Land off
Tattenhall Road, Tattenhall

TRANSPORT ASSESSMENT

Report prepared for
Gladman Developments Ltd

April 2025

Report Reference 1952/2/B

ASHLEY HELME
ASSOCIATES

Transport Assessment

Land off Tattenhall Road, Tattenhall

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Ashley Helme Associates Ltd
76 Washway Road
SALE, Manchester
M33 7RE

Telephone
0161 972 0552

aha@ashleyhelme.co.uk
www.ashleyhelme.co.uk

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Transport Assessment

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1 Introduction

1.1 Ashley Helme Associates Limited (AHA) are appointed by **Gladman Developments Ltd** (GDL) to prepare a **Transport Assessment** (TA) report for proposed residential development on land off Tattenhall Road, Tattenhall, (henceforth referred to as the Site).

1.2 Proposed Development

1.2.1 The Site is presently agricultural/ field land. The proposed development comprises a residential development of up to **110 dwellings**.

1.3 Scope of the Report

1.3.1 The transport policy context for the proposed development is outlined in Chapter 2. The principles of the access strategy adopted for the proposed development are also discussed in Chapter 2, and this provides the means to achieve transport policy objectives. It is fundamental to the approach of the applicant, as represented in this TA, that a holistic view is taken of the consideration of access to the proposed development by all modes of transport.

1.3.2 The issues addressed within the TA fall broadly into the following areas:

(i) Accessibility by non-car modes, and
(ii) The vehicular traffic impact on the operational performance of the local highway network.

1.3.3 The local highway network is described in Chapter 3. The proposed Site access arrangements are outlined in Chapter 4.

1.3.4 The transport sustainability of the proposed development is a key issue, as set out in the National Planning Policy Framework (NPPF, December 2024), and also Planning Practice Guidance (PPG, March 2014). Accessibility issues are identified in Chapter 2, and an accessibility appraisal of the Site by non-car modes is presented in Chapters 5 (Walk & Cycle) and 6 (Public Transport), using an accessibility mapping methodology. The planning application is accompanied by a Travel Plan and this is summarised in Chapter 7.

1.3.5 The estimation of the development generated trips and associated With Development traffic flows is presented in Chapter 8. Modelling of the impact of development traffic on the highway network is described in Chapter 9.

1.3.6 The conclusions of the TA are presented in Chapter 10.

2 Policies & Principles of Access Strategy

2.1 A holistic approach is adopted for the desired access strategy. Due cognisance is taken of a range of relevant policy documents and considerations that represent current national and local policies. These include:

- National Planning Policy Framework (NPPF), December 2024,
- Planning Practice Guidance (PPG), March 2014,
- Cheshire West and Chester Local Plan (2015-2030),
- Cheshire West and Chester Local Transport Plan 4 (2011-2026).

2.2 A general thrust of current national and local policies is to promote and deliver sustainable transport objectives, and this is a key factor in defining the access strategy for the proposed development.

2.3 There are a range of documents that provide advice and guidance identifying that the historic approach of adopting rigid highway design standards and considering this in isolation is not appropriate or desirable in today's world. This includes, for example, Manual for Streets (MfS) and the associated Manual for Streets 2 (MfS2).

2.4 National Planning Policy Framework

2.4.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied. The latest version of NPPF was released in December 2024.

2.4.2 NPPF: Achieving Sustainable Transport

2.4.2.1 Paragraph 7 of NPPF sets out that:

"The purpose of the planning system is to contribute to the achievement of sustainable development, including the provision of homes, commercial development and supporting infrastructure in a sustainable manner. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs. At a similarly high level, members of the United Nations – including the United Kingdom – have agreed to pursue the 17 Global Goals for Sustainable Development in the period to 2030. These address social progress, economic well-being and environmental protection."

2.4.2.2 In paragraph 10, NPPF makes it clear that:

*"So that sustainable development is pursued in a positive way, at the heart of the Framework is a **presumption in favour of sustainable development."***

2.4.3 Promoting Sustainable Transport

2.4.3.1 The Government's commitment to sustainable transport is emphasised in NPPF. Paragraph 109 advises development promoters to consider transport issues from the earliest stages of plan-making and development proposals using a **vision-led** approach, so that:

"a) making transport considerations an important part of early engagement with local communities;

b) ensuring patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places;

c) understanding and addressing the potential impacts of development on transport networks;

d) realising opportunities from existing or proposed transport infrastructure, and changing transport technology and usage – for example in relation to the scale, location or density of development that can be accommodated;

e) identifying and pursuing opportunities to promote walking, cycling and public transport use; and

f) identifying, assessing and taking into account the environmental impacts of traffic and transport infrastructure – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.''

2.4.3.2 This is expanded in paragraph 110, which states:

*"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable **transport solutions will vary between urban and rural areas**, and this should be taken into account in both plan-making and decision-making."* (AHA emphasis).

The proposed development respects and reflects this NPPF transport sustainability related objective.

2.4.3.3 NPPF states in paragraph 115 that:

"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

a) sustainable transport modes are prioritised taking account of the vision for the site, the type of development and its location;

b) safe and suitable access to the site can be achieved for all users;

c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and

d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree through a vision-led approach.''

2.4.3.4 NPPF makes it clear in paragraph 116 that:

''Development should only be ***prevented or refused*** *on* ***highways grounds*** *if there would be an unacceptable impact on* ***highway safety****, or the* ***residual cumulative impacts*** *on the road network, following mitigation, would be* ***severe****, taking into account all reasonable future scenarios.''* (AHA emphasis).

2.4.3.5 NPPF offers specific transport advice with respect to development proposals. In paragraph 117, NPPF sets out that development should:

"a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;

b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;

c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;

d) allow for the efficient delivery of goods, and access by service and emergency vehicles; and

e) *be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations."*

2.4.3.6 NPPF sets out the documents that should be prepared for major developments. In paragraph 118, NPPF advises:

"All developments that will generate significant amounts of movement should be required to provide a ***travel plan****, and the application should be supported by a* ***vision-led transport statement*** *or* ***transport assessment*** *so that the likely impacts of the proposal can be assessed and monitored."* (AHA emphasis).

2.5 PPG

2.5.1 The Department for Communities and Local Government (DCLG) launched the Planning Practice Guidance (PPG) web-based resource on 6 March 2014. The PPG includes advice on when transport assessments and transport statements are required, and what they should contain.

2.5.2 The PPG states that:

"Travel Plans, Transport Assessments and Statements can positively contribute to:

- *encouraging sustainable travel;*
- *lessening traffic generation and its detrimental impacts;*
- *reducing carbon emissions and climate impacts;*
- *creating accessible, connected, inclusive communities;*
- *improving health outcomes and quality of life;*
- *improving road safety; and*
- *reducing the need for new development to increase existing road capacity or provide new roads."*

2.5.3 With respect to Transport Assessments and Statements, PPG sets out that:

''The key issues to consider at the start of preparing a Transport Assessment or Statement may include:

- *the planning context of the development proposal;*
- *appropriate study parameters (i.e. area, scope and duration of study);*
- *assessment of public transport capacity, walking/ cycling capacity and road network capacity;*

- *road trip generation and trip distribution methodologies and/or assumptions about the development proposal;*
- *measures to promote sustainable travel;*
- *safety implications of development; and*
- *mitigation measures (where applicable) – including scope and implementation strategy.''*

2.5.4 With respect to Travel Plans, PPG sets out that:

''Travel Plans should set explicit outcomes rather than just identify processes to be followed (such as encouraging active travel or supporting the use of low emission vehicles). They should address all journeys resulting from a proposed development by anyone who may need to visit or stay and they should seek to fit in with wider strategies for transport in the area.

They should evaluate and consider:

- *benchmark travel data including trip generation databases;*
- *information concerning the nature of the proposed development and the forecast level of trips by all modes of transport likely to be associated with the development;*
- *relevant information about existing travel habits in the surrounding area;*
- *proposals to reduce the need for travel to and from the site via all modes of transport; and*
- *provision of improved public transport services.''*

2.6 Cheshire West and Chester Local Plan (2015-2030)

2.6.1 The Cheshire West and Chester (CWCC) Local Plan was adopted on 29 January 2015 and forms the statutory development plan for the borough. The purpose of the Plan is to provide the overall vision, strategic objectives, spatial strategy and strategic planning policies for the borough to 2030.

2.6.2 In line with Regulation 10A of the Town and Country Planning (Local Planning) (England) Regulations 2012 (as amended), a review of the CWCC Local Plan was carried out and reported on the 20 January 2020. The inspector appointed to the review concluded that Plan did not need updating. Consequently, the 2015 Local Plan remains valid.

2.6.3 Sustainable Development

2.6.3.1 The Council's position on sustainable development is set out in **STRAT 1**. This states:

"The Local Plan seeks to enable development that improves and meets the economic, social and environmental objectives of the borough in line with the presumption in favour of sustainable development. Proposals that are in accordance with relevant policies in the Plan and support the following sustainable development principles will be approved without delay, unless material considerations indicate otherwise:

- *Mitigate and adapt to the effects of climate change, ensuring development makes the best use of opportunities for renewable energy use and generation.*
- *Provide for mixed-use developments which seek to provide access to homes, employment, retail, leisure, sport and other facilities, promoting healthy and inclusive communities whilst reducing the need to travel.*
- ***Locate new housing, with good accessibility to existing or proposed local shops, community facilities and primary schools and with good connections to public transport***
- *Protect, enhance and improve the natural and historic environment whilst enhancing and restoring degraded and despoiled land, seeking opportunities for habitat creation.*
- *Encourage the use and redevelopment of previously developed land and buildings in sustainable locations that are not of high environmental value.*
- *Minimise the loss of greenfield land and high grade agricultural land.*
- *Support regeneration in the most deprived areas of the borough and ensure those reliant on non-car modes of transport can access jobs and services.*
- *Ensure the prudent use of our natural finite resources whilst promoting the re-use, recovery and recycling of materials.* (AHA emphasis).

The Council will always work proactively with applicants where proposals are not in accordance with the Plan to find solutions which mean that proposals can be made sustainable and approved wherever possible. However, proposals that fundamentally conflict with the above principles or policies within the Local Plan will be refused.

