	0	93	96.30
1715 - 1730	0	0	55	0	10	4	2	0	71	75.60
Hourly Total	**1**	**1**	**268**	**0**	**37**	**7**	**10**	**0**	**324**	**339.10**
Hourly Average	**0.25**	**0.25**	**67.00**	**0.00**	**9.25**	**1.75**	**2.50**	**0.00**	**81.00**	**84.78**
1730 - 1745	0	0	50	0	6	0	3	0	59	62.90
1745 - 1800	0	0	29	0	1	0	1	0	31	32.30
1800 - 1815	0	0	39	0	5	1	2	0	47	50.10
1815 - 1830	0	0	15	0	7	1	0	0	23	23.50
Hourly Total	**0**	**0**	**133**	**0**	**19**	**2**	**6**	**0**	**160**	**168.80**
Hourly Average	**0.00**	**0.00**	**33.25**	**0.00**	**4.75**	**0.50**	**1.50**	**0.00**	**40.00**	**42.20**

Session Total	**1**	**2**	**587**	**1**	**107**	**19**	**27**	**0**	**744**	**786.60**
Session Average	**0.08**	**0.17**	**48.92**	**0.08**	**8.92**	**1.58**	**2.25**	**0.00**	**62.00**	**65.55**

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.3: Right from B5210 Woolston Grange Avenue to A57 Manchester Road (West)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	5	0	2	1	0	0	8	8.50
0645 - 0700	0	0	9	0	1	0	0	0	10	10.00
0700 - 0715	0	0	4	0	1	2	0	0	7	8.00
0715 - 0730	0	0	9	0	3	2	0	0	14	15.00
Hourly Total	**0**	**0**	**27**	**0**	**7**	**5**	**0**	**0**	39	41.50
Hourly Average	**0.00**	**0.00**	**6.75**	**0.00**	**1.75**	**1.25**	**0.00**	**0.00**	9.75	10.38
0730 - 0745	0	0	9	0	5	0	0	1	15	16.00
0745 - 0800	0	0	12	0	4	2	0	0	18	19.00
0800 - 0815	0	0	6	1	3	2	1	0	13	15.30
0815 - 0830	0	1	12	1	8	0	0	0	22	21.40
Hourly Total	**0**	**1**	**39**	**2**	**20**	**4**	**1**	**1**	68	71.70
Hourly Average	**0.00**	**0.25**	**9.75**	**0.50**	**5.00**	**1.00**	**0.25**	**0.25**	17.00	17.93
0830 - 0845	0	0	9	0	2	1	1	0	13	14.80
0845 - 0900	0	0	11	0	4	2	0	0	17	18.00
0900 - 0915	0	0	13	0	10	3	0	0	26	27.50
0915 - 0930	0	0	7	0	5	4	0	0	16	18.00
Hourly Total	**0**	**0**	**40**	**0**	**21**	**10**	**1**	**0**	72	78.30
Hourly Average	**0.00**	**0.00**	**10.00**	**0.00**	**5.25**	**2.50**	**0.25**	**0.00**	18.00	19.58

Session Total	**0**	**1**	**106**	**2**	**48**	**19**	**2**	**1**	179	191.50
Session Average	**0.00**	**0.08**	**8.83**	**0.17**	**4.00**	**1.58**	**0.17**	**0.08**	14.92	15.96

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.3: Right from B5210 Woolston Grange Avenue to A57 Manchester Road (West)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	28	1	4	1	0	0	34	34.50
1545 - 1600	0	2	42	0	7	3	0	0	54	54.30
1600 - 1615	0	1	55	1	10	0	0	0	67	66.40
1615 - 1630	0	0	35	0	4	2	0	1	42	44.00
Hourly Total	**0**	**3**	**160**	**2**	**25**	**6**	**0**	**1**	197	199.20
Hourly Average	**0.00**	**0.75**	**40.00**	**0.50**	**6.25**	**1.50**	**0.00**	**0.25**	49.25	49.80
1630 - 1645	0	0	60	1	7	0	0	1	69	70.00
1645 - 1700	0	0	42	1	6	0	0	0	49	49.00
1700 - 1715	0	0	73	0	10	0	0	0	83	83.00
1715 - 1730	0	0	43	0	3	0	0	0	46	46.00
Hourly Total	**0**	**0**	**218**	**2**	**26**	**0**	**0**	**1**	247	248.00
Hourly Average	**0.00**	**0.00**	**54.50**	**0.50**	**6.50**	**0.00**	**0.00**	**0.25**	61.75	62.00
1730 - 1745	0	0	48	0	3	0	0	0	51	51.00
1745 - 1800	1	1	21	0	4	0	0	0	27	25.60
1800 - 1815	0	1	27	0	2	0	0	0	30	29.40
1815 - 1830	0	0	19	0	1	0	0	0	20	20.00
Hourly Total	**1**	**2**	**115**	**0**	**10**	**0**	**0**	**0**	128	126.00
Hourly Average	**0.25**	**0.50**	**28.75**	**0.00**	**2.50**	**0.00**	**0.00**	**0.00**	32.00	31.50

Session Total	**1**	**5**	**493**	**4**	**61**	**6**	**0**	**2**	572	573.20
Session Average	**0.08**	**0.42**	**41.08**	**0.33**	**5.08**	**0.50**	**0.00**	**0.17**	47.67	47.77

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.4: U-Turn from B5210 Woolston Grange Avenue to B5210 Woolston Grange Avenue								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	1	0	0	0	0	0	1	1.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	1	0	0	1	1.50
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	2	2.50
Hourly Average	**0.00**	**0.00**	**0.25**	**0.00**	**0.00**	**0.25**	**0.00**	**0.00**	0.50	0.63
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	0.00
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	0.00
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.00	0.00

Session Total	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	2	2.50
Session Average	**0.00**	**0.00**	**0.08**	**0.00**	**0.00**	**0.08**	**0.00**	**0.00**	0.17	0.21

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.4: U-Turn from B5210 Woolston Grange Avenue to B5210 Woolston Grange Avenue								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	0.00
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.00	0.00
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	0.00
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.00	0.00
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	0.00
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.00	0.00

Session Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	0.00
Session Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.00	0.00

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.5: Left from A57 Manchester Road (East) to M6 Slips Roads								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	28	0	7	1	2	0	38	41.10
0645 - 0700	0	0	16	0	11	1	3	0	31	35.40
0700 - 0715	0	0	23	0	12	3	3	0	41	46.40
0715 - 0730	0	1	29	0	15	2	1	0	48	49.70
Hourly Total	0	1	96	0	45	7	9	0	158	172.60
Hourly Average	0.00	0.25	24.00	0.00	11.25	1.75	2.25	0.00	39.50	43.15
0730 - 0745	0	0	32	0	15	4	3	0	54	59.90
0745 - 0800	0	0	45	1	11	9	3	0	69	77.40
0800 - 0815	0	0	43	1	9	17	3	0	73	85.40
0815 - 0830	0	0	34	0	7	12	4	0	57	68.20
Hourly Total	0	0	154	2	42	42	13	0	253	290.90
Hourly Average	0.00	0.00	38.50	0.50	10.50	10.50	3.25	0.00	63.25	72.73
0830 - 0845	0	0	29	0	8	3	4	0	44	50.70
0845 - 0900	0	0	28	2	11	3	0	0	44	45.50
0900 - 0915	0	0	21	0	10	1	1	0	33	34.80
0915 - 0930	0	0	22	1	14	1	2	0	40	43.10
Hourly Total	0	0	100	3	43	8	7	0	161	174.10
Hourly Average	0.00	0.00	25.00	0.75	10.75	2.00	1.75	0.00	40.25	43.53

Session Total	0	1	350	5	130	57	29	0	572	637.60
Session Average	0.00	0.08	29.17	0.42	10.83	4.75	2.42	0.00	47.67	53.13

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.5: Left from A57 Manchester Road (East) to M6 Slips Roads								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	46	0	15	3	1	0	65	67.80
1545 - 1600	0	0	38	0	14	0	1	0	53	54.30
1600 - 1615	0	0	59	1	19	1	1	0	81	82.80
1615 - 1630	0	0	96	5	19	2	2	0	124	127.60
Hourly Total	0	0	239	6	67	6	5	0	323	332.50
Hourly Average	0.00	0.00	59.75	1.50	16.75	1.50	1.25	0.00	80.75	83.13
1630 - 1645	0	0	66	0	14	1	1	0	82	83.80
1645 - 1700	0	0	55	1	14	0	1	0	71	72.30
1700 - 1715	0	0	68	0	9	0	1	0	78	79.30
1715 - 1730	0	1	65	0	8	1	0	0	75	74.90
Hourly Total	0	1	254	1	45	2	3	0	306	310.30
Hourly Average	0.00	0.25	63.50	0.25	11.25	0.50	0.75	0.00	76.50	77.58
1730 - 1745	0	0	49	1	8	1	1	0	60	61.80
1745 - 1800	0	0	39	0	6	0	1	0	46	47.30
1800 - 1815	0	0	43	0	5	0	1	0	49	50.30
1815 - 1830	0	0	47	0	5	0	1	0	53	54.30
Hourly Total	0	0	178	1	24	1	4	0	208	213.70
Hourly Average	0.00	0.00	44.50	0.25	6.00	0.25	1.00	0.00	52.00	53.43

Session Total	0	1	671	8	136	9	12	0	837	856.50
Session Average	0.00	0.08	55.92	0.67	11.33	0.75	1.00	0.00	69.75	71.38

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.6: Northbound from A57 Manchester Road (East) to A57 Manchester Road (West)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	22	0	11	2	1	1	37	40.30
0645 - 0700	0	0	35	0	12	1	1	0	49	50.80
0700 - 0715	0	0	19	0	22	3	3	1	48	54.40
0715 - 0730	0	0	55	1	12	3	2	1	74	79.10
Hourly Total	**0**	**0**	**131**	**1**	**57**	**9**	**7**	**3**	208	224.60
Hourly Average	**0.00**	**0.00**	**32.75**	**0.25**	**14.25**	**2.25**	**1.75**	**0.75**	**52.00**	**56.15**
0730 - 0745	0	0	43	0	7	3	2	0	55	59.10
0745 - 0800	0	1	57	0	35	4	2	0	99	103.00
0800 - 0815	0	1	61	0	20	7	1	0	90	94.20
0815 - 0830	0	1	64	0	12	4	1	0	82	84.70
Hourly Total	**0**	**3**	**225**	**0**	**74**	**18**	**6**	**0**	326	341.00
Hourly Average	**0.00**	**0.75**	**56.25**	**0.00**	**18.50**	**4.50**	**1.50**	**0.00**	**81.50**	**85.25**
0830 - 0845	0	0	49	1	18	2	0	1	71	73.00
0845 - 0900	0	0	53	2	17	1	1	1	75	77.80
0900 - 0915	0	0	44	0	16	1	2	0	63	66.10
0915 - 0930	0	1	41	0	15	3	1	0	61	63.20
Hourly Total	**0**	**1**	**187**	**3**	**66**	**7**	**4**	**2**	270	280.10
Hourly Average	**0.00**	**0.25**	**46.75**	**0.75**	**16.50**	**1.75**	**1.00**	**0.50**	**67.50**	**70.03**

Session Total	**0**	**4**	**543**	**4**	**197**	**34**	**17**	**5**	**804**	**845.70**
Session Average	**0.00**	**0.33**	**45.25**	**0.33**	**16.42**	**2.83**	**1.42**	**0.42**	**67.00**	**70.48**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.6: Northbound from A57 Manchester Road (East) to A57 Manchester Road (West)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	83	2	19	0	1	1	106	108.30
1545 - 1600	0	0	71	1	23	2	2	0	99	102.60
1600 - 1615	1	1	71	2	24	2	2	2	105	109.20
1615 - 1630	0	0	92	1	25	1	0	0	119	119.50
Hourly Total	**1**	**1**	**317**	**6**	**91**	**5**	**5**	**3**	429	439.60
Hourly Average	**0.25**	**0.25**	**79.25**	**1.50**	**22.75**	**1.25**	**1.25**	**0.75**	**107.25**	**109.90**
1630 - 1645	1	0	87	0	15	3	0	0	106	106.70
1645 - 1700	2	0	91	1	19	3	0	0	116	115.90
1700 - 1715	0	2	89	2	8	0	2	1	104	106.40
1715 - 1730	0	0	102	2	16	0	2	2	124	128.60
Hourly Total	**3**	**2**	**369**	**5**	**58**	**6**	**4**	**3**	450	457.60
Hourly Average	**0.75**	**0.50**	**92.25**	**1.25**	**14.50**	**1.50**	**1.00**	**0.75**	**112.50**	**114.40**
1730 - 1745	0	1	92	0	7	1	0	0	101	100.90
1745 - 1800	0	2	84	0	9	0	0	0	95	93.80
1800 - 1815	0	2	58	0	5	0	0	2	67	67.80
1815 - 1830	0	0	80	0	6	0	0	0	86	86.00
Hourly Total	**0**	**5**	**314**	**0**	**27**	**1**	**0**	**2**	349	348.50
Hourly Average	**0.00**	**1.25**	**78.50**	**0.00**	**6.75**	**0.25**	**0.00**	**0.50**	**87.25**	**87.13**

Session Total	**4**	**8**	**1000**	**11**	**176**	**12**	**9**	**8**	**1228**	**1245.70**
Session Average	**0.33**	**0.67**	**83.33**	**0.92**	**14.67**	**1.00**	**0.75**	**0.67**	**102.33**	**103.81**

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.7: Right from A57 Manchester Road (East) to B5210 Woolston Grange Avenue								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	2	65	0	8	1	4	0	80	84.50
0645 - 0700	0	0	62	0	20	3	6	0	91	100.30
0700 - 0715	0	0	52	1	6	3	0	0	62	63.50
0715 - 0730	1	1	46	0	20	3	2	0	73	75.70
Hourly Total	**1**	**3**	**225**	**1**	**54**	**10**	**12**	**0**	306	324.00
Hourly Average	**0.25**	**0.75**	**56.25**	**0.25**	**13.50**	**2.50**	**3.00**	**0.00**	**76.50**	**81.00**
0730 - 0745	0	0	51	0	7	1	5	0	64	71.00
0745 - 0800	0	2	83	0	11	1	1	0	98	98.60
0800 - 0815	0	0	59	0	8	5	5	1	78	88.00
0815 - 0830	0	0	87	0	14	0	9	0	110	121.70
Hourly Total	**0**	**2**	**280**	**0**	**40**	**7**	**20**	**1**	350	379.30
Hourly Average	**0.00**	**0.50**	**70.00**	**0.00**	**10.00**	**1.75**	**5.00**	**0.25**	**87.50**	**94.83**
0830 - 0845	0	0	86	0	14	0	4	0	104	109.20
0845 - 0900	0	0	52	0	14	0	4	0	70	75.20
0900 - 0915	0	0	51	0	15	4	4	0	74	81.20
0915 - 0930	0	0	33	0	4	2	6	0	45	53.80
Hourly Total	**0**	**0**	**222**	**0**	**47**	**6**	**18**	**0**	293	319.40
Hourly Average	**0.00**	**0.00**	**55.50**	**0.00**	**11.75**	**1.50**	**4.50**	**0.00**	**73.25**	**79.85**

Session Total	**1**	**5**	**727**	**1**	**141**	**23**	**50**	**1**	949	1022.70
Session Average	**0.08**	**0.42**	**60.58**	**0.08**	**11.75**	**1.92**	**4.17**	**0.08**	**79.08**	**85.23**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.7: Right from A57 Manchester Road (East) to B5210 Woolston Grange Avenue								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	15	0	11	0	6	0	32	39.80
1545 - 1600	0	1	20	0	15	4	1	0	41	43.70
1600 - 1615	0	0	25	0	8	0	1	0	34	35.30
1615 - 1630	0	0	24	0	8	1	4	0	37	42.70
Hourly Total	**0**	**1**	**84**	**0**	**42**	**5**	**12**	**0**	144	161.50
Hourly Average	**0.00**	**0.25**	**21.00**	**0.00**	**10.50**	**1.25**	**3.00**	**0.00**	**36.00**	**40.38**
1630 - 1645	0	2	28	3	3	0	4	0	40	44.00
1645 - 1700	0	0	16	0	1	2	3	0	22	26.90
1700 - 1715	0	0	21	1	8	2	1	0	33	35.30
1715 - 1730	0	0	26	0	1	0	0	0	27	27.00
Hourly Total	**0**	**2**	**91**	**4**	**13**	**4**	**8**	**0**	122	133.20
Hourly Average	**0.00**	**0.50**	**22.75**	**1.00**	**3.25**	**1.00**	**2.00**	**0.00**	**30.50**	**33.30**
1730 - 1745	0	0	20	0	7	0	4	0	31	36.20
1745 - 1800	0	0	24	0	0	1	4	0	29	34.70
1800 - 1815	0	0	21	0	0	0	1	0	22	23.30
1815 - 1830	0	0	20	0	2	0	2	0	24	26.60
Hourly Total	**0**	**0**	**85**	**0**	**9**	**1**	**11**	**0**	106	120.80
Hourly Average	**0.00**	**0.00**	**21.25**	**0.00**	**2.25**	**0.25**	**2.75**	**0.00**	**26.50**	**30.20**

Session Total	**0**	**3**	**260**	**4**	**64**	**10**	**31**	**0**	372	415.50
Session Average	**0.00**	**0.25**	**21.67**	**0.33**	**5.33**	**0.83**	**2.58**	**0.00**	**31.00**	**34.63**

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.8: U-Turn from A57 Manchester Road (East) to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00**
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00**
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	1	0	0	0	1	0	2	3.30
Hourly Total	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**3.30**
Hourly Average	**0.00**	**0.00**	**0.25**	**0.00**	**0.00**	**0.00**	**0.25**	**0.00**	**0.50**	**0.83**

Session Total	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**3.30**
Session Average	**0.00**	**0.00**	**0.08**	**0.00**	**0.00**	**0.00**	**0.08**	**0.00**	**0.17**	**0.28**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.8: U-Turn from A57 Manchester Road (East) to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	1	0	1	2.30
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**2.30**
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.25**	**0.00**	**0.25**	**0.58**
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.00**
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	1	0	0	0	1	1.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	1	0	1	0	0	0	2	2.00
Hourly Total	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**3**	**3.00**
Hourly Average	**0.00**	**0.00**	**0.25**	**0.00**	**0.50**	**0.00**	**0.00**	**0.00**	**0.75**	**0.75**

Session Total	**0**	**0**	**1**	**0**	**2**	**0**	**1**	**0**	**4**	**5.30**
Session Average	**0.00**	**0.00**	**0.08**	**0.00**	**0.17**	**0.00**	**0.08**	**0.00**	**0.33**	**0.44**

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.9: Left from M6 Slips Roads to A57 Manchester Road (West)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	4	0	3	1	2	0	10	13.10
0645 - 0700	0	0	17	0	3	1	2	0	23	26.10
0700 - 0715	0	0	20	0	2	2	2	0	26	29.60
0715 - 0730	0	0	21	0	3	2	1	0	27	29.30
Hourly Total	**0**	**0**	**41**	**0**	**5**	**4**	**3**	**0**	**86**	**98.10**
Hourly Average	**0.00**	**0.00**	**20.50**	**0.00**	**2.50**	**2.00**	**1.50**	**0.00**	**21.50**	**24.53**
0730 - 0745	0	1	39	0	4	1	3	0	48	51.80
0745 - 0800	0	0	39	0	6	1	4	0	50	55.70
0800 - 0815	0	0	39	0	14	2	1	0	56	58.30
0815 - 0830	0	0	36	0	6	0	0	0	42	42.00
Hourly Total	**0**	**0**	**75**	**0**	**20**	**2**	**1**	**0**	**196**	**207.80**
Hourly Average	**0.00**	**0.00**	**37.50**	**0.00**	**10.00**	**1.00**	**0.50**	**0.00**	**49.00**	**51.95**
0830 - 0845	0	0	34	0	12	1	0	0	47	47.50
0845 - 0900	0	0	45	0	4	0	1	1	51	53.30
0900 - 0915	0	0	46	0	8	3	3	1	61	67.40
0915 - 0930	0	0	42	0	13	1	3	0	59	63.40
Hourly Total	**0**	**0**	**167**	**0**	**37**	**5**	**7**	**2**	**218**	**231.60**
Hourly Average	**0.00**	**0.00**	**41.75**	**0.00**	**9.25**	**1.25**	**1.75**	**0.50**	**54.50**	**57.90**

Session Total	**0**	**1**	**382**	**0**	**78**	**15**	**22**	**2**	**500**	**537.50**
Session Average	**0.00**	**0.08**	**31.83**	**0.00**	**6.50**	**1.25**	**1.83**	**0.17**	**41.67**	**44.79**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.9: Left from M6 Slips Roads to A57 Manchester Road (West)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	37	0	11	2	2	0	52	55.60
1545 - 1600	0	0	44	0	14	0	1	0	59	60.30
1600 - 1615	0	0	42	1	16	3	1	0	63	65.80
1615 - 1630	0	1	63	0	19	1	1	1	86	88.20
Hourly Total	**0**	**1**	**105**	**1**	**35**	**4**	**2**	**1**	**260**	**269.90**
Hourly Average	**0.00**	**0.50**	**52.50**	**0.50**	**17.50**	**2.00**	**1.00**	**0.50**	**65.00**	**67.48**
1630 - 1645	0	1	43	0	13	4	0	0	61	62.40
1645 - 1700	2	0	53	0	12	0	1	0	68	67.70
1700 - 1715	0	0	56	0	10	1	2	0	69	72.10
1715 - 1730	0	0	85	1	9	1	1	0	97	98.80
Hourly Total	**0**	**0**	**141**	**1**	**19**	**2**	**3**	**0**	**295**	**301.00**
Hourly Average	**0.00**	**0.00**	**70.50**	**0.50**	**9.50**	**1.00**	**1.50**	**0.00**	**73.75**	**75.25**
1730 - 1745	0	0	72	0	11	1	0	0	84	84.50
1745 - 1800	0	0	72	1	5	1	0	0	79	79.50
1800 - 1815	0	1	50	0	7	1	1	0	60	61.20
1815 - 1830	0	0	74	0	13	1	5	0	93	100.00
Hourly Total	**0**	**1**	**268**	**1**	**36**	**4**	**6**	**0**	**316**	**325.20**
Hourly Average	**0.00**	**0.25**	**67.00**	**0.25**	**9.00**	**1.00**	**1.50**	**0.00**	**79.00**	**81.30**

Session Total	**2**	**3**	**691**	**3**	**140**	**16**	**15**	**1**	**871**	**896.10**
Session Average	**0.17**	**0.25**	**57.58**	**0.25**	**11.67**	**1.33**	**1.25**	**0.08**	**72.58**	**74.68**

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.10: Northbound from M6 Slips Roads to B5210 Woolston Grange Avenue								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	53	0	10	0	8	0	71	81.40
0645 - 0700	0	0	71	0	14	2	3	0	90	94.90
0700 - 0715	0	0	86	1	22	4	5	0	118	126.50
0715 - 0730	0	1	106	0	25	1	3	0	136	139.80
Hourly Total	**0**	**1**	**316**	**1**	**71**	**7**	**19**	**0**	415	442.60
Hourly Average	**0.00**	**0.25**	**79.00**	**0.25**	**17.75**	**1.75**	**4.75**	**0.00**	**103.75**	**110.65**
0730 - 0745	0	1	142	0	29	0	5	0	177	182.90
0745 - 0800	0	0	208	0	20	2	5	0	235	242.50
0800 - 0815	0	1	176	0	32	1	6	0	216	223.70
0815 - 0830	0	0	193	0	18	4	8	0	223	235.40
Hourly Total	**0**	**2**	**719**	**0**	**99**	**7**	**24**	**0**	851	884.50
Hourly Average	**0.00**	**0.50**	**179.75**	**0.00**	**24.75**	**1.75**	**6.00**	**0.00**	**212.75**	**221.13**
0830 - 0845	0	0	168	0	17	3	9	0	197	210.20
0845 - 0900	0	0	149	0	18	5	5	0	177	186.00
0900 - 0915	0	0	153	0	20	2	8	0	183	194.40
0915 - 0930	0	0	91	1	19	4	10	0	125	140.00
Hourly Total	**0**	**0**	**561**	**1**	**74**	**14**	**32**	**0**	682	730.60
Hourly Average	**0.00**	**0.00**	**140.25**	**0.25**	**18.50**	**3.50**	**8.00**	**0.00**	**170.50**	**182.65**

Session Total	**0**	**3**	**1596**	**2**	**244**	**28**	**75**	**0**	1948	2057.70
Session Average	**0.00**	**0.25**	**133.00**	**0.17**	**20.33**	**2.33**	**6.25**	**0.00**	**162.33**	**171.48**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.10: Northbound from M6 Slips Roads to B5210 Woolston Grange Avenue								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	32	1	30	8	6	0	77	88.80
1545 - 1600	0	1	55	0	17	2	4	0	79	84.60
1600 - 1615	0	1	53	1	28	1	7	0	91	100.00
1615 - 1630	0	1	62	2	23	5	3	0	96	101.80
Hourly Total	**0**	**3**	**202**	**4**	**98**	**16**	**20**	**0**	343	375.20
Hourly Average	**0.00**	**0.75**	**50.50**	**1.00**	**24.50**	**4.00**	**5.00**	**0.00**	**85.75**	**93.80**
1630 - 1645	0	0	72	0	24	1	8	0	105	115.90
1645 - 1700	0	0	70	1	26	3	2	0	102	106.10
1700 - 1715	0	1	56	1	14	3	1	0	76	78.20
1715 - 1730	0	0	89	0	15	4	5	0	113	121.50
Hourly Total	**0**	**1**	**287**	**2**	**79**	**11**	**16**	**0**	396	421.70
Hourly Average	**0.00**	**0.25**	**71.75**	**0.50**	**19.75**	**2.75**	**4.00**	**0.00**	**99.00**	**105.43**
1730 - 1745	0	0	64	0	9	1	5	0	79	86.00
1745 - 1800	0	0	71	0	7	0	7	0	85	94.10
1800 - 1815	0	1	51	0	10	1	7	0	70	79.00
1815 - 1830	0	0	22	0	6	0	1	0	29	30.30
Hourly Total	**0**	**1**	**208**	**0**	**32**	**2**	**20**	**0**	263	289.40
Hourly Average	**0.00**	**0.25**	**52.00**	**0.00**	**8.00**	**0.50**	**5.00**	**0.00**	**65.75**	**72.35**

Session Total	**0**	**5**	**697**	**6**	**209**	**29**	**56**	**0**	1002	1086.30
Session Average	**0.00**	**0.42**	**58.08**	**0.50**	**17.42**	**2.42**	**4.67**	**0.00**	**83.50**	**90.53**

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.11: Right from M6 Slips Roads to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	26	0	6	1	3	0	36	40.40
0645 - 0700	0	0	29	0	12	4	3	0	48	53.90
0700 - 0715	0	0	18	0	5	1	4	0	28	33.70
0715 - 0730	0	0	44	0	8	3	6	0	61	70.30
Hourly Total	**0**	**0**	**62**	**0**	**13**	**4**	**10**	**0**	173	198.30
Hourly Average	**0.00**	**0.00**	**31.00**	**0.00**	**6.50**	**2.00**	**5.00**	**0.00**	43.25	49.58
0730 - 0745	0	0	45	0	11	3	6	0	65	74.30
0745 - 0800	0	0	39	2	14	3	4	0	62	68.70
0800 - 0815	0	0	32	0	9	0	0	0	41	41.00
0815 - 0830	0	0	49	0	17	1	7	0	74	83.60
Hourly Total	**0**	**0**	**81**	**0**	**26**	**1**	**7**	**0**	242	267.60
Hourly Average	**0.00**	**0.00**	**40.50**	**0.00**	**13.00**	**0.50**	**3.50**	**0.00**	60.50	66.90
0830 - 0845	0	0	43	0	13	2	4	0	62	68.20
0845 - 0900	0	0	40	1	8	3	5	0	57	65.00
0900 - 0915	0	0	29	0	11	4	5	0	49	57.50
0915 - 0930	0	0	37	0	12	3	11	0	63	78.80
Hourly Total	**0**	**0**	**149**	**1**	**44**	**12**	**25**	**0**	231	269.50
Hourly Average	**0.00**	**0.00**	**37.25**	**0.25**	**11.00**	**3.00**	**6.25**	**0.00**	57.75	67.38

Session Total	**0**	**0**	**431**	**3**	**126**	**28**	**58**	**0**	646	735.40
Session Average	**0.00**	**0.00**	**35.92**	**0.25**	**10.50**	**2.33**	**4.83**	**0.00**	53.83	61.28

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.11: Right from M6 Slips Roads to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	28	0	18	3	4	0	53	59.70
1545 - 1600	0	0	30	0	16	0	7	0	53	62.10
1600 - 1615	0	0	28	1	16	5	2	0	52	57.10
1615 - 1630	0	0	30	0	25	1	1	0	57	58.80
Hourly Total	**0**	**0**	**58**	**1**	**41**	**6**	**3**	**0**	215	237.70
Hourly Average	**0.00**	**0.00**	**29.00**	**0.50**	**20.50**	**3.00**	**1.50**	**0.00**	53.75	59.43
1630 - 1645	0	0	58	0	8	1	3	0	70	74.40
1645 - 1700	0	0	42	0	19	2	8	0	71	82.40
1700 - 1715	0	0	51	0	21	2	2	0	76	79.60
1715 - 1730	0	0	58	0	12	3	3	0	76	81.40
Hourly Total	**0**	**0**	**109**	**0**	**33**	**5**	**5**	**0**	293	317.80
Hourly Average	**0.00**	**0.00**	**54.50**	**0.00**	**16.50**	**2.50**	**2.50**	**0.00**	73.25	79.45
1730 - 1745	0	0	41	0	16	3	6	0	66	75.30
1745 - 1800	0	0	42	0	10	1	3	0	56	60.40
1800 - 1815	0	2	29	1	6	0	2	0	40	41.40
1815 - 1830	0	0	28	0	4	0	2	0	34	36.60
Hourly Total	**0**	**2**	**140**	**1**	**36**	**4**	**13**	**0**	196	213.70
Hourly Average	**0.00**	**0.50**	**35.00**	**0.25**	**9.00**	**1.00**	**3.25**	**0.00**	49.00	53.43

Session Total	**0**	**2**	**465**	**2**	**171**	**21**	**43**	**0**	704	769.20
Session Average	**0.00**	**0.17**	**38.75**	**0.17**	**14.25**	**1.75**	**3.58**	**0.00**	58.67	64.10

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.12: U-Turn from M6 Slips Roads to M6 Slips Roads								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.12: U-Turn from M6 Slips Roads to M6 Slips Roads								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.13: Left from A57 Manchester Road (West) to B5210 Woolston Grange Avenue								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	24	0	9	2	0	0	35	36.00
0645 - 0700	0	0	41	0	5	4	0	0	50	52.00
0700 - 0715	0	0	20	0	4	1	0	0	25	25.50
0715 - 0730	0	3	26	0	5	0	0	1	35	34.20
Hourly Total	**0**	**3**	**111**	**0**	**23**	**7**	**0**	**1**	**145**	**147.70**
Hourly Average	**0.00**	**0.75**	**27.75**	**0.00**	**5.75**	**1.75**	**0.00**	**0.25**	**36.25**	**36.93**
0730 - 0745	1	2	48	0	2	1	0	0	54	52.50
0745 - 0800	0	0	38	0	4	2	0	0	44	45.00
0800 - 0815	0	0	46	0	5	0	0	0	51	51.00
0815 - 0830	0	0	37	0	6	1	1	0	45	46.80
Hourly Total	**1**	**2**	**169**	**0**	**17**	**4**	**1**	**0**	**194**	**195.30**
Hourly Average	**0.25**	**0.50**	**42.25**	**0.00**	**4.25**	**1.00**	**0.25**	**0.00**	**48.50**	**48.83**
0830 - 0845	0	0	34	0	4	0	0	0	38	38.00
0845 - 0900	0	0	48	0	4	2	0	0	54	55.00
0900 - 0915	0	0	41	0	4	0	1	0	46	47.30
0915 - 0930	0	0	24	0	7	2	1	0	34	36.30
Hourly Total	**0**	**0**	**147**	**0**	**19**	**4**	**2**	**0**	**172**	**176.60**
Hourly Average	**0.00**	**0.00**	**36.75**	**0.00**	**4.75**	**1.00**	**0.50**	**0.00**	**43.00**	**44.15**

Session Total	**1**	**5**	**427**	**0**	**59**	**15**	**3**	**1**	**511**	**519.60**
Session Average	**0.08**	**0.42**	**35.58**	**0.00**	**4.92**	**1.25**	**0.25**	**0.08**	**42.58**	**43.30**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.13: Left from A57 Manchester Road (West) to B5210 Woolston Grange Avenue								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	26	0	4	0	0	0	30	30.00
1545 - 1600	0	0	37	0	6	3	0	0	46	47.50
1600 - 1615	0	0	28	0	9	2	0	0	39	40.00
1615 - 1630	0	1	14	0	7	0	0	0	22	21.40
Hourly Total	**0**	**1**	**105**	**0**	**26**	**5**	**0**	**0**	**137**	**138.90**
Hourly Average	**0.00**	**0.25**	**26.25**	**0.00**	**6.50**	**1.25**	**0.00**	**0.00**	**34.25**	**34.73**
1630 - 1645	0	0	28	0	4	0	0	0	32	32.00
1645 - 1700	0	0	22	0	8	0	0	0	30	30.00
1700 - 1715	0	0	22	0	8	0	0	0	30	30.00
1715 - 1730	0	1	25	0	2	0	0	0	28	27.40
Hourly Total	**0**	**1**	**97**	**0**	**22**	**0**	**0**	**0**	**120**	**119.40**
Hourly Average	**0.00**	**0.25**	**24.25**	**0.00**	**5.50**	**0.00**	**0.00**	**0.00**	**30.00**	**29.85**
1730 - 1745	0	1	30	0	1	1	0	0	33	32.90
1745 - 1800	0	0	22	0	2	0	0	0	24	24.00
1800 - 1815	0	1	17	0	1	1	0	0	20	19.90
1815 - 1830	0	0	17	0	4	0	0	0	21	21.00
Hourly Total	**0**	**2**	**86**	**0**	**8**	**2**	**0**	**0**	**98**	**97.80**
Hourly Average	**0.00**	**0.50**	**21.50**	**0.00**	**2.00**	**0.50**	**0.00**	**0.00**	**24.50**	**24.45**

Session Total	**0**	**4**	**288**	**0**	**56**	**7**	**0**	**0**	**355**	**356.10**
Session Average	**0.00**	**0.33**	**24.00**	**0.00**	**4.67**	**0.58**	**0.00**	**0.00**	**29.58**	**29.68**

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.14: Southbound from A57 Manchester Road (West) to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	65	0	10	1	2	0	78	81.10
0645 - 0700	0	0	68	0	13	2	0	2	85	88.00
0700 - 0715	0	2	101	0	21	2	2	2	130	134.40
0715 - 0730	0	2	104	1	25	5	1	3	141	146.60
Hourly Total	**0**	**4**	**338**	**1**	**69**	**10**	**5**	**7**	**434**	**450.10**
Hourly Average	**0.00**	**1.00**	**84.50**	**0.25**	**17.25**	**2.50**	**1.25**	**1.75**	**108.50**	**112.53**
0730 - 0745	0	0	104	0	32	2	1	2	141	145.30
0745 - 0800	0	1	74	1	28	4	2	3	113	120.00
0800 - 0815	0	1	89	1	19	5	2	0	117	121.50
0815 - 0830	0	0	69	0	19	4	4	2	98	107.20
Hourly Total	**0**	**2**	**336**	**2**	**98**	**15**	**9**	**7**	**469**	**494.00**
Hourly Average	**0.00**	**0.50**	**84.00**	**0.50**	**24.50**	**3.75**	**2.25**	**1.75**	**117.25**	**123.50**
0830 - 0845	0	0	93	1	15	7	0	0	116	119.50
0845 - 0900	0	0	65	0	19	0	1	2	87	90.30
0900 - 0915	0	0	64	0	32	5	3	1	105	112.40
0915 - 0930	0	0	55	0	14	3	3	2	77	84.40
Hourly Total	**0**	**0**	**277**	**1**	**80**	**15**	**7**	**5**	**385**	**406.60**
Hourly Average	**0.00**	**0.00**	**69.25**	**0.25**	**20.00**	**3.75**	**1.75**	**1.25**	**96.25**	**101.65**

Session Total									1288	1350.70
Session Average									107.33	112.56

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.14: Southbound from A57 Manchester Road (West) to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	2	80	2	7	1	1	0	93	93.60
1545 - 1600	0	0	57	0	9	1	2	4	73	80.10
1600 - 1615	0	1	56	3	15	0	3	0	78	81.30
1615 - 1630	1	0	67	1	4	2	1	2	78	81.50
Hourly Total	**1**	**3**	**260**	**6**	**35**	**4**	**7**	**6**	**322**	**336.50**
Hourly Average	**0.25**	**0.75**	**65.00**	**1.50**	**8.75**	**1.00**	**1.75**	**1.50**	**80.50**	**84.13**
1630 - 1645	0	2	71	0	12	1	2	1	89	91.90
1645 - 1700	0	2	88	0	11	4	2	1	108	112.40
1700 - 1715	0	0	98	3	12	2	1	1	117	120.30
1715 - 1730	0	1	86	0	6	1	0	2	96	97.90
Hourly Total	**0**	**5**	**343**	**3**	**41**	**8**	**5**	**5**	**410**	**422.50**
Hourly Average	**0.00**	**1.25**	**85.75**	**0.75**	**10.25**	**2.00**	**1.25**	**1.25**	**102.50**	**105.63**
1730 - 1745	0	0	73	0	1	0	1	1	76	78.30
1745 - 1800	0	1	72	0	5	0	0	0	78	77.40
1800 - 1815	0	4	76	0	5	0	0	1	86	84.60
1815 - 1830	0	0	58	1	2	2	1	0	64	66.30
Hourly Total	**0**	**5**	**279**	**1**	**13**	**2**	**2**	**2**	**304**	**306.60**
Hourly Average	**0.00**	**1.25**	**69.75**	**0.25**	**3.25**	**0.50**	**0.50**	**0.50**	**76.00**	**76.65**

Session Total	**1**	**13**	**882**	**10**	**89**	**14**	**14**	**13**	**1036**	**1065.60**
Session Average	**0.08**	**1.08**	**73.50**	**0.83**	**7.42**	**1.17**	**1.17**	**1.08**	**86.33**	**88.80**

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.15: Right from A57 Manchester Road (West) to M6 Slips Roads								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	28	0	5	0	2	0	35	37.60
0645 - 0700	0	0	28	0	2	1	0	0	31	31.50
0700 - 0715	0	0	26	0	7	1	1	0	35	36.80
0715 - 0730	0	0	39	1	12	1	0	0	53	53.50
Hourly Total	**0**	**0**	**121**	**1**	**26**	**3**	**3**	**0**	154	159.40
Hourly Average	**0.00**	**0.00**	**30.25**	**0.25**	**6.50**	**0.75**	**0.75**	**0.00**	**38.50**	**39.85**
0730 - 0745	0	0	30	0	12	2	4	0	48	54.20
0745 - 0800	0	0	27	0	8	4	2	0	41	45.60
0800 - 0815	0	0	37	0	12	2	1	0	52	54.30
0815 - 0830	0	0	35	0	5	1	2	0	43	46.10
Hourly Total	**0**	**0**	**129**	**0**	**37**	**9**	**9**	**0**	184	200.20
Hourly Average	**0.00**	**0.00**	**32.25**	**0.00**	**9.25**	**2.25**	**2.25**	**0.00**	**46.00**	**50.05**
0830 - 0845	0	0	20	0	4	0	1	0	25	26.30
0845 - 0900	0	0	21	0	4	1	0	0	26	26.50
0900 - 0915	0	0	25	0	1	2	2	0	30	33.60
0915 - 0930	0	0	12	0	7	1	1	0	21	22.80
Hourly Total	**0**	**0**	**78**	**0**	**16**	**4**	**4**	**0**	102	109.20
Hourly Average	**0.00**	**0.00**	**19.50**	**0.00**	**4.00**	**1.00**	**1.00**	**0.00**	**25.50**	**27.30**

Session Total	**0**	**0**	328	**1**	79	16	16	**0**	440	468.80
Session Average	**0.00**	**0.00**	**27.33**	**0.08**	**6.58**	**1.33**	**1.33**	**0.00**	**36.67**	**39.07**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.15: Right from A57 Manchester Road (West) to M6 Slips Roads								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	26	0	4	0	1	0	31	32.30
1545 - 1600	0	0	26	0	7	2	0	0	35	36.00
1600 - 1615	0	0	36	0	7	1	1	0	45	46.80
1615 - 1630	0	0	37	0	10	1	1	0	49	50.80
Hourly Total	**0**	**0**	**125**	**0**	**28**	**4**	**3**	**0**	160	165.90
Hourly Average	**0.00**	**0.00**	**50.76**	**0.14**	**12.14**	**2.39**	**2.35**	**0.00**	**40.00**	**41.48**
1630 - 1645	0	0	39	0	7	0	0	0	46	46.00
1645 - 1700	0	0	25	0	5	1	0	0	31	31.50
1700 - 1715	0	0	43	0	4	1	0	0	48	48.50
1715 - 1730	0	0	29	0	3	0	0	0	32	32.00
Hourly Total	**0**	**0**	**136**	**0**	**19**	**2**	**0**	**0**	157	158.00
Hourly Average	**0.00**	**0.00**	**34.00**	**0.00**	**4.75**	**0.50**	**0.00**	**0.00**	**39.25**	**39.50**
1730 - 1745	0	0	39	0	4	1	0	0	44	44.50
1745 - 1800	0	0	25	0	1	0	0	0	26	26.00
1800 - 1815	0	0	12	0	3	0	0	0	15	15.00
1815 - 1830	0	0	12	0	1	0	0	0	13	13.00
Hourly Total	**0**	**0**	**88**	**0**	**9**	**1**	**0**	**0**	98	98.50
Hourly Average	**0.00**	**0.00**	**22.00**	**0.00**	**2.25**	**0.25**	**0.00**	**0.00**	**24.50**	**24.63**

Session Total	**0**	**0**	349	**0**	56	7	3	**0**	415	422.40
Session Average	**0.00**	**0.00**	**29.08**	**0.00**	**4.67**	**0.58**	**0.25**	**0.00**	**34.58**	**35.20**

Woolston Interchange, Warrington
Classified Junction Count

Site 1 of 2
B5210 Woolston Grange Avenue
A57 Manchester Road (East)
M6 Slips Roads
A57 Manchester Road (West)

Lat/Long
lat 53.398025° lon -2.512627°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 1.16: U-Turn from A57 Manchester Road (West) to A57 Manchester Road (West)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	1	1	2.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	1	0	1	0	0	1	3	4.00
Hourly Total	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**2**	**4**	**6.00**
Hourly Average	**0.00**	**0.00**	**0.25**	**0.00**	**0.25**	**0.00**	**0.00**	**0.50**	**1.00**	**1.50**
0730 - 0745	0	0	0	0	0	0	0	1	1	2.00
0745 - 0800	0	0	0	0	0	1	0	0	1	1.50
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	1	1	2.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**3**	**5.50**
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.25**	**0.00**	**0.50**	**0.75**	**1.38**
0830 - 0845	0	0	1	0	0	0	0	0	1	1.00
0845 - 0900	0	0	2	0	0	0	0	1	3	4.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	1	0	1	2	3.50
Hourly Total	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**2**	**6**	**8.50**
Hourly Average	**0.00**	**0.00**	**0.75**	**0.00**	**0.00**	**0.25**	**0.00**	**0.50**	**1.50**	**2.13**

Session Total	**0**	**0**	**4**	**0**	**1**	**2**	**0**	**6**	**13**	**20.00**
Session Average	**0.00**	**0.00**	**0.33**	**0.00**	**0.08**	**0.17**	**0.00**	**0.50**	**1.08**	**1.67**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 1.16: U-Turn from A57 Manchester Road (West) to A57 Manchester Road (West)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	1	0	0	0	0	0	1	1.00
1545 - 1600	0	0	1	0	0	0	0	1	2	3.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	1	1	2.00
Hourly Total	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**4**	**6.00**
Hourly Average	**0.00**	**0.00**	**0.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.50**	**1.00**	**1.50**
1630 - 1645	0	0	0	0	1	0	0	0	1	1.00
1645 - 1700	0	0	0	0	1	0	0	0	1	1.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	1	0	0	0	0	1	2	3.00
Hourly Total	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**1**	**4**	**5.00**
Hourly Average	**0.00**	**0.00**	**0.25**	**0.00**	**0.50**	**0.00**	**0.00**	**0.25**	**1.00**	**1.25**
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	1	0	0	0	0	0	1	1.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**2.00**
Hourly Average	**0.00**	**0.00**	**0.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.50**	**0.50**

Session Total	**0**	**0**	**5**	**0**	**2**	**0**	**0**	**3**	**10**	**13.00**
Session Average	**0.00**	**0.00**	**0.42**	**0.00**	**0.17**	**0.00**	**0.00**	**0.25**	**0.83**	**1.08**

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.1: Left from A57 Manchester Road (East) to Local Access								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	1	0	0	0	0	0	1	1.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	1	0	0	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.25
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	1	0	0	0	0	0	1	1.00
Session Average	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	0.08

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.1: Left from A57 Manchester Road (East) to Local Access								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	1	0	0	0	1	1.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	1	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.25
1630 - 1645	0	0	1	0	0	0	0	0	1	1.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	1	0	0	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.25
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	1	0	1	0	0	0	2	2.00
Session Average	0.00	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.17	0.17

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.2: Left from A57 Manchester Road (East) to A57 Manchester Road (South)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	1	49	0	14	0	5	0	69	74.90
0645 - 0700	0	0	47	0	13	2	3	0	65	69.90
0700 - 0715	0	0	39	0	21	4	2	1	67	72.60
0715 - 0730	0	1	58	0	22	2	0	1	84	85.40
Hourly Total	**0**	**2**	**193**	**0**	**70**	**8**	**10**	**2**	**285**	**302.80**
Hourly Average	**0.00**	**0.50**	**48.25**	**0.00**	**17.50**	**2.00**	**2.50**	**0.50**	**71.25**	**75.70**
0730 - 0745	0	0	75	0	14	5	4	0	98	105.70
0745 - 0800	0	2	78	0	23	10	2	0	115	121.40
0800 - 0815	0	1	85	1	12	21	3	1	124	138.80
0815 - 0830	0	1	101	0	12	10	3	0	127	135.30
Hourly Total	**0**	**4**	**339**	**1**	**61**	**46**	**12**	**1**	**464**	**501.20**
Hourly Average	**0.00**	**1.00**	**84.75**	**0.25**	**15.25**	**11.50**	**3.00**	**0.25**	**116.00**	**125.30**
0830 - 0845	0	0	82	0	14	1	2	1	100	104.10
0845 - 0900	0	0	69	2	21	1	0	1	94	95.50
0900 - 0915	0	0	64	0	16	1	2	0	83	86.10
0915 - 0930	0	1	53	1	12	2	3	0	72	76.30
Hourly Total	**0**	**1**	**268**	**3**	**63**	**5**	**7**	**2**	**349**	**362.00**
Hourly Average	**0.00**	**0.25**	**67.00**	**0.75**	**15.75**	**1.25**	**1.75**	**0.50**	**87.25**	**90.50**

Session Total	**0**	**7**	**800**	**4**	**194**	**59**	**29**	**5**	**1098**	**1166.00**
Session Average	**0.00**	**0.58**	**66.67**	**0.33**	**16.17**	**4.92**	**2.42**	**0.42**	**91.50**	**97.17**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.2: Left from A57 Manchester Road (East) to A57 Manchester Road (South)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	91	1	22	2	5	1	122	130.50
1545 - 1600	0	1	83	0	25	0	3	0	112	115.30
1600 - 1615	1	1	110	3	25	2	1	2	145	147.90
1615 - 1630	0	0	153	4	30	1	4	0	192	197.70
Hourly Total	**1**	**2**	**437**	**8**	**102**	**5**	**13**	**3**	**571**	**591.40**
Hourly Average	**0.25**	**0.50**	**109.25**	**2.00**	**25.50**	**1.25**	**3.25**	**0.75**	**142.75**	**147.85**
1630 - 1645	1	2	127	2	18	0	3	0	153	154.90
1645 - 1700	1	0	110	1	22	2	1	0	137	138.50
1700 - 1715	0	2	121	2	19	0	2	1	147	149.40
1715 - 1730	0	1	122	1	14	0	0	1	139	139.40
Hourly Total	**2**	**5**	**480**	**6**	**73**	**2**	**6**	**2**	**576**	**582.20**
Hourly Average	**0.50**	**1.25**	**120.00**	**1.50**	**18.25**	**0.50**	**1.50**	**0.50**	**144.00**	**145.55**
1730 - 1745	0	1	102	1	12	1	1	0	118	119.20
1745 - 1800	0	1	90	0	10	0	2	0	103	105.00
1800 - 1815	0	2	65	0	5	0	1	2	75	77.10
1815 - 1830	0	0	92	0	8	0	1	0	101	102.30
Hourly Total	**0**	**4**	**349**	**1**	**35**	**1**	**5**	**2**	**397**	**403.60**
Hourly Average	**0.00**	**1.00**	**87.25**	**0.25**	**8.75**	**0.25**	**1.25**	**0.50**	**99.25**	**100.90**

Session Total	**3**	**11**	**1266**	**15**	**210**	**8**	**24**	**7**	**1544**	**1577.20**
Session Average	**0.25**	**0.92**	**105.50**	**1.25**	**17.50**	**0.67**	**2.00**	**0.58**	**128.67**	**131.43**

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.3: Westbound from A57 Manchester Road (East) to Manchester Road								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	1	0	0	0	1	1.00
0745 - 0800	0	0	1	0	0	0	0	0	1	1.00
0800 - 0815	0	0	1	0	0	0	0	0	1	1.00
0815 - 0830	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	0	0	3	0	1	0	0	0	4	4.00
Hourly Average	0.00	0.00	0.75	0.00	0.25	0.00	0.00	0.00	1.00	1.00
0830 - 0845	0	0	1	0	0	0	0	0	1	1.00
0845 - 0900	0	0	1	0	0	0	0	0	1	1.00
0900 - 0915	0	0	2	0	0	0	0	0	2	2.00
0915 - 0930	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	0	0	5	0	0	0	0	0	5	5.00
Hourly Average	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	1.25	1.25
Session Total	0	0	8	0	1	0	0	0	9	9.00
Session Average	0.00	0.00	0.67	0.00	0.08	0.00	0.00	0.00	0.75	0.75

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.3: Westbound from A57 Manchester Road (East) to Manchester Road								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	3	0	0	0	0	0	3	3.00
1600 - 1615	0	0	5	0	0	0	0	0	5	5.00
1615 - 1630	0	0	3	0	0	0	0	0	3	3.00
Hourly Total	0	0	11	0	0	0	0	0	11	11.00
Hourly Average	0.00	0.00	2.75	0.00	0.00	0.00	0.00	0.00	2.75	2.75
1630 - 1645	0	0	0	0	1	0	0	0	1	1.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	1	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.25
1730 - 1745	0	0	3	0	0	0	0	0	3	3.00
1745 - 1800	0	0	1	0	0	0	0	0	1	1.00
1800 - 1815	0	0	4	0	0	0	0	0	4	4.00
1815 - 1830	0	1	1	0	0	0	0	0	2	1.40
Hourly Total	0	1	9	0	0	0	0	0	10	9.40
Hourly Average	0.00	0.25	2.25	0.00	0.00	0.00	0.00	0.00	2.50	2.35
Session Total	0	1	20	0	1	0	0	0	22	21.40
Session Average	0.00	0.08	1.67	0.00	0.08	0.00	0.00	0.00	1.83	1.78

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.4: Right from A57 Manchester Road (East) to M6 Thelwall Viaduct								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	16	0	10	2	7	0	35	45.10
0645 - 0700	0	0	24	0	9	4	10	0	47	62.00
0700 - 0715	0	0	27	0	11	4	5	0	47	55.50
0715 - 0730	0	0	34	0	18	5	4	0	61	68.70
Hourly Total	**0**	**0**	**101**	**0**	**48**	**15**	**26**	**0**	**190**	**231.30**
Hourly Average	**0.00**	**0.00**	**25.25**	**0.00**	**12.00**	**3.75**	**6.50**	**0.00**	**47.50**	**57.83**
0730 - 0745	0	0	29	0	12	6	4	0	51	59.20
0745 - 0800	0	0	29	0	14	2	5	0	50	57.50
0800 - 0815	0	0	21	0	22	4	4	0	51	58.20
0815 - 0830	0	0	28	0	14	2	8	0	52	63.40
Hourly Total	**0**	**0**	**107**	**0**	**62**	**14**	**21**	**0**	**204**	**238.30**
Hourly Average	**0.00**	**0.00**	**26.75**	**0.00**	**15.50**	**3.50**	**5.25**	**0.00**	**51.00**	**59.58**
0830 - 0845	0	0	26	0	13	2	9	0	50	62.70
0845 - 0900	0	0	29	0	10	1	3	0	43	47.40
0900 - 0915	0	0	15	0	12	3	6	0	36	45.30
0915 - 0930	0	0	20	0	16	2	6	0	44	52.80
Hourly Total	**0**	**0**	**90**	**0**	**51**	**8**	**24**	**0**	**173**	**208.20**
Hourly Average	**0.00**	**0.00**	**22.50**	**0.00**	**12.75**	**2.00**	**6.00**	**0.00**	**43.25**	**52.05**

Session Total	**0**	**0**	**298**	**0**	**161**	**37**	**71**	**0**	**567**	**677.80**
Session Average	**0.00**	**0.00**	**24.83**	**0.00**	**13.42**	**3.08**	**5.92**	**0.00**	**47.25**	**56.48**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.4: Right from A57 Manchester Road (East) to M6 Thelwall Viaduct								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	1	14	0	2	1	1	0	19	20.20
1545 - 1600	0	1	21	0	10	1	2	0	35	37.50
1600 - 1615	0	0	30	0	3	0	5	0	38	44.50
1615 - 1630	0	0	32	0	15	1	5	0	53	60.00
Hourly Total	**0**	**2**	**97**	**0**	**30**	**3**	**13**	**0**	**145**	**162.20**
Hourly Average	**0.00**	**0.50**	**24.25**	**0.00**	**7.50**	**0.75**	**3.25**	**0.00**	**36.25**	**40.55**
1630 - 1645	0	0	28	0	6	0	1	0	35	36.30
1645 - 1700	0	0	29	0	4	1	3	0	37	41.40
1700 - 1715	0	0	32	0	1	0	1	0	34	35.30
1715 - 1730	0	0	42	0	4	0	2	0	48	50.60
Hourly Total	**0**	**0**	**131**	**0**	**15**	**1**	**7**	**0**	**154**	**163.60**
Hourly Average	**0.00**	**0.00**	**32.75**	**0.00**	**3.75**	**0.25**	**1.75**	**0.00**	**38.50**	**40.90**
1730 - 1745	0	0	24	0	5	1	2	0	32	35.10
1745 - 1800	0	0	21	0	3	0	5	0	29	35.50
1800 - 1815	0	0	26	0	4	0	2	0	32	34.60
1815 - 1830	0	2	16	0	2	0	3	0	23	25.70
Hourly Total	**0**	**2**	**87**	**0**	**14**	**1**	**12**	**0**	**116**	**130.90**
Hourly Average	**0.00**	**0.50**	**21.75**	**0.00**	**3.50**	**0.25**	**3.00**	**0.00**	**29.00**	**32.73**

Session Total	**0**	**4**	**315**	**0**	**59**	**5**	**32**	**0**	**415**	**456.70**
Session Average	**0.00**	**0.33**	**26.25**	**0.00**	**4.92**	**0.42**	**2.67**	**0.00**	**34.58**	**38.06**

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.5: U-Turn from A57 Manchester Road (East) to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	1	0	0	0	0	0	1	1.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	1	0	0	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.25

Session Total	0	0	1	0	0	0	0	0	1	1.00
Session Average	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	0.08

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.5: U-Turn from A57 Manchester Road (East) to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	1	0	0	0	0	0	1	1.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	1	0	1	2.30
1615 - 1630	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	0	0	2	0	0	0	1	0	3	4.30
Hourly Average	0.00	0.00	0.50	0.00	0.00	0.00	0.25	0.00	0.75	1.08
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	1	0	1	2.30
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	1	0	1	2.30
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.58
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	2	0	0	0	2	0	4	6.60
Session Average	0.00	0.00	0.17	0.00	0.00	0.00	0.17	0.00	0.33	0.55

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.6: Left from Local Access to A57 Manchester Road (South)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	1	0	0	0	1	1.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	1	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.25

Session Total	0	0	0	0	1	0	0	0	1	1.00
Session Average	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.08	0.08

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.6: Left from Local Access to A57 Manchester Road (South)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	1	0	0	0	0	0	1	1.00
1600 - 1615	0	0	0	0	1	0	0	0	1	1.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	1	0	1	0	0	0	2	2.00
Hourly Average	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.50	0.50
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	1	0	1	0	0	0	2	2.00
Session Average	0.00	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.17	0.17

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.7: Left from Local Access to Manchester Road								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	1	0	0	0	0	0	1	1.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	1	0	0	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.25
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	1	0	0	0	0	0	1	1.00
Session Average	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	0.08

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.7: Left from Local Access to Manchester Road								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.8: Northbound from Local Access to M6 Thelwall Viaduct								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.8: Northbound from Local Access to M6 Thelwall Viaduct								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630 - 1645	0	0	1	0	0	0	0	0	1	1.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	1	0	0	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.25
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	1	0	0	0	0	0	1	1.00
Session Average	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	0.08

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.9: Right from Local Access to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.9: Right from Local Access to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.10: U-Turn from Local Access to Local Access								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.10: U-Turn from Local Access to Local Access								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.11: Left from A57 Manchester Road (South) to Manchester Road								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	2	0	0	0	0	0	2	2.00
0700 - 0715	0	0	2	0	0	1	0	0	3	3.50
0715 - 0730	0	0	3	0	0	0	0	0	3	3.00
Hourly Total	**0**	**0**	**7**	**0**	**0**	**1**	**0**	**0**	8	8.50
Hourly Average	**0.00**	**0.00**	**1.75**	**0.00**	**0.00**	**0.25**	**0.00**	**0.00**	**2.00**	**2.13**
0730 - 0745	0	0	3	0	0	0	0	0	3	3.00
0745 - 0800	0	0	3	0	0	1	0	0	4	4.50
0800 - 0815	0	0	4	0	1	0	0	0	5	5.00
0815 - 0830	0	0	14	0	4	0	0	0	18	18.00
Hourly Total	**0**	**0**	**24**	**0**	**5**	**1**	**0**	**0**	30	30.50
Hourly Average	**0.00**	**0.00**	**6.00**	**0.00**	**1.25**	**0.25**	**0.00**	**0.00**	**7.50**	**7.63**
0830 - 0845	0	0	7	0	2	1	0	0	10	10.50
0845 - 0900	0	0	6	0	1	1	0	0	8	8.50
0900 - 0915	0	0	3	0	3	0	0	0	6	6.00
0915 - 0930	0	0	12	0	0	0	0	0	12	12.00
Hourly Total	**0**	**0**	**28**	**0**	**6**	**2**	**0**	**0**	36	37.00
Hourly Average	**0.00**	**0.00**	**7.00**	**0.00**	**1.50**	**0.50**	**0.00**	**0.00**	**9.00**	**9.25**

Session Total	**0**	**0**	59	**0**	11	4	**0**	**0**	74	76.00
Session Average	**0.00**	**0.00**	**4.92**	**0.00**	**0.92**	**0.33**	**0.00**	**0.00**	**6.17**	**6.33**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.11: Left from A57 Manchester Road (South) to Manchester Road								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	6	0	0	0	0	0	6	6.00
1545 - 1600	0	0	5	0	0	0	0	0	5	5.00
1600 - 1615	0	0	5	1	1	0	0	0	7	7.00
1615 - 1630	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	**0**	**0**	**17**	**1**	**1**	**0**	**0**	**0**	19	19.00
Hourly Average	**0.00**	**0.00**	**4.25**	**0.25**	**0.25**	**0.00**	**0.00**	**0.00**	**4.75**	**4.75**
1630 - 1645	0	1	9	0	0	0	0	0	10	9.40
1645 - 1700	0	0	4	0	1	0	0	0	5	5.00
1700 - 1715	0	0	7	1	1	0	0	0	9	9.00
1715 - 1730	0	0	9	0	1	1	0	0	11	11.50
Hourly Total	**0**	**1**	**29**	**1**	**3**	**1**	**0**	**0**	35	34.90
Hourly Average	**0.00**	**0.25**	**7.25**	**0.25**	**0.75**	**0.25**	**0.00**	**0.00**	**8.75**	**8.73**
1730 - 1745	0	0	2	0	1	0	0	0	3	3.00
1745 - 1800	0	1	2	0	1	0	0	0	4	3.40
1800 - 1815	0	0	3	0	0	0	0	0	3	3.00
1815 - 1830	0	0	8	0	0	0	0	0	8	8.00
Hourly Total	**0**	**1**	**15**	**0**	**2**	**0**	**0**	**0**	18	17.40
Hourly Average	**0.00**	**0.25**	**3.75**	**0.00**	**0.50**	**0.00**	**0.00**	**0.00**	**4.50**	**4.35**

Session Total	**0**	**2**	61	**2**	6	1	**0**	**0**	72	71.30
Session Average	**0.00**	**0.17**	**5.08**	**0.17**	**0.50**	**0.08**	**0.00**	**0.00**	**6.00**	**5.94**

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.12: Left from A57 Manchester Road (South) to M6 Thelwall Viaduct								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	82	0	14	3	7	0	106	116.60
0645 - 0700	0	0	81	0	29	6	2	2	120	127.60
0700 - 0715	0	1	121	0	39	3	8	0	172	183.30
0715 - 0730	0	2	132	2	47	9	7	2	201	215.40
Hourly Total	**0**	**3**	**416**	**2**	**129**	**21**	**24**	**4**	**599**	**642.90**
Hourly Average	**0.00**	**0.75**	**104.00**	**0.50**	**32.25**	**5.25**	**6.00**	**1.00**	**149.75**	**160.73**
0730 - 0745	0	0	111	0	56	7	8	2	184	199.90
0745 - 0800	0	1	107	3	48	7	3	1	170	177.80
0800 - 0815	0	0	105	3	39	7	11	0	165	182.80
0815 - 0830	0	0	91	1	43	4	14	2	155	177.20
Hourly Total	**0**	**1**	**414**	**7**	**186**	**25**	**36**	**5**	**674**	**737.70**
Hourly Average	**0.00**	**0.25**	**103.50**	**1.75**	**46.50**	**6.25**	**9.00**	**1.25**	**168.50**	**184.43**
0830 - 0845	0	0	99	2	31	6	6	0	144	154.80
0845 - 0900	0	0	78	1	28	6	6	2	121	133.80
0900 - 0915	0	0	82	0	47	7	4	0	140	148.70
0915 - 0930	0	0	62	1	33	7	7	2	112	126.60
Hourly Total	**0**	**0**	**321**	**4**	**139**	**26**	**23**	**4**	**517**	**563.90**
Hourly Average	**0.00**	**0.00**	**80.25**	**1.00**	**34.75**	**6.50**	**5.75**	**1.00**	**129.25**	**140.98**

Session Total	**0**	**4**	**1151**	**13**	**454**	**72**	**83**	**13**	**1790**	**1944.50**
Session Average	**0.00**	**0.33**	**95.92**	**1.08**	**37.83**	**6.00**	**6.92**	**1.08**	**149.17**	**162.04**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.12: Left from A57 Manchester Road (South) to M6 Thelwall Viaduct								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	120	2	23	4	2	0	151	155.60
1545 - 1600	0	0	124	0	18	6	3	2	153	161.90
1600 - 1615	0	1	158	0	29	3	5	0	196	203.40
1615 - 1630	1	1	156	3	20	3	4	2	190	197.30
Hourly Total	**1**	**2**	**558**	**5**	**90**	**16**	**14**	**4**	**690**	**718.20**
Hourly Average	**0.25**	**0.50**	**139.50**	**1.25**	**22.50**	**4.00**	**3.50**	**1.00**	**172.50**	**179.55**
1630 - 1645	0	1	181	1	25	1	7	0	216	225.00
1645 - 1700	0	1	186	1	19	5	3	1	216	222.80
1700 - 1715	0	0	180	0	20	4	4	0	208	215.20
1715 - 1730	0	2	169	0	13	5	6	2	197	208.10
Hourly Total	**0**	**4**	**716**	**2**	**77**	**15**	**20**	**3**	**837**	**871.10**
Hourly Average	**0.00**	**1.00**	**179.00**	**0.50**	**19.25**	**3.75**	**5.00**	**0.75**	**209.25**	**217.78**
1730 - 1745	0	0	166	0	6	0	4	1	177	183.20
1745 - 1800	0	0	130	0	15	1	5	0	151	158.00
1800 - 1815	0	4	123	0	8	0	3	0	138	139.50
1815 - 1830	0	0	87	1	3	2	0	0	93	94.00
Hourly Total	**0**	**4**	**506**	**1**	**32**	**3**	**12**	**1**	**559**	**574.70**
Hourly Average	**0.00**	**1.00**	**126.50**	**0.25**	**8.00**	**0.75**	**3.00**	**0.25**	**139.75**	**143.68**

Session Total	**1**	**10**	**1780**	**8**	**199**	**34**	**46**	**8**	**2086**	**2164.00**
Session Average	**0.08**	**0.83**	**148.33**	**0.67**	**16.58**	**2.83**	**3.83**	**0.67**	**173.83**	**180.33**

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.13: Right from A57 Manchester Road (South) to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	1	58	0	13	2	3	0	77	81.30
0645 - 0700	0	0	66	0	20	5	3	0	94	100.40
0700 - 0715	0	2	65	0	12	3	4	2	88	95.50
0715 - 0730	1	1	91	0	16	3	5	1	118	125.60
Hourly Total	**1**	**4**	**280**	**0**	**61**	**13**	**15**	**3**	**377**	**402.80**
Hourly Average	**0.25**	**1.00**	**70.00**	**0.00**	**15.25**	**3.25**	**3.75**	**0.75**	**94.25**	**100.70**
0730 - 0745	0	1	109	0	19	4	6	0	139	148.20
0745 - 0800	0	1	79	0	22	2	5	2	111	119.90
0800 - 0815	0	1	82	0	23	0	1	0	107	107.70
0815 - 0830	0	0	87	0	27	2	6	0	122	130.80
Hourly Total	**0**	**3**	**357**	**0**	**91**	**8**	**18**	**2**	**479**	**506.60**
Hourly Average	**0.00**	**0.75**	**89.25**	**0.00**	**22.75**	**2.00**	**4.50**	**0.50**	**119.75**	**126.65**
0830 - 0845	0	0	103	0	25	3	4	0	135	141.70
0845 - 0900	0	0	81	0	21	4	7	0	113	124.10
0900 - 0915	0	0	65	0	22	6	6	1	100	111.80
0915 - 0930	0	0	57	0	18	2	12	0	89	105.60
Hourly Total	**0**	**0**	**306**	**0**	**86**	**15**	**29**	**1**	**437**	**483.20**
Hourly Average	**0.00**	**0.00**	**76.50**	**0.00**	**21.50**	**3.75**	**7.25**	**0.25**	**109.25**	**120.80**

Session Total	**1**	**7**	**943**	**0**	**238**	**36**	**62**	**6**	**1293**	**1392.60**
Session Average	**0.08**	**0.58**	**78.58**	**0.00**	**19.83**	**3.00**	**5.17**	**0.50**	**107.75**	**116.05**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.13: Right from A57 Manchester Road (South) to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	2	62	0	19	3	6	0	92	100.10
1545 - 1600	0	0	63	1	27	1	7	2	101	112.60
1600 - 1615	0	1	70	3	19	6	6	0	105	115.20
1615 - 1630	0	0	73	0	28	2	2	0	105	108.60
Hourly Total	**0**	**3**	**268**	**4**	**93**	**12**	**21**	**2**	**403**	**436.50**
Hourly Average	**0.00**	**0.75**	**67.00**	**1.00**	**23.25**	**3.00**	**5.25**	**0.50**	**100.75**	**109.13**
1630 - 1645	0	1	110	0	18	2	4	1	136	142.60
1645 - 1700	0	2	98	0	27	3	9	0	139	151.00
1700 - 1715	0	0	130	2	25	2	2	1	162	166.60
1715 - 1730	0	0	124	3	18	2	3	0	150	154.90
Hourly Total	**0**	**3**	**462**	**5**	**88**	**9**	**18**	**2**	**587**	**615.10**
Hourly Average	**0.00**	**0.75**	**115.50**	**1.25**	**22.00**	**2.25**	**4.50**	**0.50**	**146.75**	**153.78**
1730 - 1745	0	0	99	0	17	3	7	0	126	136.60
1745 - 1800	0	0	85	0	10	1	2	0	98	101.10
1800 - 1815	0	3	86	1	10	0	3	1	104	107.10
1815 - 1830	0	0	65	0	8	0	4	0	77	82.20
Hourly Total	**0**	**3**	**335**	**1**	**45**	**4**	**16**	**1**	**405**	**427.00**
Hourly Average	**0.00**	**0.75**	**83.75**	**0.25**	**11.25**	**1.00**	**4.00**	**0.25**	**101.25**	**106.75**

Session Total	**0**	**9**	**1065**	**10**	**226**	**25**	**55**	**5**	**1395**	**1478.60**
Session Average	**0.00**	**0.75**	**88.75**	**0.83**	**18.83**	**2.08**	**4.58**	**0.42**	**116.25**	**123.22**

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.14: Right from A57 Manchester Road (South) to Local Access								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	1	0	0	0	1	1.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	1	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.25

Session Total	0	0	0	0	1	0	0	0	1	1.00
Session Average	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.08	0.08

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.14: Right from A57 Manchester Road (South) to Local Access								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.15: U-Turn from A57 Manchester Road (South) to A57 Manchester Road (South)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	1	0	1	0	2	3.30
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	2	3.30
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.25**	**0.00**	**0.25**	**0.00**	**0.50**	**0.83**
0730 - 0745	0	0	2	0	0	0	0	0	2	2.00
0745 - 0800	0	0	2	0	1	0	0	0	3	3.00
0800 - 0815	0	0	2	0	1	1	0	0	4	4.50
0815 - 0830	0	0	0	0	0	1	1	0	2	3.80
Hourly Total	**0**	**0**	**6**	**0**	**2**	**2**	**1**	**0**	11	13.30
Hourly Average	**0.00**	**0.00**	**1.50**	**0.00**	**0.50**	**0.50**	**0.25**	**0.00**	**2.75**	**3.33**
0830 - 0845	0	0	1	0	4	1	0	0	6	6.50
0845 - 0900	0	0	3	0	0	0	0	0	3	3.00
0900 - 0915	0	0	1	0	0	1	0	0	2	2.50
0915 - 0930	0	0	2	0	1	0	0	0	3	3.00
Hourly Total	**0**	**0**	**7**	**0**	**5**	**2**	**0**	**0**	14	15.00
Hourly Average	**0.00**	**0.00**	**1.75**	**0.00**	**1.25**	**0.50**	**0.00**	**0.00**	**3.50**	**3.75**

