Technical Note

Project: Watling Street Business Park Extension, Cannock

Subject: Transport Technical Appraisal

Client:	St Modwen Logistics	**Version:**	B
Project No:	07790	**Author:**	BT
Date:	12/03/2024	**Approved:**	JW

1 Introduction

1.1 Overview

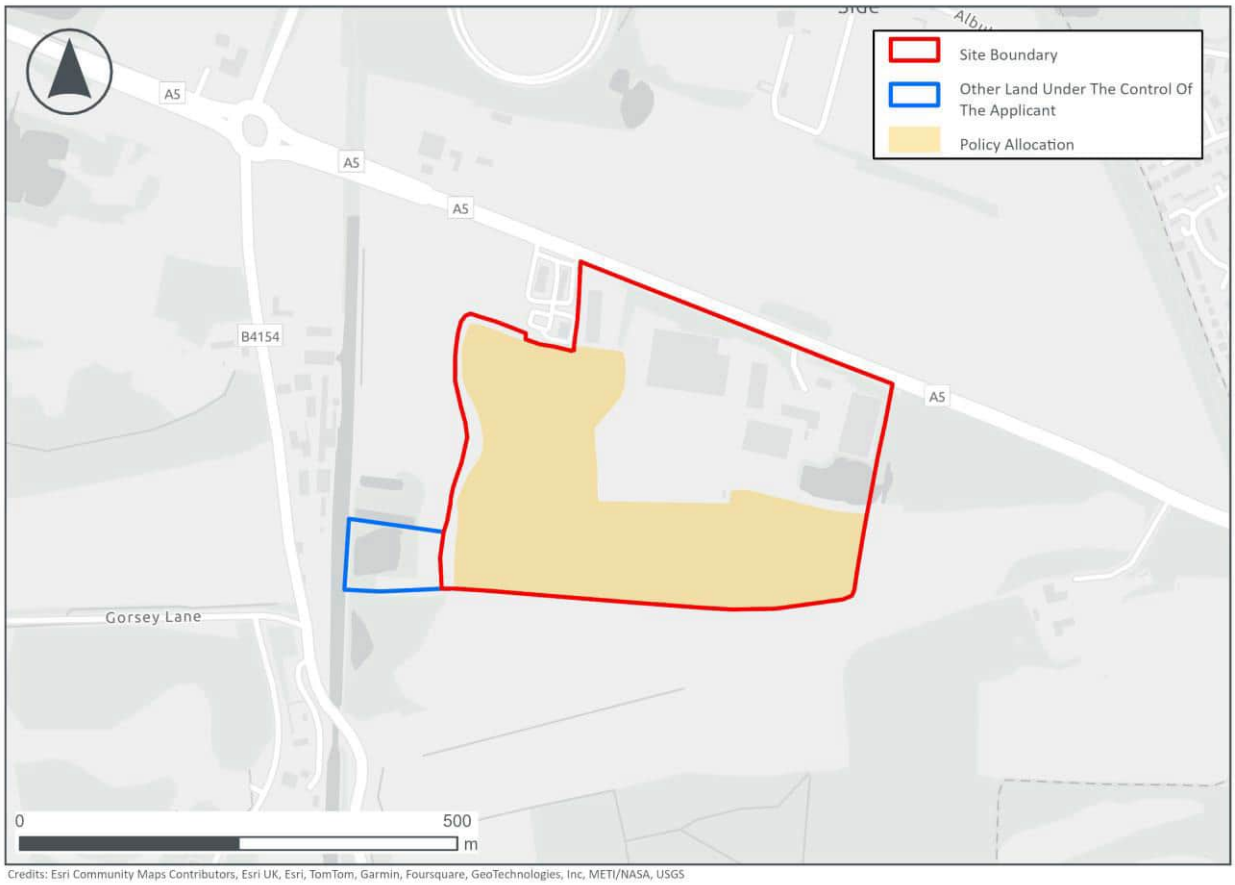
1.1.1 PJA has been commissioned by St Modwen Logistics Propco Ltd. to prepare a technical appraisal of transport and access matters relating to land at Watling Street, Cannock. The site includes the existing Watling Street Business Park and expansion land to the rear. The site will be redeveloped and expanded to provide around 50,000sqm of industrial and logistics floorspace (use classes E(g)iii), B2 and B8).

1.1.2 The site is ideally located for employment development with direct access to the Strategic Road Network (SRN). This note sits alongside a vision document which demonstrates how the transport strategy fits within a comprehensive masterplan for the site.

1.2 Planning Context

1.2.1 The site benefits from a proposed allocation in the pre-submission (Regulation 19) Cannock Chase Local Plan (2023) under Policy SE2 - Watling Street Business Park Extension (Figure 1). The draft Policy SE2 proposes to allocate the expansion land to provide up to 50,000sqm of industrial and logistics floor space, including redevelopment of the existing business park adjacent to the allocation.

Figure 1: Cannock Chase Local Plan Site Allocation SE2



1.2.2 The policy wording includes the following transport related requirements:

- *"Vehicular access will be via the existing access onto the A5. The existing access will however be amended to only allow entry and exit from the westbound carriageway of the A5.*
- *Vehicle parking will be provided as an integral part of the scheme, with provision for 20% of the parking spaces for electric vehicle charging and generous planting to limit impact on visual amenity and ameliorate impact on climate change.*
- *Provision of a network of pedestrian, cycle and vehicular ways to connect to, and integrate with the existing employment site and surrounding area.*
- *In accordance with national planning guidance, the impact of removing land from the Green Belt should be offset compensatory improvements to the environmental quality and accessibility of the remaining Green Belt land."*

1.3 Purpose of Report

1.3.1 The site context has been considered in detail including an assessment of existing transport infrastructure. Based upon this analysis, a comprehensive transport strategy is presented which demonstrates that:

- Access to the site can be delivered through improvements to the existing junction, through either:
  - The current arrangement (all moves permitted except right turn from the site onto Watling Street); or
  - Additionally prohibiting the right turn into the site from Watling Street (as required by Draft Policy SE2)
- The site can be made accessible by sustainable transport through pedestrian and cycle connections to and through the site and onwards towards Brownhills West, Norton Canes, Pelsall, Walsall and other urban areas;
- The site access can suitably accommodate development traffic up to an Opening Year scenario of 2028 in accordance with Department for Transport Circular 01/2022.

1.4 Structure of Report

1.4.1 This report is structured as follows:

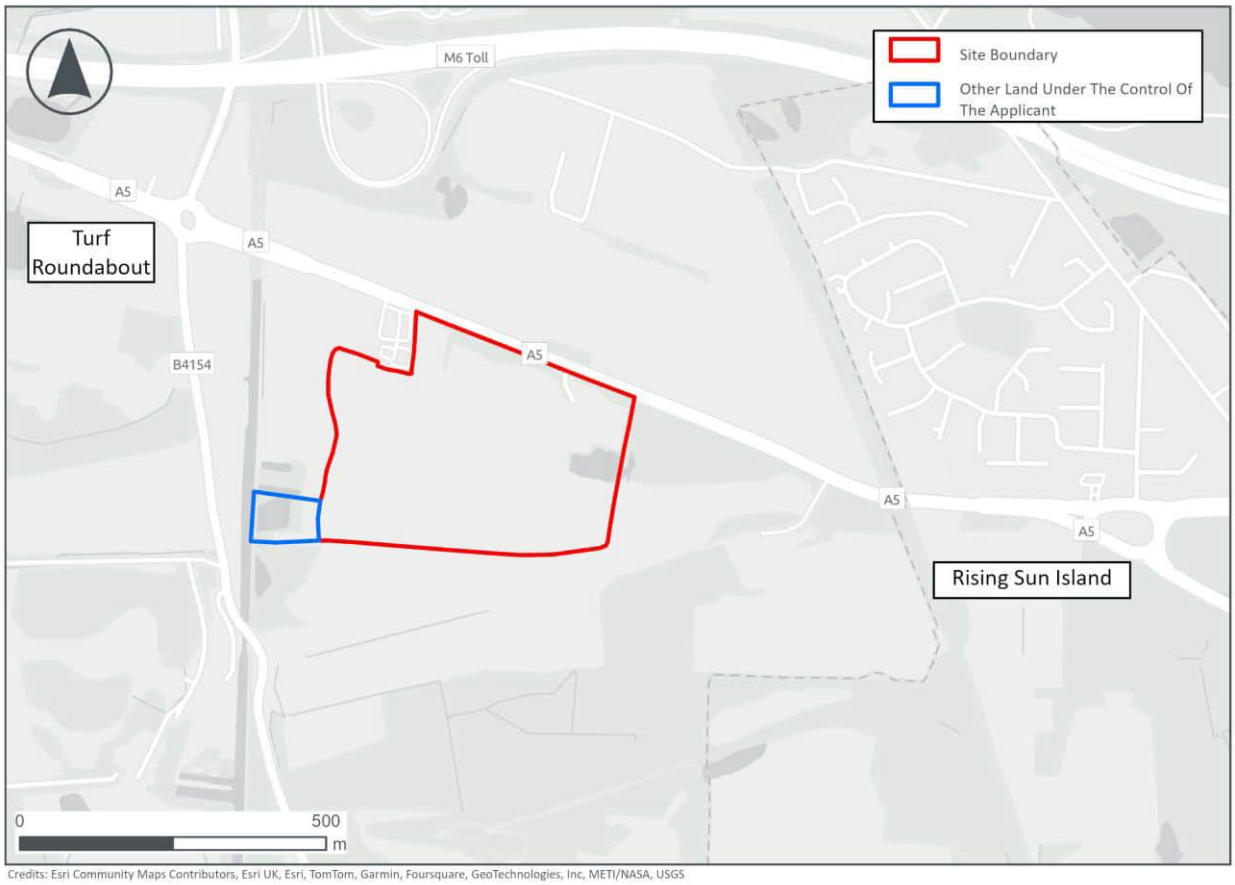
- **Section 2** – Baseline Conditions
- **Section 3** – Transport Strategy
- **Section 4** – Highway Capacity
- **Section 5** - Summary

2 Baseline Conditions

2.1 Introduction

2.1.1 The site, shown in Figure 2, is bounded by the A5 Watling Street to the north, agricultural land and woodland to the east, west and south, the Cannock Extension Canal to the south-west and a service station to the north-west. The northern part of the site is occupied by Watling Street Business Park.

Figure 2: Site Location



2.2 Local Highway Network

A5 Watling Street

2.2.1 The A5 Watling Street is a single carriageway road forming the northern edge of the site. Approximately 1.1km to the west, the road meets the B4154 at The Turf Roundabout. Approximately 400m to the east of the site the road meets the A452 and Wilkin Road at the Rising Sun Island.

2.2.2 The site's vehicular access is from A5 Watling Street, via a ghost island priority junction. Traffic leaving the site is directed to turn left, right turns from the site are prohibited.

2.2.3 The A5 Watling Street is subject to the national speed limit along the site frontage. This reduces to 40mph for approximately 200m on the approach to the Rising Sun Island.

2.2.4 In the vicinity of the site, the carriageway measures approximately 10m in width. A shared footway/cycleway is provided on the northern side of the carriageway, separated by a grass verge approximately 2.2m in width, although it was observed to be overgrown in places and therefore potentially wider. No street lighting is present in the vicinity of the site although lighting is provided on the approach to both roundabouts.

B4154 Walsall Road/Lime Lane

2.2.5 The B4154 Walsall Road/Lime Lane is a single carriageway road running in a north-south orientation. The road connects Norton Canes to Pelsall and intersects the A5 Watling Street at The Turf Roundabout.

2.2.6 Walsall Road to the north of the Watling Street/B4154 Roundabout is subject to a 30mph speed limit. Lime Lane to the south of the roundabout is subject to a 50mph speed limit. Both roads in proximity to The Turf Roundabout are subject to the national speed limit.

2.2.7 Walsall Road has a carriageway width of approximately 7m within the vicinity of The Turf roundabout, and a footway of approximately 1.8m is provided on the western side of the road. Further north into Norton Canes footways are provided on both sides of the road set back at times by grass verges. There is street lighting present and dropped kerbs and tactile paving provided at most crossing points along the road including on the northern arm of the roundabout.

2.2.8 Lime Lane has a carriageway width of approximately 7.2m. A footway varying in width between approximately 0.8m and 1.4m is provided on the western side of the road. There is no street lighting present.

2.2.9 The footway routes through to an unmarked crossing on the western arm of the roundabout via a grass verge and central reservation.