Where there are no Local Plan policies relevant to the application or relevant policies are out of date at the time of making the decision, the Council will grant permission unless material considerations indicate otherwise, taking into account whether any adverse impacts of granting permission would significantly and demonstrably outweigh the benefits when assessed against the National Planning Policy Framework, or specific policies in the Framework indicate that development should be refused."

2.6.4 Transport and Accessibility

2.6.4.1 Policy **STRAT 10** of the local plan sets out the general transport and accessibility requirements for new developments, and states:

"In accordance with the key priorities for transport set out in the Local Transport Plan, development and associated transport infrastructure should:

- *Provide and develop reliable and efficient transport networks that support sustainable economic growth in the borough and the surrounding area*
- *Reduce carbon emissions from transport and take steps to adapt our transport networks to the effects of climate change*
- *Contribute to safer and secure transport and promote forms of transport that are beneficial to health Improve accessibility to jobs and key services which help support greater equality of opportunity*
- *Ensure that transport helps improve quality of life and enhances the local environment*

In order to minimise the need for travel, proposals for new development should be located so as they are accessible to local services and facilities by a range of transport modes. New development will be required to demonstrate that:

- *Additional traffic can be accommodated safely and satisfactorily within the existing, or proposed, highway network*
- *Satisfactory arrangements can be made to accommodate the additional traffic before the development is brought into use*
- *Appropriate provision is made for access to public transport and other alternative means of transport to the car*
- *Measures have been incorporated to improve physical accessibility and remove barriers to mobility, especially for disabled and older people. The safety of all road users should be taken into account in the design and layout of new developments. Opportunities to improve public transport facilities will be taken wherever possible, through improved services, interchange facilities and parking at railway stations.*

Developments that would generate significant amounts of movement should be accompanied by a ***Transport Assessment*** *and* ***Travel Plan****, in accordance with Council guidance*

New developments will be expected to provide adequate levels of car and cycle parking in accordance with the Council's parking standards, taking account of:

- *The accessibility of the development*
- *The type, mix and use of the development*
- *The availability of, and opportunities for, public transport*
- *Local car ownership levels*

Parking provision should support the viability of town centres whilst minimising traffic congestion.

Proposals should seek to maximise use of sustainable (low carbon) modes of transport, by incorporating high quality facilities for pedestrians, cyclists and public transport and where appropriate charging points for electric vehicles.

Opportunities will be sought to extend and improve access to local footpath and cycle networks, including greenways, canal towpaths and the Public Rights of Way networks." (AHA emphasis).

2.6.4.2 In addition to the above, several policies from the Chester Local Plan are saved as part of the emerging CWC Local Plan.

2.6.5 Parking

2.6.5.1 The CWCC parking requirements for residential developments are set out in the Supplementary Planning Document (SPD): Parking Standards (February 2022). This sets out standards for general and cycle parking together with electric charging points. These are design elements that will be determined through a subsequent reserved matters application.

2.7 Cheshire West and Chester Local Transport Plan (2011-2026)

2.7.1 The Local Transport Plan (LTP) sets out Cheshire West and Chester Council's plans and proposals for improving local transport over the fifteen-year period up to 2026. It consists of a longer-term Integrated Transport Strategy for the period 2011 to 2026. This includes:

"• *Ensuring that our roads and bridges are well maintained and tackling the current maintenance backlog;*

- *Dealing with increased levels of traffic congestion;*
- *Improving local bus services and providing a more joined up approach to how buses operate;*
- *Improving transport links to jobs and services, especially for those without access to a car;*
- *Encouraging the use of greener and more sustainable types of transport;*
- *Championing more healthy and active types of transport such as cycling and walking;*
- *Improving air quality and the environment;*
- *Improving safety and reducing the number of casualties on our roads;*
- *Assessing how transport can support economic growth, regeneration and new development;*

- *Improving commuter links to neighbouring areas, particularly Merseyside, Manchester, North East Wales and Warrington; and*
- *Responding to the mobility needs of older and disabled people."*

2.7.2 The underlying theme of the LTP is to promote policies and measures to foster and achieve improved opportunities for travel choices by non-car modes. This provides the context for specific local measures to be considered, promoted and introduced.

2.8 Principles of the Access Strategy

2.8.1 The access strategy for the development provides the means to achieve the identified policy objectives by optimising the opportunity for access to/from the Site by non-car modes. This is in accordance with all local and national policies.

2.8.2 The accessibility of the Site for those travelling on foot and cycle is reviewed in Chapter 5, and takes account of the existing and proposed facilities. The current accessibility of the Site by public transport is outlined in Chapter 6 herein, together with the development proposals for public transport. The proposed development takes account of the needs of the mobility impaired.

2.8.3 The Access Strategy for the development is cohesive, reflecting the need to appropriately consider and enable provision for the movement of people and goods. This is in accordance with the aims and spirit of NPPF. This includes considering, inter alia:

- Permeability of the Site from/connection to the surrounding locality, for all modes of transport, motorised and non-motorised,
- Internal access arrangements, all to be the subject of reserved matters application(s), should minimise distance travelled by all modes (where appropriate),
- Emergency access requirements must be met.

2.8.4 The development proposals adopt an integrated approach to managing travel demand, offering safe and sustainable access for all by a choice of sustainable transport alternatives, between homes and employment and a range of services and facilities, such as retail, health, education, and leisure.

2.9 Summary

2.9.1 In summary, the development proposal respects and promotes the principles of transport sustainability, and is consistent with national and local transport policy objectives.

3 Highway Network

3.1 The Site has frontage on Tattenhall Road, which is public highway.

3.2 Tattenhall Road

3.2.1 The Site has about 170m of frontage with Tattenhall Road.

3.2.2 Tattenhall Road is a single carriageway road and measures around 5.5m wide in the vicinity of the Site. Continuous sealed surface footway is available along the east side Tattenhall Road. Footway on the west side of Tattenhall Road currently terminates near to the south-east corner of the Site.

3.2.3 There is a speed limit change from 30mph to 40mph about 70m north of the Site southern boundary.

3.3 Study Network

3.3.1 Traffic generated by the Site will pass through the following junctions that comprise the TA study network of junctions:

REF	JUNCTION	CONTROL
SJ1	Site/Tattenhall Road	refer Chapter 4;
SJ2	Tattenhall Road/Newton Lane	priority control crossroads junction;
SJ3	Tattenhall Road/Oaklands Avenue	priority control 'T' junction;
SJ4	Tattenhall Road/Chester Road	priority control 'T' junction;
SJ5	Chester Road/Burwardsley Road/High Street	priority control 'T' junction;
SJ6	Chester Road/Rookery Drive	priority control 'T' junction.

3.3.2 Figure 3.1 shows the location of the study junctions. The local highway authority Cheshire West and Chester Council (CWCC) is responsible for TA study junctions SJ1-SJ6.

3.4 Existing Junction Geometry

3.4.1 The existing study network junctions are presented on the following drawings:

REF	JUNCTION	DRAWING No
SJ2	Tattenhall Road/Newton Lane	1952/02
SJ3	Tattenhall Road/Oaklands Avenue	1952/03
SJ4	Tattenhall Road/Chester Road	1952/04
SJ5	Chester Road/Burwardsley Road/High Street	1952/04
SJ6	Chester Road/Rookery Drive	1952/05.

3.4.2 SJ2: Tattenhall Road/Newton Lane

3.4.2.1 To the north of the Site, Tattenhall Road forms a priority-controlled junction with Newton Lane. This is TA SJ2 and the existing arrangements are shown on Drg No 1952/02.

3.4.2.2 SJ2 takes the form of a crossroads junction. Newton Lane forms the minor arms and are controlled by give-way markings at the junction.

3.4.2.3 There is recently installed sealed surface footway on the east side of Tattenhall Road. There are dropped kerbs and tactile paving on the Newton Lane (E) approach to the junction.

3.4.2.4 SJ2 is located within a 40mph speed limit. However, a 50mph speed limit applies to Tattenhall Road immediately to the north of the junction.

3.4.3 SJ3: Tattenhall Road/Oaklands Avenue

3.4.3.1 SJ3 is a priority-controlled T-junction located approximately 400m south of the Site. The existing SJ3 arrangements are shown on Drg No 1952/03.

3.4.3.2 SJ3 takes the form of a simple priority-controlled junction. Oaklands Avenue is the minor arm of the junction.

3.4.3.3 There are sealed surface footways around all of the junction. There are dropped kerbs on Oaklands Avenue at the junction.

3.4.3.4 SJ3 is located within a 30mph speed limit. However, a 20mph speed limit applies to Oaklands Avenue immediately to the west of the junction.

3.4.4 SJ4: Tattenhall Road/Chester Road

3.4.4.1 SJ4 is a priority-controlled T-junction located about 280m south-west of SJ3. The existing SJ4 arrangements are shown on Drg No 1952/04.

3.4.4.2 SJ4 takes the form of a simple priority-controlled junction. Chester Road is the minor arm of the junction.

3.4.4.3 There are sealed surface footways around all of the junction. There are dropped kerbs on Chester Road at the junction. The footway on the north-west side of Tattenhall Road (N) is segregated from the carriageway by a wide grass verge which contains mature trees.

3.4.4.4 The junction is located within a 20mph speed limit. The junction benefits from lighting.

3.4.5 SJ5: Chester Road/Burwardsley Road/High Street

3.4.5.1 SJ5 is a priority-controlled T-junction located about 50m south of SJ4. The existing SJ5 arrangements are shown on Drg No 1952/04.

3.4.5.2 Burwardsley Road/ High Street form the major arms of the junction. Chester Road is the minor arm. The junction is located within a 20mph speed limit zone. However, a 30mph speed limit applies to Burwardsley Road immediately after the junction.

3.4.5.3 There are sealed surface footways around all of the junction, which benefit from street lighting.

3.4.6 SJ6: Chester Road/Rookery Drive

3.4.6.1 SJ6 is a priority-controlled T junction located about 275m north-west of SJ4. The existing SJ6 arrangements are shown on Drg No 1952/05.

3.4.6.2 Chester Road form the major arms of the junction. Rookery Drive is the minor arm. The junction is located within a 20mph speed limit zone. However, a 30mph speed limit applies to Chester Road Road immediately to the north-west the junction.

3.4.6.3 There are sealed surface footways around all of the junction. There are dropped kerbs on Rookery Drive at a defined crossing point. The junction benefits from street lighting.