Session Total	**0**	**0**	**13**	**0**	**8**	**4**	**2**	**0**	27	31.60
Session Average	**0.00**	**0.00**	**1.08**	**0.00**	**0.67**	**0.33**	**0.17**	**0.00**	**2.25**	**2.63**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.15: U-Turn from A57 Manchester Road (South) to A57 Manchester Road (South)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	3	0	0	0	0	0	3	3.00
1545 - 1600	0	0	0	0	1	0	0	0	1	1.00
1600 - 1615	0	0	1	0	1	0	0	0	2	2.00
1615 - 1630	0	0	0	0	0	1	0	0	1	1.50
Hourly Total	**0**	**0**	**4**	**0**	**2**	**1**	**0**	**0**	7	7.50
Hourly Average	**0.00**	**0.00**	**1.00**	**0.00**	**0.50**	**0.25**	**0.00**	**0.00**	**1.75**	**1.88**
1630 - 1645	0	0	3	0	0	0	0	0	3	3.00
1645 - 1700	0	0	4	0	0	0	0	0	4	4.00
1700 - 1715	0	0	3	0	0	0	0	0	3	3.00
1715 - 1730	0	0	5	0	0	0	0	0	5	5.00
Hourly Total	**0**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	15	15.00
Hourly Average	**0.00**	**0.00**	**3.75**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.75**	**3.75**
1730 - 1745	0	0	2	0	0	0	0	0	2	2.00
1745 - 1800	0	0	2	0	0	0	0	0	2	2.00
1800 - 1815	0	0	1	0	0	0	0	0	1	1.00
1815 - 1830	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	6	6.00
Hourly Average	**0.00**	**0.00**	**1.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.50**	**1.50**

Session Total	**0**	**0**	**25**	**0**	**2**	**1**	**0**	**0**	28	28.50
Session Average	**0.00**	**0.00**	**2.08**	**0.00**	**0.17**	**0.08**	**0.00**	**0.00**	**2.33**	**2.38**

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.16: Left from Manchester Road to M6 Thelwall Viaduct								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	1	0	1	0	0	0	0	0	2	1.20
0715 - 0730	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	1	0	2	0	0	0	0	0	3	2.20
Hourly Average	0.25	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.75	0.55
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	1	0	0	0	1	1.00
0800 - 0815	0	0	2	0	1	0	0	0	3	3.00
0815 - 0830	0	0	1	0	1	0	0	0	2	2.00
Hourly Total	0	0	3	0	3	0	0	0	6	6.00
Hourly Average	0.00	0.00	0.75	0.00	0.75	0.00	0.00	0.00	1.50	1.50
0830 - 0845	0	0	2	0	0	0	0	0	2	2.00
0845 - 0900	0	0	1	0	0	0	0	0	1	1.00
0900 - 0915	0	0	3	0	0	0	0	0	3	3.00
0915 - 0930	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	0	0	7	0	0	0	0	0	7	7.00
Hourly Average	0.00	0.00	1.75	0.00	0.00	0.00	0.00	0.00	1.75	1.75
Session Total	1	0	12	0	3	0	0	0	16	15.20
Session Average	0.08	0.00	1.00	0.00	0.25	0.00	0.00	0.00	1.33	1.27

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.16: Left from Manchester Road to M6 Thelwall Viaduct								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	2	0	0	0	0	0	2	2.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	1	0	0	0	0	0	1	1.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	3	0	0	0	0	0	3	3.00
Hourly Average	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.75	0.75
1630 - 1645	0	0	1	0	0	0	0	0	1	1.00
1645 - 1700	0	0	5	0	1	0	0	0	6	6.00
1700 - 1715	0	0	5	0	0	0	0	0	5	5.00
1715 - 1730	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	0	0	12	0	1	0	0	0	13	13.00
Hourly Average	0.00	0.00	3.00	0.00	0.25	0.00	0.00	0.00	3.25	3.25
1730 - 1745	0	0	3	0	0	0	0	0	3	3.00
1745 - 1800	0	0	2	0	0	0	0	0	2	2.00
1800 - 1815	0	0	6	0	1	0	0	0	7	7.00
1815 - 1830	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	0	0	12	0	1	0	0	0	13	13.00
Hourly Average	0.00	0.00	3.00	0.00	0.25	0.00	0.00	0.00	3.25	3.25
Session Total	0	0	27	0	2	0	0	0	29	29.00
Session Average	0.00	0.00	2.25	0.00	0.17	0.00	0.00	0.00	2.42	2.42

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.17: Eastbound from Manchester Road to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	1	0	0	1	1.50
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	1	1.50
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.25**	**0.00**	**0.00**	0.25	0.38
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	0.00
Hourly Average	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	0.00	0.00
0830 - 0845	0	0	4	0	1	0	0	0	5	5.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	1	0	0	0	0	0	1	1.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**5**	**0**	**1**	**0**	**0**	**0**	6	6.00
Hourly Average	**0.00**	**0.00**	**1.25**	**0.00**	**0.25**	**0.00**	**0.00**	**0.00**	1.50	1.50

Session Total	**0**	**0**	5	**0**	1	1	**0**	**0**	7	7.50
Session Average	**0.00**	**0.00**	0.42	**0.00**	0.08	0.08	**0.00**	**0.00**	0.58	0.63

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.17: Eastbound from Manchester Road to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	3	0	1	0	0	0	4	4.00
1545 - 1600	0	0	3	0	0	0	0	0	3	3.00
1600 - 1615	0	0	3	0	1	0	0	0	4	4.00
1615 - 1630	0	0	4	0	0	0	0	0	4	4.00
Hourly Total	**0**	**0**	13	**0**	2	**0**	**0**	**0**	15	15.00
Hourly Average	**0.00**	**0.00**	3.25	**0.00**	0.50	**0.00**	**0.00**	**0.00**	3.75	3.75
1630 - 1645	0	0	1	0	0	0	0	0	1	1.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	5	0	0	0	0	0	5	5.00
1715 - 1730	0	0	2	0	0	0	0	0	2	2.00
Hourly Total	**0**	**0**	8	**0**	**0**	**0**	**0**	**0**	8	8.00
Hourly Average	**0.00**	**0.00**	2.00	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	2.00	2.00
1730 - 1745	0	0	3	0	1	0	0	0	4	4.00
1745 - 1800	0	0	3	0	0	0	0	0	3	3.00
1800 - 1815	0	0	4	0	0	0	0	0	4	4.00
1815 - 1830	0	0	3	0	0	0	0	0	3	3.00
Hourly Total	**0**	**0**	13	**0**	1	**0**	**0**	**0**	14	14.00
Hourly Average	**0.00**	**0.00**	3.25	**0.00**	0.25	**0.00**	**0.00**	**0.00**	3.50	3.50

Session Total	**0**	**0**	34	**0**	3	**0**	**0**	**0**	37	37.00
Session Average	**0.00**	**0.00**	2.83	**0.00**	0.25	**0.00**	**0.00**	**0.00**	3.08	3.08

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.18: Right from Manchester Road to Local Access								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.18: Right from Manchester Road to Local Access								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.19: Right from Manchester Road to A57 Manchester Road (South)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	1	0	1	0	0	0	2	2.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	1	0	0	1	0	0	2	2.50
Hourly Total	**0**	**0**	**2**	**0**	**1**	**1**	**0**	**0**	**4**	**4.50**
Hourly Average	**0.00**	**0.00**	**0.50**	**0.00**	**0.25**	**0.25**	**0.00**	**0.00**	**1.00**	**1.13**
0730 - 0745	0	0	1	0	0	0	0	0	1	1.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	6	0	0	1	0	0	7	7.50
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	**0**	**0**	**7**	**0**	**0**	**1**	**0**	**0**	**8**	**8.50**
Hourly Average	**0.00**	**0.00**	**1.75**	**0.00**	**0.00**	**0.25**	**0.00**	**0.00**	**2.00**	**2.13**
0830 - 0845	0	0	4	0	3	0	0	0	7	7.00
0845 - 0900	0	0	5	0	0	1	0	0	6	6.50
0900 - 0915	0	0	1	0	1	1	0	0	3	3.50
0915 - 0930	0	0	1	0	1	0	0	0	2	2.00
Hourly Total	**0**	**0**	**11**	**0**	**5**	**2**	**0**	**0**	**18**	**19.00**
Hourly Average	**0.00**	**0.00**	**2.75**	**0.00**	**1.25**	**0.50**	**0.00**	**0.00**	**4.50**	**4.75**

Session Total	**0**	**0**	**20**	**0**	**6**	**4**	**0**	**0**	**30**	**32.00**
Session Average	**0.00**	**0.00**	**1.67**	**0.00**	**0.50**	**0.33**	**0.00**	**0.00**	**2.50**	**2.67**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.19: Right from Manchester Road to A57 Manchester Road (South)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	6	0	0	0	0	0	6	6.00
1545 - 1600	0	0	3	1	1	0	0	0	5	5.00
1600 - 1615	0	0	6	0	1	0	0	0	7	7.00
1615 - 1630	0	0	10	0	1	0	0	0	11	11.00
Hourly Total	**0**	**0**	**25**	**1**	**3**	**0**	**0**	**0**	**29**	**29.00**
Hourly Average	**0.00**	**0.00**	**6.25**	**0.25**	**0.75**	**0.00**	**0.00**	**0.00**	**7.25**	**7.25**
1630 - 1645	0	0	7	1	1	0	0	0	9	9.00
1645 - 1700	0	0	4	0	0	0	0	0	4	4.00
1700 - 1715	0	0	12	1	0	1	0	0	14	14.50
1715 - 1730	0	0	9	0	0	0	0	0	9	9.00
Hourly Total	**0**	**0**	**32**	**2**	**1**	**1**	**0**	**0**	**36**	**36.50**
Hourly Average	**0.00**	**0.00**	**8.00**	**0.50**	**0.25**	**0.25**	**0.00**	**0.00**	**9.00**	**9.13**
1730 - 1745	0	0	7	0	2	0	0	0	9	9.00
1745 - 1800	0	1	1	0	0	0	0	0	2	1.40
1800 - 1815	0	0	12	0	1	0	0	0	13	13.00
1815 - 1830	0	0	9	0	0	0	0	0	9	9.00
Hourly Total	**0**	**1**	**29**	**0**	**3**	**0**	**0**	**0**	**33**	**32.40**
Hourly Average	**0.00**	**0.25**	**7.25**	**0.00**	**0.75**	**0.00**	**0.00**	**0.00**	**8.25**	**8.10**

Session Total	**0**	**1**	**86**	**3**	**7**	**1**	**0**	**0**	**98**	**97.90**
Session Average	**0.00**	**0.08**	**7.17**	**0.25**	**0.58**	**0.08**	**0.00**	**0.00**	**8.17**	**8.16**

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.20: U-Turn from Manchester Road to Manchester Road								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.20: U-Turn from Manchester Road to Manchester Road								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.21: Left from M6 Thelwall Viaduct to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	28	0	5	1	0	0	34	34.50
0645 - 0700	0	0	41	0	15	3	3	0	62	67.40
0700 - 0715	0	0	51	0	17	2	1	0	71	73.30
0715 - 0730	0	0	55	0	20	1	3	0	79	83.40
Hourly Total	**0**	**0**	**175**	**0**	**57**	**7**	**7**	**0**	**246**	**258.60**
Hourly Average	**0.00**	**0.00**	**43.75**	**0.00**	**14.25**	**1.75**	**1.75**	**0.00**	**61.50**	**64.65**
0730 - 0745	0	0	45	0	18	1	0	0	64	64.50
0745 - 0800	0	0	44	0	12	0	2	0	58	60.60
0800 - 0815	0	0	50	0	10	2	1	0	63	65.30
0815 - 0830	0	0	41	0	13	1	3	0	58	62.40
Hourly Total	**0**	**0**	**180**	**0**	**53**	**4**	**6**	**0**	**243**	**252.80**
Hourly Average	**0.00**	**0.00**	**45.00**	**0.00**	**13.25**	**1.00**	**1.50**	**0.00**	**60.75**	**63.20**
0830 - 0845	0	0	31	0	15	4	2	0	52	56.60
0845 - 0900	0	0	40	0	18	1	1	0	60	61.80
0900 - 0915	0	0	31	0	12	3	4	0	50	56.70
0915 - 0930	0	0	29	0	9	3	4	0	45	51.70
Hourly Total	**0**	**0**	**131**	**0**	**54**	**11**	**11**	**0**	**207**	**226.80**
Hourly Average	**0.00**	**0.00**	**32.75**	**0.00**	**13.50**	**2.75**	**2.75**	**0.00**	**51.75**	**56.70**

Session Total	**0**	**0**	**486**	**0**	**164**	**22**	**24**	**0**	**696**	**738.20**
Session Average	**0.00**	**0.00**	**40.50**	**0.00**	**13.67**	**1.83**	**2.00**	**0.00**	**58.00**	**61.52**

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.21: Left from M6 Thelwall Viaduct to A57 Manchester Road (East)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	15	0	5	1	5	0	26	33.00
1545 - 1600	0	0	24	0	12	3	7	0	46	56.60
1600 - 1615	0	0	25	0	14	2	4	0	45	51.20
1615 - 1630	0	0	34	0	11	1	4	0	50	55.70
Hourly Total	**0**	**0**	**98**	**0**	**42**	**7**	**20**	**0**	**167**	**196.50**
Hourly Average	**0.00**	**0.00**	**24.50**	**0.00**	**10.50**	**1.75**	**5.00**	**0.00**	**41.75**	**49.13**
1630 - 1645	0	0	37	0	10	3	2	0	52	56.10
1645 - 1700	0	0	59	0	7	7	1	0	74	78.80
1700 - 1715	0	0	32	0	8	5	1	0	46	49.80
1715 - 1730	0	0	42	0	3	6	1	0	52	56.30
Hourly Total	**0**	**0**	**170**	**0**	**28**	**21**	**5**	**0**	**224**	**241.00**
Hourly Average	**0.00**	**0.00**	**42.50**	**0.00**	**7.00**	**5.25**	**1.25**	**0.00**	**56.00**	**60.25**
1730 - 1745	0	0	50	0	6	4	0	0	60	62.00
1745 - 1800	0	0	29	0	1	5	1	0	36	39.80
1800 - 1815	0	0	30	0	4	3	0	0	37	38.50
1815 - 1830	0	0	34	0	3	3	0	0	40	41.50
Hourly Total	**0**	**0**	**143**	**0**	**14**	**15**	**1**	**0**	**173**	**181.80**
Hourly Average	**0.00**	**0.00**	**35.75**	**0.00**	**3.50**	**3.75**	**0.25**	**0.00**	**43.25**	**45.45**

Session Total	**0**	**0**	**411**	**0**	**84**	**43**	**26**	**0**	**564**	**619.30**
Session Average	**0.00**	**0.00**	**34.25**	**0.00**	**7.00**	**3.58**	**2.17**	**0.00**	**47.00**	**51.61**

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.22: Southbound from M6 Thelwall Viaduct to Local Access								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	0	0	0	0.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.22: Southbound from M6 Thelwall Viaduct to Local Access								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630 - 1645	0	0	0	0	0	0	0	0	0	0.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	0	0	0	0.00
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	0	0	0	0.00
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.23: Right from M6 Thelwall Viaduct to A57 Manchester Road (South)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	1	65	0	11	4	2	1	84	89.00
0645 - 0700	0	0	66	0	29	3	6	0	104	113.30
0700 - 0715	0	0	55	1	19	5	4	0	84	91.70
0715 - 0730	1	1	71	1	25	5	5	0	109	116.60
Hourly Total	1	2	257	2	84	17	17	1	381	410.60
Hourly Average	0.25	0.50	64.25	0.50	21.00	4.25	4.25	0.25	95.25	102.65
0730 - 0745	0	0	48	0	15	3	6	0	72	81.30
0745 - 0800	0	1	105	1	33	4	4	0	148	154.60
0800 - 0815	0	0	70	0	24	6	6	0	106	116.80
0815 - 0830	0	0	84	0	21	5	10	0	120	135.50
Hourly Total	0	1	307	1	93	18	26	0	446	488.20
Hourly Average	0.00	0.25	76.75	0.25	23.25	4.50	6.50	0.00	111.50	122.05
0830 - 0845	0	0	77	1	19	3	6	0	106	115.30
0845 - 0900	0	0	56	2	21	2	5	0	86	93.50
0900 - 0915	0	0	50	0	23	3	5	0	81	89.00
0915 - 0930	0	0	41	0	19	4	7	0	71	82.10
Hourly Total	0	0	224	3	82	12	23	0	344	379.90
Hourly Average	0.00	0.00	56.00	0.75	20.50	3.00	5.75	0.00	86.00	94.98
Session Total	1	3	788	6	259	47	66	1	1171	1278.70
Session Average	0.08	0.25	65.67	0.50	21.58	3.92	5.50	0.08	97.58	106.56

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.23: Right from M6 Thelwall Viaduct to A57 Manchester Road (South)								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	44	1	23	1	4	0	73	78.70
1545 - 1600	0	0	42	0	25	6	1	0	74	78.30
1600 - 1615	0	0	38	0	23	1	3	0	65	69.40
1615 - 1630	0	0	49	2	21	2	2	0	76	79.60
Hourly Total	0	0	173	3	92	10	10	0	288	306.00
Hourly Average	0.00	0.00	43.25	0.75	23.00	2.50	2.50	0.00	72.00	76.50
1630 - 1645	0	0	44	0	13	4	2	0	63	67.60
1645 - 1700	1	0	44	1	12	3	3	0	64	68.60
1700 - 1715	0	0	42	0	6	1	2	0	51	54.10
1715 - 1730	0	0	57	1	11	1	2	1	73	77.10
Hourly Total	1	0	187	2	42	9	9	1	251	267.40
Hourly Average	0.25	0.00	46.75	0.50	10.50	2.25	2.25	0.25	62.75	66.85
1730 - 1745	0	0	50	0	8	1	4	0	63	68.70
1745 - 1800	0	0	54	0	6	1	3	0	64	68.40
1800 - 1815	0	0	44	0	4	0	1	0	49	50.30
1815 - 1830	0	0	46	0	6	0	2	0	54	56.60
Hourly Total	0	0	194	0	24	2	10	0	230	244.00
Hourly Average	0.00	0.00	48.50	0.00	6.00	0.50	2.50	0.00	57.50	61.00
Session Total	1	0	554	5	158	21	29	1	769	817.40
Session Average	0.08	0.00	46.17	0.42	13.17	1.75	2.42	0.08	64.08	68.12

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.24: Right from M6 Thelwall Viaduct to Manchester Road								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	2	0	0	0	0	0	2	2.00
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	1	0	0	0	0	0	1	1.00
0715 - 0730	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	0	0	4	0	0	0	0	0	4	4.00
Hourly Average	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
0730 - 0745	0	0	1	0	0	0	0	0	1	1.00
0745 - 0800	0	0	5	0	0	0	0	0	5	5.00
0800 - 0815	0	0	6	0	0	0	0	0	6	6.00
0815 - 0830	0	0	5	0	1	0	0	0	6	6.00
Hourly Total	0	0	17	0	1	0	0	0	18	18.00
Hourly Average	0.00	0.00	4.25	0.00	0.25	0.00	0.00	0.00	4.50	4.50
0830 - 0845	0	0	4	0	0	0	0	0	4	4.00
0845 - 0900	0	0	2	0	0	0	0	0	2	2.00
0900 - 0915	0	0	2	0	1	0	0	0	3	3.00
0915 - 0930	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	0	0	9	0	1	0	0	0	10	10.00
Hourly Average	0.00	0.00	2.25	0.00	0.25	0.00	0.00	0.00	2.50	2.50

Session Total	0	0	30	0	2	0	0	0	32	32.00
Session Average	0.00	0.00	2.50	0.00	0.17	0.00	0.00	0.00	2.67	2.67

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.24: Right from M6 Thelwall Viaduct to Manchester Road								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	0	0	0	0	0	0	0	0.00
1545 - 1600	0	0	2	0	1	0	0	0	3	3.00
1600 - 1615	0	0	1	0	1	0	0	0	2	2.00
1615 - 1630	0	0	3	0	0	0	0	0	3	3.00
Hourly Total	0	0	6	0	2	0	0	0	8	8.00
Hourly Average	0.00	0.00	1.50	0.00	0.50	0.00	0.00	0.00	2.00	2.00
1630 - 1645	0	0	1	0	1	0	0	0	2	2.00
1645 - 1700	0	0	2	0	0	1	0	0	3	3.50
1700 - 1715	0	0	3	0	0	0	0	0	3	3.00
1715 - 1730	0	0	2	0	0	0	0	0	2	2.00
Hourly Total	0	0	8	0	1	1	0	0	10	10.50
Hourly Average	0.00	0.00	2.00	0.00	0.25	0.25	0.00	0.00	2.50	2.63
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	1	0	0	0	0	0	1	1.00
Hourly Total	0	0	1	0	0	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.25

Session Total	0	0	15	0	3	1	0	0	19	19.50
Session Average	0.00	0.00	1.25	0.00	0.25	0.08	0.00	0.00	1.58	1.63

Woolston Interchange, Warrington
Classified Junction Count

Site 2 of 2
A57 Manchester Road (East)
Local Access
A57 Manchester Road (South)
Manchester Road
M6 Thelwall Viaduct

Lat/Long
lat 53.398551° lon -2.507631°

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 13°C

0630 - 0930 (Weekday AM Peak)

	Movement 2.25: U-Turn from M6 Thelwall Viaduct to M6 Thelwall Viaduct								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
0630 - 0645	0	0	0	0	0	0	1	0	1	2.30
0645 - 0700	0	0	0	0	0	0	0	0	0	0.00
0700 - 0715	0	0	0	0	0	0	0	0	0	0.00
0715 - 0730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	1	0	1	2.30
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.58
0730 - 0745	0	0	0	0	0	0	0	0	0	0.00
0745 - 0800	0	0	0	0	0	0	0	0	0	0.00
0800 - 0815	0	0	0	0	0	0	0	0	0	0.00
0815 - 0830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0830 - 0845	0	0	0	0	0	0	0	0	0	0.00
0845 - 0900	0	0	0	0	0	0	0	0	0	0.00
0900 - 0915	0	0	0	0	0	0	0	0	0	0.00
0915 - 0930	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	0	0	0	0	1	0	1	2.30
Session Average	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.19

Date
Tuesday 14 September 2021

Weather
Cloudy
Temp: 16°C

1530 - 1830 (Weekday PM Peak)

	Movement 2.25: U-Turn from M6 Thelwall Viaduct to M6 Thelwall Viaduct								Original Data	
TIME	P/CYCLE	M/CYCLE	CAR	TAXI	LGV	OGV1	OGV2	BUS/COACH	TOTAL	PCU TOTAL
1530 - 1545	0	0	1	0	0	0	0	0	1	1.00
1545 - 1600	0	0	0	0	0	0	0	0	0	0.00
1600 - 1615	0	0	0	0	0	0	0	0	0	0.00
1615 - 1630	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	1	0	0	0	0	0	1	1.00
Hourly Average	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.25
1630 - 1645	0	0	1	0	0	0	0	0	1	1.00
1645 - 1700	0	0	0	0	0	0	0	0	0	0.00
1700 - 1715	0	0	0	0	0	0	1	0	1	2.30
1715 - 1730	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	1	0	0	0	1	0	2	3.30
Hourly Average	0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.00	0.50	0.83
1730 - 1745	0	0	0	0	0	0	0	0	0	0.00
1745 - 1800	0	0	0	0	0	0	0	0	0	0.00
1800 - 1815	0	0	0	0	0	0	0	0	0	0.00
1815 - 1830	0	0	0	0	0	0	0	0	0	0.00
Hourly Total	0	0	0	0	0	0	0	0	0	0.00
Hourly Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Session Total	0	0	2	0	0	0	1	0	3	4.30
Session Average	0.00	0.00	0.17	0.00	0.00	0.00	0.08	0.00	0.25	0.36

vectos.

Appendix D

National Highways Email Correspondence on Nicol Avenue

From: Laverick, Benjamin
To: Phil Tilby
Cc: Tom Reader
Subject: RE: Birchwood South Masterplan M6 Junction 21 Woolston Interchange - Meeting 7th September 2021
Date: 01 November 2021 12:05:58
Attachments: image011.png
image012.png

Hi Phil,

I thought I would just drop you a quick email to update you in relation to National Highways' position in relation to a proposed upgrade of the bridge across the M6 North of Junction 21.

As previously stated, National Highways believe that it may be possible for a third party to upgrade the bridge, provided the required design standards can be met.

I have received a few specific points for consideration that I thought it may be worth making you aware of, although I recognise these may be a little more detailed than you require at the moment.

- What is the current status of the bridge and road? It is a public highway or accommodation bridge to serve specific areas, which may not include the land being developed.
- Would a new bridge change the status of the highway / access rights requiring status changes, permissions or Legal Agreements with others. We have a number of Sec 278's were the legal status of land, access and rights is holding back and potentially preventing schemes going ahead. These matters and land ownership needs to be considered again at early stages as this could prevent a bridge replacement of the developer does not own or have access to adjacent land.
- In addition to the structures and engineering element which would be significant assuming the developments capacity (flow / weight) exceeds what can be accommodated, impact to the SRN during the works needs to be considered even at such an early enquiry stage. This itself may rule out various options including if the bridge can feasibly be replaced or not.
- Other Factors to be considered would include, suicides prevention, statutory undertaker's apparatus requirements, new foundations which may be required, new pier protection (VRS) on the M6 may be required and ownership/maintenance liability of the bridge after the upgrade needs to be confirmed and provisioned for etc. Other disciplines might also have their requirements as well ie lighting. Furthermore, there may be a requirement to provide a commuted lump sum if the Asset is to be adopted by National Highways"

I am happy to discuss this further as you develop your proposals

Kind regards

Ben

Benjamin Laverick, Assistant Spatial Planner
Operations North West Spatial Planning Team
National Highways | Piccadilly Gate | Store Street | Manchester | M1 2WD
Web: www.highwaysengland.co.uk

From: Phil Tilby [mailto:Phil.Tilby@vectos.co.uk]
Sent: 29 September 2021 10:37
To: Laverick, Benjamin <Benjamin.Laverick@highwaysengland.co.uk>
Cc: Tom Reader <tom.reader@vectos.co.uk>
Subject: RE: Birchwood South Masterplan M6 Junction 21 Woolston Interchange - Meeting 7th September 2021

Hi Ben

Thanks for the reply and all noted below.

Please can you let me know if you receive any internal responses relating to the principle of upgrading the crossing over the M6, as I will need to advise my client on any feedback particularly if any significant concerns are raised at this stage?

Kind regards

Phil

Phil Tilby
Associate Director
-
0161 228 1008
07375 670 904
-
4th Floor Oxford Place, 61 Oxford Street
Manchester, M1 6EQ

From: Laverick, Benjamin <Benjamin.Laverick@highwaysengland.co.uk>
Sent: 28 September 2021 16:05
To: Phil Tilby <Phil.Tilby@vectos.co.uk>
Cc: Tom Reader <tom.reader@vectos.co.uk>
Subject: RE: Birchwood South Masterplan M6 Junction 21 Woolston Interchange - Meeting 7th September 2021

Hi Phil,

In the first instance I will be the point of contact for any pre-application scoping work, although it may be necessary to call other colleagues in to those discussions as and when necessary.

I have sent some "feelers" out to ascertain if there would be any show stoppers to upgrading the crossing over the M6, although I think these are more likely related to the cost and being able to meet the necessary technical approvals as laid out in the Design Manual for Roads and Bridges.

I'll keep you informed as I hear anything further, and in the mean time if you have any specific queries please do get in touch,

Kind regards

Ben

Benjamin Laverick, Assistant Spatial Planner
Operations North West Spatial Planning Team
National Highways | Piccadilly Gate | Store Street | Manchester | M1 2WD
Web: www.highwaysengland.co.uk

From: Phil Tilby [mailto:Phil.Tilby@vectos.co.uk]
Sent: 26 September 2021 18:25
To: Laverick, Benjamin <Benjamin.Laverick@highwaysengland.co.uk>
Cc: Tom Reader <tom.reader@vectos.co.uk>
Subject: RE: Birchwood South Masterplan M6 Junction 21 Woolston Interchange - Meeting 7th September 2021

Hi Ben

I trust you are well.

Further to our meeting on the 07/09/2021 on the above site and the discussion about the bridge at Nicol Avenue over the M6, I would be grateful if you can confirm that National Highways would not object in principle to a possible proposal to upgrade the existing bridge or construct a new bridge structure via Nicol Avenue (subject to all of the necessary technical approval processes etc)?

Please could you provide me with an appropriate contact in National Highways that I could approach in relation to commencing any bridge upgrade proposal discussions?

Look forward to hearing from you.

Kind regards

vectos.

Appendix E

TRICS Report – Industrial

Calculation Reference: AUDIT-715001-211110-1136

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : C - INDUSTRIAL UNIT

TOTAL VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	BD	BEDFORDSHIRE	1 days
	HC	HAMPSHIRE	1 days
03	**SOUTH WEST**		
	BR	BRISTOL CITY	1 days
	DV	DEVON	1 days
04	**EAST ANGLIA**		
	NF	NORFOLK	2 days
	SF	SUFFOLK	1 days
05	**EAST MIDLANDS**		
	DS	DERBYSHIRE	1 days
	NR	NORTHAMPTONSHIRE	1 days
06	**WEST MIDLANDS**		
	HE	HEREFORDSHIRE	1 days
	WM	WEST MIDLANDS	1 days
07	**YORKSHIRE & NORTH LINCOLNSHIRE**		
	WY	WEST YORKSHIRE	1 days
08	**NORTH WEST**		
	CH	CHESHIRE	2 days
	LC	LANCASHIRE	2 days
09	**NORTH**		
	CB	CUMBRIA	1 days
	TV	TEES VALLEY	1 days
10	**WALES**		
	CF	CARDIFF	1 days
	VG	VALE OF GLAMORGAN	1 days
11	**SCOTLAND**		
	SR	STIRLING	1 days
17	**ULSTER (NORTHERN IRELAND)**		
	AN	ANTRIM	1 days

Primary Filtering selection:

Parameter: Gross floor area
Actual Range: 150 to 14125 (units: sqm)
Range Selected by User: 150 to 67459 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/13 to 06/05/21

Selected survey days:

Monday	3 days
Tuesday	5 days
Wednesday	1 days
Thursday	10 days
Friday	3 days

Selected survey types:

Manual count	22 days
Directional ATC Count	0 days

Selected Locations:

Suburban Area (PPS6 Out of Centre)	10
Edge of Town	12

Selected Location Sub Categories:

Industrial Zone	19
Commercial Zone	1
Development Zone	1
No Sub Category	1

Secondary Filtering selection:

Use Class:

Not Known	22 days

Filter by Site Operations Breakdown:
All Surveys Included

Population within 500m Range:
All Surveys Included

Population within 1 mile:

1,001 to 5,000	2 days
5,001 to 10,000	3 days
10,001 to 15,000	6 days
15,001 to 20,000	1 days
20,001 to 25,000	4 days
25,001 to 50,000	6 days

Population within 5 miles:

5,001 to 25,000	1 days
50,001 to 75,000	3 days
75,001 to 100,000	3 days
100,001 to 125,000	2 days
125,001 to 250,000	8 days
250,001 to 500,000	4 days
500,001 or More	1 days

Car ownership within 5 miles:

0.6 to 1.0	8 days
1.1 to 1.5	14 days

Travel Plan:

No	22 days

PTAL Rating:

No PTAL Present	22 days

Covid-19 Restrictions	Yes	At least one survey within the selected data set was undertaken at a time of Covid-19 restrictions

LIST OF SITES relevant to selection parameters

1 **AN-02-C-01** **COMPOSITES** **ANTRIM**
FERGUSON ROAD
LISBURN

Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Gross floor area: 6500 sqm
Survey date: FRIDAY *19/06/15* *Survey Type: MANUAL*

2 **BD-02-C-01** **PUMPS, MOTORS & FANS** **BEDFORDSHIRE**
POSTLEY ROAD
BEDFORD
KEMPSTON
Edge of Town
Industrial Zone
Total Gross floor area: 1045 sqm
Survey date: THURSDAY *15/10/20* *Survey Type: MANUAL*

3 **BR-02-C-02** **STAINLESS FITTINGS** **BRISTOL CITY**
SOUTH LIBERTY LANE
BRISTOL

Edge of Town
Industrial Zone
Total Gross floor area: 1475 sqm
Survey date: TUESDAY *22/09/15* *Survey Type: MANUAL*

4 **CB-02-C-01** **DOMINO'S PIZZA** **CUMBRIA**
COWPER ROAD
PENRITH
GILWILLY IND. ESTATE
Edge of Town
Industrial Zone
Total Gross floor area: 2950 sqm
Survey date: TUESDAY *10/06/14* *Survey Type: MANUAL*

5 **CF-02-C-02** **BAKERY** **CARDIFF**
MAES-Y-COED ROAD
CARDIFF

Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 14125 sqm
Survey date: THURSDAY *06/10/16* *Survey Type: MANUAL*

6 **CH-02-C-02** **INDUSTRIAL MATERIALS** **CHESHIRE**
JUPITER DRIVE
CHESTER
CHESTER W. EMP. PARK
Edge of Town
Industrial Zone
Total Gross floor area: 8100 sqm
Survey date: WEDNESDAY *19/11/14* *Survey Type: MANUAL*

7 **CH-02-C-03** **OFFICE FURNITURE** **CHESHIRE**
BRUNEL ROAD
MACCLESFIELD
LYME GREEN BUS. PARK
Edge of Town
Development Zone
Total Gross floor area: 6658 sqm
Survey date: MONDAY *19/09/16* *Survey Type: MANUAL*

8 **DS-02-C-02** **ENGINEERED PRODUCTS** **DERBYSHIRE**
PONTEFRACT STREET
DERBY

Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 2600 sqm
Survey date: THURSDAY *25/06/15* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

9 **DV-02-C-02** **ENERGY RECOVERY FACILITY** **DEVON**
GRACE ROAD SOUTH
EXETER
MARSH BARTON TRAD. EST.
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 3513 sqm
Survey date: THURSDAY 06/07/17 *Survey Type: MANUAL*

10 **HC-02-C-01** **ENGINEERING COMPANY** **HAMPSHIRE**
JAYS CLOSE
BASINGSTOKE

Edge of Town
Industrial Zone
Total Gross floor area: 3000 sqm
Survey date: THURSDAY 16/06/16 *Survey Type: MANUAL*

11 **HE-02-C-02** **THERMAL PROCESSING** **HEREFORDSHIRE**
COLLEGE ROAD
HEREFORD
BURCOTT
Edge of Town
Commercial Zone
Total Gross floor area: 1880 sqm
Survey date: TUESDAY 22/10/13 *Survey Type: MANUAL*

12 **LC-02-C-03** **TIMBER SUPPLIES** **LANCASHIRE**
GOLDEN HILL LANE
LEYLAND

Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 150 sqm
Survey date: TUESDAY 06/11/18 *Survey Type: MANUAL*

13 **LC-02-C-04** **POWDER COATINGS** **LANCASHIRE**
CHORLEY ROAD
BLACKPOOL
LITTLE CARLETON
Edge of Town
Industrial Zone
Total Gross floor area: 1010 sqm
Survey date: THURSDAY 20/06/19 *Survey Type: MANUAL*

14 **NF-02-C-03** **SHEET METAL CONTRACTOR** **NORFOLK**
ELVIN WAY
NORWICH
HELLESDON
Edge of Town
Industrial Zone
Total Gross floor area: 260 sqm
Survey date: THURSDAY 07/11/19 *Survey Type: MANUAL*

15 **NF-02-C-04** **EXHIBITION DESIGN & MANUF.** **NORFOLK**
FLETCHER WAY
NORWICH
UPPER HELLESDON
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 690 sqm
Survey date: THURSDAY 14/11/19 *Survey Type: MANUAL*

16 **NR-02-C-02** **RENEWABLE ENGINEERING** **NORTHAMPTONSHIRE**
TREVITHICK ROAD
CORBY

Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 702 sqm
Survey date: THURSDAY 22/10/20 *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

17 **SF-02-C-01** **JOINERY** **SUFFOLK**
ANSON ROAD
IPSWICH
MARTLESHAM HEATH
Edge of Town
Industrial Zone
Total Gross floor area: 1100 sqm
Survey date: FRIDAY *12/07/13* *Survey Type: MANUAL*

18 **SR-02-C-01** **SPECIALIST MODEL MAKING** **STIRLING**
BORROWMEADOW ROAD
STIRLING

Edge of Town
Industrial Zone
Total Gross floor area: 2350 sqm
Survey date: MONDAY *16/06/14* *Survey Type: MANUAL*

19 **TV-02-C-02** **FLUID ENGINEERING** **TEES VALLEY**
PARKVIEW ROAD WEST
HARTLEPOOL

Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 1050 sqm
Survey date: FRIDAY *04/09/20* *Survey Type: MANUAL*

20 **VG-02-C-01** **ALCOHOL ANALYSIS PRODUCTS** **VALE OF GLAMORGAN**
VERLON CLOSE
BARRY

Edge of Town
Industrial Zone
Total Gross floor area: 1500 sqm
Survey date: THURSDAY *06/05/21* *Survey Type: MANUAL*

21 **WM-02-C-04** **FOUNDRY** **WEST MIDLANDS**
STOURVALE ROAD
STOURBRIDGE
LYE
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 4324 sqm
Survey date: TUESDAY *21/11/17* *Survey Type: MANUAL*

22 **WY-02-C-02** **FLUID SYSTEMS** **WEST YORKSHIRE**
BROWN LANE WEST
LEEDS
HOLBECK
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 13350 sqm
Survey date: MONDAY *19/10/15* *Survey Type: MANUAL*

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

TOTAL VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	4	1549	0.065	4	1549	0.000	4	1549	0.065
06:00 - 07:00	6	3650	0.338	6	3650	0.018	6	3650	0.356
07:00 - 08:00	22	3561	0.329	22	3561	0.068	22	3561	0.397
08:00 - 09:00	**22**	**3561**	**0.340**	22	3561	0.074	**22**	**3561**	**0.414**
09:00 - 10:00	22	3561	0.195	22	3561	0.125	22	3561	0.320
10:00 - 11:00	22	3561	0.166	22	3561	0.126	22	3561	0.292
11:00 - 12:00	22	3561	0.126	22	3561	0.134	22	3561	0.260
12:00 - 13:00	22	3561	0.180	22	3561	0.226	22	3561	0.406
13:00 - 14:00	22	3561	0.160	22	3561	0.154	22	3561	0.314
14:00 - 15:00	22	3561	0.106	22	3561	0.124	22	3561	0.230
15:00 - 16:00	22	3561	0.094	22	3561	0.197	22	3561	0.291
16:00 - 17:00	22	3561	0.047	**22**	**3561**	**0.294**	22	3561	0.341
17:00 - 18:00	22	3561	0.064	22	3561	0.254	22	3561	0.318
18:00 - 19:00	22	3561	0.043	22	3561	0.138	22	3561	0.181
19:00 - 20:00	4	1549	0.113	4	1549	0.129	4	1549	0.242
20:00 - 21:00	4	1549	0.048	4	1549	0.065	4	1549	0.113
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.414			2.126			4.540

Parameter summary

Trip rate parameter range selected:	150 - 14125 (units: sqm)
Survey date date range:	01/01/13 - 06/05/21
Number of weekdays (Monday-Friday):	22
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

TAXIS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
06:00 - 07:00	6	3650	0.000	6	3650	0.000	6	3650	0.000
07:00 - 08:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
08:00 - 09:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
09:00 - 10:00	22	3561	0.001	22	3561	0.001	22	3561	0.002
10:00 - 11:00	22	3561	0.003	22	3561	0.003	22	3561	0.006
11:00 - 12:00	**22**	**3561**	**0.005**	**22**	**3561**	**0.004**	**22**	**3561**	**0.009**
12:00 - 13:00	22	3561	0.003	22	3561	0.004	22	3561	0.007
13:00 - 14:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
14:00 - 15:00	22	3561	0.001	22	3561	0.001	22	3561	0.002
15:00 - 16:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
16:00 - 17:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
17:00 - 18:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
18:00 - 19:00	22	3561	0.001	22	3561	0.001	22	3561	0.002
19:00 - 20:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
20:00 - 21:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.014			0.014			0.028

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

OGVS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
06:00 - 07:00	6	3650	0.009	6	3650	0.000	6	3650	0.009
07:00 - 08:00	22	3561	0.026	22	3561	0.022	22	3561	0.048
08:00 - 09:00	22	3561	0.040	22	3561	0.026	22	3561	0.066
09:00 - 10:00	**22**	**3561**	**0.059**	22	3561	0.038	**22**	**3561**	**0.097**
10:00 - 11:00	22	3561	0.055	22	3561	0.029	22	3561	0.084
11:00 - 12:00	22	3561	0.037	22	3561	0.041	22	3561	0.078
12:00 - 13:00	22	3561	0.043	22	3561	0.038	22	3561	0.081
13:00 - 14:00	22	3561	0.043	22	3561	0.031	22	3561	0.074
14:00 - 15:00	22	3561	0.027	22	3561	0.028	22	3561	0.055
15:00 - 16:00	22	3561	0.019	22	3561	0.023	22	3561	0.042
16:00 - 17:00	22	3561	0.014	22	3561	0.020	22	3561	0.034
17:00 - 18:00	22	3561	0.004	22	3561	0.003	22	3561	0.007
18:00 - 19:00	22	3561	0.001	22	3561	0.001	22	3561	0.002
19:00 - 20:00	4	1549	0.000	**4**	**1549**	**0.097**	4	1549	0.097
20:00 - 21:00	4	1549	0.000	4	1549	0.048	4	1549	0.048
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.377			0.445			0.822

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

PSVS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
06:00 - 07:00	6	3650	0.000	6	3650	0.000	6	3650	0.000
07:00 - 08:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
08:00 - 09:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
09:00 - 10:00	**22**	**3561**	**0.001**	**22**	**3561**	**0.001**	**22**	**3561**	**0.002**
10:00 - 11:00	22	3561	0.001	22	3561	0.000	22	3561	0.001
11:00 - 12:00	22	3561	0.000	22	3561	0.001	22	3561	0.001
12:00 - 13:00	22	3561	0.001	22	3561	0.001	22	3561	0.002
13:00 - 14:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
14:00 - 15:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
15:00 - 16:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
16:00 - 17:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
17:00 - 18:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
18:00 - 19:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
19:00 - 20:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
20:00 - 21:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.003			0.003			0.006

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

CYCLISTS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
06:00 - 07:00	6	3650	0.014	6	3650	0.000	6	3650	0.014
07:00 - 08:00	**22**	**3561**	**0.023**	22	3561	0.003	22	3561	0.026
08:00 - 09:00	22	3561	0.009	22	3561	0.000	22	3561	0.009
09:00 - 10:00	22	3561	0.003	22	3561	0.000	22	3561	0.003
10:00 - 11:00	22	3561	0.000	22	3561	0.001	22	3561	0.001
11:00 - 12:00	22	3561	0.001	22	3561	0.000	22	3561	0.001
12:00 - 13:00	22	3561	0.004	22	3561	0.013	22	3561	0.017
13:00 - 14:00	22	3561	0.008	22	3561	0.004	22	3561	0.012
14:00 - 15:00	22	3561	0.000	22	3561	0.009	22	3561	0.009
15:00 - 16:00	22	3561	0.000	22	3561	0.004	22	3561	0.004
16:00 - 17:00	22	3561	0.000	22	3561	0.017	22	3561	0.017
17:00 - 18:00	22	3561	0.009	**22**	**3561**	**0.018**	**22**	**3561**	**0.027**
18:00 - 19:00	22	3561	0.000	22	3561	0.006	22	3561	0.006
19:00 - 20:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
20:00 - 21:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.071			0.075			0.146

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

CARS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	4	1549	0.065	4	1549	0.000	4	1549	0.065
06:00 - 07:00	6	3650	0.242	6	3650	0.005	6	3650	0.247
07:00 - 08:00	**22**	**3561**	**0.277**	22	3561	0.038	**22**	**3561**	**0.315**
08:00 - 09:00	22	3561	0.274	22	3561	0.027	22	3561	0.301
09:00 - 10:00	22	3561	0.094	22	3561	0.054	22	3561	0.148
10:00 - 11:00	22	3561	0.051	22	3561	0.045	22	3561	0.096
11:00 - 12:00	22	3561	0.051	22	3561	0.056	22	3561	0.107
12:00 - 13:00	22	3561	0.082	22	3561	0.142	22	3561	0.224
13:00 - 14:00	22	3561	0.093	22	3561	0.091	22	3561	0.184
14:00 - 15:00	22	3561	0.049	22	3561	0.065	22	3561	0.114
15:00 - 16:00	22	3561	0.036	22	3561	0.105	22	3561	0.141
16:00 - 17:00	22	3561	0.022	**22**	**3561**	**0.244**	22	3561	0.266
17:00 - 18:00	22	3561	0.056	22	3561	0.237	22	3561	0.293
18:00 - 19:00	22	3561	0.040	22	3561	0.133	22	3561	0.173
19:00 - 20:00	4	1549	0.113	4	1549	0.032	4	1549	0.145
20:00 - 21:00	4	1549	0.048	4	1549	0.000	4	1549	0.048
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.593			1.274			2.867

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

LGVS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
06:00 - 07:00	6	3650	0.055	6	3650	0.014	6	3650	0.069
07:00 - 08:00	22	3561	0.029	22	3561	0.009	22	3561	0.038
08:00 - 09:00	22	3561	0.023	22	3561	0.019	22	3561	0.042
09:00 - 10:00	22	3561	0.033	22	3561	0.029	22	3561	0.062
10:00 - 11:00	**22**	**3561**	**0.057**	**22**	**3561**	**0.049**	**22**	**3561**	**0.106**
11:00 - 12:00	22	3561	0.031	22	3561	0.032	22	3561	0.063
12:00 - 13:00	22	3561	0.046	22	3561	0.041	22	3561	0.087
13:00 - 14:00	22	3561	0.024	22	3561	0.031	22	3561	0.055
14:00 - 15:00	22	3561	0.031	22	3561	0.031	22	3561	0.062
15:00 - 16:00	22	3561	0.038	22	3561	0.046	22	3561	0.084
16:00 - 17:00	22	3561	0.011	22	3561	0.034	22	3561	0.045
17:00 - 18:00	22	3561	0.004	22	3561	0.013	22	3561	0.017
18:00 - 19:00	22	3561	0.001	22	3561	0.001	22	3561	0.002
19:00 - 20:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
20:00 - 21:00	4	1549	0.000	4	1549	0.016	4	1549	0.016
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.383			0.365			0.748

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

MOTOR CYCLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
06:00 - 07:00	6	3650	0.005	6	3650	0.000	6	3650	0.005
07:00 - 08:00	**22**	**3561**	**0.005**	22	3561	0.000	22	3561	0.005
08:00 - 09:00	22	3561	0.004	22	3561	0.001	22	3561	0.005
09:00 - 10:00	22	3561	0.003	22	3561	0.001	22	3561	0.004
10:00 - 11:00	22	3561	0.003	22	3561	0.001	22	3561	0.004
11:00 - 12:00	22	3561	0.003	22	3561	0.000	22	3561	0.003
12:00 - 13:00	22	3561	0.001	22	3561	0.001	22	3561	0.002
13:00 - 14:00	22	3561	0.001	22	3561	0.001	22	3561	0.002
14:00 - 15:00	22	3561	0.000	22	3561	0.000	22	3561	0.000
15:00 - 16:00	22	3561	0.001	22	3561	0.005	22	3561	0.006
16:00 - 17:00	22	3561	0.000	**22**	**3561**	**0.008**	**22**	**3561**	**0.008**
17:00 - 18:00	22	3561	0.000	22	3561	0.004	22	3561	0.004
18:00 - 19:00	22	3561	0.000	22	3561	0.004	22	3561	0.004
19:00 - 20:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
20:00 - 21:00	4	1549	0.000	4	1549	0.000	4	1549	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.026			0.026			0.052

vectos.

Appendix F

TRICS Report – Warehousing / Logistics

Calculation Reference: AUDIT-715001-210216-0209

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : F - WAREHOUSING (COMMERCIAL)

TOTAL VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	EX	ESSEX	1 days
	HC	HAMPSHIRE	1 days
	KC	KENT	1 days
04	**EAST ANGLIA**		
	SF	SUFFOLK	1 days
09	**NORTH**		
	TW	TYNE & WEAR	1 days
17	**ULSTER (NORTHERN IRELAND)**		
	AN	ANTRIM	2 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
Actual Range: 6560 to 31000 (units: sqm)
Range Selected by User: 6560 to 80066 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/12 to 03/04/19

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Tuesday	1 days
Thursday	3 days
Friday	3 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	7 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	4
Edge of Town	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	6
Commercial Zone	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

B8	6 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Filter by Use Class Breakdown:
All Surveys Included

Population within 500m Range:
All Surveys Included

Population within 1 mile:

1,001 to 5,000	2 days
5,001 to 10,000	1 days
10,001 to 15,000	1 days
15,001 to 20,000	1 days
20,001 to 25,000	1 days
50,001 to 100,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	1 days
25,001 to 50,000	1 days
125,001 to 250,000	3 days
250,001 to 500,000	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	3 days
1.6 to 2.0	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	1 days
No	6 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	7 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 **AN-02-F-03** **PACKAGING COMPANY** **ANTRIM**
KENNEDY WAY
BELFAST
KENNEDY WAY IND. EST.
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 12234 sqm
Survey date: TUESDAY *11/10/16* *Survey Type: MANUAL*

2 **AN-02-F-04** **TESCO DISTRIBUTION CENTRE** **ANTRIM**
APOLLO ROAD
BELFAST
BALMORAL
Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 11000 sqm
Survey date: THURSDAY *14/03/19* *Survey Type: MANUAL*

3 **EX-02-F-01** **SPORTS SUPPLEMENTS** **ESSEX**
BRUNEL WAY
COLCHESTER
SEVERALLS INDUSTRIAL PK
Edge of Town
Industrial Zone
Total Gross floor area: 6560 sqm
Survey date: FRIDAY *18/05/18* *Survey Type: MANUAL*

4 **HC-02-F-02** **LOGISTICS** **HAMPSHIRE**
RUTHERFORD ROAD
BASINGSTOKE

Suburban Area (PPS6 Out of Centre)
Commercial Zone
Total Gross floor area: 13200 sqm
Survey date: THURSDAY *16/06/16* *Survey Type: MANUAL*

5 **KC-02-F-02** **COMMERCIAL WAREHOUSING** **KENT**
MILLS ROAD
AYLESFORD
QUARRY WOOD
Edge of Town
Industrial Zone
Total Gross floor area: 11200 sqm
Survey date: FRIDAY *22/09/17* *Survey Type: MANUAL*

6 **SF-02-F-02** **WAREHOUSING** **SUFFOLK**
WALTON ROAD
FELIXSTOWE

Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 22270 sqm
Survey date: THURSDAY *11/07/13* *Survey Type: MANUAL*

7 **TW-02-F-01** **ASDA DISTRIBUTION CENTRE** **TYNE & WEAR**
MANDARIN WAY
WASHINGTON
PATTISON IND. ESTATE
Edge of Town
Industrial Zone
Total Gross floor area: 31000 sqm
Survey date: FRIDAY *13/11/15* *Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
WY-02-F-02	PT & Parking

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

TOTAL VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	16635	0.081	2	16635	0.075	2	16635	0.156
06:00 - 07:00	**2**	**16635**	**0.180**	2	16635	0.117	**2**	**16635**	**0.297**
07:00 - 08:00	7	15352	0.124	7	15352	0.100	7	15352	0.224
08:00 - 09:00	7	15352	0.114	7	15352	0.065	7	15352	0.179
09:00 - 10:00	7	15352	0.128	7	15352	0.078	7	15352	0.206
10:00 - 11:00	7	15352	0.093	7	15352	0.082	7	15352	0.175
11:00 - 12:00	7	15352	0.082	7	15352	0.080	7	15352	0.162
12:00 - 13:00	7	15352	0.077	7	15352	0.068	7	15352	0.145
13:00 - 14:00	7	15352	0.113	7	15352	0.107	7	15352	0.220
14:00 - 15:00	7	15352	0.095	**7**	**15352**	**0.120**	7	15352	0.215
15:00 - 16:00	7	15352	0.066	7	15352	0.115	7	15352	0.181
16:00 - 17:00	7	15352	0.057	7	15352	0.111	7	15352	0.168
17:00 - 18:00	7	15352	0.040	7	15352	0.094	7	15352	0.134
18:00 - 19:00	7	15352	0.073	7	15352	0.062	7	15352	0.135
19:00 - 20:00	2	16635	0.084	2	16635	0.081	2	16635	0.165
20:00 - 21:00	2	16635	0.048	2	16635	0.081	2	16635	0.129
21:00 - 22:00	1	22270	0.031	1	22270	0.018	1	22270	0.049
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.486			1.454			2.940

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	6560 - 31000 (units: sqm)
Survey date date range:	01/01/12 - 03/04/19
Number of weekdays (Monday-Friday):	7
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	1

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

TAXIS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
06:00 - 07:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
07:00 - 08:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
08:00 - 09:00	**7**	**15352**	**0.001**	7	15352	0.001	7	15352	0.002
09:00 - 10:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
10:00 - 11:00	7	15352	0.001	7	15352	0.001	7	15352	0.002
11:00 - 12:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
12:00 - 13:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
13:00 - 14:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
14:00 - 15:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
15:00 - 16:00	7	15352	0.001	7	15352	0.000	7	15352	0.001
16:00 - 17:00	7	15352	0.001	**7**	**15352**	**0.002**	**7**	**15352**	**0.003**
17:00 - 18:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
18:00 - 19:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
19:00 - 20:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
20:00 - 21:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
21:00 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.004			0.004			0.008

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

OGVS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	16635	0.030	2	16635	0.057	2	16635	0.087
06:00 - 07:00	2	16635	0.042	**2**	**16635**	**0.081**	**2**	**16635**	**0.123**
07:00 - 08:00	7	15352	0.033	7	15352	0.028	7	15352	0.061
08:00 - 09:00	7	15352	0.037	7	15352	0.034	7	15352	0.071
09:00 - 10:00	7	15352	0.047	7	15352	0.037	7	15352	0.084
10:00 - 11:00	7	15352	0.052	7	15352	0.039	7	15352	0.091
11:00 - 12:00	7	15352	0.034	7	15352	0.028	7	15352	0.062
12:00 - 13:00	7	15352	0.036	7	15352	0.025	7	15352	0.061
13:00 - 14:00	7	15352	0.041	7	15352	0.046	7	15352	0.087
14:00 - 15:00	7	15352	0.027	7	15352	0.041	7	15352	0.068
15:00 - 16:00	7	15352	0.034	7	15352	0.027	7	15352	0.061
16:00 - 17:00	7	15352	0.033	7	15352	0.028	7	15352	0.061
17:00 - 18:00	7	15352	0.023	7	15352	0.030	7	15352	0.053
18:00 - 19:00	7	15352	0.023	7	15352	0.019	7	15352	0.042
19:00 - 20:00	**2**	**16635**	**0.054**	2	16635	0.063	2	16635	0.117
20:00 - 21:00	2	16635	0.045	2	16635	0.072	2	16635	0.117
21:00 - 22:00	1	22270	0.027	1	22270	0.004	1	22270	0.031
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.618			0.659			1.277

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

CYCLISTS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
06:00 - 07:00	**2**	**16635**	**0.006**	2	16635	0.000	2	16635	0.006
07:00 - 08:00	7	15352	0.002	7	15352	0.000	7	15352	0.002
08:00 - 09:00	7	15352	0.006	7	15352	0.001	7	15352	0.007
09:00 - 10:00	7	15352	0.001	7	15352	0.000	7	15352	0.001
10:00 - 11:00	7	15352	0.001	7	15352	0.000	7	15352	0.001
11:00 - 12:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
12:00 - 13:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
13:00 - 14:00	7	15352	0.003	7	15352	0.000	7	15352	0.003
14:00 - 15:00	7	15352	0.003	7	15352	0.003	7	15352	0.006
15:00 - 16:00	7	15352	0.006	7	15352	0.002	7	15352	0.008
16:00 - 17:00	7	15352	0.004	7	15352	0.002	7	15352	0.006
17:00 - 18:00	7	15352	0.001	**7**	**15352**	**0.009**	**7**	**15352**	**0.010**
18:00 - 19:00	7	15352	0.000	7	15352	0.003	7	15352	0.003
19:00 - 20:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
20:00 - 21:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
21:00 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.033			0.020			0.053

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

CARS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	16635	0.048	2	16635	0.018	2	16635	0.066
06:00 - 07:00	**2**	**16635**	**0.117**	2	16635	0.036	**2**	**16635**	**0.153**
07:00 - 08:00	7	15352	0.071	7	15352	0.060	7	15352	0.131
08:00 - 09:00	7	15352	0.056	7	15352	0.009	7	15352	0.065
09:00 - 10:00	7	15352	0.057	7	15352	0.020	7	15352	0.077
10:00 - 11:00	7	15352	0.023	7	15352	0.025	7	15352	0.048
11:00 - 12:00	7	15352	0.027	7	15352	0.034	7	15352	0.061
12:00 - 13:00	7	15352	0.020	7	15352	0.029	7	15352	0.049
13:00 - 14:00	7	15352	0.052	7	15352	0.044	7	15352	0.096
14:00 - 15:00	7	15352	0.052	**7**	**15352**	**0.069**	7	15352	0.121
15:00 - 16:00	7	15352	0.015	7	15352	0.068	7	15352	0.083
16:00 - 17:00	7	15352	0.015	7	15352	0.064	7	15352	0.079
17:00 - 18:00	7	15352	0.009	7	15352	0.048	7	15352	0.057
18:00 - 19:00	7	15352	0.047	7	15352	0.036	7	15352	0.083
19:00 - 20:00	2	16635	0.018	2	16635	0.012	2	16635	0.030
20:00 - 21:00	2	16635	0.003	2	16635	0.006	2	16635	0.009
21:00 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.630			0.578			1.208

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

LGVS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
06:00 - 07:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
07:00 - 08:00	7	15352	0.014	7	15352	0.010	7	15352	0.024
08:00 - 09:00	7	15352	0.017	7	15352	0.015	7	15352	0.032
09:00 - 10:00	**7**	**15352**	**0.024**	**7**	**15352**	**0.020**	**7**	**15352**	**0.044**
10:00 - 11:00	7	15352	0.015	7	15352	0.015	7	15352	0.030
11:00 - 12:00	7	15352	0.019	7	15352	0.017	7	15352	0.036
12:00 - 13:00	7	15352	0.017	7	15352	0.013	7	15352	0.030
13:00 - 14:00	7	15352	0.015	7	15352	0.017	7	15352	0.032
14:00 - 15:00	7	15352	0.013	7	15352	0.007	7	15352	0.020
15:00 - 16:00	7	15352	0.015	7	15352	0.020	7	15352	0.035
16:00 - 17:00	7	15352	0.008	7	15352	0.013	7	15352	0.021
17:00 - 18:00	7	15352	0.005	7	15352	0.007	7	15352	0.012
18:00 - 19:00	7	15352	0.001	7	15352	0.006	7	15352	0.007
19:00 - 20:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
20:00 - 21:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
21:00 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.163			0.160			0.323

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

MOTOR CYCLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
06:00 - 07:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
07:00 - 08:00	7	15352	0.001	7	15352	0.000	7	15352	0.001
08:00 - 09:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
09:00 - 10:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
10:00 - 11:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
11:00 - 12:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
12:00 - 13:00	7	15352	0.001	7	15352	0.000	7	15352	0.001
13:00 - 14:00	**7**	**15352**	**0.003**	7	15352	0.000	**7**	**15352**	**0.003**
14:00 - 15:00	7	15352	0.001	**7**	**15352**	**0.002**	7	15352	0.003
15:00 - 16:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
16:00 - 17:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
17:00 - 18:00	7	15352	0.000	7	15352	0.002	7	15352	0.002
18:00 - 19:00	7	15352	0.000	7	15352	0.000	7	15352	0.000
19:00 - 20:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
20:00 - 21:00	2	16635	0.000	2	16635	0.000	2	16635	0.000
21:00 - 22:00	1	22270	0.000	1	22270	0.000	1	22270	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.006			0.004			0.010

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

vectos.

Appendix G

Park & Ride Survey Data

Hooton P&R Flow Profile

Capacity = 418 spaces

AM Flows

(53 cars already parked)

AM Car Flow Profile

Time Beginning	IN			OUT			Total PU/DO
	Cars	Cycles	Pedestrians	Cars	Cycles	Pedestrians	
06:45	7	0	1	0	1	0	3
PU/DO*	3	0	0	0	0	0	
07:00	27	0	0	1	0	0	3
PU/DO	3	0	0	0	0	0	
07:15	21	11	2	0	1	0	7
PU/DO	7	0	0	0	0	0	
07:30	43	1	1	0	0	0	9
PU/DO	8	0	0	1	0	0	
07:45	37	0	0	0	0	0	12
PU/DO	11	0	0	1	0	0	
08:00	47	1	0	0	0	0	6
PU/DO	6	0	0	0	0	0	
08:15	30	0	0	0	11	0	10
PU/DO	9	0	0	0	1	0	
08:30	34	0	1	1	0	0	4
PU/DO	4	0	0	0	0	0	
08:45	20	0	0	0	1	0	1
PU/DO	1	0	0	0	0	0	

Time Beginning	IN	OUT
06:45	2.4%	0.7%
07:00	7.2%	1.0%
07:15	6.7%	1.7%
07:30	12.2%	2.2%
07:45	11.5%	2.9%
08:00	12.7%	1.4%
08:15	9.3%	2.2%
08:30	9.1%	1.2%
08:45	5.0%	0.2%
0730-	45.7%	8.6%

PM Flows

PM Car Flow Profile

Time Beginning	IN			OUT			Total PU/DO
	Cars	Cycles	Pedestrians	Cars	Cycles	Pedestrians	
16:00	1	0	0	6	0	2	7
PU/DO	4	0	0	3	0	0	
16:15	0	2	0	27	0	1	5
PU/DO	3	0	0	2	0	0	
16:30	4	0	0	15	1	2	7
PU/DO	5	0	0	2	0	0	
16:45	0	2	0	28	0	0	7
PU/DO	1	0	0	6	0	0	
17:00	1	2	6	29	0	1	7
PU/DO	3	0	0	4	0	0	
17:15	1	0	3	19	0	0	10
PU/DO	4	0	0	6	0	0	
17:30	3	0	2	32	0	0	5
PU/DO	1	0	0	4	0	0	
17:45	2	0	1	40	1	0	9
PU/DO	0	0	0	9	0	0	
18:00	1	2	0	19	0	3	4
PU/DO	0	0	0	4	0	0	

Time Beginning	IN	OUT
16:00	1.2%	3.1%
16:15	0.7%	7.7%
16:30	2.2%	5.3%
16:45	0.2%	8.4%
17:00	1.0%	8.6%
17:15	1.2%	6.9%
17:30	1.0%	8.9%
17:45	0.5%	11.7%
18:00	0.2%	5.5%
1645-	3.3%	32.8%

Capacity 300 spaces

	Arr	Dep	2 way
0700-0800	113	23	136
0800-0900	108	15	123
0900-1000			
1500-1600			
1600-1700	13	74	86
1700-1800	11	108	119

Hooton P&R Flow Profile

Capacity = 418 spaces

AM Flows (53 cars already parked)

Time Beginning	IN			OUT			Total PU/DO
	Cars	Cycles	Pedestrians	Cars	Cycles	Pedestrians	
06:45	7	0	1	0	1	0	
PU/DO*	3	0	0	0	0	0	3
07:00	27	0	0	1	0	0	
PU/DO	3	0	0	0	0	0	3
07:15	21	11	2	0	1	0	
PU/DO	7	0	0	0	0	0	7
07:30	43	1	1	0	0	0	
PU/DO	8	0	0	1	0	0	9
07:45	37	0	0	0	0	0	
PU/DO	11	0	0	1	0	0	12
08:00	47	1	0	0	0	0	
PU/DO	6	0	0	0	0	0	6
08:15	30	0	0	0	11	0	
PU/DO	9	0	0	0	1	0	10
08:30	34	0	1	1	0	0	
PU/DO	4	0	0	0	0	0	4
08:45	20	0	0	0	1	0	
PU/DO	1	0	0	0	0	0	1

AM Car Flow Profile

Time Beginning	IN	OUT
06:45	2.4%	0.7%
07:00	7.2%	1.0%
07:15	6.7%	1.7%
07:30	12.2%	2.2%
07:45	11.5%	2.9%
08:00	12.7%	1.4%
08:15	9.3%	2.2%
08:30	9.1%	1.2%
08:45	5.0%	0.2%
0730-0830	45.7%	8.6%

PM Flows

Time Beginning	IN			OUT			Total PU/DO
	Cars	Cycles	Pedestrians	Cars	Cycles	Pedestrians	
16:00	1	0	0	6	0	2	
PU/DO	4	0	0	3	0	0	7
16:15	0	2	0	27	0	1	
PU/DO	3	0	0	2	0	0	5
16:30	4	0	0	15	1	2	
PU/DO	5	0	0	2	0	0	7
16:45	0	2	0	28	0	0	
PU/DO	1	0	0	6	0	0	7
17:00	1	2	6	29	0	1	
PU/DO	3	0	0	4	0	0	7
17:15	1	0	3	19	0	0	
PU/DO	4	0	0	6	0	0	10
17:30	3	0	2	32	0	0	
PU/DO	1	0	0	4	0	0	5
17:45	2	0	1	40	1	0	
PU/DO	0	0	0	9	0	0	9
18:00	1	2	0	19	0	3	
PU/DO	0	0	0	4	0	0	4

PM Car Flow Profile

Time Beginning	IN	OUT
16:00	1.2%	3.1%
16:15	0.7%	7.7%
16:30	2.2%	5.3%
16:45	0.2%	8.4%
17:00	1.0%	8.6%
17:15	1.2%	6.9%
17:30	1.0%	8.9%
17:45	0.5%	11.7%
18:00	0.2%	5.5%
1645-1745	3.3%	32.8%

vectos.