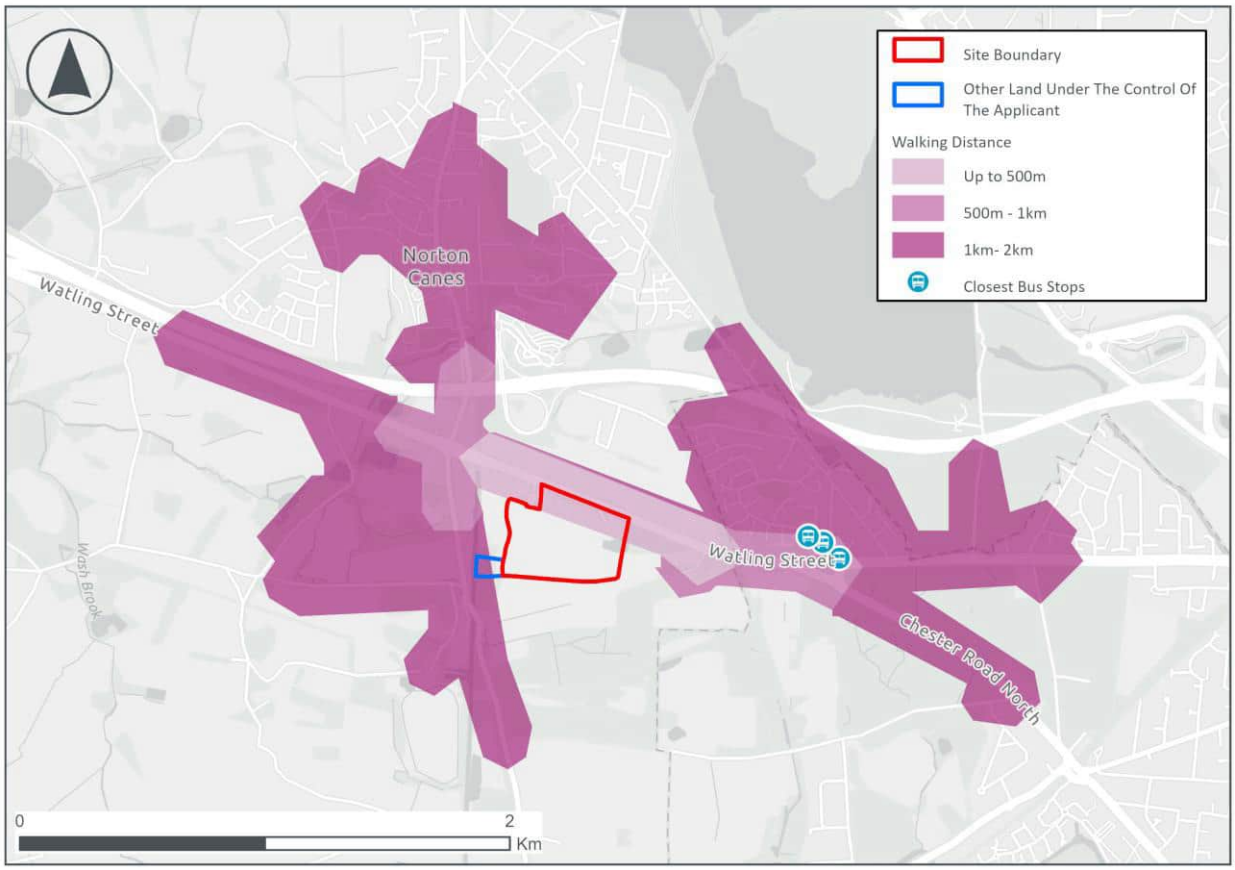
2.3 Accessibility

Walking

2.3.1 Guidance provided by the Institution of Highways and Transportation (IHT) in their publication 'Guidelines for Providing for Journeys on Foot' (2000) suggest that in terms of commuting; walk distances of up to 2,000 metres can be considered as a preferred maximum, with 'desirable' and 'acceptable' distances being 500 metres and 1,000 metres respectively. It should be noted that journeys of a longer length are often undertaken.

2.3.2 The ArcGIS network analyst tool has been used to calculate walking isochrones demonstrating the extent of the local area within the IHT guidance, shown in Figure 3.

Figure 3: Walking Isochrone



Credits: Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS, Contains OS data © Crown copyright and database right 2023

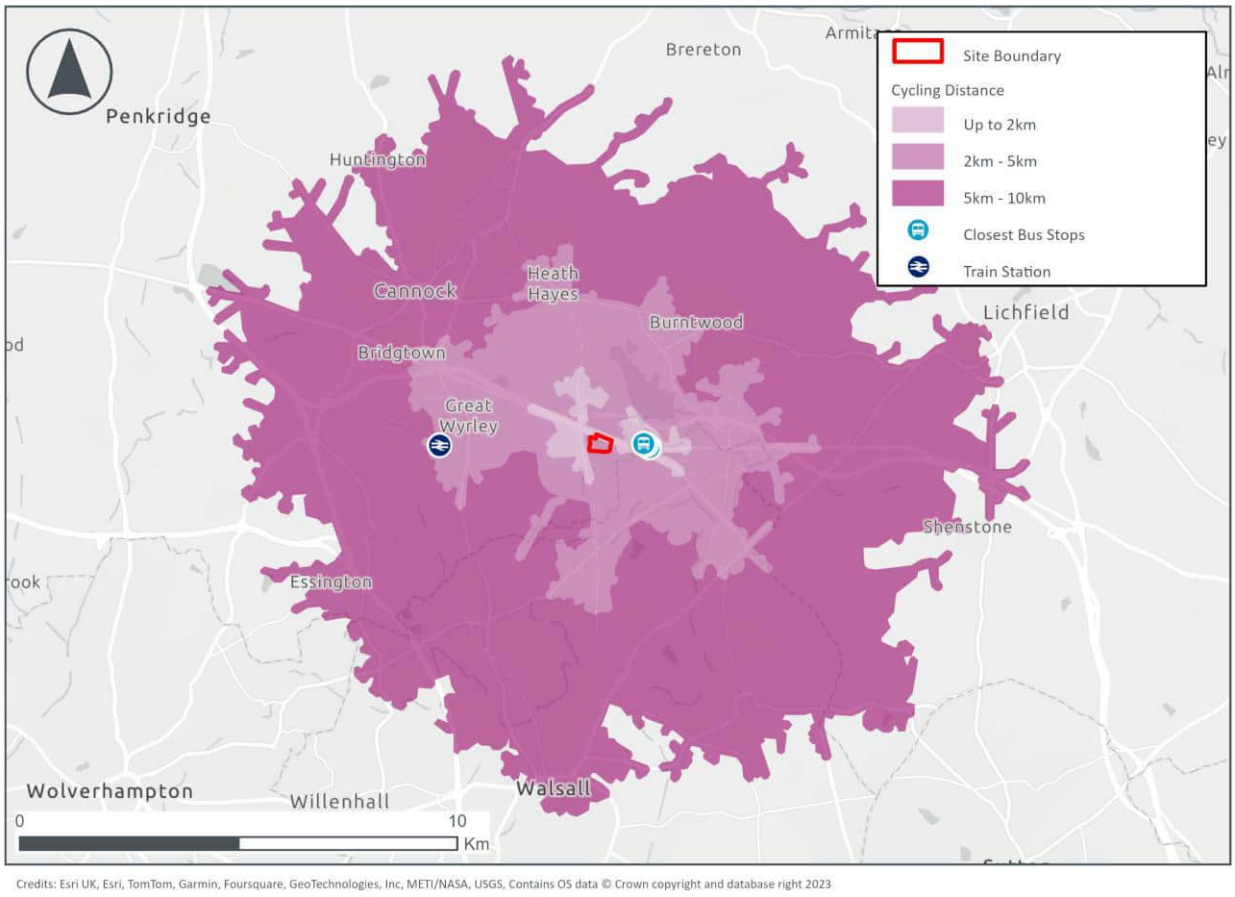
2.3.3 Figure 3 demonstrates that Norton Canes and parts of Brownhills West are accessible within a preferred maximum walking distance of the site. This includes the bus stops in Brownhills West within approximately 1km. It should be noted that the pre-existing site access has been used as a starting point and the isochrone does not take into account local Public Rights of Way (PRoW).

Cycling

2.3.4 Guidance on Local Cycling and Walking Infrastructure Plans (LCWIPs) from the Department for Transport (DfT), states that it is possible for cycling to replace trips made by other modes of transport, typically up to 10km. However, it also outlines that some individuals may be able to cycle further.

2.3.5 Figure 4 demonstrates the extent of the surrounding area to the development site that is accessible within an 10km cycling distance.

Figure 4: Cycling Isochrone



2.3.6 The entirety of Norton Canes, Cannock, Heath Hayes, Great Wyrley and Burntwood are shown to be accessible, as well as the northern area of Walsall and the western area of Lichfield. It should be noted that the cycling isochrone does not take into account the available infrastructure along these cycling routes as per LTN 1/20 guidelines. A review of available infrastructure is included in Section 2.4 below.

2.4 Pedestrian and Cycle Infrastructure

2.4.1 As shown in Section 3, the site is well suited to draw upon local population centres for employment within Staffordshire and the West Midlands. The following section assesses the pre-existing infrastructure within the vicinity of the site.

Pedestrian

2.4.2 There is an existing shared use route along the A5 Watling Street to the north of the site, which provides a continuous connection to Cannock to the west, and Brownhills to the east. The route is separated from the carriageway by a grass verge approximately 1m in width and ties into further footway provision along Lime Lane, Walsall Road and roads within Brownhills West. Along the vicinity of the site, no street lighting is provided although there is street lighting provided closer to the A4154 roundabout and Rising Sun Island.

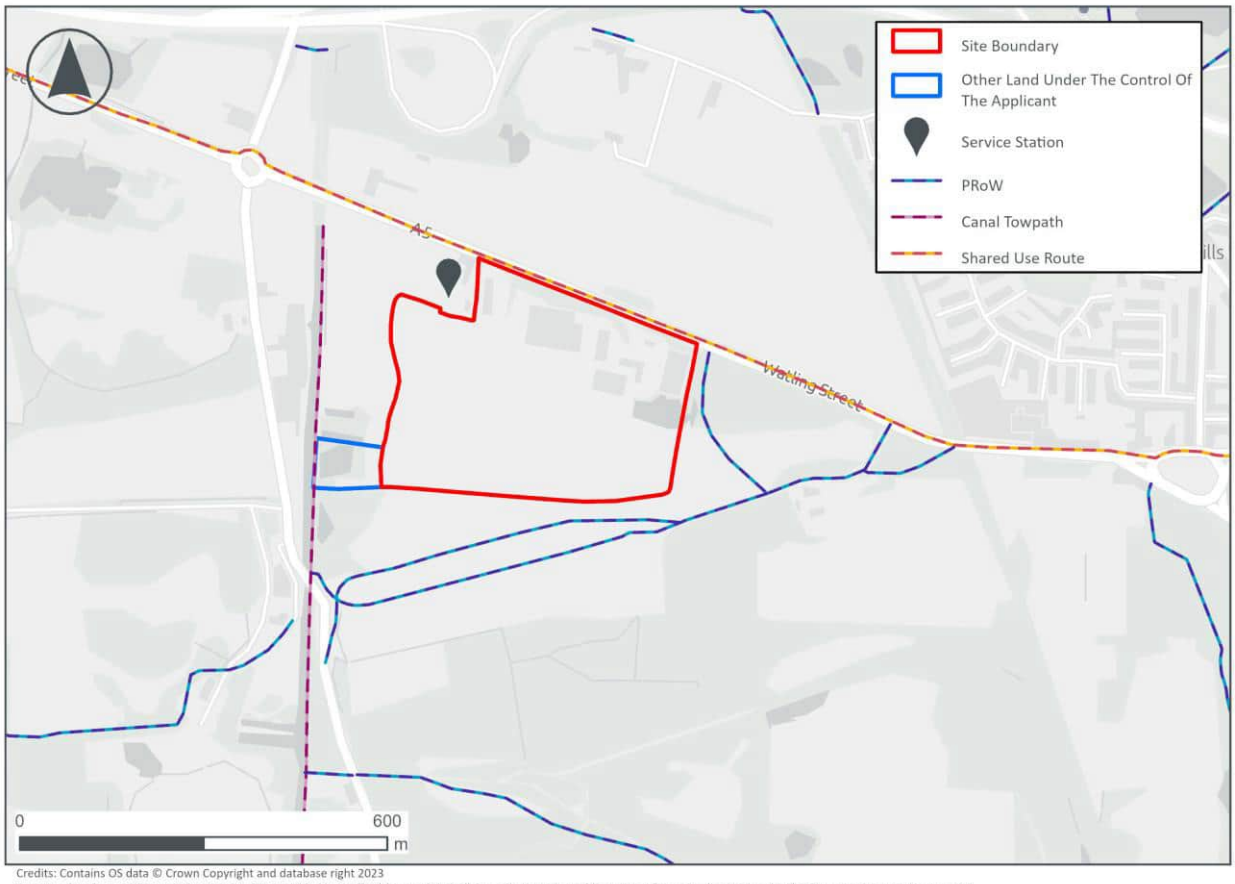
2.4.3 To the west of the site the towpath of the Cannock Extension Canal provides a connection to Pelsall to the south of the site. The canal stops at the A5 with no connections to the north.

2.4.4 There are a number of PRoW's in the vicinity of the site which connect to Great Wyrley, Brownhills and the canal. This includes PRoW provision to the south and east of the site through woodland and farmland although these do not connect directly to the site.

2.4.5 At the north-western boundary of the site is a service station which offers a Petrol Filling Station, ASDA convenience foodstore, Starbucks Drive-Thru, Greggs and a hot food take-way. There is no pedestrian route on the southern side of Watling Street between the site and the service station, but there is a well worn footpath adjacent to the road.

2.4.6 Figure 5 shows the existing pedestrian infrastructure local to the site, whilst Figure 6 provides a wider context.

Figure 5: Existing Pedestrian/Cycle Infrastructure



Cycling

2.4.7 To the west, the shared use footway/cycleway routes along the A5 Watling Street and provides an off-road connection to Cannock and other residential areas. This includes provision over the A5/M6 junction and alternative quiet routes residential areas.