3.5 Personal Injury Collision History

3.5.1 The personal injury collision (PIC) records for the TA study junctions as well as the Site frontage have been purchased from CWCC for the period **1 July 2019 to 30 June 2024**. A plan of the reported PICs is included in Appendix A. The CWCC 'Crash Report' is included in Appendix B.

3.5.2 Distribution of Accidents

3.5.2.1 A summary of the CWCC PIC data is set out below:

	2019	2020	2021	2022	2023	2024	**TOTAL**
Tattenhall Road (near SJ1)	-	-	-	-	-	-	**0**
SJ2	-	-	-	2	2	-	**4**
SJ3	-	-	-	-	-	-	**0**
SJ4	-	-	-	-	-	-	**0**
SJ5	-	-	-	-	-	-	**0**
SJ6	-	-	-	-	-	-	**0**
TOTAL	**0**	**0**	**0**	**2**	**2**	**0**	**4**

3.5.3 Severity

3.5.3.1 The severity of the recorded accidents is set out below:

	Slight	Serious
Tattenhall Road (near SJ1	-	-
SJ2	3	1
SJ3	-	-
SJ4	-	-
SJ5	-	-
SJ6	-	-
TOTAL	**3**	**1**

3.5.4 SJ2: Tattenhall Road/Newton Lane

3.5.4.1 There have been 4no recorded PICs at SJ2 in the 5-year selection period. These occurred in 2022 and 2023. Three accidents are classified as Slight. There was a single 'Serious' accident that occurred in 2023. The accidents details are as follows:

220037699

The collision occurred on 29.05.22 between a vehicle travelling east to west on Newton Lane and a vehicle travelling north to south on Tattenhall Road. The report suggests that weather was a contributory factor by affecting the vision of the Newton Lane driver and creating a slippery road surface. The report also suggests that the vehicle on Newton Lane may have been travelling too fast. The accident is classified as Slight.

22000708623

The collision occurred on 23.09.22 between a vehicle turning right into Newton Lane (W) with a cyclist waiting to turn out of Newton Lane (W). The report suggests that dazzling sun/distraction and an uncertain driver are contributory factors. The accident resulted the cyclist receiving 'Slight' injuries.

23000294878

The collision occurred on 07.04.23 between an agricultural vehicle travelling from north to south on Tattenhall Road with a vehicle travelling west to east from Newton Lane (W). The report suggests that the driver on Newton Lane failed to look properly and failed to judge speed. The accident resulted in 4 people receiving Slight injuries. One person sustained Serious injuries.

23001008174

The collision occurred on 14.10.23 between a vehicle traveling east to west from Newton Lane (E) with a vehicle travelling south to north on Tattenhall Road. The report suggests that the driver on Newton Lane failed to give-way. The accident is classified as Slight.

3.5.5 Summary

3.5.5.1 A review of the accident data shows that there have recorded accidents at only SJ2 in the TA study network. A review of the SJ2 accidents shows that driver error was the main contributory factor to all of the accidents. Whilst all accidents are regrettable, there is **no** accident pattern that gives rise to the need for accident remediation measures.

4 Proposed Site Access Arrangements

4.1 Design Philosophy

4.1.1 It is accepted that the way a new residential scheme relates to its surrounding area is key to its success. Guidance on the design of residential developments is set out in documents such Manual for Streets (MfS). This advocates that residential design should:

- Be based on a hierarchical design process placing pedestrians at the top.
- Recognise that streets fulfil a community function with spaces for social interaction.
- Create an inclusive environment that recognises the needs of all ages and abilities.
- Focus on pedestrian desire lines.
- Create a permeable network of streets with strong connectivity to a range of routes.

4.1.2 The starting point of a new residential scheme is to first identify the existing places/amenities near to the site and their relative importance. Then, from this, form an understanding of how an area works to enable proposed points of connection and linkage to be identified, both within and outside the site, so that important desire lines are achieved. MfS recognises that:

- A permeable and well-connected movement network can positively affect how much people walk or cycle or use public transport which helps to achieve a sustainable environment and good quality of life for its community,

- A good range of local amenities within easy access of residents can help to create a walkable neighbourhood, and

- Walking and cycling are important modes of travel, offering a more sustainable alternative to the car, making a positive contribution to the overall character of the place, public health and to tackle climate change through carbon emissions reductions.

4.1.3 MfS advocates residential design that creates walkable neighbourhoods. MfS sets out in para 4.4.1 that:

"Walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes (up to about 800m) walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and PPG13 states that walking offers the greatest potential to replace short car trips, particularly those under 2km. MfS encourages a reduction in the need to travel by car through the creation of mixed-use neighbourhoods with interconnected street patterns, where daily needs are within walking distance of most residents."

4.1.4 A holistic approach to the Site access arrangements is at the core of the development Site access strategy. Thus, there is a cohesive 'package' of development access arrangements for differing modes of travel, comprising, walk, cycle, bus and motor vehicles. Further information about walk and cycle modes is presented in Chapter 5, and about public transport in Chapter 6.

4.2 Site Access Strategy

4.2.1 The access strategy for the Site is:

(i) Vehicles: Tattenhall Road,
(ii) Pedestrians: Tattenhall Road,
(iii) Cyclists: Tattenhall Road.

4.3 Design Considerations

4.3.1 Design Guidance

4.3.1.1 The design guidance considered includes Manual for Streets 1 (MfS1), MfS2 and the Design Manual for Roads and Bridges (DMRB).

4.3.1.2 MfS2 states that:

"*…most MfS advice can be applied to a highway regardless of speed limit.* ***It is therefore recommended that as a starting point for any scheme affecting non-trunk roads, designers should start with MfS.***" (para 1.3.2)

Tattenhall Road is not a trunk road.

4.3.1.3 MfS continues in para 1.3.3:

"*Where designers do refer to DMRB for detailed technical guidance on specific aspects, for example on strategic inter-urban and non-trunk roads, it is recommended that they* ***bear in mind the key principles of MfS****, and apply DMRB in a way that* ***respects local context****. It is further recommended that DMRB or other standards and guidance is* ***only used*** *when the guidance contained in MfS is not sufficient or where particular evidence leads a designer to conclude that MfS is not applicable.*"

4.4 Site Access Arrangements

4.4.1 The proposed Site Access arrangements on Tattenhall Road are shown on **Drg No 1952/01/A.** This is based on a topographical survey.

4.4.2 The key features of the proposed Drg No 1952/01/A Site Access/Tattenhall Road arrangements include:

(i) Introduce new Site Access, forming a 'T' junction with Tattenhall Road;
(ii) Junction to operate under priority control;
(iii) Site Access to measure 5.5m wide,
(iv) 6.0m corner radii between the Site access and Tattenhall Road,
(v) Provide 2.4m x 111m visibility splay to the left, for vehicles emerging from the Site Access;
(vi) Provide 2.4m x 103m visibility splay to the right, for vehicles emerging from the Site Access.
(vii) Provide pedestrian crossing on Tattenhall Road to the south of the proposed Site access, with appropriate pedestrian-vehicle intervisibilities.

4.4.3 Speed and Visibility Requirements

4.4.3.1 The Site boundary on the east side is formed by Tattenhall Road. There is a speed limit change from 30mph to 40mph about 70m north of the Site southern boundary. Therefore, vehicle speeds along the Tattenhall Road Site boundary will vary.

4.4.3.2 To assist with the design of the Site access junction, the applicant commissioned an Automatic Traffic Count (ATC) survey of Tattenhall Road in the vicinity of the Site access. This involved the installation of pneumatic tubes across Tattenhall Road to the south (ATC1) and north (ATC2) of the proposed Site access junction.

4.4.3.3 The surveys were undertaken between 16-22 October 2024 (inclusive) and recorded data over the full 24-hour period of each survey day.

4.4.4 Vehicle Speeds: Average

4.4.4.1 The recorded 5-day off-peak average speeds are:

		ATC1	**ATC2**
(i)	Northbound:	33.5mph	36.1mph
(ii)	Southbound:	33.0mph	35.5mph.

4.4.4.2 The ATC1 tubes were located in a section of Tattenhall Road that is subject to a 30mph speed limit. The speed survey results from ATC1 show that vehicles are travelling about 3-4mph above the speed limit.

4.4.4.3 The ATC2 tubes were located in a section of Tattenhall Road that is subject to a 40mph speed limit. The speed survey results from ATC2 show that vehicles are generally travelling about 4-5mph below the 40mph speed limit.

4.4.5 Vehicle Speeds: 85th Percentile

4.4.5.1 The recorded 5-day off-peak 85%le speeds are:

		ATC1	ATC2
(i)	Northbound:	39.9mph	42.4mph
(ii)	Southbound:	39.5mph	42.0mph.

4.4.6 Weather Records

4.4.6.1 A review of the weather data collected at weather stations near Tattenhall for the survey period (excluding Saturday and Sunday) shows that there were the following levels of rainfall for the duration of the survey (16-22 October 2024):

(i)	Wednesday 16 October 2024:	10.4mm,
(ii)	Thursday 17 October 2024:	41.9mm,
(iii)	Friday 18 October 2024:	0.0mm,
(iv)	Monday 21 October 2024:	2.5mm. and
(v)	Tuesday 22 October 2024:	0.3mm.

4.4.6.3 The recorded rainfall levels are very low with the exception of Wednesday 16 October and Thursday 17 October. The speed survey results for these days are removed from the dataset on the basis that the wet weather may have affected vehicle speeds. For the remaining three survey days (ie Friday, Monday and Tuesday), it is reasonable to assume that the survey data reflects **dry** weather conditions.

4.4.7 Design Speeds

4.4.7.1 The approach adopted to derive a Design Speed for the junction design is to use the recorded speeds collected by:

(i) ATC1: Northbound speeds, and
(ii) ATC2: Southbound speeds.

4.4.7.2 The subsequent 85%ile speeds (inter peaks of 1000-1200 and 1400-1600 hours) are:

(i)	Northbound:	40.5mph, and
(ii)	Southbound:	42.4mph.

4.4.7.3 The Design Speeds for both northbound and southbound vehicles are both **above** the 37.5mph (60kph) threshold in MfS. Therefore, the design guidance in **DMRB** is applicable for the Site access visibility splays.

4.4.8 Stopping Sight Distance

4.4.8.1 The visibility standards in DMRB are based on the Stopping Sight Distance (SSD). This is derived from the 85%ile speeds together with assumptions regarding driver perception/ reaction times and rate of deceleration.