Appendix H

Traffic Flow Diagrams

Figure 1
2021 Survey Flows (PCUs)
AM Peak Hour (0730-0830)

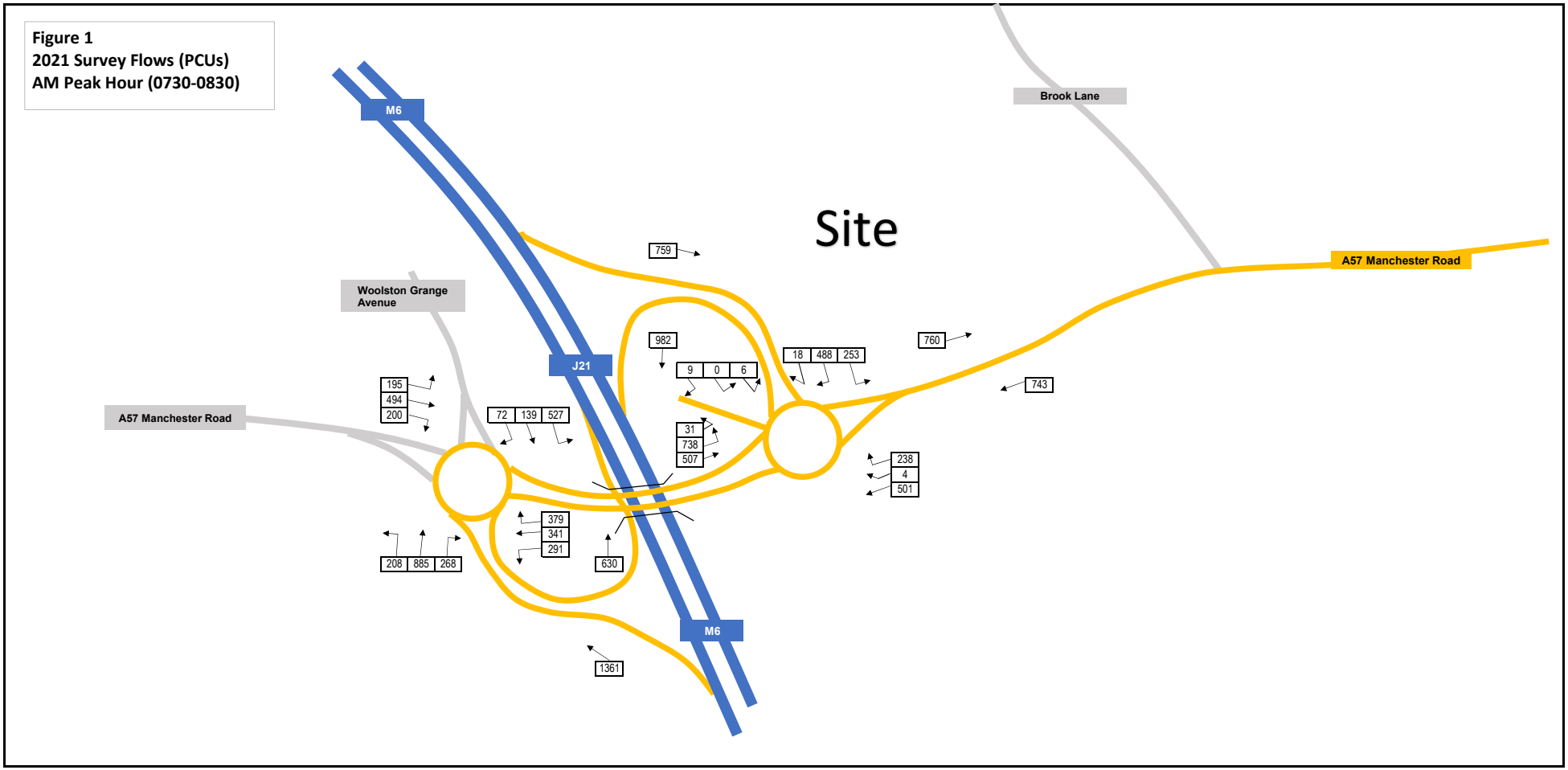


Figure 2
2021 Survey Flows (PCUs)
PM Peak Hour (1630-1730)

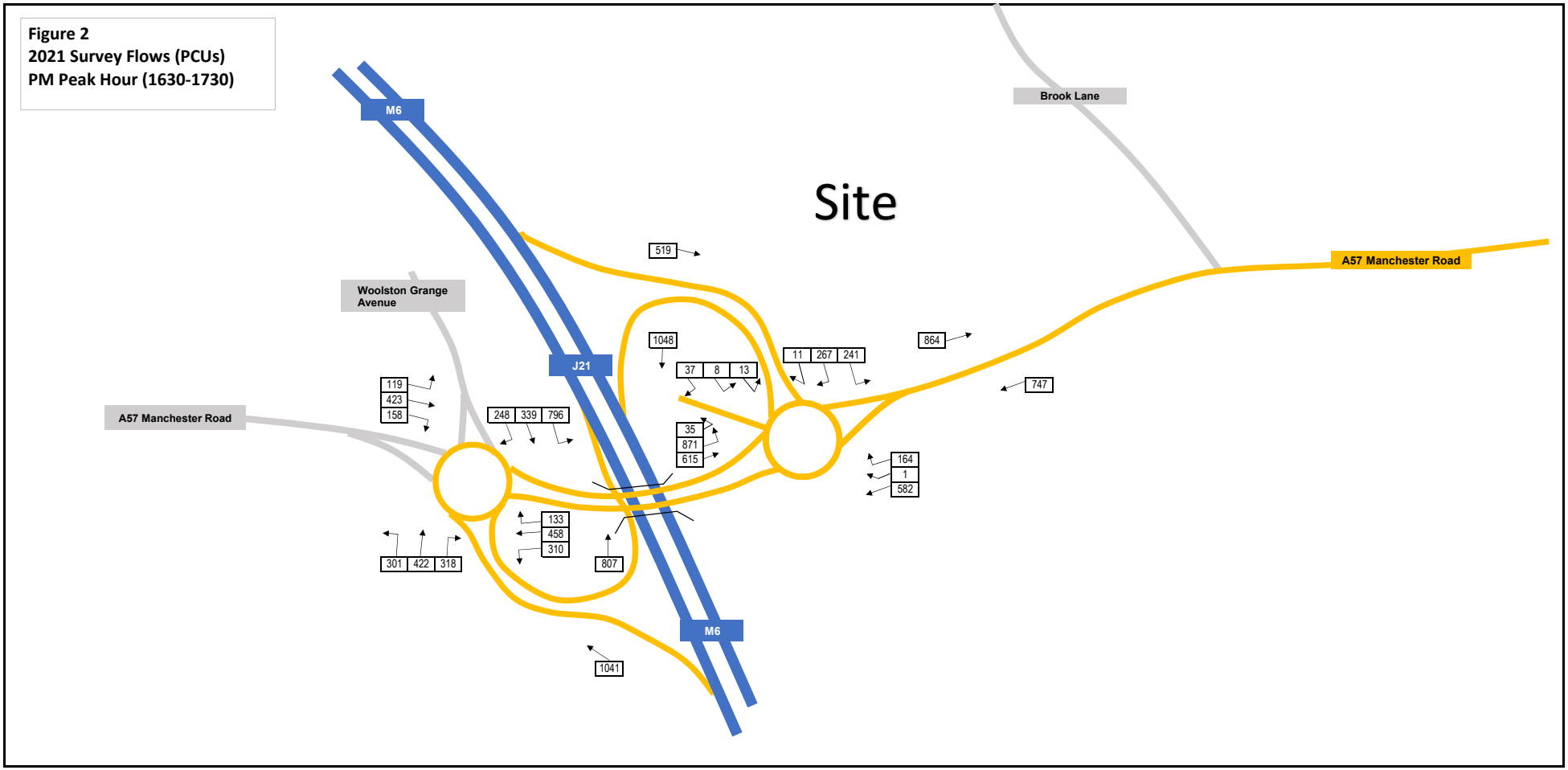


Figure 3
Development Trips at Site Accesses
AM Peak Hour

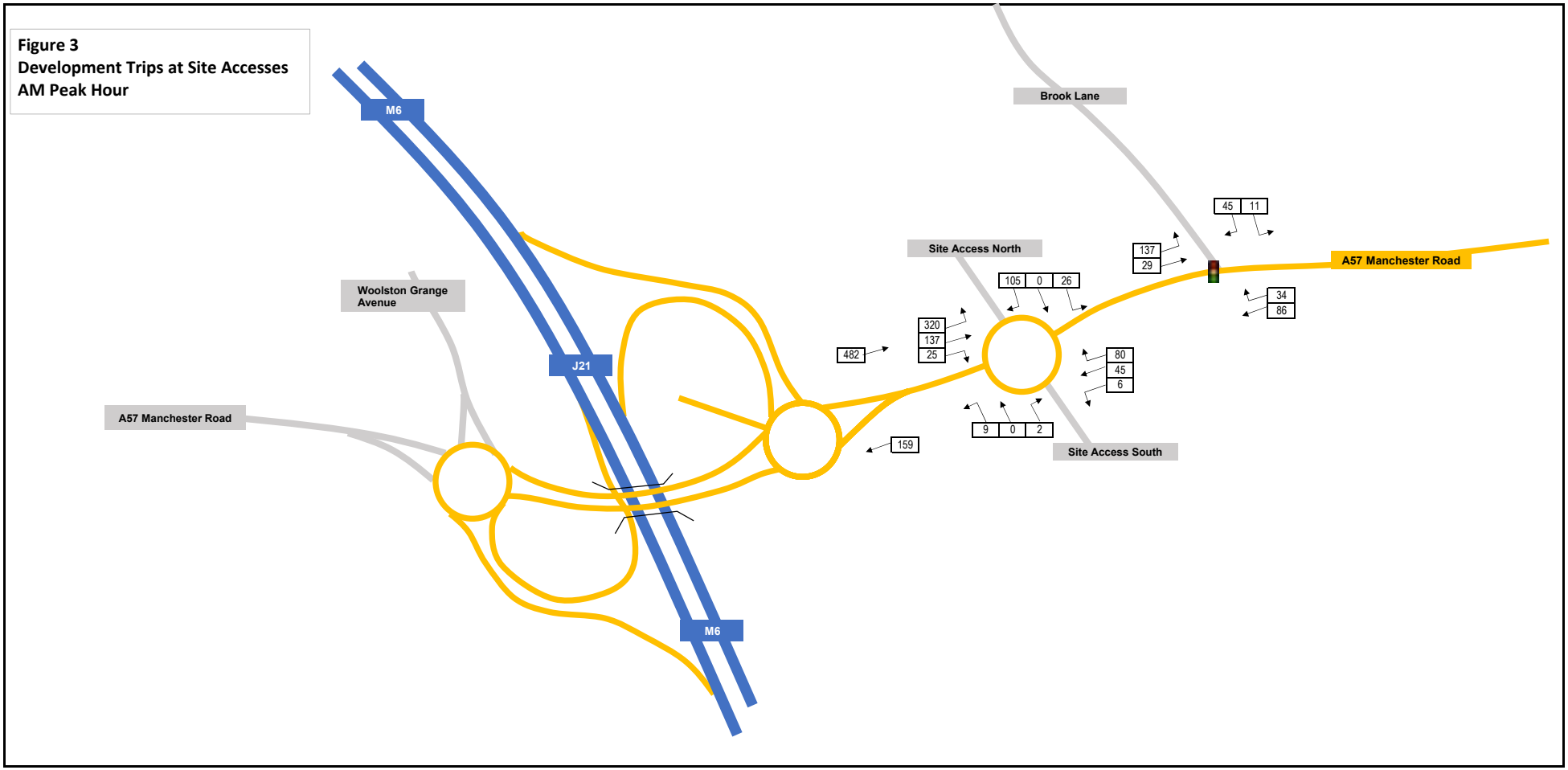


Figure 4
Development Trips at Site Accesses
AM Peak Hour

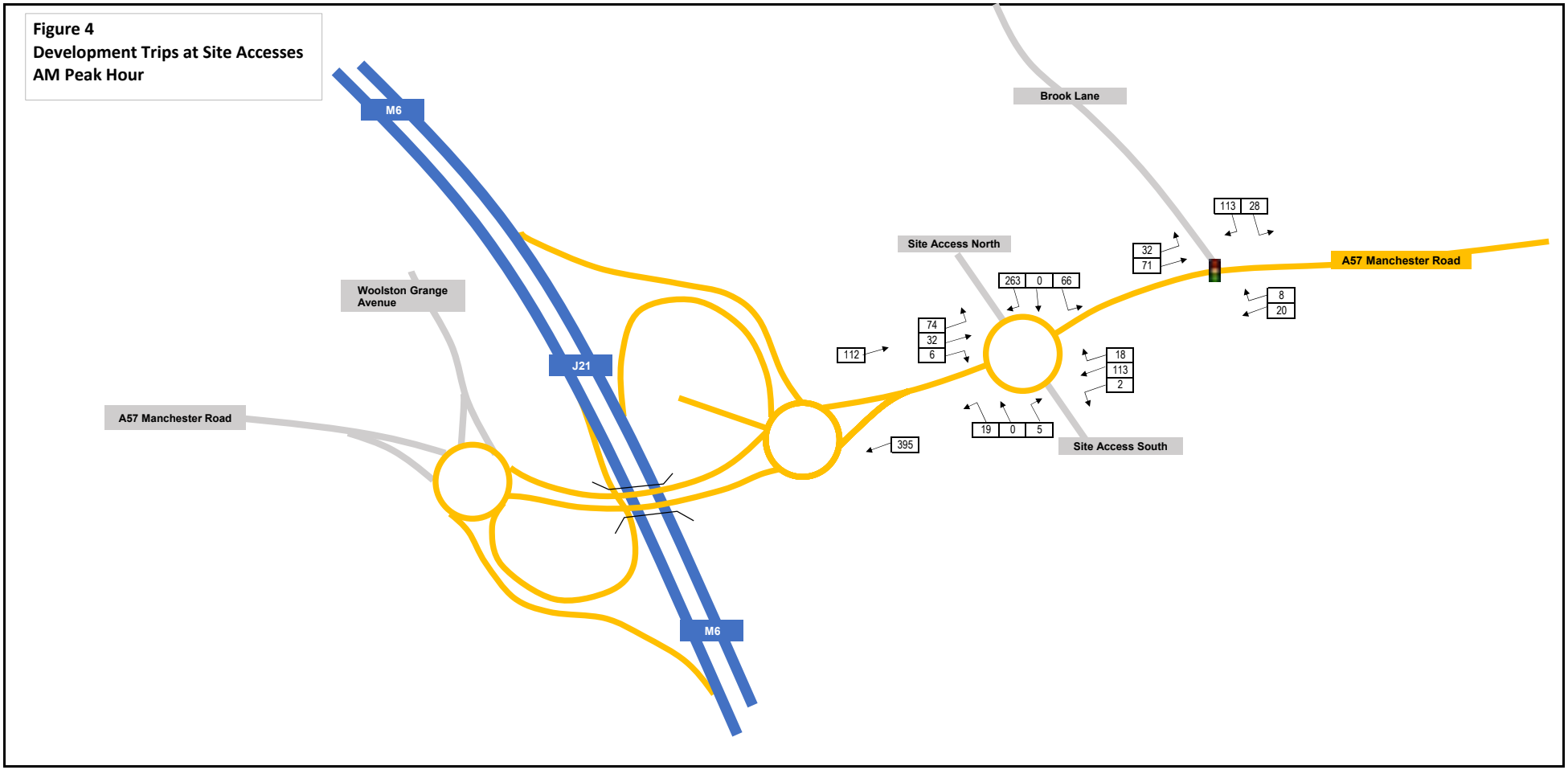


Figure 5
2030 + Dev AM Peak Hour (PCUs)

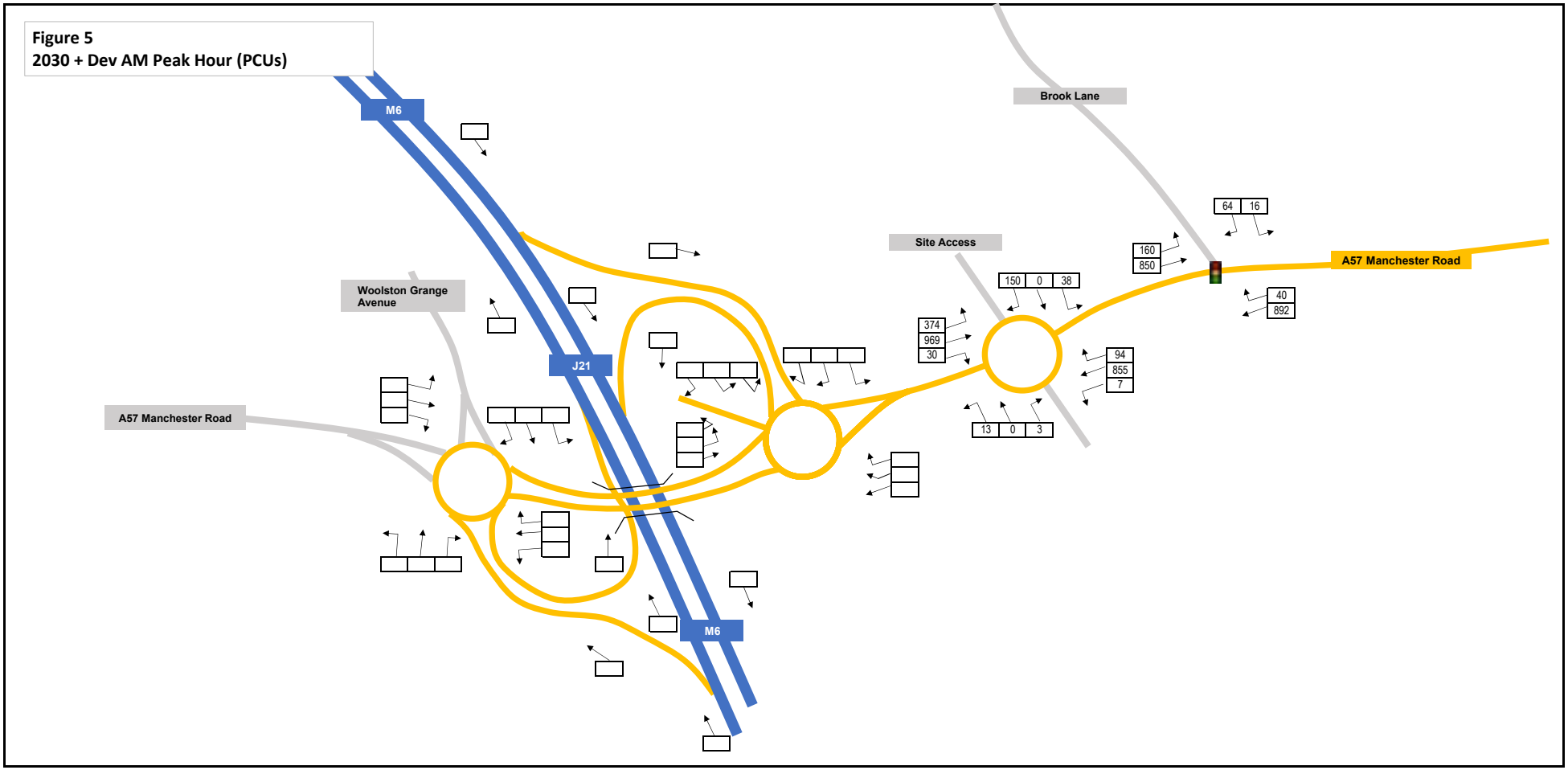
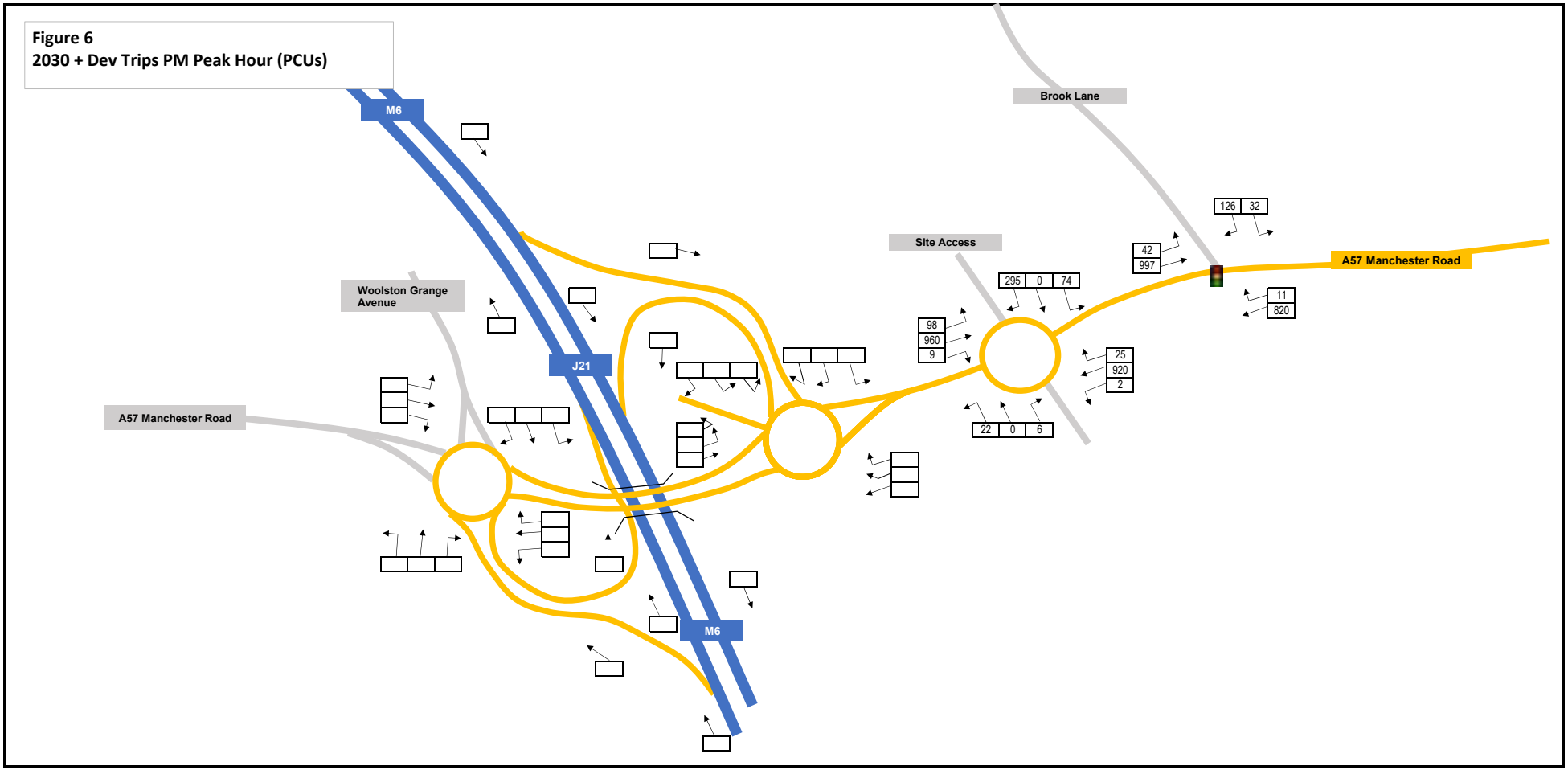
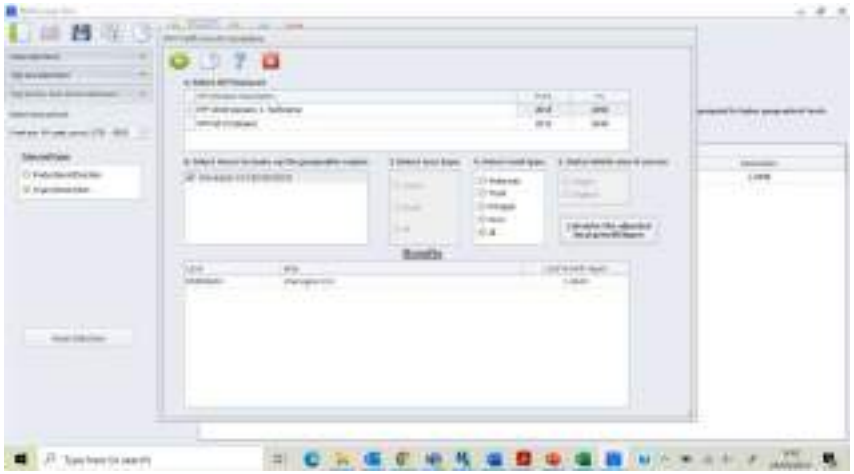


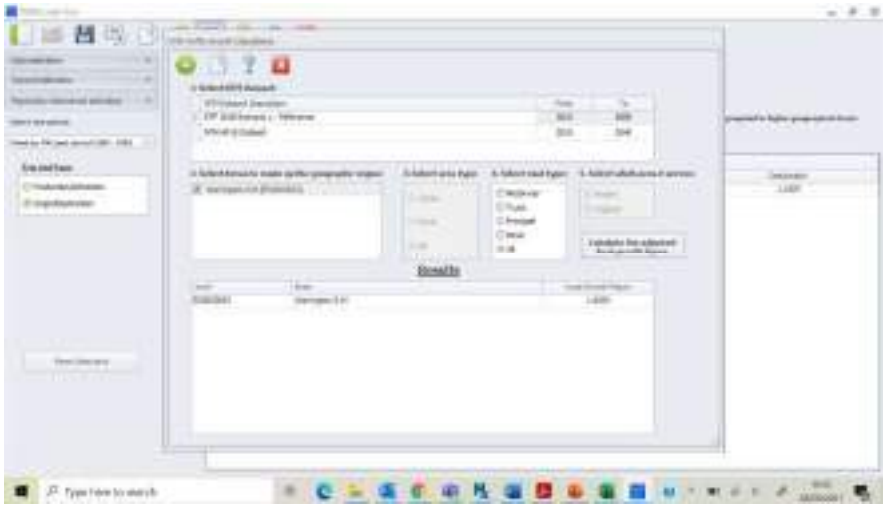
Figure 6
2030 + Dev Trips PM Peak Hour (PCUs)



Appendix I

TEMPro Growth Factors





vectos.

Appendix J

Junctions Modelling Output – Site Access Roundabout

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

Filename: Site Access.arc8
Path: N:\Vectos Job Data\2021\VN212061 Birchwood South Masterplan\Arcady
Report generation date: 11/11/2021 19:01:39

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2030 + Dev							
Arm 1	0.21	3.59	0.13	A	0.36	3.19	0.24	A
Arm 2	1.11	4.60	0.52	A	1.71	6.15	0.63	A
Arm 3	0.03	6.41	0.02	A	0.05	6.35	0.04	A
Arm 4	1.71	4.20	0.62	A	0.88	2.82	0.46	A

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle.

"D1 - 2030 + Dev, AM " model duration: 07:45 - 09:15
"D2 - 2030 + Dev, PM" model duration: 16:45 - 18:15

Run using Junctions 8.0.6.541 at 11/11/2021 19:01:38

File summary

Title	A57 / Site Access
Location	
Site Number	
Date	28/09/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	manchester.modelling
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	PCU	perHour	s	-Min	perMin

(Default Analysis Set) - 2030 + Dev, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2030 + Dev, AM	2030 + Dev	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4			4.30	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Site Access North	
2	2	A57 East	
3	3	Site Access South	
4	4	A57 West	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.30	7.80	2.00	30.00	55.00	20.00	
2	3.65	7.50	14.00	35.00	55.00	21.00	
3	3.65	5.20	5.00	30.00	55.00	21.00	
4	6.80	8.10	10.00	35.00	55.00	20.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.728	2413.166
2		(calculated)	(calculated)	0.620	1816.554
3		(calculated)	(calculated)	0.544	1405.490
4		(calculated)	(calculated)	0.739	2468.737

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	131.00	100.000
2	ONE HOUR	✓	760.00	100.000
3	ONE HOUR	✓	11.00	100.000
4	ONE HOUR	✓	1251.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	26.000	0.000	105.000
	2	80.000	0.000	6.000	674.000
	3	0.000	2.000	0.000	9.000
	4	320.000	906.000	25.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.20	0.00	0.80
	2	0.11	0.00	0.01	0.89
	3	0.00	0.18	0.00	0.82
	4	0.26	0.72	0.02	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.430	1.000	1.430
	2	1.170	1.000	1.210	1.030
	3	1.000	1.470	1.000	1.470
	4	1.170	1.030	1.210	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	43.0	0.0	43.0
	2	17.0	0.0	21.0	3.0
	3	0.0	47.0	0.0	47.0
	4	17.0	3.0	21.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.13	3.59	0.21	A
2	0.52	4.60	1.11	A
3	0.02	6.41	0.03	A
4	0.62	4.20	1.71	A

Main Results for each time segment

Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	141.03	140.57	725.33	0.00	1885.12	0.075	0.12	2.951	A
2	598.58	596.38	135.38	0.00	1732.63	0.345	0.55	3.309	A
3	12.17	12.10	703.61	0.00	1022.80	0.012	0.02	5.235	A
4	1007.19	1004.14	72.41	0.00	2415.20	0.417	0.76	2.723	A

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	168.41	168.27	867.87	0.00	1781.34	0.095	0.15	3.190	A
2	714.76	713.99	162.04	0.00	1716.10	0.417	0.74	3.758	A
3	14.54	14.52	842.35	0.00	947.34	0.015	0.02	5.672	A
4	1202.68	1201.48	86.69	0.00	2404.64	0.500	1.06	3.197	A

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	206.25	206.03	1062.16	0.00	1639.90	0.126	0.20	3.589	A
2	875.40	873.93	198.39	0.00	1693.57	0.517	1.11	4.586	A
3	17.80	17.77	1031.09	0.00	844.68	0.021	0.03	6.399	A
4	1472.98	1470.44	106.11	0.00	2390.28	0.616	1.70	4.173	A

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	206.25	206.25	1063.96	0.00	1638.59	0.126	0.21	3.593	A
2	875.40	875.38	198.62	0.00	1693.43	0.517	1.11	4.603	A
3	17.80	17.80	1032.70	0.00	843.80	0.021	0.03	6.406	A
4	1472.98	1472.94	106.29	0.00	2390.15	0.616	1.71	4.197	A

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	168.41	168.63	870.57	0.00	1779.39	0.095	0.15	3.195	A
2	714.76	716.21	162.41	0.00	1715.88	0.417	0.75	3.771	A
3	14.54	14.57	844.83	0.00	945.99	0.015	0.02	5.683	A
4	1202.68	1205.20	86.96	0.00	2404.44	0.500	1.08	3.218	A

Main results: (09:00-09:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	141.03	141.17	728.43	0.00	1882.86	0.075	0.12	2.955	A
2	598.58	599.36	135.95	0.00	1732.28	0.346	0.56	3.328	A
3	12.17	12.19	707.04	0.00	1020.93	0.012	0.02	5.245	A
4	1007.19	1008.42	72.78	0.00	2414.93	0.417	0.77	2.741	A

(Default Analysis Set) - 2030 + Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2030 + Dev, PM	2030 + Dev	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	(untitled)	Roundabout	1,2,3,4			4.23	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Site Access North	
2	2	A57 East	
3	3	Site Access South	
4	4	A57 West	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.30	7.80	2.00	30.00	55.00	20.00	
2	3.65	7.50	14.00	35.00	55.00	21.00	
3	3.65	5.20	5.00	30.00	55.00	21.00	
4	6.80	8.10	10.00	35.00	55.00	20.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.728	2413.166
2		(calculated)	(calculated)	0.620	1816.554
3		(calculated)	(calculated)	0.544	1405.490
4		(calculated)	(calculated)	0.739	2468.737

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	329.00	100.000
2	ONE HOUR	✓	892.00	100.000
3	ONE HOUR	✓	24.00	100.000
4	ONE HOUR	✓	983.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	66.000	0.000	263.000
	2	18.000	0.000	2.000	872.000
	3	0.000	5.000	0.000	19.000
	4	74.000	903.000	6.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.20	0.00	0.80
	2	0.02	0.00	0.00	0.98
	3	0.00	0.21	0.00	0.79
	4	0.08	0.92	0.01	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.120	1.000	1.120
	2	1.340	1.000	1.370	1.020
	3	1.000	1.150	1.000	1.150
	4	1.340	1.010	1.370	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	12.0	0.0	12.0
	2	34.0	0.0	37.0	2.0
	3	0.0	15.0	0.0	15.0
	4	34.0	1.0	37.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1	0.24	3.19	0.36	A
2	0.63	6.15	1.71	A
3	0.04	6.35	0.05	A
4	0.46	2.82	0.88	A

Main Results for each time segment

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	277.41	276.65	695.42	0.00	1906.89	0.145	0.19	2.472	A
2	689.84	686.98	227.33	0.00	1675.63	0.412	0.71	3.729	A
3	20.78	20.67	906.08	0.00	912.67	0.023	0.03	4.641	A
4	767.47	765.58	22.39	0.00	2452.18	0.313	0.47	2.212	A

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	331.26	331.01	831.92	0.00	1807.52	0.183	0.25	2.730	A
2	823.73	822.52	272.00	0.00	1647.94	0.500	1.02	4.474	A
3	24.81	24.77	1084.67	0.00	815.54	0.030	0.04	5.235	A
4	916.43	915.84	26.81	0.00	2448.91	0.374	0.62	2.435	A

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	405.70	405.28	1018.60	0.00	1671.62	0.243	0.36	3.184	A
2	1008.87	1006.16	333.02	0.00	1610.12	0.627	1.69	6.094	A
3	30.39	30.32	1327.12	0.00	683.67	0.044	0.05	6.336	A
4	1122.39	1121.36	32.80	0.00	2444.48	0.459	0.88	2.817	A

Main results: (17:30-17:45)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	405.70	405.70	1019.54	0.00	1670.93	0.243	0.36	3.186	A
2	1008.87	1008.80	333.36	0.00	1609.90	0.627	1.71	6.149	A
3	30.39	30.39	1330.10	0.00	682.05	0.045	0.05	6.352	A
4	1122.39	1122.38	32.89	0.00	2444.42	0.459	0.88	2.823	A

Main results: (17:45-18:00)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	331.26	331.68	833.39	0.00	1806.45	0.183	0.25	2.736	A
2	823.73	826.42	272.54	0.00	1647.61	0.500	1.04	4.519	A
3	24.81	24.88	1089.09	0.00	813.13	0.031	0.04	5.254	A
4	916.43	917.45	26.94	0.00	2448.82	0.374	0.62	2.439	A

Main results: (18:00-18:15)

Arm	Total Demand (PCU/hr)	Entry Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	End Queue (PCU)	Delay (s)	LOS
1	277.41	277.65	697.69	0.00	1905.24	0.146	0.19	2.477	A
2	689.84	691.09	228.15	0.00	1675.12	0.412	0.72	3.764	A
3	20.78	20.82	910.98	0.00	910.01	0.023	0.03	4.655	A
4	767.47	768.06	22.53	0.00	2452.08	0.313	0.47	2.217	A

Appendix K

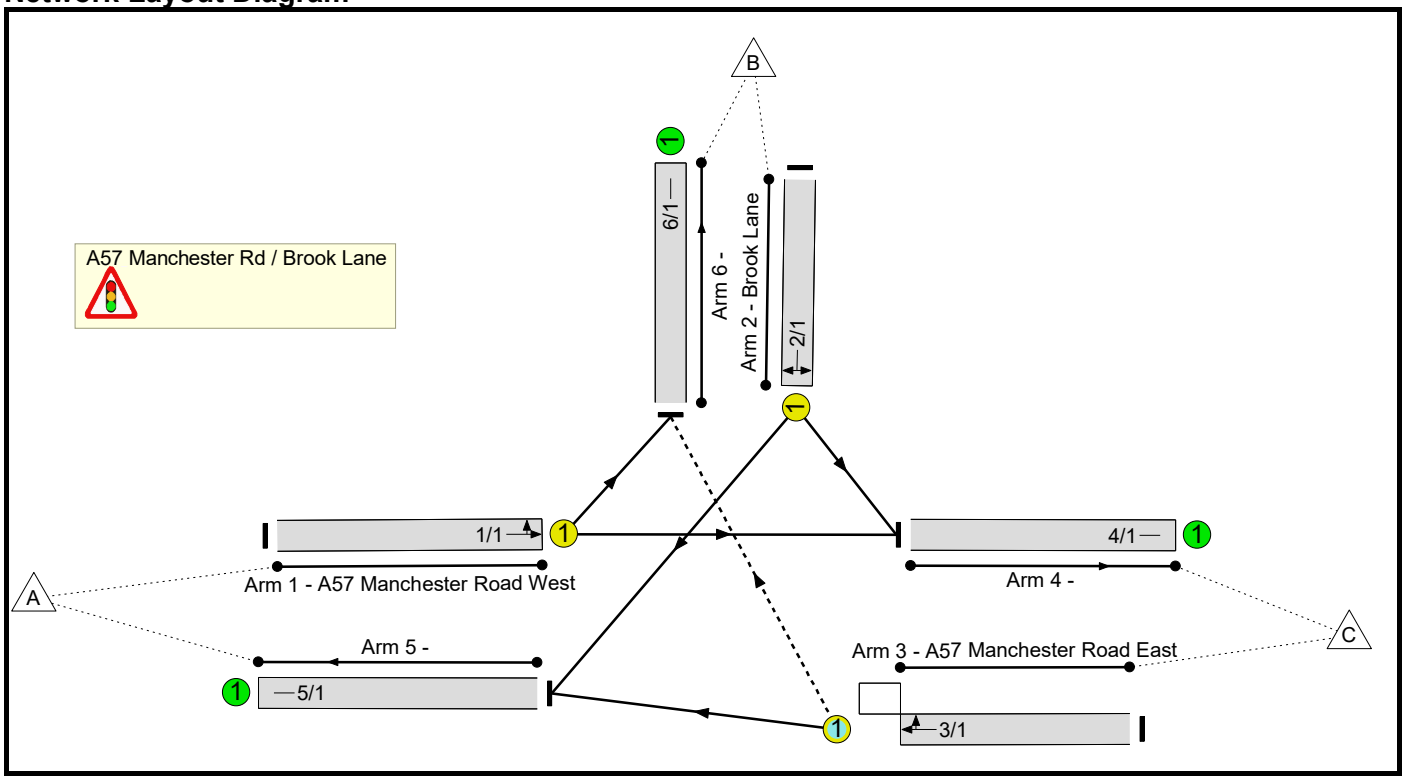
LinSig Modelling Output – Site Access Signal Junction

Full Input Data And Results

User and Project Details

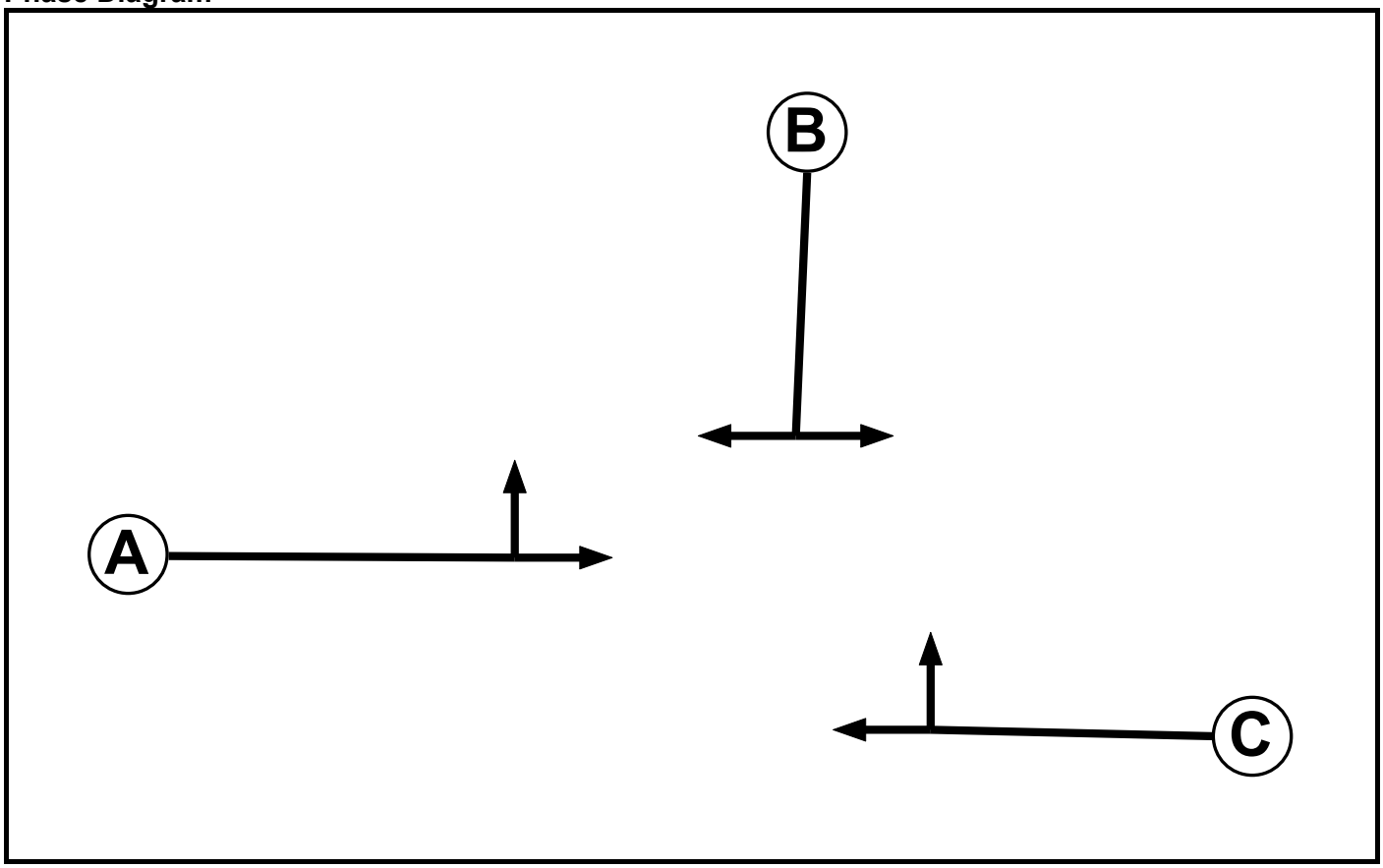
Project:	
Title:	
Location:	
Additional detail:	
File name:	Brook Lane Access Rev A - All Industrial nov 2021.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7

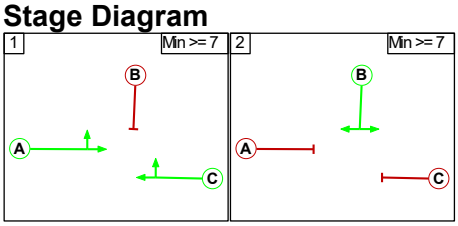
Phase Intergreens Matrix

Terminating Phase	Starting Phase			
		A	B	C
A			7	-
B	7			7
C	-	7		

Phases in Stage

Stage No.	Phases in Stage
1	A C
2	B

Stage Diagram



Full Input Data And Results

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
		1	2
From Stage	1		7
	2	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A57 Manchester Rd / Brook Lane

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
3/1 (A57 Manchester Road East)	6/1 (Right)	1439	0	1/1	1.09	All	2.00	2.00	0.50	2	2.00

Full Input Data And Results

Lane Input Data

Junction: A57 Manchester Rd / Brook Lane												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A57 Manchester Road West)	U	A	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 4 Ahead	Inf
											Arm 6 Left	15.00
2/1 (Brook Lane)	U	B	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 4 Left	15.00
											Arm 5 Right	15.00
3/1 (A57 Manchester Road East)	O	C	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	15.00
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2030 + Dev AM'	08:00	09:00	01:00	
2: '2030 + Dev PM '	17:00	18:00	01:00	

Scenario 1: '2030 + Dev AM' (FG1: '2030 + Dev AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	160	850	1010
	B	64	0	16	80
	C	892	40	0	932
	Tot.	956	200	866	2022

Traffic Lane Flows

Lane	Scenario 1: 2030 + Dev AM
Junction: A57 Manchester Rd / Brook Lane	
1/1	1010
2/1	80
3/1	932
4/1	866
5/1	956
6/1	200

Full Input Data And Results

Lane Saturation Flows

Junction: A57 Manchester Rd / Brook Lane								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A57 Manchester Road West)	3.65	0.00	Y	Arm 4 Ahead	Inf	84.2 %	1949	1949
				Arm 6 Left	15.00	15.8 %		
2/1 (Brook Lane)	3.65	0.00	Y	Arm 4 Left	15.00	20.0 %	1800	1800
				Arm 5 Right	15.00	80.0 %		
3/1 (A57 Manchester Road East)	3.65	0.00	Y	Arm 5 Ahead	Inf	95.7 %	1972	1972
				Arm 6 Right	15.00	4.3 %		
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2030 + Dev PM ' (FG2: '2030 + Dev PM ', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	42	997	1039
	B	126	0	32	158
	C	820	11	0	831
	Tot.	946	53	1029	2028

Traffic Lane Flows

Lane	Scenario 2: 2030 + Dev PM
Junction: A57 Manchester Rd / Brook Lane	
1/1	1039
2/1	158
3/1	831
4/1	1029
5/1	946
6/1	53

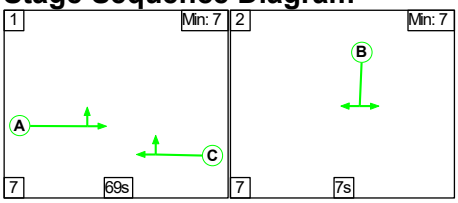
Full Input Data And Results

Lane Saturation Flows

Junction: A57 Manchester Rd / Brook Lane								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A57 Manchester Road West)	3.65	0.00	Y	Arm 4 Ahead	Inf	96.0 %	1972	1972
				Arm 6 Left	15.00	4.0 %		
2/1 (Brook Lane)	3.65	0.00	Y	Arm 4 Left	15.00	20.3 %	1800	1800
				Arm 5 Right	15.00	79.7 %		
3/1 (A57 Manchester Road East)	3.65	0.00	Y	Arm 5 Ahead	Inf	98.7 %	1977	1977
				Arm 6 Right	15.00	1.3 %		
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2030 + Dev AM' (FG1: '2030 + Dev AM', Plan 1: 'Network Control Plan 1')

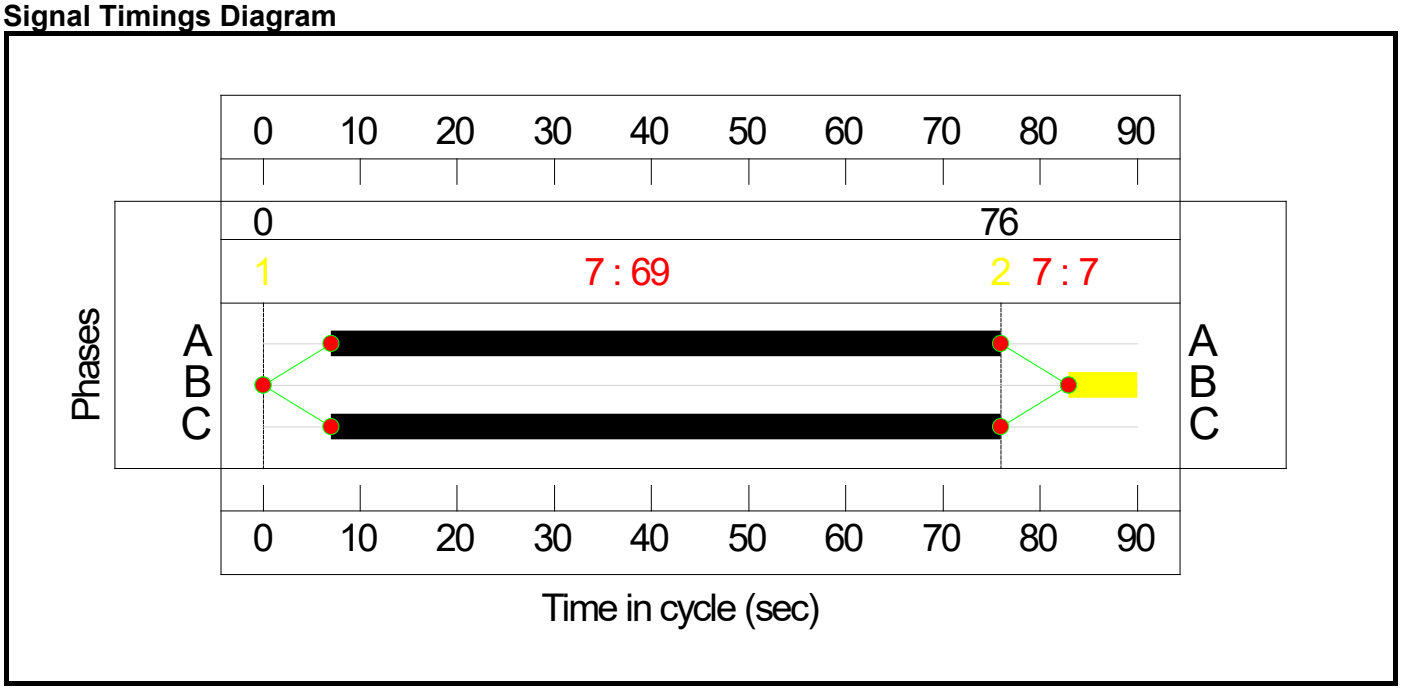
Stage Sequence Diagram



Stage Timings

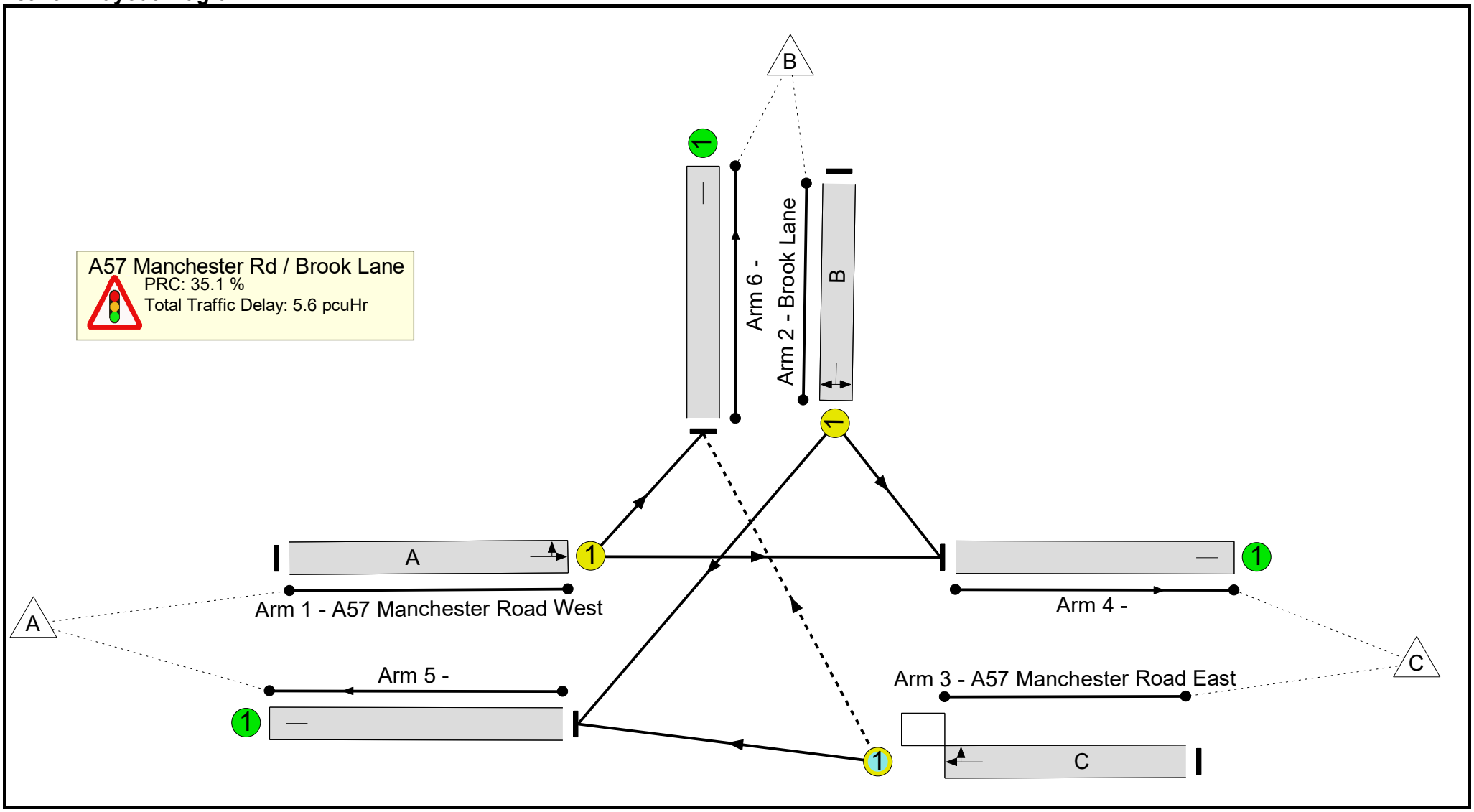
Stage	1	2
Duration	69	7
Change Point	0	76

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**66.6%**
A57 Manchester Rd / Brook Lane	-	-	**N/A**	-	-		-	-	-	-	-	-	**66.6%**
1/1	A57 Manchester Road West Ahead Left	U	N/A	N/A	A		1	69	-	1010	1949	1516	66.6%
2/1	Brook Lane Left Right	U	N/A	N/A	B		1	7	-	80	1800	160	50.0%
3/1	A57 Manchester Road East Ahead Right	O	N/A	N/A	C		1	69	-	932	1972	1534	60.8%
4/1		U	N/A	N/A	-		-	-	-	866	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	956	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	200	Inf	Inf	0.0%

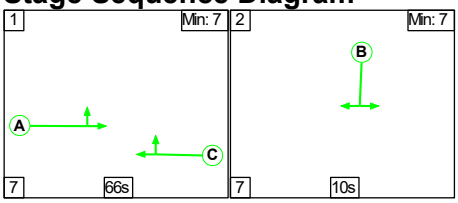
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**40**	**0**	**0**	**3.3**	**2.3**	**0.1**	**5.6**	-	-	-	-
A57 Manchester Rd / Brook Lane	-	-	**40**	**0**	**0**	**3.3**	**2.3**	**0.1**	**5.6**	-	-	-	-
1/1	1010	1010	-	-	-	1.3	1.0	-	2.3	8.2	11.5	1.0	12.5
2/1	80	80	-	-	-	0.9	0.5	-	1.4	61.3	1.9	0.5	2.4
3/1	932	932	40	0	0	1.1	0.8	0.1	1.9	7.5	9.6	0.8	10.4
4/1	866	866	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	956	956	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	200	200	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 35.1 Total Delay for Signalled Lanes (pcuHr): 5.59 Cycle Time (s): 90
PRC Over All Lanes (%): 35.1 Total Delay Over All Lanes(pcuHr): 5.59

Full Input Data And Results

Scenario 2: '2030 + Dev PM ' (FG2: '2030 + Dev PM ', Plan 1: 'Network Control Plan 1')

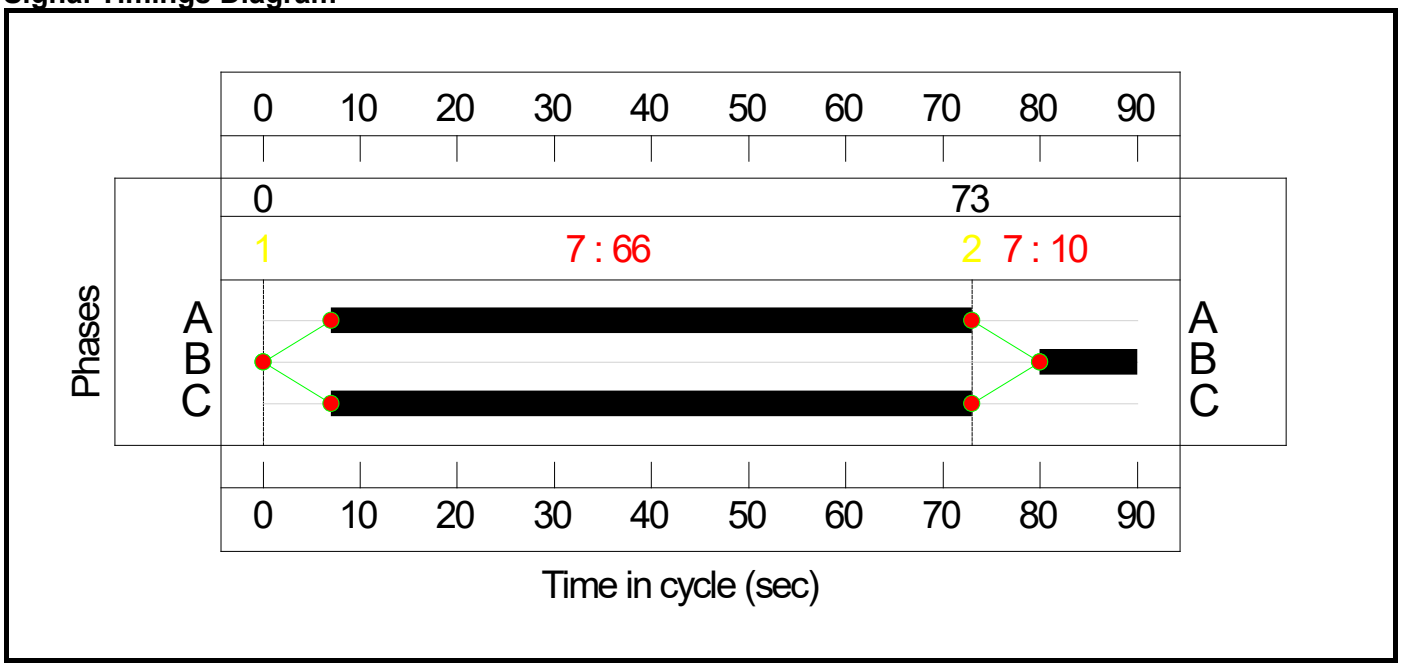
Stage Sequence Diagram



Stage Timings

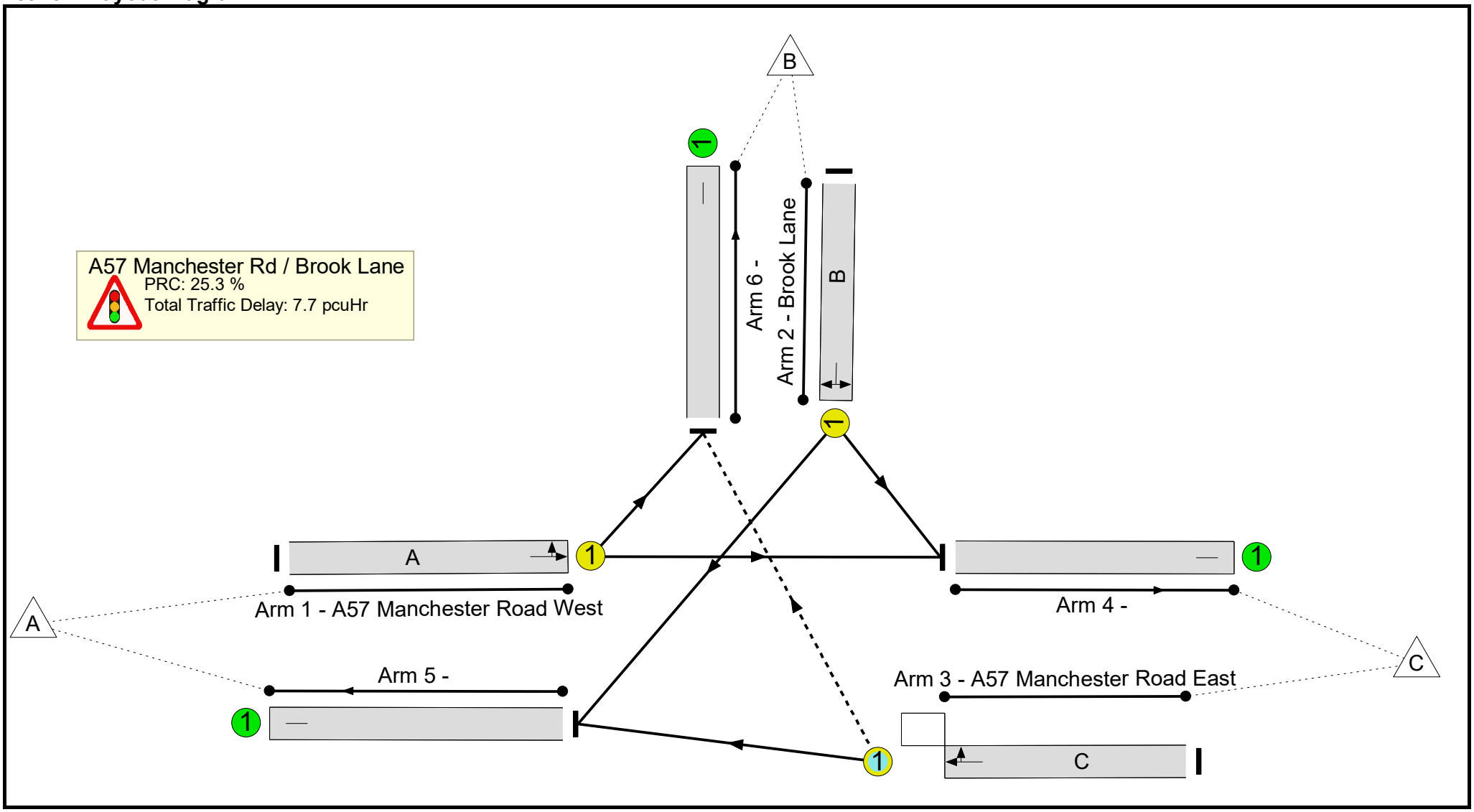
Stage	1	2
Duration	66	10
Change Point	0	73

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**71.8%**
A57 Manchester Rd / Brook Lane	-	-	**N/A**	-	-		-	-	-	-	-	-	**71.8%**
1/1	A57 Manchester Road West Ahead Left	U	N/A	N/A	A		1	66	-	1039	1972	1468	70.8%
2/1	Brook Lane Left Right	U	N/A	N/A	B		1	10	-	158	1800	220	71.8%
3/1	A57 Manchester Road East Ahead Right	O	N/A	N/A	C		1	66	-	831	1977	1472	56.5%
4/1		U	N/A	N/A	-		-	-	-	1029	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	946	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	53	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**11**	**0**	**0**	**4.6**	**3.1**	**0.0**	**7.7**	-	-	-	-
A57 Manchester Rd / Brook Lane	-	-	**11**	**0**	**0**	**4.6**	**3.1**	**0.0**	**7.7**	-	-	-	-
1/1	1039	1039	-	-	-	1.8	1.2	-	3.0	10.4	13.9	1.2	15.1
2/1	158	158	-	-	-	1.7	1.2	-	2.9	66.0	3.8	1.2	5.0
3/1	831	831	11	0	0	1.2	0.6	0.0	1.8	8.0	9.0	0.6	9.6
4/1	1029	1029	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	946	946	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	53	53	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 25.3 Total Delay for Signalled Lanes (pcuHr): 7.74 Cycle Time (s): 90
PRC Over All Lanes (%): 25.3 Total Delay Over All Lanes(pcuHr): 7.74

vectos.

Contact

London
Network Building,
97 Tottenham Court Road,
London W1T 4TP.
Tel: 020 7580 7373

Bristol
5th Floor, 4 Colston Avenue,
Bristol BS1 4ST
Tel: 0117 203 5240

Cardiff
Helmont House, Churchill Way,
Cardiff CF10 2HE
Tel: 029 2072 0860

Exeter
6 Victory House,
Dean Clarke Gardens,
Exeter EX2 4AA
Tel: 01392 422 315

Birmingham
Great Charles Street,
Birmingham B3 3JY
Tel: 0121 2895 624

Manchester
Oxford Place, 61 Oxford Street,
Manchester M1 6EQ.
Tel: 0161 228 1008

Leeds
7 Park Row, Leeds LS1 5HD
Tel: 0113 512 0293

Bonn
Stockenstrasse 5, 53113,
Bonn, Germany
Tel: +49 176 8609 1360
www.vectos.eu

Registered Office
Vectos (North) Limited
Oxford Place
61 Oxford Street
Manchester M1 6EQ.
Company no. 07794057

2. Warrington Draft Local Plan & Local Transport Plan 4 Consultation

Ben Laverick
Assistant Asset Manager
Highways England
Piccadilly Gate
Store Street
Manchester
M1 2WD

Tel: 0300 123 5000

Local Plan,
Planning Policy and Programmes,
Warrington Borough Council,
New Town House,
Buttermarket Street,
Warrington,
WA1 2NH

12th June 2019

Dear Sir / Madam,

Warrington Draft Local Plan & Local Transport Plan 4 Consultation

As a statutory consultee in the planning system, Highways England has a regulatory duty to cooperate. Consequently, Highways England are obliged to give consideration to all proposals received and to provide appropriate, timely and substantive responses. Highways England's desire to be a proactive planning partner goes beyond this statutory role but follows the spirit of the Licence which states that Highways England should: "*support local and national economic growth and regeneration*".

Highways England is charged with operating, managing capacity, maintaining and improving England's motorways and major A roads, which form the Strategic Road Network (SRN). It is an ambition to ensure that major roads are more dependable, durable, and most importantly – safe. Therefore, this review considers the proposals within the Warrington Proposed Submission Draft Local Plan Regulation 19 and associated transport evidence base in terms of the legal compliance and soundness of the documents. The review of the draft Local Transport Plan (LTP4) consultation documents, particularly focuses on the potential of the proposals to impact upon the safety and operation of the SRN within the Warrington district.

The SRN in Warrington comprises sections of the M6, M62 and M56, with the M6 running to the east of the main urban area, the M62 running to the north of the main urban area, and the M56 running to the south of the area. Junctions 20, 21, 21A and 22 of the M6 all fall within Warrington. It is noted that the Lymm interchange (M6 junction 20/M56 junction 9) is located immediately adjacent to the borough boundary within Cheshire East, whilst the dumb-bell roundabout which feeds the north facing slips is located within Warrington. In addition, whilst the junction 22 roundabout sits within Warrington, the north-facing slip roads fall within St Helens. Junctions 8, 9, 10 and 11 of the M62 all sit within Warrington, as do junctions 9 and 10 of the M56.

Key Findings

Following the review of the Warrington Proposed Submission Draft Local Plan Regulation 19 and the LTP4 consultation documents, we would draw your attention to the following key findings:

- LTP4 recognises Transport for the North's (TfN's) view that a focus on the SRN alone will not allow the North to achieve its aspiration for improved connectivity and economic growth.
- Through LTP4 Warrington's aspiration is to reduce Journey to Work mode share for drivers of cars and vans from 74% to 60% by 2041, and to increase public transport mode share to 15%, cycling to 7% and walking to 9.5%.
- Following adoption of the LTP4, more detailed studies will be undertaken to identify options for a mass transit solution to serve the strategic allocations in the emerging Local Plan.
- Warrington Borough Council (WBC) will investigate the implementation of a Workplace Parking Levy in Warrington as a way of managing demand for private car use, and of funding sustainable transport improvements.
- Opportunities for increasing the movement of goods by rail and water will also be investigated, including the potential of Port Warrington.
- The Local Plan covers the period 2017 to 2037;
- The total capacity figure for the main urban area is 13,726 new homes. This figure includes 1,200 homes at the Peel Hall site. A specific allocation for the site is included in the Draft Local Plan given its potential to impact upon both the local and strategic road network.
- It has been assumed that around 1,100 homes will be provided through Green Belt release in outlying settlements meaning that land adjacent to the main urban area needs to be found for approximately 6,000 new homes. Garden Suburb to the south east of Warrington and urban extension to the south west is the chosen option.
- Land to the east of the A50 will remain within the Green Belt, except for the parcel of land proposed for 116 ha of employment development adjacent to the M56 and M6. It is considered that more work is required to identify mitigation measures / strategic infrastructure to support this development and Highways England has signed a Statement of Common Ground (SoCG) with WBC to ensure that this site and others come forward sustainably.
- The ambitions for the Garden Suburb are to deliver between 5,000 and 7,500 new homes and an extension to the existing Appleton Thorn/Barleycastle Industrial Estate at the strategic intersection of junction 20 of the M6 and junction 9 of the M56, to provide 10,000 new jobs.
- The proposed phasing schedule for the Garden Suburb includes delivering 930 housing units and 116 ha of employment land close to junction 9 of the M56 in phase

1. Phase 2 would deliver the largest proportion of housing (2,797 units), phase 3 takes development through to the end of the Plan period (1,485 units) and phase 4: identifies development beyond the defined plan period (2,208 units).

- There is a requirement of approximately 213 ha of employment land to be provided through Green Belt release. WBC is proposing to allocate the following three additional employment areas: Port Warrington (74.36 ha); Warrington Business Hub (25.47 ha); and Garden Suburb Employment Area (116 ha).
- The northern extension of Omega has been removed from the emerging Local Plan primarily due to concerns around access and the ability of junction 8 of the M62 to accommodate further development, particularly given the proposed western extension of Omega to the south of the M62 in St Helens.
- The infrastructure schedule identifies the requirement for several SRN improvements including short-term committed Smart Motorway schemes at M62 junctions 10 to 12 and M6 junctions 21a to 26, which are fully committed schemes with completion expected during the next 5 years. Work on the M62 junction 10 to 12 Smart motorway is currently on site, with the M6 21a to 26 scheme due to follow after this.
- Further capacity and junction improvements are identified for the M62, and capacity improvements for the M6 in the short to medium term (2017-2028), although there is no information provided on the scale and type of works, indicative cost or funding source and there has been an assumption that Highways England will lead on these improvements.
- Improvements to junction 10 of the M56 in the medium term (2023-28) with an indicative cost of £10m, and improvements at junction 20 of the M6 in long term (2028-38) with an indicative cost of £50m are identified with a reference to them being subject to a Highways England study, but no further information is provided about the scale or type of works required.
- The traffic modelling evidence supplied for the consultation is limited in its detail and it is not possible to provide comments on the suitability of the background traffic growth, development trip generation or development trip distribution based upon the information supplied.
- The modelling evidence does not include any analysis of the Local Plan at an early phase, so it is not possible to judge whether the level of mitigation proposed is suitable or deliverable.
- The traffic modelling evidence completed to support the Local Plan provides little analysis of the impact on the SRN. The evidence supplied does not appear to provide a suitable baseline assessment for comparison of the Local Plan growth.
- We do not consider that the transport evidence provided at this stage is sufficient to support the proposed growth set out within the Draft Local Plan.

Review of Evidence Informing the LTP4

LTP4 Evidence Base Review

The evidence review is an important part in the LTP4 development process, as it provides an opportunity to understand the existing travel patterns and reasons why people travel in Warrington. It also enables the identification of existing and future problems with Warrington's transport system. The findings of the review have helped to inform the development of LTP4 policies and enabled evidence based objective setting.

The LTP4 evidence base document provides a review of the socio-economic trends and activity, such as population, the economy, health and leisure. Travel patterns, behaviour and use within Warrington. Future growth forecasts, regeneration and development proposals, and environmental issues and considerations and the natural environment.

Pertinent to the SRN, are the key findings for transport and travel including travel patterns and trip behaviour, journey times and congestion, travel to work, car ownership, and highways accessibility and freight activity. Car travel dominates in Warrington with approximately 81% of residents having access to a car. Most commuting journeys are made by car, including to the town centre. Serious congestion issues are observed in Warrington during peak periods along Birchwood Way accessing the M6, along the A50 accessing the M6 and where the A49 joins the M62. It is noted that less than 25% of residents can access key employment sites outside the town centre (including Gemini, Omega, Daresbury, Lingley Mere and Birchwood Park) within 30 minutes using public transport. In addition, the greatest road freight flows are observed on the SRN along the M6, followed by the M62 and then the M56.

The key findings in terms of air quality and noise pollution are also pertinent to the SRN. National standards for NOx are being exceeded on the motorway network surrounding Warrington, the town centre and roads that lead into the centre. A 43% and 41% reduction is required within the motorway and town centre AQMA, respectively. Also, the first priority locations for noise action planning include junction 9 and 11 of the M62, roads on the approach to junction 9 of the M62 and the A56. Noise important areas include M62 junction 10 / junction 21A.

The key findings and implications for future growth suggest that pinch point improvements and congestion relief alone will not be enough to support the planned growth in Warrington. The Waterfront area will require new access arrangements and the Garden Suburb and South West Urban Extension will require new transport infrastructure to support the level of development proposed in these locations. A more sustainable transport strategy is also required to ensure sustainable growth at existing employment sites in the Atlantic Gateway and Cheshire Science Corridor. The Transport for the North (TfN) road study plans to upgrade and improve journey times, east-west connectivity, and safety and user experience on the M6, M62 and M56. It also notes that there is likely to be a greater number of people travelling to and from motorway access points in north, south and east Warrington.

Highways England recognises the vital role that the SRN plays in Warrington and is aware of the significant challenges associated with not only bringing forward the targeted level of growth, but also in catering for growth associated with neighbouring authority areas and the general increase in background traffic levels on the SRN. There is likely to be a material impact on the operation of the SRN around Warrington associated with future increases in traffic. Therefore, it will be critical to identify appropriate and available strategies to cater for the targeted growth, by way of improving the accessibility and sustainability of allocation sites, and through implementation of appropriate highway infrastructure improvements.

Strategic Environmental Assessment of the Warrington Draft LTP4

This environmental report documents the Strategic Environmental Assessment (SEA) process that has been undertaken to support the preparation of the Warrington LTP4. The LTP4 sets out the vision and strategy for the long-term development of transport solutions in Warrington. It will provide the framework for how transport will support the economic, social and environmental development of Warrington over the Plan period and will replace the existing LTP3.

SEA is a mechanism for considering and communicating the likely significant effects of an emerging plan and reasonable alternatives in terms of key environmental issues. The aim of SEA is to inform and influence the plan-making process with a view to avoiding or mitigating negative environmental effects and maximising positive effects.

Scoping is the process of gathering information about the area and factors likely to be affected by the Plan. This helps to identify what the key issues are and which of these should be the focus of the SEA process. A Scoping Report was prepared and consulted upon in July and August 2018. It provided an outline of the Plan, the current and projected baseline, a contextual review of national, regional and local policies, plans and programmes, and established the key issues to form part of the SEA framework of objectives.

The appraisals identify and evaluate 'likely significant effects' on the baseline / likely future baseline associated with the draft Plan (and any reasonable alternatives), drawing on the sustainability topics and objectives as a methodological framework. We note that the following assumptions have been considered when undertaking the appraisals:

- In the absence of LTP4 there is still national and local policy, programmes and schemes, so the effects of LTP4 are predicted in the context of how it is likely to lead to more positive or negative effects when compared to a less proactive approach.
- Significant effects will only be identified if there is likely to be a tangible change to the projected baseline.

- The appraisal is focused on strategic matters, as detailed effects would be dealt with at the planning stage through appropriate assessment (e.g. Environmental Impact Assessment).
- Where routine mitigation measures could be implemented to reduce potential negative effects, this will be considered in the appraisals.

A key part of the appraisal process is to consider whether there are different ways in which the vision and objectives of the Plan can be achieved. Many policies have been developed to help deliver the vision and objectives which are not mutually exclusive strategic approaches so there are no reasonable alternatives to test. For example, policies that seek to improve safety do not have any strategic alternatives. However, there are strategic decisions to make about what transport measures to focus efforts and funding towards. Three reasonable options are identified as follows:

1. Focus on a mix of sustainable travel (walking, cycling and improvement of existing public transport networks) and traffic management measures.
2. A new mass transit system to be implemented alongside traffic management measures and sustainable travel. This would require substantial investment and may result in less investment in traffic management and sustainable travel.
3. Sole focus on sustainable modes of travel. This would involve greater investment in walking and cycling infrastructure and supporting measures.

It was found that Option 2 generated the most significant positive effects overall, as it best supports economic growth and housing development, which are critical to the emerging Local Plan. Therefore, the preferred approach is broadly reflective of Option 2, including a broad range of policy measures to deliver the vision and objectives of the Plan.

The appraisal findings of the following themes are most relevant to Highways England: Economy and Regeneration (objectives 1 and 2), Health and Well-being (objectives 3, 4 and 5), Accessibility (objective 6), Housing (objective 7) and Natural Resources (objective 9).

Overall significant positive effects are predicted for objective 1 as improvements to the transport network are critical to support a modern economy, and for objective 2 due largely to the passenger transport policies that could help improve access for disadvantaged groups. Also, a significant positive effect is predicted for objective 3 largely related to the active travel and road safety policies. A minor positive effect is predicted for objective 4 as there is no explicit goal to improve access to green infrastructure, and for objective 5 as even though there are no specific measures relating to access to health facilities, the Plan will lead to a general improvement in accessibility. A significant positive effect is predicted for objective 6 which is likely to lead to key benefits including improved access to services, support for active modes of travel, developments being well served by a range of transport modes, a modal shift to the movement of freight from roads to rail and water, and a reduction in carbon emissions. The Plan is also predicted to have significant positive effects upon housing by securing sustainable patterns of growth and movement, which are important to the delivery of new homes. The overall effect with

regards to air quality is a significant positive effect relating to the strong drive to achieve modal shift to active modes and support the encouragement for the use of public transport and the management of road networks to reduce congestion, along with cleaner / low emission vehicles.

The recommendations that have been made to improve the Plan policies include strengthening the active travel policies by identifying what types of active travel infrastructure will be encouraged. That the options exploration process for a mass rapid transit system includes an assessment of the environmental impacts to help guide the preferred approach. Freight movements on waterways are promoted as a key principle to encourage modal shift and that the passenger transport policies seek to support an increase in bus use.

Highways England considers that an appropriate level of assessment has been carried out to support the current stage in the development process of the LTP4.

Review of Warrington Fourth Local Transport Plan: Consultation Draft

The draft LTP4 has been published for consultation alongside the Draft Local Plan. To date it has been informed by feedback from a series of transport summits that were attended by interested organisations, by comments received during the PDO consultation in Summer 2017, and by a thorough review of the transport evidence base.