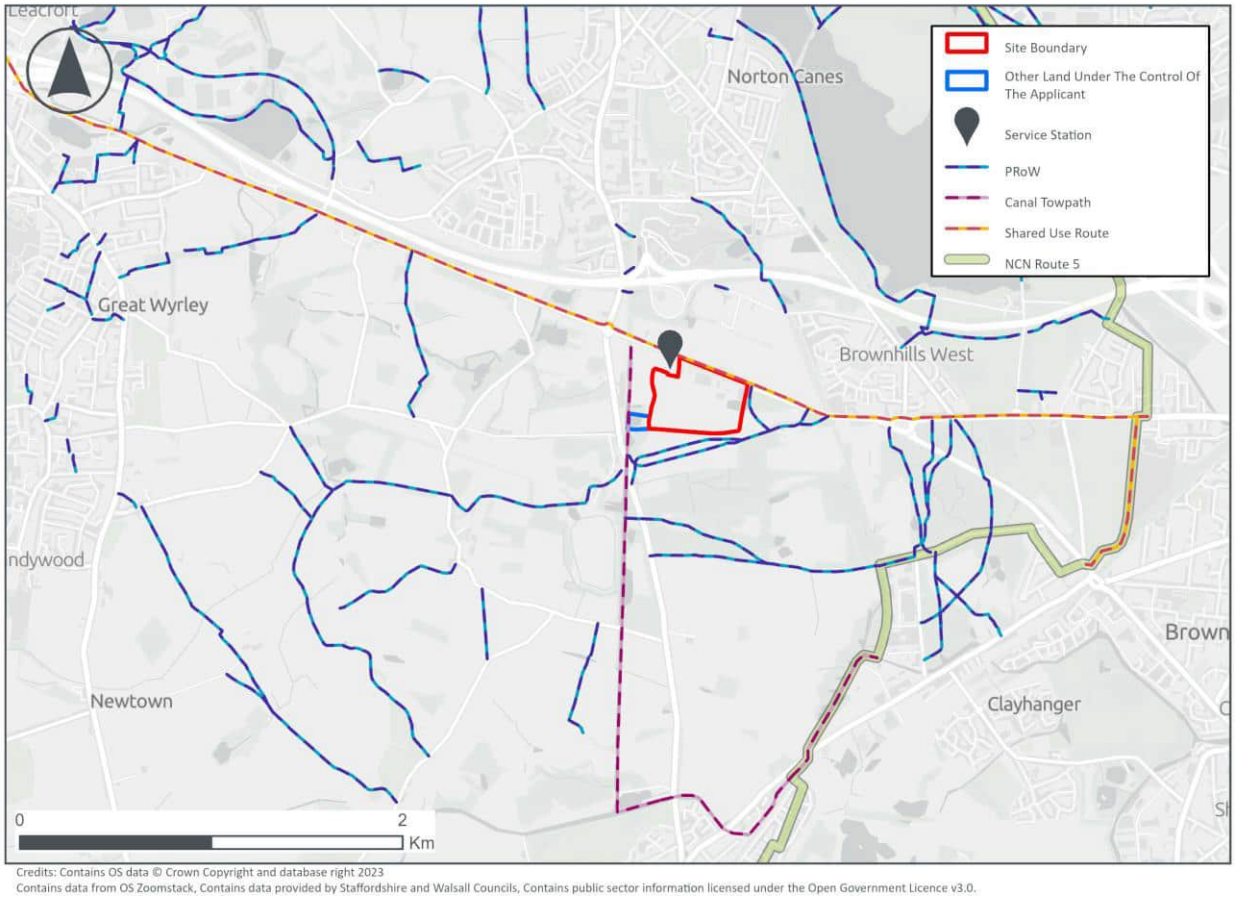
2.4.8 To the east the footway/cycleway routes through to Brownhills West and ties into residential roads. The majority of roads within Brownhills West are subject to a 20mph speed limit meaning that the provision of cyclists mixing with traffic on carriageway is suitable for most people per LTN 1/20 guidance, subject to confirmation of vehicle flows.

2.4.9 To the east of the Rising Sun Island, the shared footway/cycleway continues along the A5 to connect with other walking/cycling infrastructure. This includes National Cycle Network (NCN) Route 5 near Howdle's Lane. NCN5 routes south to Pelsall and Walsall, and north to Lichfield via a mixture of shared footways/cycleways, canal towpaths and on-street routes.

2.4.10 There are no planned route improvements in the LCWIP which are of relevance to this site.

2.4.11 Wider walking and cycling infrastructure is shown in Figure 6.

Figure 6: Wider walking/cycling facilities



2.5 Public Transport

Bus

2.5.1 The site is well connected to the local bus network at Brownhills West. The nearest bus stop is located on the eastbound arm of Rising Sun Island approximately 1km to the east of the site. The stop has frequent connections to Brownhills, Walsall and Birmingham. The stop has a shelter, flag and timetable information.

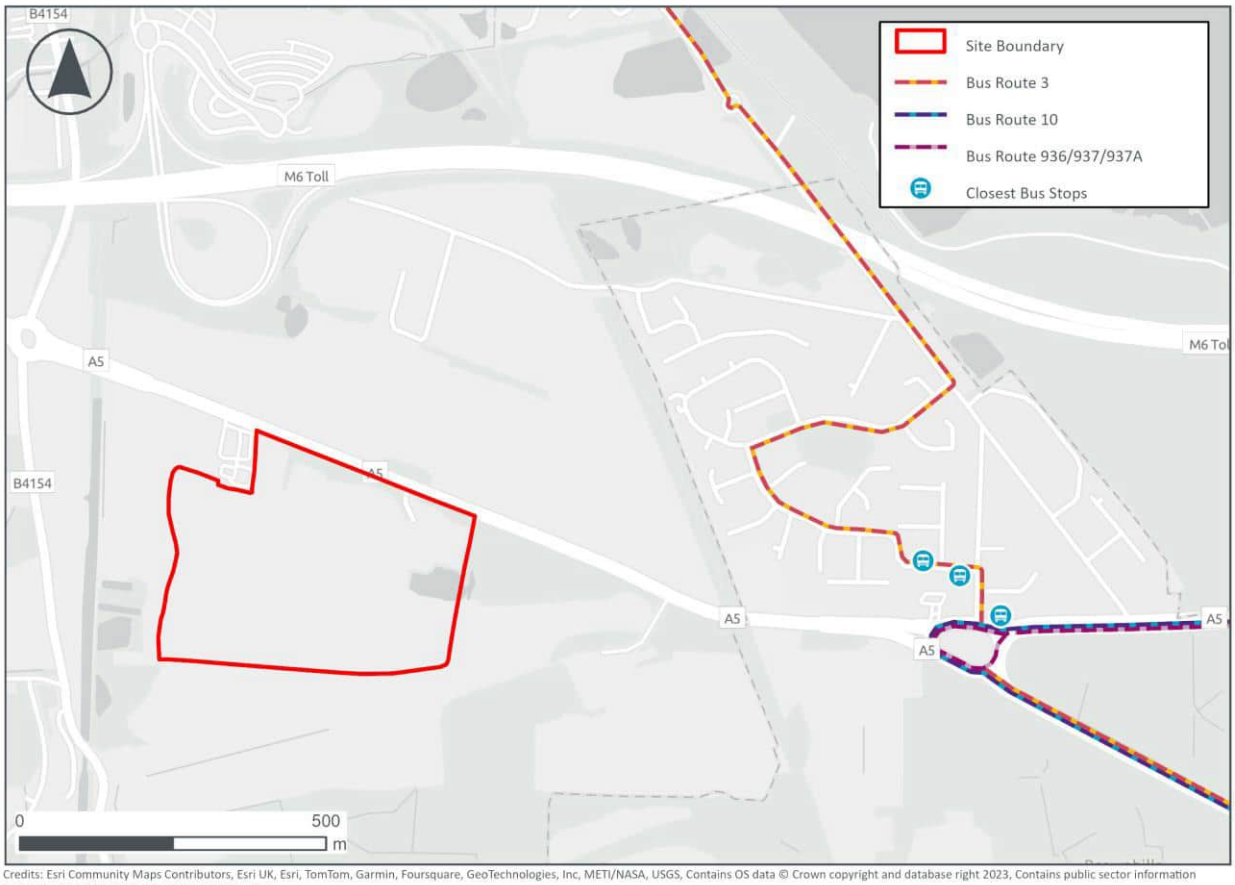
2.5.2 Further bus stops are located in Brownhills West along Shannon Drive, approximately 1.1km north-east of the site. These stops have timetable information and flags and poles with the

eastbound stop provided with a shelter. A summary of bus routes and stops are located in Table 1 and Figure 7.

Table 1: Local bus services

Service	Route	Operator	Stop	Average daytime frequency		
				Monday-Friday	Saturday	Sunday
3	Brownhills – Brownhills West – Norton Canes - Cannock	Chaserider	Brownhills West at Shannon Drive	Hourly	Hourly	No Service
10	Brownhills West – Brownhills – Rushall - Walsall	National Express West Midlands	Brownhills West at the Rising Sun Island	Every 12-15 minutes	Every 15-20 minutes	Every 30 minutes
936	Brownhills West – Brownhills – Aldridge - Pheasey – Kingstanding – Perry Barr - Birmingham			4 AM services to Birmingham, 3 PM services to Brownhills West	No Service	No Service
937	Brownhills West – Brownhills – Aldridge – Kingstanding – Perry Barr - Birmingham			Every 30 minutes	Every 30 minutes	No Service
937A	Brownhills West – Brownhills – Aldridge - Streetly – Kingstanding – Perry Barr - Birmingham			5 evening services	5-6 evening services	Hourly

Figure 7: Bus Services



2.5.3 It has been demonstrated that high-frequency services stops a short distance to the east of the site. Services provide access to Brownhills, Cannock, Walsall and Birmingham. The services run at suitable times for employees at the site to commute to and from work throughout the week.

2.5.4 The walking distance to these bus stops exceeds the 'typical' 400m threshold which is often used as a marker for walking distances to bus stops. However, given the very high frequency of services from these stops, it is considered the routes are sufficient to provide an alternative to travelling by private car.

Rail

2.5.5 The nearest primary railway station to the site is Landywood, approximately 4.7km to the west. Services from Landywood run every 30 minutes Monday – Saturday and hourly on Sunday to the following key destinations:

- Cannock (3 minutes)
- Rugeley Trent Valley (15 minutes)
- Walsall (15 minutes)
- Birmingham New Street (40 minutes)
- Birmingham International (60 minutes)

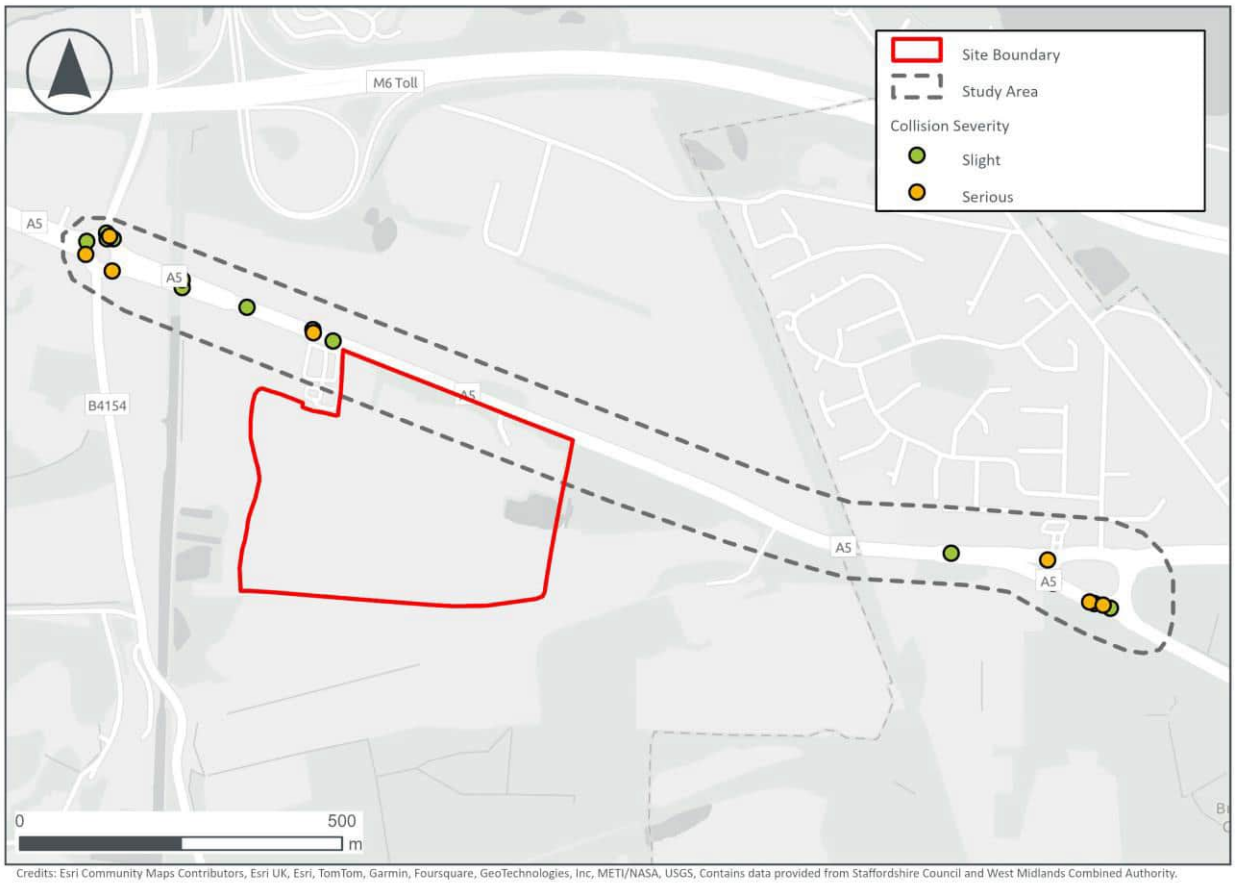
2.5.6 Landywood station is not accessible via any of the local bus routes. Buses from the Rising Sun Island serve alternative stations at Cannock and Walsall railway stations which offer additional connectivity.

2.6 Highway Safety

2.6.1 In order to establish whether there are any existing highway safety concerns on the local highway network that would be exacerbated by the proposed development, highway safety data has been obtained from Staffordshire County Council (SCC) and West Midlands Combined Authority for the latest 5-year periods available, any additional information up to present (01/01/2017 – 12/02/2024).

2.6.2 There have been a total of 21 collisions across the whole study area within the time period, 14 collisions were recorded as slight, seven collisions were recorded as serious, and no collision were recorded as fatal. It should be noted that in some incidents were reported as being on Chester Road North/A5, but grid references were provided at the Rising Sun Island. This is shown in Figure 8.

Figure 8: Collision Data Summary



2.6.3 Table 2 provides a summary of the location (junctions/links) in the vicinity of the site (junctions/links), including the severity of the collision and if there is involvement of a sensitive road user.