4.4.8.2 The SSDs in DMRB assume:

(i) Driver perception/ reaction time: 2 seconds, and
(ii) Deceleration rate: 3.68 m)/s^2 (absolute minimum)
2.45 m)/s^2 (desirable minimum)

4.4.8.3 Based on a northbound Design Speed of **40.5mph** for the Site Access (18.11m/s), the calculated SSD is:

ADVICE	PERCEPTION/ REACT TIME (s)	DECEL RATE (m/s^2)	SSD(m)
DMRB	2	3.68 (absolute min)	81
DMRB	2	2.45 (desirable min)	103.

4.4.8.4 Based on a southbound Design Speed of **42.4mph** for the Site Access (18.95m/s), the calculated SSD is:

ADVICE	PERCEPTION/ REACT TIME (s)	DECEL RATE (m/s^2)	SSD(m)
DMRB	2	3.68 (absolute min)	87
DMRB	2	2.45 (desirable min)	111.

4.4.8.5 Drg No 1952/01/A demonstrates that visibility splays satisfying DMRB are achievable. Drg No 1952/01/A also confirms that forward sightlines are available between a southbound vehicle and stationary vehicle waiting to turn right into Site and between the stationary vehicles and an approaching northbound vehicle.

4.4.8.6 There is a circa 4m level difference along the Tattenhall Road coincident with the Site frontage. Drg No 1952/01/A demonstrates that the visibility splays are achievable in the vertical plane assuming a driver eye height of 1.05m and an object height of 0.26m.

4.4.9 Pedestrian Improvements: Tattenhall Road

4.4.9.1 It is proposed that the following pedestrian infrastructure is to be delivered by the development:

(i) Provide 2.0m wide footway on the south side of the proposed Site access road,
(ii) Introduce dropped kerbs, tactile paving to the south of the Site access to assist pedestrian crossing to/from the existing footway on the east side of Tattenhall Road. The proposed crossing is to be highlighted with a red textureflex marking on the carriageway,
(iii) Extend existing lighting columns on Tattenhall Road northwards to a point just beyond the proposed Site access.

4.4.9.2 The proposed improvements are shown on Drg No 1952/01/A. This also demonstrates that appropriate pedestrian-vehicle intervisibilities are achievable at the crossing.

4.4.10 Swept Path Analysis

4.4.10.1 Swept path analysis of the proposed Site Access junction has been undertaken to examine if the proposed junction can accommodate the tracking movements of larger vehicles. For this exercise, vehicles are adopted that might be generated by the proposed development, albeit on an occasional basis. The results for the Site Access are set out on the following drawings:

(i)	10.60m Large Refuse Vehicle (3 axle)	1952/SP/01,
(ii)	9.57m Pantechnicon	1952/SP/02,
(iii)	8.68m Fire Appliance	1952/SP/03.

4.4.10.2 The swept path analysis shown on Drg Nos 1952/SP/01-03 confirms that all of the 'test' vehicles can complete all turns at the junction.

4.4.11 Stage 1 Road Safety Audit

4.4.11.1 The applicant acknowledges that a Stage 1 Road Safety Audit (RSA) of the proposed Site Access arrangements is required. However, the applicant would welcome feed-back from CWCC highway officers prior to commissioning the audit.

4.5 Proposed Speed Reduction Scheme: Tattenhall Road

4.5.1 Existing Speeds

4.5.1.1 In the vicinity of the application Site, the average vehicle speeds in both directions of travel along Tattenhall Road are above the 30mph speed limit. Consequently, the applicant proposes a package of measures aimed at reducing speeds.

4.5.2 Improvement Scheme

4.5.2.1 It is proposed that measures are installed along Tattenhall Road. These are identified on **Drg No 1952/01/A** and comprise:

(i) Provision of a 'SLOW' marking in the Tattenhall Road carriageway to the north of the proposed Site access,
(ii) Provision of a speed rondel on the Tattenhall Road carriageway, to the south of the proposed Site access,
(iii) Provision of red textureflex on the Tattenhall Road carriageway, between proposed dropped kerb/tactile paving crossing points, to the south of the Site access,
(iv) Upgrade of Tattenhall welcome sign with 'Please Drive Carefully' message to the south of the proposed Site access. Sign to include Glasdon style gate to make it more prominent,
(v) Introduction of speed activated signage to the north of the Site access junction,
(vi) Northward extension of the existing 30mph speed limit (to be funded through a S106 agreement).

4.6 Internal Roads

4.6.1 The internal road layout for the outline application is to be the subject of reserved matters application(s).

4.7 Mobility Impaired

4.7.1 The needs of those with mobility impairment are an important component of the detailed design of the development. This is advocated in NPPF. The detailed design of the internal layout of the development, which must be the subject of reserved matters approval, will describe the facilities to be provided on Site to assist the mobility impaired, taking account of guidance and standards together with good practice and local/national policies.

4.8 Summary

4.8.1 The planning application seeks the determination of access.

4.8.2 The scheme is to be served by a new priority-controlled T junction formed on Tattenhall Road. This is presented on Drg No 1952/01/A.

4.8.3 It is demonstrated that the proposed access point:

(i) Satisfies geometric and visibility requirements;
(ii) Offers appropriate provision for all users, including those with mobility impairment;
(iii) Can accommodate the tracking movements of a range of vehicles.

4.8.4 Pedestrian and cycle access is available from Tattenhall Road, which is identified on the Development Framework Plan.

4.8.5 It is considered that the proposed access strategy is in accordance with guidance at both local and national level.

5 Walk & Cycle

5.1 Walk

5.1.1 It is established and acknowledged that walking is the most important mode of travel at the local level, and offers the greatest potential to replace short car trips, particularly under 2km.

5.1.2 National Travel Survey (2023)

5.1.2.1 The National Travel Survey of 2023 (NTS 2023) The NTS 2023 is the latest available data. NTS 2023 confirms that 29% of **all** trips are undertaken on foot. However, for trips less up to 1 mile (1.6km), 81% of journeys are carried out on foot.

5.1.2.2 The NTS also sets out that, on average, people:

(i) undertake 263 walk trips per year,
(ii) walk a total of 225 miles per year.

5.1.2.3 Based on the total walk distance of 225 miles and 263 trips per year, this means that the average walk trip is about 0.86 miles (circa 1.37km).

5.1.2.4 The NTS establishes that:

(i) 81% of all trips under 1 mile (1.6km) are made by foot,
(ii) Nearly all walks recorded in the NTS were under 5 miles (99.8%),
(iii) Walking accounts for 29% of all trips and 4% of distance travelled,
(iv) Most trips to/from school for a trip length of under 1 mile were made by walking (80% for children aged 5-10 and 89% for children aged 11-16).

5.1.3 National Planning Policy Framework (NPPF)

5.1.3.1 NPPF defines sustainable transport modes as:

"*Any efficient, safe and accessible means of transport with overall low impact on the environment, including* ***walking*** *and cycling, ultra low and zero emission vehicles, car sharing and public transport.*" (AHA emphasis).

5.1.4 The National Design Guide

5.1.4.1 The National Design Guide sets out in paragraph 82 that:

"*Priority is given to **pedestrian** and cycle movements, subject to location and the potential to create connections. **Prioritising pedestrians** and cyclists mean creating routes that are **safe, direct, convenient and accessible for people of all abilities**. These are designed as part of attractive spaces with good sightlines, and well chosen junctions and crossings, so that people want to use them. Public rights of way are protected, enhanced and well-linked into the wider network of pedestrian and cycle routes.*" (AHA emphasis).

5.1.4.2 This expanded further in paragraph 83, which states:

"*In well-designed places, people should not need to rely on the car for everyday journeys, including getting to workplaces, shops, schools and other facilities, open spaces or the natural environment. Safe and direct routes with visible destinations or clear signposting encourage **people to walk** and cycle.*" (AHA emphasis).

5.1.5 Manual for Streets

5.1.5.1 The 'walkable neighbourhood' concept is set out in MfS1 and endorsed in MfS2. MfS1 explains that:

"*Walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' (up to about 800 m) walking distance of residential areas which residents may access comfortably on foot. However, this is **not an upper limit** and PPG13 states that walking offers the greatest potential to replace short car trips, particularly those under 2 km.*" (MfS para 4.4.1, AHA emphasis).

5.1.6 CIHT Planning for Walking

5.1.6.1 The CIHT document 'Planning for Walking' (2015) sets out the following key points:

"• *Patterns of land use and, in particular, residential densities and mixed uses are the primary determinants of how much people walk. As towns and cities spread out, people make fewer short journeys. The current trend to higher density for new residential developments should encourage walking, if linked to provision of local destinations.*

• *Most short journeys are still made wholly on foot.*

- *Walking is also part of longer journeys. Very few trips by car or public transport are completed without some walking.*

- *Pedestrian "footfall" determines the viability of shops."*

5.1.6.2 The document also stresses:

"• *Walking contributes to physical and mental health.*

- *All streets in urban areas need to be designed to accommodate people who walk wherever they wish to go*

- *People travelling on foot want routes that are direct, as level as possible, enjoyable and have destinations in sight. Safe road crossings are an essential element of routes.*

- *"Walking" is best thought of as a nonvehicle movement including all forms of assistance, such as sticks, wheelchairs, baby buggies and pavement vehicles. Good provision for users requiring such forms of assistance helps everybody.*

- *Walking and cycling are often regarded as compatible. In reality, they are very different modes that will often require separate provision. Both benefit from reduced traffic speeds and reduced motor vehicle traffic flow.*

- The issue of pedestrians and pedal cyclists sharing space is contentious. There are perceived risks associated with cyclists sharing space with pedestrians, and it is not always realised that cyclists seriously injure several hundred pedestrians each year.

- Planners and traffic managers should appreciate that to encourage walking, motor vehicle traffic rather than pedestrians should, as far as possible, be required to avoid conflicts by diverting from direct routes and by changing elevation. Pedestrians wish to follow direct routes on a constant level."

5.1.7 CIHT Providing for Journeys on Foot

5.1.7.1 The CIHT document 'Providing for Journeys on Foot (2000) does not provide a definitive view of distances, but does suggest a preferred maximum distance of 800m for journeys to town centres and 2000m for walk commuting trips.