WBC, as a transport authority, has a statutory duty under the Transport Act 2000, as amended by the Local Transport Act 2008, to produce a Local Transport Plan (LTP) and keep it under review. The LTP will help to address current and future local transport issues by providing a framework for decisions on future investment. It sets objectives for transport to support wider goals and ambitions, establishes policies to help achieve the objectives, and plans for implementing the policies. The vision, policies and actions identified in the Plan cover the period from its adoption to 2040.

The LTP4 has been influenced by several local and regional policies including TfN's Strategic Transport Plan which sets out the case for strategic transport infrastructure investment through to 2050. Highways England's Strategic Road Network covers just 2% of the road network in the North, but it accounts for a significant amount of traffic flow and economic value. TfN's view is that a focus on the SRN alone will not allow the North to achieve its aspiration for improved connectivity and economic growth.

A Major Road Network (MRN) for the North has been identified that connects both current economic centres and futures economic growth locations, as well as major transport hubs to enable multi-modal journeys. With local connections alongside strategic roads, it accounts for about 7% of the roads in the North. The MRN in Warrington include sections of the A49, A57, A56, A50 and A574.

Alongside the Strategic Transport Plan, TfN has published an Investment Programme which comprises TfN's advice to government on the long-term, multi-modal priorities for enhanced pan-Northern connectivity. The schemes and packages of interventions relevant to Warrington, which impact on the SRN are:

- Road Investment Strategy (RIS) 1, including M6 J22-25 & M62 J10-13 Smart Motorways;
- Warrington Western Link;
- M56 junctions 11 to 15 capacity improvement;
- M6 improvements including junctions 19 to 21A; and
- M62 junctions 5 to 10.

Within the Warrington Air Quality Action Plan, it states that actions to improve air quality by the Council within the Motorway AQMA are limited. A formal working group is to be set up between transport officers from the Council, Highways England and TfN to assess potential actions. The working group is likely to deliver this work as an agenda item within existing transport meetings.

The key challenges that need addressing through LTP4 are:

- Addressing car dependency and congestion.
- Growing bus patronage.
- Continuing the upward trend in rail use.
- Improving the walking and cycling offer.
- Improving air quality and reducing transport noise.
- Addressing transport inequalities.
- Making Warrington a more disabled friendly place.
- Supporting growth.
- Reflecting public and stakeholder views.

The vision for LTP4 is: *Warrington will be a thriving, attractive and well-connected place with popular, high quality walking, cycling, and public transport networks*. This is supported by a series of objectives as follows:

- Provide people with a choice about how they travel for each journey.
- Encourage a culture change that reduces the need for people to travel by car.
- Improve access to the town centre for all sustainable modes.
- Develop a resilient and efficient transport network that supports the town's growth.
- Reduce traffic congestion.
- Reduce emissions from transport.
- Maintain and improve all transport infrastructure.
- Encourage healthier lifestyles by increasing day-to-day activity.

- Improve safety for all highway users.
- Make Warrington a more disabled friendly place.

The following policies and actions for delivering the vision and objectives are of interest to Highways England:

- Active Travel: how we will increase walking and cycling in Warrington.
- Smarter Travel Choice: helping people choose how they travel.
- Passenger Transport: how we will improve bus, rail and taxi journeys in Warrington.
- Safer Travel: making travelling through Warrington safer.
- Freight Management: How we will support and manage freight movements.

Through LTP4 Warrington will become a place that is not dominated by car movements. The aspiration is to reduce Journey to Work mode share for drivers of cars and vans from 74% to 60% by 2041. To achieve this there is a need to facilitate significant increases in cycling to 7% mode share (approximately 2.5 times the current level), bus and local public transport use to 15% (3 times the current level) and waking to 9.5%. This aim to increase the use of sustainable modes of travel is ambitious and needs to be supported by an equally ambitious vision for transforming the transport network. The approach to delivering this change falls within four themes:

- Creating an attractive, high standard, user-friendly environment for walking and cycling trips.
- Transforming public transport by ensuring that there are attractive, frequent services that connect the places that people live and large attractors.
- Managing demand for private car use.
- Creating sufficient transport capacity on the network through major priority infrastructure projects.

Warrington are developing a Local Cycling and Walking Infrastructure Plan (LCWIP) in line with government guidance. The LCWIP sets out an aspirational core network for walking and cycling routes that includes primary routes, neighbourhood routes, and greenways. The key outputs of the LCWIP will be a network plan for walking and cycling which identifies preferred routes and core zones and a prioritised programme of infrastructure improvements for future investment. This will help to provide the right infrastructure to enable and support an increase in cycling in Warrington.

Smarter Travel Choices describes a range of approaches designed to help people to become less car dependent. The ambition is to reduce the number of car trips by providing greater awareness of sustainable travel choices. The scope includes travel plans, information and marketing, alternatives to travel (e.g. agile working), sustainable choices, training and enabling, active travel, cycling and walking, and smart and integrated ticketing.

To achieve the ambitious target to increase mode share for bus and mass transit use for journeys to work to 15%, the public transport offer in Warrington needs to be transformed.

Public transport currently available in Warrington includes express coach, local bus, rail and taxi/private hire vehicles. Future modes could include light rapid transit services such as tram/light rail or express/guided bus.

A study has been commissioned to look at options for two possible modes for a mass transit solution for Warrington: Light Rail/Tram and Bus Rapid Transit (BRT). This is in the very early stages and other modes may be considered in the process of identifying a mass transit network for Warrington. Indicatively the proposed network includes three cross-town centre routes: Lingley Mere/Omega to the proposed Garden Suburb; Daresbury to Winwick; and Birchwood to Fiddler's Ferry. It also includes two orbital routes: Birchwood to the proposed Garden Suburb; and Lingley Mere/Omega to Birchwood. The core of the proposed network would provide linkages to key transport hubs including Warrington Central, Bank Quay and the Bus Interchange. WBC proposes to carry out the optioneering, feasibility and design work in the first 5 years of the LTP4.

We welcome WBC's commitment to plan for improvements to the active travel network and to the promotion of smarter travel choices. We also support the proposal to consider options for a mass transit solution that will serve the strategic allocations for housing and employment development in the emerging Local Plan. These areas need to be well-served by sustainable modes of transport, which should be in place at the right time to serve the new residential communities and employment opportunities. Evidence has shown that trying to change people's travel behaviour once it has been established is extremely difficult. Therefore, it is necessary to plan for growth in sustainable locations that are accessible by all modes of transport.

In addition, High Speed 2 (HS2) and Northern Powerhouse Rail (NPR) offer a unique opportunity to enhance the area surrounding Bank Quay. In addition, with the newly electrified Chat Moss route, which skirts the borough to the north now providing the quickest end to end journey time between Liverpool and Manchester, there is an opportunity to review services on the Cheshire Lines Committee (CLC). WBC have been working in partnership with TfGM and Merseytravel to identify options for enhanced service patterns on the line. Some minor rail infrastructure at Birchwood station and to the west of Sankey for Penketh station could deliver benefits including the retention of 2 semi-fast services per hour along the corridor, potential to connect the Liverpool-Birchwood service to the Merseyrail network at Liverpool South Parkway and the establishment of a Warrington Metro with six trains per hour on the core section of route between Warrington West and Birchwood.

A Workplace Parking Levy is a charge on employers who provide parking to their employees. After the adoption of the LTP4, WBC will investigate the implementation of a Workplace Parking Levy in Warrington as a way of managing demand for private car use, and as a way of funding sustainable transport improvements. An outline feasibility study has estimated that it could contribute £4.8m per year for investment in sustainable transport improvements in Warrington.

To maintain and improve Warrington's networks for all modes and to incentivise the increased use of sustainable travel, a range of physical improvements will be required. Minor improvements will include pedestrian and cycling accessibility improvements, road safety and traffic management schemes, junction upgrades, bus stop improvements and priority measures, and highway maintenance programmes. Typically, these schemes will be under £2m and funded by the annual Department for Transport (DfT) Integrated Transport and Maintenance Blocks.

Major improvements will typically be large scheme infrastructure projects over £2m and will be funded from specific bids to external agencies such as DfT, Homes England, Highways England, Network Rail and Cheshire and Warrington Local Enterprise Partnership. Significant match funding is also likely to be required from WBC's capital programme and developer contributions. Schemes confirmed as funded up to 2021 include:

- M62 junction 8 improvements; and
- Warrington East Phase 3 – Dualling of A574 between M62 J11 and Moss Gate.

Under the Road Traffic Act 1988, WBC is required to prepare and carry out a programme of measures to promote road safety. Including this within the LTP helps to embed safety into broader transport schemes and encourages efficient use of resources. Safety and security for all users and all parts of the network needs to be considered including elements such as personal safety whilst waiting at bus stops or whilst cycling or walking along off-road routes.

Warrington will establish road safety as a cultural priority and work effectively with partners and stakeholders at a local and regional level to promote the Safe Systems approach. This includes increasing the safety quality of the SRN and main road network to the highest iRAP (International Road Assessment Programme) rating. The establishment of the national road safety performance framework will provide the focus for delivery and will also set interim quantitative targets to 2030 for road safety improvement. However, it is not clear at this stage when the national performance framework will be established.

Freight plays a vital role in the economic well-being of Warrington and the wider UK economy. It is essential that Warrington continues to be an attractive place for business investment, including from the freight and logistics sector. The heaviest flows of Heavy Goods Vehicles (HGVs) can be seen on the SRN and the number of Light Goods Vehicles (LGVs) on the highways network is also increasing. Nearly 80 miles of smart motorway will be built in the North West over the next five years as part of a £1.5bn investment plan by Highways England. This will provide more reliable journey times for freight operators using the SRN to access Warrington. It should be noted that other modes such as rail and water freight also play a vital role to the functioning of the regional and national economy.

Rail's modal share of Trans-Pennine freight is low and yet the M62 carries a large number of HGVs. An increase in freight paths could enable rail freight operators to operate more

freight which could remove some road movements and have a net benefit of improving journeys times. In addition, Port Warrington is a proposed tri-modal (water, rail and road) freight interchange on the Manchester Ship Canal, with a direct link to the West Coast Main Line (WCML). This facility will provide opportunities for freight to be moved by water within the North West.

Highways England supports the Plan's vision and objectives to reduce the dominance of the car in Warrington and to promote more sustainable movements by walking, cycling and public transport. We welcome well-founded sustainable transport options for travel and encourage development in sustainable locations accessible by all modes of transport. Furthermore, we agree that the SRN alone cannot support the level of growth planned in the North and that sustainable movements of goods should be promoted. We are committed to ensuring that major roads are more dependable, durable, and most importantly – safe.

Review of Evidence Informing the Local Plan

Development Options and Site Assessment Technical Report

Given the number and nature of representations made to the PDO consultation, WBC has carried out a fundamental review of the technical evidence base and options assessments that underpin the emerging Local Plan. This report covers the options assessed for the spatial strategy for the distribution of new homes, the methodology for site specific allocations for housing and employment land, the housing trajectory and the approach to development needs beyond the Plan period.

Three options for assessing the housing requirements have been defined as follows:

- Option A – minimum requirement under the Government's standard housing methodology (909 homes per annum (pa));
- Option B – housing requirements to match economic growth (945 homes pa);
- Option C – minimum requirement under the Government's standard methodology (using 2016 based household projections- 735 homes pa).

The land calculations for the three growth scenarios are set out overleaf:

	Option A Standard Methodology	Option B Economic Growth	Option C Standard Methodology (2016 base)
Annual requirement	909	945	735
2017 to 2037	18,180	18,900	14,700
Flexibility at 10%	1,818	1,890	1,470
Total requirement	19,998	20,790	16.170
Urban capacity	13,726	13,726	13,726
Green Belt requirement	6,272	7,064	2,444

To meet the requirement of paragraph 22 of the National Planning Policy Framework (NPPF) for strategic policies to look ahead over a minimum of 15 years from the date of adoption, the Plan period covers 2017 to 2037. This assumes that the Plan will be adopted in late 2020. A benchmark of 10% has been applied to provide sufficient flexibility in the context of the proposed housing land supply, which is based on the precedent set in other Local Plan examinations.

In response to representations received to the Regulation 18 consultations density assumptions used in the Strategic Housing Land Availability Assessment (SHLAA) and masterplanning work have been reviewed. This has been done to reflect recent planning permissions in the town centre for higher density residential development and WBC's commitment to optimise the use of previously developed land. A new density of 257 dwelling per hectare has been applied to sites in and around the town centre. Through this process a total capacity figure for the main urban area of 13,726 new homes has been derived. This figure includes 1,200 homes at the Peel Hall site. This site has the potential to impact upon both the local and strategic road network given the scale of development proposed and it also requires additional on-site infrastructure. As such, there is a specific allocation for the site contained within the Draft Local Plan.

Highways England supports this approach as it will ensure sustainable development and that the required supporting infrastructure is identified and delivered in a timely manner to specifically mitigate the impact on the SRN.

Three options for the spatial distribution of housing growth have been assessed in preparing the Proposed Submission Draft Local Plan, which relate to the distribution of housing from Green Belt release as follows:

- Option 1 – all Green Belt release accommodated adjacent to main urban area;

- Option 2 – majority of Green Belt release accommodated adjacent to main urban area with 'incremental growth' in outlying settlements; and
- Option 3 – Green Belt release adjacent to main urban area complemented by a sustainable extension to one or more outlying settlements and incremental growth to remaining settlements.

The spatial options for the three growth scenarios have been assessed quantitatively through the Sustainability Appraisal (SA)/SEA process. In addition, they have been assessed qualitatively against the Local Plan objectives and detailed evidence base including outputs from the Warrington Multi-Modal Transport Model (MMTM) and the Air Quality Assessment, to provide greater transparency in how the preferred growth scenario and spatial strategy has been derived. WBC considers this process to be consistent with paragraph 35 of the NPPF to provide an appropriate strategy that has considered reasonable alternatives and that is based on proportionate evidence.

Growth Scenario C is not considered to provide the basis of an appropriate strategy as it does not meet Warrington's full development needs in accordance with paragraph 11 of the NPPF. For Growth Scenarios A and B, it is considered that Option 2 performs best against the Local Plan objectives. Following the assessment, WBC considers that Growth Scenario B provides the best strategy for the Local Plan to ensure the sustainable development of Warrington over the long term. Scenario B only represents a relatively small increase in development over Scenario A and it is considered that any additional environmental impacts can be appropriately mitigated.

Six options have been assessed to identify the most appropriate locations for development adjacent to the main urban area, as follows:

- Option 1 – Garden Suburb to the south east of Warrington of around 4,200 homes and urban extension to the south west of around 1,600 homes;
- Option 2 – Garden Suburb of around 4,200 homes and an urban extension to the west of Warrington of around 1,600 homes;
- Option 3 – Garden Suburb of around 4,200 homes and an urban extension to the north of around 1,600 homes;
- Option 4 – Garden Suburb of around 4,200 homes and dispersed Green Belt release adjacent to the main urban area;
- Option 5 – Garden Suburb of around 2,400 homes, urban extension to the south west of around 1,600 homes and dispersed Green Belt release adjacent to the main urban area; and
- Option 6 – A more dispersed pattern of Green Belt release adjacent to the main urban area.

The options are based on the revised Green Belt requirement and assumption that around 1,100 homes will be provided through Green Belt release in outlying settlements. This means that sufficient land adjacent to the main urban area needs to be found for approximately 6,000 homes.

Based on the assessment, Option 1 has been identified for inclusion in the Proposed Submission Draft Local Plan. This option performs strongly across most Local Plan objectives and is capable of meeting development needs, delivering the supporting infrastructure, and of contributing to the wider sustainable development of Warrington as a whole. Green Belt release can be facilitated without compromising the strategic importance of Warrington's Green Belt as a whole, with revised boundaries considered likely to be robust and durable beyond the Plan period. However, WBC recognise that housing delivery from these sites is unlikely within the early years of the Local Plan, given the lead in times for required infrastructure to support the two urban extensions.

A Development Framework has been prepared for the Garden Suburb. Having reviewed options for how the level of growth can best be accommodated through the preparation of the Framework and through SA/SEA, the allocation has been reduced from that proposed within the PDO with the A50 now forming the eastern extent of the site allocation. The reduced allocation can accommodate the required level of development within the Plan period and has capacity for around 2,000 homes beyond 2037.

Land to the east of the A50 will therefore remain within the Green Belt. The one exception is at the south east of the allocation where the proposed employment area includes a parcel of land to the east of the A50. This parcel has been included due to its proximity to junction 20 of the M6. It is stated that WBC has engaged with Highways England to ensure that appropriate improvements can be made to the strategic road network to support the development.

We consider that more work is required to identify mitigation measures / strategic infrastructure to support this development and have agreed to work with WBC to ensure that the site comes forward sustainably.

A stepped housing trajectory is proposed, which means that for the first 5 years of the Plan housing completions will be at an annual average of 847 homes per annum. This is to reflect the lead in time required to deliver essential infrastructure to support the sustainable development of the Waterfront, Garden Suburb and South West Garden Village meaning there will be relatively low levels of housing delivered in the early years. The annual average housing requirement over the remaining 15 years will therefore need to be increased to 978 homes per annum to ensure the minimum of 945 homes per annum is delivered over the Plan period.

In determining the amount of employment land needed for the Plan period, the 2019 Economic Development Needs Assessment (EDNA) update concluded that the preferred forecasting method for establishing need is a projection forward of past take-up rates that considers both strategic and local needs, resulting in a need of 362 hectares of employment land to 2037. This is proposed to be met as follows:

Total Requirement	361.71 ha
Existing supply	83.91 ha
Masterplan additional	31.46 ha
St Helens Omega Extension	31.20 ha
Green Belt requirement	215.14 ha

WBC can demonstrate a realistic supply of 83.91 hectares in the urban area, with masterplanning work supporting the potential for a further 31.46 hectares of employment primarily within and close to the town centre. Through Duty to Cooperate discussions it has been agreed that a 30-hectare extension to the west of the established Omega employment development in St Helens will count towards Warrington's employment land needs. This leaves a requirement of approximately 213 hectares to be provided through Green Belt release.

As part of the EDNA update (2019) all potential employment sites were categorised according to their feasibility, viability and deliverability as strategic and/or local employment sites. The highest performing sites for strategic and local need were categorised as 'A' and 'B' respectively, category 'C' sites were considered as reasonable, whilst category 'D' and 'E' sites were considered to be progressively constrained and to perform poorly, respectively. Each site has been assessed against SA/SEA criteria, means of access, Green Belt performance, and how they relate to the emerging Local Plan objectives and spatial strategy, including planned infrastructure.

There are enough grade 'A' sites to meet the full requirement for employment land. Following consideration of the wider site assessment criteria, WBC is proposing to allocate the following three additional employment areas:

- Port Warrington (74.36 ha) – the principle of expansion of the Port was established in the previous Plan due to the location of the site, the increase in freight on the Manchester Ship Canal and the ability to connect the ship canal to the road and rail network, The Port will form part of the wider Waterfront allocation and will be accessed by road from the Western Link.
- Warrington Business Hub (25.47 ha) – a modern business park located within the wider Waterfront allocation, benefiting from being close to Port Warrington, but also Bank Quay station and the town centre.
- Garden Suburb Employment Area (116 ha) – this is located at the junction of the M6 and M56 and will meet a large proportion of Warrington's identified B8 requirement. It will benefit from being close to the Garden Suburb and planned improvements to road infrastructure.

These sites provide a total of 215.83 ha marginally above the required need. They are broadly the same employment locations that were identified in the PDO and will require significant infrastructure improvements to the local and strategic road network. The only

grade 'A' site which has not been allocated is a northern extension to the existing Omega North site. This is primarily due to concerns around access and the ability of junction 8 of the M62 to accommodate further development, particularly given the proposed western extension of Omega to the south of the M62 in St Helens.

Warrington Transport Model: Model Validation Report

The Warrington MMTM is a 2016 based highway and public transport model, developed by AECOM on behalf of WBC. The model has been developed to assist WBC in preparing its spatial strategy for the Warrington Local Plan and for appraising a variety of transport proposals. The model has been developed using the industry standard SATURN software for the highway side and EMME software for public transport and demand modelling. The model covers the local and strategic road network within the borough of Warrington in two levels of detail. The finer detail of model covers much of the urban form of Warrington and covers the following sections of the SRN:

- M62 between, and including, junction 8 and junction 11;
- M6 between, and including, junction 22 and junction 20; and
- Junction 10 of the M56.

The second, lower, level of modelling, the extended simulation area, also covers the following parts of the SRN:

- Junction 7 of the M62;
- Junction 23 of the M6; and
- Junctions 7, 8, 9, 11 and 12 of the M56.

The model has been developed using a significant amount of traffic data, including slip road surveys at all the modelled SRN junctions and use of WebTris data for the SRN mainlines. Upon review of the presented flow calibration the model is demonstrated to calibrate well to observed traffic data, including most count sites on the SRN. It is noted that the model has a number of calibration count sites on the SRN which fall outside acceptable criteria. These include the slip roads at M62 junction 9 in the evening peak and the M6 mainline between junctions 21 and 22. The model has been validated to independent traffic counts, those not used in the matrix development process. The SRN is shown to validate reasonably well to the validation counts, noting that not all movements are subject to a validation count site, with the following notable exceptions:

- In the morning period:
  - Two approaches to M62 junctions 8;
  - The eastbound on-slip at M62 junction 9;
  - The M6 mainline between Croft and junction 22; and
  - The southbound on-slip at junction 21 of the M6.
- In the interpeak period:
  - Four sites in proximity to M62 junction 8;

- The A49 to the north of M62 junction 9;
- The M6 between Croft and junction 22;
- The southbound on-slip at junction 21 of the M6; and
- The southbound on-slip at junction 20.

- In the evening period:
  - Three sites in proximity to M62 junction 8;
  - Four sites in proximity to M62 junction 9;
  - The M62 mainline between junctions 9 and 10;
  - The northbound off-slip at M6 junction 21; and
  - One site at the Lymm Interchange.

Further to the flow validation the model has been validated to Trafficmaster journey time data for a range of routes on the local road network and the SRN. The routes on the SRN cover the M6, M62 and M56 mainlines. The local road routes include the local roads which intersect with the SRN at all modelled SRN junctions.

Highways England note that no journey time routes have been included on any of the slip roads. The model does not meet validation criteria for journey times on the SRN routes assessed. The model is not able to replicate the observed journey times on the M6 northbound and M62 westbound in the morning peak; the M6 in both directions in the inter peak period; and the M6 northbound in the evening peak.

Of concern to Highways England is the M6 northbound validation which is three minutes too slow in the morning model and six and a half minutes to fast in the evening peak.

The level of flow calibration and validation across the model is of a reasonable standard, however the miscalibrations on the SRN which have been identified above should be borne in mind when the modelled forecasts are used in these areas. Likewise, reference to the mis-validation of the SRN journey times should be made in any analysis of the impact of the SRN by the Local Plan proposals. Nevertheless, the model is of an appropriate standard to be able to understand the strategic flow impacts of development proposals and is considered suitable for assessment purposes for input to localised assessment methods.

Preferred Development Option: Transport Model Testing of Alternative Scenarios

During the preparation of the PDO evidence base the Warrington MMTM was not available to test the highway impacts of the PDO. A retrospective assessment of the PDO highway impacts, using the Warrington MMTM, and the impacts of alternative land use distributions has been completed. Six alternative distribution scenarios have been tested, over the PDO scenario, summarised for residential household numbers in the table (overleaf) taken from the report.

	PDO	S2	S3	S4	S5	S6	S7
Garden City Suburb	6,324	7,324	3,198	8,000	6,324	4,000	2,293
South West Warrington	1,831	1,831	902	0	0	1,831	647
Outlying Settlements	1,190	0	4,900	1,190	1,190	1,190	1,190
West Warrington	0	0	0	0	2,243	2,243	1,850
Urban Extension	0	0	0	0	0	0	3,210
Remainder	15,429	15,429	15,429	15,429	15,429	15,429	15,429
Total	**24,774**	**24,584**	**24,429**	**24,619**	**25,186**	**24,693**	**24,619**

The overall household numbers between the scenarios differ little, with the geographic spread varying considerably. The employment allocations have remained constant between all scenarios.

The information on the forecasting assessment of the PDO in the Warrington MMTM is presented in a referenced report "Warrington Transport Model: Forecasting Report (MFR), February 2018", this report does not form the evidence package of reports submitted for consultation and it is therefore not possible to comment upon.

Minimal detail on the adopted development trip rates have been provided in the report. It would be expected that the trip rates used be presented for review and comparison made with other developments. It would also be expected that the increase in trips in the model be presented in absolute values.

Minimal information of the distributions has been provided in the report, it would be expected that the zone to zone distribution for each development site be presented in some form, preferably in geographical illustrations.

Results from the assessments have been provided in the form of a range of network wide statistics, with no SRN specific related metrics. The network statistics on the whole predict very little difference between the assessed scenarios, suggesting that the placement of residential developments across the borough of Warrington would have similar highway impacts.

Warrington Local Plan Testing: Transport Model Testing of the WBC Proposed Submission Draft Local Plan and Highways Schemes in the Infrastructure Delivery Plan

The Warrington Local Plan modelling assessment, using the Warrington MMTM, is presented in the PSVLP_Transport_Model_Testing report prepared by AECOM. The report provides details on the modelling methodology to assess the Local Plan proposals

and provides modelled results from three forecast scenarios, detailed below, and one base year scenario.

The report provides the same level of detail on the modelled trip rates and distributions as presented in the PDO alternative testing assessment report.

Further evidence on the development of trip rates and distributions is required for agreement to be reached on their appropriateness. The information supplied does not provide confidence that the modelling includes sufficient levels of traffic growth associated with the Local Plan developments and therefore creates reservations over all of the modelled results presented.

The modelling report does not provide any information of the inclusion of background traffic growth.

Highways England would expect the model includes any committed developments, and any completed development following the 2016 data collection exercise. Furthermore, it would be expected that the model would include development consideration outside the borough of Warrington, including strategic traffic growth on the SRN. It is important for Highways England to plan for the cumulative impact of traffic growth on the SRN.

Forecasts on committed highway infrastructure have been included in the model. Committed highway infrastructure has been identified as being that which has been built since 2016, is currently under construction, or has a funding commitment. Eighteen such schemes have been identified as replicated from Table 8 in the report below:

- Mersey Gateway Bridge;
- Great Sankey Hub junction;
- Mersey Street junction;
- Skyline Drive;
- Warrington East Phase 1;
- M62 junction 8 improvements;
- Omega Local Highway Schemes Phase 2a;
- Omega Local Highway Schemes Phase 2b;
- Centre Park Link;
- Warrington West Rail Station;
- Warrington East Phase 2;
- Local Highway Schemes Phase 1;
- Local Highway Schemes Phase 3;

- Warrington East Phase 3;
- Highway England Route Investment Programme – M62 junctions 10-12 SMP;
- Highway England Route Investment Programme – M6 junctions 21a-26 SMP;
- Highway England Route Investment Programme – M56 junctions 11a; and
- Highway England Route Investment Programme – M6 junctions 16-19 SMP.

Additional highway infrastructure measures have been identified as Development Enablers, that being that the Local Plan development is dependent on these measures. There are seven development enablers, as follows, to be delivered by 2026:

- Warrington Western Link;
- Warrington South Strategic Infrastructure – Cat and Lion Bypass;
- Warrington South Strategic Infrastructure – Wrights Green Link;
- Warrington South Strategic Infrastructure – Howshoots Link;
- Warrington South Strategic Infrastructure – Wrights Green to A50 Link;
- Parkside Link A; and
- Parkside Link B.

The report states that there may be a requirement for other potential highway mitigations as a result of the Local Plan developments and/or existing network conditions, and these are included in the IDP. It is not clear how these measures have been developed, nor how they relate to being required to delivering the Local Plan.

Highways England would expect the transport infrastructure included within the IDP to be based upon accompanying transport evidence.

The model has been used to test two policy interventions: a mass transit package; and a Go Dutch cycling strategy. The modelling of both measures has been completed with a large number of assumptions due to the lack of any detail on how the two measures are to be introduced. The listed assumptions into the impact of the measures on the highway network, and the influence on mode choice have been presented. Both measures are thought to be sensible approaches to reducing the reliance on the car for travelling into and around Warrington.

Due to many unknowns over the deliverability of the schemes, and the assumptions included to model them, the results have only been considered to provide a range of possible benefits.

Based upon the above discussed forecasting process four modelled scenarios have been presented:

- 2016 Base model;
- 2036 Scenario 1 – 2016 base with committed schemes and Local Plan Growth;
- 2036 Scenario 2 – Scenario 1 with development enabling infrastructure;
- 2036 Scenario 3 – Scenario 2 with policy interventions.

The presentation of the four scenarios does not allow for a direct comparison of the highway impacts of the Local Plan development due to a lack of a do minimum model.

It would be expected that a base model with committed infrastructure would be included, it is therefore, not possible to form a judgement on the highway impacts of the Local Plan, ignoring our other technical concerns. Furthermore, an interim assessment has not been presented, it would be expected that an interim year assessment would be included to demonstrate the phased impact of the Local Plan and allow for the development of interventions which are required to be delivered early in the Plan period. Without this evidence it is not possible to determine if the proposed infrastructure in the IDP support the first phases of the Local Plan, nor is it possible to determine if that infrastructure is feasible or deliverable.

The results of the modelling assessments presented in the report have been compared against the 2016 base model. This approach means that the "with Local Plan" scenarios included the impacts of the committed infrastructure. If the scheme assessment was compared against a base model with committed infrastructure it is anticipated that this would worsen the comparison of the Local Plan results.

The results presented have little information of the Local Plans impact on the SRN, further results and analysis are required for Highways England to form a view on the predicted operation of junctions, merges, diverges and links of the SRN. This evidence should include refined methods of impact assessment, such as junction models and TD22/06 merging and diverging analysis, based upon the changes in flows predicted in the Warrington MMTM. Any completed analysis will need to be done so with recognition of the deficiencies in the base model and attempt to reflect observed flows and conditions at each assessment location.

Warrington Borough Council Local Plan Air Quality Modelling

Air quality modelling has been completed to ascertain the impact of the Local Plan proposals. The modelling has been completed based upon traffic data from the Warrington MMTM and therefore the results of the air quality modelling are subject to the concerns highlighted over the development of the Warrington MMTM forecast scenarios. It is not clear which traffic flow scenarios have been used from the Warrington MMTM for the air quality model. Due to the lack of clarity over the policy interventions it would be

preferable if the air quality modelling used traffic data from Scenario 2. The motorway AQMA has been included in the coarse air quality assessment but excluded from the detailed modelling due to the lack of receptors close to the AQMA.

Highways England requests that the impact of the Local Plan on the motorway AQMA is provided and that any necessary mitigation measures are identified.

The overall results from the air quality modelling completed on the urban area of the borough, illustrate that air quality is expected to improve over the Plan period due to improvements in vehicle technology, and increase fleet penetration of electric vehicles.

Warrington Garden Suburb Development Framework

The Development Framework has been prepared as a record of the evidence base, engagement process and design studies that underpin the proposals within Warrington Garden Suburb (WGS), that are included within the emerging Local Plan. The document sets out the policy position and provides an overview of the spatial analysis of the area including relevant transport, planning, environmental and utilities considerations as background context for developing and testing a comprehensive framework for the WGS.

WGS forms part of the wider south Warrington area located approximately 5km to the south of Warrington town centre and it covers an area of 1,500 hectares. Its boundary is defined by Appleton and Dudlow's Green to the west, the M56 and M6 to the south and east, and Grappenhall, the A56 and the Bridgewater Canal to the north. It is largely Green Belt consisting of agricultural land with some residential neighbourhoods and employment dispersed throughout the area.

The aim and primary objectives of the framework are to:

- Define the scale and type of development to come forward within the area;
- Define the social, physical and transport infrastructure required to support development;
- Provide a vehicle for consensus building and implementation;
- Support and integrate it with the review of the Local Plan;
- Demonstrate deliverability of the scheme; and
- Understand the existing character and minimise impact.

The ambitions for the WGS are to deliver a major new urban extension of between 5,000 and 7,500 new homes within three neighbourhoods surrounding a new neighbourhood centre with retail, health and leisure facilities, and a new Country Park. A major new employment area is also proposed as an extension to the existing Appleton Thorn/Barleycastle Industrial Estate at the strategic intersection of the M6 and M56, to provide 10,000 new jobs. Walking, cycling and public transport linkages will connect the neighbourhoods to local and neighbourhood centres, the new employment area and the

town centre. In addition, an extensive green network will connect the WGS with links to the wider green infrastructure network. These ambitions are aligned with the vision for the emerging Local Plan for Warrington.

WBC received over 45 submissions to the 'call for sites' within the WGS area from both public and private sector landowners and developers. These, with sites from the Green Belt Site Selection and SHLAA Green Belt Site Proformas have been considered in developing the Framework.

It is stated that the Green Belt Assessment undertaken by Arup in 2016 has informed the design and delivery strategy for the WGS. Most of the identified sites were considered to make a moderate to low contribution to the Green Belt. As such, sites making a weak contribution have been prioritised to be delivered in the early stages, sites making a moderate contribution will be delivered in a variety of phases and those sites making a strong contribution, located mainly in the north-eastern part of the WGS, will be kept untouched as Green Belt within the Plan period.

Within the local context section, a review of the vehicular movements network is provided. This states that WGS is well connected by road being adjacent to the M56/M6 interchange junctions, and with London Road (A49) and Knutsford Road (A50) providing the north-south connections from WGS to the town centre. As the area is predominantly farmland, WGS currently has a small number of bus routes serving the local and wider area. It is stated that a fundamental upgrade of the existing vehicular movement network is required to support the scale of development proposed in the WGS, and where possible this should use the existing road infrastructure. However, new road infrastructure will be required to connect proposed developments and will be phased accordingly.

A review of the non-vehicular movements is also provided. Two existing strategic long-distance trails run along the northern extent of the WGS; the Trans Pennine Trail – which runs alongside the Manchester Ship Canal and cuts through the northern corner of the site via a disused railway, and the Mersey Valley Trail which overlaps with the Cheshire Ring Canal Walk – running along the northern boundary of the site, mainly alongside the northern side of the Bridgewater Canal. There are also several existing Public Right of Way (PRoW) within the surrounding WGS including in Dudlow Green, Grappenhall and Appleton Thorn. It is stated that these established routes should be recognised and reinforced as part of the Framework.

The Framework identifies the overarching opportunities to support the WGS as improving the existing transport network to provide better links with the town centre, incorporating sustainable modes of travel, providing better public transport and non-vehicular links, and integrating the proposed infrastructure network with the transportation and green corridors.

Highways England acknowledges their attendance at a vision workshop in May 2018 where the general background to the WGS was discussed, along with Local Plan progress, market constraints and the technical baseline. At the session, issues relating to connectivity by public transport, walking and cycling, and air quality and physical constraints were discussed and considered. Three concept options were also presented with Option B being considered as the preferred approach. We note that following the workshop, Option B has been further refined and tested against physical constraints and trajectory requirements and has been subject to further consultation with major developers and landowners with interests in WGS.

The Framework structure has been developed to incorporate an enhanced vehicular movement network through a series of new and upgraded routes. These improvements will be phased over time in response to the development trajectory to link new and existing communities. The overall objective is to use this network to improve the linkages to the town centre, particularly through an enhanced public transport network that aims to generate greater patronage on the routes thereby making them commercially viable for public transport operators. The primary loop is seen as the principal public transport corridor linking back to Warrington via the A49 and A50.

The proposed non-vehicular network will build on established footpaths and cycle/bridleways to ensure that these routes integrate with proposed green infrastructure to improve accessibility by walking and cycling within attractive car-free environments. Cycle routes will also sit alongside new/ upgraded vehicular routes and provide viable alternatives to connect to the town centre and public transport hubs.

The final land use that has emerged through the design, development and engagement process is shown in the table overleaf:

Land Use	Hectares (Ha)	Potential no. of dwellings	Employment footprint
Neighbourhood Centre	19		
Employment Land	116		406,000 sq m (based on 35% of land area)
Residential	351.3	7,419 (including 930 Homes England units)	
3 Village Centres	6.9		
Country Park	89		
Proposed Strategic Road	14.7		
Green Belt and Open Countryside	622.5		
Total	**1237.6**		

The proposed infrastructure includes a conceptual arrangement for the strategic movement corridors. These have been developed through a series of workshops with WBC's Transport Team. The Framework states that from the outset one of the primary determining factors has been to future proof a new network that can evolve as the WGS matures and grows. It was also important for the network to perform a multi-functional role and has therefore been developed as a series of 40m wide corridors that are able to accommodate a range of functions including: vehicular lanes, cycle and footpaths (separated from general traffic where possible), bus routes, green verges/ landscape buffers in addition to primary utility corridors. The 40m width also generates a built-in flexibility to the plans allowing roads and other elements to deviate within the zone in response to detailed design considerations.

There is a proposed phasing schedule set out within the framework. Phase 1 incorporates three non-Green Belt sites within Villages A and B and will deliver 930 housing units. Alongside the new homes approximately 116 ha of new employment land could be delivered close to junction 9 of the M56. Enabling infrastructure including new strategic movement and utilities corridors will also be required. Phase 2 could deliver the largest proportion of housing (2,797 units), over three of the four villages and new strategic movement and utilities corridors will create east/west linkage between the A49 and A50. By the end of phase 2 all primary infrastructure/movement corridors will have been created. Phase 3 takes development through to the end of the Plan period (1,485 units). Phase 4: identifies development beyond the defined Plan period through new areas of residential development (2,208 units) along the new east-west corridor and along the WGS northern edge, adjacent to the Bridgewater Canal.

Highways England note that there is no reference within the placemaking principles to acknowledge the role the SRN will play within the WGS area or any mitigation measures that may be required to support its sustainable development and delivery. We consider that further work is required to understand the impact of the WGS on the SRN, particularly in relation to the trips associated with the new residential and employment areas. We consider that development within the WGS needs to be accessible by all modes of transport, which means the need for significant investment in public/active travel in the area. Proposed development cannot merely be reliant on existing capacity on the SRN.

Highways England has previously raised concerns with WBC about a piecemeal approach to development, which would result in the loss of investment in and/or delivery of strategic mitigation to address the likely impact of significant trips on the SRN associated with development in the WGS. Delivering development without any evidence supporting the need for a significant investment in infrastructure in this area could result in independent piecemeal mitigation being delivered. This will only address the impacts of individual developments, rather than contributing towards longer-term mitigation to offset the impact of cumulative development.

Transport evidence needs to demonstrate that the WGS is accessible by all modes of transport, identify what infrastructure will support the phased delivery of growth in this area and that it is sufficient to mitigate the impact of forecast demand and satisfy our concerns over future impacts on the safe and efficient operation of the SRN.

Infrastructure Delivery Plan 2019

The IDP forms part of the evidence base supporting and underpinning Warrington's Proposed Submission Draft Local Plan. It aims to aid all parties in identifying and prioritising infrastructure provision as part of an integrated approach to planning and infrastructure development. The Local Plan aims to set out Warrington's infrastructure requirements within the Borough up to 2037 and the IDP is an essential mechanism for helping to identify funding priorities and gaps. It is a 'live' document and will be reviewed and monitored regularly to ensure it includes the most up to date information. Any identified costs are based on the best available information at the time of publication and will be subject to change during the plan period.

The IDP schedule details the projects required to support the delivery of the emerging Local Plan. It also demonstrates the extensive list of internal and external infrastructure providers that have been consulted in relation to the delivery of proposals within the Proposed Submission Draft Local Plan. A plan-wide Viability Assessment has also been undertaken and this demonstrates that the delivery of necessary infrastructure to support the levels of development proposed is viable and deliverable over the Plan period. This involved engagement with developers on infrastructure requirements and costs for sites proposed for development in the Plan.

The main development areas require extensive infrastructure to support their development. WBC has identified the strategic infrastructure requirements of these allocations – over and above standard on-site infrastructure and S106 planning obligations – and included these in the Viability Assessment as a per dwelling cost.

For the Garden Suburb, WBC is proposing to facilitate the forward funding of key infrastructure requirements. For the Viability Assessment, the strategic infrastructure cost for residential development has been set at £18,500 per dwelling in the first year of the development. This figure has been assessed using current estimates for the delivery of infrastructure in accordance with the IDP, assumed S106 contributions and the cost of advanced funding. Against this WBC has set an external public sector funding requirement.

Highways England note that the funding to meet this requirement has not been confirmed at this stage and that the financing to support this enabling infrastructure is the subject of ongoing discussions.

The infrastructure schedule identifies the requirement for several SRN improvements including short-term committed Smart Motorway schemes at M62 junctions 10 to 12 and M6 junctions 21a to 26, which are fully committed schemes with completion expected during the next 5 years. Work on the M62 junctions 10 to 12 Smart motorway is currently on site, with the M6 21a to 26 scheme due to follow after this.

It also identifies the need for further capacity and junction improvements on the M62 and capacity improvements on the M6 in the short to medium term (2017-2028), although there is no information provided in relation to the indicative cost or funding source and there appears to be an assumption that Highways England will lead on these improvements.

In addition, it identifies the requirement for improvements to junction 10 of the M56 in the medium term (2023-28) at an indicative cost of £10m, of which there is currently no funding secured. There is a reference to these being the subject of a Highways England study. Also included and noted as the subject of a Highways England study is improvements at junction 20 of the M6 in long term (2028-38) with an indicative cost of £50m with no commitments to funding. Highways England commissioned studies on the SRN to identify any issues and concerns in relation to the current operation of the network. This is to help enable us to target investment for future schemes through long-term investment plans such as the RIS. It should be noted that the studies do not form a commitment by Highways England to deliver improvements at these specific locations.

Highways England also note that no cycling and walking infrastructure is labelled as committed or funded, despite strategic cycling corridors being required in the short term. Also, the only public transport commitment is Warrington West rail station, which is fully funded and on site with completion expected late 2019. No other public transport infrastructure is committed or funded, despite bus corridor improvements also being required in the short term.

Whilst we have acknowledged that WBC is in ongoing discussions for the provision of strategic infrastructure, particularly to support the strategic allocations, we consider that there should be more certainty regarding the infrastructure required to support development in the short term. This includes the indicative cost, funding sources and when it will be delivered and by whom.

Sustainability Appraisal

The Sustainability Appraisal (SA) process began with a Scoping Report that was prepared and published for consultation in October 2016. Following consideration of the comments received, the scope of the SA was determined and has provided the baseline position against which appraisals have been undertaken. The SA has been updated throughout the plan making process.

An appraisal of the plan policies has been undertaken against the SA Framework. Effects have been identified taking into consideration a range of characteristics including: magnitude, duration, frequency and likelihood. This has helped to determine the significance of effects and whether these are positive or negative. The findings have been present for each SA topic area, of which the air quality and accessibility topics are of most relevance to Highways England.

For air quality, the SA has identified that in combination the delivery of housing and employment space will lead to additional car trips, many of which would contribute to congestion at motorway junctions and connecting roads. However, it is considered that as the Plan also promotes active and sustainable modes of travel as well as local accessibility to services, facilities, jobs and recreation, this will help reduce the effects on air quality. The emphasis on sustainable modes of travel and green infrastructure enhancement whilst positive are not likely to have significant effects. Potential for notable benefits is thought to come from support for strategic infrastructure improvements such as the requirement to contribute to motorway junction improvements and the Western Link; which could help to divert traffic and tackle congestion. Overall only minor negative effects are predicted with more neutral effects expected in the longer term.

The SA has identified that the draft Plan is likely to have a minor effect on the baseline position for accessibility. The strategy and supporting allocations direct growth mainly to the urban areas of Warrington, which have better accessibility than smaller villages, and will help to reduce the need to travel to access services, goods and employment. The strategic allocations are located on the urban fringes that are currently poorly served by public transport and may give rise to additional traffic heading towards the main urban area. However, key infrastructure improvements are required before development can commence, such as the strategic routes through the WGS supporting new public transport links to the town centre – a potential mass transit solution is being explored through the LTP4. The Plan also seeks to achieve increased use of sustainable modes of travel by protecting and enhancing sustainable transport and active travel networks. It is considered that these measures could help to achieve significant positive effects in the

longer term, but it is acknowledged that there is a level of uncertainty. Furthermore, not all communities may benefit from improvements and there will also be short term disruption to the road networks because of infrastructure improvements so there are likely to be some negative effects experienced.

No mitigation and enhancement measures are proposed for the air quality and accessibility topics based on the findings of the appraisal. In addition, Highways England consider the proposed monitoring measures for these two topic areas to be appropriate to understand the impact of the Local Plan. Overall, Highways England consider that an appropriately detailed SA has been carried out for this stage in the plan making process.

Review of Warrington Proposed Submission Draft Local Plan

The Draft Local Plan sets out strategic objectives for Warrington; objectives W1 and W4 continue to seek to develop strategic infrastructure, reduce congestion and promote sustainable modes of transport and active travel options. The objectives have been updated to reflect the higher level of development proposed to meet future needs and the changes to NPPF (2019).

Highways England welcome and support these strategic objectives and guiding principles for the Plan.

The spatial strategy's main priority is to optimise the development potential of the existing urban area. As such, several key elements from the PDO remain, including intensifying development in the town centre and inner area of Warrington and opening up the Waterfront as a new urban quarter facilitated by the Western Link. However, it is acknowledged that not all of Warrington's needs can be met within the existing urban area, which can accommodate around 13,700 new homes. This means the requirement for the remaining 7,000 homes will have to be facilitated through the release of Green Belt land.

A range of options were considered for the distribution of new homes from Green Belt release. The chosen spatial strategy is for a Garden Suburb to the south east of the main urban area that will deliver 5,000 new homes (including 4,200 through Green Belt release) to 2037 facilitated by internal roads and a strategic link, with the potential for a further 2,300 new homes from Green Belt release beyond the Plan period. An urban extension to the south west of the main urban area for around 1,600 homes facilitated by the Western Link, and incremental growth across outlying settlements of approximately 1,100 new homes.

As with housing, it is not possible to meet all the employment land need within the existing urban area, which means there is a requirement for 21.5 hectares of employment land through Green Belt release. A range of options were also considered for employment and the main employment sites have been allocated at Port Warrington, Waterfront Business Hub, Garden Suburb Employment Area and Omega Westward Extension in St Helens. Sites to the north of junction 8 and 9 of the M62 were discounted due to highway concerns and ecological impacts. No further sites have been identified for safeguarding beyond the Plan period, as the potential of Fiddlers Ferry Power Station is not included within the employment land supply at this stage but will likely contribute to meeting longer term need.

This would equate to 11% of Warrington's Green Belt area being released. Much of this will be adjacent to the M6 and M56.

Highways England supports development in the most accessible and sustainable locations and expects transport evidence to identify potential impacts from cumulative development upon the SRN around Warrington. This is required to enable appropriate mitigation measures and strategic infrastructure to be identified and phased accordingly to support sustainable development in Warrington. Highways England has previously raised concerns regarding the impact of proposed infrastructure such as the Western Link and the fact that site allocations and mitigation were being proposed without a wider understanding of the cumulative transport impacts. Following our review of the Local Plan transport modelling evidence, our concerns remain as the evidence has not considered the impact of planned growth in Warrington on the SRN. Therefore, it is not possible to understand if the proposed mitigation will address the impacts upon the future safe and efficient operation of the SRN in Warrington.

The Draft Local Plan includes high level proposals for motorway junction upgrades at M56 junction 10, M6 junction 20 and M6 junction 21a, although no plans or descriptions are provided. A robust evidence base will be required to demonstrate the need for junction improvements and if required, to allow Highways England and WBC to work together to identify schemes that are feasible in terms of construction, finance and deliverability. This should not be taken as acknowledgement that Highways England will finance schemes and any scheme delivery would require our prior agreement.

It is noted that to fully achieve the Draft Local Plan, Green Belt release and investment in strategic infrastructure is required. As set out in Policy DEV1 – Housing Delivery, WBC is proposing a stepped housing trajectory with relatively lower levels of housing (847 homes pa) delivered in the first 5 years of the Plan period to allow for key enabling infrastructure to be delivered. Housing will then be delivered at a higher rate (978 homes pa) over the next ten years of the Plan period. It will be crucial that phased delivery of identified infrastructure is optimised to allow for growth but without significantly impacting upon the SRN.

In this respect, Highways England welcome the need for an individual site assessment of local transport impacts for major warehousing and distribution developments in Policy DEV4 – Economic Growth and Development. This is required to identify mitigation required to offset the impact of development in addition to the need for strategic infrastructure.

Highways England consider the absence of detailed evidence of proposed infrastructure improvements and associated impacts in relation to the future operation of the SRN should be rectified as soon as possible and have shared these thoughts with WBC through our Duty to Cooperate meetings. We are committed to working with WBC to ensure that the Plan can be delivered sustainably in relation to strategic transport requirements. We also acknowledge the removal of the employment site that would have formed an extension to Omega north of junction 8 of the M62 as a result of concerns relating to the capacity of the junction to accommodate trips associated with further development.

Policy INF1 – Sustainable Travel and Transport aims to improve the safety and efficiency of the transport network, tackle congestion and improve air quality, promote sustainable transport options and reduce the need to travel by private car. Its general principles include building in sustainable and accessible locations, or in locations that can be made sustainable and accessible, with priority given to walking, cycling and public transport. Furthermore, this policy aims to mitigate the impact or improve the performance of the transport network, including the SRN, by delivering site specific infrastructure to support the proposed level of development. This includes improving and developing appropriate road, rail and water freight transport routes and facilities to assist in the sustainable and efficient movement of goods. It also commits to considering the impacts of development on the wider region's SRN and to work with neighbouring authorities and wider stakeholders to assess transport initiatives, where impacts have been identified and need to be mitigated.

Highways England supports this policy to encourage modal shift to more sustainable modes of travel for local trips around Warrington and the wider urban area. We also welcome the inclusion of the recognition for schemes to mitigate impacts and to help improve the performance of the SRN. Planned growth cannot simply be reliant on the available capacity on the SRN for future access and travel needs and we support well-founded sustainable transport schemes within the Local Plan. We also welcome point 7, which requires major developments likely to generate significant movements to be accompanied by a Transport Assessment and a Travel Plan.

We note that provision for the safeguarding of land for transport schemes is made in Policy INF2 – Transport Safeguarding. It includes provision for the Bridgefoot Link, a new or replacement high-level crossing of the Manchester Ship Canal in Latchford, Warrington East Multi-Modal Corridor improvement and the Western Link. It states that these and

additional schemes will be tested using the Warrington MMTM and that if additional land requirements are identified these will be safeguarded in a future review of the Local Plan.

Development will also be required to provide or contribute towards the provision of infrastructure needed to support it and Policy INF5 – Delivering Infrastructure sets out the principles for how this will be sought, for example through planning obligations, and when the infrastructure must be operational. This includes transport improvements such as walking and cycling facilities. It also sets out the circumstances where WBC will consider the viability of development proposals at the planning application stage.

Movement and access are key parts of the design process and for the achievement of sustainable development.

Highways England welcome the principles for movement and accessibility set out in Policy DC8 – Quality of Place to ensure developments promote sustainable methods of transport including walking, cycling and public transport.

Developments are expected to be designed so that they are not dominated by vehicular access and car parking. Designs should be inclusive and accessible to all and promote permeability by creating places that are connected and easy to move through.

We support Policy ENV8 – Environmental and Amenity Protection which seeks to ensure that new development will not have an unacceptable negative impact on air quality, and that it will not further exacerbate air quality in the existing AQMAs or contribute to air pollution in areas that may result in further areas being designated as AQMAs.

Policy MD2 – Warrington Garden Suburb sets out a comprehensive package of transport improvements that will be required to support the sustainable delivery of approximately 5,100 new homes and 116 of employment land within the Plan period. This includes improved walking and cycling routes, public transport enhancements, a new strategic link to connect the Garden Suburb with the A49 and A50, and capacity improvements at junctions 9 and 10 of the M56 and junction 20 of the M6 and other network improvements as identified by an appropriate Transport Assessment. A Development Framework will be prepared as a Supplementary Planning Document (SPD) for the Garden Suburb and will include more detailed masterplans for each of the three Garden Villages and the Neighbourhood Centre, together with a delivery strategy and phasing plan to ensure comprehensive and coordinated delivery.

The first phase of residential development will comprise of Homes England sites at Grappenhall Hayes, Appleton Cross and Pewterspear with extant planning permission. No further residential development will be permitted until the funding and programme for

the delivery of the strategic link to connect the Garden suburb to the local and strategic road networks has been confirmed. In addition, new employment development will not be permitted until the funding and programme for the delivery of the improvements at junction 9 of the M56 and junction 20 of the M6 have been agreed with key stakeholders including Highways England and the Local Highway Authority.

Policy MD3 – South West Urban Extension is allocated approximately 112 hectares of land for the delivery of around 1,600 new homes. It states that a masterplan will need to be prepared for the urban extension together with a delivery strategy and phasing plan to ensure the comprehensive and coordinated development. The development will be expected to improve cycling and walking routes, provide public transport enhancements and make a proportionate contribution towards the delivery of the Western Link Road. Development cannot come forward until the funding and programme for the delivery of the Western Link has been confirmed. This means the first homes are anticipated to be completed by 2023/24, with the urban extension completed in full by the end of the Plan period.

Policy MD4 – Land at Peel Hall allocates 69 hectares of land for a new sustainable community of approximately 1,200 new homes. This will be supported by junction improvements and new highway connections linking the development to the local road network, and highway works to the SRN, as agreed by the Council and Highways England. It will also be expected to provide bus priority features such as bus gates to support efficient services and public transport enhancements and an internal cycling and walking network to improve accessibility by active modes and any other network improvements identified in an appropriate Transport Assessment. A detailed masterplan will be required for the development of the site, together with a delivery strategy and phasing plan to ensure the comprehensive and coordinated delivery of the site. In addition, a Transport Steering Group will be required to coordinate the efficient delivery of sustainable transport measures and to ensure the required network efficiency and safety measures on the wider network are delivered as and when appropriate.

Highways England support the approach set out for delivering site allocations in Policies MD2, MD3 and MD4, as this will ensure that alternative sustainable transport options are made available in the right place at the right time to cater for local trips and forecast demand associated with planned development. We also welcome the requirement for development frameworks and masterplans along with delivery strategies to ensure that sites are brought forward in a comprehensive and coordinated manner and that the required strategic infrastructure is in place to support the sustainable delivery of planned growth.

Highways England recognise that a key element of identified assessment work was to test the proposed site allocations through the updated Warrington MMTM. This has enabled the Council to consider transport impacts arising from new development, particularly for the local highway network. However, a robust transport evidence base

would include an assessment of the impact of the Local Plan upon the SRN to ensure that appropriate mitigation measures are proposed and delivered to support sustainable development.

Highways England do not consider the transport evidence at this stage is robust and we would welcome the opportunity to continue to work with the Council to ensure the plan is supported by a robust transport evidence. The transport evidence base must be sufficient, demonstrate that there are no issues that impact upon the deliverability of the plan and facilitate the growth aims as much as possible. As such, there also needs to be an emphasis on recognising the deliverability (in both engineering and funding terms) of mitigating infrastructure-based measures that are being proposed.

Conclusion

The Localism Act 2011 placed the responsibility of 'Duty to Cooperate' on local authorities, to ensure that any local or cross-boundary impacts have been fully considered and addressed appropriately in preparing the Local Plan. The local authority must demonstrate that they have discussed such matters with the relevant bodies, including Highways England.

Highways England note that the Warrington Proposed Submission Draft Local Plan is at an advanced stage and is the version of the plan the Council intends to submit for examination and then adopt.

According to NPPG an assessment of the transport implications should be undertaken at several stages in preparing the Local Plan. It should be an iterative process that becomes more refined through the process itself and ultimately shaping its development, rather than this being collected retrospectively and trying to retrofit it to the development strategy.

We request that we be notified of any of the following:

- The Draft Local Plan has been submitted for Independent Examination by a Planning Inspector;
- The publication of the recommendations of any person (i.e. the Planning Inspector) appointed to carry out an independent examination of the Draft Local Plan; and
- The adoption of the Local Plan.

It is recommended that growth is planned in sustainable locations that can be accessed by non-car modes of transport. Highways England supports this view as planned growth cannot simply be reliant on the availability of capacity on the SRN for future access and travel needs, particularly for local trips. We would welcome continued dialogue with WBC to ensure that the transport impacts of strategic areas for growth are appropriately assessed and considered in respect of the SRN. Also, to ensure that alternative sustainable transport options are made available in the right place at the right time to cater for local trips and forecast demand associated with planned development.

We welcome the inclusion of well-founded, sustainable transport schemes in the Local Plan, and would like to continue working collaboratively with Warrington Borough Council to understand the impact of both the proposed highway and public transport schemes on the future efficient and safe operation of the Strategic Road Network, and their ability to support planned growth in the area to 2037 and beyond.

Yours faithfully

Benjamin Laverick
Assistant Asset Manager

3. Ecology Technical Note: South Station Place, Birchwood

Ecology Technical Note: South Station Place, Birchwood

Bowland Ecology Ltd was commissioned by Patrick Properties to complete a suite of ecology surveys and an ecological appraisal of land to the south of Birchwood, Warrington. The site is subject to proposals for an application for multi-use development of the site with a strong focus on a park and ride initiative, to facilitate 'greener' travel. This includes proposals for enhancements at Birchwood station and community facilities to support improvements along the CLC line.

Key ecological surveys are being, or will be, undertaken for the following features: Amphibians including GCN and reptiles; Ornithology – breeding and wintering; Bats; Water vole/otter; Vegetation, Invertebrates and Invasive Non-Native Species (INNS).

The site is dominated by arable and pasture fields separated by a network of ditches, as well as a few fields of semi-natural grassland and approximately 11.5 ha of birch woodland and mossland. The site is enclosed between the motorway / rail line / air strip and roads for the most part, with mature trees that provide a well-defined boundaries. The site has residential and employment parcels along Manchester Road / Brook Lane / Juniper Lane and Nicole Avenue. Agricultural fields dominate the landscape to the east and south and the River Mersey is located approximately 480 m to the south, beyond which lies (Figure 1 presents a plan showing the locations of wildlife site designations):

- Risley Moss SSSI (Site of Special Scientific Interest) & LNR (Local Nature Reserve) / Manchester Mosses SAC (Special Area of Conservation), located approximately 100 m to the north-east of the survey area. This is designated for its meres and mosses, including open water and peatland, as well as associated fringe habitats. The site is also valuable for the species it supports such as water vole, GCN, reptiles, dragonflies and breeding birds including wintering wildfowl and raptors;
- Woolston Eyes SSSI, located 700 m to the south (beyond the River Mersey). This is primarily designated due to it's breeding bird assemblage of lowland open waters and their margins (including nationally important numbers of black-necked grebe *Podiceps nigricollis*, gadwall *Anas strepera* and pochard *Aythya ferina*), and for wintering wildfowl; and
- Rixton Clay Pits SAC, SSSI & LNR, located 2 km to the east. This is designated for its calcareous grassland communities and as the site supports the county's largest known breeding population of GCN.
- Woolston Moss Local Wildlife Site (LWS), partly located within the survey area, in the lowland raised bog in the north-eastern corner of the site; and
- Rixton Moss LWS, located approximately 250 m to the south-east of the site.

This submission provides an overview of: ecological features including survey results to date; consultation undertaken to date; and the ecological opportunities associated with the site.

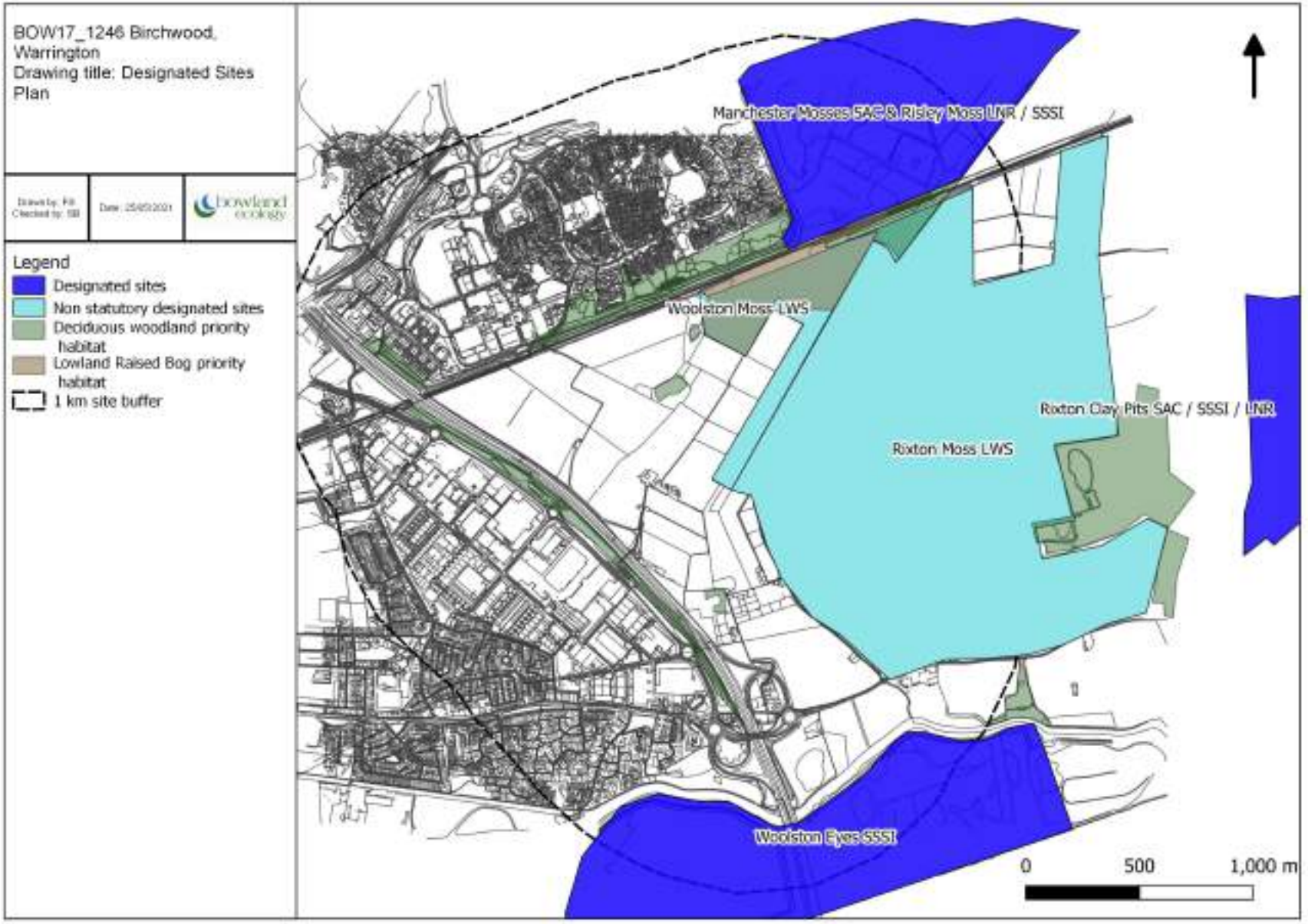


Figure 1: Wildlife Site Designations

The surveys and desk studies undertaken to date confirm the presence of a range of ecological features which are summarised below (Appendix 1 provides species records collated from desk study, Appendix 2 provides Phase 1 habitat plans for the site):

Habitat overview

As is demonstrated in Appendix 2 the site is largely arable land with a network of ditches associated with drainage of the area to support agriculture. A key feature of the site is an area of 'former mossland' that supports birch woodland growing on peat, with many open areas dominated by bracken, particularly around the perimeter of the woodland. Some areas of heather and Rhododendron are also present within. The woodland / mossland is split into a larger northern section and a smaller southern / central section. Both have been heavily drained, with steep ditches on all perimeters of each woodland and there are almost no Sphagnum mosses present. The southern woodland / mossland has a similar vegetation composition to the north, with the ground flora dominated by bracken and a canopy of silver birch, becoming dense to centre.

Other habitats present include pockets of species poor semi-improved grassland, improved grassland, hedgerows, ditches and scrub.

The areas of peatland (restored and remnant, see Figure 1) are a key feature of the site and surrounding landscape. The value of these habitats should not be underestimated, peat bogs are a vital habitat both in the UK and worldwide, when in good condition they are a valuable carbon sink. Areas of restored peatland are associated with Risley Moss to the north and outside of the proposed development site. It should be noted that the development proposals are being designed to avoid impacts to areas of deep peat within the site; and to identify opportunities to deliver peatland restoration.

Species overview

Key species interests identified to date include:

Amphibians

- The desk study provided several records of GCN within 1 km of the survey area, the closest of which was located approximately 760 m to the north-east, within Risley Moss SSSI (which is where the majority of records were provided from). It should also be noted that Rixton Clay Pits SAC is situated approximately 2 km to the east of the site, which is known to support the county's largest known breeding population of GCN. No ponds are present within the survey area; however, several field drains are present within the north of the site which. Most drains are shallow or dry but some appear to hold water throughout the year and so provide potential breeding habitat for GCN and other amphibians. Additionally, a review of aerial photos and OS maps identified several off-site ponds within 500 m, of which four are located within 50 m of the site (Ponds P1 - P4). Bowland Ecology conducted eDNA surveys of accessible ponds / field drains within 500 m of the site in 2021; overall four samples were taken. Negative results were returned for all ponds. To date this species has not been confirmed from ponds on site, however given proximity to confirmed GCN ponds (e.g., Risley Moss, Rixton Clay Pits) it is assumed that this species may use suitable terrestrial habitat within the site. Other species of common amphibian are likely to be present in suitable habitats at the site.

- The proposed development is being designed with extensive mitigation and enhancement habitat which will accommodate and likely benefit the local area for amphibian species.

Reptiles

- Adder, common lizard, slow worm is known to occur within Risley Moss SSSI situated approximately 100 m to the north-east of the site. The majority of the site is unsuitable for reptile species, being dominated by open arable land. The former mossland areas within the survey area provide good shelter and foraging opportunities for all the above reptile species, in addition to grass snake. The mossland is well connected to Risley Moss SSSI through peatland/ mossland, with a railway line directly adjacent to the northern site boundary which may act as a commuting route for reptiles. Additionally, scrub, hedgerows and unmanaged grassland (including field borders) provide suitable reptile habitat. Reptile surveys have not commenced, however common lizard presence has been confirmed within the former mossland area whilst carrying out other surveys on site.

- The proposed development includes extensive habitat enhancement areas and is seeking opportunities to restore peatland. It is therefore considered that impacts to reptiles will be avoided, either by: avoiding suitable habitat (former mossland); and/or employing standard mitigation techniques. Further that the development will have a focus upon delivery of habitat restoration including peatland which would benefit local reptile populations.

Ornithology

- Trees, hedgerows and scattered / dense scrub throughout the site provide nesting opportunities for a range of tree and scrub nesting bird species. The two buildings to be demolished both provide potential nesting habitat for birds; in particular the woodstore building (Building 2) provides suitable barn owl habitat. The mossland / peatland, unmanaged tussocky grassland and wide, deep ditches also provide nesting habitat for ground nesting birds and the arable field margins provide habitat for farm birds too. Following the initial assessment and desk study, three breeding bird surveys were undertaken between April and June 2021. These surveys confirmed that approximately 42 species were showing breeding behaviour at the site and the site supports a typical assemblage of bird species associated with habitats at the site. The following table listing the breeding bird species of conservation note recorded at the site:

Species	No. of territories	Status
bullfinch (BF)	1	S41, A
dunnock (D.)	8	S41, A
house sparrow (HS)	6	S41, R
lapwing (L.)	5	S41, R
linnet (LI)	2	S41, R
mallard (MA)	1	A
meadow pipit (MP)	(5 birds)	A
oystercatcher (OC)	1	A
reed bunting (RB)	1	S41, A
skylark (S.)	19	S41, R
song thrush (ST)	3	S41, R
starling (SG)	3	S41, R

swift (SI)	(9 birds)	A
willow warbler (WW)	7	A
yellow wagtail (YW)	2	S41, R
yellowhammer (Y.)	11	S41, R

S41 NERC 2006 – Species of Principal Importance for Nature Conservation, R – red list Birds of Conservation Concern 4[1], A – amber list BoCC.

- The site is not currently considered to be of significant value for wintering birds; however, scoping surveys are being undertaken in winter to confirm this and define the scope of detailed surveys should these be required. Consideration will be given to the potential presence of bird species (particularly wintering wildfowl) on land within the site, and within the zone of influence of the site, that may provide suitable habitat for wintering bird species associated with statutory wildlife designations.

- The development will be designed sensitively to take account of ornithological interests. The majority of mature trees will be retained. Habitat mitigation and enhancement will lead to the restoration of peatland and wetland which will benefit associated bird populations. The design will also include provision of habitat suitable for foraging and nesting barn owl (including the installation of nest boxes).

Bats

- The site provides potential roosting habitat for bats in the form of buildings and trees. A few potential roosting features (PRFs) were identified in the group of trees in the northern field in the site, which were assessed to hold low potential for roosting bats. No PRFs were identified on any other tree within the site, although not all trees were closely inspected. Development design would seek to avoid and minimise tree loss. Once tree removal requirements, if any, are known, further survey will be required. Two buildings have been subject to a building inspection for their potential to support roosting bats; a woodstore (Building 1) and a dilapidated flat-roofed stable block (Building 2). Both were assessed to hold negligible potential to support roosting bats. Several other buildings are present in the survey area which provide potential roosting habitat for bats, but these have not been subject to survey to date. Any buildings, trees or structures likely to be affected by development proposals would be subject to detail surveys following best practice. The desk study provided records of common pipistrelle, soprano pipistrelle and noctule within 1 km of the survey area. The site is well-connected to alternative roosting habitat in the landscape, particularly Risley Moss SSSI to the north-east of the site. The northern site boundary (a treeline adjacent to the railway) and the vegetation along the western site boundary (adjacent to the motorway) both provide a commuting route for bats through the landscape, as well as providing foraging opportunities. Additionally, the mossland areas support invertebrate populations which will provide bats with further foraging opportunities; as does the off-site woodland containing the fishing ponds further south.

- In order to further assess the value of the site for bats, walked transects were undertaken during the 2021 bat survey season (June, July and August). In conjunction with the transects, static bat detectors were deployed at eight locations within the site (for at least five consecutive nights in each of June, July and August). Bat species recorded during the transect surveys comprise common pipistrelle, soprano pipistrelle, noctule and Myotis sp. Common

[1] https://www.bto.org/sites/default/files/shared_documents/publications/birds-conservation-concern/birds-of-conservation-concern-4-leaflet.pdf

pipistrelle was the most frequently recorded bat, followed by soprano pipistrelle and Myotis. Only a few noctules were recorded throughout the surveys.

Water vole and otter

- Risley Moss SSSI is known to support a water vole population, which is located approximately 100 m from the site boundaries. The site is well connected to Risley Moss through mossland habitat to the north-east of the site, as well as Birchwood Brook which is connected to field drains in the north of the site. However, it should be noted that the field drains are culverted beneath the railway and so provide sub-optimal connectivity to Birchwood Brook. Some of the field drains within the north of the site provide suitable habitat for water vole. Field drains further south are less suitable for water vole as many are dry or shallower and more exposed, with poor connectivity to shelter and other suitable watercourses. Water vole surveys are yet to be undertaken within the site.

- The site provides sub-optimal habitat for otter. Although some of the field drains provide potential commuting routes for otters through the landscape, no desk study records were provided within 1 km of the site and the field drains are poorly connected to larger watercourses such as the River Mersey which is located over 600 m to the south. Additionally, all field drains were relatively shallow or dry.