Table 2: Collision Summary

Location	Number of collisions				Sensitive Road User Involvement			
	Slight	Serious	Fatal	Total	Pedestrian	Cyclist	Motorcyclist	Total
Junctions								
A5/B4154 The Turf Roundabout	4	3	0	7	0	1	1	**2**
Rising Sun Island	3	3	0	6	0	0	1	**0**
Links								
A5 Watling Street	7	1	0	8	1	0	2	**3**
Total	**14**	**7**	**0**	**21**	**1**	**1**	**5**	**7**

A5/B4154 The Turf Roundabout

2.6.4 A total of seven collisions have occurred at the Turf Roundabout during the study period, four collisions were classed as slight, and three collisions were classed as serious.

2.6.5 One serious collision involved a cyclist, and the contributory factor was poor weather. Another serious collision involved two goods vehicles and the main contributory factor was travelling too fast for the conditions. The final serious collision involved a motorcyclist and a Light Goods Vehicle (LGV) and the contributory factor was failure to judge another person's path or speed.

Rising Sun Island

2.6.6 Three serious collisions were recorded at the Rising Sun Island during the study period. Two collisions involved a motorcyclists and the contributory factors were deposit on the road and unknown. No contributory factor was given. One of the serious collisions involved a pedestrian and the contributor factor to the collision was failing to look properly.

Links

A5 Watling Street

2.6.7 A total of eight collisions have been recorded along Watling Street during the study period, seven collisions were classed as slight, and one collision was classed as serious.

2.6.8 Three of the collisions occurred in close proximity to the service station. Two collisions were classed as slight, and one collision was classed as serious. One of the slight collisions involved cars colliding and the contributory factor was impaired by alcohol, and the other slight collision involved a car and LGV vehicle colliding, no contributory factor was given. The serious collision involved a motorcyclist and a LGV vehicle, the contributory factor was failure to judge another person's path or speed.

2.6.9 One of the slight collisions involved a goods vehicle and a car colliding in close proximity to the Rising Sun Island.

Summary

2.6.10 There have been no collisions at the site access within the study period.

2.6.11 The analysis notes that there has been a pattern of collisions at both the Turf and Rising Sun junctions, although with no indication of similar causation factors. Both junctions are busy roads, with the Turf roundabout being subject to the national speed limit.

2.6.12 It is not considered that there are any inherent safety issues at these junctions that could be exacerbated by development traffic, however the data would be further reviewed as part of a planning application in conjunction with National Highways.

2.7 Conclusions

This section has demonstrated that:

- The site sits on the SRN with onward access to the M5 and M6 and M6 Toll;
- The site is accessible to local areas by walking and cycling including surrounding facilities for employees and local towns;
- A range of walking/cycling infrastructure is provided to allow access to surrounding areas along dedicated routes;
- The site has good access to local bus routes with services throughout the week and at appropriate times for employees; and
- There is no highway safety concern due to the low number of collisions in the vicinity of the site and limited evidence of common causational factors.

3 Transport Strategy

Constraints and Opportunities

3.1.1 The comprehensive transport strategy has been prepared to address the following constraints:

Constraints

- The site is located on a busy arterial road with existing pedestrian/cycle access only available via these routes.
- Pedestrian access to the northern side of the A5 is via an uncontrolled crossing to the shared footway/cycleway.
- There is no footway on the southern side of the A5 although some informal use of the verge to access the service station was observed.
- The closest bus stops are approximately 1km away to the east and the site is approximately 5km from the nearest railway station.

3.1.2 The strategy has then been developed specifically based upon the site context and maximising the following key opportunities:

Opportunities

- There are high frequency bus service accessible from the Rising Sun Island with routes serving key residential areas in Brownhills, Cannock, Walsall and Birmingham.
- The existing site access has a good safety record with no reported collisions.
- The shared footway/cycleway links through to a wider network of walking/cycling infrastructure to connect to in surrounding urban areas.
- There are opportunities to connect the site directly to the canal for active travel inks south as well as directly into the service station.

3.2 Vehicle Access

Existing Layout

3.2.1 The site is currently accessible via a ghost island priority junction from the A5 Watling Street into the Watling Street Business Park. Right-turn movements from the A5 to Watling Street Business Park are via a storage lane. Vehicles exiting the business park must turn left.

3.2.2 An assessment has been undertaken of existing compliance with the Design Manual for Roads and Bridges (DMRB). The following aspects have been assessed and comply with DMRB.

Table 3: Design Criteria - Aspects Complying with DMRB

Design Criteria	DMRB Para / Table Ref	Requirement	Actual Achieved
Lane width (through lane)	CD 123 Para 6.8	3.0 – 3.65m	3.3 – 3.5m (WB) 3.3 – 3.4m (EB)
Lane width (right turn)	CD 123 Para 6.10	Min 2.5m for improvements to existing junctions	2.8 – 3.0m
Turning Length (right turn lane)	CD 123 Para 6.4	Min 10m	10m
Deceleration Length (right turn lane)	CD123 Table 5.22 Para 6.6	80m for 100kph 0-4% uphill gradient	84m
Visibility splay from access (horizontal plane)	CD123 Para 3.8	4.5 x 215m	4.5 x 215m
Gradient of minor road	CD123 Para 5.3	No steeper than 4% for first 15m	Approx. 2.5%

3.2.3 A number of aspects however fail to comply with DMRB and are an existing departure from standards. These are summarised in Table 4.

Table 4: Existing Layouts - Departures from Standard

Departure Reference	Design Criteria	DMRB Para / Table Ref	Requirement	Actual Achieved
Design Aspect – Right Turn Lane				
1	Direct taper length (right turn lane)	CD123 Table 5.22 para 6.6	25m for 100kph design speed	10m
2	Queueing length (right turn lane)	CD123 para 6.5	12m (based on traffic modelling)	4m
Design Aspect – Corner Radius onto Minor Road (entry to site)				
3	Diverge taper should be provided where major road flow exceeds 7000 AADT or turning flow exceeds 600 AADT	CD123 Table 4.18a	80m deceleration length plus direct taper of 25m – 100kph design speed	No diverge taper provided – only simple corner radii
Design Aspect – Corner Radius onto Major Road (exit from site)				
4	Corner radius onto major road	CD123 para 5.6.3	Corner radii should be 15 followed by taper of 1:6	Aligned to vehicle tracking
Design Aspect – Vertical Visibility				
5	Visibility to junction and back of queue (eastbound approach)	CD109 Table 2.10	215m forward visibility from 1.05m to 0.26m height	Not achievable – significantly reduced by crest of hill
6	Visibility to junction and back of queue (westbound approach)	CD109 Table 2.10	215m forward visibility from 1.05m to 0.26m height	Not achievable – minor encroachment by crest of hill

3.2.4 As identified above, there are a number of departures associated with the existing layout, these being:

- The right turn lane is of insufficient length including the taper length (Ref 1 and 2);
- The entry taper into the junction (turning left from the A5) is insufficiently designed, providing a simple radius instead of a diverge taper or auxiliary lane (Ref 3);
- The exit taper from the junction (turning left onto the A5) is insufficiently designed, providing a smaller than required radius and no taper (Ref 4).
- There is substandard vertical visibility on approach to the junction, this applies from both directions but more significantly when arriving from the west over a crest in the A5 (Ref 5 and 6).

3.2.5 As described in the sections below, PJA has sought to improve the proposed layout to resolve these departures as much as possible, which would provide a safety improvement to the junction.

3.2.6 It is important however to recognise that the existence of departures from standard does not necessarily represent a highway safety issues or materially increase the risk of collisions – as noted earlier there have been no recorded injury accidents in the last five years.

Proposed Layout

3.2.7 Policy SE2 refers to the site access, noting:

"Vehicular access will be via the existing access onto the A5. The existing access will however be amended to only allow entry and exit from the westbound carriageway of the A5."

3.2.8 However, this policy is considered to be overly restrictive. As described above, the design requirements are a very detailed matter requiring careful consideration, which would normally take place at planning application stage. This would include exercises such as Road Safety Audit, Walking Cycling and Horse Riding Assessment and Review, and Risk Assessment so that the design parameters can be fully understood and considered in the round.

3.2.9 Therefore, two design options have been considered to improve the existing site access:

- Option 1 – Retain existing movements
- Option 2 – Ban right turn into the site

3.2.10 The exercise shows that in both options, the existing departures can be substantially mitigated. Given that there is no record of existing safety issues at the junction, it is considered that the matter of right turn movements would be best resolved at planning application stage rather than specified in planning policy, subject to engagement with National Highways.

Option 1 – Retain Existing Movements

3.2.11 The preliminary design drawing within **Appendix A** presents changes to the design to improve compliance with DMRB and mitigate existing departures. These changes include:

- Extending the right turn lane to meet DMRB standards (Table 4 Ref 1 and 2), this also increases the visibility of the right turn lane on the westbound approach and reduces the significance of the existing departure (Table 4 Ref 5);
- Changing the entry corner from the A5 into the site from a simple radius to a taper diverge. This is to reduce the disruption to mainline traffic caused by slowing vehicles within area of restricted visibility from the east (Table 4 Ref 3 and Ref 6);
- Changing the exit corner from the site onto the A5 from a simple radius to the specified 15m radius plus 1:6 taper, this improves the movement for HGVs turning left (Table 5 Ref 4).

3.2.12 The scheme design would either fully or partly resolve the existing departures from standard, or mitigate existing safety risks.

3.2.13 It is therefore concluded that Option 1 would provide a design and safety improvement compared to the existing layout.

Option 2 – Ban right turn into site

3.2.14 A further option has been prepared which would be in accordance with SE2, removing the right turn into the site (also within **Appendix A**). This includes the following changes:

- Closure of the right turn lane into the site. It is understood the A5 is a 'wide load route', and so a flush central island would be installed with demountable bollards, as opposed to a kerbed central reserve. This would remove the existing departures associated with the length of right turn lane (Ref 1 and 2), and would reduce the significance of the existing visibility departure by removing slowing traffic (Ref 5).
- Changing the entry corner from the A5, as per Option 1 (Table 4 Ref 3 and Ref 6)
- Changing the exit corner from the site onto the A5, as per Option 1 (Table 4 Ref 4).

3.2.15 Under Option 2, scheme design again would either fully or partly resolve the existing departures from standard, or mitigate existing safety risks.

3.2.16 It is considered that both Options 1 and 2 provide an acceptable access solution, with further details to be discussed with NH at planning application stage, without prescribing Option 2 under Policy SE2.

3.3 Pedestrian/Cycle Access

Existing

3.3.1 Pedestrian access to the site is via a footway measuring approximately 3.5m wide on the eastern side of the priority junction which links to an internal marked pedestrian route within Watling Street Business Park.

3.3.2 A flattened traffic island with drop kerbs and tactile paving provides access across the A5 to the shared footway/cycleway on the northern side of the carriageway. There is no footway provision in the southern side of the A5.

Improvement Opportunities

3.3.3 A number of improvement opportunities have been investigated, to provide access to the site by pedestrians and cyclists.

Site Access

3.3.4 To access the canal to the south-west, a footway/cycleway could be provided from the south-western corner of the site onto the Cannock Extension Canal. The details of the route will be determined following the outcome of ecological and arboricultural surveys.

3.3.5 As part of the site access works the pedestrian crossing will be replaced in the same form (pedestrian refuge). Consideration was given to providing a signalised crossing, however due to the balance of risks associated with existing vertical visibility constraints the refuge was considered to be the safest solution. The design and form of the crossing would be assessed further at planning application stage.

Service Station Access

3.3.6 Direct access could be provided from the north-western corner of the site to the boundary with the service station. This would provide access to a key amenity for staff on lunch breaks and would reduce the number of pedestrian trips along the southern side of the A5 which was observed to occur. This route would need to be discussed with the landowners of the service station.

Connections to Great Wyrley/Norton Canes

3.3.7 Current facilities for pedestrians/cyclist at The Turf Roundabout are in the form of dropped kerbs/tactile paving on the northern arm of the roundabout and an unmarked pedestrian crossing on the western arm to Lime Lane. The northern crossing was observed to be difficult to use due to the volume and speed of vehicles exiting the roundabout.

3.3.8 It is proposed that the footway along the eastern side of the B4154 will be extended with an additional crossing provided. The new crossing could potentially be under traffic signal control. This would improve access to Norton Canes from the site, avoiding crossing at the Turf roundabout.