5.1.8 Existing Infrastructure

5.1.8.1 There is currently no footway along the west side of Tattenhall Road coincident with the Site boundary. However, there is continuous footway on the west side of Tattenhall Road from a point just south of the Site. There is continuous footway on the east side of Tattenhall Road. This extends from the village centre (to the south) and the junction of Tattenhall Road/Newton Lane (SJ2) to the north.

5.1.9 Walk Isochrones and Local Amenities

5.1.9.1 A 400m distance corresponds to a walk time of 5 minutes, based upon a typical normal walking speed. Figure 5.1 presents the development 400m, 800m, 1200m, 1600m and 2000m walk isochrones, (ie reflecting 5, 10, 15, 20 and 25-minute walk journeys), and taking account of the pedestrian infrastructure.

5.1.9.2 The walk isochrones presented in Figure 5.1 are created using Basemap TRACC software, a digital mapping and transport data program. The TRACC software enables installation of maps to create a road network. Amendments have been made to the road network to allow for the inclusion of public rights of way and pedestrian access points.

5.1.9.3 The TRACC software adopts the Department for Transport speeds and hence, a walk speed of 4.8km/h is automatically assumed across the road network. However, it is possible to alter the walk speed on all roads to reflect for example, changes in gradient or no accessibility by footway. The walk isochrones presented in Figure 5.1 take into account the absence of footway on certain roads and the walk speed on these routes has been adjusted to 0km/h.

5.1.9.4 There are amenities near to the Site. The amenities, together with the approximate walk distances from the Site, are:

(i)	Castlefields Playground:	660m,
(ii)	Tattenhall Park Primary School:	840m,
(iii)	Tattenhall News:	980m,
(iv)	Tattenhall Turkish Barber:	990m,
(v)	The Letters Inn:	1005m,
(vi)	Fish and Chips @ No3:	1015m,
(vii)	Tattenhall Library:	1015m,
(viii)	ATM and Spar Convenience Store:	1030m,
(ix)	Sportsmans Arms:	1040m,
(x)	Sandy Bears Nursey:	1050m,
(xi)	Pharmacy:	1080m,
(xii)	Tattenhall Dental:	1100m,

(xiii) Alison's Coffee Shop: 1105m,
(xiv) Tattenhall Sports Club: 1190m,
(xv) Village Surgery Tattenhall: 1190m,
(xvi) Hair and Beauty Room: 1120m,
(xvii) Tattenhall Spice: 1135m,
(xviii) Iconic Barbers: 1145m,
(xix) St Alban's Church: 1130m,
(xx) Barbour Institute Community Centre: 1255m.

5.1.10 Public Rights of Way (PROWs)

5.1.10.1 Figure 5.2 presents the existing Public Rights of Way (PROW) near to the site. Figure 5.2 shows that there is a network of public footpaths near to the Site. The footpaths that are likely to be used regularly by residents of the proposed development are:

(i) 291/FP31/1: Park Avenue – Rean Meadow - Burwardsley Road,
(ii) 291/FP6/1: Chester Road – Covert Rise – Frog Lane,
(iii) 291/FP1/1: Field Lane – High Street

Much of these PROWs form part of the Millennium Mile, which is circular walking route through Tattenhall.

5.1.11 Walk Routes to Local Amenities

5.1.11.1 There are a range of routes available to walk to local amenities. The routes most likely to be used are:

(i) Tattenhall Road – Chester Road – High Street,
(ii) Tattenhall Road – Keysbrook – Footpath 291/FP31/1 – Buwardsley Road.

5.1.12 Walk Routes to Schools

5.1.12.1 The nearest primary school to the Site is **Tattenhall Park Primary School** on Chester Road. The walk distance from the centre of the development to the school is about 840m.

5.1.12.2 The NTS sets out that, for journeys of under 1 mile (1.6km), 80% of 5-11 years olds walk to school. As the distance between the Site and Tattenhall Park Primary School is well below the 1.6km figure quoted in NTS then it is reasonable to assume that most trips between the Site and Tattenhall Park Primary School will be on foot.

5.1.12.3 The route most likely to be used between the Site and Tattenhall Park Primary School is along Tattenhall Road. The route offers continuous sealed surface footways and street lighting. The route is fronted by residential properties which offer neighbourhood surveillance. All of the walk route along Tattenhall Road is subject to a 20/30mph speed limit which provides an environment conducive to walking.

5.1.13 Pedestrian Trip Generation

5.1.13.1 The proposed development will generate pedestrian trips.

5.1.13.2 Based on multi-modal TRICS trip rates and Journey to Work Census data (refer Chapter 8), it is estimated that the proposed development (110 dwellings) could generate the following pedestrian trips in the AM & PM peak hours and between 0700-1900 (12-hours), which is usually taken to be the 'working day':

	ARR	DEP	2-WAY
AM (0800-0800)	1	4	5
PM (1700-1800)	3	2	5
0700-1900	23	23	46.

5.1.14 Pedestrian Access to the Site

5.1.14.1 It is proposed that the following pedestrian infrastructure is to be delivered by the development:

(iv) Provide 2.0m wide footway on the south side of the proposed Site access road,
(v) Introduce 2.0m wide footbridge to the Site at the south-east corner of the Site,
(vi) Extend the existing footway on the west side of Tattenhall Road to connect with the proposed pedestrian access point for the Site,
(vii) Introduce dropped kerbs, tactile paving to the south of the Site access to assist pedestrian crossing to/from the existing footway on the east side of Tattenhall Road. The proposed crossing is to be highlighted with a red textureflex marking on the carriageway.

5.1.14.2 The proposed improvements are shown on Drg No 1952/01/A.

5.1.15 Measures to encourage Walking

5.1.15.1 All residents walking to/from the proposed development must use Tattenhall Road. A speed survey of Tattenhall Road shows that average vehicle speeds are about 3-4mph higher than the current 30mph speed limit, in the vicinity of the Site. The applicant proposes a package of measures to reduce vehicle speeds along Tattenhall Road, which will help to create a better

walking environment. It is proposed that the current 30mph speed limit is extended northwards. This is to be complemented by a package of speed reduction measures along Tattenhall Road including vehicle activated signage. The measures are shown on Drg No 1952/01/A.

5.1.15.2 There is existing street lighting along Tattenhall Road. However, the lighting terminates near to the south-east corner of the Site (location annotated on Drg No 1952/01/A). The applicant proposes to extend the street lighting on Tattenhall Road to a point just beyond the proposed Site access. The indicative lighting scheme is shown on Drg No 1952/01/A. The precise details can be determined at detailed design stage.

5.1.15.3 Although the final residential layout is to be determined through a reserved matters application, the layout will include a comprehensive network of sealed surface footways with lighting. The network will be designed with impaired mobility users in mind. Signage will be introduced to direct pedestrians.

5.1.15.4 On-site signage will be provided during the construction phase to advise residents of suitable and safe walking routes. The signage will be complemented by travel information notice boards during construction.

5.1.15.5 Promotional events and literature will be arranged through the Travel Plan, to encourage walking, and emphasising the health benefits.

5.1.15.6 Residents will be provided with maps showing safe local walking routes.

5.2 Cycle

5.2.1 It is recognised that cycling also has potential to substitute for short car trips, particularly those under 5km, and to form part of a longer journey by public transport.

5.2.2 National Travel Survey (2023)

5.2.2.1 The NTS 2023 sets out that, on average, people:

(i) undertake 15 cycle trips per year,
(ii) cycle a total of 47 miles per year.

5.2.2.2 Based on the total cycle distance of 47 miles and 15 trips per year, this means that the average cycle trip is 3.1 miles, which is just over 5km.

5.2.3 National Planning Policy Framework (NPPF)

5.2.3.1 NPPF defines sustainable transport modes as:

"Any efficient, safe and accessible means of transport with overall low impact on the environment, including walking and ***cycling****, ultra low and zero emission vehicles, car sharing and public transport."* (AHA emphasis).

5.2.4 The National Design Guide

5.2.4.1 The National Design Guide sets out in paragraph 82 that:

"Priority is given to pedestrian and ***cycle movements****, subject to location and the potential to create connections.* ***Prioritising*** *pedestrians and* ***cyclists*** *mean creating routes that are* ***safe, direct, convenient and accessible for people of all abilities****. These are designed as part of attractive spaces with good sightlines, and well chosen junctions and crossings, so that people want to use them. Public rights of way are protected, enhanced and well-linked into the wider network of pedestrian and* ***cycle routes****."* (AHA emphasis).

5.2.4.2 This expanded further in paragraph 83, which states:

"In well-designed places, people should not need to rely on the car for everyday journeys, including getting to workplaces, shops, schools and other facilities, open spaces or the natural environment. Safe and direct routes with visible destinations or clear signposting encourage ***people to*** *walk and* ***cycle****."* (AHA emphasis).

5.2.5 Gear Change, A Bold Vision for Cycling and Walking (DfT, 2020)

5.2.5.1 Gear Change, A Bold Vision for Cycling and Walking states:

"58% of car journeys in 2018 were under 5 miles. And in urban areas, more than 40% of journeys were under 2 miles in 2017-18. For many people, these journeys are perfectly suited to cycling and walking." (Page 11)

5.2.6 Traffic Flows: Tattenhall Road

5.2.6.1 Figure C1, Appendix C presents the recorded AM & PM peak hour traffic flows (2-way) along Tattenhall Road, being:

(i) AM peak hour (0730-0830): 196 vehicles, and

(ii) PM peak hour (1630-1730): 181 vehicles.

5.2.6.2 This confirms that there are low levels of vehicular traffic using Tattenhall Road, being around 3 vehicles per minute on average.

5.2.7 Cycle Isochrones and Local Amenities

5.27.1 Figure 5.3 presents the 2km and 5km cycle isochrones for the Site, representing approximately 10-minute and 25-minute journey times. The cycle isochrones presented in Figure 5.3 were created using Basemap TRACC software. The analysis discounts footpaths which do not permit cyclists. Review of Figure 5.3 highlights that Hargrave, Huxley, Burwardsley, Milton Green and Gatesheath are all within a 5km cycle ride of the Site.

5.2.8 Cycle Access to the Site

5.2.8.1 Cycle access to the Site is available via the proposed Site Access on Tattenhall Road.

5.2.9 Cycle Trip Generation

5.2.9.1 The proposed development will generate cycle trips.

5.2.9.2 Based on multi-modal TRICS trip rates and Journey to Work Census data (refer Chapter 8) it is estimated that the proposed development (110 dwellings) could generate the following cycle trips in the AM & PM peak hours and between 0700-1900 (12-hours), which is usually taken to be the 'working day':

	ARR	DEP	2-WAY
AM (0800-0800)	0	1	1
PM (1700-1800)	1	0	1
0700-1900	5	5	10.