Invertebrate Surveys

- Due to the presence of former mossland on site invertebrate surveys were carried out and these involved two survey transects, ground searches and sweep searches. As the survey was conducted in August, the results only provide a brief overview of the invertebrate assemblages present on site. The survey confirmed potential for the site to host a diversity of Odonata (dragon fly) assemblages, with an abundance (49 individuals) of black darter *Sympetrum danae* (IUCN LC) recorded during the transect. The site also has potential to host several S41 moth species listed on the data search. Ground and sweep samples are still being identified, however searches of deadwood revealed the presence of a click beetle, likely from the Genus Cardiophorus. This is a very local genus, occurring mostly in southern England and on the Welsh coast. Due to its unusual characteristics, the specimen is being sent to an expert for identification. At the least this is expected to be a notable species.

- The site will include a range of habitat enchantment areas including peatland and wetland restoration that will benefit invertebrates including Odonata.

INNS

- With regards to INNS: Giant hogweed, Himalayan balsam, Rhododendron and Montbretia were recorded within the site during the field survey; these are invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Giant hogweed is abundant in the most southerly field within the survey area, close to the M6 motorway. Himalayan balsam presence is extensive throughout the site, including along field boundaries, ditches and within the mossland areas. Rhododendron is present within birch woodland on the former mossland on site. Montbretia was recorded in one location on site, associated with former mossland habitat.

Consultation

Consultation has confirmed that potential impacts on peat, including opportunities for restoration, are a key concern for all consultees. A summary of consultation to date is provided below. It should be noted that to date, all responses were encouraged by proposals that would not incorporate development on areas of deep peat. The opportunity to bring forward Biodiversity Net Gain was encouraged in addition to peat land restoration where possible. We will continue to work with groups / organisations. The table below also includes additional consultees to be contacted:

Consultee/Site	Contact	Note on engagement
GMEU	Derek Richardson	High level discussion 25/8/21 but not able to formally engage at this point. Confirmed that the proposal was not on any of the identified Moss land and that detailed surveys were being undertaken to ensure minimal impact and opportunities to created improvements We will continue to engage formally and work with Natural England as the proposal develops.
Natural England	Paul Thomas	25/8/21 Called and left a message. Telephone conversation with Paul 26/8/21 - initially was concerned with any development that might occur on deep peat - reassured him that this wasn't the case and that the project is looking to explore restoration feasibility, he was extremely positive about the potential of this and described a number of degraded peatland sites in Grtr Manchester that were showing success from restoration methods (re-wetting of bunded cells and seeding with sphagnum). I asked if he would be available to meet on site, he advised that they would need to enter into a DAS agreement (Discretionary Advice). Emailed 1/9/21 to seek further advice form Paul and scope/costs of a potential DAS agreement.
Lancashire Wildlife Trust	Mike Longden Sarah Johnson Martin Walker	Will be contacted in due course to engage in discussions regarding the site.
Risley Moss Action Group (RIMAG)	Mark Cozens	emailed 25/8/21 and discussed with Mark Cozens (ranger) - background on works carried out at Risley bunding, repairs, water levels raised, sphagnum growing. Water vole, adder, slow worm, common lizard, 16 spp dragonfly on Risley Moss. Key stakeholders: Warrington Nature Conservation Forum (wncf.co.uk). Greater Manchester Wetland Partnership. Need to link into: carbonlandscape.org.uk. Other ideas: Willow tit opportunities - wet woodland creation on our site. Canada geese are a problem on Risley Moss.
Warrington Nature Conservation Forum		Warrington Nature Conservation Forum (wncf.co.uk)
Carbon landscapes carbonlandscape.org.uk	Steve Ormerod	Meeting 30th September 2021 – Steve described that Carbon Landscapes was a component project of the Greater Manchester Wetlands project (22 projects within this), he mentioned a range of sites and projects: Chat Moss complex (contacts Martin Walker/Sarah Johnson), Hawcroft Moss (Cheshire Wildlife Trust), New Moss Wood. He reiterated the need for input from Paul Thomas of NE & Mark Cozens (Ranger and RIMAG). He provided contact information for GM wetlands – Amanda Wright). Carbon Landscapes is funded via HLF and nearly completed. Steve also mentioned connecting spaces and the link between Birchwood-New Cut-the Mersey-Rixton Moss.

Cheshire Wildlife Trust	Ross Harding Martin Varley	Online meeting 21/10/21 with Ross Harding and Martin Varley. General discussion regarding strategic wildlife opportunities, value of peatland. Supportive of principle due to site not being on designated Moss Land and delivering an important Park and ride to encourage people into public transport. The group was pleased to see the proposal incorporate opportunity for enhance areas for nature and peat land restoration outside the development areas. Further contacts where provide for further involvement and discussions with other nature groups We will continue to work with the group as proposal develops.
Greater Manchester Wetland Partnership	Amanda Wright	Natural England + LWT working in the NIA – Nature Improvement Area. This is a strategically identified area for the delivery of nature recovery (can link to Net Gain etc). Meeting to be confirmed.

Opportunities

The key ecological opportunity for the site is the potential to delivery restoration of degraded bog. To support the potential for peatland restoration: Preliminary Site Investigations have been undertaken to assess the presence of and depth of peat deposits; and hydrological investigations have been undertaken. Figure 2 shows an historic map of the assumed extent of former peatland at the site, this matches closely with the mossland habitats present on site. Figure 3 consists of 2 plans showing key ecological constraints and opportunities associated with the site. Whilst peatland restoration is a key objective, opportunities will not be limited to this objective. Opportunities to create associated habitats (wetland, lowland acid grassland/birch woodland) together with opportunities to link habitats and improve habitat connectivity will also be explored and incorporated into the scheme design.

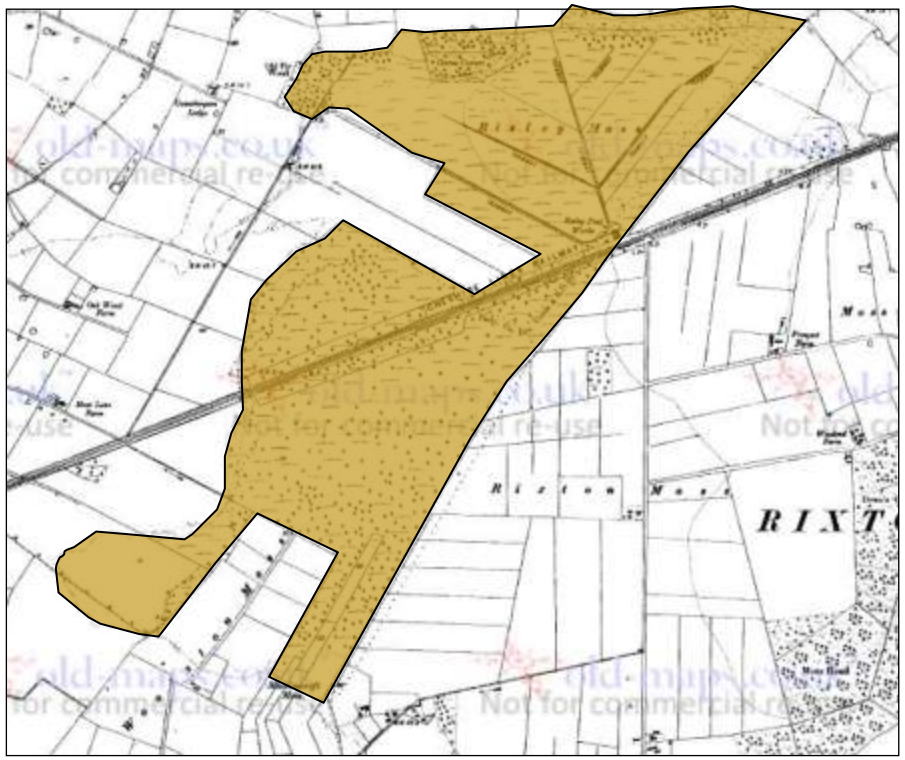


Figure 2: 1908 map showing extent of mossland/peatland

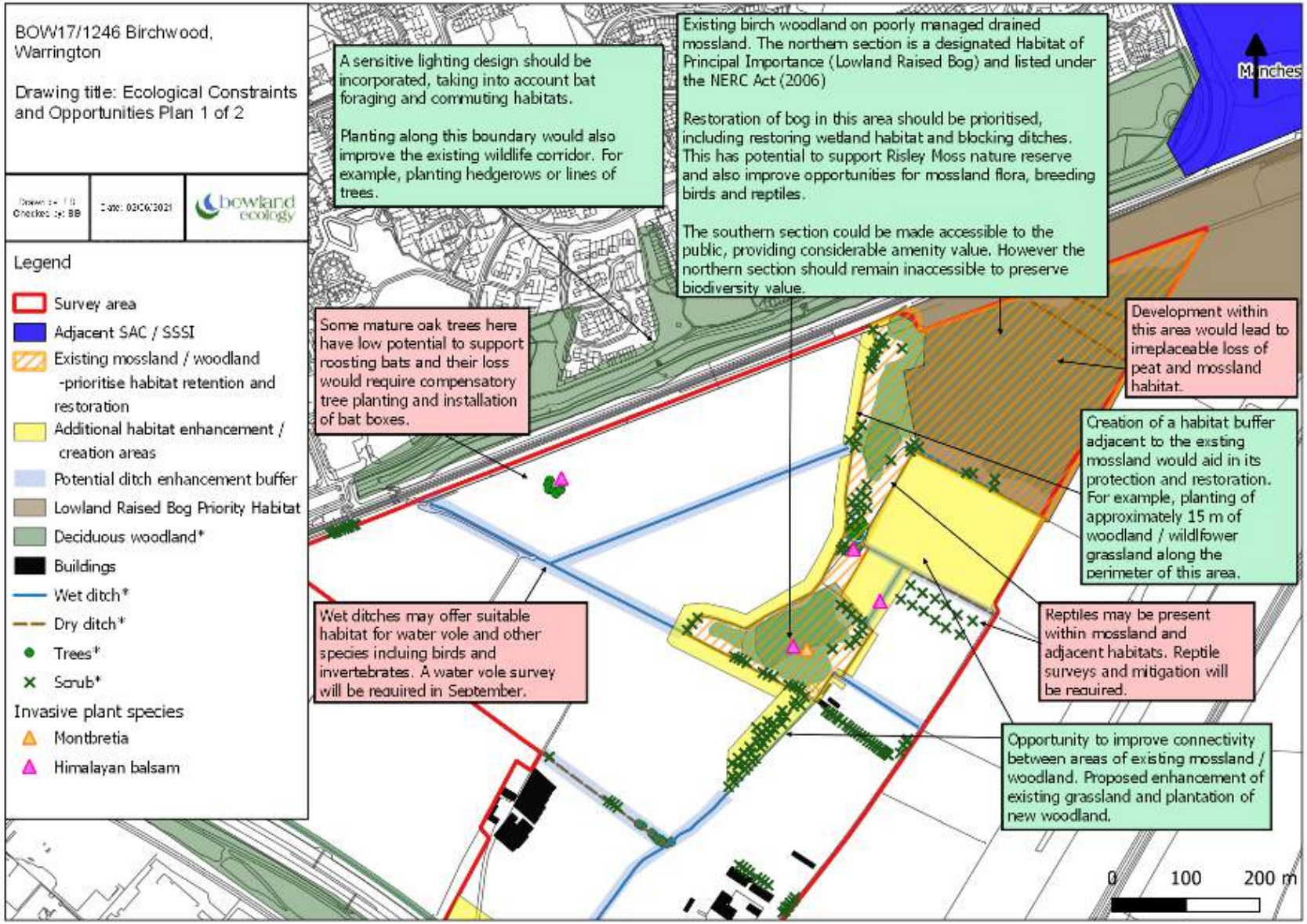


Figure 3: Ecological Constraints and Opportunity Plan 1 of 2

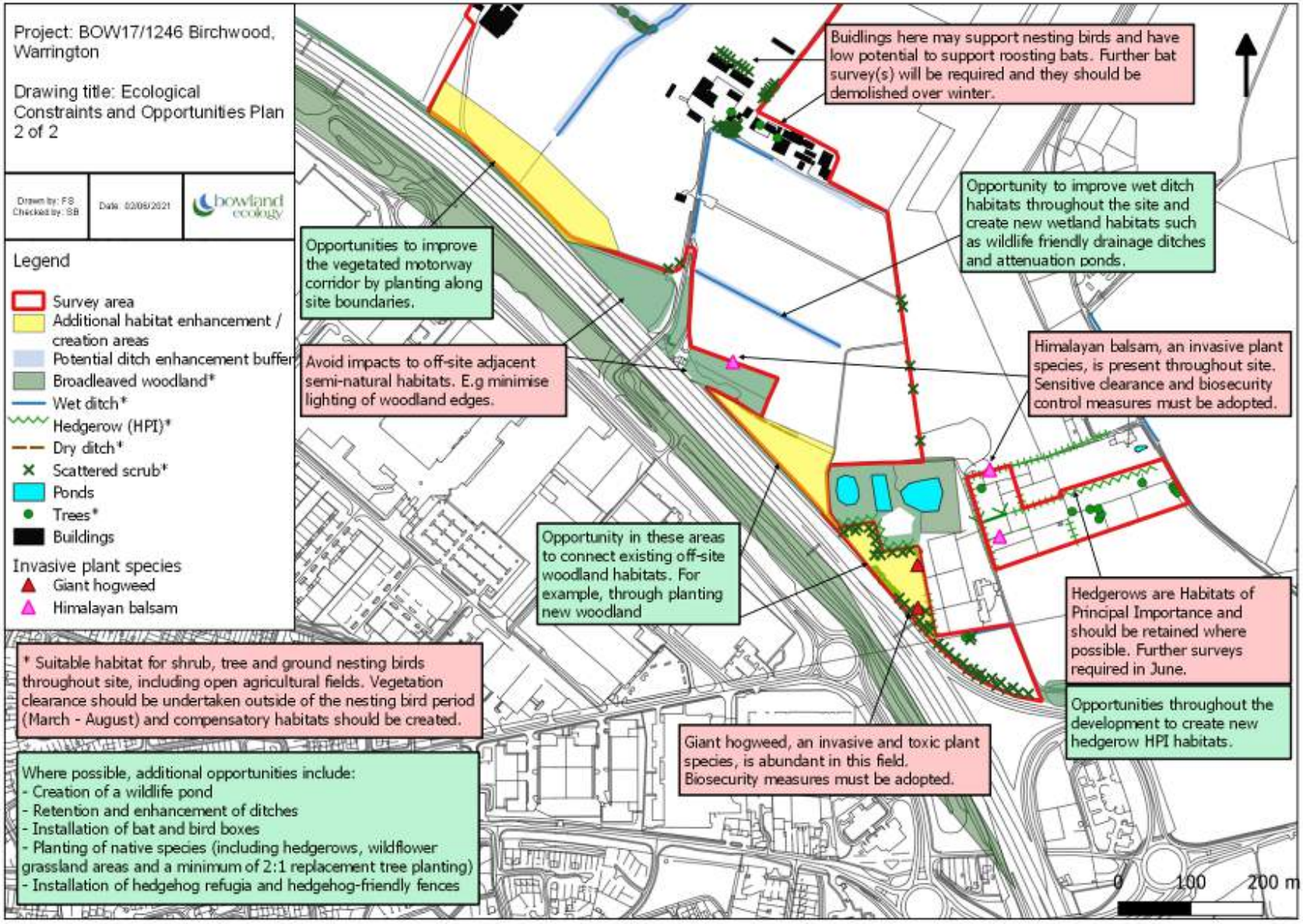


Figure 3: Ecological Constraints and Opportunity Plan 2 of 2

Summary

A strategic site wide approach to development, mitigation, compensation and enchantment is being adopted. Key components of which are: the avoidance of development that would harm areas of deep peat; the provision of significant opportunities to enhance wildlife connectivity between Risley Moss SAC/SSSI, Woolston Eyes SSSI, Rixton Moss LWS and Rixton Clay Pits SAC; and the delivery of an overall Biodiversity Net Gain as a result of development at the site.

A detailed scope of ecological survey coupled with early and extensive consultation will support: the sensitive design of development proposals; the ecological mitigation and compensation measures; and the habitat and species enhancement measures.

Patrick Properties are committed to delivering bio diversity net gain through green infrastructure enhancements as part of the proposal for south Station place, which is public transport lead proposal, with significant opportunities to deliver nature enhancements working with all interested parties.

Prepared by: Jeremy James MSc, BSc (Hons), CEcol, CEnv, MCIEEM **Date:** 4/11/21

www.bowlandecology.co.uk

Appendix 1: Species Records from Dek Study

RECORD provided records of legally protected and NERC Act 2006 Section 41 species on or within 1 km of the site within the last 20 years. No records of protected fauna or invasive plant species were provided from within the site boundary. A summary of the species desk study is provided below:

Terrestrial mammals:

- Badger (*Meles meles*), the closest record is located over 480 m from the site;
- Water vole (*Arvicola amphibius*), the closest record is 280 m to the west, separated by the M6 motorway. The closest record to the east is 680 m;
- American mink (*Neovison vison*), only one record from 2003 located in Risley Moss nature reserve;
- Common pipistrelle (*Pipistrellus pipistrellus*), noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*); and
- European hedgehog (*Erinaceus europaeus*).

Herpetofauna (amphibians and reptiles):

- Adder (*Vipera berus*), common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*), the majority of (and closest) records are situated within Risley Moss nature reserve;
- Great crested newt (*Triturus cristatus*), the majority of (and closest) records are situated within Risley Moss nature reserve; and
- Common amphibians; common toad (*Bufo bufo*), common frog (*Rana temporaria*), palmate newt (*Lissotriton helveticus*), smooth newt (*Lissotriton vulgaris*).

Birds:

- Numerous records of notable bird species, including 36 species listed on Schedule 1 of the Wildlife and Countryside Act. However, none of the records are situated within the site boundary.
- Species include; kingfisher (*Alcedo atthis*), whooper swan (*Cygnus cygnus*), green sandpiper (*Tringa ochropus*), corncrake (*Crex crex*), avocet (*Recurvirostra avosetta*), barn owl (*Tyto alba*) and osprey (*Pandion haliaetus*).

Flowering plants:

- Numerous records of flowering plant species, of which only one is a SPI; cornflower (*Centaurea cyanus*). Records of the following species listed by IUCN as near threatened or vulnerable were also provided; yellow vetchling (*Lathyrus aphaca*) and corn chamomile (*Anthemis arvensis*).

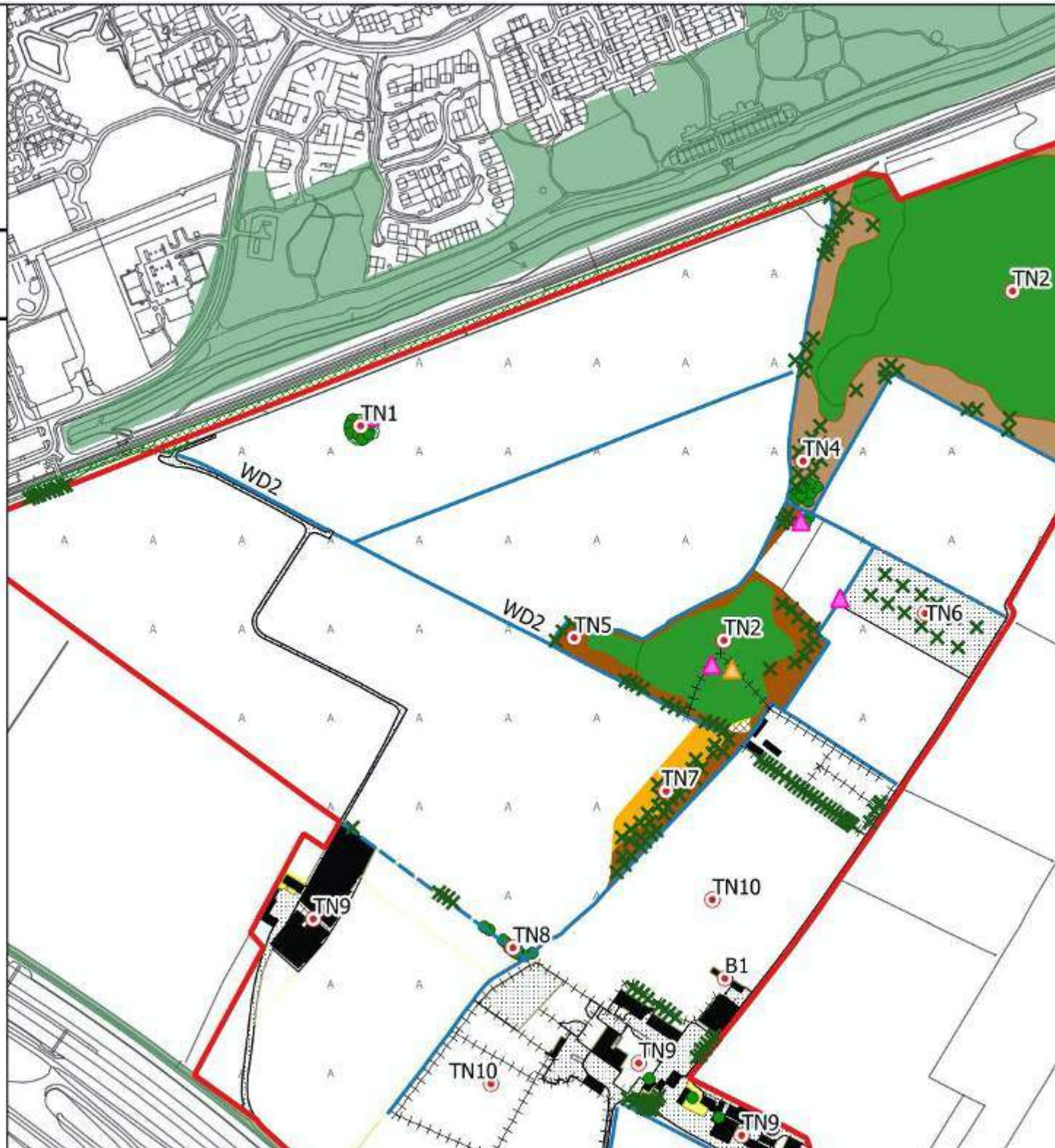
Invasive plant species (Schedule 9 of WCA):

- False-acacia (*Robinia pseudoacacia*), giant hogweed (*Heracleum mantegazzianum*), Indian balsam (*Impatiens glandulifera*), Japanese knotweed (*Fallopia japonica*), Japanese rose (*Rosa rugosa*), montbretia (*Crocosmia* x *crocosmiiflora*), Nuttall's waterweed (*Elodea nuttallii*), Rhododendron (*Rhododendron ponticum*), water fern (*Azolla filiculoides*) and yellow archangel (*Lamium galeobdolon* subsp. *Argentatum*).

BOW17_1246 Birchwood, Warrington

Drawing title: Phase 1 Habitat Plan (pg 1)

Drawn by: FS Checked by: SB	Date: 16/08/2021	bowland ecology



Legend

- Survey area
- Target notes

Habitats

- Birch woodland / mossland
- Dense scrub
- Semi-improved neutral grassland
- Poor semi-improved grassland
- Bracken
- Tall ruderal
- A Arable land
- Amenity grassland
- Ephemeral/short perennial
- Introduced shrub
- Buildings
- Bare ground
- Wet ditch
- Fence
- Dry ditch
- Off-site scrub and trees
- Trees
- Scattered scrub

Invasive species

- Bamboo and Montbretia
- Himalayan balsam

Warrington

Drawing title: Phase 1 Habitat Plan (pg 2)

Drawn by: FS Checked by: SB	Date: 16/08/2021	bowland ecology

Legend

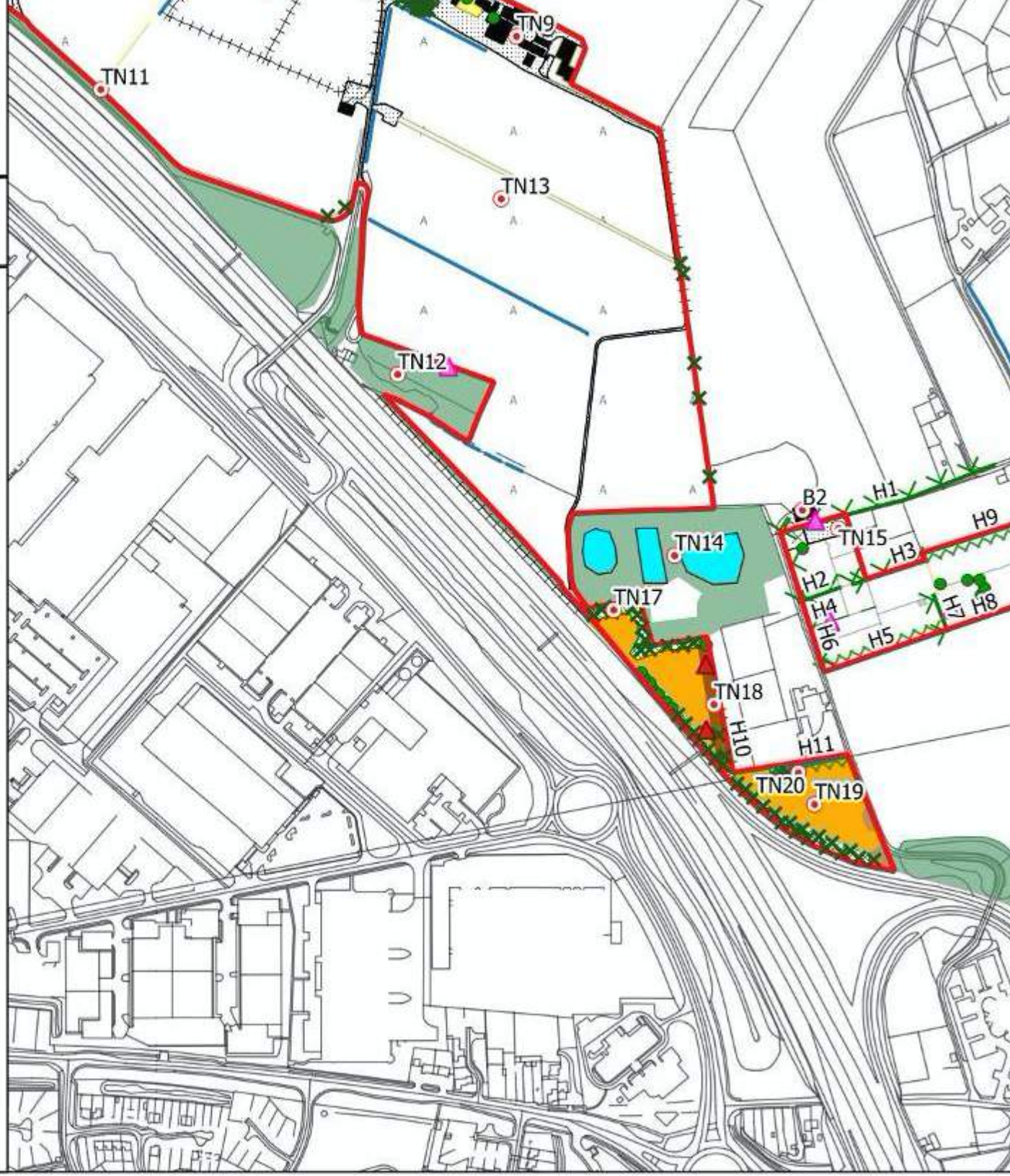
- Survey area
- Target notes

Habitats

- Dense scrub
- Semi-improved neutral grassland
- Poor semi-improved grassland
- Bracken
- Arable land
- A — Amenity grassland
- Ephemeral/short perennial
- Buildings
- Bare ground
- Wet ditch
- Hedgerow
- Defunct hedgerow
- Hedge with trees
- Fence
- Dry ditch
- Off-site scrub and trees
- Ponds
- Trees
- Scattered scrub

Invasive species

- Giant hogweed
- Himalayan balsam



4. Landscape & Visual Greenbelt Review

Landscape & Visual Green Belt Review

South Station Place, Birchwood

12th November 2021

TG Report No. 14127_R02_JB_CW

Tyler Grange

Report No:	Date	Revision	Author	Checked
14127_R02	12th November 2021	-	Jonathan Berry Ba (Hons) DipLA CMLI AIEMA M.Arbor.A	Wendy Lancaster PGDipLA PGDipUD CMLI FRSA

Contents:

Plans:

Section 1: Introduction

Green Belt Purpose & Methodology for Review

1.1. This Green Belt Review has been prepared by Tyler Grange Group Ltd on behalf of Patrick Properties to provide further analysis of the land associated with the promotion of South Station Place, Birchwood.

1.2. Green Belt Review is separate to the matters considered within the Landscape and Visual Technical Note, as Green Belt is not a landscape designation. However, the assessment of the contribution of a Site to the Green Belt and the potential effects of the development promotion on its function as Green Belt requires an understanding of some character and visual matters, such as the identification of defensible boundaries, the relationship between settlements and the understanding of the potential for development to physically, visually and perceptually impinge upon the countryside.

1.3. This Green Belt Review assesses the contribution of the site to the five purposes of the Green Belt as outlined within the National Planning Policy Framework (NPPF). It also provides an assessment of openness. The five purposes of Green Belt are set out in paragraph 138 and are as follows:

- To check unrestricted sprawl of large built-up areas;
- To prevent neighbouring towns merging into one another;
- To assist in safeguarding the countryside from encroachment;
- To preserve the setting and special character of historic towns; and
- To assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

1.4. With regards to the alteration of Green Belt boundaries, paragraph 142 also notes the following:

"When drawing up or reviewing Green Belt boundaries, the need to promote sustainable patterns of development should be taken into account. Strategic policymaking authorities should consider the consequences for sustainable development of channelling development towards urban areas inside the Green Belt boundary, towards towns and villages inset within the Green Belt or towards locations beyond the outer Green Belt boundary. Where it has been concluded that it is necessary to release Green Belt land for development, plans should give first consideration to land which has been previously-developed and/or is well-served by public transport. They should also set out ways in which the impact of removing land from the Green Belt can be offset through compensatory improvements to the environmental quality and accessibility of remaining Green Belt land."

1.5. This document provides a discursive analysis of the contribution that the Site makes to the purposes of the Green Belt a set out within the NPPF as summarised above. It includes a further dis-

cussion as to the changes to that contribution that would be brought about by the proposed development and any recommendations to mitigate or compensate for those changes. The Site is assessed as currently making a contribution based on the following scale:

- Strong contribution – the Site strongly provides a contribution to that purpose, or developing the Site will result in increased pressure on adjacent Green Belt Land and/or a reduction in that land's ability to fulfil the purpose;
- Moderate (some) contribution – the Site makes some contribution to the purpose, or developing the Site will result in some weakening of the ability of the adjacent Green Belt land to meet that purposes;
- Weak (limited) contribution – the Site makes a limited contribution to the purpose, or developing the Site will result in a limited weaking of the ability of the adjacent land to fulfil its purpose; or
- No contribution.

1.6. This Green Belt Review should be read in association with the following plans, contained at the report:

- Green Belt Boundary Analysis (14127/P02b)
- Viewpoint Location Plan (14127/P04)
- Photosheets (14127/P03a)

Section 2: Overview of Council Assessments

Green Belt Context

2.1. Warrington's Green Belt was first considered in the Cheshire Structure Plan in 1979 which contained the first formal Green Belt policy in the county. The New Town Designated Area was proposed to accommodate local housing needs and the Green Belt covered the surrounding area. It wasn't until 2006 when the Unitary Development Plan was adopted that a detailed Green Belt boundary for Warrington was actually defined.

2.2. In January 2016, Ove Arup and Partners (Arup) was appointed by Warrington Borough Council (WBC) to undertake a Green Belt Assessment for the local authority area of Warrington designated by Green Belt. Warrington's Local Plan Core Strategy was adopted in July 2014, but following its adoption, a legal challenge was made by a landowner with respect to the housing policies. This was subsequently successful and the High Court decision in February 2015 resulted in the Plan no longer having a housing target.

2.3. The Arup Green Belt Assessment clearly noted (paragraph 1.1, item 6) that:

"It is an initial assessment and there will be the need to undertake more detailed site specific assessment work as part of the Local Plan Review process. This Assessment will not consider whether 'exceptional circumstances' exist or make any recommendations relating to the alteration or review of Green Belt boundaries".

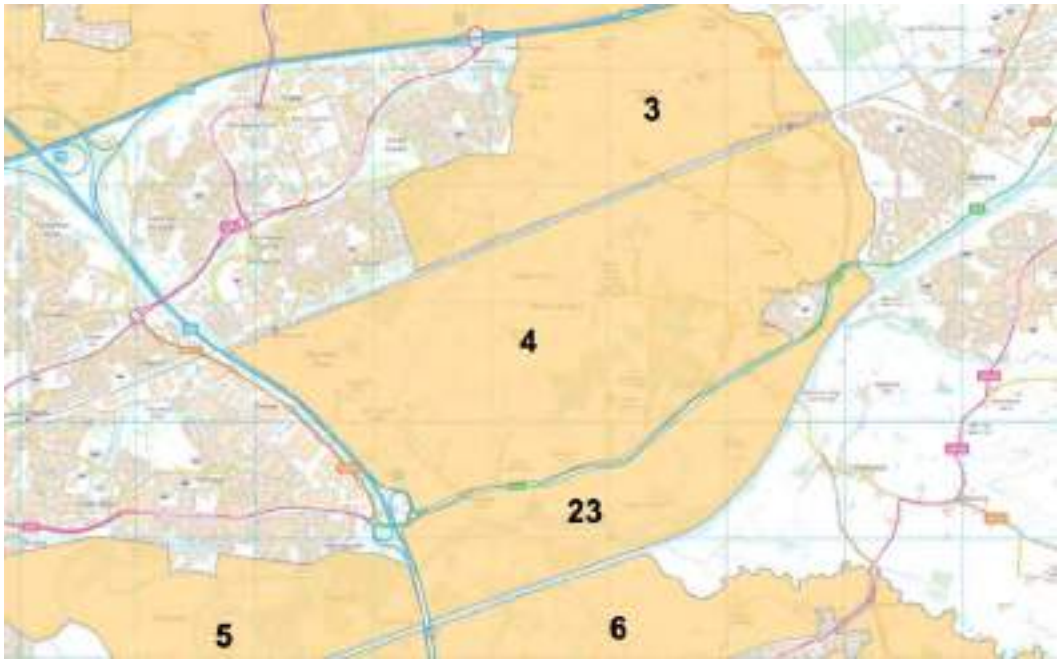
2.4. A Green Belt Addendum was published in June 2017 to take into account a number of issues raised in the Regulation 18 consultation specifically relating to some minor amendments required to certain parcel assessments and also the implications resulting from the updated position of High Speed Rail 2 (HS2).

2.5. A further Green Belt Assessment and Additional Site Assessment Report was published in July 2017 and subsequent Green Belt site assessments were undertaken for the remaining Call for Sites and SHLAA sites (July 2017, May 2018, and November 2018).

2.6. Most recently and following on from the consultation in 2019 on the Proposed Submission Version Local Plan under Regulation 19 of The Town and Country Planning (Local Planning) (England) Regulations 2012, the Council has undertaken a review of the options for the Plan's Spatial Strategy. This has included a re-assessment of all sites submitted for consideration through the Local Plan process and an update of the supporting evidence base. The August 2021 Green Belt Site Selection summarises the implications for the Green Belt resulting from the proposed allocations in the updated 'Proposed Submission Version Local Plan'. This takes into account any harm to the function and integrity of the Green Belt and the resultant Green Belt boundary.

Assessment Finding for the Site & Surrounding Area

2.7. As set out within the Warrington Borough Council Green Belt Assessment (2016), the Site is located within 'General Area 4', which covers an extensive geographical area (see extract).



Extract of the Stage 1 Green Belt Assessment General Areas Plan

2.8. The assessment firstly (Stage 1) considers the General Areas against the 5 Green Belt Purposes. The main 3 landscape related purposes have been considered further at this stage. In relation to 'sprawl', the study clearly states that:

"The M6 forms a durable boundary between the GA and the built up area along the western boundary with the railway line forming a durable boundary along part of the northern boundary. The GA is only connected to the built up area along these boundaries and these durable boundaries could prevent sprawl."

2.9. In relation to the topic of 'merging', the assessment notes that General Area 4 forms an essential gap between the Warrington urban area and the Cadishead in the adjacent neighbouring authority of Salford, whereby development of the whole of the GA would result in the actual merging of these towns; however, it also confirms that:

"Development in the western section of the GA would reduce the gap between towns but not result in merging."

2.10. In terms of encroachment, the wider GA is considered to represent a 'Moderate Contribution'. The assessment determines that:

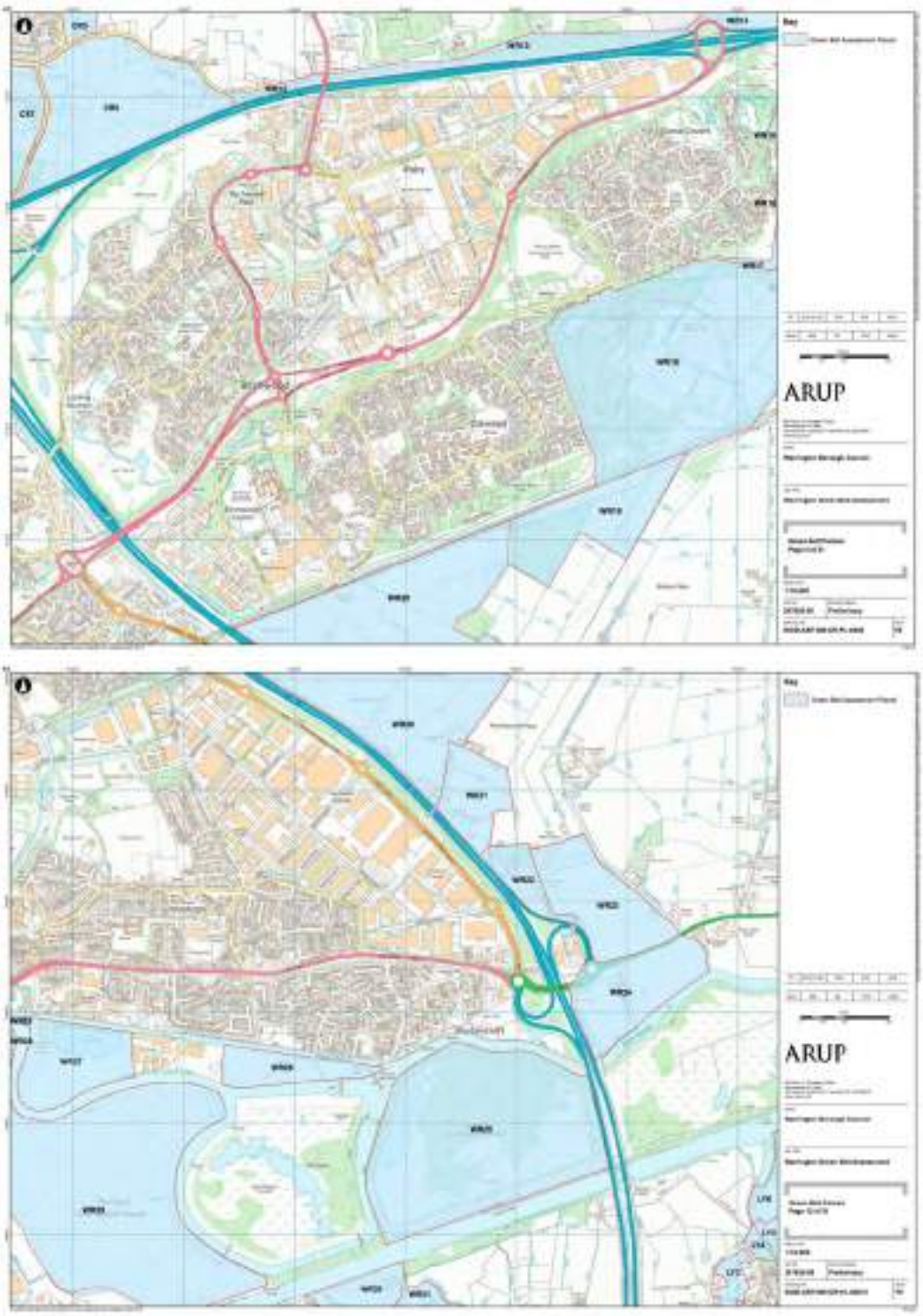
"The boundaries between the built up area and the GA are durable and could prevent encroachment from the built up area. The Glaze Brook forms a durable boundary between the GA and the countryside which may be able to prevent encroachment if the GA were developed."

2.11. The overall Green Belt contribution for 'General Area 4' is considered to be 'moderate'.

2.12. As follow-up, a Stage 2 assessment was undertaken by the Council. Parcel boundaries were defined to reflect the NPPF, requiring the use of physical features which are readily recognisable and likely to be permanent. Durable features were used in the first instance with parcels drawn from the settlement outwards to the nearest durable feature. Where this resulted in large expanses of

countryside, which was more akin to the General Areas, features lacking durability were utilised in order to enable division of the Green Belt into manageable parcels.

2.13. For the wider Site, 5 assessment parcels were identified (WR20, WR21, WR22, WR23 and WR24) as illustrated on the map extract below.



Extract of the Stage 2 Green Belt Assessment Parcels Plan

2.14. In relation to the wider Site, it is important to note that it was deemed to make either 'no contribution' or 'weak contribution' to 'Purpose 2' and the topic of 'merging'. Confirming that the parcels do *"not play a role in preventing towns from merging"*.

2.15. In relation to 'encroachment', all of the study parcels are considered to represent a 'strong contribution'. Justification for this is somewhat generic, although provides a further indication that the eastern parcels could be perceived as being more sensitive and having a more evident relationship with the adjoining countryside. The assessment states that:

"The parcel is connected to the countryside along the eastern boundaries. The existing land use consists of open countryside in agricultural use with Woolston nursery and greenhouses evident. The parcel is flat with no built form and no vegetation. There are open long line views thus the parcel supports a strong degree of openness. Overall the parcel makes a strong contribution to safeguarding from encroachment due to its openness and the non-durable boundaries with the countryside".

2.16. The overall judgement for the majority of the wider Site parcels (WR20, WR21, WR22 and WR23) is that the study parcels make a 'strong contribution' to the Green Belt, with the exception of Parcel 'WR24' which is considered to make a 'moderate contribution', largely as it being a less essential gap and having a durable boundary with the River Mersey.

2.17. Overall, the main justification for the 'strong contribution' appears to relate to the existing durability of the boundaries associated with existing settlement edge and the main highway routes. The assessment notes that:

"The boundary between the parcel and the built up area is durable consisting of the M6 and A57. The boundaries between the parcel and the countryside are of mixed durability. The A57 to the south is durable, Brook Lane which is a made track lined by a stream to the east, Juniper Lane to the west, and field boundaries lined by hedgerow to the north are not permanently durable in the long term to prevent encroachment beyond the parcel."

2.18. No further consideration or assessment has been undertaken by the Council in relation to the Green Belt parcels associated with the Site.

Other Problems Associated with the ARUP Green Belt Assessment

2.19. The use of large study parcels has the potential to skew the findings of the Green Belt Assessment and does not allow for the proper assessment of smaller discreet parcels within larger areas that may make a more limited contribution to the Green Belt and offer opportunities for release.

2.20. Other issues that have been identified include:

- Reliance upon a number of subjective judgements without defined criteria and measurable parameters. This introduces degree of interpretation and lack of transparency and replicability in the assessment;
- Lack of detailed analysis and justification of assessment and recommendations, with repetitive text used throughout the document;

- The assumption that whole areas will be lost to development which results in areas being discounted without full and robust consideration of how they could be developed to include new Green Belt boundaries, mitigation measures and enhancement of land retained in the Green Belt;

- The assessment does not always use recognisable and durable boundaries and features on the ground which has led to failings in properly sub-diving larger parcels; and

- The assessment sometimes fails to consider local circumstances when determining which areas should be retained in the Green Belt and the preservation of settlement gaps (i.e. physical, visual and perceptual gaps between settlements and the role of individual land parcels within them).

Section 3: Contribution of the Site to the Green Belt

Existing Green Belt Boundaries

3.1. Given the observations and criticisms set out in the previous Section of this report on the ARUP assessment, it is important to consider the existing boundaries of the Site and re-visit the previous judgements made regarding the durability of the parcel boundaries, as that informed the assessments made into the conformity (or not) with the Green Belt purposes.

3.2. How boundaries are defined was set out clearly within the ARUP methodology. An extract is provided below of the ARUP methodology and Table 3 (Boundary Definitions) as contained on page 24 of the 2016 Green Belt Assessment.

Durable Features (Readily recognisable and likely to be permanent)	**Infrastructure:** - Motorway - Roads (A roads, B roads and unclassified 'made' roads) - Existing development with clear established boundaries (e.g. a hard or contiguous building line) **Natural:** - Water bodies and watercourses (reservoirs, lakes, meres, rivers, streams and canals) - Protected woodland (TPO) or hedges or ancient woodland - Prominent landform (e.g. ridgeline) Combination of a number of boundaries below
Features Lacking Durability (Soft boundaries which are recognisable but have lesser permanence)	**Infrastructure:** - Private/unmade roads or tracks - Existing development with irregular boundaries - Disused railway line - Footpath accompanied by other physical features (e.g. wall, fence, hedge) **Natural:** - Watercourses (brook, drainage ditch, culverted watercourse) accompanied by other physical features - Field boundary accompanied by other natural features (e.g. tree line, hedge line)

3.3. This re-assessment has utilised the same criteria as that used by ARUP and the findings should be read alongside the 'Green Belt Boundary Analysis Plan' and 'Photosheets' contained to the rear of this report.

3.4. With reference to the outward edge (eastern boundary) of the Site, it is evident that a combination of features (in accordance with the Table 3 criteria) does represent a durable boundary. There is only one short section of Brook Lane which currently has weaker containment due to the lack of boundary vegetation. However, the views east are still limited by the slightly rising landform and scattered mature tree planting beyond (see Photoviewpoint 25).

3.5. The boundary features are described further below:

Woolston Moss Local Wildlife Site (LWS)

3.6. This feature was not described within the ARUP assessment of parcels WR19 and WR20; however, as a non-statutory designation with distinctive features, this area of landscape is important and intended for retention and enhancement. Furthermore, the established tree stock offers considerable enclosure (see Photoviewpoints 36 and 37).

Martinscroft Moss & Private Airstrip

3.7. The private airfield is a permanent facility that permits up to 25 take-off/landing cycles per week and nor more than 500 flights per year (Planning Application No. 2011/18432). Again, this feature was not described within the ARUP assessment of parcels WR19, WR20, WR21, WR22 and WR23.

3.8. There are also established hedgerow features and a prominent tree belt along the western edge of the airstrip and the heavily wooded context of Marshall's Farm beyond (see Photoviewpoints 15, 16, 23 and 24).

Brook Lane

3.9. This a part 'made' road and surfaced track that provides vehicular access to numerous properties, farmsteads and businesses (including the private airstrip and Marshall's Farm). It is also the route of a Public Right of Way (Ref. Woolston 17).

3.10. Brook Lane is also aligned by Fishington Brook, sections of mature tree planting and both residential and commercial development which offers a sense of enclosure (see Photoviewpoints 1, 26, 29 and 31).

Re-Assessment of the Contribution of the Site to the Purposes of the Green Belt

3.11. As already noted, the Council has not produced an updated or more refined Green Belt Assessment for this area of landscape, therefore the table below sets out a summary of the previous ARUP 2016 findings and an up-to-date assessment undertaken by Tyler Grange. This finer-grain assessment has been based on both desktop and fieldwork undertaken between June-October 2021.

3.12. The assessment has considered the contribution to the Green Belt purposes and a definition of the underlying terminology is set out below for assistance.

- Sprawl - spread or develop irregularly or without restraint;
- Merge – combine or cause to combine to form a single entity; and
- Encroachment - a gradual advance beyond usual or acceptable limits.

3.13. Consideration of mitigation has also been included, which is consistent with the ARUP 2021 assessment produced for the Fiddler's Ferry development option.

NPPF Purpose	ARUP 2016 Assessment Contribution (Parcels WR20, WR21, WR22, WR23 and WR24)	Re-Assessment of Contribution of the Site	Mitigation
To check the unrestricted sprawl of large built-up areas	WR20, WR21 and WR22: *The railway line and the M6 form a durable boundary between the parcel and the built up area which could sprawl into the parcel. The parcel is connected to the built up area along its northern and south western boundaries.* **Moderate Contribution** WR23 and WR24: *The parcel has a limited connection to the built up area being only connected along part of its western boundary.* **Weak Contribution**	The Site provides durable long-term boundaries to the east in the form of the Woolston Moss LWS and the permanent airfield associated with Martinscroft Moss. Furthermore, the watercourse, mature vegetation and scattered buildings along Brook Lane form an identifiable boundary. The River Mersey corridor is a strong feature that limits sprawl to the south. There is already established inter-visibility and some connectivity with the adjoining urban areas to the north and west. The Site is currently occupied by residential development, commercial development and farmsteads. The Site offers the ability to round-off development between the urban areas of Oakwood to the north and Martinscroft to the west. Sprawl can be restrained by the durable boundary features to the north, east, south and west. **Weak Contribution**	The creation of strong Green Infrastructure to the east of the Site, utilising existing features and protected ecological habitats and including new woodland planting where suitable and/or where defined by the Mersey Forest Plan. This will create a defensible boundary.
To prevent neighbouring towns merging into one another	WR20, WR21 and WR22: **No Contribution** WR23 and WR24: *The parcel forms a less essential gap between the Warrington urban area and Cadishead within the neighbouring authority of Salford whereby development of the parcel would reduce the gap between the towns but would not result in them merging.* **Weak Contribution**	The Site forms a smaller portion of less essential (east-west) gap between Warrington and Cadishead. At-worst, the proposed development parameters could result in a 1.25km reduction in the gap between settlements, but that has to be considered against the width of the existing gap which is in the region of 5.5km. There is no perceptible reduction in the (north-south) gap between the Site and Lymm and Statham. Furthermore, there is no inter-visibility between the settlements and no location from which the separation of the two settlements would be perceived as merging. **Weak Contribution**	The retention and strengthening of the existing landscape features associated with the eastern boundary of the Site would ensure continued visual separation between Cadishead and the Site, particularly when approached along the A57.
To assist in safeguarding the countryside from encroachment	WR20, WR21, WR22, WR23 and WR24: *The boundary between the parcels and the built up area are durable consisting of the railway line, the M6 and A57. The boundaries between the parcel and the countryside are of mixed durability. The A57 to the south is durable, Brook Lane which is a made track lined by a stream to the east, Juniper Lane to the west, and field boundaries lined by hedgerow to the north are not permanently durable in the long term to prevent encroachment beyond the parcel. The parcels are well connected to the countryside along the boundaries. The existing land use consists of open countryside in agricultural use with some residential properties including stables located along Brook Lane. The parcel is flat with limited built form and vegetation. There are open long line views thus the parcel supports a strong degree of openness.* **Strong Contribution**	Due consideration needs to be given to the durability of the eastern boundary of the Site, which safeguards encroachment of future development further to the east through the presence of the Woolston Moss LWS and the permanent airfield associated with Martinscroft Moss. Brook Lane is also defined by a number of features (track, trees and the Fishington Brook) which in combination represent a durable boundary. To the south, the River Mersey corridor physically restricts encroachment. Landform and tree cover does limit wider visibility and the fieldwork and accompanying photography demonstrates that open long line views are not readily available. **Weak Contribution**	The creation of strong Green Infrastructure to the east of the Site and, the retention and strengthening of the existing landscape features associated would reduce the visual and perceptual intrusion of the proposed development into the countryside.
To preserve the setting and special character of historic towns	WR20, WR21, WR22, WR23 and WR24: *Warrington is a historic town however the parcel is not within 250m of the Warrington Town Centre Conservation Areas. The parcel does not cross an important viewpoint of the Parish Church.* **No Contribution**	There is no perceptual influence or inter-visibility with the historic core of Warrington Town Centre or Conservation Area. **No Contribution**	n/a

To assist in urban regeneration, by encouraging the recycling of derelict and other urban land	WR20, WR21, WR22, WR23 and WR24: *The Mid Mersey Housing Market Area has 2.08% brownfield urban capacity for potential development, therefore the parcel makes a moderate contribution to this purpose.* **Moderate Contribution**	The updated Local Plan (2021) recognises the need for both housing and employment land, plus the need for some removal of land from the Green Belt to accommodate that identified need. In this case the Site represents a very sustainable location immediately adjoining M6 junction 21 and Birchwood Station. The landscape has also been subject to disturbance, including the removal of the deep peat deposits. **Weak Contribution**	n/a
Justification & Overall Assessment	WR20, WR21, WR22 and WR23: *In line with the methodology, professional judgement has therefore been applied to evaluate the overall contribution. The parcel has been judged to make a strong overall contribution as it is well connected to the countryside and supports a strong degree of openness and there are non-durable boundaries between the parcel and the countryside and therefore the parcel has a strong role in preventing encroachment.* **Strong Contribution** WR24: *The parcel has been judged to make a moderate overall contribution as although it supports a strong degree of openness and the eastern boundary with the countryside is nondurable, the remaining boundaries with the countryside are durable meaning that any development would be contained and would therefore not threaten the openness and permanence of the Green Belt.* **Moderate Contribution**	The re-assessment of the Site itself has judged that overall, it makes a weak contribution to the Green Belt purposes. The Site is evidentially associated with the established urban edge and represents a sustainable location on previously disturbed peat reserves. A combination of durable boundary features (which include the Woolston Moss LWS, the operational airfield, Brook Lane and associated features and, the River Mersey corridor) provide a strong and permanent sense of enclosure, to limit any perception of sprawl, merging or encroachment. Landform and tree cover does limit wider views and the assessment demonstrates that open long line views and inter-visibility between settlements are not available. **Weak Contribution**	The creation of strong and connecting network of Green Infrastructure, that utilises and enhances existing features and protected ecological habitats, will create a more diverse landscape, capable reducing any sense of visual and perceptual intrusion and ensuring that the proposed development assimilates into the countryside.

Section 4: Compensatory Improvements

4.1. The Vision Document and Landscape & Visual Technical Note should be read alongside this report. They provide a thorough review of the existing Site context, as well as identifying the constraints that exist and the opportunities available for enhancement. These enhancements form part of the compensation improvements that need to be considered as part of the overall planning balance when determining the acceptability of the removal of land from the Green Belt.

4.2. The key compensatory considerations and development parameter attributes include:

- Focus of development upon previously extracted and disturbed deep peat reserves (now dry and degraded) and beyond the boundaries of the Risley Moss SSSI, Woolston Eyes SSI, Rixton Clay Pits SAC, SSSI and LNR;
- The possibility of peatland restoration and responding to the objectives of the Carbon Landscape project;
- The safeguarding, enhancement and management of Woolston Moss LWS;
- Bog restoration and improving connectivity between existing mossland and woodland;
- Opportunities to incorporate field pattern and enhancement of existing ditches, with new attenuation designed to maximise wildlife value;
- The strengthening of the boundary landscape features, with new planting where appropriate to create improved age and species diversity as well as increased habitat connectivity;
- The retention and incorporation of organic farming;
- New areas of public open space; and
- Improved recreational access and permeability, with a network of formal and informal routeways linking local footpath and cycleway routes to Birchwood Station.

4.3. The proposed development has the ability to comprise significant gains in terms of the provision of high-quality Green Infrastructure and publicly and privately accessible open space above the current baseline situation.

Section 5: Conclusion

5.1. The Site makes a weak (limited) contribution to the purposes of the Green Belt as set out within the NPPF. This is a lower assessment than that included within the original ARUP (2016) Green Belt Assessment; however, this is due to the finer-grain consideration undertaken by Tyler Grange, which has assessed a smaller parcel size and categorised a number of boundaries as being permanent and durable.

5.2. The Proposed Development will have a localised effect on visual openness due to limited area from which it is possible to perceive the open nature of the Site.

5.3. The Development will result in a significant increase in publicly and privately accessible open space, including a substantial area of Green Infrastructure, amenity land and enhanced wildlife habitats.

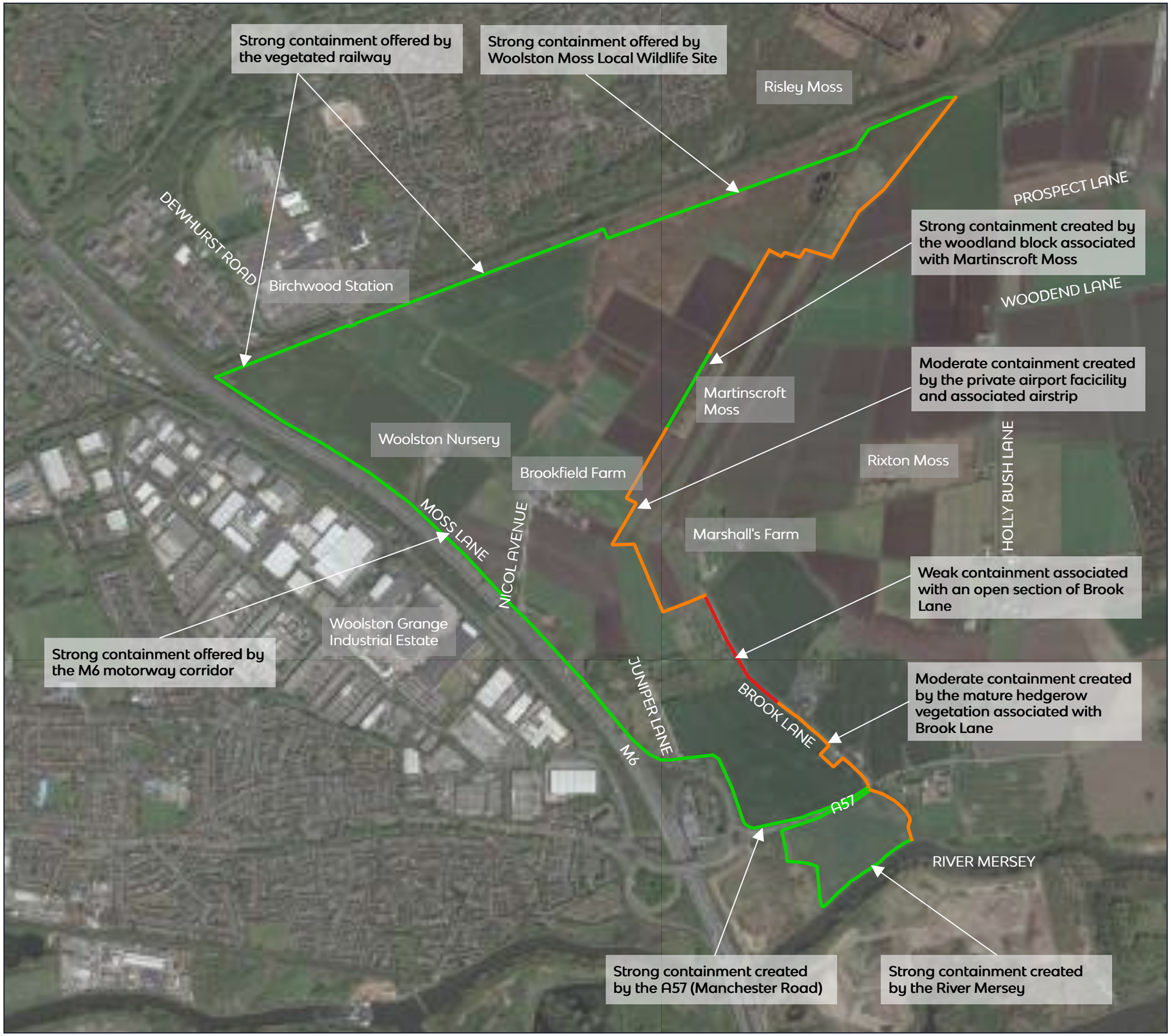
Plans

Green Belt Boundary Analysis (14127/P02b)

Visual Context Plan (14127/P05)

Viewpoint Location Plan (14127/P04)

Photoviewpoints 1-38 (14127/P03)



- Strong Boundaries
- Moderate Boundaries
- Weak Boundaries

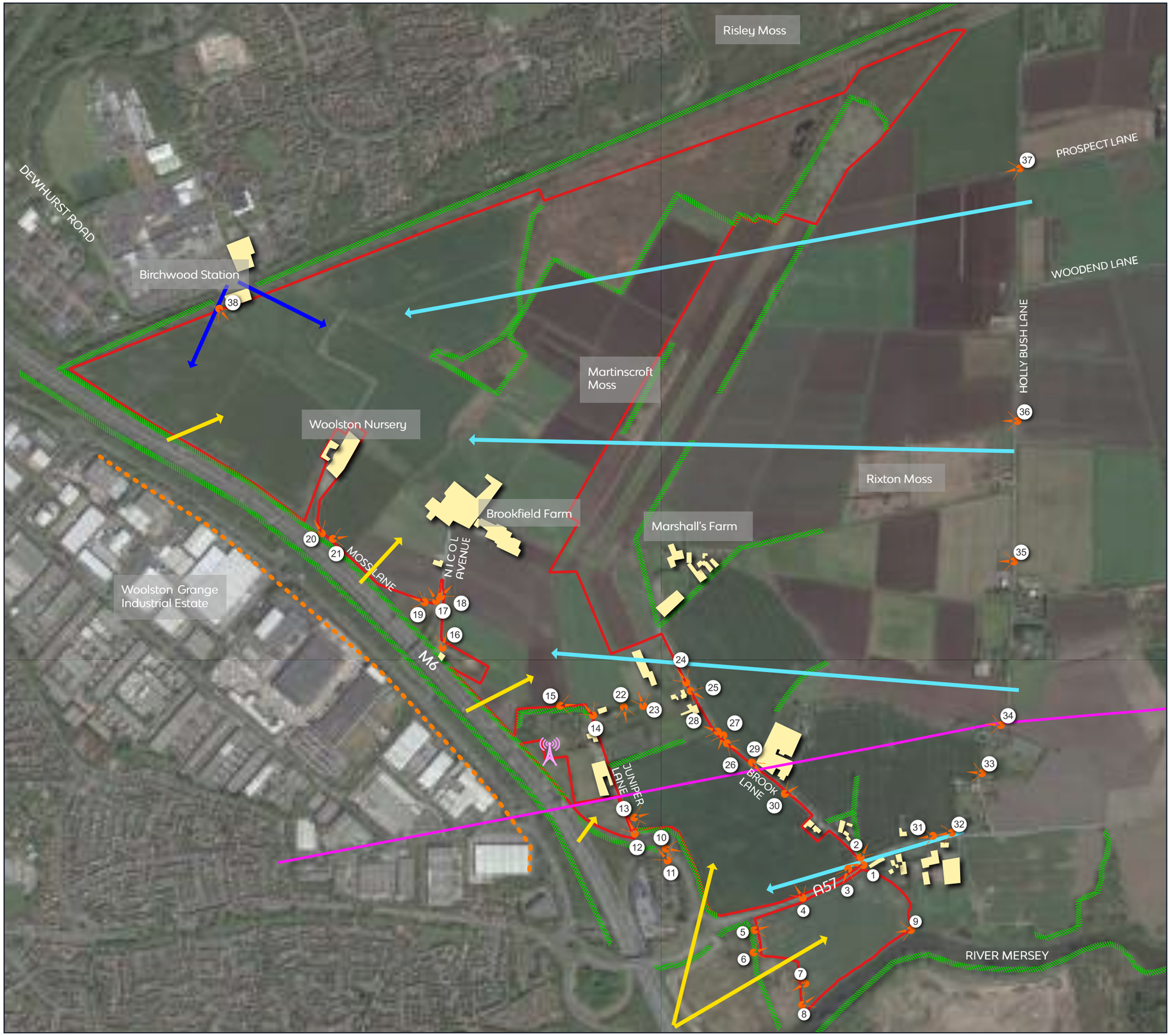
Green Belt boundary judgements have been based on the Table 3 definitions as contained in the ARUP Green Belt Assessment (2016).

N

Project	South Station Place, Birchwood
Drawing Title	Green Belt Boundary Review Plan
Scale	1:12000 @A3
Drawing No.	14127/P02a
Date	November 2021
Checked	PIJ/JB

Tyler Grange

97 Icknield Street, Hockley, Birmingham B18 6RU
T: 01285 831804 E: info@tylergrange.co.uk W: www.tylergrange.co.uk



- Site Boundary
- Viewpoint Locations
- Existing Vegetation that Screens and/or Filters Views Towards and Across the Site
- Existing Buildings and Structures that are Visible and Influence the Visual Context of the Site
- Telecommunications Mast
- Overhead Power Lines and Associated Pylons
- Established Height Parameters and Visible Backdrop Associated with the Woolston Grange Industrial Park
- Glimpsed Transient Views Through the Dense Embankment Vegetation Towards the Site from the M6 Corridor
- Glimpsed Distant Views Towards the Site Through Layers of Hedgerows and Other Intervening Landscape Features from Hollybush Lane
- Visual Connectivity Between Birchwood Station and the Site

N

Project	South Station Place, Birchwood
Drawing Title	Visual Context Plan
Scale	1:9900 @A3
Drawing No.	14127/P05
Date	November 2021
Checked	PIJ/JB

Tyler Grange

97 Icknield Street, Hockley, Birmingham B18 6RU
T: 0121 773 07707 E: info@tylergrange.co.uk W: www.tylergrange.co.uk

Site Boundary

Viewpoint Locations

N

Project	South Station Place, Birchwood
Drawing Title	Viewpoint Location Plan
Scale	1:9800 @A3
Drawing No.	14127/P04
Date	November 2021
Checked	PIJ/JB

Tyler Grange

97 Icknield Street, Hockley, Birmingham B18 6RU
T: 0121 773 07707 E: info@tylergrange.co.uk W: www.tylergrange.co.uk

Photoviewpoint 1: Looking west from Brook Lane at the junction with the A57. **Distance:** 0m **Orientation:** West **Coordinates:** SJ 66738 89361

Photoviewpoint 2: Looking north-east from Brook Lane at the junction with the A57. **Distance:** 1m **Orientation:** North-east **Coordinates:** SJ 66742 89370

Tyler Grange

Photoviewpoint 1 - 2 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 3: The view south-west from the A57, looking across the Site towards the River Mersey and the elevated section of the M6 beyond.

Distance: 1m **Orientation:** South-west **Coordinates:** SJ 66731 89353

Photoviewpoint 4: The view north across the Site from the A57. Where the hedgerow has been removed, the view extends across the Site towards the Moss Side Farm complex. The enclosing vegetation along Brook Lane is also visible.

Distance: 1m **Orientation:** North **Coordinates:** SJ 66596 89288

Photoviewpoint 5: Looking east across the Site from Public Footpath No. 26 (Woolston). **Distance:** 54m **Orientation:** East **Coordinates:** SJ 66482 89197

Photoviewpoint 6: The view east through boundary vegetation from Public Footpath No. 26 (Woolston). **Distance:** 162m **Orientation:** East **Coordinates:** SJ 66492 89090

Tyler Grange

Photoviewpoint 5 - 6 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 7: The view west from Public Footpath No. 26 (Woolston) towards the elevated M6 corridor. **Distance:** 201m **Orientation:** West **Coordinates:** SJ 66567 89065

Photoviewpoint 8: Looking north-east along the River Mersey corridor from Public Footpath No. 27 (Woolston). **Distance:** 281m **Orientation:** North-east **Coordinates:** SJ 66598 88995

Photoviewpoint 9: Looking west across the Site from Public Footpath No. 27 (Woolston). **Distance:** 197m **Orientation:** West **Coordinates:** SJ 66849 89197

Photoviewpoint 10: The view south-east from the Public Footpath No. 15 (Woolston) and the Juniper Lane overbridge to the M6 slip road. **Distance:** 10m **Orientation:** South-east **Coordinates:** SJ 66257 89395

Tyler Grange

Photoviewpoint 9 - 10 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 11: The view north-west from the Public Footpath No. 15 (Woolston) and the Juniper Lane overbridge to the M6 slip road.

Distance: 17m **Orientation:** North-west **Coordinates:** SJ 66251 89389

Photoviewpoint 12: The view north from Juniper Lane and Public Footpath No. 15 (Woolston) towards the Moss Side Farm complex.

Distance: 0m **Orientation:** North **Coordinates:** SJ 66170 89448

Tyler Grange

Photoviewpoint 11 - 12 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 13: Looking east / south-east across the Site from Juniper Lane and Public Footpath No. 15 (Woolston) towards Brook Lane, Nurseries and Rixton Dog School.

Distance: 0m **Orientation:** East / south-east **Coordinates:** SJ 66172 89459

Photoviewpoint 14: Looking north-west across the Site from Public Footpath No. 14 (Woolston) towards Nicol Avenue and the vegetated corridor associated with the M6.

Distance: 0m **Orientation:** North-west **Coordinates:** SJ 66064 89732

Tyler Grange

Photoviewpoint 13 - 14 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 15: The view east from Public Footpath No. 14 (Woolston) towards the private airfield and associated hangers.

Distance: 0m **Orientation:** East **Coordinates:** SJ 66006 89764

Photoviewpoint 16a: The view north-east from Nicol Avenue across the Site towards the Brookfield Farm complex.

Distance: 0m **Orientation:** North-east **Coordinates:** SJ 65680 89922

Photoviewpoint 16b: The view north-east from Nicol Avenue across the Site towards the Brookfield Farm complex. **Distance:** 0m **Orientation:** North-east **Coordinates:** SJ 65680 89922

Photoviewpoint 17a: Looking north across the Site from Nicol Avenue towards Wolston Nursery and Birchwood Station beyond. **Distance:** 0m **Orientation:** North **Coordinates:** SJ 65672 90037

Photoviewpoint 17b: Looking north across the Site from Nicol Avenue towards Wolston Nursery and Birchwood Station beyond.

Distance: 0m **Orientation:** North **Coordinates:** SJ 65672 90037

Photoviewpoint 18: Looking north-east/east towards the Brookfield Farm complex and the vegetated Martinscroft Moss / private airfield beyond.

Distance: 0m **Orientation:** North-east **Coordinates:** SJ 65685 90049

Tyler Grange

Photoviewpoint 17b - 18
South Station Place, Birchwood
14127/P02
October 2021
PIJ/JB

Drawing Title
Project
Drawing No.
Date
Checked

Photoviewpoint 19: The view north-west from Moss Lane towards Wolston Nursery and the vegetated corridor associated with the M6.

Distance: 0m **Orientation:** North-west **Coordinates:** SJ 65635 90027

Photoviewpoint 20: The view north along Moss Lane towards Wolston Nursery, the vegetated railway corridor and Birchwood Station.

Distance: 0m **Orientation:** North **Coordinates:** SJ 65381 90200

Tyler Grange

Photoviewpoint 19 - 20
South Station Place, Birchwood
14127/P02
October 2021
PIJ/JB

Drawing Title
Project
Drawing No.
Date
Checked

Photoviewpoint 21a: Looking east from Moss Lane towards the Brookfield Farm complex and the woodland cover beyond that borders Martinscroft Moss and the private airfield. **Distance:** 0m **Orientation:** East **Coordinates:** SJ 65382 90200

Photoviewpoint 21b: Looking east from Moss Lane towards the Brookfield Farm complex and the woodland cover beyond that borders Martinscroft Moss and the private airfield. **Distance:** 0m **Orientation:** East **Coordinates:** SJ 65382 90200

Photoviewpoint 22: Looking south into the paddocks and garden curtilage that adjoins Public Footpath No. 16 (Woolston).

Distance: 0m **Orientation:** South **Coordinates:** SJ 66165 89759

Photoviewpoint 23: The view north from Public Footpath No. 16 (Woolston) towards the mown private airfield and associated hangers.

Distance: 0m **Orientation:** North **Coordinates:** SJ 66194 89773

Photoviewpoint 24: The view north towards the private airfield and the wooded enclosure associated with Marshall's Farm, from the junction of Public Footpath No. 16 (Woolston) and Brook Lane.

Distance: 0m **Orientation:** North **Coordinates:** SJ 66304 89817

Photoviewpoint 25a: Looking south-east from Brook Lane and Public Footpath No. 17 (Woolston) towards the Nurseries and mature trees that mark the field boundaries beyond.