Connections to Pelsall

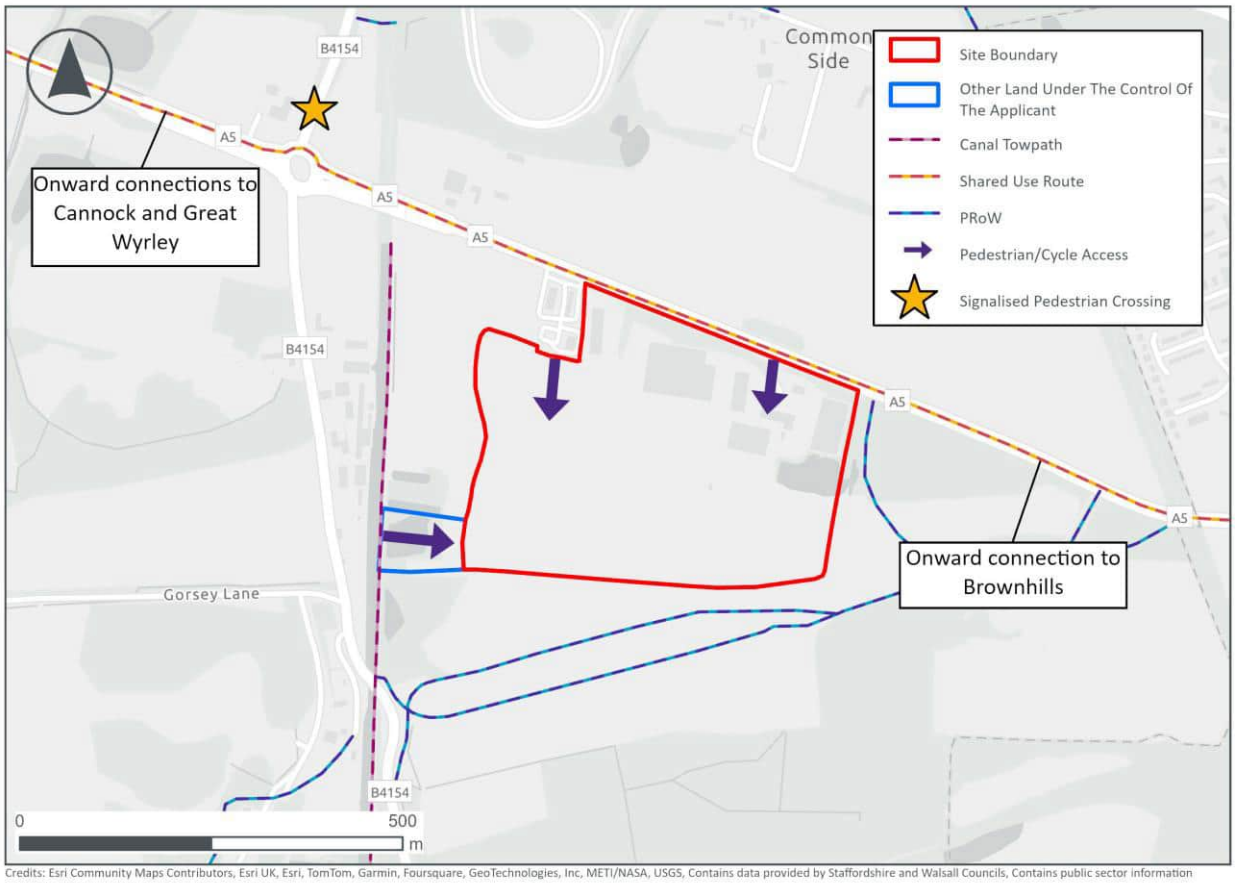
3.3.9 As described above, a connection from the south-west of the site to the Cannock Extension Canal is proposed. The canal towpath is currently unsurfaced but there is potential to improve the route, subject to discussions with the Canal and Rivers Trust.

PRoW Improvements

3.3.10 As mentioned, several PRoWs surround the site but do not directly connect to it. Policy SE2 requires the provision of walking/cycling routes to connect and integrate into the existing surrounding area, as well as any compensatory improvements to improve accessibility of remaining Green Belt land as a result of removing land from the Green Belt as required by the National Planning Policy Framework. There is therefore the potential to improve PRoWs in line with the SCC PRoW Improvement Plan which could include measures such as new stiles, gates, signage and surfacing.

3.3.11 The above potential improvements are shown in Figure 9.

Figure 9: Active Travel Strategy



3.4 Public Transport

3.4.1 The site is well placed to draw upon the local workforce in Cannock, Walsall, Brownhills and surrounding regions. As has been demonstrated in the previous sections the bus services to the Rising Sun Island/Brownhills West are provided at a high frequency and serve a wide range of destinations. They are within walking/cycling distance of the site by a shared footway/cycleway long the A5, albeit it is acknowledged that the distance exceeds a 'typical' walking distance to bus stops of 400m.

3.4.2 A number of supplementary solutions have been considered, including extensions to existing routes and demand responsive transport. However, the assessment concluded that reliance on the existing services would remain the best course of action based on the scale of the proposed development, long term service viability and very high frequency of existing routes.

4 Highway Capacity

4.1 Overview

4.1.1 Section 3 of this report presented two options for the site access:

- **Option 1:** Retaining the existing arrangement with safety improvements.
- **Option 2:** Removing the right turn movement into the site in line with Local Plan Policy SE2.

4.1.2 This section assesses the capacity of both these options. The impact of the site on the surrounding highway network would be assessed as part of a Transport Assessment based upon a defined scope agreed with NH and SCC. However, it is noted that the Local Plan Evidence Base has not identified any specific improvements that are required.

4.1.3 This assessment has utilised traffic survey data collected by BSP Consulting in September 2022 on behalf of St Modwen Logistics.

4.2 Travel Demand

Existing Trip Generation

4.2.1 The existing Business Park consists of 14,013sqm of floor space of B2, B8 and E g) ii) & iii) land uses. Trip rates for the existing Business Park were extracted from an Automatic Traffic Count (ATC) at the Business Park access road in October 2022. These are shown in Table 5.

Table 5: Existing Business Park Trip Rates

	AM Peak (08:00-09:00)			PM Peak (16:00-17:00)		
	Arrive	Depart	Total	Arrive	Depart	Total
Total Vehicles						
Trip Rate)	0.341	0.248	0.589	0.168	0.311	0.480

Updated Trip Generation

4.2.2 To better represent the site, updated trip rates have been derived using the TRICS version 7.10.4 online database and the following selection criteria:

- 02/D – Employment - Industrial Estate;
- Excluding sites in Greater London or Ireland;
- 10,000 – 100,000sqm;
- "Edge of Town" zones;
- Monday – Friday surveys.

4.2.3 The resultant trip rates used in are summarised below and the full TRICS report is included for reference in **Appendix C**.

Table 6: Proposed Site Trip Generation

	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	Arrive	Depart	Total	Arrive	Depart	Total
Total Vehicles						
Trip Rate (50,000sqm)	0.483	0.173	0.656	0.122	0.441	0.563
Trip Generation	242	87	328	61	221	282
HGVs						
Trip Rate (50,000sqm)	0.032	0.026	0.058	0.014	0.011	0.025
Trip Generation	16	13	29	7	6	13

4.2.4 It is noted that the TRICS trip rates are higher than the existing business park, which provides a robust assessment of the proposed development trip generation.

4.2.5 It is estimated that the development would generate a total of 328 two-way trips during the AM peak and 282 two-way trips during the PM peak.

Trip Distribution/Assignment

4.2.6 Development trips have been distributed using data from the previous BSP work. The trips were distributed in accordance with origin-destination travel to work data for car drivers from the 2011 Census. The 'Cannock Chase 013' Middle Layer Super Output Area (MSOA), which contains the Watling Street Business Park, has been used. It is assumed that all vehicles turn left out of the Business Park in accordance with road markings in place.

4.2.7 The resultant trip assignment can be summarised as follows:

- 78.3% of trips route west via the A5. Of these, 30.9% route along the B4154, 32.2% continue along the A5 and 15.2% route down Lime Lane.
- 21.7% of trips would route east along the A5. No further distribution or assignment was given at subsequent junctions.

4.2.8 Traffic flow diagrams presenting the assessment scenarios are provided in **Appendix B**.

4.3 Junction Modelling

Baseline Traffic

4.3.1 Baseline traffic flows have been derived from ATC surveys undertaken in 2022 at the following locations:

- Permanent ATC maintained by National Highways situated along the A5 approximately 550m to the east of the business park site access (7-days from 24th to 30th September 2022).
- Permanent ATC maintained by National Highways situated along the A5 approximately 900m to the west of the Turf Island roundabout (7-days from 24th to 30th September 2022).
- Temporary ATC situated along Lime Lane approximately 125m to the south of the Turf Island roundabout (7-days from 6th to 12th October 2022).
- Temporary ATC at the Business Park Access Road.

Modelling Scenarios

4.3.2 The junction has been modelled up for an opening year of 2028 in line with DfT Circular 01/2022. The 2022 baseline flows were growthed to 2028 using factors obtained from TEMPRO under the following parameters:

- Dataset Version: 80
- Dataset Scenario: Core
- Result Type: Trip ends by time period
- Geographic Area: E02006130: Cannock Chase 013
- Trip purpose definition: All purposes
- Transport mode: Car Driver
- Trip end type: Origin Destination
- Area/Road Type: All/Trunk/Minor

Table 7: TEMPro Growth Factors

Period	2022 > 2028
AM	1.0506
PM	1.0503

Junction Capacity Assessments

Option 1

4.3.3 Junctions 10 software (PICADY Module) has been used to model the proposed site access junction under Option 1 with a right turn storage bay and left turn only movements to and from the business park. The results of the 2028 + Development scenario are included in the tables below and full modelling results are included at **Appendix D.**

4.3.4 The model is based upon a 'one hour' profile which assumes traffic builds up across the peak hour and further represents a robust assessment.

Table 8: Site Access current operation modelling results

Arm	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (S)
Site Access (left only)	0.39	1.0	24	0.57	1.0	20
A5 (right, ahead)	0.66	2.0	34	0.15	0.0	12

4.3.5 The results demonstrate that the proposed site accesses can accommodate development traffic in an Opening Year scenario of 2028.

Option 2

4.3.6 Junctions 10 software (PICADY Module) has been used to model the proposed site access junction under Option 2 as described in Local Plan Policy SE2 with the right turn storage bay removed and left turn only movements to and from the business park. The results of the 2028 + Development scenario are included in the tables below and full modelling results are included at **Appendix D.**

Table 9: Site Access Local Plan Policy SE2 modelling results

Arm	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (S)
Site Access (left only)	0.42	1.0	27	0.64	2.0	26

4.3.7 The results demonstrate that the proposed site accesses can accommodate development traffic in a future year scenario of 2028.

4.3.8 It can therefore be concluded that the proposed site access junction will work with reserve capacity under both Options 1 and 2 in the future year scenario of 2028.

5 Conclusions

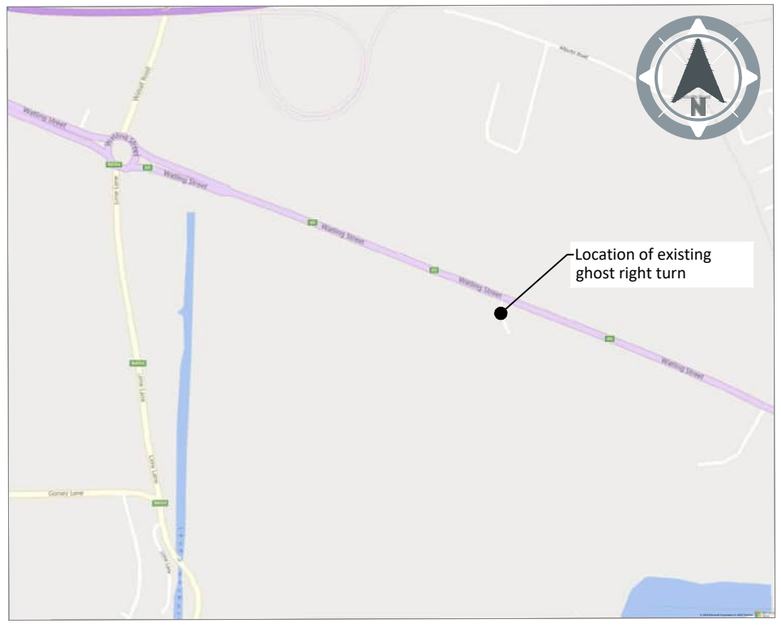
5.1.1 This appraisal demonstrates that with regards to transport, the site is suitable for allocation for employment development in that:

- The site benefits from close access to the strategic road network with the A5 providing access to key routes such as the M5 and M6.

- Safe and suitable access to the site can be delivered via the existing access road to the Watling Street Business Park junction, subject to improvements;
- There is potential for new walking and cycling connections to the canal towpath to the east and the service station to the north-west, improving the accessibility of the site;
- The site is accessible on-foot providing employment opportunities for Norton Canes, Brownhills, Cannock, Walsall and Great Wyrley;
- Existing public transport links are provided at suitable times of day for a range of working patterns. Stops with shelters and timetables are located within 1km of the site to be used by employees at the site; and
- The access to the site from Watling Street would operate with reserve capacity.

Appendix A Site Access Drawings

A3 1:1000 20 30 40 50 60 70



Existing crown in the road

Proposed demountable keep left bollard

Existing forward visibility non compliance to slowing vehicles as they enter the existing right turn lane. This length of non-compliance is reduced due to the extended ghost right turn lane.

Proposed left in/left out junction

Proposed blank faced bollard

Proposed demountable illuminated refuge beacon

Existing crossing to be relocated

Proposed demountable illuminated refuge beacon and demountable keep left bollard

Proposed refuge island to have minimal kerb upstand due to the A5 being a wide load route

Proposed relocated uncontrolled crossing

Existing forward visibility non compliance to slowing vehicles as they break to turn into the development. The proposed solution provides a tapered exit to assist with vehicles leaving the carriageway at reasonable speeds as not to cause potential hard breaking and rear shunt incidents if the forward visibility to the junction is not currently fully compliant with the standards.

Proposed keep left bollard

Proposed junction to tie into internal masterplan

Proposed 3m shared footway/cycleway with 1m separation

Proposed demountable keep left bollard

R15

A5 Watling Street

SSD 4.5m x 215m (60mph)

Commercial Unit

Commercial Units

Container

CDM Note

These drawings have been produced with reference to the CDM Regulations 2015.
Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9.