5.2.10 Measures to encourage Cycling

5.2.10.1 All residents cycling to/from the proposed development must use Tattenhall Road. Site residents will emerge into a section of Tattenhall Road subject to a 30mph speed limit. However, a speed survey of Tattenhall Road shows that average vehicle speeds are about 3-4mph higher than the current 30mph speed limit. The applicant proposes a package of measures to reduce vehicle speeds along Tattenhall Road, which, together with low vehicle flows, will help to create a better cycling environment. It is proposed that the current 30mph speed limit is extended northwards. This is to be complemented by a package of speed reduction measures along Tattenhall Road including vehicle activated signage. The measures are shown on Drg No 1952/01/A.

5.2.10.2 Although the subject of a reserved matters application, it is anticipated that cycle parking will be provided within the development that meets council standards.

5.2.10.3 Residents of the development will have the opportunity to receive:

(i) Adult cycle training,
(ii) Contribution to cycle safety equipment, eg helmet, high visibility clothing, etc, and
(iii) Cycle puncture repair kit.

5.2.10.4 Awareness of cycling as a travel choice, for essential (eg work) as well as other journey purposes (eg leisure) is to be promoted to residents through the Travel Plan.

5.2.10.5 The Travel Plan will promote three sustainable travel events per year once 50% occupation of the development is achieved. This includes, for example but not exclusively:

(i) Promotion of National Bike Week,
(ii) Bike buddy scheme, for those not confident about cycling.

5.2.10.6 Promotional events and literature will be arranged through the Travel Plan, to encourage cycling and emphasise the health benefits.

5.3 Summary

5.3.1 Transport sustainability is a principle underlying the proposed development. Encouraging walk and cycle journeys is recognised as important. The location of the Site provides a good context for journeys of residents to be undertaken on foot and by cycle. There is good walk and cycle infrastructure between the Site and nearby amenities, thereby offering opportunity to foster a sustainable community, in accordance with the aims of local policies and national policy in NPPF.

5.3.2 It is demonstrated that there are a range of local amenities in Tattenhall that will meet many of the resident's everyday needs. Most amenities are located within a 15-minute walk of the Site. There are a range of walk routes available to residents depending on the location of the amenity they wish to access. Most walk routes are along residential roads which have footways and lighting.

5.3.3 All of the local amenities are well within a short cycle ride of the Site. It is demonstrated that Tattenhall Road carries very low levels of traffic even in the peak hours. The speed limit of Tattenhall Road is 30mph. The applicant proposes a package of measures to reduce vehicle speeds along Tattenhall Road that will help to create an improved environment for cycling.

6 Public Transport

6.1 The proposed development affords opportunity for development generated public transport journeys to be made by bus.

6.2 Bus

6.2.1 Bus Stops

6.2.1.1 The nearest bus stops to the Site are located on Tattenhall Road near to the junction with Greenlands. The walk distance is about 300m from the centre of the Site. The bus stops comprise:

(i) Northbound: Flag and pole,
Timetable board,
Low floor kerb access,

(ii) Southbound: Brick shelter,
Seating,
Timetable board,
Low floor kerb access.

6.2.2 Bus Services

6.2.2.1 The **No 41 bus service** is routed though Tattenhall. The service operates between Chester and Whitchurch. Services run from Tattenhall (Greenlands) to Chester between 0655 hours and 2005 hours, with return journeys from Chester up until 1850 hours. Trips in the direction from Tattenhall to Whitchurch can be made between 0803 hours and 1833 hours. The latest return journey from Whitchurch to Tattenhall is at 1915 hours.

6.2.2.2 For travel in both directions, buses operate at about a **30-minute frequency** to/from Chester and at an **hourly frequency** to/from Whitchurch. The frequency and time range within which the service operates would allow Site residents, that work in Chester or Whitchurch, to commute by bus.

6.2.2.3 The No 41 journey times are:

(i) Chester (bus station): typically, 39 minutes,
(ii) Whitchurch: typically, 54 minutes.

6.2.3 School Bus Services

6.2.3.1 The **No 41 bus service** offers travel to/from **Bishop Heber High School**, which is based in Malpas. Outbound and return services coincide with start and finish times, departing from the Tattenhall at 0803 hours, and returning back at 1539 hours.

6.2.4 Community Bus Services

6.2.4.1 ECT provide the **PlusBus** service in Tattenhall. The PlusBus service is available for those who find public transport difficult to use. This could be due to age, a mobility difficulty or disability. A journey can be booked between 48 hours and one week in advance, with travel available between 9am and 11pm from Monday to Saturday, and between 9am and 5pm on Sundays (subject to availability).

6.2.5 Bus Trip Generation

6.2.5.1 The proposed development will generate trips by bus.

6.2.5.2 Based on multi-modal TRICS trip rates and Journey to Work Census data (refer Chapter 8) it is estimated that the proposed development (110 dwellings) could generate the following bus trips in the AM & PM peak hours and between 0700-1900 (12-hours), which is usually taken to be the 'working day':

	ARR	DEP	2-WAY
AM (0800-0800)	0	2	2
PM (1700-1800)	1	1	2
0700-1900	8	8	16.

6.3 Summary

6.3.1 The No 41 bus service operates in Tattenhall. This offers frequent travel to Chester and Whitchurch. The No 41 bus service times coincide with typical workplace start and finish times in Chester and Whitchurch, which offers the potential to complete commuter trips by bus. The service also offers travel to/from Bishop Heber High School in Malpas. Additionally, there is a community transport option for trips to/from local centres and facilities in Cheshire West and Chester.

6.3.2 It is demonstrated that the Site has good public transport accessibility, with opportunities for travel by bus. This is in accordance with the aims and objectives of current national and local policies.

7 Travel Plan

7.1 The TP for the proposed development is prepared in accordance with best practice and experience, and the 2014 PPG. The outcomes approach is adopted for the development TP.

7.2 The key objectives of the TP are to:

- Contribute to traffic reduction and other sustainable transport objectives set out in national, regional and local policies,
- Improve accessibility of the Site by sustainable modes of transport,
- Widen choice of travel mode for all those travelling to/from the Site.

7.3 Specific outcomes sought from the TP are to:

- Achieve the minimum number of additional single occupancy car traffic movements to/from the development,
- Address the access needs of Site users, by supporting sustainable transport choices such as walking, cycling, public transport and low/zero emission vehicles,
- Reduce the need for travel to/from the Site.

7.4 The TP explicitly considers accessibility by the sustainable travel modes and the proposed measures to encourage their use. These are summarised below:

- Walk: Segregated pedestrian access to the development,
  Extension of existing footway on west side of Tattenhall Road,
- Cycle: Speed reduction scheme along Tattenhall Road,
- Electric vehicles: Provision of an individual electric car charging point for each property,
- Car Share: To be promoted by the TPC,
- Work at home: Provision of infrastructure for high-speed broadband service to be delivered to the new houses,

7.5 The TP target is set as: **maximum 0700-1900 2-way vehicle trip rate of 4.515 vehicles/hour/dwelling**. The objective is for the TP target to be achieved within 5 years from first occupation. This represents a **10%** reduction compared to 'business as usual'.

7.6 The TP is to operate to **5 years after first occupation** of the development.

7.7 The developer will appoint a Travel Plan Coordinator (TPC), to introduce, manage, operate and monitor the TP. As part of the ongoing management of the TP, the TPC will maintain a dialogue with the Council, and monitor emerging best practice information, to provide the most efficient platform for maximising the effectiveness of the TP.

7.8 The developer is required to finance the TP. A sufficient revenue budget will be identified to employ the TPC for a period of 5 years post-occupation of the first dwelling, on a sufficient basis to introduce and manage the TP initiatives, and thereafter as required to:

- Manage the initiatives,
- Finance the measures identified in this and subsequent TP Monitoring and Review reports and as agreed with the Council, and
- Enable the TPC postholder to carry out the duties identified above.

7.9 The TP Action Plan is set out in Chapter 10 of the TP. The TP summarises identified measures that are proposed, and indicates the timing for the measures and funding information. This illustrates the holistic approach adopted for the TP, aimed at encouraging from the outset a positive sustainable transport awareness and culture for the development. The TP measures will be reviewed and amended as appropriate, in consultation with and requiring the agreement of the local authority, as part of the ongoing dynamic monitoring and review process for the TP.

8 Traffic Flows

8.1 Peak Periods

8.1.1 The times when the combination is greatest, of traffic generated by the proposed residential development and the existing highway network traffic, are the weekday AM & PM peak hours. The TA includes quantitative analysis of the traffic impact of the proposed development for these periods.

8.2 Study Network

8.2.1

REF	JUNCTION	CONTROL
SJ1	Site/Tattenhall Road	priority control 'T' junction;
SJ2	Tattenhall Road/Newton Lane	priority control crossroads junction;
SJ3	Tattenhall Road/Oaklands Avenue	priority control 'T' junction;
SJ4	Tattenhall Road/Chester Road	priority control 'T' junction;
SJ5	Chester Road/Burwardsley Road/High Street	priority control 'T' junction;
SJ6	Chester Road/Rookery Drive	priority control 'T' junction.

The TA study network is presented on Figure 3.1.

8.3 Traffic Counts

8.3.1 AHA has available the following traffic count data for the TA study network:

- Tattenhall Road (SJ1): Automatic traffic count 16-22 October 2024,
- SJ2-SJ6: Classified turning counts 17 October 2024.

8.3.2 Analysis of the traffic count data identifies the peak hours for traffic flows on Tattenhall Road as:

- AM: 0800-0900, and
- PM: 1645-1745.

Quantitative analysis is undertaken for these peak hours.

8.3.3 **Figure C1, Appendix C**, presents the 2024 AM & PM peak hour traffic count flows at the TA study junctions. The flows are presented in vehicles.

8.4 Traffic Growth

8.4.1 For the purposes of quantitative testing of the local highway network, it is assumed that the development will be fully constructed and operational by year **2030.**

8.4.2 The National Transport Model (NTM) is used as a basis for deriving local growth factors. The NTM growth factors adopted to estimate year 2030 traffic flows, from the 2024 count data, are set out in **Technical File Note 1, Appendix D**.