Distance: 0m **Orientation:** South-east **Coordinates:** SJ 66308 89814

Tyler Grange

Photoviewpoint 24 - 25a Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 25b: Looking south-east from Brook Lane and Public Footpath No. 17 (Woolston) towards the Nurseries and mature trees that mark the field boundaries beyond.

Distance: 0m **Orientation:** South-east **Coordinates:** SJ 66308 89814

Photoviewpoint 26: Looking south along Brook Lane and Public Footpath No. 17 (Woolston) towards the Nurseries and associated dwellings.

Distance: 2m **Orientation:** South **Coordinates:** SJ 66390 89684

Tyler Grange

Photoviewpoint 25b - 26 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 27a: The view across the Site from Brook Lane and Public Footpath No. 17 (Woolston) towards the vegetated embankments associated with Junction 21 of the M6.

Distance: 0m **Orientation:** South-west **Coordinates:** SJ 66379 89688

Photoviewpoint 27b: The view across the Site from Brook Lane and Public Footpath No. 17 (Woolston) towards the vegetated embankments associated with Junction 21 of the M6.

Distance: 0m **Orientation:** South-west **Coordinates:** SJ 66379 89688

Tyler Grange

Photoviewpoint 27a - 27b Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 28: The view west from Brook Lane and Public Footpath No. 17 (Woolston) towards the pony paddock and associated domestic curtilage.

Distance: 0m **Orientation:** West **Coordinates:** SJ 66379 89688

Photoviewpoint 29: Looking south along the vegetated section of Brook Lane, with existing residential properties in the middle-distance and the wooded backdrop associated with the River Mersey beyond.

Distance: 1m **Orientation:** South **Coordinates:** SJ 66455 89626

Tyler Grange

Photoviewpoint 28 - 29 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 30a:	The view east from Brook Lane and Public Footpath No. 17 (Woolston), with gently rising landform and some visibility with the properties associated with Holly Bush Lane.	**Distance:**	5m	**Orientation:**	East	**Coordinates:**	SJ 66566 89540

Photoviewpoint 30b:	The view east from Brook Lane and Public Footpath No. 17 (Woolston), with gently rising landform and some visibility with the properties associated with Holly Bush Lane.	**Distance:**	5m	**Orientation:**	East	**Coordinates:**	SJ 66566 89540

Tyler Grange

Photoviewpoint 30a - 30b Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 31: The view west from the A57, with the majority of the Site filtered by the vegetation associated with Brook Lane. The M6 corridor is visible in the distance.

Distance: 172m **Orientation:** West **Coordinates:** SJ 66904 89424

Photoviewpoint 32: The view west from the A57, where the majority of the Site is filtered by intervening vegetation.

Distance: 250m **Orientation:** West **Coordinates:** SJ 66966 89441

Tyler Grange

Photoviewpoint 31 - 32
South Station Place, Birchwood
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Drawing Title
Project

Photoviewpoint 33: Looking west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook), the majority of the Site is concealed by landform and intervening layers of vegetation. The Nurseries on Brook Lane and the pylons which cross the Site are visible in the view.

Distance: 400m **Orientation:** West / north-west **Coordinates:** SJ 67042 89591

Photoviewpoint 34: Looking west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook), where the majority of the Site is filtered by intervening vegetation. The vegetated line of the railway corridor and Woolston Moss can be seen to the north-west.

Distance: 535m **Orientation:** West / north-west **Coordinates:** SJ 67097 89734

Tyler Grange

Photoviewpoint 33 - 34 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 35a: The view west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook). Whilst the majority of the Site is concealed by vegetation, the telecommunications mast near Jupiter Lane can be seen in the distance as can the private airfield.

Distance: 870m **Orientation:** West / north-west **Coordinates:** SJ 67128 90117

Photoviewpoint 35b: The view west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook). Whilst the majority of the Site is concealed by vegetation, the telecommunications mast near Jupiter Lane can be seen in the distance as can the private airfield.

Distance: 870m **Orientation:** West / north-west **Coordinates:** SJ 67128 90117

Tyler Grange

Photoviewpoint 35a - 35b
South Station Place, Birchwood
14127/P02
October 2021
PIJ/JB

Drawing Title
Project
Drawing No.
Date
Checked

Photoviewpoint 36: The view west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook), with glimpsed views of the private airfield, the Brookfield Farm complex and the tree planting and layers of vegetation associated with Woolston Moss LWS.

Distance: 1.09km **Orientation:** West / north-west **Coordinates:** SJ 67127 90473

Photoviewpoint 37: Looking west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook), the Site is filtered by the tree planting and layers of vegetation associated with Woolston Moss LWS.

Distance: 1.54km **Orientation:** West / north-west **Coordinates:** SJ 67130 91110

Tyler Grange

Photoviewpoint 36 - 37 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 38: The view south across the Site from the cycleway that links Birchwood Station with Woolston and Longbarn.

Distance: 1m **Orientation:** South **Coordinates:** SJ 65142 90764

Tyler Grange

Photoviewpoint 38
South Station Place, Birchwood
14127/P02
October 2021
PIJ/JB

Drawing Title
Project
Drawing No.
Date
Checked

5. Landscape & Visual Technical Note

Landscape & Visual Technical Note

South Station Place, Birchwood

12th November 2021

TG Report No. 14127_R01_JB_CW

Tyler Grange

Report No:	Date	Revision	Author	Checked
14127_R01	12th November 2021	-	Jonathan Berry Ba (Hons) DipLA CMLI AIEMA M.Arbor.A	Wendy Lancaster PGDipLA PGDipUD CMLI FRSA

Contents:

Plans:

Section 1: Introduction

Introduction

1.1. This Technical Note has been prepared by Tyler Grange Group Ltd on behalf of Patrick Properties to provide high level advice on the landscape and visual matters associated with the promotion of South Station Place, Birchwood. The note considers the planning policy context, landscape character and resources, visual receptors and the opportunities and constraints of the Site, in terms of proposed development.

1.2. The work does not constitute a full Landscape and Visual Appraisal (LVA) or a full Landscape and Visual Impact Assessment (LVIA). It is intended to support representations being made for the release of the Site from the Green Belt for the purposes of mixed-use development.

Section 2: Landscape Character and Visual Baseline

Site Context

2.1. The Site is centred on grid reference SJ 65734 90526, located within the administrative boundary of Warrington Borough Council (WBC), approximately 4.7 km to the east of Warrington city centre and 2.9 km to the south-east of the M6/M62 interchange. It extends to approximately 180 hectares / 446 acres and comprises several land parcels that broadly extend north from Junction 21 of the M6 (see Figure 1).

2.2. The western boundary is defined by the vegetated embankment associated with the motorway corridor, beyond which lies numerous commercial uses along Woolston Grange Avenue, with residential housing and the wider Warrington urban area beyond.

2.3. The northern boundary is defined by the Liverpool to Manchester railway line, the vegetated Birchwood Brook corridor and Birchwood Railway Station. Beyond lies the Birchwood Shopping Centre.

2.4. The established woodland associated Woolston Moss borders the Site to the north-east, with a private airstrip to the east, beyond which lies Rixton Moss. To the south-east, the Site is defined by Brook Lane, with the associated network of ditches and established hedgerows.

2.5. To the south, the Site extends across the A57 (Manchester Road) and borders the River Mersey corridor.

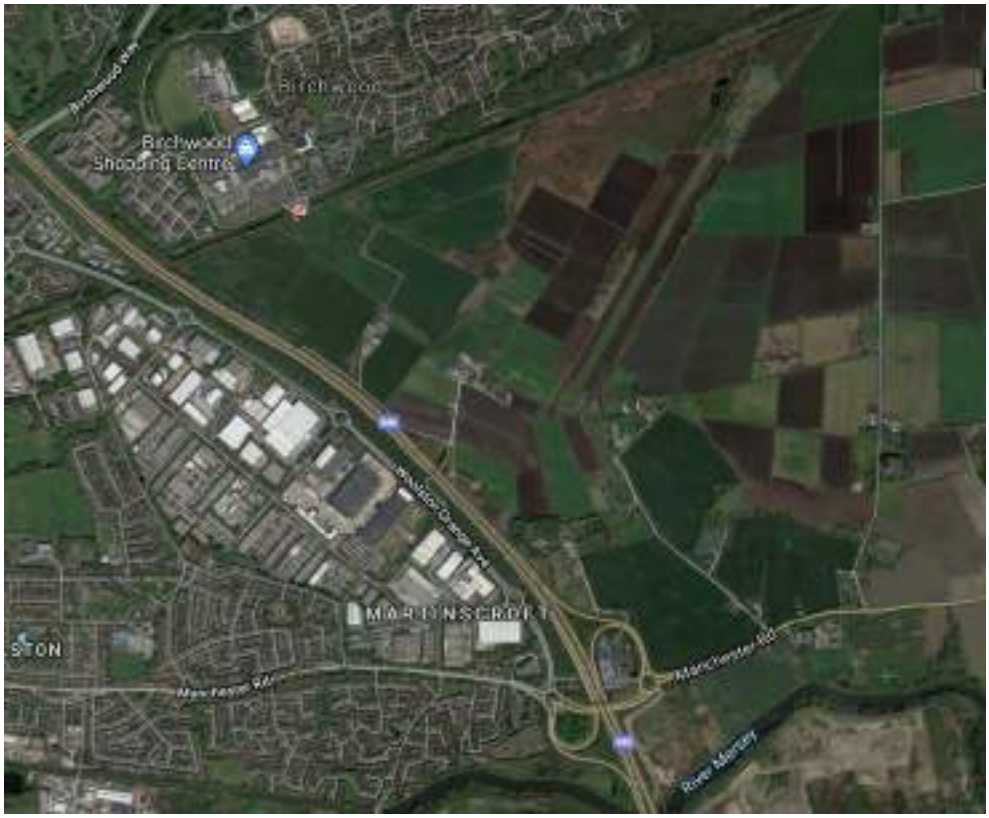


Figure 1: Site Location

Landscape Designations

2.6. A review of the MAGIC website[1] reveals that the Site is not located within either a locally or nationally designated landscapes.

2.7. The Site does not contain ancient woodland, nor are there any identified ancient, veteran or notable individual trees. The National Woodland Inventory does identify several areas as having a standard 'Woodland' classification (see Figure 2).

Figure 2: Extract of National Forest Inventory & Woodland Map

2.8. The available mapping data does identify the following designated and non-statutory designated sites beyond the boundaries of the Site:

- Manchester Mosses SAC and Risley Moss LNR / SSSI;
- Woolston Eyes SSSI;
- Rixton Clay Pits SAC / LNR / SSSI;
- Rixton Moss LWS; and
- Woolston Moss LWS (partially within the Site).

[1] https://magic.defra.gov.uk/

2.9. These are considered further from an ecological perspective in the separate work undertaken by Bowland Ecology (see Figure 3 extract of the wildlife designations).

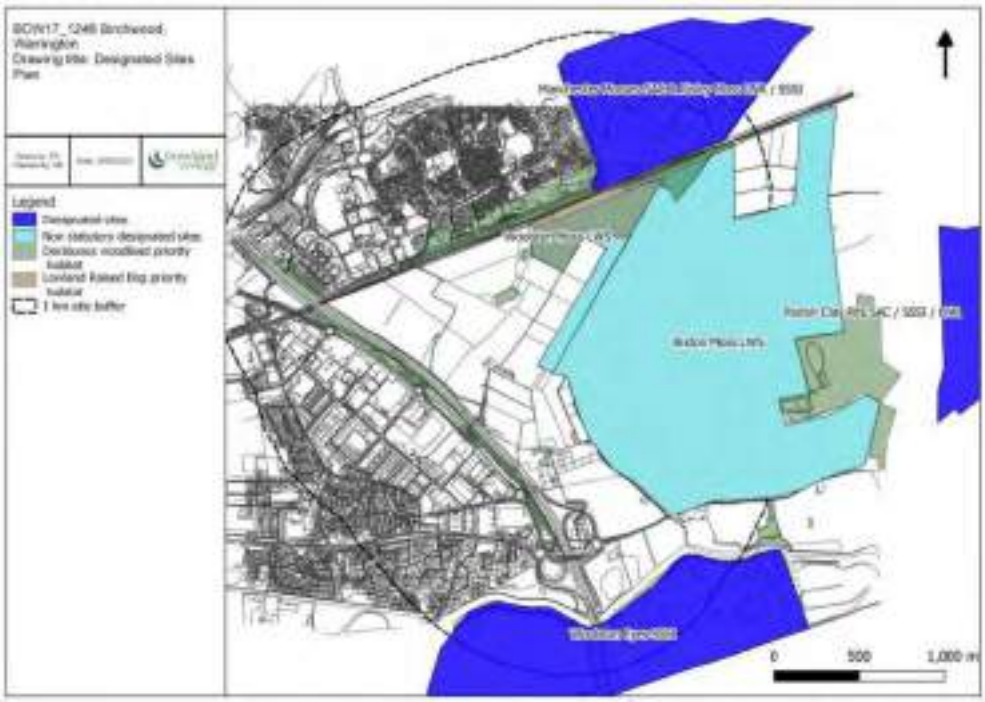


Figure 3: Extract of Bowland Ecology Report – Wildlife Designations

Published Character Context

2.10. The characterisation process is a non-value judgment process; therefore, classifying landscapes into distinct areas does not suggest that one character area is more sensitive than another or valued by people more or less.

2.11. The landscape character appraisal process reviews the wider landscape character type at a national level, explores more detailed character features at a district/local level and analyses site-specific land use that informs local distinctiveness and sense of place. This document considers the local, site-specific character features and context as identified through fieldwork. From this we can identify the relevant characteristics and important site features to retain.

National

2.12. At a national level, Natural England's National Character Areas (NCA's) identify broad, strategic character areas for the whole of England. At a national level, the Site lies within the NCA profile 60: Mersey Valley.

2.13. The key characteristics relevant to the site and surrounding study area are:

- *"Trees and woodland are mainly associated with settlements, occasional parkland and isolated woodland blocks;*
- *Large-scale, open, predominantly flat, high-quality farmland occurs between developments, with primarily arable farming to the north of the valley and a mixture of arable and dairying to the south;*

- *The field pattern is regular and large scale, often defined by hedgerows with isolated hedgerow trees; many hedgerows are intermittent and have been replaced by post-and-wire fencing;*
- *There are densely populated urban and suburban areas, with major towns particularly at the river crossings, including Warrington;*
- *There is large-scale, highly visible industrial development, with docks, chemical works and oil refineries; and*
- *The river valley has a dense communication network with motorways, roads, railways and canals running east–west, and power lines are also prominent."*

District

2.14. At a district level, the Site is located within the Mossland Character Type (Type 2) and more specifically the Rixton, Woolston & Risley Moss Type (Type 2A), the landscape is described as being very sensitive to expansive views and with little opportunity to screen any features. It is described as being a very fertile and open landscape, but with unstable peat depositions and also highly susceptible to changes in water level (see Figure 4). This work was undertaken for Warrington Borough Council in 2007 by Agathoclis Beckmann Landscape Architects.

2.15. However, it is also recognised that the mossland areas have changed dramatically, with the construction of the M6, railway infrastructure and through extensive drainage and peat removal.

2.16. The landscape is identified as being 'very distinctive and special' and 'extremely sensitive to change', but landscape objectives are also identified, some of which could be delivered through a sensitive development response. The most relevant in this case include the diversification of habitats for wildlife and the retention of the basic landscape structure of mossland fields and ditches.

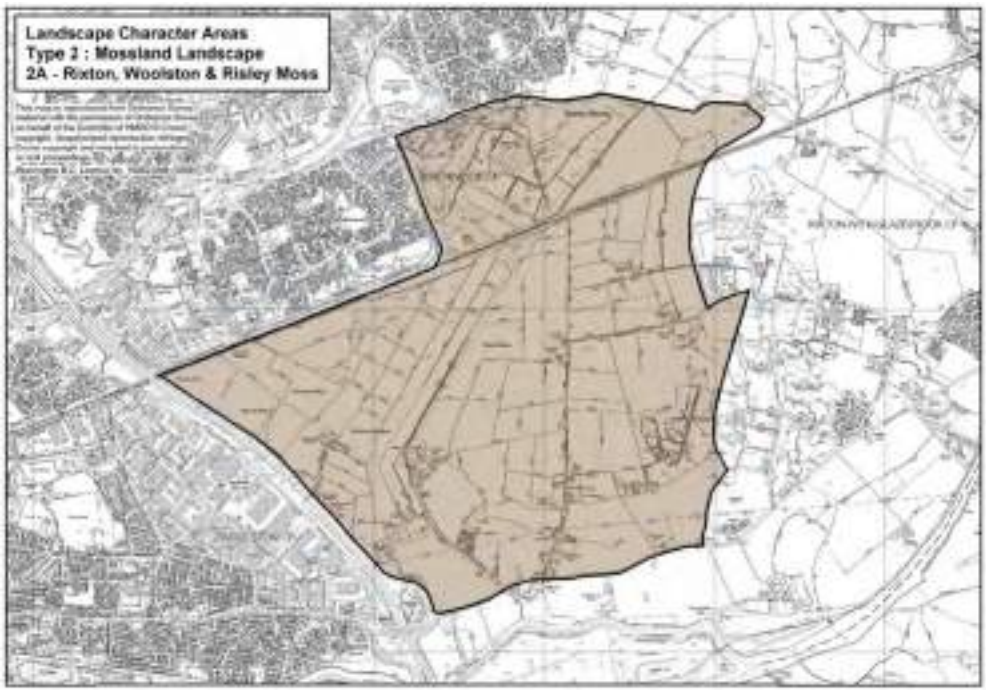


Figure 4: Extract of the Warrington Landscape Character Assessment –Type 2A: Rixton, Woolston & Risley Moss

2.17. The key characteristics are described as being:

- *"Level basin form to mossland areas;*
- *Expansive views towards North Wales;*
- *Straight water-filled ditches defining rectilinear fields;*
- *Dark peaty soil frequently exposed due to the intensity of cultivation;*
- *Leaning telegraph poles and property subsidence;*
- *Scattered presence of polytunnels;*
- *General absence of hedgerow and hedgerow trees;*
- *Elevated trackways, usually flanked by deep ditches;*
- *Tranquility within core areas;*
- *Open and exposed; and*
- *Presence of woodlands with a high conservation/wildlife value."*

Historic Landscape Character Assessment

2.18. Cheshire County Council commenced a survey of the Historic Landscape Character of the county in May 2002. The County Council's Natural and Historic Environment Team carried out the work in partnership with English Heritage and the completed document was published in 2007.

2.19. There are no intact ancient field systems evident, with the majority of the Site classified as 'C19th Field Systems'. A small area of the Site to the south of New Moss Farm is categorised as being 'Post Medieval Field System' (see Figure 5).

2.20. The survey confirms that the *"C19th Field systems are preserved in the mossland areas of Warrington, notably at Rixton and Holcroft Mosses, but there are some other, more isolated areas in the south of the Borough"*.

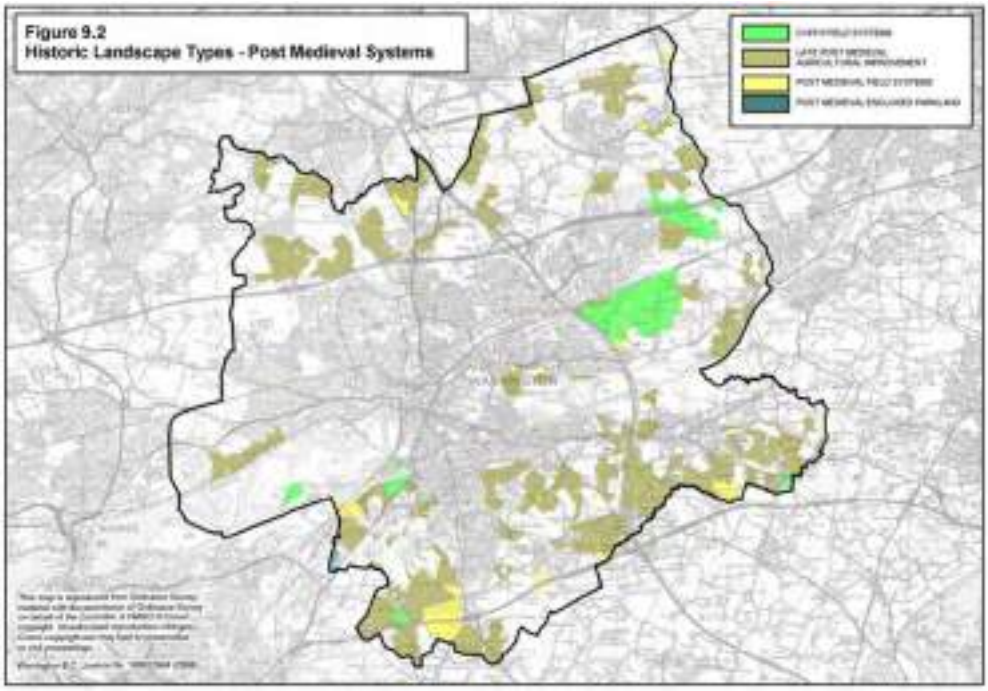


Figure 5: Extract of the Cheshire Historic Landscape Character Assessment – Post Medieval Systems

Site-Specific Character

2.21. Whilst the character information set out above does provide some context relevant to the site, it does not address all of the characteristics specific to the Site. In response to fieldwork and desktop research, further observations have been made with regards the site and its immediate surroundings.

2.22. It is evident that the Site is significantly influenced by the surrounding communications corridors, these include the Manchester to Liverpool railway line to the north (built in 1830) and the M6 corridor to the west (built in 1956), both of which severed the mossland habitats. The vegetated River Mersey corridor and Butchersfield Canal provides containment to the south (see Figure 6).

2.23. The land to the north-west (to the south of Birchwood Station) comprises of larger scale field parcels, divided by linear ditches and there is a notable absence of vegetation, with exception of a single copse of field trees. There is also a network of surfaced paths and the agricultural style buildings associated with Woolston Nursery (see Photoviewpoint 20). Further to the north-east, the character is influenced by the established tree cover associated with Woolston Moss LWS.

2.24. Surrounding the Brook Field Farm complex and to the west of Martinscroft Moss (see Photoviewpoints 16a and 16b), the field system consists of more regular, rectilinear medium-scale field parcels. They are actively farmed, and a network of ditches and tracks provide a visible structure. The existing farmstead and associated outbuildings have both a domestic and agricultural quality and, the landscape contains a more apparent presence of tree stock and hedgerow vegetation.

Figure 6: Aerial Image Illustrating the Urban Landscape Context to the North and West of the Site

2.25. The central portion of the Site represents a smaller-scale field pattern, characterised by a combination of residential development plots, garden curtilage and well vegetated boundary enclosure (see Photoviewpoints 22, 24 and 28). The area has road access in the form of Brook Lane (see Photoviewpoints 1, 26 and 29) and Juniper Lane (see Photoviewpoints 12).

2.26. To the south, the Site comprises a large and medium-scale parcel of open arable land, traversed by the A57 (Manchester Road) and enclosed by the established tree cover which aligns both Junction 21 of the M6 motorway (see Photoviewpoint 3) and the River Mersey (see Photoviewpoints 8 and 9).

2.27. The existing Site features and the landscape context is illustrated on the Landscape Context Plan located to the rear of this report.

Mersey Forest Plan

2.28. The Site is located within the Mersey Forest Plan. The Mersey Forest is a growing network of trees and woodlands covering 1,370 square km of Merseyside and North Cheshire. The broad aim of 'The Plan' is to deliver a long-term strategic guide for increased tree cover, as embedded within national planning policy.

2.29. The Site is covered by three 'planting classification' (see Figure 6).

Figure 6: Extract of the Extract of the Mersey Forest Plan – Policy Target

2.30. The majority of the Site is located within 'W16'. The target suggests 'no change' in net woodland cover, noting that:

"The mosslands around Risley and Rixton are of significant biodiversity and carbon storage importance and woodland planting is not appropriate on the SAC and SSSIs. Existing woodlands make an important contribution to the character of the wider area and should be managed. This area is of importance for farmland birds."

2.31. The M6 corridor and Junction 21 with the A57 (Manchester Road) falls within 'W9'. The target suggests a '30%' net increase in woodland. The suggested approach confirms:

"Restore hedges and hedgerow trees. Plant small copses and linear woodlands along highways and rights of way. Maintain the open 'valley bottom'. Further develop the Mersey Way to link to

Rixton, create a footpath/cycleway along the Ship Canal to Rixton, and develop strategic green links such as the River Bollin and Mersey Valley."

2.32. The southern margins of the Site and the A57 (Manchester Road) corridor falls within 'W5'. The target suggests a 20% increase, noting the following objectives:

"Create small woodlands and copses within a restored pattern of hedgerows and hedgerow trees. Create linear woodlands along highways, roads, and rights of way, around farm boundaries, and along the River Glaze, Sankey Brook, and Phipps Brook. Provide multi-use recreational corridors, for example connecting Burtonwood to Bold Forest Park in St.Helens and links to Rixton Clay Pits. Planting should soften any new development. Replant orchards around Croft."

The Mosslands Project / Carbon Landscapes

2.33. Covering the Site and the wider landscape between Wigan, Salford and Warrington, this is a multi-million pound project funded by the Heritage Lottery Fund launched to restore areas in the North West transformed by heavy industries like coal mining, peat extraction and iron & steel production. Led by the Lancashire Wildlife Trust, 'The Carbon Landscape' aims to restore more than 130 hectares to nature, train more than 1000 volunteers and offer free education to 40 schools and is spearheading the latest Government thinking on the environment.

2.34. As part of the Carbon Landscape Partnership's quest to celebrate the area's hidden heritage, they are working with delivery partners and communities to restore the natural landscape, while interpreting the natural and social heritage of the area.

2.35. The 3 broad aim which can be achieved through enabling development include:

***"1) RESTORATION**: To restore a derelict landscape, ensuring connectivity and resilience in an area facing significant threats.*

***2) RECONNECTION**: To reconnect people with their landscape through improved access, increased learning and volunteering opportunities.*

***3) COMMUNITY ENGAGEMENT**: To instil pride and engender community ownership in our Carbon Landscape, providing skills for local people, groups and beneficiaries to become custodians for our future."*

Visual Baseline

2.36. A full site survey was undertaken in June, July and October 2021. Visibility was good and the survey undertaken during both the summer months when vegetation and trees were in leaf and, during the winter months when it is possible to observe worst-case visibility. A brief summary of the Site's visual context is described below and illustrated on the Visual Context Plan, contained to the rear of this report alongside accompanying Photosheets (Photoviewpoints 1-38).

2.37. To the north, views are largely contained by the Liverpool to Manchester railway line and the vegetated Birchwood Brook corridor. Birchwood Railway Station is also visible as a townscape feature (see Photoviewpoints 17, 19 and 20).

2.38. To the east, the Site is largely contained by the woodland cover and tree belts associated with Woolston Moss and Martinscroft Moss (see photo below and Photoviewpoints 21, 36, 37 and 38). They form a notable skyline component within a flat landscape and restrict distant views towards Cadishead. From limited locations, there are some glimpsed views towards the operations at the Collier Landfill (at Moss Side).

View east within the Site – demonstrating the woodland containment currently offered by Woolston Moss & Martinscroft Moss

2.39. To the south-east, visibility is reduced by the presence of the Marshall's Farm complex and the tree belts and woodland block that surround it (see Photoviewpoints 16 and 21). Beyond, the scattered mature trees and ditch-side vegetation alongside Brook Lane creates a notable boundary, with the associated nursery buildings also a visible component in the flat landscape (see Photoviewpoints 25, 26, 29 and 31).

View south-east within the Site – highlighting the visual enclosure and woodland cover associated with Marshall's Farm

2.40. To the south, views are restricted by the vegetated corridor associated with the River Mersey and the Manchester Ship Canal beyond. From some internal portions of the Site, there is some limited visibility towards the M6 and the more elevated section of the highway associated with the Thelwall Viaduct (see Photoviewpoints 3, 5, 7, 8 and 9).

2.41. To the west, the visual envelope is mainly contained by the M6 and the vegetation that adjoins it. There are some localised glimpsed views beyond, but they are limited by the presence of the larger

commercial and industrial units associated with the 'Grange' (see Photoviewpoints 10, 11, 14, 17 and 19).

2.42. Overall, despite the scale of the Site, visually the combination of vegetated boundaries and the flat landform determines that it is well contained. Furthermore, there are no key views or vistas identified within the Council's adopted SPD or evidence base.

Section 3: Policy Context

Local Planning Policy

3.1. The Site falls within the administrative borough of Warrington and is subject to a Green Belt designation (Overall Spatial Strategy - Green Belt Policy CS 5) within the Warrington Borough Council Local Plan Core Strategy (Adopted July 2014).

3.2. Local Policies relating to landscape character and visual amenity that will need to be considered as part of any site promotion / emerging development proposals include:

Warrington Borough Council Local Plan Core Strategy (Adopted July 2014)

- Policy CS 1 Overall Spatial Strategy - Delivering Sustainable Development;
- Policy CS 2 Overall Spatial Strategy - Quantity and Distribution of Development;
- Policy CS 5 Overall Spatial Strategy - Green Belt;
- Policy CS 6 Overall Spatial Strategy – Strategic Green Links;
- Policy QE 3 Green Infrastructure;
- Policy QE 6 Environment and Amenity Protection;
- Policy QE 7 Ensuring a High Quality Place; and
- Policy CC 2 Protecting the Countryside.

3.3. The Overall Spatial Strategy policies focus on sustainable development, managing the quantity and distribution, housing supply, the Green Belt and strategic Green Links.

3.4. Policy CS 1 states that "development proposals that are sustainable will be welcomed and approved without delay". The policy goes on to list the criteria by which development should accord with alongside national and local planning policy frameworks and the material considerations in order to be considered sustainable. Specific material considerations relevant to the site and proposed residential development include:

- *"Priority afforded to the protection of the Green Belt and the character of the countryside;*
- *The need to address the causes of and be resilient to the effects of climate change;*
- *The need to safeguard environmental standards and residential amenity;*
- *The delivery of high standards of design and construction, that have regard to local distinctiveness and efficiency; and*
- *The need to make the best use of existing transport, utility, social and environmental infrastructure within existing settlements, and ensure additional provision where needed to support development."*

3.5. Policy CS 2 relates to the quantity and distribution of development. Principles in the policy relevant to the site and residential development include:

- *"The general extent of the Green Belt and the detailed boundaries as indicated on the Local Plan Core Strategy Policies Map will be maintained for as long as can be seen ahead and at least until 2032;*
- *Within the Green Belt area, development will only be allowed where it is considered to be appropriate in accordance with national policy; and*
- *All new development should where appropriate make provision for supporting infrastructure in accordance with Policy MP10."*

3.6. Policy CS 3 states that:

"Should monitoring indicate that an on-going, 5 years' deliverable and a subsequent 5 years' supply of developable housing land can no longer be sustained or where it can be demonstrated that housing need cannot be met within Warrington, the Council will review its housing land provision, and bring on-stream additional housing sites as required, with priority given to encouraging the reuse of previously developed land and avoiding sites in the Green Belt where possible."

3.7. In relation to Policy CS 5, planning permission for new buildings in the Green Belt *"will be approved where they accord with relevant national policy".* It will be important to ensure that the development of the Site does not contribute towards urban sprawl of Warrington east towards Cadishead or significant encroachment into the countryside in order to ensure the strategic role of the Liverpool, Manchester and West Lancashire Green Belt remains valid.

3.8. Policy CS 6 relates to Green Infrastructure and states that the Council *"is committed to supporting wider programmes and initiatives which seek to connect the borough's Strategic Green Links with employment areas, residential communities, and Green Infrastructure Assets".* Further requirements in relation to Green Infrastructure are set out in Policy QE3 which provides more detail on the criteria against which applications will be assessed.

3.9. Policy QE 6 considers the protection of environment and amenity within development. Areas taken into consideration relevant to site and residential development include:

- *"The quality of water bodies, including canals, rivers, ponds and lakes;*
- *Land quality;*
- *Levels of light pollution and impacts on the night sky; and*
- *The need to respect the living conditions of existing neighbouring residential occupiers and future occupiers of new housing schemes in relation to overlooking / loss of privacy, outlook, sunlight, daylight, overshadowing, noise and disturbance."*

3.10. Policy QE 7 describes the Council's expectations in term of the quality of place in relation to development. Proposals which have considered the following aspects will be positively received:

- *"Be sustainable, durable, adaptable and energy efficient; create inclusive, accessible and safe environments;*

- *function well in relation to existing patterns of movement and activity;*
- *reinforce local distinctiveness and enhance the character, appearance and function of the street scene, local area and wider townscape;*
- *harmonise with the scale, proportions and materials of adjacent and / or existing buildings;*
- *maintain and respect the landscape character and, where appropriate, distinctiveness of the surrounding countryside;*
- *use the density and mix of development to optimise the potential of the site without damaging the character of the area; and*
- *be visually attractive as a result of good architecture and the inclusion of appropriate public space."*

3.11. The remaining applicable landscape and visual related policies deal with improvements to the Green Infrastructure of Warrington Borough the retention of landscape features and recreational public routes, including cycleways, as well as the requirement for built form to complement the materiality of the locality in order to preserve local distinctiveness and the local character features to ensure the suitable assimilation of development proposals. The policies also direct development towards achieving high quality design within new development and providing landscaping as an integral part of the overall design.

3.12. Policy CC 2 supports development within the countryside provided that:

- *"the detailed siting and design of the development relates satisfactorily to its rural setting, in terms of its scale, layout and use of materials;*
- *they respect local landscape character, both in terms of immediate impact, or from distant views;*
- *unobtrusive provision can be made for any associated servicing and parking facilities or plant, equipment and storage;*
- *they relate to local enterprise and farm diversification; and*
- *it can be demonstrated that there would be no detrimental impact on agricultural interests."*

3.13. In addition to the above policies, the following Supplementary Planning Documents (SPD) and Supplementary Planning Guidance (SPG) also need to be taken into consideration:

Supplementary Planning Documents

Environmental Protection SPD (May 2013)

3.14. This SPD supports Policy QE6 Environment and Amenity Protection and details the councils approach to dealing with environmental protection including light pollution. Development schemes which include street lighting proposals should adhere to the design principles set out in the SPD. Principles relating to landscape and visual include:

- *"Limiting the light levels to a designed uniformity;*
- *limiting the use of lighting schemes to identified uses or users;*

- *the retention of screening vegetation; and*
- *the use of planting and bunding to contain lighting effects".*

3.15. The SPD states that *"these conditions will be applied as necessary by the LPA to help reduce obtrusive light from new proposals, particularly glare and spillage, from areas of wildlife importance, open countryside and residential amenity."*

Design and Construction (October 2010)

3.16. This document provides advice and guidance to developers about aspects of the design and construction process. The document states that *"A well designed landscape scheme should enhance the appearance and setting of any new development and its location. A successful scheme will have considered and correctly interpreted the landscape character of the location so as to produce the most appropriate design solution for the development."*

Landscape Design Guide for New Developments

3.17. This document is to provide advice and guidance to developers who are required to submit landscape schemes as part of detailed planning applications.

3.18. The key objectives are:

- *Ensure high quality environments in which to live and work through excellent landscape designs in new developments;*
- *ensure the design of new landscapes feature at an early stage in the design process to ensure they are well integrated into new developments;*
- *ensure biodiversity and geological features are conserved and enhanced through landscape improvements;*
- *promote the health and wellbeing of the community through new landscape schemes*
- *promote quality landscape schemes which are sensitive to the locality and provide local distinctiveness; and*
- *ensure that the design of new landscapes do not increase fear of crime or give rise to criminal behaviour.*

Open Space and Recreation Provision (September 2007)

3.19. This policy details a number of key objectives for open space within the borough including:

- *"To ensure an adequate provision of open space in quantitative, qualitative and accessibility terms subsequently helping to ensure the creation of sustainable communities;*
- *to create opportunities for and enhance biodiversity;*
- *to create opportunities for travel by more sustainable modes such as by walking or cycling;*
- *to assist in maintaining and improving public health by providing opportunities for recreation and sport;*

- *to provide educational opportunities in the form of 'outside classrooms' through providing opportunities for contact with nature;*
- *to provide focal points for social interaction and community events;*
- *to contribute to local distinctiveness through helping to create a sense of place and belonging;*
- *to help secure safe and well-designed open spaces where the design has intended to deter crime; and*
- *to assist in tackling climate change through the plantation of trees and creation of green 'breathing' spaces."*

Planning Obligations (September 2007)

3.20. This SPD details the councils approach to the use of planning obligations to facilitate decision making, relevant key objectives include:

- *"Ensure appropriate environmental and biodiversity protection and enhancement and mitigation measures where appropriate;*
- *Ensure no detrimental impacts on amenity (visual, residential, noise, flood risk, landscape);*
- *Ensure conservation of heritage assets and mitigation where appropriate."*

Climate Change Strategy for Warrington

3.21. This document details the Council's approach to climate change and aims to promote sustainable development that are resilient to climate change including: *"through locating development away from flood risk areas, increasing tree cover or increasing the use of permeable surfaces"*.

Warrington Borough Council Proposed Submission Version Local Plan (2021)

3.22. The Council have now published our updated Proposed Submission Version Local Plan.

3.23. The key changes we are proposing are:

- *"A reduction in new housing from 945 a year over 20 years, to 816 a year over a reduced plan period of 18 years (2021-2038 inclusive).*
- *Proposals for 580 hectares to be removed from the Green Belt for development. This equates to 5% of the total amount of Green Belt land in the borough and is significantly lower than the 1,210 hectares proposed in the previous Plan, which equated to 11% of the total amount of Green Belt.*
- *The removal of the South West Urban Extension (1,600 homes), Phipps Lane in Burtonwood Village (160 homes), and Massey Brook Lane in Lymm (66 homes) from the Plan.*
- *Moving away from the Garden Suburb concept in South Warrington (4,200 new homes), and instead including new proposals for a South East Warrington Urban Extension, with a reduced allocation of 2,400 new homes during the plan period.*

- *The removal of Port Warrington (75ha employment land) and the Business Hub (25ha employment land) from the plan.*
- *The inclusion of the Fiddlers Ferry site in the Plan, with the closure of the power station in March 2020 giving us the opportunity to bring the site into the allocation this time".*

3.24. If adopted, the following policies will be of relevance:

- GB1 Warrington's Green Belt;
- DC3 Green Infrastructure;
- DC5 Open Space, Outdoor Sport and Recreation Provision; and
- DC6 Quality of Place.

Section 4: Opportunities and Constraints

4.1. The local landscape character has capacity to accommodate development as the Site's identified character is that physically and visually influenced by the settlement edge location.

4.2. A summary of the landscape and visual constraints and opportunities include the following:

- Utilising the degraded mossland landscape and the scale of the field parcels to accommodate a sustainable development response;
- Safeguarding the landscape character, tree cover and habitats associated with Woolston Moss LWS. The provision of an area of open space and a buffer will ensure that an appropriate off-set is established, with enhancements to the current landscape condition and the creation of a robust future boundary;
- An opportunity exists for place-making where the nearby Birchwood Station can act as an expanded sustainable transport hub;
- Retention and enhancement of existing ditches, hedgerows and trees where practicable. Where it is not practicable to retain existing hedgerows and trees, their loss should be mitigated for by replacement planting, ensuring linkages between habitats around and within any built environment;
- Retention and incorporation of the liner belt of organic farmland in association with the retention and management of the established tree belts that align Martinscroft Moss and the private airfield;
- Utilising the wooded enclosure associated with Marshall's Farm and the established scattered trees along Brook Lane to create a logical and robust boundary;
- Ensuring that development scale and mass responds appropriately to the existing urban edge, particularly with the opportunity to focus larger-scale development to the north and west, but with a reduction in development density and height parameters to the east (towards Woolston Moss LWS);
- High-quality green infrastructure should form a multifunctional network incorporating features integral to sustainable drainage and incorporating existing informal footpath links. With regards to sustainable drainage, an opportunity exists to create SuDS features that function both in terms of engineering, wildlife and aesthetics;
- A development set back along the south of the Site should be incorporated to protect the remaining rural setting around Stanton-under-Bardon (Compliant with Policy Env 8: Important Views). This set back can incorporate new tree planting to soften views of the new development and improve the approach to Stanton-under-Bardon from the south. The buffer will also allow for further retention of the existing hedgerow along the Site's northern boundary;

- Adequate space should be given in accordance with NHBC guidelines on foundation design in proximity to trees. These guidelines, that so often is a constraint to tree planting at the detailed design stage, should be considered early in the design process; and

- By creating greater recreational accessibility and expanding the current limited public right of way network. This will actively promote health, well-being and active living.

Overall Landscape Strategy

4.3. In response to the identified constraints and opportunities, the landscape strategy and overall proposals have been designed with due consideration to the Site's context. As such, the scheme has sought to protect and enhance the existing environmental assets across the Site and the surrounding land, with the intention to make a material positive impact upon nature in the local area.

4.4. Peat restoration and enhancement is identified as the key area for environmental enhancements and thus biodiversity net gain across the site. Opportunities for further habitat creation are also identified across the more eastern edge of the Site.

4.5. During the restoration process, there is also ample opportunity to introduce rare and specialist plant species (which have been successfully re-introduced to other mosslands such as Risley and Cadishead), such as sundews, white beaked sedge, and a variety of sphagnum moss. There is also potential for the local Wildlife Trust to include the Site in future re-introduction projects (for example, large heath butterfly, white-faced darter, and the bog bush cricket).

4.6. A series of formal and informal green spaces across the site will provide a range of amenity and recreational functions, which will comprise of over 18 hectares / 45 acres of public open space and woodland for informal use.

4.7. Garden Village principles seek to create generous green space within developments including well connected and biodiversity-rich public parks, high quality public gardens, tree-lined streets and open spaces.

4.8. The proposed development will also seek to provide a firm and defensible long-term boundary to the Green Belt to the east whilst providing a soft outer boundary to the existing urban area in order to prevent unplanned urban sprawl.

4.9. The proposals seek to enhance and promote the existing Green Infrastructure, through a series of green corridors, which connect the Site and the surrounding area. In turn, this will provide a series of ecological corridors to enhance and promote biodiversity within the site and enhance the biodiversity value of the site and surrounding mossland for both the residential and employment areas.

4.10. These qualities will provide a key design framework for the development of the Site. The green corridors are to be designed alongside pedestrian and cycle movement which navigate across the site, alongside a 'blue' network of sustainable urban drainage systems.

4.11. The Garden Village principles place emphasis on creating walkable neighbourhoods, which can be applied to a business context and which will be encouraged throughout these green networks, decorated as tree-lined streets to encourage travel via foot or cycle through an attractive landscape. This in turn promotes a healthy, sustainable community.

4.12. It is anticipated that the landscaping treatment for the 8 live-work units will be characterised with high-quality and wildlife-friendly garden spaces. This includes, but is not limited to, the provision of bird boxes and baths, and the introduction of native plant species.

4.13. The landscaping provision, including the new open spaces and public parks, will be developed further through the proceeding masterplanning process.

Section 5: Conclusion

5.1. The Site is not located within either a locally or nationally designated landscape and whilst it is located within the wider Mossland Character Type (Type 2) and more specifically the Rixton, Woolston & Risley Moss Type (Type 2A), it actually falls outside of the non-statutory designated Rixton Moss Local Wildlife Site (LWS).

5.2. It contains some representative and ordinary features; however, the Site and associated mossland areas have changed dramatically, with the construction of the M6, railway infrastructure and through extensive drainage and peat removal. Furthermore, there are no intact ancient field systems evident, with the majority of the Site classified as 'C19th Field Systems'.

5.3. The Site itself is also heavily influenced and interspersed by the existing built form and access tracks associated with Birchwood Station, Woolston Nursery, Brookfield Farm, Moss Farm, Marshall's Farm and other scattered buildings along Brook Lane.

5.4. In response to the objectives of the Warrington Borough Council Landscape Character Assessment, a sensitive development response can be delivered. In this case including the diversification of habitats for wildlife and the retention of the basic landscape structure of mossland fields and ditches.

5.5. From a visual perspective, despite the scale of the Site, the enclosure offered by the existing settlement edge and flat topography with layers of boundary vegetation, reduces the extent to which the proposed development will be visible in the wider landscape. There are a limited number of public locations from which the full extent of the Site is perceptible and, the proposed network of Green Infrastructure and Garden Village principles will further assimilate the scheme.

5.6. Overall, the Site represents a sustainable location for which a landscape and ecologically-led masterplan has the ability to create a more diverse environment, safeguarding and enhancing the existing landscape features and creating a real sense of place, with new character areas, open spaces and a connecting network of green links.

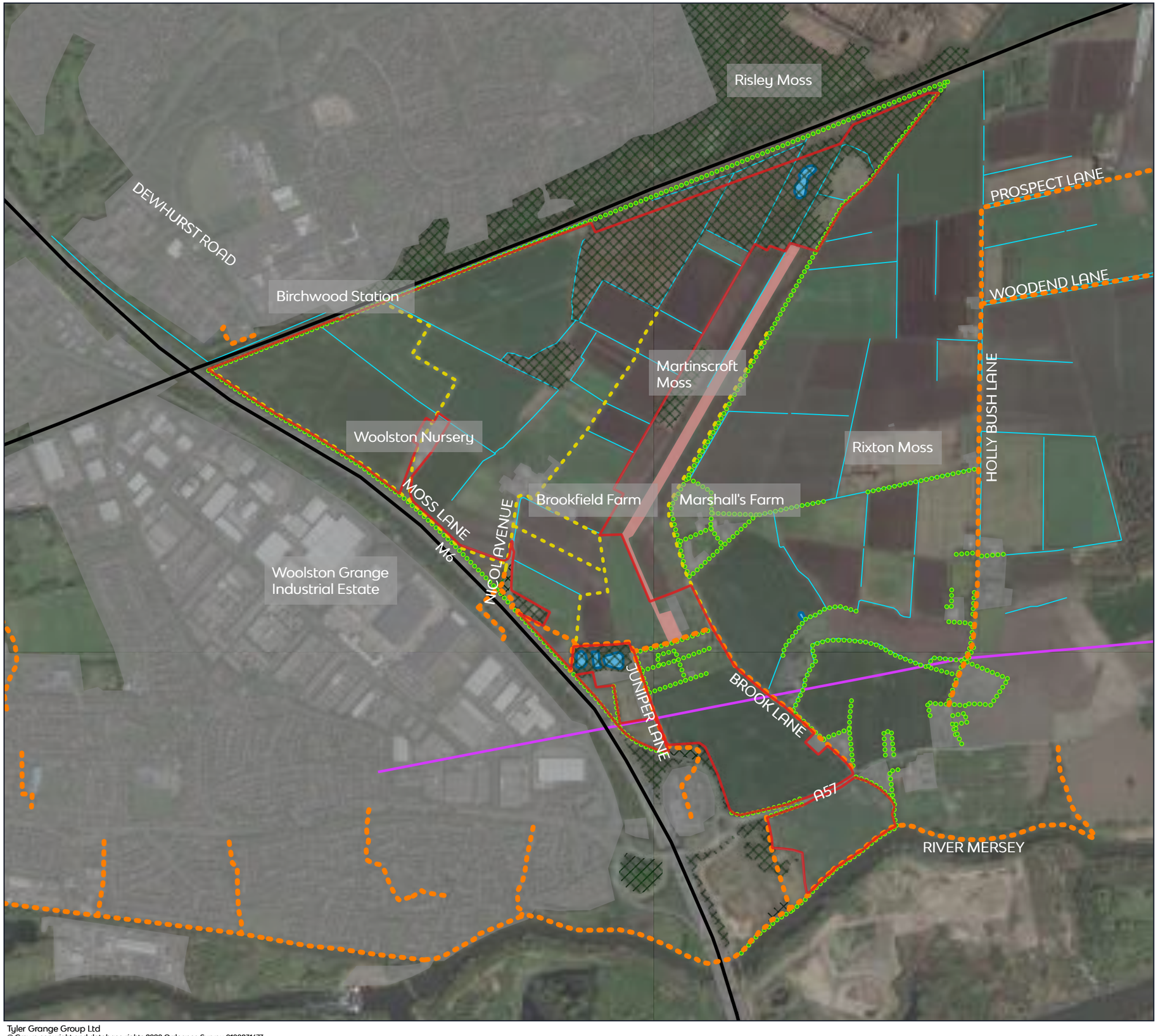
Plans

Landscape Context Plan (14127/P01b)

Visual Context Plan (14127/P05)

Viewpoint Location Plan (14127/P04)

Photoviewpoints 1-38 (14127/P03)



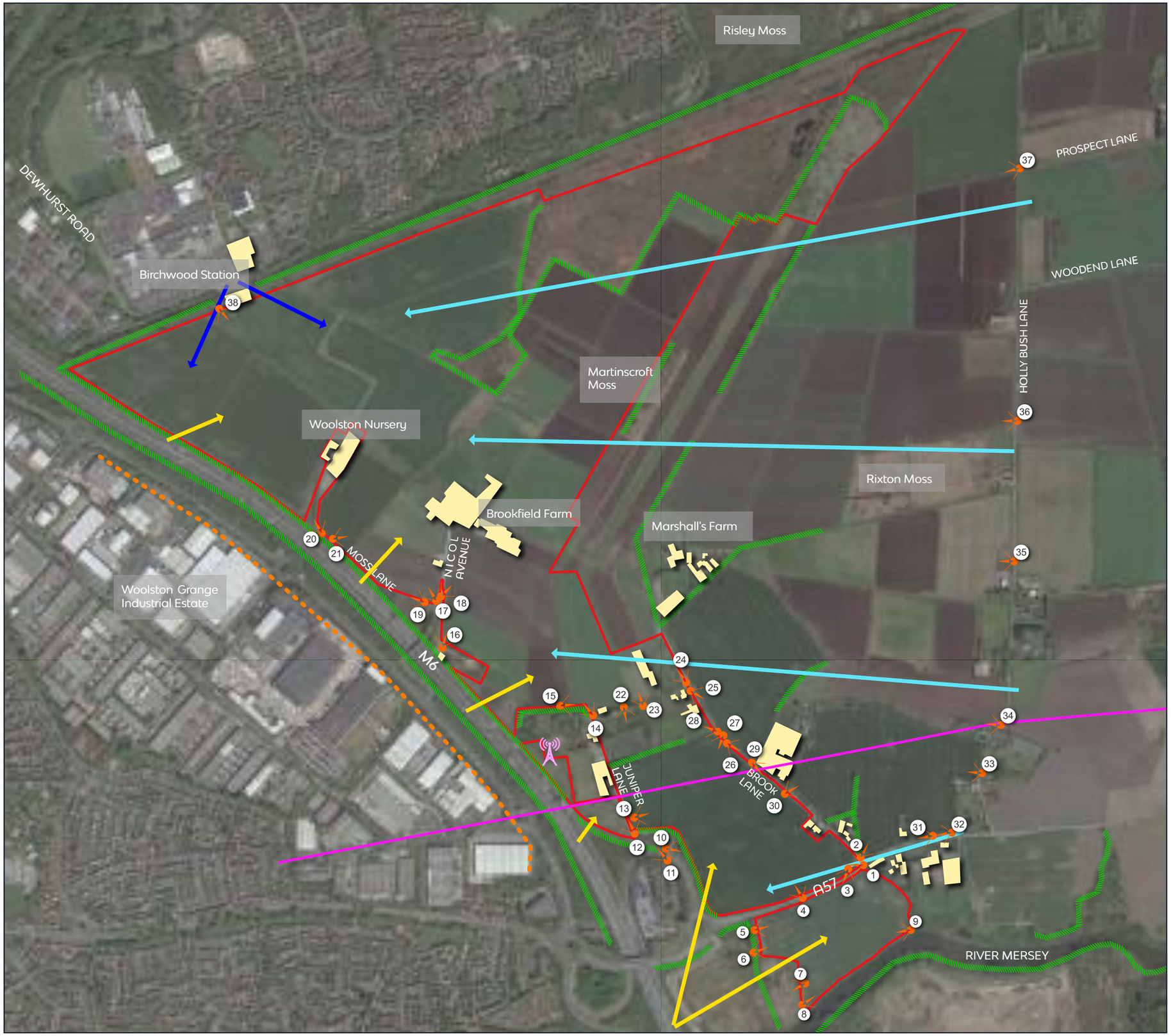
- Site Boundary
- Tracks and Highways
- Public Rights of Way (PRoW) / Bridgeways
- M6 and Railway Corridor
- Hedgerows and Scattered Trees
- Overhead Power Lines
- Built Development (Farmsheds / Outbuildings / Commercial Development / Private Dwellings)
- Principle Woodland Blocks / Tree Belts / Established Vegetation
- Ponds
- Ditch System
- Private Airstrip and Hangers

N

Project	South Station Place, Birchwood
Drawing Title	Landscape Context Plan
Scale	1:12000 @A3
Drawing No.	14127/P01a
Date	November 2021
Checked	PIJ/JB

Tyler Grange

97 Icknield Street, Hockley, Birmingham B18 6RU
T: 01285 831804 E: info@tylergrange.co.uk W: www.tylergrange.co.uk



- Site Boundary
- Viewpoint Locations
- Existing Vegetation that Screens and/or Filters Views Towards and Across the Site
- Existing Buildings and Structures that are Visible and Influence the Visual Context of the Site
- Telecommunications Mast
- Overhead Power Lines and Associated Pylons
- Established Height Parameters and Visible Backdrop Associated with the Woolston Grange Industrial Park
- Glimpsed Transient Views Through the Dense Embankment Vegetation Towards the Site from the M6 Corridor
- Glimpsed Distant Views Towards the Site Through Layers of Hedgerows and Other Intervening Landscape Features from Hollybush Lane
- Visual Connectivity Between Birchwood Station and the Site

N

Project	South Station Place, Birchwood
Drawing Title	Visual Context Plan
Scale	1:9900 @A3
Drawing No.	14127/P05
Date	November 2021
Checked	PIJ/JB

Tyler Grange

97 Icknield Street, Hockley, Birmingham B18 6RU
T: 0121 773 07707 E: info@tylergrange.co.uk W: www.tylergrange.co.uk

Site Boundary

Viewpoint Locations

N

Project	South Station Place, Birchwood
Drawing Title	Viewpoint Location Plan
Scale	1:9800 @A3
Drawing No.	14127/P04
Date	November 2021
Checked	PIJ/JB

Tyler Grange

97 Icknield Street, Hockley, Birmingham B18 6RU
T: 0121 773 07707 E: info@tylergrange.co.uk W: www.tylergrange.co.uk

Photoviewpoint 1: Looking west from Brook Lane at the junction with the A57. **Distance:** 0m **Orientation:** West **Coordinates:** SJ 66738 89361

Photoviewpoint 2: Looking north-east from Brook Lane at the junction with the A57. **Distance:** 1m **Orientation:** North-east **Coordinates:** SJ 66742 89370

Tyler Grange

Photoviewpoint 1 - 2 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 3: The view south-west from the A57, looking across the Site towards the River Mersey and the elevated section of the M6 beyond.

Distance: 1m **Orientation:** South-west **Coordinates:** SJ 66731 89353

Photoviewpoint 4: The view north across the Site from the A57. Where the hedgerow has been removed, the view extends across the Site towards the Moss Side Farm complex. The enclosing vegetation along Brook Lane is also visible.

Distance: 1m **Orientation:** North **Coordinates:** SJ 66596 89288

Photoviewpoint 5: Looking east across the Site from Public Footpath No. 26 (Woolston). **Distance:** 54m **Orientation:** East **Coordinates:** SJ 66482 89197

Photoviewpoint 6: The view east through boundary vegetation from Public Footpath No. 26 (Woolston). **Distance:** 162m **Orientation:** East **Coordinates:** SJ 66492 89090

Tyler Grange

Photoviewpoint 5 - 6 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 7: The view west from Public Footpath No. 26 (Woolston) towards the elevated M6 corridor. **Distance:** 201m **Orientation:** West **Coordinates:** SJ 66567 89065

Photoviewpoint 8: Looking north-east along the River Mersey corridor from Public Footpath No. 27 (Woolston). **Distance:** 281m **Orientation:** North-east **Coordinates:** SJ 66598 88995

Photoviewpoint 9: Looking west across the Site from Public Footpath No. 27 (Woolston). **Distance:** 197m **Orientation:** West **Coordinates:** SJ 66849 89197

Photoviewpoint 10: The view south-east from the Public Footpath No. 15 (Woolston) and the Juniper Lane overbridge to the M6 slip road. **Distance:** 10m **Orientation:** South-east **Coordinates:** SJ 66257 89395

Tyler Grange

Photoviewpoint 9 - 10 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 11: The view north-west from the Public Footpath No. 15 (Woolston) and the Juniper Lane overbridge to the M6 slip road.

Distance: 17m **Orientation:** North-west **Coordinates:** SJ 66251 89389

Photoviewpoint 12: The view north from Juniper Lane and Public Footpath No. 15 (Woolston) towards the Moss Side Farm complex.

Distance: 0m **Orientation:** North **Coordinates:** SJ 66170 89448

Tyler Grange

Photoviewpoint 11 - 12 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 13: Looking east / south-east across the Site from Juniper Lane and Public Footpath No. 15 (Woolston) towards Brook Lane, Nurseries and Rixton Dog School.

Distance: 0m **Orientation:** East / south-east **Coordinates:** SJ 66172 89459

Photoviewpoint 14: Looking north-west across the Site from Public Footpath No. 14 (Woolston) towards Nicol Avenue and the vegetated corridor associated with the M6.

Distance: 0m **Orientation:** North-west **Coordinates:** SJ 66064 89732

Tyler Grange

Photoviewpoint 13 - 14 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 15: The view east from Public Footpath No. 14 (Woolston) towards the private airfield and associated hangers.

Distance: 0m **Orientation:** East **Coordinates:** SJ 66006 89764

Photoviewpoint 16a: The view north-east from Nicol Avenue across the Site towards the Brookfield Farm complex.

Distance: 0m **Orientation:** North-east **Coordinates:** SJ 65680 89922

Photoviewpoint 16b: The view north-east from Nicol Avenue across the Site towards the Brookfield Farm complex. **Distance:** 0m **Orientation:** North-east **Coordinates:** SJ 65680 89922

Photoviewpoint 17a: Looking north across the Site from Nicol Avenue towards Wolston Nursery and Birchwood Station beyond. **Distance:** 0m **Orientation:** North **Coordinates:** SJ 65672 90037

Photoviewpoint 17b: Looking north across the Site from Nicol Avenue towards Wolston Nursery and Birchwood Station beyond.

Distance: 0m **Orientation:** North **Coordinates:** SJ 65672 90037

Photoviewpoint 18: Looking north-east/east towards the Brookfield Farm complex and the vegetated Martinscroft Moss / private airfield beyond.

Distance: 0m **Orientation:** North-east **Coordinates:** SJ 65685 90049

Tyler Grange

Photoviewpoint 17b - 18
South Station Place, Birchwood
14127/P02
October 2021
PIJ/JB

Drawing Title
Project
Drawing No.
Date
Checked

Photoviewpoint 19: The view north-west from Moss Lane towards Wolston Nursery and the vegetated corridor associated with the M6.

Distance: 0m **Orientation:** North-west **Coordinates:** SJ 65635 90027

Photoviewpoint 20: The view north along Moss Lane towards Wolston Nursery, the vegetated railway corridor and Birchwood Station.

Distance: 0m **Orientation:** North **Coordinates:** SJ 65381 90200

Tyler Grange

Photoviewpoint 19 - 20
South Station Place, Birchwood
14127/P02
October 2021
PIJ/JB

Drawing Title
Project
Drawing No.
Date
Checked

Photoviewpoint 21a: Looking east from Moss Lane towards the Brookfield Farm complex and the woodland cover beyond that borders Martinscroft Moss and the private airfield. **Distance:** 0m **Orientation:** East **Coordinates:** SJ 65382 90200

Photoviewpoint 21b: Looking east from Moss Lane towards the Brookfield Farm complex and the woodland cover beyond that borders Martinscroft Moss and the private airfield. **Distance:** 0m **Orientation:** East **Coordinates:** SJ 65382 90200

Photoviewpoint 22: Looking south into the paddocks and garden curtilage that adjoins Public Footpath No. 16 (Woolston).

Distance: 0m **Orientation:** South **Coordinates:** SJ 66165 89759

Photoviewpoint 23: The view north from Public Footpath No. 16 (Woolston) towards the mown private airfield and associated hangers.

Distance: 0m **Orientation:** North **Coordinates:** SJ 66194 89773

Photoviewpoint 24: The view north towards the private airfield and the wooded enclosure associated with Marshall's Farm, from the junction of Public Footpath No. 16 (Woolston) and Brook Lane.

Distance: 0m **Orientation:** North **Coordinates:** SJ 66304 89817

Photoviewpoint 25a: Looking south-east from Brook Lane and Public Footpath No. 17 (Woolston) towards the Nurseries and mature trees that mark the field boundaries beyond.

Distance: 0m **Orientation:** South-east **Coordinates:** SJ 66308 89814

Tyler Grange

Photoviewpoint 24 - 25a Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 25b: Looking south-east from Brook Lane and Public Footpath No. 17 (Woolston) towards the Nurseries and mature trees that mark the field boundaries beyond.

Distance: 0m **Orientation:** South-east **Coordinates:** SJ 66308 89814

Photoviewpoint 26: Looking south along Brook Lane and Public Footpath No. 17 (Woolston) towards the Nurseries and associated dwellings.

Distance: 2m **Orientation:** South **Coordinates:** SJ 66390 89684

Tyler Grange

Photoviewpoint 25b - 26 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 27a: The view across the Site from Brook Lane and Public Footpath No. 17 (Woolston) towards the vegetated embankments associated with Junction 21 of the M6.

Distance: 0m **Orientation:** South-west **Coordinates:** SJ 66379 89688

Photoviewpoint 27b: The view across the Site from Brook Lane and Public Footpath No. 17 (Woolston) towards the vegetated embankments associated with Junction 21 of the M6.

Distance: 0m **Orientation:** South-west **Coordinates:** SJ 66379 89688

Tyler Grange

Photoviewpoint 27a - 27b Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 28: The view west from Brook Lane and Public Footpath No. 17 (Woolston) towards the pony paddock and associated domestic curtilage.

Distance: 0m **Orientation:** West **Coordinates:** SJ 66379 89688

Photoviewpoint 29: Looking south along the vegetated section of Brook Lane, with existing residential properties in the middle-distance and the wooded backdrop associated with the River Mersey beyond.

Distance: 1m **Orientation:** South **Coordinates:** SJ 66455 89626

Tyler Grange

Photoviewpoint 28 - 29 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 30a:	The view east from Brook Lane and Public Footpath No. 17 (Woolston), with gently rising landform and some visibility with the properties associated with Holly Bush Lane.	**Distance:**	5m	**Orientation:**	East	**Coordinates:**	SJ 66566 89540

Photoviewpoint 30b:	The view east from Brook Lane and Public Footpath No. 17 (Woolston), with gently rising landform and some visibility with the properties associated with Holly Bush Lane.	**Distance:**	5m	**Orientation:**	East	**Coordinates:**	SJ 66566 89540

Tyler Grange

Photoviewpoint 30a - 30b Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 31: The view west from the A57, with the majority of the Site filtered by the vegetation associated with Brook Lane. The M6 corridor is visible in the distance.

Distance: 172m **Orientation:** West **Coordinates:** SJ 66904 89424

Photoviewpoint 32: The view west from the A57, where the majority of the Site is filtered by intervening vegetation.

Distance: 250m **Orientation:** West **Coordinates:** SJ 66966 89441

Tyler Grange

Photoviewpoint 31 - 32
South Station Place, Birchwood
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Drawing Title
Project

Photoviewpoint 33: Looking west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook), the majority of the Site is concealed by landform and intervening layers of vegetation. The Nurseries on Brook Lane and the pylons which cross the Site are visible in the view.

Distance: 400m **Orientation:** West / north-west **Coordinates:** SJ 67042 89591

Photoviewpoint 34: Looking west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook), where the majority of the Site is filtered by intervening vegetation. The vegetated line of the railway corridor and Woolston Moss can be seen to the north-west.

Distance: 535m **Orientation:** West / north-west **Coordinates:** SJ 67097 89734

Tyler Grange

Photoviewpoint 33 - 34 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 35a: The view west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook). Whilst the majority of the Site is concealed by vegetation, the telecommunications mast near Jupiter Lane can be seen in the distance as can the private airfield.

Distance: 870m **Orientation:** West / north-west **Coordinates:** SJ 67128 90117

Photoviewpoint 35b: The view west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook). Whilst the majority of the Site is concealed by vegetation, the telecommunications mast near Jupiter Lane can be seen in the distance as can the private airfield.

Distance: 870m **Orientation:** West / north-west **Coordinates:** SJ 67128 90117

Tyler Grange

Photoviewpoint 35a - 35b
South Station Place, Birchwood
14127/P02
October 2021
PIJ/JB

Drawing Title
Project
Drawing No.
Date
Checked

Photoviewpoint 36: The view west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook), with glimpsed views of the private airfield, the Brookfield Farm complex and the tree planting and layers of vegetation associated with Woolston Moss LWS.

Distance: 1.09km **Orientation:** West / north-west **Coordinates:** SJ 67127 90473

Photoviewpoint 37: Looking west/north-west from Holly Bush Lane and Public Footpath No. 2 (Rixton & Glazebrook), the Site is filtered by the tree planting and layers of vegetation associated with Woolston Moss LWS.

Distance: 1.54km **Orientation:** West / north-west **Coordinates:** SJ 67130 91110

Tyler Grange

Photoviewpoint 36 - 37 Drawing Title
South Station Place, Birchwood Project
14127/P02 Drawing No.
October 2021 Date
PIJ/JB Checked

Photoviewpoint 38: The view south across the Site from the cycleway that links Birchwood Station with Woolston and Longbarn.

Distance: 1m **Orientation:** South **Coordinates:** SJ 65142 90764

Tyler Grange

Photoviewpoint 38
South Station Place, Birchwood
14127/P02
October 2021
PIJ/JB

Drawing Title
Project
Drawing No.
Date
Checked

6. Flood Risk Associated with the Birchwood Mixed-Use Development Site

Jordan Kennedy
Director
Patrick Properties
Hamilton House
Church Street
Altrincham
WA14 4DR

DATE: 08/10/2021

REFERENCE: 211008_27958_PB1

Dear Jordan

RE: FLOOD RISK ASSOCIATED WITH THE BIRCHWOOD MIXED-USE DEVELOPMENT SITE

I am writing with regard to the proposed *c.* 113 ha mixed-use development site on greenfield land to the east of the M6, between J21 (Woolston Interchange) and Birchwood station (centred approximately on OS GR 365677,390039.

Until recently a significant area of the site was shown on the Environment Agency (EA) Flood Map for Planning as being within Flood Zones 2 and 3 (medium and high risk, respectively).

As part of a modelling update for the Manchester Ship Canal, the EA made the decision to remove the section of Flood Zone 3 covering the M6 (and including large parts of the southern and western areas of the development site) and reclassify them as Flood Zone 1 (low risk). However, following this re-zonation, an area of land associated with the Fishington Brook remains in Flood Zone 3, encroaching onto the NE of the site.

Subsequent discussions with the EA have confirmed that this area of Flood Zone 3 originated from national broad-scale JFLOW modelling conducted in 2004 and was, therefore, not remodelled as part of the updated Manchester Ship Canal Modelling (the decision to keep it being made on information available to the EA at the time).

The area of predicted flooding appears incongruous as there are no historical records of flooding of that area in either the Warrington Borough Strategic Flood Risk Assessment (SFRA) or the EA's Product 4 information, the catchment of the brook is relatively small (*c.* 0.55 km^2) whilst the channel is relatively large, providing a significant amount of stormwater storage.

Furthermore, this entire area is shown to be in Flood Zone 1 from the output of subsequent modelling conducted by JBA Consulting on behalf of the EA (2006 "*Review of Warrington Flood Maps*") and depicted in the 2008 Warrington SFRA.

Associated commentary within the SFRA states that:

"*Further assessment of the extent of flooding through Warrington was undertaken for the EA by JBA in 2006. These revised flood zones take the Manchester Ship Canal into account and indicate a reduction in the extent of flooding. The EA have acknowledged that these revised flood zones provide a more realistic extent of flooding through Warrington*."

JBA Consulting have been a national framework consultant to the EA since 1999 and are their sole supplier for Modelling and Mapping Programme Delivery across the North West region.

In summary:

- Following recent remodelling of flood risk associated with the Manchester Ship Canal, which removed much of the development site from Flood Zones 2 (medium risk) and 3 (high risk), the EA made the decision to leave a relatively small area encroaching onto the NE corner of the development site as Flood Zone 3, based on the information available to them at the time.

- This remaining area of Flood Zone 3 is an artefact from national broad-scale JFLOW modelling of the Fishington Brook conducted by the EA in 2004.

- Subsequent detailed and more reliable remodelling of the site was conducted for the EA by their retained consultants, JBA Consulting, in 2006, which demonstrated that all of the proposed development site lies in Flood Zone 1 (low risk).

- The EA have acknowledged that the original modelling of the area conducted in 2004 overestimated flood risk and that their subsequent JBA Consulting modelling, which demonstrates low flood risk across the entire site, provides a more realistic extent of flooding through Warrington.

- In light of their more recent and realistic modelling, which was not included on the current version of the EA Flood Map, we are convinced that the site should not be Flood Zone 3 and are now working with the EA to rectify the online Flood Map in line with their own studies.

- I have working knowledge of the flood risk associated with the site and its environs over a period of at least 16 years and I concur with the findings of the 2006 JBA Consulting detailed modelling, which reflect the findings of provisional modelling we have conducted on the Fishington Brook in the past. Consequently, I am confident that the area of flooding associated with this small watercourse will be removed from the EA Flood Map in due course.

Kind regards

Paul Bond

PhD MSc BSc CEnv CSci MIEnvSc MCIEEM

Associate, Hilson Moran Infrastructure and Environment Group

7. Hydrological and Hydrogeological Risk Assessment

Hydrological and Hydrogeological Risk Assessment

DATE OF ISSUE: **15 NOVEMBER 2021**
ISSUE: **0.3**
HM REFERENCE: **27958-RP-IE-001**

PROJECT:

LAND SOUTH OF BIRCHWOOD
WARRINGTON

CLIENT:

PATRICK PROPERTIES WARRINGTON LTD
HAMILTON HOUSE, CHURCH STREET,
ALTRINCHAM,
CHESHIRE, WA14 4DR

PROJECT NAME:	**LAND SOUTH OF BIRCHWOOD**
REPORT NAME:	**Hydrological and Hydrogeological Risk Assessment**
ISSUE STATUS:	**DRAFT**
HM REFERENCE:	**27958-RP-IE-001**
DATE OF ISSUE:	**15 NOVEMBER 2021**
ISSUE:	**0.3**
AUTHOR:	**SIAN GRIMSLEY/TOM HALL/JAMES GIBSON**
CHECKER:	**PAUL BOND**
APPROVER:	**PAUL BOND**

HM OFFICE: **SHACKLETON HOUSE**
HAYS GALLERIA
4 BATTLEBRIDGE LANE
LONDON
SE1 2HP

T: +44 (0)20 7940 8888
HILSONMORAN.COM
INFO@HILSONMORAN.COM

DOCUMENT HISTORY:

ISSUE	DATE	DETAILS
0.1	13/11/2021	DRAFT REPORT
0.2	15/11/2021	REVIEWED REPORT
0.3	15/11/2021	REVISED REPORT

Contents

1. Introduction

Hilson Moran has been instructed by Patrick Properties Warrington Ltd to undertake a Hydrological and Hydrogeological Risk Assessment to support the proposed development of Land South of Birchwood, Warrington. The site is centred on approximately National Grid Reference SJ 65771 90259, with the site boundary and location identified in Figure 1.1.