General Notes

- Proposed traffic development flows (A5 32,627 AADT, development arm 3,560 AADT)
- Major road (A5) National Speed Limit (60mph), development 30mph
- Proposed diverge of the Ghost Right Turn junction requires an auxiliary lane based on the AADT traffic volumes on the A5 Watling Street. Further to road constraints and the requirement to accommodate a uncontrolled pedestrian crossing the diverge consists of a 1:6 taper for 30m followed by a 15m radius. The proposals are a relaxation of the requirements set out in CD 123 and National Highways approval is necessary.
- For the merge of the Ghost Right Turn junction it is proposed to have a 15m radius followed by a 1:6 taper for 30m. This compliant with CD 123.
- The proposed non-compliances would require National Highways approval

Key

- Highway boundary
- Visibility splay
- Carriageway
- Verge
- Shared footway / cycleway
- Traffic island

Rev	Date	Drw	Chk	App
P01	29.02.24	ARP	AN	AN

Client
St Modwen Logistics Propco Ltd

Project
Watling Street Business Park Extension

Drawing Status
Concept

Title
Ghost Right Junction

Drawing No.
07790-0001

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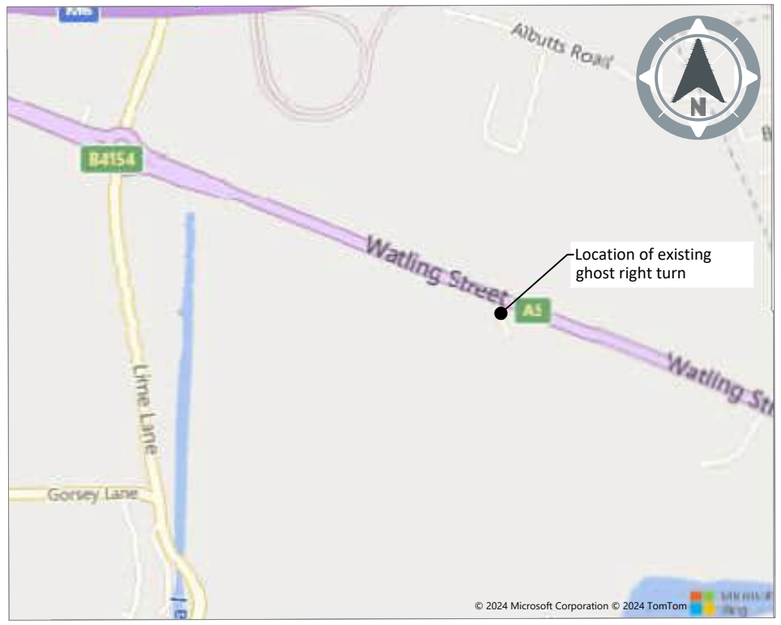
Birmingham | Bristol | Cambridge | London | Manchester | Reading
Melbourne | Perth
pja.co.uk | pja.com.au

File name C:\PJA\PHIL JONES ASSOCIATES\SHAREDDATA - 07790 WATLING STREET, CANNOCK\A ENG\2 - DESIGN\DRAWINGS\CURRENT\07790-A-0001-P01 GHOST RIGHT JUNCTION.DWG, printed on 08/03/2024 13:37:34, by Alex Painting

A3 1:1000 20 30 40 50 60 70



Existing crown in the road

Existing forward visibility non compliance to slowing vehicles as they enter the existing right turn lane is removed by adopting this solution as vehicles are continuing in a ahead direction only.

Proposed bollards to prevent right turn movements

Proposed demountable keep left bollard

Proposed ahead only lane

Proposed illuminated demountable left turn only sign

Proposed demountable illuminated refuge beacon

Proposed blank faced bollard

Existing crossing to be relocated

Proposed refuge island to have minimal kerb upstand due to the A5 being a wide load route

R15

Proposed demountable illuminated refuge beacon

Proposed relocated uncontrolled crossing

Proposed left in/left out junction

Proposed keep left bollard

Proposed junction to tie into internal masterplan

R15

Proposed 3m shared footway/cycleway with 1m separation

Proposed demountable keep left bollard

A5 Watling Street

SSD 4.5m x 215m (60mph)

Existing forward visibility non compliance to slowing vehicles as they break to turn into the development. The proposed solution provides a tapered exit to assist with vehicles leaving the carriageway at reasonable speeds as not to cause potential hard breaking and rear shunt incidents if the forward visibility to the junction is not currently fully compliant with the standards.

Commercial Unit
Commercial Unit
Commercial Unit
Container
Commercial Units
Commercial Units
Commercial Units

CDM Note

These drawings have been produced with reference to the CDM Regulations 2015.
Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9.

General Notes

- Proposed traffic development flows (A5 32,627 AADT, development arm 3,560 AADT)
- Major road (A5) National Speed Limit (60mph), development 30mph
- Proposed diverge of the Left In/Left Out junction requires an auxiliary lane based on the AADT traffic volumes on the A5 Watling Street. Further to road constraints and the requirement to accommodate a uncontrolled pedestrian crossing the diverge consists of a 1:6 taper for 30m followed by a 15m radius. The proposals are a relaxation of the requirements set out in CD 123 and National Highways approval is necessary.
- For the merge of the Left In/Left Out junction it is proposed to have a 15m radius followed by a 1:6 taper for 30m. This compliant with CD 123.
- The proposed non-compliances would require National Highways approval

Key

- Highway boundary
- Visibility splay
- Carriageway
- Verge
- Shared footway / cycleway
- Traffic island

Rev	Date	Drw	Chk	App
P01	29.04.24	ARP	AN	AN

Client
St Modwen Logistics Propco Ltd

Project
Watling Street Business Park Extension

Drawing Status
Concept

Title
Left In/Left Out Junction

Drawing No.
07790-0002

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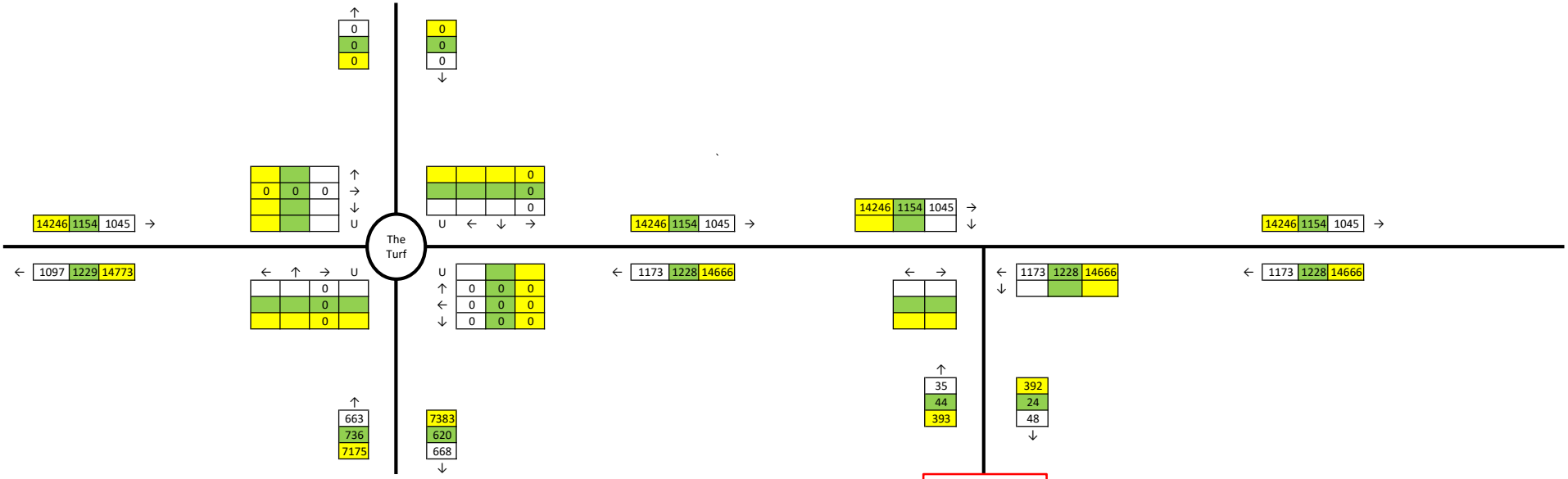
Appendix B Traffic Flow Diagrams