8.4.3 Factored Counts

8.4.3.1 **Figure C2, Appendix C** presents the 2030 AM & PM peak hour traffic flows at the TA study junctions.

8.5 Committed Developments

8.5.1 Land at Chester Road (LPA ref 20/02824/FUL)

8.5.1.1 AHA is aware of a committed scheme of 30 dwellings on Chester Road, Tattenhall (LPA ref 20/02824/FUL). This scheme, known as Millbrook Meadow, is currently under construction by Lister Carter Homes. AHA estimates that about half the properties have been completed. AHA has reviewed the Transport Statement report that accompanied the planning application. This did not consider any of the study junctions adopted in this TA report. Therefore, given the low level of traffic that will be generated by the remaining houses to be built and the lack of study junction overlap, no further assessment of this development is made in this TA.

8.6 Distribution of Development Generated Traffic

8.6.1 It is necessary to estimate the % distribution of the traffic generated by the proposed development. A common methodology is to use Journey to Work data from the Census. This methodology is adopted for the purposes of the TA quantitative analysis.

8.6.2 The 2021 Census was undertaken at a time of markedly changed travel characteristics as a result of the Coronavirus pandemic. The Office for National Statistics (ONS) acknowledges this by stating the following on their website:

"Census 2021 took place during the coronavirus (COVID-19) pandemic, a period of unparalleled and rapid change; the national lockdown, associated guidance and furlough measures will have affected the travel to work topic."

8.6.3 The ONS website, in reference to the 2021 Census Travel to Work data, states:

"Take care when using these data for planning and policy purposes."

8.6.4 Consequently, the TA report will adopt the **2011** Census to derive a distribution for the proposed development.

8.6.5 **Table 8.1** provides a summary of the information derived from the Census Journey to Work data.

8.6.6 **Figure C3, Appendix C** presents the proposed % distribution of development generated traffic at the TA Study junctions. This is based on the information presented in Table 8.1.

8.7 Trip Estimation

8.7.1 TRICS Interrogation

8.7.1.1 The TRICS database is interrogated to identify suitable trip generation rates to adopt for estimating the AM and PM peak hour movements generated by the proposed residential development.

8.7.1.2 TRICS is interrogated for information about trip generation rates for Houses. Criteria adopted for this interrogation include:

- Houses privately owned;
- Sites between 75-225 units;
- All surveys 2016 or more recent;
- Remove 'Edge of Town Centre' sites;
- Remove sites that have a population in excess of 10,001 people within 1 mile;
- Remove sites that have a population in excess of 25,001 people within 5 miles;
- Sites in Ireland, Northern Ireland and Greater London excluded on the basis that they may have significantly different travel characteristics;
- If a site has multiple survey date entries, include only the most recent survey used within the identified TRICS sample, (to avoid statistical bias in the trip rates identified for use in the analysis).

8.7.1.3 On this basis, 5 sites are identified and the results of the TRICS interrogation are included in Appendix C. TRICS explicitly states that the 85%ile statistic is not reliable for a database with less than 20 entries. Thus, average trip rates are adopted to estimate the traffic generated by the proposed residential development.

8.7.1.4 The **Total Person** trip rates (per dwelling) derived from the TRICS interrogation are:

	ARR	DEP	2-WAY
AM (0800-0800)	0.198	0.561	0.759
PM (1700-1800)	0.463	0.292	0.755
0700-1900	3.567	3.599	7.166.

8.7.1.5 The consequent estimates of Total Person trips, based on 110 dwellings are:

	ARR	DEP	2-WAY
AM (0800-0800)	22	62	84
PM (1700-1800)	51	32	83
0700-1900	392	396	788.

8.7.2 Census Data: Travel to Work

8.7.2.1 The 2011 Census has been interrogated to establish Travel to Work data for **MSOA Cheshire West and Chester 046**. This confirms the following methods of travel to work:

MODE OF TRAVEL	NUMBER OF RESIDENTS	% OF RESIDENTS
Home working	505	13.4
Train	47	1.3
Bus, minibus or coach	74	2.0
Tram	5	0.1
Taxi	8	0.2
Motorcycle, scooter or moped	30	0.8
Car or van driver	2,628	70.0
Car or van passenger	166	4.4
Cycle	50	1.3
Walk	214	5.7
Other	28	0.7
Total	**3,755**	**100.**

8.7.2.2 The consequent estimate of trips generated by the proposed development of up to 110 dwellings in the AM and PM peak hours is:

MODE OF TRAVEL	AM PEAK HOUR			PM PEAK HOUR		
	ARR	DEP	2-WAY	AM	PM	2-WAY
Home working	3	8	11	7	4	11
Train	0	1	1	1	0	1
Bus, minibus or coach	0	2	2	1	1	2
Tram	0	0	0	0	0	0
Taxi	0	0	0	0	0	0
Motorcycle, scooter or moped	0	1	1	1	0	1
Car or van driver	15	43	58	36	22	58
Car or van passenger	1	3	4	2	2	4
Cycle	0	1	1	1	0	1
Walk	1	4	5	3	2	5
Other	1	0	1	0	1	1.

8.73 Vehicle Trips

8.7.3.1 The consequent estimates of AM & PM peak hour **vehicle trips** generated by the proposed development (110 dwellings) are:

	ARR	DEP	2-WAY
AM (0800-0800)	15	43	58
PM (1700-1800)	36	22	58.

8.7.3.2 **Figure C4, Appendix C** presents the traffic generated by the proposed development in the AM and PM peak hours at the TA study junctions, based on the % distribution on Figure C3, Appendix C.

8.8 Traffic Impact

8.8.1 AHA usually adopts a materiality test to determine the requirement for detailed junction modelling. The test adopted is that junction modelling is undertaken if the proposed development is predicted to generate an increase in traffic at a study junction of **30** vehicles or more.

8.8.2 The traffic impact of the proposed development at the TA study network of junctions in the AM and PM peak hours is summarised below:

SJ	AM Vehs	PM Vehs
SJ1	**+58**	**+58**
SJ2	**+33**	**+31**
SJ3	+26	+26
SJ4	+17	+18
SJ5	+9	+10
SJ6	+16	+16

8.8.3 A review of the above summary shows that the proposed development is estimated to have a traffic impact in excess of 30 vehicles at only **SJ1** and **SJ2**. Modelling is undertaken and reported for these junctions in Chapter 9.

8.9 With Development

8.9.1 The estimated 2030 AM and PM peak hour With Development traffic flows at the TA study junctions are presented on **Figure C5, Appendix C**.

9 Operational Performance of the Highway Network

9.1 The computer program PICADY (within Junctions 10) is used to model the performance of a priority (give-way) control junction. PICADY predicts the ratio of flow to capacity (RFC) and associated queue for the minor (give-way) entry to the junction and for the major road. PICADY is used to model the operational performance of:

(i) SJ1 Site/Tattenhall Road,
(ii) SJ2 Tattenhall Road/Newton Lane.

9.2 Queue Surveys and Model Validation

9.2.1 Queue Survey

9.2.1.1 Queues were recorded on all external approach arms at the study junctions. Data was collected at the same time as the AM & PM peak period traffic count surveys.

9.2.1.2 The survey recorded queues in 5-minute intervals. The survey recorded the queue on each arm at the 5-minute mark (eg at 0800, 0805, 0810 etc). The survey also recorded the maximum queue during the 5-minute interval.

9.2.2 Model Validation

9.2.2.1 The process of model validation involves:

(i) Construct PICADY model for the junction;
(ii) Use 2024 recorded traffic count data;
(iii) Compare model output queues to recorded queues;
(iv) If necessary, make small adjustments to model geometry to provide 'best match' between model and recorded queues.

9.3 SJ1: Site/Tattenhall Road (AHA Drg No 1952/01/A)

9.3.1 Table 9.1 presents the results of the PICADY modelling of the proposed Site Access/ Tattenhall Road junction. Review of Table 9.1 shows that the proposed priority-controlled junction is predicted to operate with a high degree of spare capacity and negligible queues/delays in the year 2030 AM & PM peak hour With Development situations.

9.4 SJ2: Tattenhall Road/Newton Lane

9.4.1 Queue Survey Results

9.4.1.1 Queues were recorded on the approaches to SJ2. Data was collected at the same time as the AM & PM peak period traffic count surveys (ie on 17 October 2024).

9.4.1.2 The survey recorded queues in 5-minute intervals. The survey recorded the queue on each arm at the 5-minute mark (eg at 0800, 0805, 0810, etc). The survey also recorded the maximum queue during the 5-minute interval.

9.4.1.3 A review of the survey data show that the SJ2 is presently operating with negligible queuing traffic. This indicates that SJ2 is operating in a satisfactory manner.

9.4.2 Model Validation

9.4.2.1 A PICADY model is constructed for the 2024 AM & PM peak hour Count situation. The results are presented in Table 9.2. A review of Table 9.2 shows that the PICADY model queues provide a close match to the recorded queues. It is concluded that the PICADY model is suitable to test the traffic impact of the proposed development in year 2030.

9.4.3 Year 2030 Analysis

9.4.3.1 Table 9.3 presents the results of the PICADY modelling of the Tattenhall Road/Newton Lane junction for year 2030. A review of Table 9.3 shows that the priority-controlled crossroads junction is predicted to operate with a high degree of spare capacity and negligible queues/delays in the year 2030 AM & PM peak hour Base and With Development situations.

9.4.3.2 It is demonstrated that the addition of traffic generated by the proposed development at SJ2 has an imperceptible effect on junction performance.

10 Summary & Conclusions

10.1 Ashley Helme Associates Limited (AHA) are appointed by Gladman Developments Ltd to prepare a Transport Assessment (TA) report to support the planning application for residential development on land off Tattenhall Road, Tattenhall. The Site is presently agricultural land. The proposed development comprises a residential development of up to **110 dwellings**.

10.2 Access Strategy

10.2.1 The planning application seeks outline consent with all matters reserved, except access. The access strategy for the Site is:

(i) Vehicles: Tattenhall Road,
(ii) Pedestrians: Tattenhall Road,
(iii) Cyclists: Tattenhall Road.

10.2.2 The proposed access arrangements are shown on Drg No 1952/01/A. It is demonstrated that the proposed access point:

(i) Satisfies geometric and visibility requirements,
(ii) Has sufficient capacity to operate efficiently and safely,
(iii) Offers appropriate provision for all users, and
(iv) Can accommodate the tracking movements of a range of vehicles.