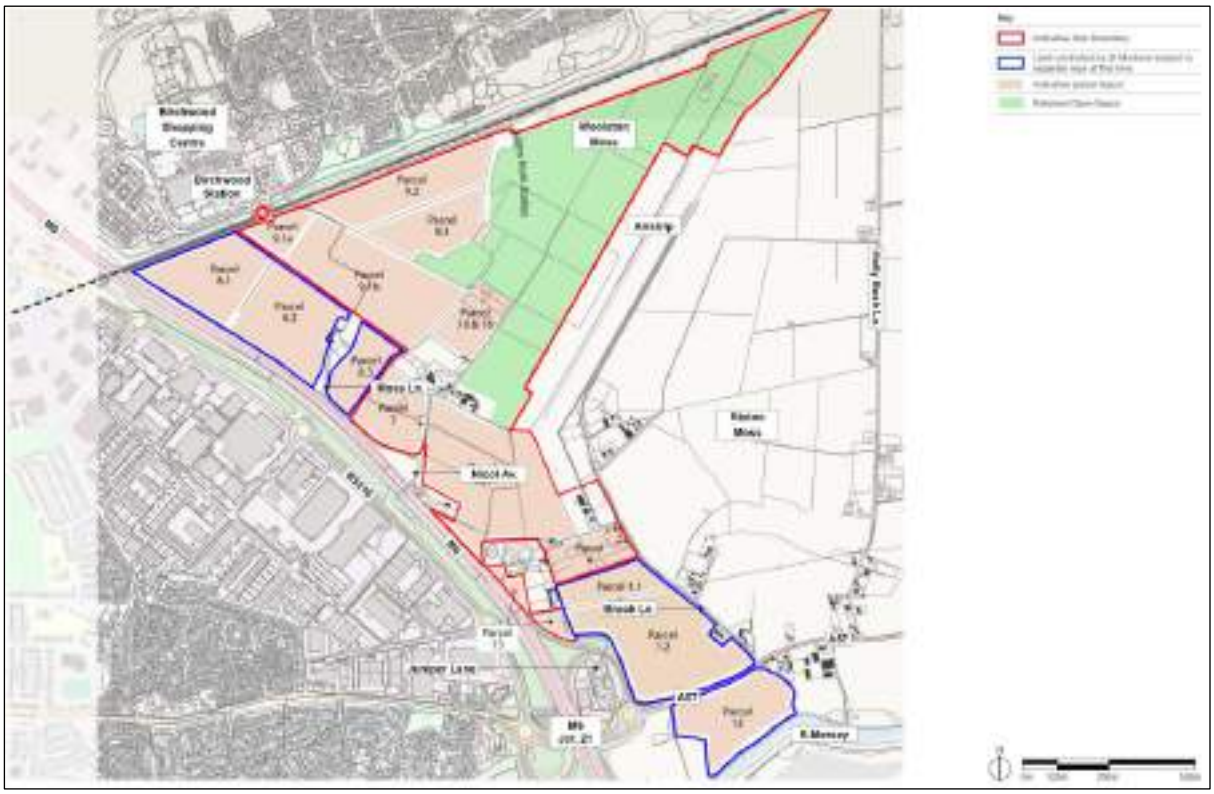


Figure 1.1 Site Location Plan

The Application Site is located alongside the M6 motorway corridor, on the eastern side, and to the south of the town of Birchwood, on the southern side of the railway line that links Liverpool and Manchester.

1.1. Proposed Development

The development proposals are for an employment/business use led scheme, with associated infrastructure, public open space and railway station facilities as illustrated in the Indicative Masterplan presented as Figure 1.2 below.

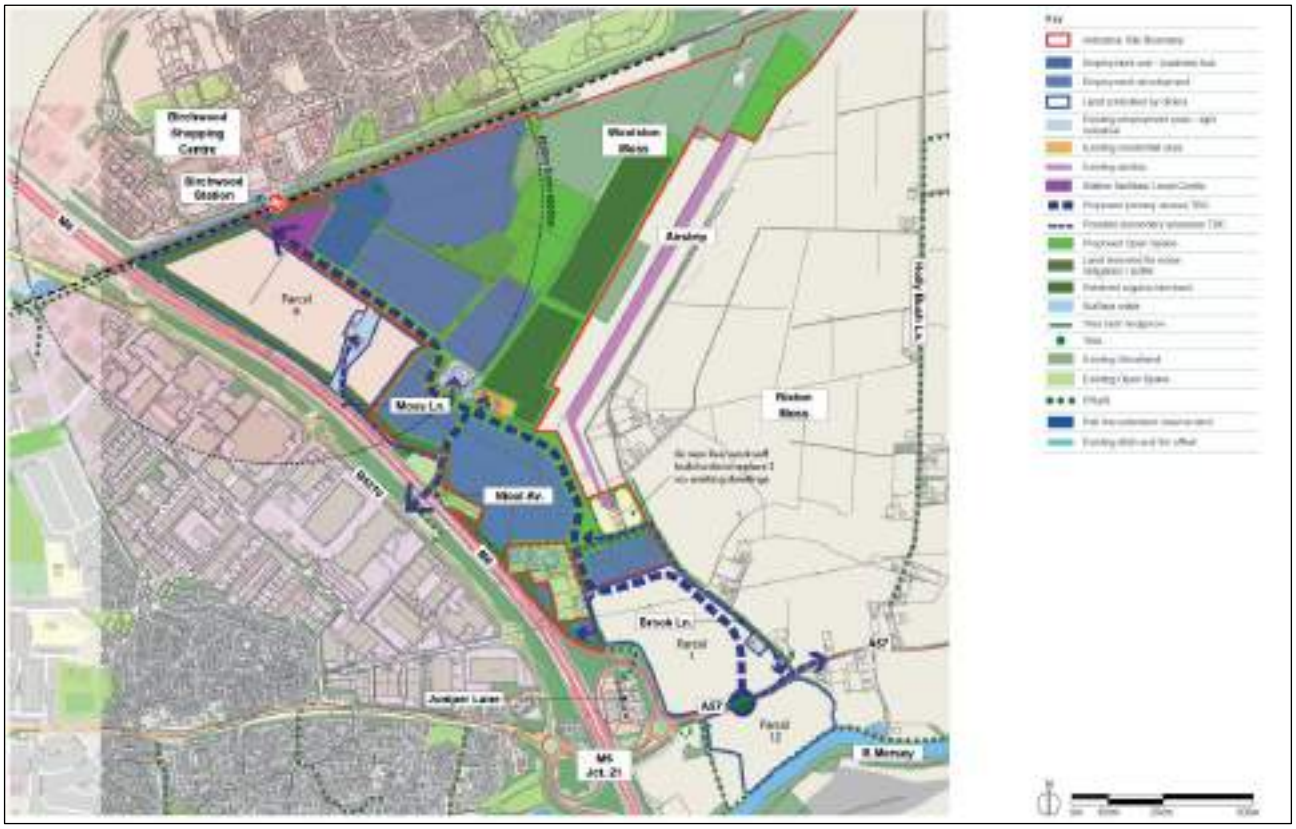


Figure 1.2 Framework Masterplan

1.2. Purpose

The purpose of this Hydrological and Hydrogeological Risk Assessment is to establish surface water and groundwater conditions on the site and the hydrological/hydrogeological connectivity of these water bodies to potentially sensitive areas or sites in the surrounding area, in order to allow for an assessment of the implications of the proposed development on local hydrological and hydrogeological regimes and any associated impacts on people or the physical environment.

2. Legislation, Policy and Guidance

2.1. Legislation

A summary of the relevant hydrological and hydrogeological legislation is provided below.

2.1.1. The Water Environment Regulations

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 transpose the Water Framework Directive (2000/60/EC) into national legislation in England and Wales and revoke the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. The Directive, and subsequent Regulations, aim to prevent deterioration of the water environment and improve water quality by managing water in natural river basin districts. The Regulations make provision for the establishment of River Basin Districts, require the identification of bodies of water from which drinking water is abstracted, measures to be included to protect watercourses, monitoring requirements for water quality and the establishment of River Basin Management Plans.

The Regulations also transpose aspects of the Priority Substances Directive (2008/105/EC), which lays down environmental quality standards for priority substances and certain other pollutants as provided for in Article 16 of the Water Framework Directive, with the aim of achieving good surface water chemical status and in accordance with the provisions and objectives of Article 4 of that directive.

2.1.2. The Groundwater Direction

The Groundwater (Water Framework Directive) (England) Direction 2014 implements the Groundwater Daughter Directive (2006/118/EC) and sets out instructions for the Environment Agency (EA) about certain obligations to protect groundwater. The Direction revokes the previous direction, Groundwater (Water Framework Directive) Direction 2006.

2.1.3. Environmental Protection Act

The Environmental Protection Act (1990) makes provision for the improved control of pollution arising from certain industrial and other processes, introducing new regulations for improved management relating to waste and pollution. The Act establishes responsibilities in relation to the control of pollution to water

2.1.4. Water Resources Act and Water Act

The Water Resources Act 1991 aims to prevent and minimise pollution to water, making it an offence to cause or knowingly permit any poisonous, noxious or polluting material, or any solid waste, to enter any controlled water.

The Water Act 2003 aims to provide a modern, efficient and robust legislative framework to facilitate both sustainable water resources management and economic growth. The Water Act 2014 further strengthens this by requiring the water industry to increase resilience of water supplies to natural hazards, such as drought and floods.

2.1.5. Flood and Water Management Act

The Flood and Water Management Act (2010) makes provision for water regarding to the management or risks in connection with flooding and coastal erosion. The Act provides for better,

more comprehensive management of flood risk for people, homes and businesses, helps safeguard community groups from unaffordable rises in surface water drainage charges and protects water supplies to the consumer.

The Act sets out relevant definitions relating to flood risk and management and places an obligation on lead local flood authorities to develop, maintain, apply and monitor a strategy for flood risk management.

2.1.6. Land Drainage Act

The Land Drainage Act 1991 consolidates the enactments relating to internal drainage boards, and the functions of such boards and local authorities in relation to land drainage. The Act requires land owners to maintain watercourses in such a condition that the free flow of water is not impeded.

2.2. Policy

A summary of the national and local planning policy relevant to hydrology, hydrogeology and the proposed development is detailed below.

2.2.1. National Planning Policy Framework

The National Planning Policy Framework (NPPF)[1] sets out policies, which apply to the preparation of local plans and to development management decisions. This framework sets out the Government's economic, environmental and social planning policies for England. Taken together, these policies articulate the Government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations.

The NPPF sets out the Government's planning policies on the conservation and enhancement of the natural environment, with the following paragraphs relating to hydrological impacts:

- Paragraph 8c identifies the environmental objective of the NPPF as "*to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy*";
- Paragraph 174, under the heading "*Conserving and Enhancing the Natural Environment*", states that "*planning policies and decisions should contribute to and enhance the natural and local environment by…preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans*";
- Paragraph 183, under the heading "*Ground Conditions and Pollution*", states that "*planning policies and decisions should ensure that…a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment from that remediation)*".

2.2.2. Local Planning Policy

2.2.2.1. Warrington Local Plan Core Strategy

The WBC's Local Plan is currently made up of several documents. Local planning policy is provided in WBC's Local Plan Core Strategy Document[2], which was adopted in 2014. This document sets out the strategic policy and planning framework for the development of Warrington up to 2027.

The main planning policy relating to hydrology is provided by Policy QE 6 on Environment and Amenity Protection, which states that:

"The Council, in consultation with other agencies, will only support development which would not lead to an adverse impact on the environment or amenity of future occupiers or those currently occupying adjoining or nearby properties, or does not have an unacceptable impact on the surrounding area.

The Council will into consideration the following:

- *The integrity and continuity of tidal and fluvial flood defences;*
- *The quality of water bodies, including canals, rivers, ponds and lakes;*
- *Groundwater resources in terms of their quantity, quality and the ecological features they support;*
- *Land quality*"

Relevant planning policy is also provided by Policy QE 5 on Biodiversity and Geodiversity, which states that:

"The Council will work with partners to protect and where possible enhance sites of recognised nature and geological value. These efforts will be guided by the principles set out in National Planning Policy and those which underpin the strategic approach to the care and management of the Borough's Green Infrastructure in its widest sense."

2.2.2.2. Warrington Local Plan: Updated Proposed Submission Version

Consultation on the Proposed Submission Version of the Local Plan[3], took place between 15th April and 17th June 2019. This document provides the planning framework for the borough for the period 2017 to 2037.

An Updated Proposed Submission Version of the Local Plan[4], has since been prepared which considers the feedback given during the consultations on the Proposed Submission Version Local Plan in 2019. This document is at an early stage of production and has not yet been approved for public consultation. However, it is a material consideration in the determination of this assessment.

The main planning policy relating to hydrology is provided by Policy ENV8 on Environmental and Amenity Protection, which states that:

- *"The Council requires that all development is located and designed so as not to result in a harmful or cumulative impact on the natural and built environment, and/or general levels of amenity.*
- *Development proposals, as appropriate to their nature and scale, should demonstrate that environmental risks have been evaluated and appropriate measures have been taken to minimise the risks of adverse impacts to air, land and water quality, whilst assessing vibration, light and noise pollution both during their construction and in their operation.*

Land Quality

- *The Council will ensure that any development proposals on or adjacent to potentially contaminated land; unstable ground or that have a sensitive end use, are suitable for their intended use. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account.*
- *Development proposals on land that is (or suspected to be) affected by contamination; unstable ground or has a sensitive end use must include an assessment of the extent of the issues and any possible risks. Development will only be permitted where the land is, or can be made suitable for the proposed use.*
- *Development proposals will need to demonstrate that any loss of the Borough's best and most versatile agricultural land will be minimised.*

Water Quality

- *Development proposals will not be permitted where it would have an adverse effect on the quality or availability of groundwater resources, watercourses or water bodies.*
- *Any proposals for new development within Groundwater Source Protection Zones must accord with central government guidance set out in its Groundwater Protection guides, or any subsequent iteration of the guidance. New development within Groundwater Source Protection Zones will be required to:*
    - *be planned so as to mitigate the risk of pollution to the public water supply and the water environment;*
    - *undertake a risk assessment and mitigation strategy with respect to groundwater protection to manage the risk of pollution to public water supply and the water environment; and*
    - *produce a Construction Management Plan to identify the potential impacts from all construction activities on both groundwater, public water supply and surface water and identify appropriate mitigation measures necessary to protect and prevent pollution of these waters."*

2.3. Guidance

2.3.1. National Planning Practice Guidance

The NPPF is supported by Planning Practice Guidance[5], which provides guidance on outlines how the planning process can address potential hydrological impacts associated with new development. It provides specific guidance on the level of detail required, how impacts can be mitigated and provides information on how local authorities may take air quality as a specific consideration in a planning decision.

3. Methodology

3.1. Baseline

The baseline conditions, and future baseline conditions, for the Birchwood site have been established from a range of desk-based sources, in particular from the following:

- Defra Data Services Platform[6];
- The EA Flood Map for Planning internet resource[7];
- WBC Strategic Flood Risk Assessment (SFRA)[8];
- Warrington Preliminary Flood Risk Assessment (PFRA) 2017-2023[9];
- WBC Local Flood Risk Management Strategy (LFRMS) 2019-2025[10];
- Mersey Estuary Catchment Flood Management Plan (CFMP)[11];
- British Geological Survey (BGS) Geology of Britain Viewer[12]; and
- National Soil Resources Institute (NSRI) Soilscape Viewer[13].

4. Baseline Conditions

4.1. Potential Ecological Receptors

The area surrounding the Site includes a number of ecologically designated sites, with designations ranging from those at the local scale up to those at the international scale. The designated sites are identified in Table 4.1 and Figure 4.1.

Table 4.1 Ecologically Designated Sites Surrounding the Site

Designated Site	Proximity to Site	Characteristics/ Reason for designation	Ecological Value following CIEEM Criteria[14]
Special Area of Conservation (SAC)			
Manchester Mosses	*c.* 65 m north-east	Degraded raised bog system capable of natural regeneration, supporting diverse vegetation including purple moor grass, bracken and birch scrub/woodland	International
Rixton Clay Pits	*c.* 1.8 km east	Series of remnant hollows forming inland water bodies that support extensive great crested newt (GCN) population.	International
Site of Special Scientific Interest (SSSI)			
Risley Moss	*c.* 65 m north-east	Meres and Mosses - raised bog system with open water bodies supporting diverse flora and fauna. Regeneration of mire surface. Assemblage of breeding birds including meadow pipit, skylark, reed bunting, mallard, snipe, wintering wildfowl and raptor.	National
Holcroft Moss	*c.* 2.7 km north-east	Meres and Mosses – series of open water and peatland sites supporting characteristic flora.	National
Rixton Clay Pits	*c.* 1.8 km east	Calcareous grassland communities and support county's largest GCN breeding population.	National
Woolston Eyes	*c.* 240 m south	Lowland open waters and their margins supporting nationally important wintering wildfowl, black-necked grebe, gadwall and pochard. Also notified for its breeding bird assemblage. Also supports notably assemblage of amphibians, including GCN.	National
Local Nature Reserve (LNR)			
Risley Moss	*c.* 65 m north-east	Mossland, mixed woodland and grass meadow supporting diverse vegetation including marsh orchids and Snakes Head Fritillary, and species such as mallard and kingfisher.	Local
Rixton Clay Pits	*c.* 1.8 km east	Former clay pits with a rich mosaic of wet grassland, woodland and open water, scattered ponds -and associated swamp habitats.	Local

Designated Site	Proximity to Site	Characteristics/ Reason for designation	Ecological Value following CIEEM Criteria[14]
Paddington Meadows	*c.* 2.3 km west	Former farmland habitat with waterside meadows and hawthorn hedge boundaries. Supports a range of faunal species including lapwing, skylark, meadow pipit, Cetti's warbler, kestrel and sparrowhawk.	Local
Local Wildlife Site (LWS)			
Rixton Moss LWS	*c.* 250 m east	Lowland raised bog. H18 - Areas of fens, swamps, reedbeds, lowland raised bogs and blanket bogs with sphagnum moss, cotton grasses or abundant tall vegetation such as common reed, tall sedges and grasses or Cheshire indicator species for wetland should be selected as LWS. Any site supporting species or species assemblages which qualify under the species selection criteria S1-13 should be selected.	Local
Woolston Moss LWS	On-site		Local

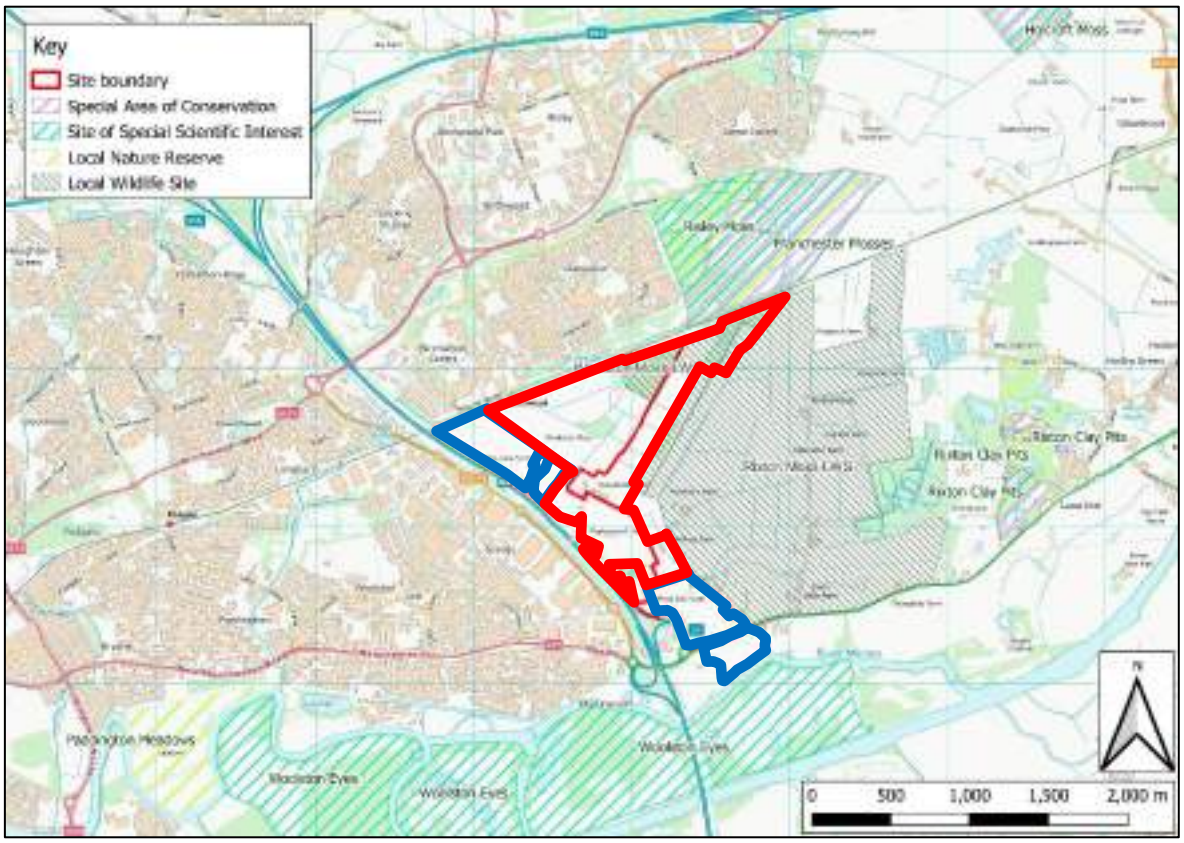


Figure 4.1 ***Ecologically Designated Sites Surrounding the Site*** *(Contains Ordnance Survey data © Crown copyright and database right 2021 and public sector information licensed under the Open Government Licence v3.0)*

4.2. Climate

The climate is warm and temperate and Birchwood has a significant amount of rainfall during the year (this is true even for the driest month). According to the Köppen and Geiger climate classification system[15], this climate is classified as Cfb (temperate oceanic climate) with an annual average temperature of 9.8 °C.

The Met Office indicates through their climate averages maps that the annual average rainfall for the 1981-2010 period was between 800-1000 mm, as shown in Figure 4.2.

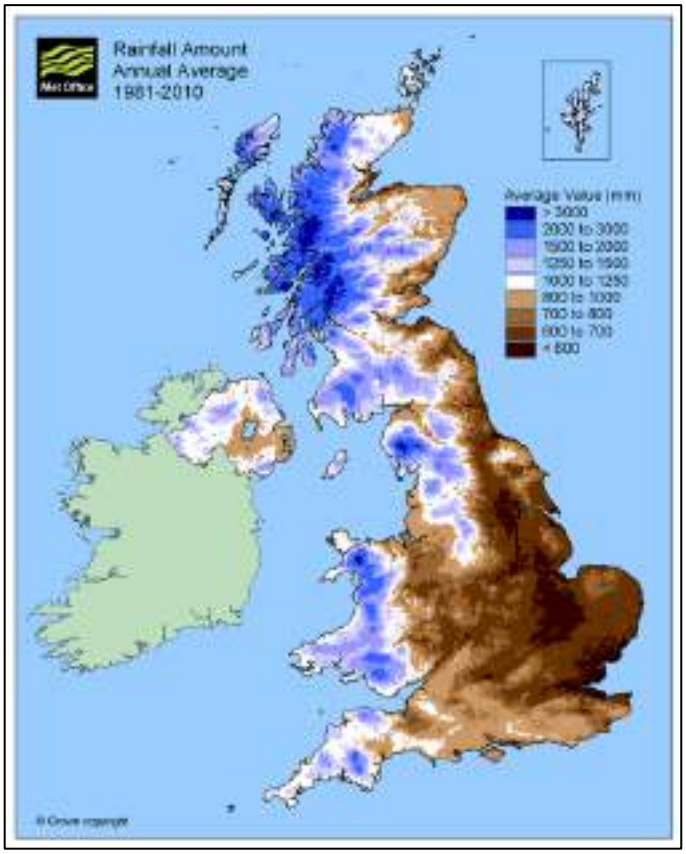


Figure 4.2 Rainfall Annual Average 1981 – 2010 (Source: Met Office, 2018)

The standard average annual rainfall, as stated by the Flood Estimation Handbook is 816.0 mm, with generally wetter winter months than summer months although there is generally rainfall all year round with the potential for heavy rainfall in the form of thunderstorms in summer and frontal systems in winter.

4.3. Topography

The topography within the site, illustrated in Figure 4.3, comprises relatively shallow gradients, with a general north-westerly slope across the site (i.e. away from all the nearby ecologically designated sites described in Section 4.1 above.

The high point of the site is in the north-east corner, at 19.4 m Above Ordnance Datum (AOD), with the lowest point of the site in the north-west corner, at 11.0 m AOD. The northern section of the site slopes westwards towards the north-west corner, whilst the southern part of the site generally slopes north-westerly from around 13.5 m AOD, although a small area slopes southwards towards the River Mersey.

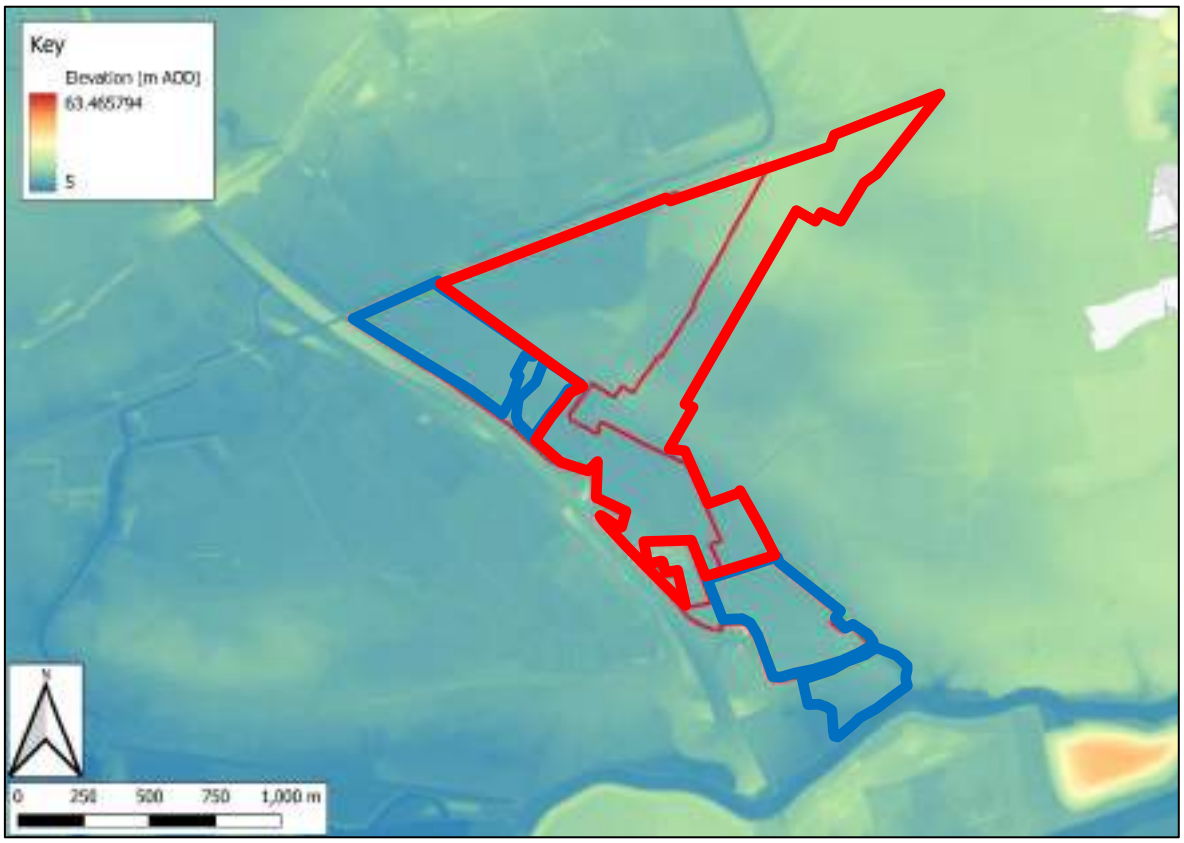


Figure 4.3 ***Topographic Map*** *(Contains Ordnance Survey data © Crown copyright and database right 2021 and public sector information licensed under the Open Government Licence v3.0)*

Figure 4.4 provides a re-scaled version of the topography map to show the level changes in the site more clearly, with an elevated section in the centre of the site which falls outside of the site boundary.

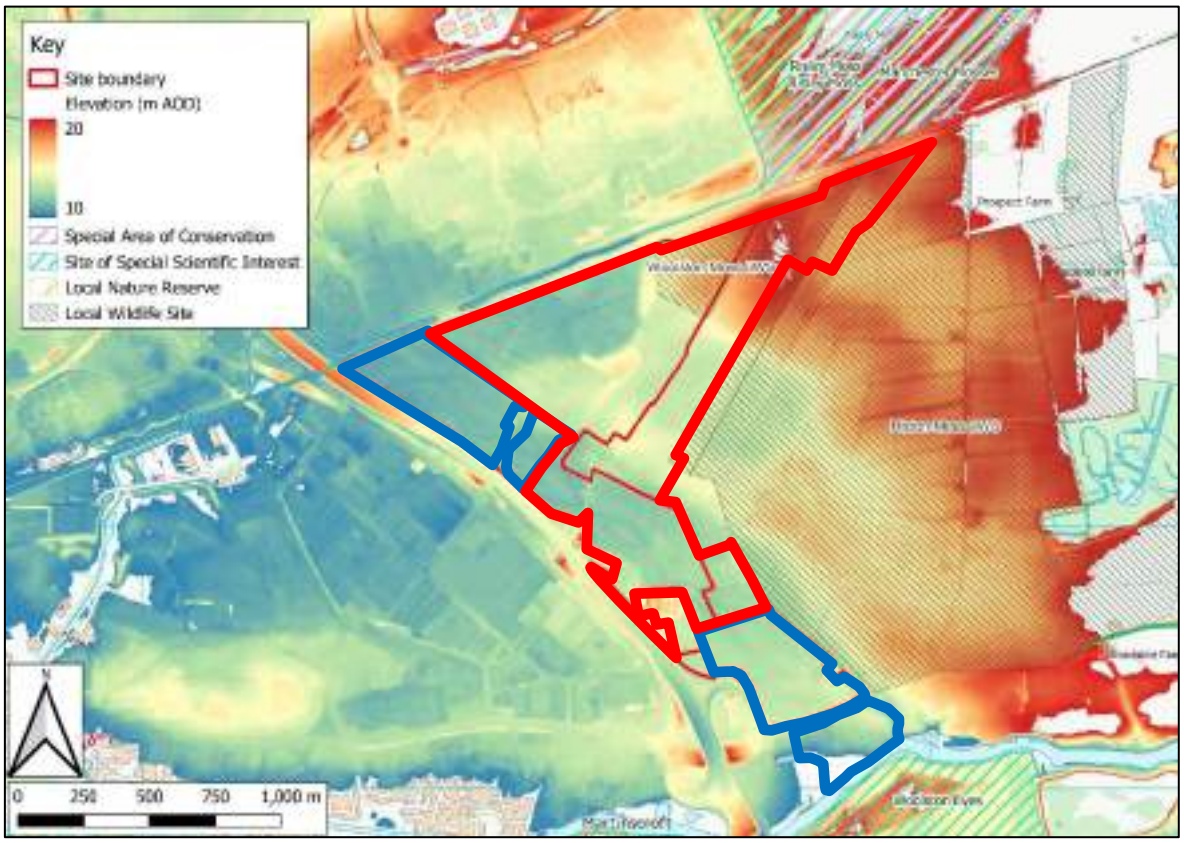


Figure 4.4 ***Site-Detailed Topographic Map*** *(Contains Ordnance Survey data © Crown copyright and database right 2021 and public sector information licensed under the Open Government Licence v3.0)*

4.4. Surface Water Features

The Site lies within the Lower Mersey area of the Mersey Estuary Catchment, which drains land from the outskirts of Bolton in the east and Wigan to the north, through Leigh, St Helens and Warrington, and includes the Mersey Estuary at Liverpool in the south. The site falls within the Glaze surface water operational catchment of the Lower Mersey area.

Although the topography of the site suggests it drains towards the northwest corner of the site, except for a small area on the southern boundary that would drain towards the south, the Water Framework District (WFD) Management Catchments indicate that the site is split into two discrete catchments, as identified in Figure 4.5 below.

Interrogation of the EA catchment planning website identifies the northern part of the site falls within the Spittle Brook waterbody whilst the southern half of the site falls within the Mersey (Bollin confluence to Howley Weir) including Padgate Brook waterbody. This suggests the drainage of the site is split into two watersheds, with the southern half draining towards the south-east and the northern part draining towards the north-west. Ultimately, both areas drain into the River Mersey with a confluence around Woolston.

The site supports a number of surface waterbodies, comprising drainage channels to aid the movement of water from the land. A network of ditches across the northern part of the site drain the land towards Birchwood Brook along the northern boundary of the site, which runs westwards to Spittle Brook.

There are also a number of drainage channels across the southern end of the site that are assumed to link up to the Fishington Brook Main River on the eastern boundary.

Figure 4.5 demonstrates that for the northern parts of the site, the main on-site surface water flow routes convey runoff away from the Manchester Moss SAC, Holcroft Moss SSSI, Risley Moss SSSI/LNR, Woolston Moss and Rixton Moss LWSs.

For the southern part of the site, surface water is conveyed south eastwards, where it is intercepted by the Fishington Brook and then conveyed southwards towards the River Mersey. Consequently, flow is isolated from the upstream areas of the Rixton Clay Pits SAC/SSSI/LNR and Rixton Moss LWS, ultimately being conveyed south westwards towards the Woolston Eyes SSSI and the Paddington Meadows LNR.

Neither the Woolston Eyes SSSI nor the Paddington Meadows LNR comprise raised bog or peatland systems. The former comprising open waters and their margins, largely formed from gravel extraction and canal dredgings deposit grounds and the latter comprising former farmland habitat with waterside meadows.

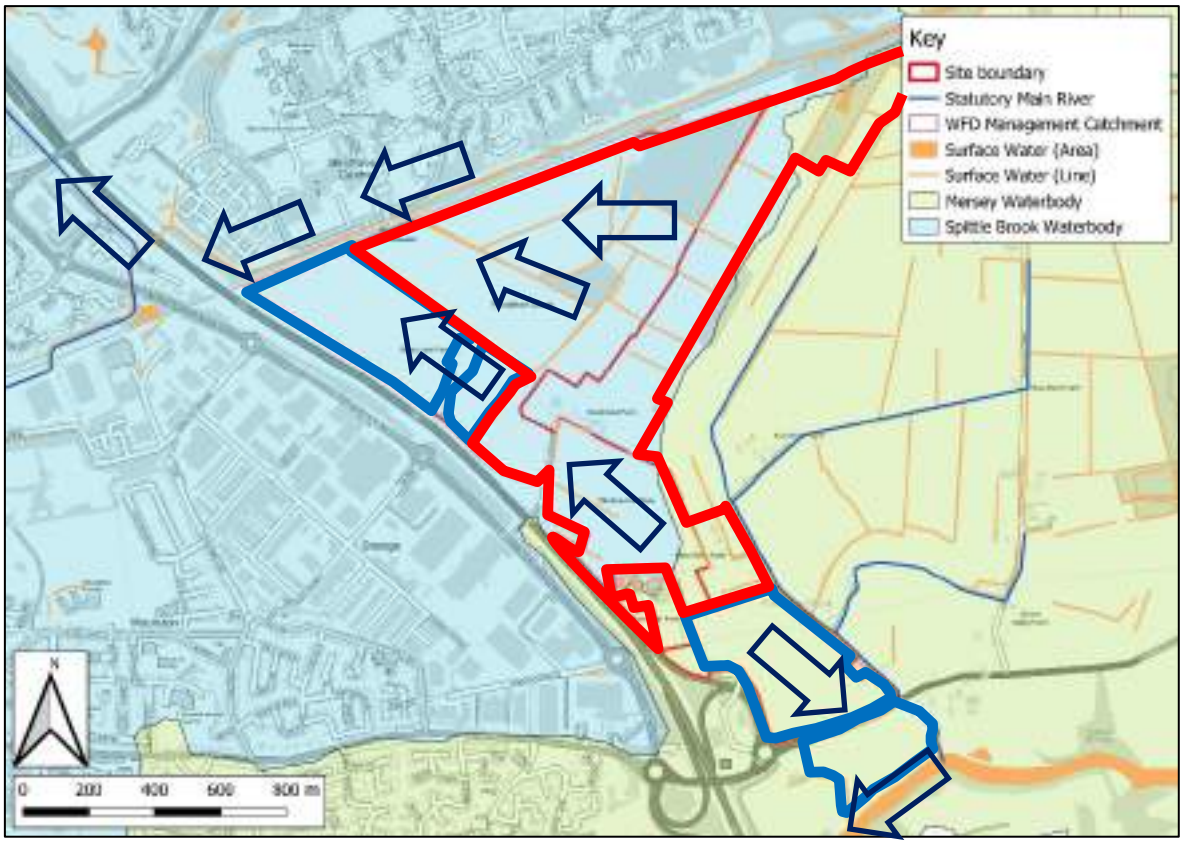


Figure 4.5 ***Surface Water Network showing main site surface water flow directions*** *(Contains Ordnance Survey data © Crown copyright and database right 2021 and public sector information licensed under the Open Government Licence v3.0)*

There are three surface water bodies present associated with Moss Side Farm in the centre of the southern area, falling outside of the site boundary, however these do not appear to connect with the drainage network and are located on high ground on the site.

4.5. Surface Water Quality

The Spittle Brook was identified in 2019 as having a moderate ecological status, with the hydromorphological supporting elements supporting good status, physico-chemical quality elements being moderate, biological elements being poor and specific pollutants being high.

In terms of the physico-chemical quality elements the *p*H, temperature and ammonia are identified to be of high status with phosphate at moderate status and dissolved oxygen as bad status. All specific pollutants are identified to be of high status. The chemical element fails as a result of benzo(b)flourantehene, benzo(g-h-i)perylene, mercury and its compounds and polybrominated diphenyl ethers (PBDE). The priority substances are all of good status.

The Mersey (Bollin confluence to Howley Weir) including Padgate Brook waterbody (ID GB112069061012) was identified in 2019 as having a moderate ecological status, with the hydromorphological supporting elements supporting good status, physico-chemical quality elements being moderate, biological elements being bad and specific pollutants being high.

In terms of the physico-chemical quality elements the *p*H, temperature and acid neutralising capacity are identified to be of high status with ammonia and dissolved oxygen at moderate status and phosphate at poor status. All specific pollutants are identified to be of high status. The chemical element fails as a result of benzo(b) and (k) flourantehene, benzo (ghi) perylene and indeno (123-cd) pyrene, benzo(g-h-i)perylene, mercury and its compounds, perflourooctane sulphonate (PFOS), polybrominated diphenyl ethers (PBDE) and tributultin compounds. The priority substances are largely of good status, with the exception of cypermethrin (priority hazardous) which fails.

4.6. Designations

The Site and immediate surrounding area is not subject to identification as a Nitrate Vulnerable Zone (NVZ), with the closest being the River Glaze NVZ approximately 1.6 km to the north-east.

4.7. Geology and Hydrogeology

The BGS Geology of Britain viewer[16] provides an understanding of the geological formations throughout Great Britain. Review of the information at the 1:50,000 scale mapping identifies that the site is primarily underlain by bedrock of sandstone from the Wilmslow Formation which constitutes a Principal Aquifer. This is a sedimentary bedrock formed approximately 247 to 252 million years ago in the Triassic period within an environment previously dominated by hot deserts.

The site is also underlain by several superficial deposits, with the majority of the northern part of the site shown to support peat comprising organic accumulations and formed up to 3 million years ago in the Quaternary Period. The north west corner and much of the southern part of the site supports glaciofluvial sheet deposits, comprising Devensian sand and gravel formed up to 2 million years ago in the Quaternary Period in an environment dominated by ice age conditions.

Two small areas in the southern part of the site supports sand from the Shirdley Hill Formation, formed up to 2 million years ago in the Quaternary Period in an environment dominated by wind blown deposits.

It should be noted that both Risley Moss and Rixton Clay Pits are located above different aquifers to the Triassic Wilmslow Formation Principal Aquifer that underlies the development site. The Manchester Mosses SAC and Risley Moss SSSI/LNR are predominantly located on the Triassic Bollin

Mudstone Member (Mudstone) and partly (along the northern boundary) on the Triassic Tarporley Siltstone Formation (Siltstone, Mudstone and Sandstone), both designated as a Secondary B Aquifers.

Similarly, Rixton Clay Pits SAC/SSSI/LNR lie above the Bollin Mudstone Member Secondary B Aquifer. The Wilmslow Sandstone Member, which predates the Bollin Mudstone Member sits unconformably next to it, separated by a fault line. Consequently, there is unlikely to be hydraulic continuity between the Wilmslow Sandstone Member Principal Aquifer and the adjacent lower permeability Bollin mudstones/siltstones. Furthermore, interpolation of local groundwater levels show both Risley Moss and Rixton Clay Pits to be up-gradient from the development site, with groundwater flow assumed to be in a south westerly/westerly direction away from these nationally designated areas and towards the development site (refer to cross sections below).

Similarly the fragmented nature of the shallow peat deposits and the elevated nature of all designated areas to the north east and east of the site *i.e.* Manchester Mosses SAC, Risley Moss SSSI/LNR, Rixton Clay Pits SAC/SSSI/LNR, Woolston Moss LWS and Rixton Moss LWS (refer to Section 4.3 above), would render any perched groundwater flow from the site to these protected areas very unlikely.

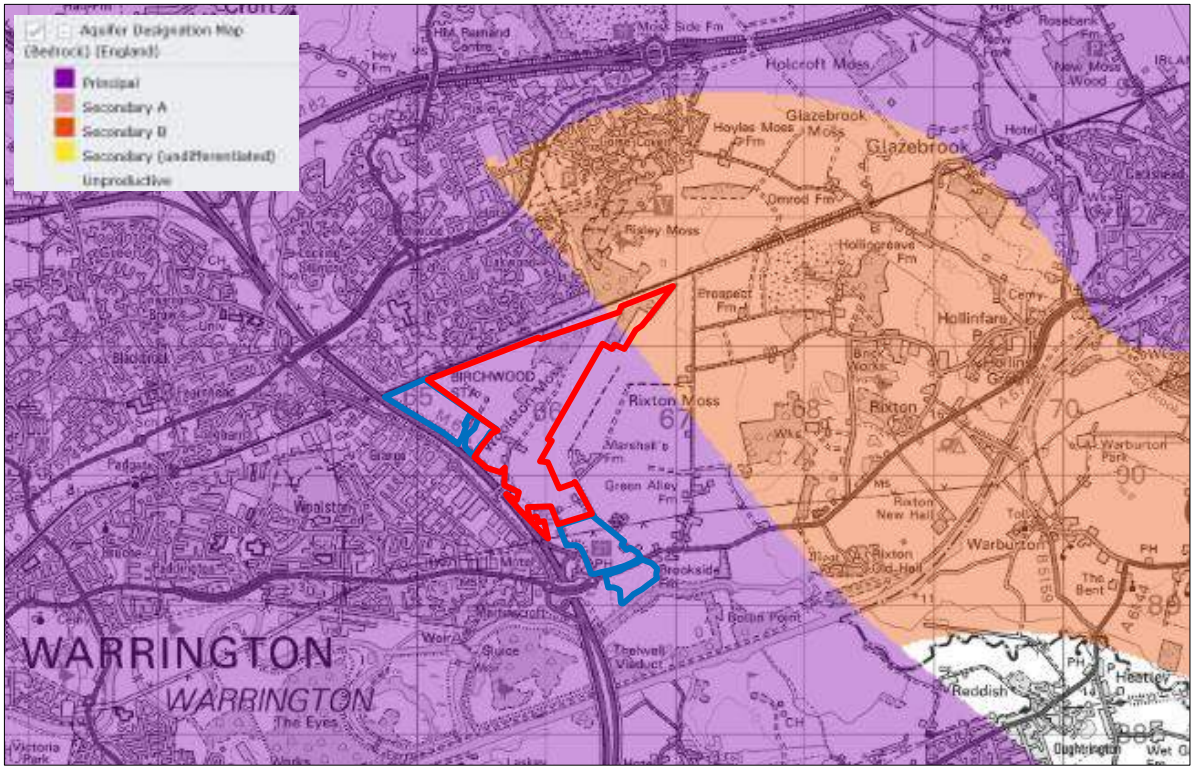


Figure 4.6 Aquifer Designation Map (source Defra online MAGIC resource at https://magic.defra.gov.uk/MagicMap.aspx)

The entire site falls within Zone 3 of a Source Protection Zone (SPZ), comprising the Total Catchment area. There are a number of Inner and Outer Protection Zones (Zone 1 and Zone 2 respectively) associated with the total catchment in the surrounding area resulting in an extensive total catchment being interlinked. The closest SPZ is located to the south with 2.3 km to the Outer Protection Zone and 2.7 km to the Inner Protection Zone, and the second is located to the north-west with 2.7 m to the Outer Protection Zone and 2.8 km to the Inner Protection Zone. The location of these are identified in Figure 4.16. The SPZ Map indicates a lack of aquifer connectivity

between the site and protected areas to the east and north east of the site, including Manchester Mosses SAC, Risley Moss SSSI/LNR, Rixton Clay Pits SAC/SSSI/LNR, Woolston Moss LWS and Rixton Moss LWS.

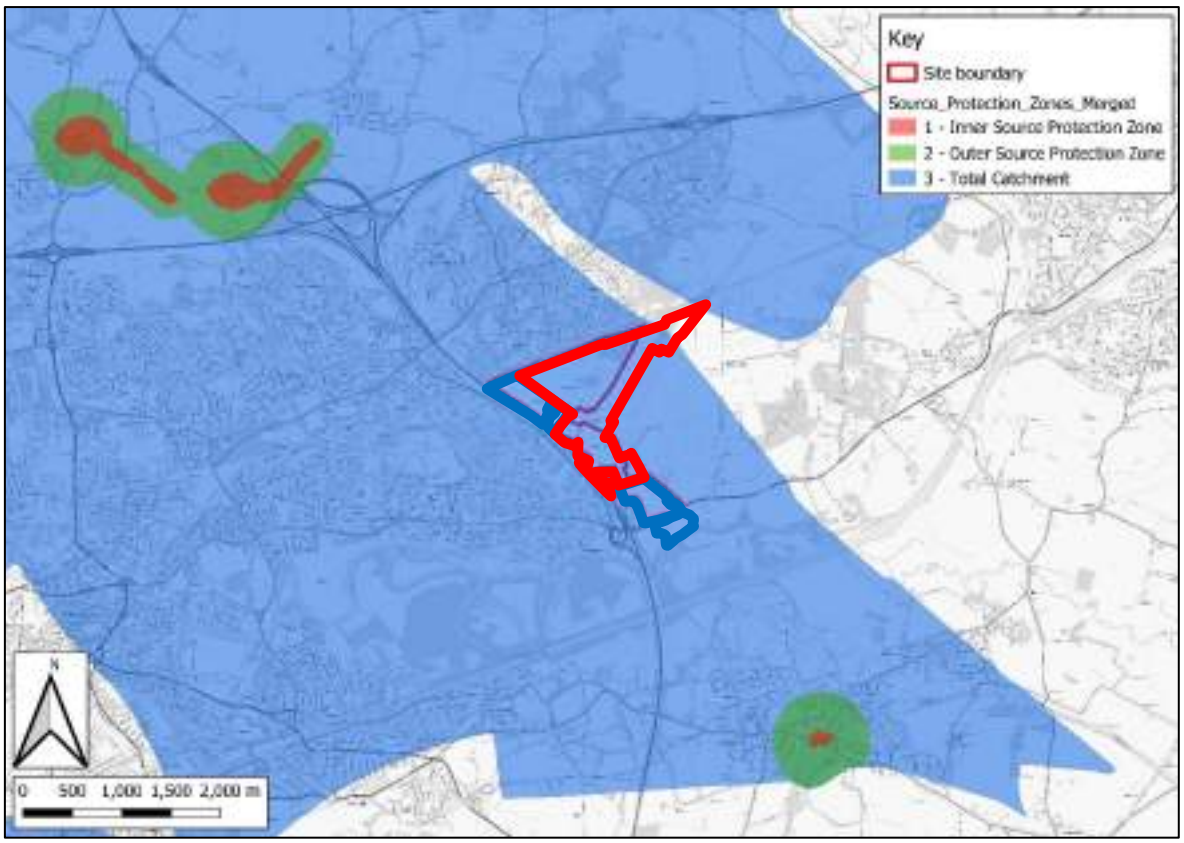


Figure 4.6 ***Source Protection Zone*** *(Contains Ordnance Survey data © Crown copyright and database right 2021 and public sector information licensed under the Open Government Licence v3.0)*

There are a number of boreholes present around the periphery of the site associated with the M6 corridor and railway corridor and the urban area of Birchwood with a couple of additional boreholes present on the eastern boundary. On the eastern boundary, a borehole to 12.5 m depth (BGS ID 896340) identifies the soil to comprise peat layers to a depth of 4.2 m, followed by layers of sandstone with silty and clayey bands to brown weak sandstone at 12.5 m. A borehole to the north (BGS ID 17500035) identifies the soil to comprise a layer of topsoil, followed by a layer of clay to 4.5 m depth and coarse gravel to 5.25 m depth after which is the sandstone bedrock. In the northwest corner a borehole (BGS ID 944035) confirms a similar pattern to the northern boundary borehole with made ground to 1.4 m, followed by layers of sand and clay to 6 m after which is the sandstone bedrock to the base of the 30 m borehole. This is also confirmed by a borehole on the western boundary (BGS ID 822364).

In addition, e3P were commissioned by Patrick Properties Warrington Ltd to investigate the extent and depth of peat across the site[17] in May 2021 by means of a series of 31 trial pits, as illustrated in Figure 4.7 below). The trial pits were mechanically excavated, typically to a depth of around 2.5 m and ground conditions including underlying strata and water strikes were recorded. The ground investigation generally confirmed the published geology. However, as illustrated in Figure 4.6, peat was not located across the northern and southern areas of the site and instead

was identified within the central and north western areas, with thickness of >1.6 m identified within the central north eastern area of the site.

The preliminary investigations identified Made Ground peat in four locations on the site, between ground level and 0.8 m below ground level and comprised black clayey peat with gravel of brick, sandstone and mudstone with areas encountering tiles, glass, timber and plastic bags. These sites are largely in the centre of the site around Brookfield Farm (TP 108, 110 and 118), with the exception of one located on the eastern side of the northern part of the site (TP112).

Natural peat was encountered within eleven of the trial pit locations across the stie, between 0.1 m below ground level and a maximum proven depth of 2.7 m below ground level*. The natural deposits comprised brown fibrous silty peat with a strong organic odour with frequent plant matter, branches and trees encountered in one trial pit (TP112), whilst the peat was very saturated in two (TP118 and TP126). Groundwater was encountered as perched water within the majority of wells between 1.30 m and 2.30 m bgl.

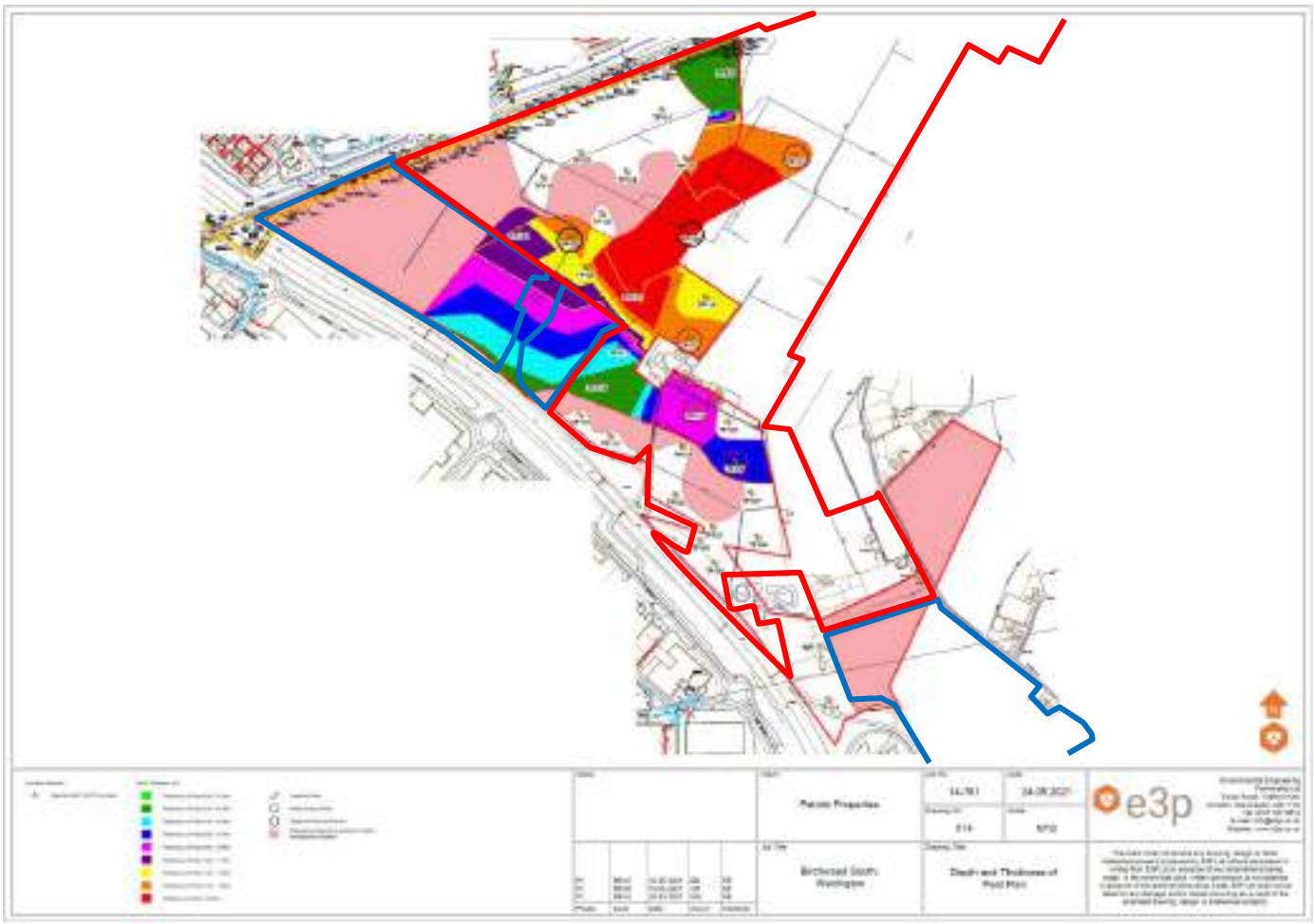


Figure 4.7 e3P Trial Pit Results showing Extent and Depth of Peat Encountered (not to scale)

* The full extent of peat could not be proven in the preliminary investigation due to limitations of the excavator reach and unsafe conditions requiring trial pits to be terminated.

The historic assumed extent of mossland and peatland in 1908 is illustrated in Figure 4.8 below (sourced from The Bowland Ecology "*Ecology Technical Note: South Station Place, Birchwood*", dated 04/11/21).

The area of confirmed natural peat was smaller than suggested by the BGS. Local farmers have suggested that areas of peat have historically been removed to provide a fuel source for the military during the war. This could be one reason as to why the extent of the peat may not be completely widespread. It could also explain the presence of made ground peat identified at the surface adjacent to the eastern boundary.

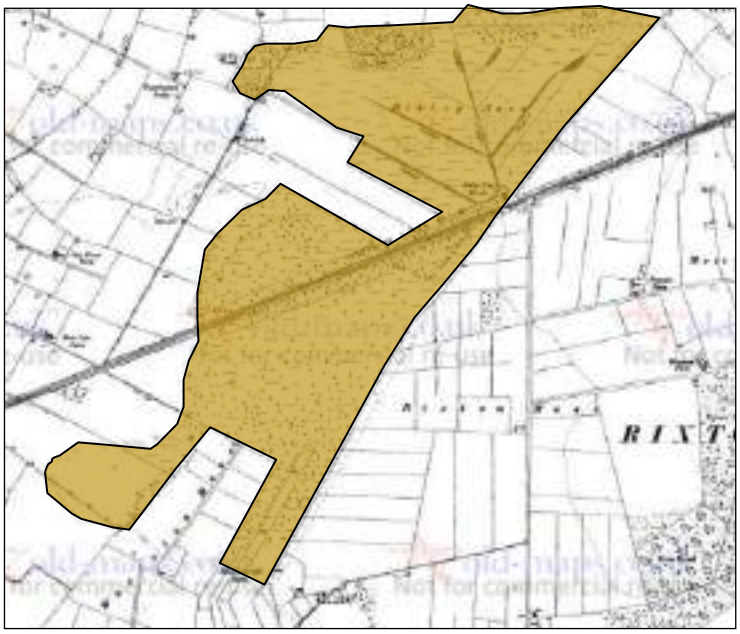


Figure 4.8 1908 Map Showing Historic Extent of Mossland/Peatland (not to scale)

Nevertheless, Bowland Ecology concluded that the remaining peat present in the north east corner of the site supports "*Existing birch woodland on poorly managed drained mossland*" and that "*The northern section is a designated Habitat of Principal Importance (Lowland Raised Bog) and listed under the NERC Act (2006). Restoration of bog in this area should be prioritised, including restoring wetland habitat and blocking ditches. This has the potential to support Risley Moss nature reserve and also improve opportunities for mossland flora, breeding birds and reptiles*."

By inputting BGS records from borehole on and surrounding the site, together with the e3P trial pit results into a Geographical Information System (GIS), namely QGIS, this has permitted interpolation of geological strata and groundwater levels across the site. Consequently, a number of cross sections have been selected to provide information across the site and towards the ecological receptors identified in Section 4.1 above. The cross sections across the site are identified in Figure 4.9 and comprise the following:

Cross Section 1 - starting from the north west corner of the site the cross section strikes north eastwards along the railway line towards and through the Manchester Mosses SAC and Risley Moss SSSI/LNR.

Cross Section 2 - starting from the north west corner of the site the cross section strikes north eastwards before striking eastwards towards and through Woolston Moss LWS and Rixton Moss LWS beyond.

Cross Section 3 - starting from the north west corner of the site the cross section strikes south eastwards for a short distance adjacent to the M6, before striking eastwards towards and through Rixton Moss LWS.

Cross Section 4 - starting from the north west corner of the site the cross section strikes south eastwards adjacent to the M6, before striking eastwards across the centre of the site to the site boundary and the south eastwards across Rixton Moss LWS towards Rixton Clay Pits SAC/SSSI/LNR.

Cross Section 5 - starting from the north west corner of the site the cross section strikes south eastwards and runs along the western boundary of the site parallel with the M6 to junction 21 near the southern boundary of the site.

Cross Section 6 - starting from the north west corner of the site the cross section strikes north eastwards before striking southwards through the centre of the site to junction 21 near the southern boundary of the site.

The resulting interpolated geological profiles are presented in Figures 4.10 to 4.15. Note that green lines below the X-axis identify where the cross section runs through a designated site (dark green identifies the statutory designated sites and the light green identifies the non-statutory designated sites). It should be noted that the borehole records within the site and to the east are relatively sparse, with extensive records along the motorway to the west and railway line to the north, with trial pit coverage across the central areas of the site good. Consequently, the accuracy of the results are limited by the availability of records.

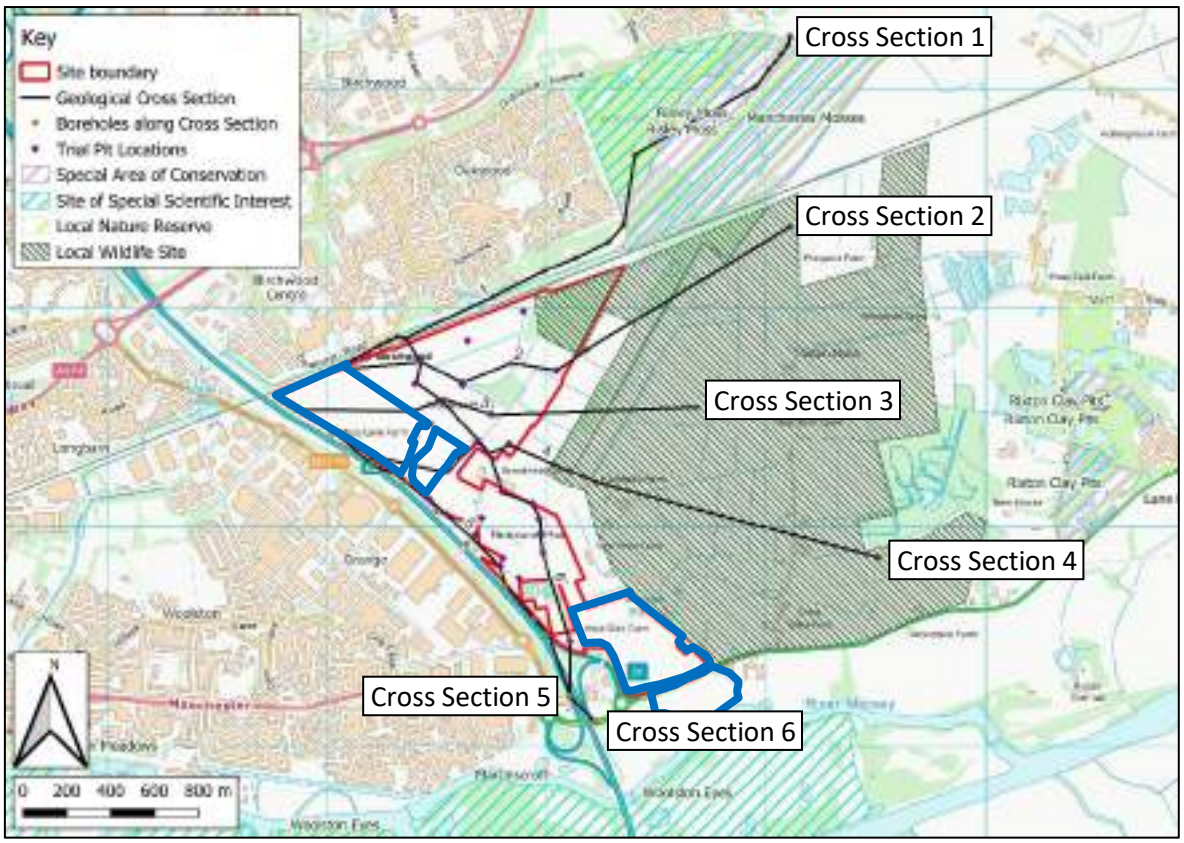


Figure 4.9 ***Geological Cross-Sections Established across the Site*** *(Contains Ordnance Survey data © Crown copyright and database right 2021)*

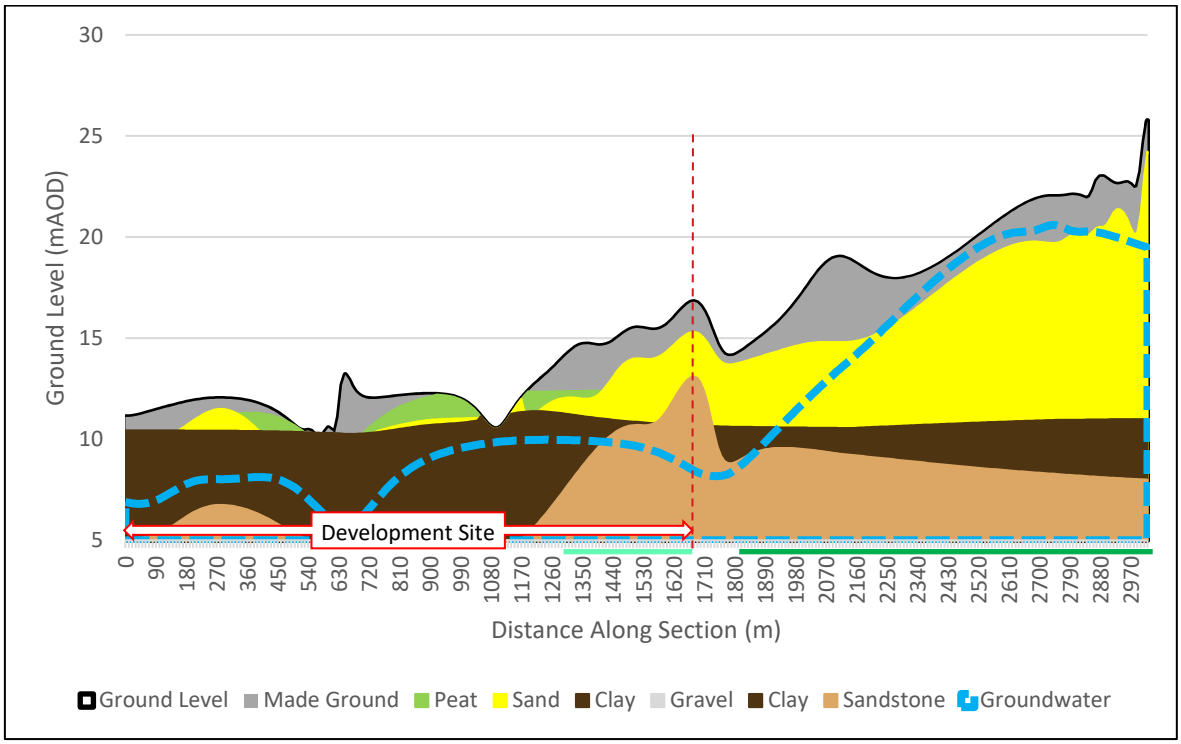


Figure 4.10 Interpolated Geological Strata and Groundwater Levels across Cross-Section 1

Interpolated Cross Section 1 indicates the northern area of the site to be underlain with Clay of the glacial till and Sandstone of the Wilmslow Sandstone Member at depth. Above the glacial till lies fragmented Peat, Sand and Made Ground. Ground levels rise significantly north east of the site boundary, with Made Ground, Sand and Clay overlying Sandstone (presumably of the Bollin Mudstone and Tarporley Siltstone Formation).

Groundwater levels are observed to rise significantly north east of the site (by around 10 m) placing the Manchester Mosses SAC and Risley Moss SSSI/LNR hydraulically up-gradient from the development site.

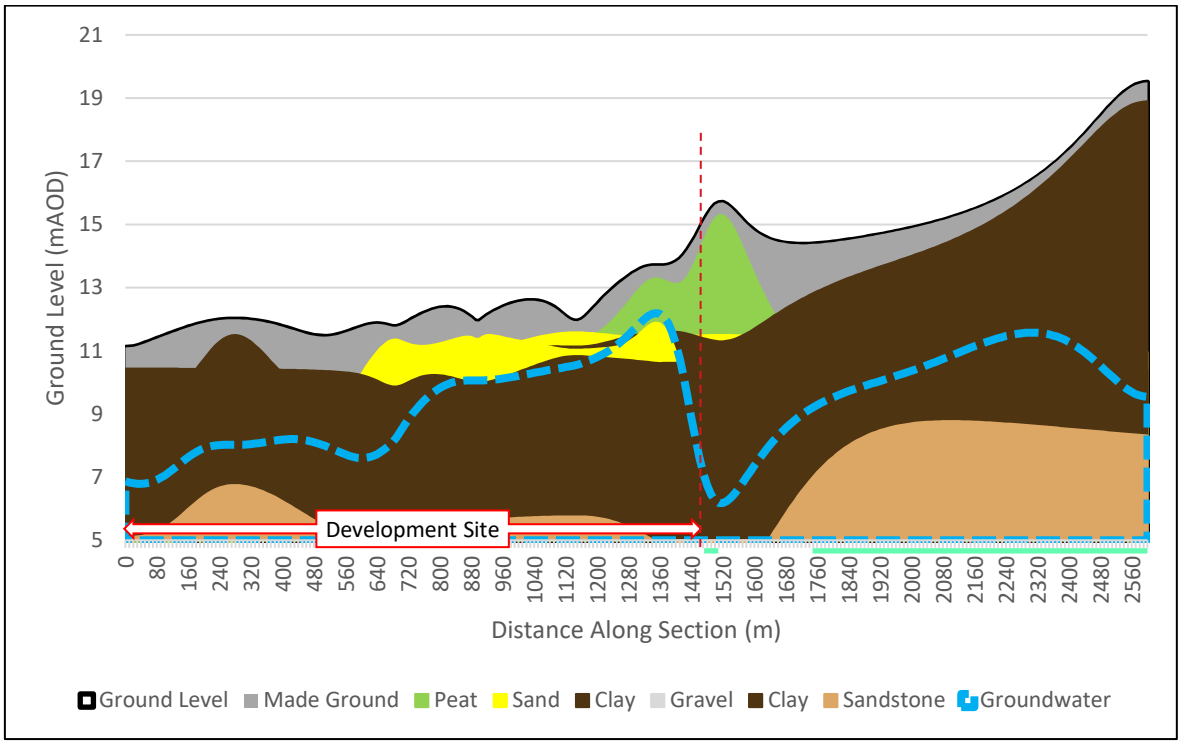


Figure 4.11 Interpolated Geological Strata and Groundwater Levels across Cross-Section 2

Interpolated Cross Section 2 indicates the northern area of the site to be underlain with Made Ground, Clay of the glacial till and Sandstone of the Wilmslow Sandstone Member at depth. Little in the way of Peat is encountered until Woolston Moss is reached on the eastern side of the site. Beyond this lie Made Ground and Clay, overlying Sandstone (presumably of the Bollin Mudstone/Tarporley Siltstone Formation).

Groundwater levels are observed to rise from the western boundary to the eastern boundary of the site. East of the site boundary they fall sharply across the fault line and then rise again, suggesting perched groundwater in the Peat and Sand below Woolston Moss and a lack of hydraulic continuity across the fault. As such, Woolston Moss LWS appears to be hydraulically up-gradient from the rest of the site to the west.

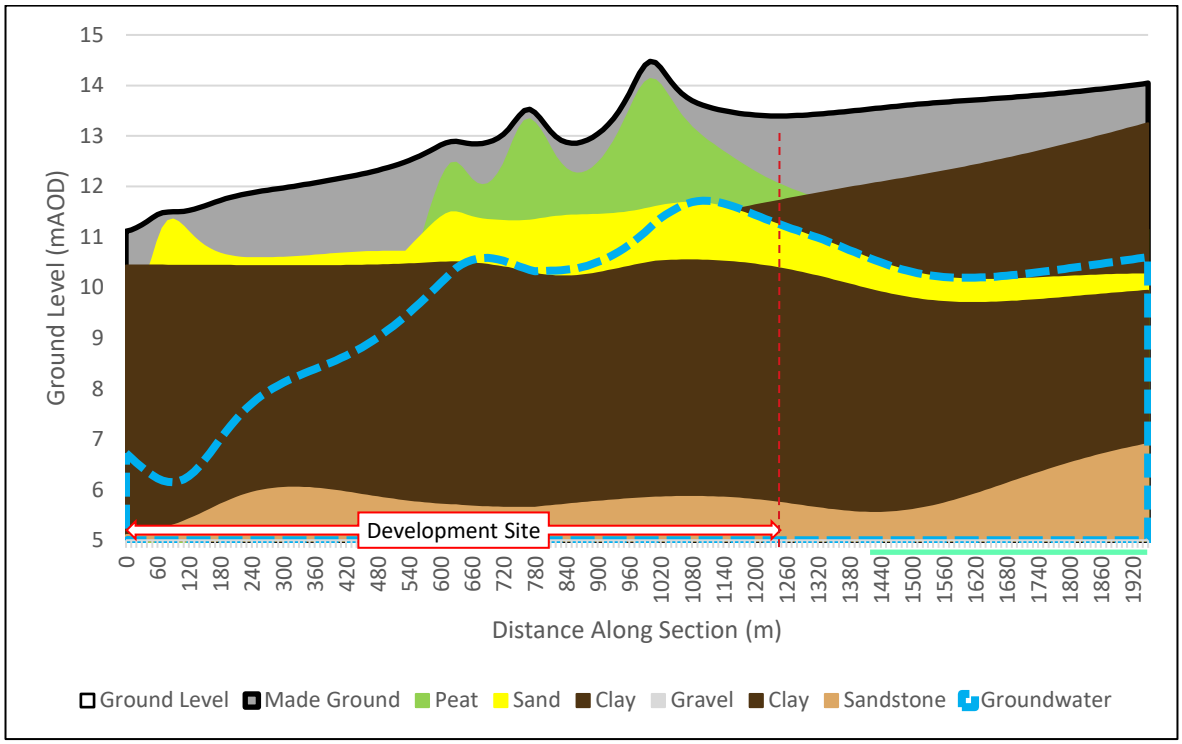


Figure 4.12 Interpolated Geological Strata and Groundwater Levels across Cross-Section 3

Interpolated Cross Section 3 demonstrates a similar pattern across the site to Cross Section 2 above, with little in the way of Peat encountered until the eastern side of the site.