2022 Survey Total Trips

Total

AM
PM
ADT

ADT factor
5.85



AM	A	B	C	D
A	0	0	0	0
B	0	0	0	0
C	0	0	0	0
D	0	0	0	0

PM	A	B	C	D
A	0	0	0	0
B	0	0	0	0
C	0	0	0	0
D	0	0	0	0

AM	A	B	C
A		0	1173
B	0		0
C	1045	0	

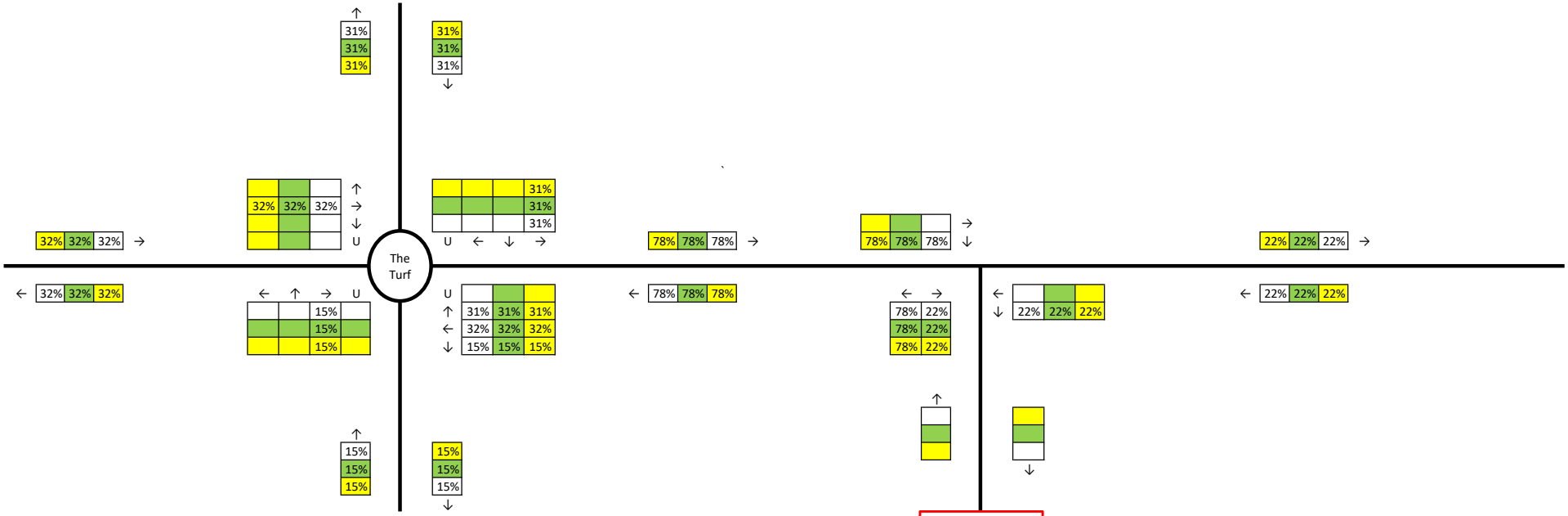
PM	A	B	C
A		0	1228
B	0		0
C	1154	0	

Trip Distribution

Total

AM
PM
ADT

ADT factor
5.85



AM	A	B	C	D
A	0	0	0	0
B	0	0	0	0
C	0	0	0	0
D	0	0	0	0

PM	A	B	C	D
A	0	0	0	0
B	0	0	0	0
C	0	0	0	0
D	0	0	0	0

AM	A	B	C
A		0	0
B	0		1
C	0	1	

PM	A	B	C
A		0	0
B	0		1
C	0	1	

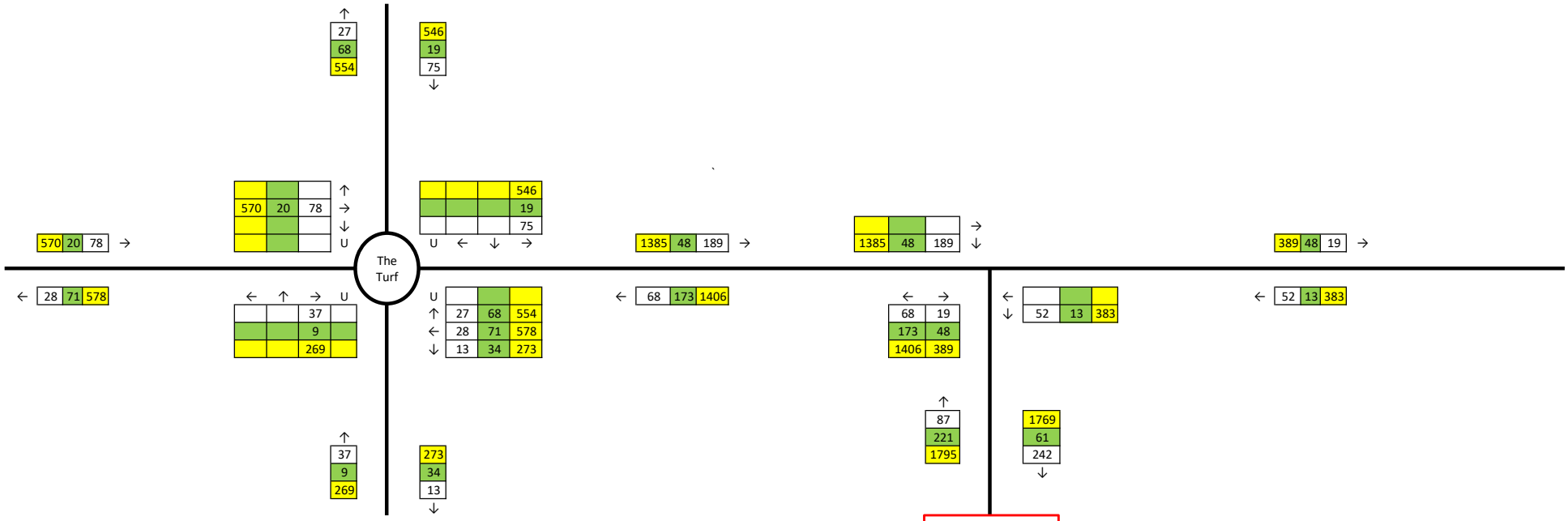
Total Development Trips

Total

AM
PM
ADT

ADT factor

5.85



AM	A	B	C	D
A	0	75	0	0
B	27	0	13	28
C	0	37	0	0
D	0	78	0	0

PM	A	B	C	D
A	0	19	0	0
B	68	0	34	71
C	0	9	0	0
D	0	20	0	0

AM	A	B	C
A		52	0
B	19		68
C	0	189	

PM	A	B	C
A		13	0
B	48		173
C	0	48	

2028 Base Total Vehicle Trips

Total

AM
PM
ADT

ADT factor
5.85

AM	A	B	C	D
A	0	0	0	0
B	0	0	0	0
C	0	0	0	0
D	0	0	0	0

PM	A	B	C	D
A	0	0	0	0
B	0	0	0	0
C	0	0	0	0
D	0	0	0	0

AM	A	B	C
A		0	1232
B	0		0
C	1097	0	

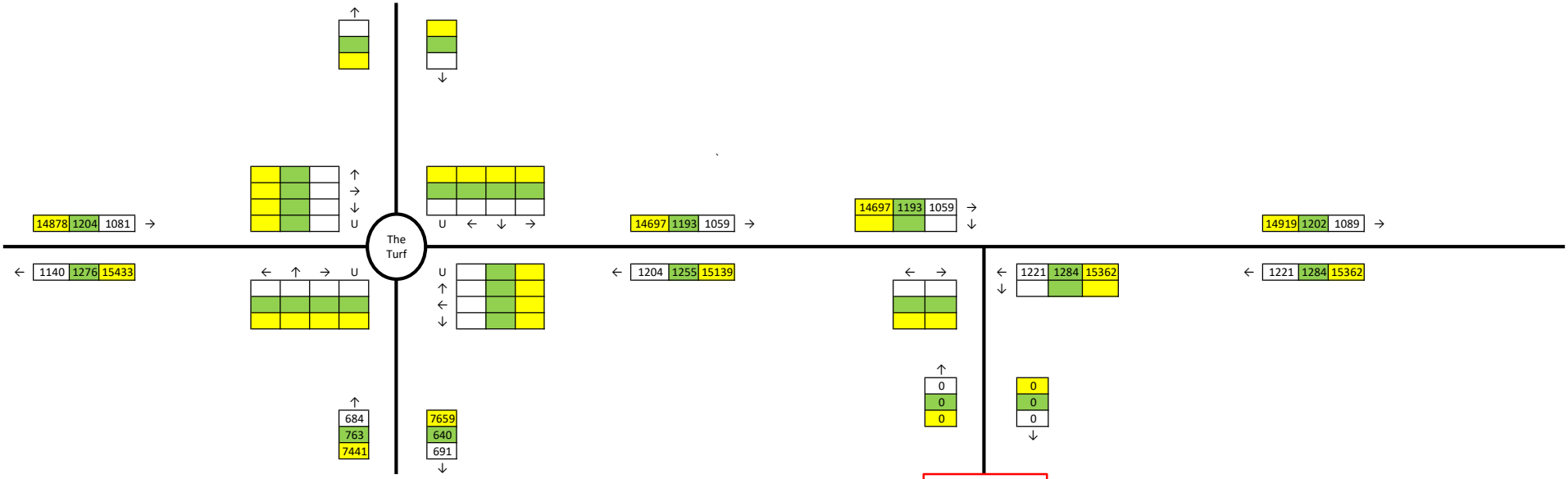
PM	A	B	C
A		0	1289
B	0		0
C	1211	0	

2028 without 2022 Survey Trips

Total

AM
PM
ADT

ADT factor
5.85



AM	A	B	C	D
A	0	0	0	0
B	0	0	0	0
C	0	0	0	0
D	0	0	0	0

PM	A	B	C	D
A	0	0	0	0
B	0	0	0	0
C	0	0	0	0
D	0	0	0	0

AM	A	B	C
A		0	1221
B	0		0
C	1059	0	

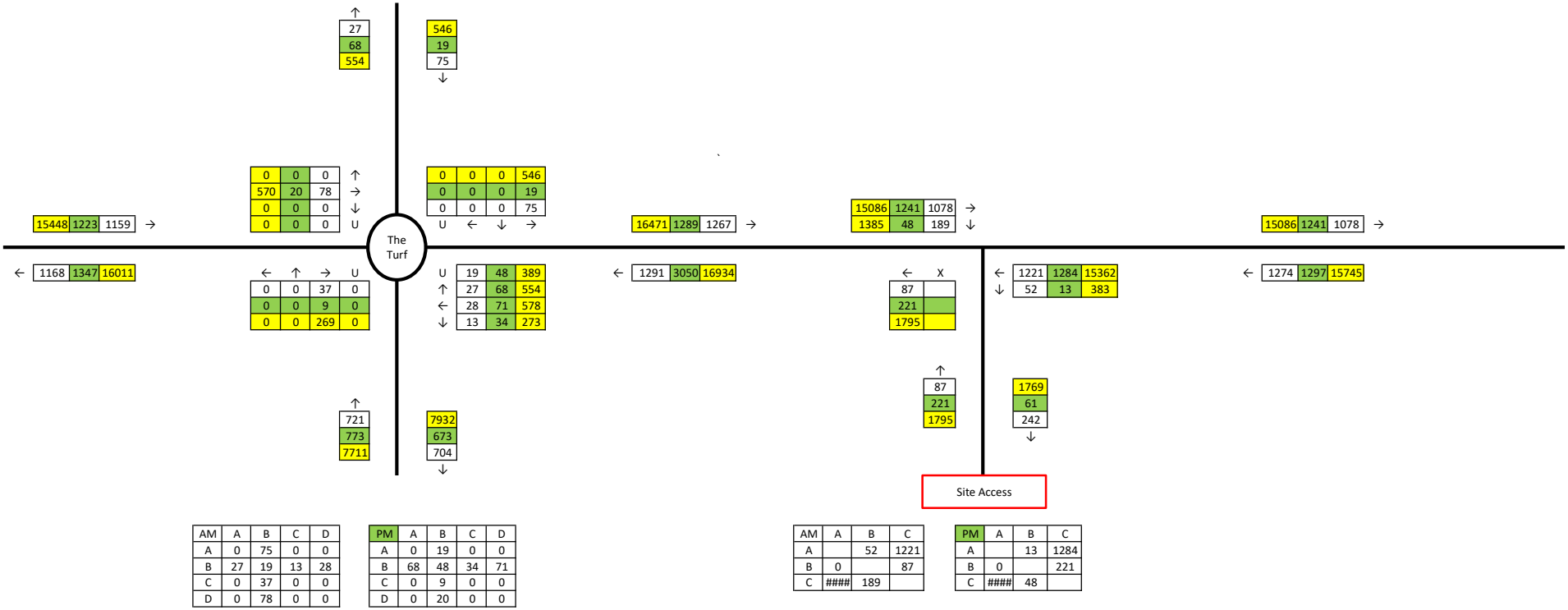
PM	A	B	C
A		0	1284
B	0		0
C	1193	0	

2028 + Proposed Dev Trips Op 1

Total

AM
PM
ADT

ADT factor
5.85



AM	A	B	C	D
A	0	75	0	0
B	27	19	13	28
C	0	37	0	0
D	0	78	0	0

PM	A	B	C	D
A	0	19	0	0
B	68	48	34	71
C	0	9	0	0
D	0	20	0	0

AM	A	B	C
A		52	1221
B	0		87
C	####	189	

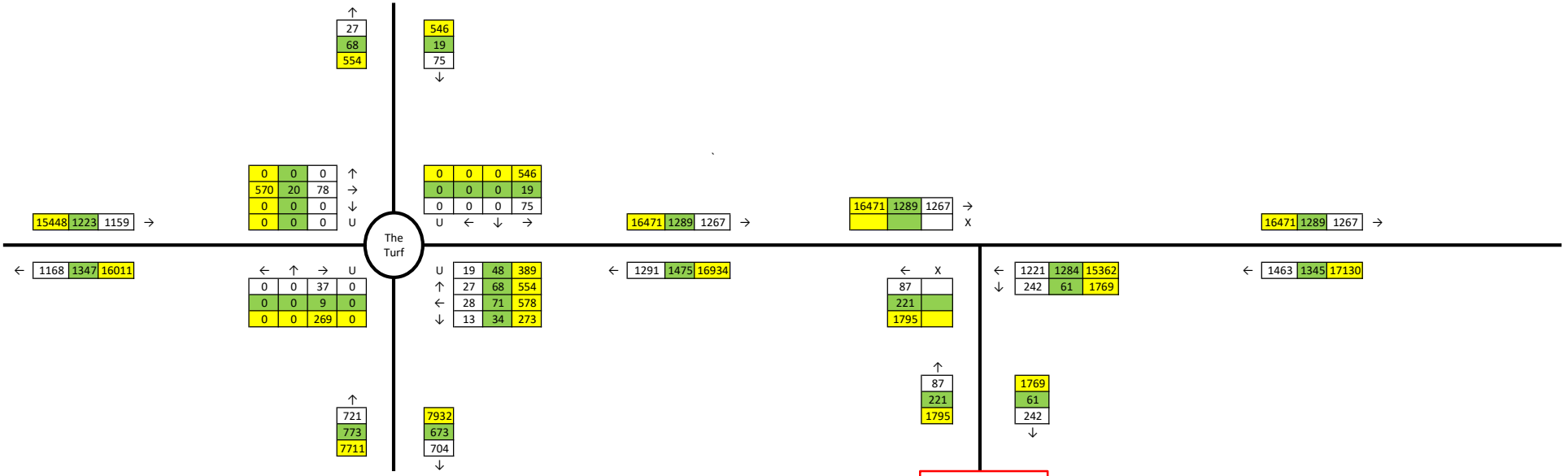
PM	A	B	C
A		13	1284
B	0		221
C	####	48	

2028 + Proposed Dev Trips Op 2

Total

AM
PM
ADT

ADT factor
5.85



AM	A	B	C	D
A	0	75	0	0
B	27	19	13	28
C	0	37	0	0
D	0	78	0	0

PM	A	B	C	D
A	0	19	0	0
B	68	48	34	71
C	0	9	0	0
D	0	20	0	0

AM	A	B	C
A		242	1221
B	0		87
C	1267	0	

PM	A	B	C
A		61	1284
B	0		221
C	1289	0	

Appendix C TRICS Outputs

PJA Seven House, High Street Longbridge, Birmingham Licence No: 231601

Calculation Reference: AUDIT-231601-240130-0123

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : D - INDUSTRIAL ESTATE
TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	EX	ESSEX	1 days
03	SOUTH WEST		
	NS	NORTH SOMERSET	1 days
06	WEST MIDLANDS		
	WK	WARWICKSHIRE	1 days
	WO	WORCESTERSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YORKSHIRE	1 days
11	SCOTLAND		
	AG	ANGUS	1 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:	22000 to 90535 (units: sqm)
Range Selected by User:	20000 to 100000 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/15 to 15/09/22

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	2 days
Wednesday	1 days
Thursday	3 days

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

Selected survey types:

Manual count	6 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:

Edge of Town	6

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	3
Out of Town	2
No Sub Category	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.

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	4 days - Selected
Servicing vehicles Excluded	3 days - Selected

Secondary Filtering selection:

Use Class:

n/a	1 days
Not Known	5 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.

Filter by Site Operations Breakdown:
All Surveys Included

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

5,001 to 10,000	3 days
10,001 to 15,000	2 days
15,001 to 20,000	1 days

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

Population within 5 miles:

25,001 to 50,000	3 days
75,001 to 100,000	2 days
100,001 to 125,000	1 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	1 days
1.1 to 1.5	5 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:

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	6 days

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

LIST OF SITES relevant to selection parameters

1	AG-02-D-02 A933 WESTWAY ARBROATH HOSPITALFIELD Edge of Town No Sub Category Total Gross floor area: Survey date: TUESDAY	INDUSTRIAL ESTATE	78500 sqm 25/04/17	ANGUS Survey Type: MANUAL
2	EX-02-D-04 PASTURE ROAD WITHAM Edge of Town Industrial Zone Total Gross floor area: Survey date: THURSDAY	INDUSTRIAL ESTATE	37130 sqm 10/05/18	ESSEX Survey Type: MANUAL
3	NS-02-D-01 WINTERSTOKE ROAD WESTON-SUPER-MARE OLDMIXON Edge of Town Industrial Zone Total Gross floor area: Survey date: THURSDAY	INDUSTRIAL ESTATE	27000 sqm 15/09/22	NORTH SOMERSET Survey Type: MANUAL
4	NY-02-D-03 RACECOURSE ROAD RICHMOND Edge of Town Out of Town Total Gross floor area: Survey date: THURSDAY	INDUSTRIAL ESTATE	35183 sqm 05/05/22	NORTH YORKSHIRE Survey Type: MANUAL
5	WK-02-D-02 OVERVIEW WAY RUGBY Edge of Town Industrial Zone Total Gross floor area: Survey date: WEDNESDAY	INDUSTRIAL ESTATE	90535 sqm 27/06/18	WARWICKSHIRE Survey Type: MANUAL
6	WO-02-D-03 MILLENNIUM WAY EVESHAM Edge of Town Out of Town Total Gross floor area: Survey date: TUESDAY	INDUSTRIAL ESTATE	84575 sqm 26/06/18	WORCESTERSHIRE 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.

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE
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	27980	0.077	2	27980	0.039	2	27980	0.116
06:00 - 07:00	2	27980	0.148	2	27980	0.064	2	27980	0.212
07:00 - 08:00	6	55404	0.369	6	55404	0.116	6	55404	0.485
08:00 - 09:00	6	55404	0.483	6	55404	0.173	6	55404	0.656
09:00 - 10:00	6	55404	0.332	6	55404	0.206	6	55404	0.538
10:00 - 11:00	6	55404	0.264	6	55404	0.213	6	55404	0.477
11:00 - 12:00	6	55404	0.263	6	55404	0.243	6	55404	0.506
12:00 - 13:00	6	55404	0.273	6	55404	0.310	6	55404	0.583
13:00 - 14:00	6	55404	0.325	6	55404	0.278	6	55404	0.603
14:00 - 15:00	6	55404	0.244	6	55404	0.325	6	55404	0.569
15:00 - 16:00	6	55404	0.205	6	55404	0.326	6	55404	0.531
16:00 - 17:00	6	55404	0.186	6	55404	0.387	6	55404	0.573
17:00 - 18:00	6	55404	0.122	6	55404	0.441	6	55404	0.563
18:00 - 19:00	6	55404	0.108	6	55404	0.176	6	55404	0.284
19:00 - 20:00	2	27980	0.102	2	27980	0.138	2	27980	0.240
20:00 - 21:00	2	27980	0.036	2	27980	0.055	2	27980	0.091
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.537			3.490			7.027

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:	22000 - 90535 (units: sqm)
Survey date date range:	01/01/15 - 15/09/22
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

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/D - INDUSTRIAL ESTATE
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	27980	0.004	2	27980	0.004	2	27980	0.008
06:00 - 07:00	2	27980	0.009	2	27980	0.016	2	27980	0.025
07:00 - 08:00	6	55404	0.020	6	55404	0.014	6	55404	0.034
08:00 - 09:00	6	55404	0.032	6	55404	0.026	6	55404	0.058
09:00 - 10:00	6	55404	0.038	6	55404	0.030	6	55404	0.068
10:00 - 11:00	6	55404	0.035	6	55404	0.033	6	55404	0.068
11:00 - 12:00	6	55404	0.028	6	55404	0.031	6	55404	0.059
12:00 - 13:00	6	55404	0.039	6	55404	0.034	6	55404	0.073
13:00 - 14:00	6	55404	0.030	6	55404	0.035	6	55404	0.065
14:00 - 15:00	6	55404	0.033	6	55404	0.033	6	55404	0.066
15:00 - 16:00	6	55404	0.030	6	55404	0.032	6	55404	0.062
16:00 - 17:00	6	55404	0.020	6	55404	0.025	6	55404	0.045
17:00 - 18:00	6	55404	0.014	6	55404	0.011	6	55404	0.025
18:00 - 19:00	6	55404	0.009	6	55404	0.014	6	55404	0.023
19:00 - 20:00	2	27980	0.004	2	27980	0.002	2	27980	0.006
20:00 - 21:00	2	27980	0.000	2	27980	0.002	2	27980	0.002
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.345			0.342			0.687

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.

Appendix D Modelling Results

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.2.1574

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: A5 Business Park Priority - with right turn V2.j10
Path: C:\PJA Folder\Phil Jones Associates\SharedData - 07790 Watling Street, Cannock\3. Technical\3.2 Modelling
Report generation date: 01/03/2024 14:58:38

»2028 + Development, AM
»2028 + Development, PM

Summary of junction performance

	AM						PM					
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)
	2028 + Development											
Stream B-C	D1	0.6	24.00	0.39	C	3.01	D2	1.3	19.94	0.57	C	1.76
Stream B-A		0.0	0.00	0.00	A			0.0	0.00	0.00	A	
Stream C-B		1.9	33.66	0.66	D			0.2	12.17	0.15	B	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

File summary

File Description

Title	
Location	
Site number	
Date	22/02/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	PJA\Ben Turpin
Description	

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	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2028 + Development	AM	ONE HOUR	07:45	09:15	15	✓
D2	2028 + Development	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2028 + Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		3.01	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.01	A

Arms

Arms

Arm	Name	Description	Arm type
A	A5 (E)		Major
B	Site Access		Minor
C	A5 (W)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	8.60	✓	1.80	✓	3.00	250.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	6.90	6.70	6.50	6.50	✓	3.00	150	125

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	573	0.089	0.225	0.142	0.321
B-C	843	0.115	0.290	-	-
C-B	781	0.268	0.268	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2028 + Development	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1273	100.000
B		ONE HOUR	✓	87	100.000
C		ONE HOUR	✓	1267	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	52	1221
	B	0	0	87
	C	1078	189	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	7	18
	B	15	0	15
	C	19	8	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.39	24.00	0.6	C	80	120
B-A	0.00	0.00	0.0	A	0	0
C-A					989	1484
C-B	0.66	33.66	1.9	D	173	260
A-B					48	72
A-C					1120	1681

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	65	16	456	0.144	65	0.0	0.2	9.192	A
B-A	0	0	121	0.000	0	0.0	0.0	0.000	A
C-A	812	203			812				
C-B	142	36	443	0.321	140	0.0	0.5	11.813	B
A-B	39	10			39				
A-C	919	230			919				

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	78	20	402	0.195	78	0.2	0.2	11.099	B
B-A	0	0	47	0.000	0	0.0	0.0	0.000	A
C-A	969	242			969				
C-B	170	42	389	0.437	169	0.5	0.8	16.256	C
A-B	47	12			47				
A-C	1098	274			1098				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	96	24	246	0.390	94	0.2	0.6	23.563	C
B-A	0	0	0	0.000	0	0.0	0.0	0.000	A
C-A	1187	297			1187				
C-B	208	52	314	0.663	204	0.8	1.8	31.630	D
A-B	57	14			57				
A-C	1344	336			1344				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	96	24	246	0.390	96	0.6	0.6	23.997	C
B-A	0	0	0	0.000	0	0.0	0.0	0.000	A
C-A	1187	297			1187				
C-B	208	52	314	0.663	208	1.8	1.9	33.660	D
A-B	57	14			57				
A-C	1344	336			1344				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	78	20	402	0.195	80	0.6	0.2	11.222	B
B-A	0	0	46	0.000	0	0.0	0.0	0.000	A
C-A	969	242			969				
C-B	170	42	389	0.437	174	1.9	0.8	17.068	C
A-B	47	12			47				
A-C	1098	274			1098				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	65	16	456	0.144	66	0.2	0.2	9.239	A
B-A	0	0	120	0.000	0	0.0	0.0	0.000	A
C-A	812	203			812				
C-B	142	36	443	0.321	144	0.8	0.5	12.058	B
A-B	39	10			39				
A-C	919	230			919				

2028 + Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.76	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.76	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2028 + Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1297	100.000
B		ONE HOUR	✓	221	100.000
C		ONE HOUR	✓	1289	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	13	1284
	B	0	0	221
	C	1241	48	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	11	0
	B	2	0	2
	C	9	14	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.57	19.94	1.3	C	203	304
B-A	0.00	0.00	0.0	A	0	0
C-A					1139	1708
C-B	0.15	12.17	0.2	B	44	66
A-B					12	18
A-C					1178	1767

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	166	42	551	0.302	165	0.0	0.4	9.280	A
B-A	0	0	193	0.000	0	0.0	0.0	0.000	A
C-A	934	234			934				
C-B	36	9	455	0.079	36	0.0	0.1	8.577	A
A-B	10	2			10				
A-C	967	242			967				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	199	50	497	0.399	198	0.4	0.7	11.978	B
B-A	0	0	122	0.000	0	0.0	0.0	0.000	A
C-A	1116	279			1116				
C-B	43	11	410	0.105	43	0.1	0.1	9.794	A
A-B	12	3			12				
A-C	1154	289			1154				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	243	61	423	0.575	241	0.7	1.3	19.447	C
B-A	0	0	23	0.000	0	0.0	0.0	0.000	A
C-A	1366	342			1366				
C-B	53	13	349	0.152	53	0.1	0.2	12.149	B
A-B	14	4			14				
A-C	1414	353			1414				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	243	61	423	0.575	243	1.3	1.3	19.944	C
B-A	0	0	23	0.000	0	0.0	0.0	0.000	A
C-A	1366	342			1366				
C-B	53	13	349	0.152	53	0.2	0.2	12.168	B
A-B	14	4			14				
A-C	1414	353			1414				

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	199	50	497	0.399	201	1.3	0.7	12.256	B
B-A	0	0	122	0.000	0	0.0	0.0	0.000	A
C-A	1116	279			1116				
C-B	43	11	410	0.105	43	0.2	0.1	9.812	A
A-B	12	3			12				
A-C	1154	289			1154				

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	166	42	551	0.302	167	0.7	0.4	9.409	A
B-A	0	0	193	0.000	0	0.0	0.0	0.000	A
C-A	934	234			934				
C-B	36	9	455	0.079	36	0.1	0.1	8.598	A
A-B	10	2			10				
A-C	967	242			967				

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.2.1574

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Filename: A5 Business Park Priority - without right turn.j10
Path: C:\PJA Folder\Phil Jones Associates\SharedData - 07790 Watling Street, Cannock\3. Technical\3.2 Modelling
Report generation date: 01/03/2024 13:43:39

»2028 + Development, AM
»2028 + Development, PM

Summary of junction performance

	AM						PM					
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)
	2028 + Development											
Stream B-C	D1	0.7	27.00	0.42	D	0.83	D2	1.7	26.06	0.64	D	1.90
Stream B-A		0.0	0.00	0.00	A			0.0	0.00	0.00	A	
Stream C-B		0.0	0.00	0.00	A			0.0	0.00	0.00	A	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

File summary

File Description

Title	
Location	
Site number	
Date	22/02/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	PJA\Ben Turpin
Description	

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	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2028 + Development	AM	ONE HOUR	07:45	09:15	15	✓
D2	2028 + Development	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2028 + Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.83	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.83	A

Arms

Arms

Arm	Name	Description	Arm type
A	A5 (E)		Major
B	Site Access		Minor
C	A5 (W)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	8.60	✓	1.80		250.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	6.90	6.70	6.50	6.50	✓	3.00	150	125

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	573	0.089	0.225	0.142	0.321
B-C	843	0.115	0.290	-	-
C-B	719	0.247	0.247	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2028 + Development	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1463	100.000
B		ONE HOUR	✓	87	100.000
C		ONE HOUR	✓	1267	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	242	1221
	B	0	0	87
	C	1267	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	7	18
	B	0	0	15
	C	16	8	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.42	27.00	0.7	D	80	120
B-A	0.00	0.00	0.0	A	0	0
C-A					1163	1744
C-B	0.00	0.00	0.0	A	0	0
A-B					222	333
A-C					1120	1681

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	65	16	441	0.149	65	0.0	0.2	9.564	A
B-A	0	0	155	0.000	0	0.0	0.0	0.000	A
C-A	954	238			954				
C-B	0	0	373	0.000	0	0.0	0.0	0.000	A
A-B	182	46			182				
A-C	919	230			919				

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	78	20	384	0.204	78	0.2	0.3	11.759	B
B-A	0	0	74	0.000	0	0.0	0.0	0.000	A
C-A	1139	285			1139				
C-B	0	0	316	0.000	0	0.0	0.0	0.000	A
A-B	218	54			218				
A-C	1098	274			1098				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	96	24	229	0.419	94	0.3	0.7	26.376	D
B-A	0	0	0	0.000	0	0.0	0.0	0.000	A
C-A	1395	349			1395				
C-B	0	0	238	0.000	0	0.0	0.0	0.000	A
A-B	266	67			266				
A-C	1344	336			1344				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	96	24	229	0.419	96	0.7	0.7	27.002	D
B-A	0	0	0	0.000	0	0.0	0.0	0.000	A
C-A	1395	349			1395				
C-B	0	0	238	0.000	0	0.0	0.0	0.000	A
A-B	266	67			266				
A-C	1344	336			1344				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	78	20	384	0.204	80	0.7	0.3	11.919	B
B-A	0	0	74	0.000	0	0.0	0.0	0.000	A
C-A	1139	285			1139				
C-B	0	0	316	0.000	0	0.0	0.0	0.000	A
A-B	218	54			218				
A-C	1098	274			1098				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	65	16	441	0.149	66	0.3	0.2	9.617	A
B-A	0	0	155	0.000	0	0.0	0.0	0.000	A
C-A	954	238			954				
C-B	0	0	373	0.000	0	0.0	0.0	0.000	A
A-B	182	46			182				
A-C	919	230			919				

2028 + Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.90	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.90	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2028 + Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1345	100.000
B		ONE HOUR	✓	221	100.000
C		ONE HOUR	✓	1289	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	61	1284
	B	0	0	221
	C	1289	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	11	9
	B	0	0	2
	C	8	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.64	26.06	1.7	D	203	304
B-A	0.00	0.00	0.0	A	0	0
C-A					1183	1774
C-B	0.00	0.00	0.0	A	0	0
A-B					56	84
A-C					1178	1767

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	166	42	522	0.319	165	0.0	0.5	10.030	B
B-A	0	0	183	0.000	0	0.0	0.0	0.000	A
C-A	970	243			970				
C-B	0	0	446	0.000	0	0.0	0.0	0.000	A
A-B	46	11			46				
A-C	967	242			967				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	199	50	462	0.430	198	0.5	0.7	13.533	B
B-A	0	0	108	0.000	0	0.0	0.0	0.000	A
C-A	1159	290			1159				
C-B	0	0	393	0.000	0	0.0	0.0	0.000	A
A-B	55	14			55				
A-C	1154	289			1154				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	243	61	381	0.639	240	0.7	1.6	24.915	C
B-A	0	0	3	0.000	0	0.0	0.0	0.000	A
C-A	1419	355			1419				
C-B	0	0	320	0.000	0	0.0	0.0	0.000	A
A-B	67	17			67				
A-C	1414	353			1414				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	243	61	381	0.639	243	1.6	1.7	26.062	D
B-A	0	0	3	0.000	0	0.0	0.0	0.000	A
C-A	1419	355			1419				
C-B	0	0	320	0.000	0	0.0	0.0	0.000	A
A-B	67	17			67				
A-C	1414	353			1414				

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	199	50	462	0.430	202	1.7	0.8	14.029	B
B-A	0	0	108	0.000	0	0.0	0.0	0.000	A
C-A	1159	290			1159				
C-B	0	0	393	0.000	0	0.0	0.0	0.000	A
A-B	55	14			55				
A-C	1154	289			1154				

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	166	42	522	0.319	168	0.8	0.5	10.200	B
B-A	0	0	183	0.000	0	0.0	0.0	0.000	A
C-A	970	243			970				
C-B	0	0	446	0.000	0	0.0	0.0	0.000	A
A-B	46	11			46				
A-C	967	242			967				