Again, groundwater levels are observed to rise significantly from the western boundary to the eastern boundary of the site, suggesting perched groundwater in the Peat and Sand along the eastern boundary and placing the sensitive shallow Peat strata up-gradient from the rest of the site to the west. East of the site, groundwater appears to be confined within the relatively thin Sand lens between Clayey strata.

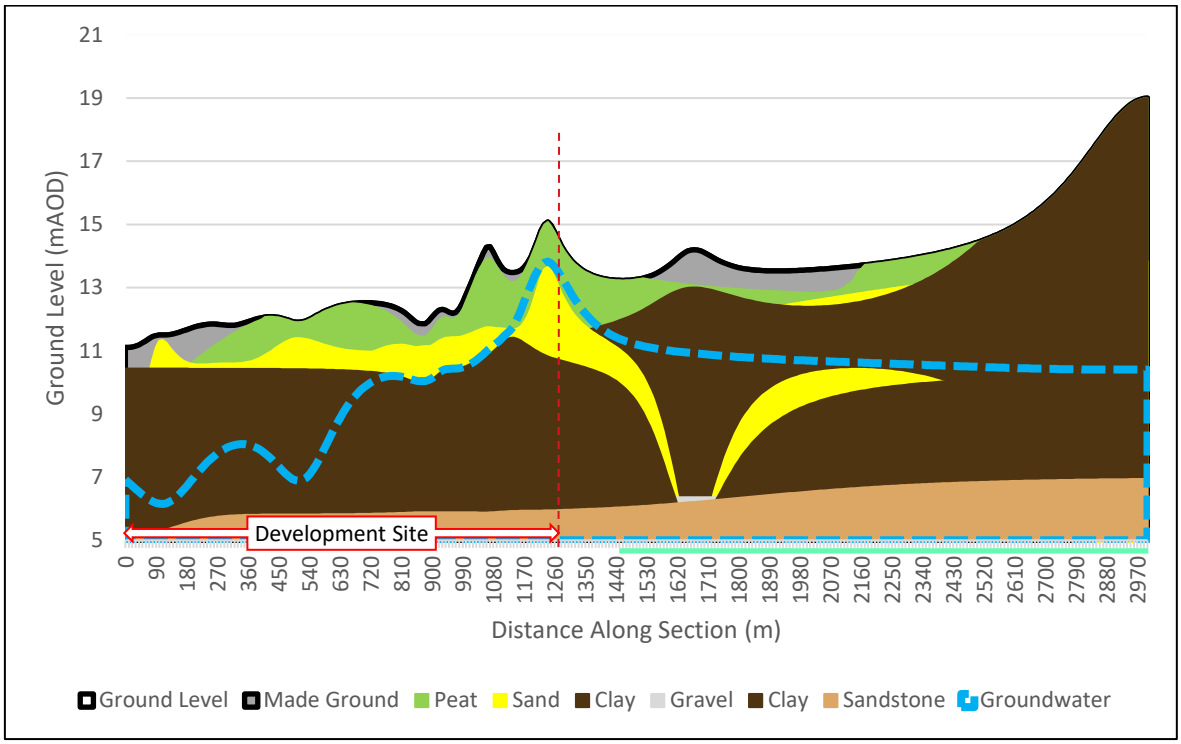


Figure 4.13 Interpolated Geological Strata and Groundwater Levels across Cross-Section 4

Interpolated Cross Section 4 demonstrates a similar pattern across the site to Cross Section 2 above, with little in the way of Peat encountered until the eastern side of the site.

Again, groundwater levels are observed to rise significantly from the western boundary to the eastern boundary of the site, suggesting perched groundwater in the Peat and Sand along the eastern boundary and placing the sensitive shallow Peat strata up-gradient from the rest of the site to the west. East of the site, groundwater appears to be confined within the relatively thin Sand lens between Clayey strata.

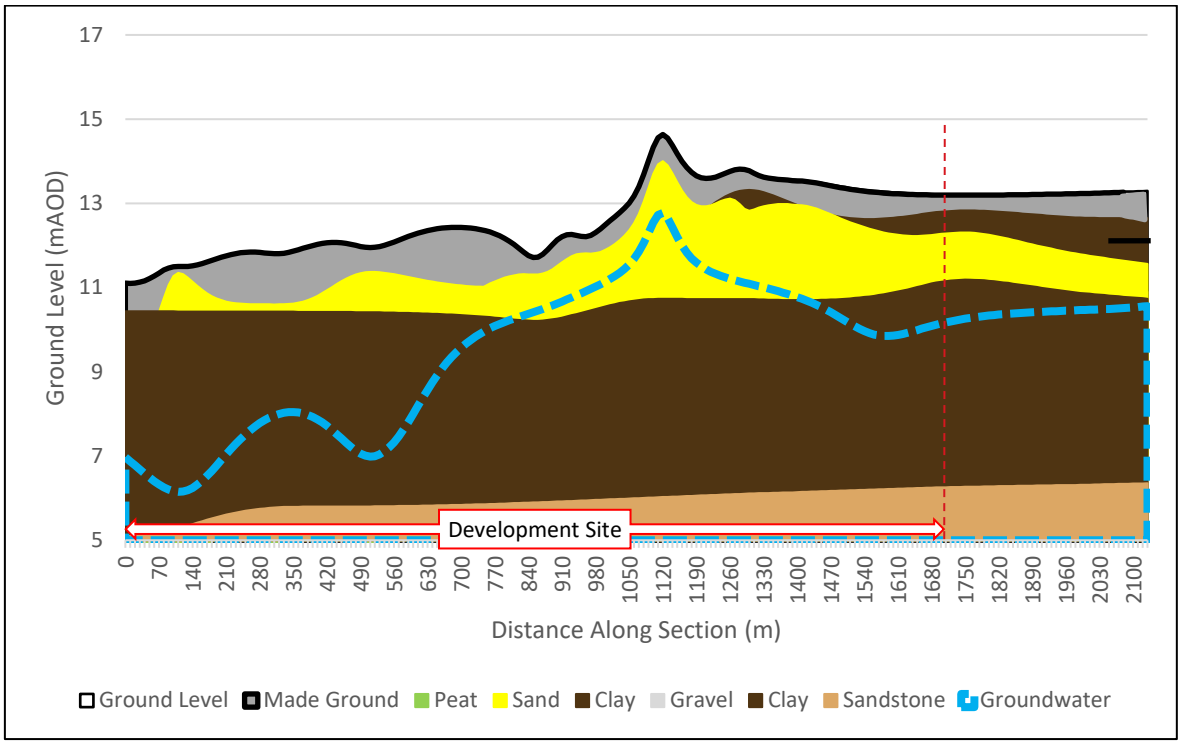


Figure 4.14 Interpolated Geological Strata and Groundwater Levels across Cross-Section 5

Interpolated Cross Section 5 indicates the western boundary of the site to be underlain with Made Ground, Sand and Clay of the glacial till and Sandstone of the Wilmslow Sandstone Member at depth along the length of the site.

Groundwater levels are observed to rise significantly from the north western corner to a high point around Nicol Avenue. From here the groundwater falls almost to the southern boundary of the site, before rising gradually towards the River Mersey. This indicates that the hydraulic gradient across much of the site is north westwards, away from the Woolston Eyes SSSI.

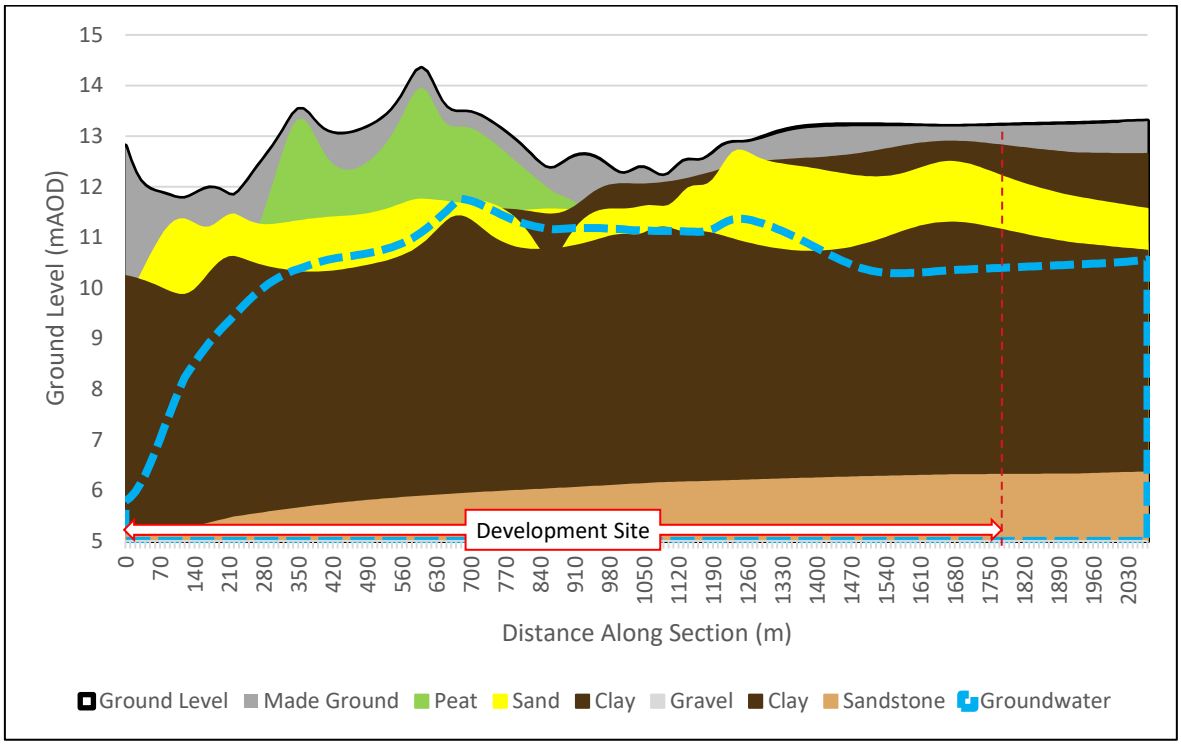


Figure 4.15 Interpolated Geological Strata and Groundwater Levels across Cross-Section 6

Interpolated Cross Section 6 is similar to Cross Section 4, although it encounters a significant area of Peat in the central north eastern area of the site.

Again, groundwater levels are observed to rise significantly from the north western corner to a high point within the Peat and Sand {presumed to be perched). From here the groundwater falls gradually almost to the southern boundary of the site, before rising slowly towards the River Mersey. This indicates that the hydraulic gradient across the northern central and eastern areas is northwards away from the Woolston Eyes SSSI.

Furthermore, the National Soil Resources Institute (NSRI) Soilscape database[18] identifies the soil types across England and Wales. The database identifies that the land on which the site stands is split into two, with raised bog peat soils to the north and naturally wet very acid sandy and loamy soils to the south. The drainage aspect of both soil types is identified as "n*aturally wet*".

4.8. Flood Risk

4.8.1. Fluvial

Until recently a significant area of the site was shown on the EA's Flood Map for Planning as being within Flood Zones 2 (medium risk) and 3 (high risk) (refer to Figure 4.17 below), However, as part of a recent modelling update for the Manchester Ship Canal, the decision was taken by the EA to remove the section of Flood Zone 3 covering the M6. Consequently, a large part of the proposed development site was reclassified as Flood Zone 1 (low risk) (refer to Figure 4.18 below). To put the flood zone mapping into context, Flood Zone 3 comprises areas categorised as subject to 1% annual probability of flooding from rivers or sea (*i.e*. the 1 in 100-year event) and Flood Zone 2 comprises areas categorised as subject to 0.1% annual probability of flooding from rivers or sea (*i.e.* the 1 in 1000-year event). Cumulatively, these areas provide the best estimate of the indicative floodplain of the identified watercourses if there were no flood defences or other man-made structures and channel modifications in place.

Figure 4.17 EA Flood Map for Planning prior to inclusion Manchester Ship Canal Remodelling (pre-June 2021)

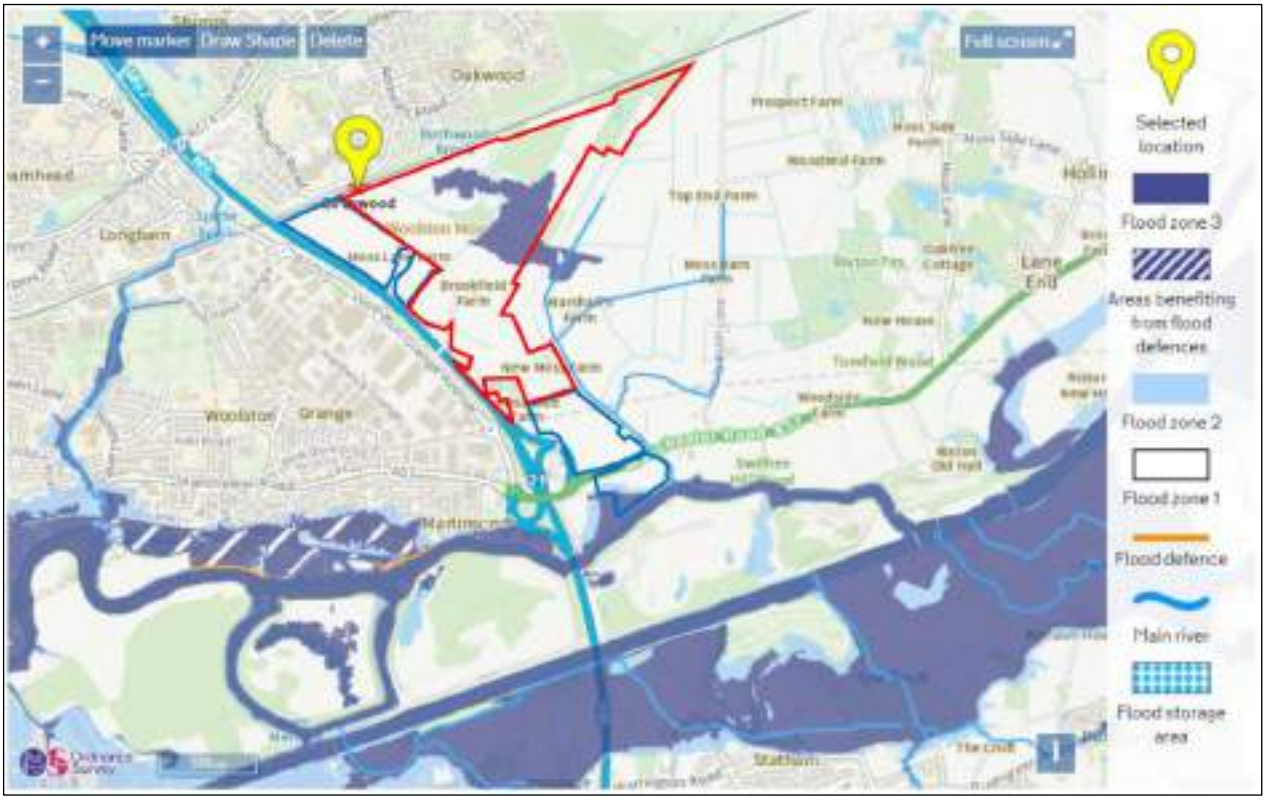


Figure 4.18 Current EA Flood Map for Planning (accessed 14/11/21)

A relatively small area of Flood Zone 3, associated with the upper reaches of the "*Fishington Brook 1*" (Main River) remains encroaching onto the NE area of the development site, following the Manchester Ship Canal remodelling (highlighted with a yellow outline on Figure 4.19 below). Discussions with the EA have revealed that this area was left on the Flood Map as it was derived "*from Jflow and was not included in the new modelling.*"

When overlain onto the Framework Masterplan it can be seen that the majority of this area falls within proposed green open space/noise buffer on the north eastern side of the site, with small areas encroaching onto proposed employment use in the north east corner of the site.

With reference to the NPPF, the proposed employment use would be classed as "Less vulnerable" to flood risk i.e. "*Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure*." As such, the proposed use would be compatible for development in Flood Zone 3, without application of the Sequential or Exception Tests, as long as the risks from flooding are identified within an appropriate Flood Risk Assessment (FRA) and suitable mitigation measures adopted to ensure residual risks are acceptable.

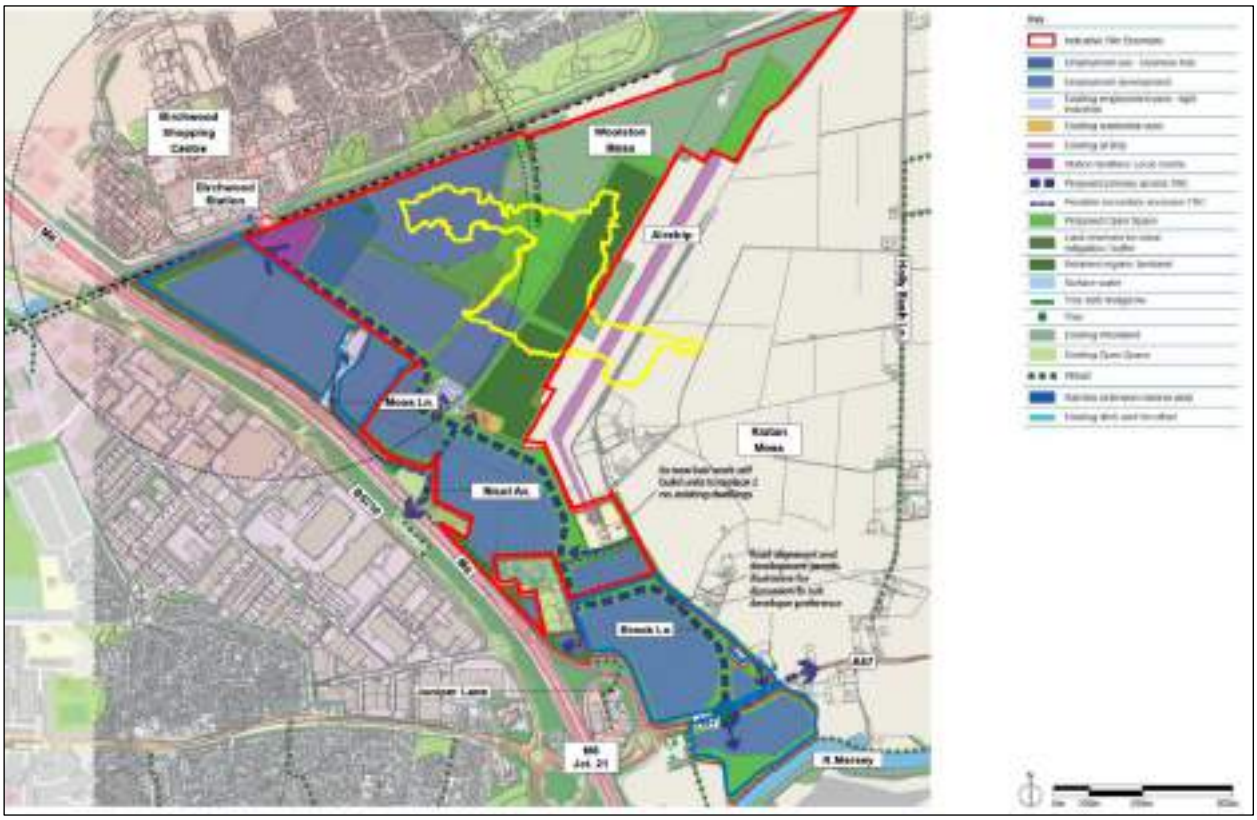


Figure 4.19 Framework Masterplan with area of Flood Zone 2 & 3 Overlain (yellow outline)

Nevertheless, it should be noted that both the areas of Flood Zone 2 & 3 to the east of the M6 (recently removed from the EA Flood Map following Manchester Ship Canal remodelling) and the remaining area of Flood Zone 2 & 3 described above, are not shown to be within these flood zones following detailed JBA Consulting remodelling presented in the 2008 Warrington SFRA (refer to Figure 4.20 below), with the whole of the proposed development site being shown as lying in Flood Zone 1 (low risk).

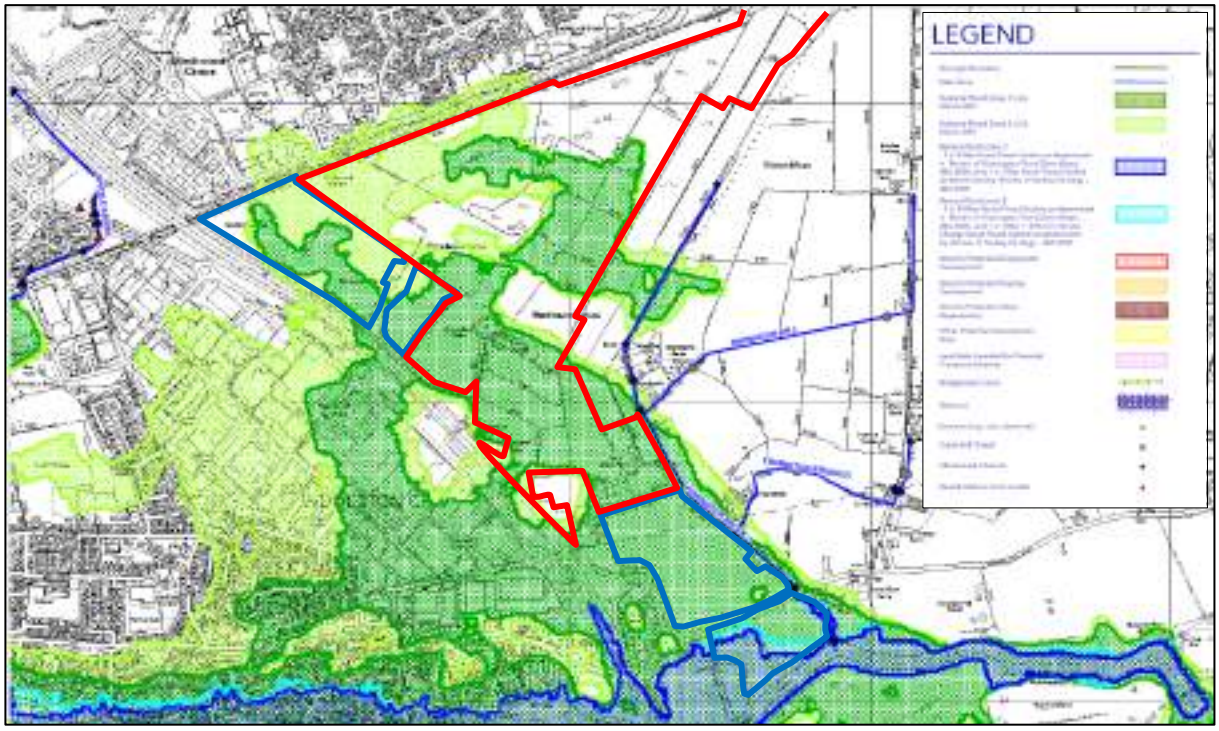


Figure 4.20 Extract from the 2008 Warrington SFRA showing EA commissioned JBA Consulting remodelled flood zones in blue (with entire site lying in Flood Zone 1)

The 2008 Warrington SFRA states that revised flood outputs were derived from the 2006 JBA Consulting remodelling exercise "*Review of Warrington Flood Maps*" commissioned by the EA *i.e.* "*Further assessment of the extent of flooding through Warrington was undertaken for the EA by JBA in 2006. These revised flood zones take the Manchester Ship Canal into account and indicate a reduction in the extent of flooding through Warrington. The EA have acknowledged that these revised flood zones provide a more realistic extent of flooding through Warrington….The mapping and depths of flooding used in this SFRA are based on the EA flood studies Flood Risk Mapping Review-Tidal Mersey at Warrington (JBA 2005), Flood Risk Mapping Review-Review of Flood Zone Maps (JBA 2006), the Sankey Feasibility Assessment (JBA 2005)……. When assessing the suitability of sites for development an initial review of a potential site should first be made against the EA defined Flood Zone Map. Where the site is located in Flood Zones 2 or 3 then further comparison should be made against the updated flood zone map. If the site remains in either revised zones 2 or 3 then the site will require Sequential Testing. Where the revised flood zones indicate that a site is now located in revised zone 1 then further consultation with the EA is required.*"

It would appear that the Fishington Brook was included within the remodelling as Section 3.14 of the SFRA refers to the Juniper Lane Employment Site (Ref. 24) as being within the Fishington Brook catchment with 65 % of the site in Flood Zone 3b and 35 % in Flood Zone 2 of the EA flood zones, but 100 % within Flood Zone 1 following the remodelling.

It should also be noted that:

1. There are no historical records of flooding of the area in either the Warrington Borough SFRA or held by the EA, whilst the land owner has also reported that the land has been free from flooding for as far back as anyone remembers.
2. With reference to the 2008 Warrington SFRA, the western tributary and main channel of the Fishington Brook ("Fishington Brook 1" in the SFRA), with which the area of flooding would

appear to be associated, is reported as being "Maintained", whilst with reference to the FEH Web Service, the catchment of the western tributary is relatively minor, covering largely drained agricultural land with scattered homesteads and possessing an area of (c. 0.55 km^2).

3. Hilson Moran has previously acted for another client supporting a planning application for a Coal Bed Methane exploration site on lands directly to the south of the proposed development site (WBC Planning Ref. 2009/15700).

   At the time, the flood risk zonation modelled by the National Generalised Model associated with the Fishington Brook was thought to be overly conservative. After consulting with the EA it was determined that the LIDAR data used to assess flood risks in the vicinity of the Fishington Brook was flown in 2002 and possessed a horizontal (grid) resolution of 2 m and a vertical (height) resolution of approximately 0.25 m (more accurate 2020 LiDAR data is now available). The Hilson Moran FRA that accompanied the planning application stated that "*The filtering of DSM imagery, to create a DTM model, can lead to inaccuracies in topographic data used in Flood Mapping. The Warrington SFRA adds a caveat to flood mapping products used in the report, stating that whilst the topographic data used in flood modelling of the region is 'fit for purpose', there are uncertainties associated with the data which could affect the accuracy of flood extents, and that the current flood zone maps across the Warrington area do tend to over-estimate the likely extent of fluvial flooding*."

   A walkover survey at the time identified the brook to be accommodated within a sizeable and generally well maintained trapezoid channel. However, in places it was observed to be heavily obscured by a shrub and tree canopy that was likely to have caused difficulty in accurately identifying the size and depth of the brook during LIDAR survey.

   Consequently, some simple HEC-RAS modelling of the brook was conducted to support the FRA, from the confluence of its tributaries near Meadow View residence, downstream to its confluence with the Butchersfield Canal. FEH CD ROM catchment descriptors and FEH Procedures, in conjunction with WINFAP software, were used to define flows in the Fishington Brook, at the confluence of the main channel with "*Fishington Brook 2*", with the downstream boundary condition (at the confluence of Fishington Brook with the Butchersfield Canal), being set at the 1 in 100 year fluvial flood level in the River Mersey. With reference to the output of the HEC-RAS modelling, the associated FRA concluded that: "*The re-modelled findings indicate that the Fishington Brook would be unlikely to overtop its banks during the 1 in 100 year fluvial flood event (including a 20% increased flow allowance to account for climate change recommendations over the lifetime of the proposed development). As a consequence, for the purposes of this FRA, the Fishington Brook is not considered to be a source of fluvial flood risk to the site during the 1 in 100 year fluvial flood event*".

4. In addition, the risk of surface water flooding specifically associated with the proposed development site is identified in Section 4.9 below. This demonstrates that the majority of the site is considered to have a very low risk of surface water flooding below 0.1 % probability of occurrence in any given year, including the area of fluvial flooding described above.

Therefore, it is highly likely that the above remaining area of Flood Zone 2 & 3 is an artefact of the low resolution, precautionary JFLOW mapping and that the risk of fluvial flooding in this area is low.

Consequently, taking all of the above evidence into consideration, Hilson Moran are currently in discussion with the EA and JBA Consulting with the aim of removing the above area of Flood Zone 2 & 3 from the EA Flood Map for Planning.

4.8.2. Surface Water

Surface water flooding occurs when intense, often short duration, precipitation events are unable to enter a drainage system due to blockages, breakages in water pipes or where the drainage capacity has been exceeded. This type of flooding is usually short-lived, associated with heavy precipitation events and highly localised. Surface run-off will tend to flow towards low spots where it collects. Flooding can occur both to land or property which lies in the flow path of the water or to property situated in the low spot where the water finally collects. The effects of climate change are predicted to increase the frequency of heavy downpours, therefore increasing the number of events that exceed the capacity of the sewer system.

The risk of surface water flooding specifically associated with the masterplan site is identified in Figures 4.21 and 4.22, using the EA's Risk of Flooding from Surface Waters data. This demonstrates that the majority of the site is considered to have a very low risk of surface water flooding below 0.1 % probability of occurrence in any given year. The southern part of the site is generally at a higher risk of surface water flooding, with the extent of flood risk in the northern part of the site significantly lower.

Only a very small area of the site is at high risk of surface water flooding (1 in 30 year event), with two drainage ditches in the centre of the site, a small area to the southern side of Moss Side Farm and a small area in the southern part of the site around Brook Lane identified. Several areas of the site are at a medium risk of surface water flooding (1 in 100 year event), with two small areas in the northern part of the site and areas in the southern part of the site around Moss Side Farm, New Moss Farm and additional areas around the southern border. There are a number of areas of low risk of surface water flooding (1 in 1,000 year event), with notable areas across the southern side of the site across Martinscroft Moss and around Moss Side Farm. Smaller areas are present at the southern extent and across the northern area along the northern boundary and in the north-west corner.

Notable areas of flood risk are present on the site boundary to the east on Brook Lane, to the south-west along the M6 and associated with Birchwood Brook along the northern boundary. Surface water flood risk in the surrounding area is notable to the east, with areas of principally low to medium flood risk, and to the north and east in the urban areas of Birchwood and Grange with areas of low to high flood risk.

No surface water flooding is predicted to be associated with the seemingly anomalous area of Flood Zone 2 and 3, relating to the Fishington Brook in the north eastern area of the site (refer to Section 4.8.1 above).

For the high risk and medium risk events, the flood depths within the site are generally below 0.3 m with the exception of flooding within the drainage ditches which are designed to convey excess surface water. During the low risk event, the flood depths are again generally below 0.3 m, although there are some areas of the site where this extends to below 0.6 m notably a small part of the northern area (as identified in Figure 4.23) and in southern parts of the site (as identified in Figure 4.24) and.

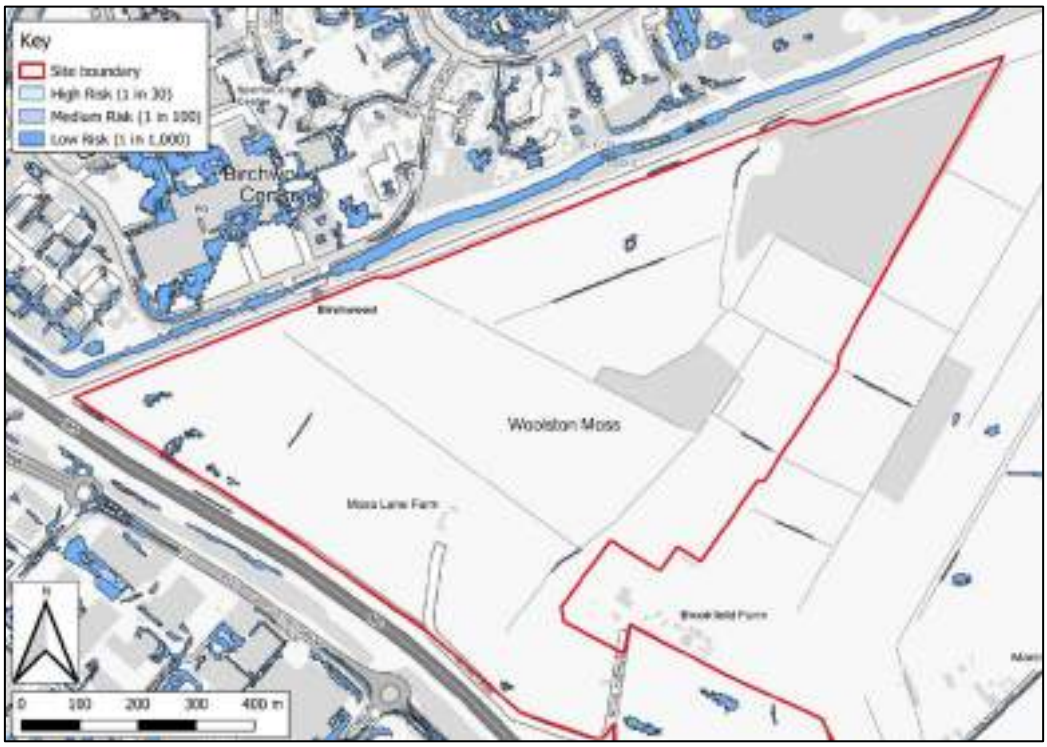


Figure 4.21 ***Surface Water Flood Map*** *(Contains Ordnance Survey data © Crown copyright and database right 2021 and public sector information licensed under the Open Government Licence v3.0)*

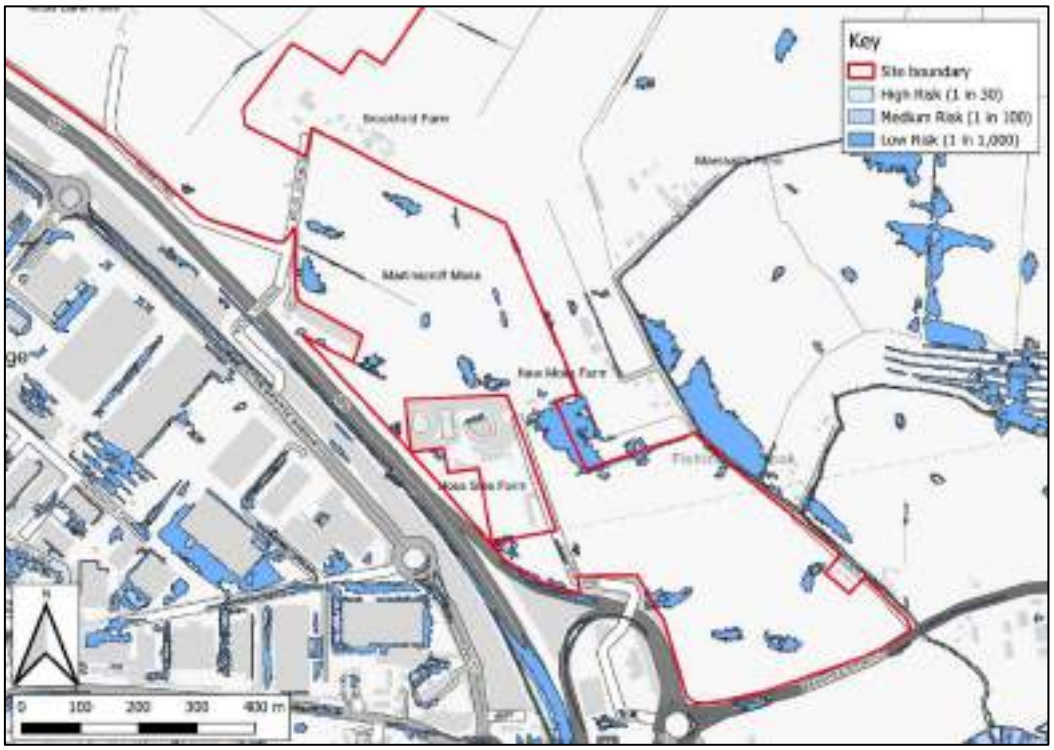


Figure 4.22 ***Surface Water Flood Map*** *(Contains Ordnance Survey data © Crown copyright and database right 2021 and public sector information licensed under the Open Government Licence v3.0)*

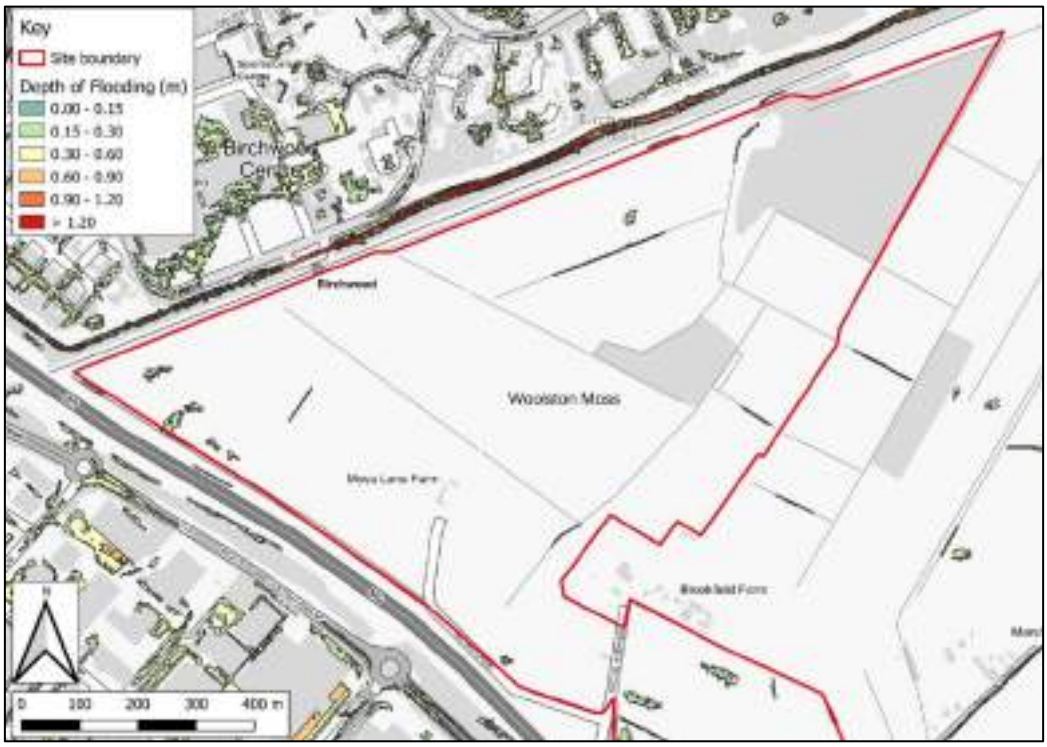


Figure 4.23 ***Surface Water Flood Depth – Low Risk Event*** *(Contains Ordnance Survey data © Crown copyright and database right 2021 and public sector information licensed under the Open Government Licence v3.0)*

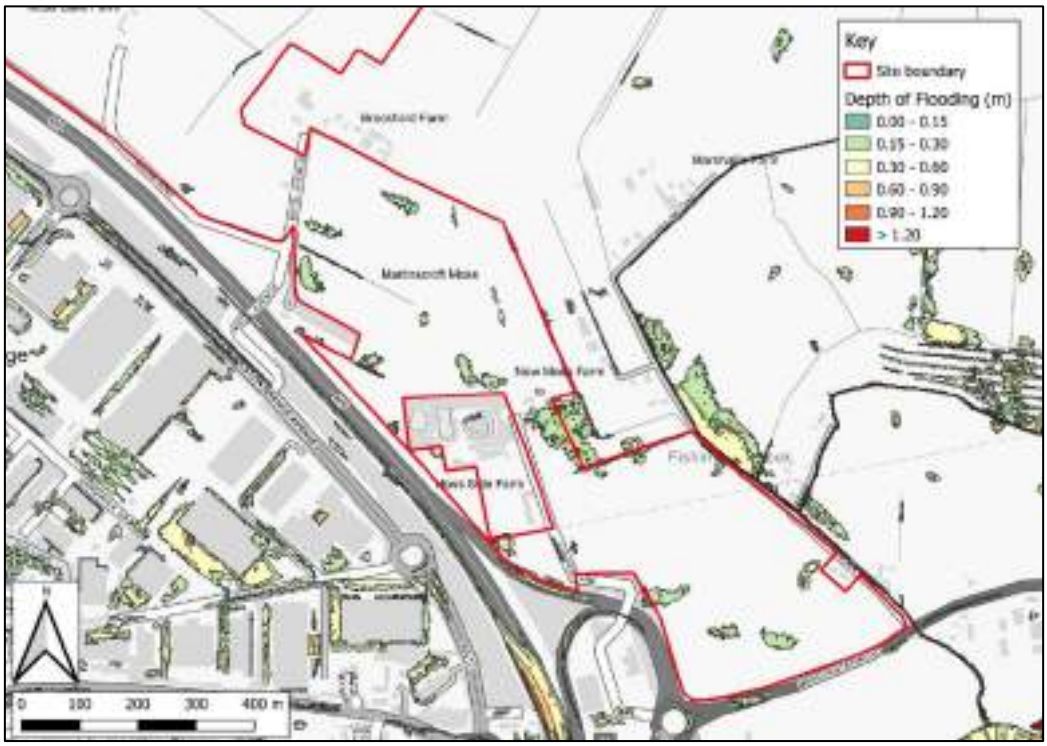


Figure 4.24 ***Surface Water Flood Depth – Low Risk Event*** *(Contains Ordnance Survey data © Crown copyright and database right 2021 and public sector information licensed under the Open Government Licence v3.0)*

4.8.3. Groundwater

The Warrington Local Flood Risk Management Strategy (LFRMS)[19] identifies that whilst there are known locations with high groundwater within Warrington, there are no specific records or reported incidences of groundwater flooding. The LFRMS concludes that there are no groundwater flood incidents that would result in 'significant harmful consequences'.

However, the EA's national dataset that presents Areas Susceptible to Groundwater Flooding (AStGWF) identifies risk across four categories for each 1 km grid square. The mapping identifies the northern part of the site to be at the lowest class of groundwater flooding susceptibility, however the southern area is identified to be at moderate to high susceptibility.

4.8.4. Sewer Flooding

The Warrington area is largely served by combined sewerage systems which include both foul and surface water flows developed during the Victorian era. To maintain hydraulic efficiency, the combined system contains a number of combined sewer overflows (CSOs) which divert excess flows to adjacent watercourses reducing the risk of sewer flooding from manholes. The operation of these CSOs increases the risk of fluvial flooding, as well as pollution of watercourses. In addition, the population and size of the Warrington area has grown since Victorian times resulting in an increase in the amount of drainage systems, discharges and less permeable surfaces for rainwater to drain into. Climate change is also leading to longer, heavier periods of rain. These factors can result in the existing sewers and drains not being able to cope during heavy rainfall.

During heavy rainfall, flooding from the sewer system may occur if:

- the rainfall event exceeds the capacity of the sewer system/drainage system;
- the system becomes blocked (by debris or sediment); or
- the system surcharges due to high water levels in receiving watercourses.

The Warrington LFRMS identifies that there have been some incidences of sewer flooding, with a total of 154 flooding incidences across the borough identified by United Utilities. However, none of these are identified within or in close proximity to the site.

4.8.5. Artificial Waterbodies

Flooding from artificial waterbodies has been identified in the Warrington SFRA to be associated with the following: Bridgewater Canal, St Helens Sankey Canal, Winwick Reservoir, Appleton Reservoir and Lymm Reservoir.

The Warrington LFRMS identifies two additional artificial waterbodies, being the Manchester Ship Canal and Woolston New Cut Canal as potential sources of flood risk. However, the LFRMS concludes that as these engineered systems are heavily controlled they are unlikely to respond in the same manner during periods of rainfall as watercourses. Therefore, the risk of flooding is associated with residual risks, such as overtopping of canal banks, breaching of embanked reaches or asset failure.

There is a single record of historical flooding resulting from an artificial waterbody, associated with the Lymm Reservoir. However this is distanced from the site.

4.9. Contaminated Sources

The available information within the Defra database identifies that the site does not support any authorised or historic landfill sites There are, however, a number of authorised and historic landfill sites in the 2 km surrounding the site boundary. These are identified in Table 4.2 and in Figure 4.25 below.

Table 4.2 Waste Management Sites within 2km of the Proposed Masterplan Site

Landfill Name	Grid Reference	Distance from Site	Description
Authorised Landfill Sites			
Rixton Landfill EPR/LP3039LP	ST 68030 91600	1.3 km east	Waste landfilling; >10 T/D with capacity; >25,000T Excluding inert waste
Tarmac Construction Landfill Site	SJ 66400 89000	65 m south	Landfill taking non-biodegradable wastes
Woolston Deposit Grounds – Dredging	SJ 64856 88179	530 m south-west	Household, commercial and industrial waste landfill
Historic Landfill Sites			
Purple Tip	SJ 68000 90700	1.7 km east	-
Proposed Industrial Tip	SJ 68200 90500	2.0 km east	-
Moat Lane	SJ 68400 90100	1.7 km east	-
Moat Lane	SJ 68100 89900	1.4 km east	-
Rixton Old Hall	SJ 68400 89600	1.6 km east	-
Bennetts Rixton Old Hall Tip Site	SJ 68200 89200	1.2 km east	-
Butchersfield	SJ 67600 88900	700 m south-east	-
Statham Refuse Tip	SJ 66900 88200	980 m south	-
Waste Clearance Landfill Site	SJ 63900 88700	1.8 km west	-

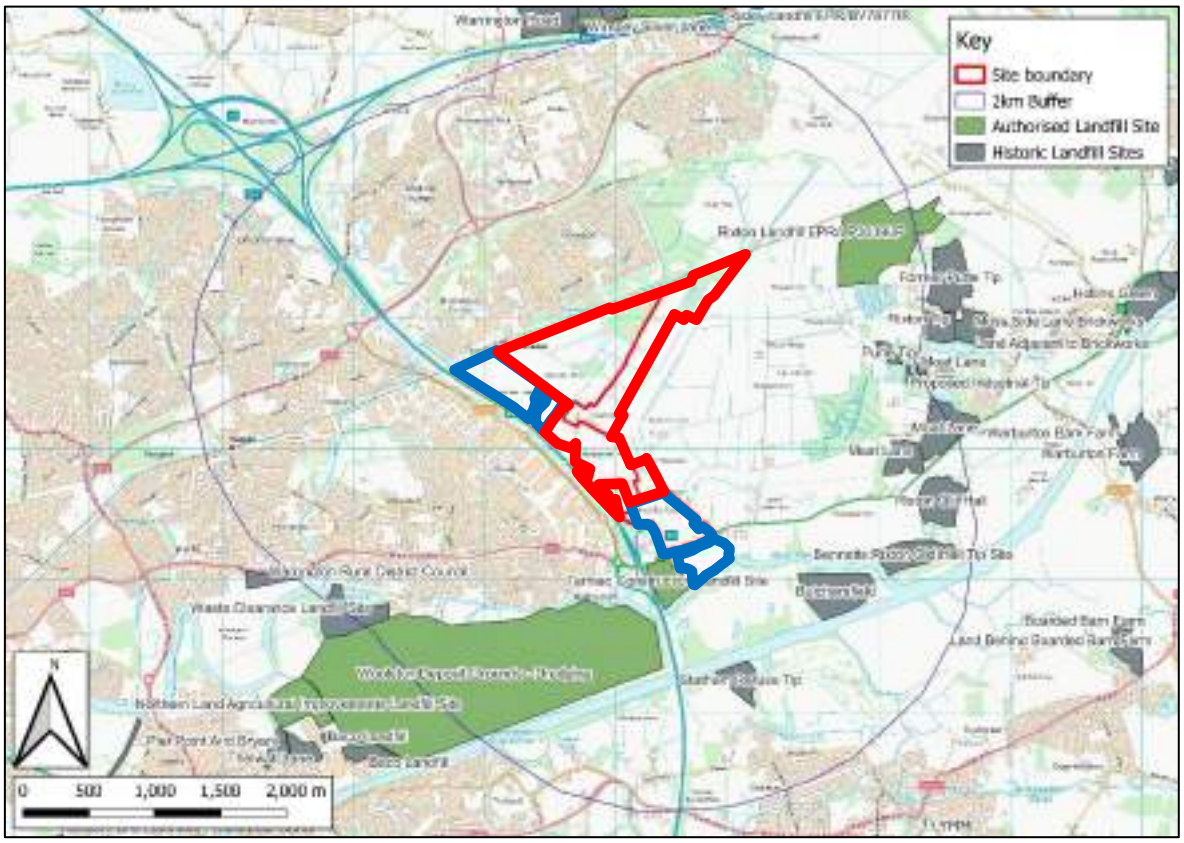


Figure 4.7 ***Waste Management Sites surrounding the Development Site*** *(Contains Ordnance Survey data © Crown copyright and database right 2021 and* ***c****ontains Environment Agency information © Environment Agency and/or database right)*

5. Site Hydrological Model

The Hydrological Model considers the risk of impact on potentially sensitive receptors by considering the sources of potential hydrological impact and the pathway by which impact could be realised upon the sensitive receptors. The sources, pathways and potentially sensitive receptors are identified in the following sections.

5.1. Sources

The consideration of hydrological sources on the site includes both the sources of water associated with the site and the potential sources of pollution that has the potential to affect the identified receptors.

Sources of water relevant to the site include the following:

- Precipitation, principally in the form of rainfall but also including snow melt, and the subsequent runoff on the site;
- Perched water in peat and superficial deposits and interflow of water through permeable geology layers;
- On-site surface water drains conveying water into the local river network via Birchwood Brook/Spittle Brook to the north and the unnamed watercourse/River Mersey to the east and south-east.
- Groundwater stored and transferred through the underlying bedrock.

In the baseline, sources of potential pollution currently comprise:

- Application of fertilisers, herbicides and insecticides to agricultural land and subsequent leaching of residual/excess nutrients/chemicals;
- Natural leaching of nutrients from peat into the surface water through runoff during rainfall or through flow of water through naturally wet areas;
- Release of runoff from underdrainage in agricultural fields, potentially containing high sediment levels;
- Release of runoff from impermeable areas, comprising access tracks, buildings and yards, into the surface water network, with the potential to include high levels of sediment;
- Discharge of water from surface water drains;
- Potential runoff from the M6 motorway, potentially including notable levels of salt, fuels and oils.

During the construction and operation of the proposed development, pathways for potential impacts will alter from or be in addition to those identified in the baseline. These comprise:

- Continued leaching of former agricultural areas resulting from previous operation of the site;
- Release of water as a result of the removal of underdrainage in agricultural fields, including high levels of sediment;
- Storage of fuels and hazardous substances during construction with potential for spillage or leakage into the ground and associated surface, sub-surface and groundwater flows;

- Introduction of concrete and cement to the site has the potential for the leachate of alkaline into associated groundwater;
- Potential for contaminated runoff, oils and fuels, from internal hardstanding areas withing the proposed development.

5.2. Pathways

Under existing baseline conditions there are a number of potential pathways by which impacts on sensitive receptors could occur, notably:

- Runoff from greenfield and impermeable surfaces (*i.e*. highways, tracks, hardstanding and scattered buildings) from areas of high elevation to areas of low elevation in line with the identified topography of the site, potentially carrying high levels of silt when agricultural fields are bare. Surface water drainage on the site is typically through the network of existing channels that drain into the Birchwood Brook/Spittle Brook to the north, the Fishington Brook/River Mersey to the east/south-east. For the northern parts of the site, the main on-site surface water flow routes convey runoff away from the Manchester Moss SAC, Holcroft Moss SSSI, Risley Moss SSSI/LNR, Woolston Moss and Rixton Moss LWSs. For the southern part of the site, surface water is conveyed south eastwards, where it is intercepted by the Fishington Brook and then conveyed southwards towards the River Mersey. Consequently, surface water flow is isolated from the upstream areas of the Rixton Clay Pits SAC/SSSI/LNR and Rixton Moss LWS, ultimately being conveyed south westwards towards the Woolston Eyes SSSI and the Paddington Meadows LNR which do not comprise raised bog or peatland systems.
- Infiltration of water into the peat (where present) and other permeable strata underlying the site, with reduced infiltration into bedrock and other less permeable layers, together with lateral sub-surface throughflow through permeable strata. Baseline studies have indicated the designated areas to the north east and east of the site i.e. Manchester Mosses SAC, Risley Moss SSSI/LNR, Rixton Clay Pits SAC/SSSI/LNR, Woolston Moss LWS and Rixton Moss LWS, lie hydrogeologically up-gradient from the site, with the European Designated areas isolated from the site by a fault line lying to the east of the site and differing underlying aquifers. Interpolated groundwater data, also indicate the Woolston Eyes SSSI to the south of the site, also to be hydrogeologically up-gradient from the site, with the groundwater gradient beneath the south of the site sloping westwards.

During the construction and operation of the proposed development, pathways for potential impacts will alter from or be in addition to those identified in the baseline. These comprise:

- Construction:
  - Runoff from above ground flows on the site from areas of high elevation to areas of low elevation in line with the identified topography of the site (see above), potentially carrying high levels of silt from areas cleared for development or stockpiles of materials;
  - Dewatering of excavations may lead to groundwater from the surrounding area being drawn into excavations;
  - Discharge of water from excavations into surface water systems, potentially containing high levels of sediment;
  - Excavation and removal of peat substrate as part of the development causing loss of hydrological connectivity across the site with remaining peat deposits;

- Operation:
  - Increased surface water runoff as a result of the increase in impermeable areas, such as roads and houses, as a result of the development;
  - Discharge of water into the surface water system via Sustainable Urban Drainage systems incorporated into the design of the external environment;

5.3. Receptors

There are a number of potential receptors in the area surrounding the proposed development site that have been considered in respect to potential risk associated with hydrological connectivity with the site. The receptors are identified in Table 5.1, which identifies their proximity to the site, value and discussion regarding the potential for risk associated with their hydrological connectivity with the site.

Table 5.1 Receptors Associated with the Site and their Hydrological Connectivity

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R1	Manchester Mosses SAC	*c.* 65 m north-east	Raised bog system	International	Not significant The SAC is located upstream of the site discharge into Birchwood Brook, and therefore is not connected to the surface water discharge from the site. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. The SAC is also located hydrogeologically up-gradient from the site, being isolated from the site by a fault line lying to the east of the site and differing underlying aquifers. Similarly the fragmented nature of the shallow peat deposits and the elevated nature of the SAC would prevent any perched groundwater flow from the site to the protected area. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R2	Rixton Clay Pits SAC	*c.* 1.8 km east	Inland waterbodies	International	Not significant. The SAC is located upstream of the discharge from the northern parts of the site into Birchwood Brook. For the southern part of the site, surface water is conveyed south eastwards, where it is intercepted by the Fishington Brook and then conveyed southwards towards the River Mersey. Therefore, the SAC is not connected to the surface water discharge from the site. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. The SAC is also located hydrogeologically up-gradient from the site, being isolated from the site by a fault line lying to the east of the site and differing underlying aquifers. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R3	Risley Moss SSSI	*c.* 65 m north-east	Raised bog system and faunal assemblage	National	Not significant The SSSI is located upstream of the site discharge into Birchwood Brook, and therefore is not connected to the surface water discharge from the site. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. The SSSI is also located hydrogeologically up-gradient from the site, being isolated from the site by a fault line lying to the east of the site and differing underlying aquifers. Similarly the fragmented nature of the shallow peat deposits and the elevated nature of the SSSI would prevent any perched groundwater flow from the site to the protected area. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R4	Holcroft Moss SSSI	*c.* 2.7 km north-east	Peatland and open water	National	Not significant The SSSI is located upstream of the site discharge into Birchwood Brook, and therefore is not connected to the surface water discharge from the site. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. The SSSI is also located hydrogeologically up-gradient from the site, being isolated from the site by a fault line lying to the east of the site and differing underlying aquifers. The fragmented nature of the shallow peat deposits and the elevated nature of the SSSI would prevent any perched groundwater flow from the site to the protected area. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R5	Rixton Clay Pits SSSI	*c.* 1.8 km east	Chalk grassland and GCN	National	Not significant The SSSI is located upstream of the discharge from the northern parts of the site into Birchwood Brook. For the southern part of the site, surface water is conveyed south eastwards, where it is intercepted by the Fishington Brook and then conveyed southwards towards the River Mersey. Therefore, the SSSI is not connected to the surface water discharge from the site. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. The SSSI is also located hydrogeologically up-gradient from the site, being isolated from the site by a fault line lying to the east of the site and differing underlying aquifers. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R6	Woolston Eyes SSSI	*c.* 240 m south	Lowland open water with faunal assemblage	National	Low significance The SSSI is located upstream of the discharge from the northern parts of the site into Birchwood Brook. For the southern part of the site, surface water is conveyed south eastwards, where it is intercepted by the Fishington Brook and then conveyed southwards towards the River Mersey. However, the SSSI is located on the far side of the River Mersey to the site and under normal or low flows is unlikely to be hydrologically connected to the floodplain on the far side of the river. Flow from the southern part of the site is unlikely to be significant enough to influence the SSSI during high flows. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. Interpolated groundwater data indicate the SSSI to be hydrogeologically up-gradient from the site, with the groundwater gradient beneath the south of the site sloping westwards. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R7	Risley Moss LNR	*c*. 65 m north-east	Mossland, mixed woodland and meadow.	Local	Low significance The LNR is located upstream of the discharge from the northern parts of the site into Birchwood Brook. For the southern part of the site, surface water is conveyed south eastwards, where it is intercepted by the Fishington Brook, which lies on the western boundary of the LNR and then conveyed southwards towards the River Mersey. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. The LNR bedrock is also located hydrogeologically up-gradient from the site, being isolated from the site by a fault line lying to the east of the site and differing underlying aquifers. The fragmented nature of the shallow peat deposits and the elevated nature of the LNR compared to the site, should prevent any perched groundwater flow from the site to the LNR. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R8	Rixton Clay Pits LNR	*c.* 1.8 km east	Mosaic of wetland and woodland habitats.	Local	Not significant The LNR is located upstream of the discharge from the northern parts of the site into Birchwood Brook. For the southern part of the site, surface water is conveyed south eastwards, where it is intercepted by the Fishington Brook and then conveyed southwards towards the River Mersey. Therefore, the LNR is not connected to the surface water discharge from the site. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. The :LNR is also located hydrogeologically up-gradient from the site, being isolated from the site by a fault line lying to the east of the site and differing underlying aquifers. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R9	Paddington Meadows LNR	*c.* 2.3 km west	Waterside meadows and hedgerows.	Local	Low significance The LNR is located upstream of the discharge from the northern parts of the site into Birchwood Brook. For the southern part of the site, surface water is conveyed south eastwards, where it is intercepted by the Fishington Brook and then conveyed southwards towards the River Mersey. However, although the LNR is located downstream of the surface water discharges, the site is associated with the floodplain and is not hydrologically connected during normal flows. Output from the site is unlikely to be significant enough to influence the site during high flows. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. Although interpolated groundwater data indicate the LNR to be hydrogeologically down-gradient from the site, given the large separation distance between the site and LNR (c. 2.3 km) , adverse effects are considered to be minimal for all potential pathways of impact. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R10	Rixton Moss LWS	*c.* 250 m east	Lowland raised bog	Local	Not significant. The LWS is located upstream of the discharge from the northern parts of the site into Birchwood Brook. For the southern part of the site, surface water is conveyed south eastwards, where it is intercepted by the Fishington Brook and then conveyed southwards towards the River Mersey. Therefore, the LWS is not connected to the surface water discharge from the site. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. The LWS is also located hydrogeologically up-gradient from the site, being isolated from the site by a fault line lying to the east of the site and differing underlying aquifers. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R11	Woolston Moss LWS	On-site	Lowland raised bog	Local	Low significance Part of the site drains through the surface water drainage on the site, however these aspects of the site are protected through the development and will fall downstream of the surface water discharge considering the topography of the site with the north east corning being the highest elevation on the site. Restoration of bog in this area will be prioritised as part of the development, including restoring wetland habitat and blocking ditches. This will have the potential to support Risley Moss nature reserve and also improve opportunities for mossland flora, breeding birds and reptiles. The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance. The LWS is located hydrogeologically up-gradient from the rest of the site. Groundwater quality will be protected through the provision of SuDS treatment train across the site in line with EA and Defra guidance.

Receptor		Distance from Site	Receptor Characteristics	Receptor Value	Is Receptor at Risk?
R12	Birchwood Brook and Onsite Drains	Within Site	Ordinary Watercourse	Local	Low significance The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance.
R13	Fishington Brook and Onsite Drains	Within Site	Main River	Local	Low significance The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance.
R14	Spittle Brook	Receives water from Birchwood Brook	Main River	Local	Low significance The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance.
R15	River Mersey	Receives water from Fishington Brook and Spittle Brook	Main River	Local	Low significance The SuDS Strategy scheme will maintain runoff from the site at current greenfield rates. Surface water quality will be protected through the provision of green open space buffer areas along site boundaries and a SuDS treatment train across the site in line with EA and Defra guidance.

6. Conclusions

- The hydrogeological impact of the proposed development has been assessed on nearby ecological protected areas comprising Risley Moss SAC/SSSI/LNR and Woolston Moss LWS to the NE of the site, Rixton Clay Pits SAC/SSSI/LNR and Rixton Moss LWS to the east of the site and Woolston Eyes SSSI to the south of the site, with particular reference to surface water quality and quantity and potential impact on groundwater quality, flows and recharge .
- Baseline studies have demonstrated that:
    - With regard to surface water, the site is split into two operational catchments under the Water Framework Directive, with the northern and central parts falling within the Spittle Brook catchment (which incorporates the Risley Moss SAC/SSSI/LNR and Woolston Moss LWS) and the southern area falling within the Mersey/Padgate Brook catchment (Bollin Confluence to Howley Weir, which incorporates the Rixton Clay Pits SAC/SSSI/LNR, Rixton Moss LWS Rixton Clay Pits SAC, SSSI and Woolston Eyes SSSI).
    - The topography of the development site falls towards the low point in the north-west corner of the site at 11.0 m AOD, with the exception of a small part of the southern area of the site which falls towards the south-east corner of the site. The highest point on the site is in the north-east corner of the site, at 19.4 m AOD, indicating that surface water flows on the site generally run in a westerly direction within the site boundary towards the low point and in the opposite direction to the nearby Risley Moss SAC/SSSI/LNR, Woolston Moss LWS, Rixton Clay Pits SAC/SSSI/LNR, Rixton Moss LWS and Woolston Eyes SSSI. Those surface water flows in the southern part of the site that flow south-easterly are intercepted by a waterbody running alongside Brook Lane and are then conveyed to the River Mersey to the south.
    - A series of surface water drainage channels currently convey water from the northern part of the site and connect to Birchwood Brook via two channels located either side of Birchwood Station, from which the watercourse flows in a westerly direction (away from Risley Moss SAC/SSSI/LNR and Woolston Moss LWS) towards the statutory main watercourse of Spittle Brook on the western side of the M6 motorway.
    - The southern area of the site is also drained by a series of channels that flow toward the Fishington Brook on the eastern boundary of the site, which conveys water southwards to the River Mersey. The Fishington Brook is classified as a Main River and possesses a well-defined sizeable channel, that serves to intercept any easterly run-off flow from the site and provides a break in surface water connectivity between the site and Rixton Moss LWS and the Rixton Clay Pits SAC/SSSI/LNR beyond.
    - Within the bounds of the application site, it is proposed to use a range of Sustainable Drainage Systems (SuDS) to manage runoff from rainfall events up to and including the 1 in 100 year event (plus a +40 % allowance for increased peak rainfall potentially resulting from climate change (CC)). The use of SuDS, including permeable pavements, swales and detention basins, will enable runoff from the development to be kept at the current greenfield rate. Local

flow routes will be maintained in order to preserve current surface water and groundwater regimes and minimise any impact on local watercourse flows and water table recharge.

- As per much of the area, including the majority of Warrington, the whole site lies within a groundwater Source Protection Zone (Zones 3 – Total Catchment). Consequently, the drainage design will adhere strictly to the Environment Agency's guidance on groundwater protection, specifically that of infiltration from run-off from roads, car parking and public or amenity areas. The SuDS will be suitably designed, meet DEFRA's Non-statutory Technical Standards for Sustainable Drainage Systems and comprise a SuDS management treatment train designed to achieve a robust surface water management system providing water quality benefits and minimising the risk of pollution to local watercourse and groundwater. Further safeguards to local ecological protected areas will be provided by vegetated buffer areas along the eastern and southern boundaries, which will serve to intercept and treat runoff.
- Interpolation of available borehole and trail records on and around the periphery of the site has allowed for the prediction of the likely geological conditions across the site and consideration of groundwater levels between the site and the surrounding sensitive sites. This analysis has identified groundwater levels to be low in the north-west corner of the site, at around 6 m AOD and fluctuating between 5 m and 10 m AOD along the northern boundary, before rising to around 20 m AOD across Risley Moss SAC/SSSI/LNR. This indicates that groundwater levels are significantly higher on Risley Moss than would be expected on the development site, with hydrological connectivity likely to see a flow of groundwater in a south-westerly direction from the designated site rather than towards it. The lack of connectivity is also suggested in the Source Protection Zone mapping, which reflects a disconnectivity between the site and Risley Moss.
- Interpolated borehole results across a transverse that runs across the site towards Rixton Clay Pits SAC/SSSI/LNR also shows a slight rise in groundwater levels from around 6 m AOD up to 8m AOD to the east by the designated site. Similarly, the Total Catchment area of the Source Protection Zone suggests a disconnect between the designated site and the site.

- Considering the above information, it has been demonstrated that the site is not in surface water connectivity with Risley Moss SAC/SSSI/LNR and Rixton Clay Pits SAC/SSSI/LNR and is hydrogeologically downstream from the water tables beneath these sites.
- As a consequence of the proposals, the rate of runoff generated from the site will be maintained at the current rate throughout its lifetime, even taking into account the anticipated impacts of climate change, whilst the runoff volume will be no more than the greenfield runoff volume for the site. In addition to providing water quality benefits, this approach will ensure that downstream flows are alleviated during extreme storm events.
- As such the Hydrogeological Impact Assessment demonstrates that the residual impact of the proposed development on nearby European ecological protected sites will be

negligible, with the restoration of bog within the Woolston Moss LWS proposed as part of the scheme. Impacts on other nearby sensitive receptors will be low to negligible. Consequently, the proposals will serve to maintain the local hydrological and hydrogeological regimes and provide water quality, quantity and flood risk benefits to the local water cycle throughout its lifetime.

Appendix: Explanation of the Levels of Significance Used in this HHRA

Significance	Impact of Proposed Development on both local and catchment hydrology	Risk of flooding of Proposed Development following completion
Not Significant	Proposed Development does not affect the quantity/quality of surface run-off and does not alter surface/groundwater flow locally or elsewhere within the catchment.	Proposed Development is not located in a 1:100 year fluvial or 1:200 year tidal floodplain. Flooding as a result of the accumulation of surface run-off on site, or elsewhere in the catchment is highly unlikely.
Low Significance	Proposed Development has a minor effect on the quantity/quality of surface run-off or surface/ groundwater flow either locally or elsewhere within the catchment. Such changes may be sustainable without mitigation measures.	Proposed Development is located in a 1:100 year fluvial and/or 1:200 year tidal floodplain, although no mitigation measures are required due to regional flood defences. Existing local drainage measures are sufficient to ensure that the accumulation of surface run-off does not result in flooding on site or increase the risk of flooding elsewhere within the catchment.
Moderate Significance	Proposed Development has a notable effect on the quantity/quality of surface run-off and has a discernible impact upon surface/groundwater flow either locally or elsewhere within the catchment. Mitigation measures may be required in order for the development to be sustainable throughout the duration of its intended lifetime.	Proposed Development is located in a 1:100 year fluvial and/or 1:200 year tidal floodplain and mitigation measures are required to reduce flood risk to an acceptable level. Surface run-off attenuation methods may be required to ensure that the accumulation of surface run-off does not result in flooding on site or increase the risk of flooding elsewhere within the catchment.
Moderate – High Significance	Proposed Development has a large effect on the quantity/quality of surface run-off and has a considerable impact upon surface/groundwater flow either locally or elsewhere within the catchment. A primary commitment to successful mitigation measures will be required in order for the development to be sustainable throughout the duration of its intended lifetime.	Proposed Development is located in a 1:100 year fluvial and/or 1:200 year tidal floodplain and significant mitigation measures are required to reduce flood risk to an acceptable level. A range of surface run-off attenuation methods will be required to ensure that the accumulation of surface run-off does not result in flooding on site or increase the risk of flooding elsewhere within the catchment.
High Significance	Proposed Development has a major effect on the quantity/quality of surface run-off and has a severe impact upon surface/groundwater flow locally or elsewhere within the catchment. The incorporation of even a wide range of practicable mitigation measures may not ensure that the development remains sustainable throughout the duration of its intended lifetime.	The Proposed Development is considered to be particularly susceptible to either tidal or fluvial flooding or a combination of both. Resultant changes in the rates of surface run-off as a result of the development will increase flood risk both on site and elsewhere in the catchment. The incorporation of even a wide range of practicable mitigation measures may not ensure that the development remains sustainable in terms of flood risk for the duration of its intended lifetime.

References

1 Department for Communities and Local Government (July 2021). National Planning Policy Framework.
2 Warrington Borough Council (July 2014). Local Plan Core Strategy.
3 Warrington Borough Council (March 2019). Warrington Proposed Submission Version Local Plan 2017-2037.
4 Warrington Borough Council (September 2021). Warrington Updated Proposed Submission Version Local Plan 2021-2038.
5 Department for Communities and Local Government (October 2019). National Planning Practice Guidance.
6 Defra (2021) Defra Data Services Platform. Accessed through https://environment.data.gov.uk/ on 26/10/2021.
7 Environment Agency Flood Map for Planning internet resource at https://flood-map-for-planning.service.gov.uk/ (accessed 26/10/2021).
8 Warrington Borough Council (2007) Warrington Strategic Flood Risk Assessment. Final Report, January 2008.
9 Warrington Borough Council (2017) Warrington Preliminary Flood Risk Assessment 2017-2023. Final Report 01, May 2017.
10 Warrington Borough Council (2017) Local Flood Risk Management Strategy 2017 – 2023. Final Report 02, December 2017.
11 Environment Agency (2009) Mersey Estuary Catchment Flood Management Plan. Summary Report December 2009. Environment Agency, Warrington.
12 British Geological Society (2021) Geology of Britain Viewer. Accessed through https://mapapps.bgs.ac.uk/geologyofbritain/home.html on 26th October 2021.
13 Cranfield University (2021). Soilscapes. Accessed through www.landis.org.uk on 26/10/2021.
14 Chartered Institute for Ecology and Environmental Management (CIEEM) (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. September 2018.
15 Geiger, Rudolf (1954). "*Klassifikation der Klimate nach W. Köppen*" [Classification of climates after W. Köppen]. Landolt-Börnstein – Zahlenwerte und Funktionen aus Physik, Chemie, Astronomie, Geophysik und Technik, alte Serie. Berlin: Springer. 3. pp. 603–607.
16 British Geological Society (2021) Geology of Britain Viewer. Accessed through https://mapapps.bgs.ac.uk/geologyofbritain/home.html on 26th October 2021.
17 E3P (2021) Preliminary Site Investigation to Identify the Extent of Peat within the Underlying Soils. Birchwood Station South, Warrington. Reference 14-761-L1. E3P, Manchester.
18 Cranfield University (2021). Soilscapes. Accessed through www.landis.org.uk on 26/10/2021.
19 Warrington Borough Council (2017) Local Flood Risk Management Strategy 2017 – 2023. Final Report 02, December 2017.