10.3 Walk and Cycle

10.3.1 The principle of transport sustainability underlies the masterplan development. The location of the Site provides a good context for journeys to be undertaken on foot and by cycle, and the masterplan access strategy reflects this with the provision of good permeability and connectivity for pedestrians and cyclists.

10.3.2 It is demonstrated that there are a range of local amenities in Tattenhall that will meet many of the resident's everyday needs. Most amenities are located within a 15-minute walk of the Site. There are a range of walk routes available to residents depending on the location of the amenity they wish to access. Most walk routes are along residential roads which have footways and lighting.

10.3.3 All of the local amenities are well within a short cycle ride of the Site. It is demonstrated that Tattenhall Road carries very low levels of traffic even in the peak hours. The speed limit of Tattenhall Road is 30mph, reducing to 20mph near to the village centre. The applicant proposes

a package of measures to reduce vehicle speeds along Tattenhall Road that will help to create an improved environment for cycling.

10.3.4 The location of the Site and nearby local amenities, offer a good opportunity for fostering a sustainable community. This is in accordance with the aims of local policies and national policy in NPPF.

10.4 Public Transport

10.4.1 Encouraging public transport journeys is an important component of the development access strategy. There are existing public transport opportunities near to the application Site.

10.4.2 The No 41 bus service operates in Tattenhall. This offers frequent travel to Chester and Whitchurch. The No 41 bus service times coincide with typical workplace start and finish times in Chester and Whitchurch, which offers the potential to complete commuter trips by bus. The service also offers travel to Bishop Heber High School in Malpas. Additionally, PlusBus offers a community transport option for trips to/from local centres and facilities in Cheshire West and Chester.

10.4.3 It is demonstrated that the Site has good public transport accessibility, with opportunities for frequent travel by bus. This is in accordance with the aims and objectives of current national and local policies.

10.5 Traffic Impact

10.5.1 Comprehensive junction analysis and modelling has been undertaken for the proposed Site Access/Tattenhall Road junction. This confirms that the proposed priority-controlled junction is predicted to operate with a very high degree of spare capacity and negligible queues/delays in the year 2030 AM & PM peak hour With Development situations.

10.5.2 Modelling has been undertaken for the Tattenhall Road/Newton Lane (SJ2) junction. The modelling confirms that the addition of development generated traffic has an imperceptible effect on the performance of the junction.

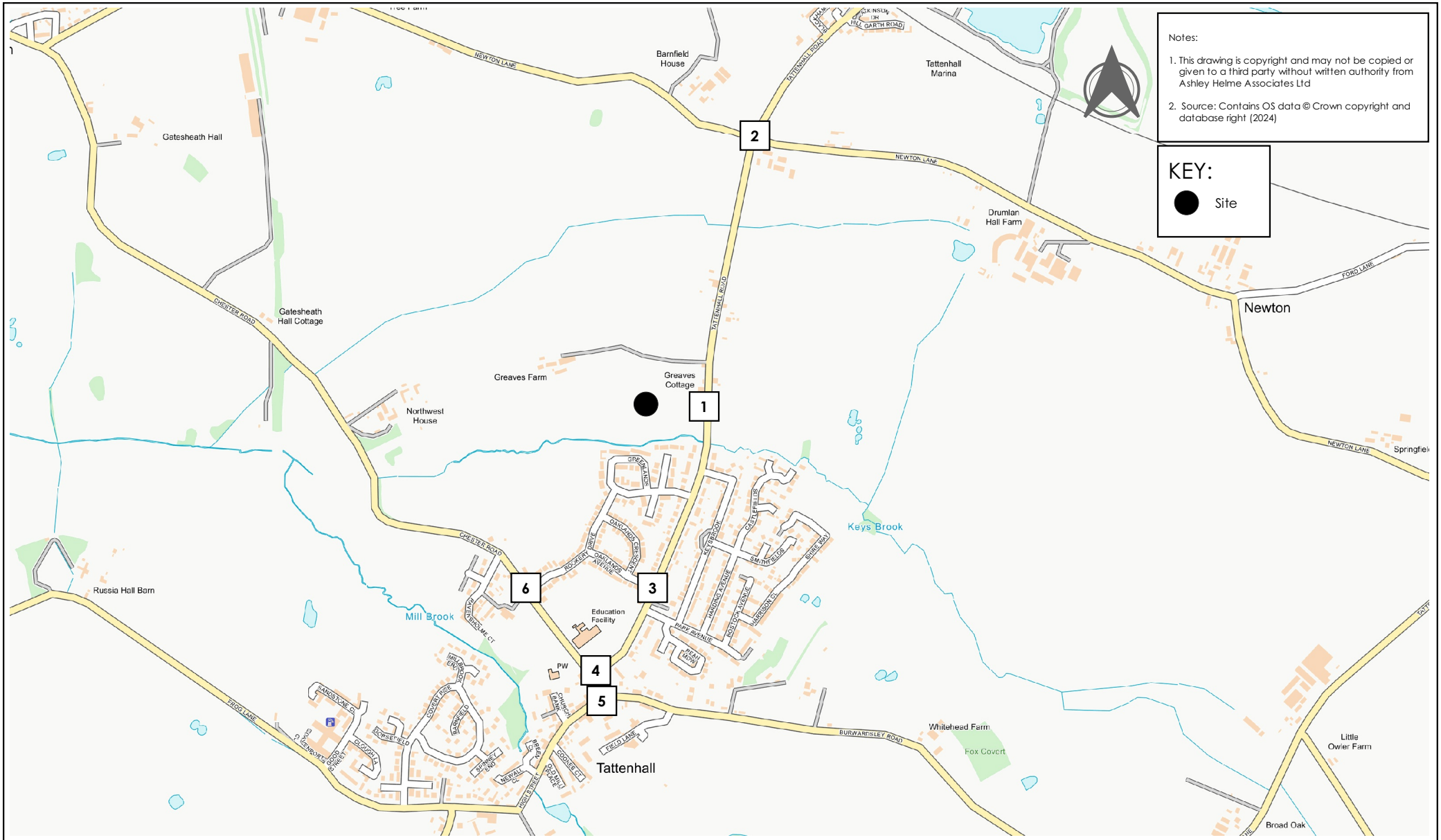
10.6 Summary

10.6.1 It is concluded that the proposed development is in accordance with national and local transport policies, and that there are no transport/highways reasons for refusal of planning permission.

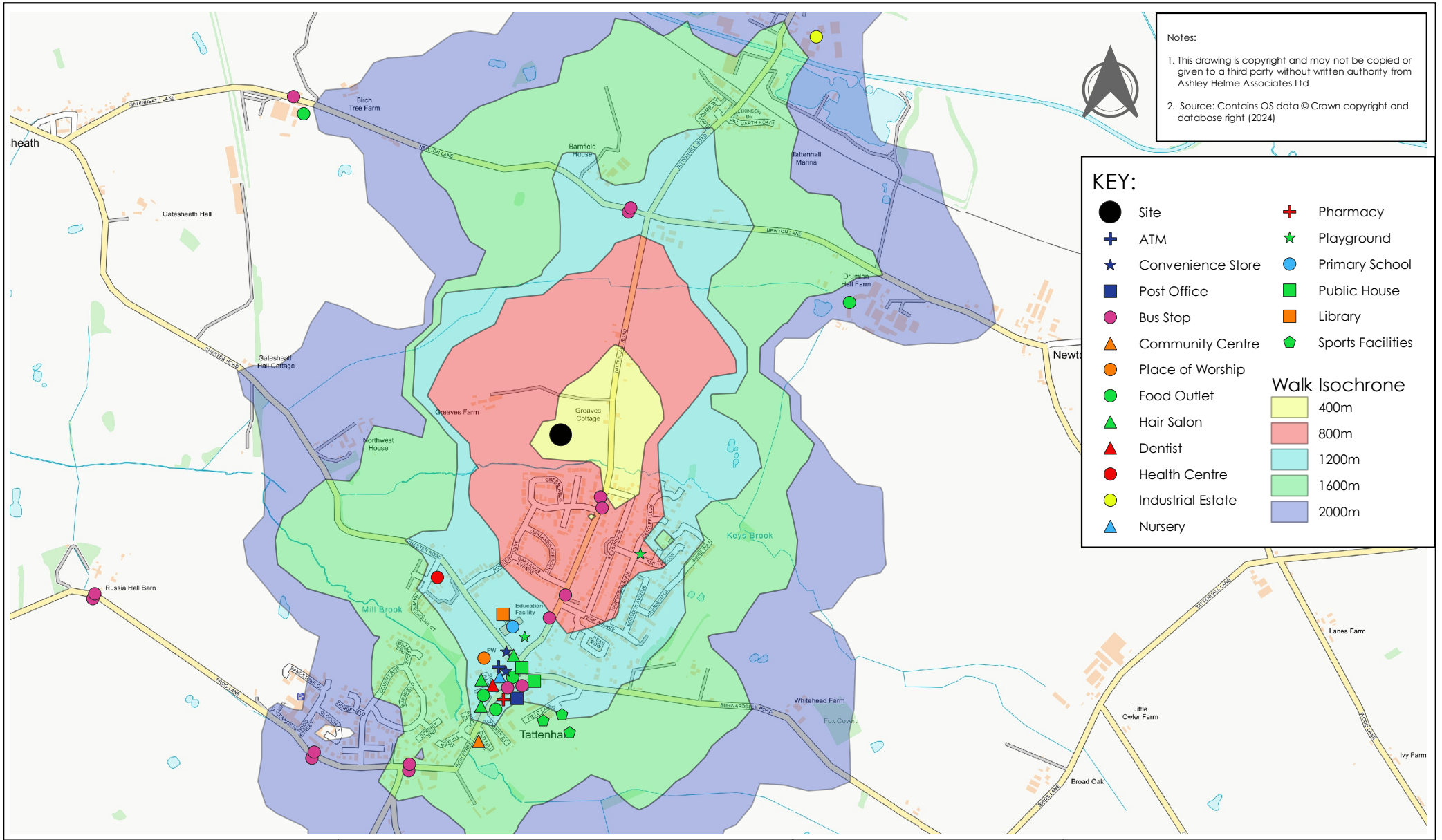
Figures



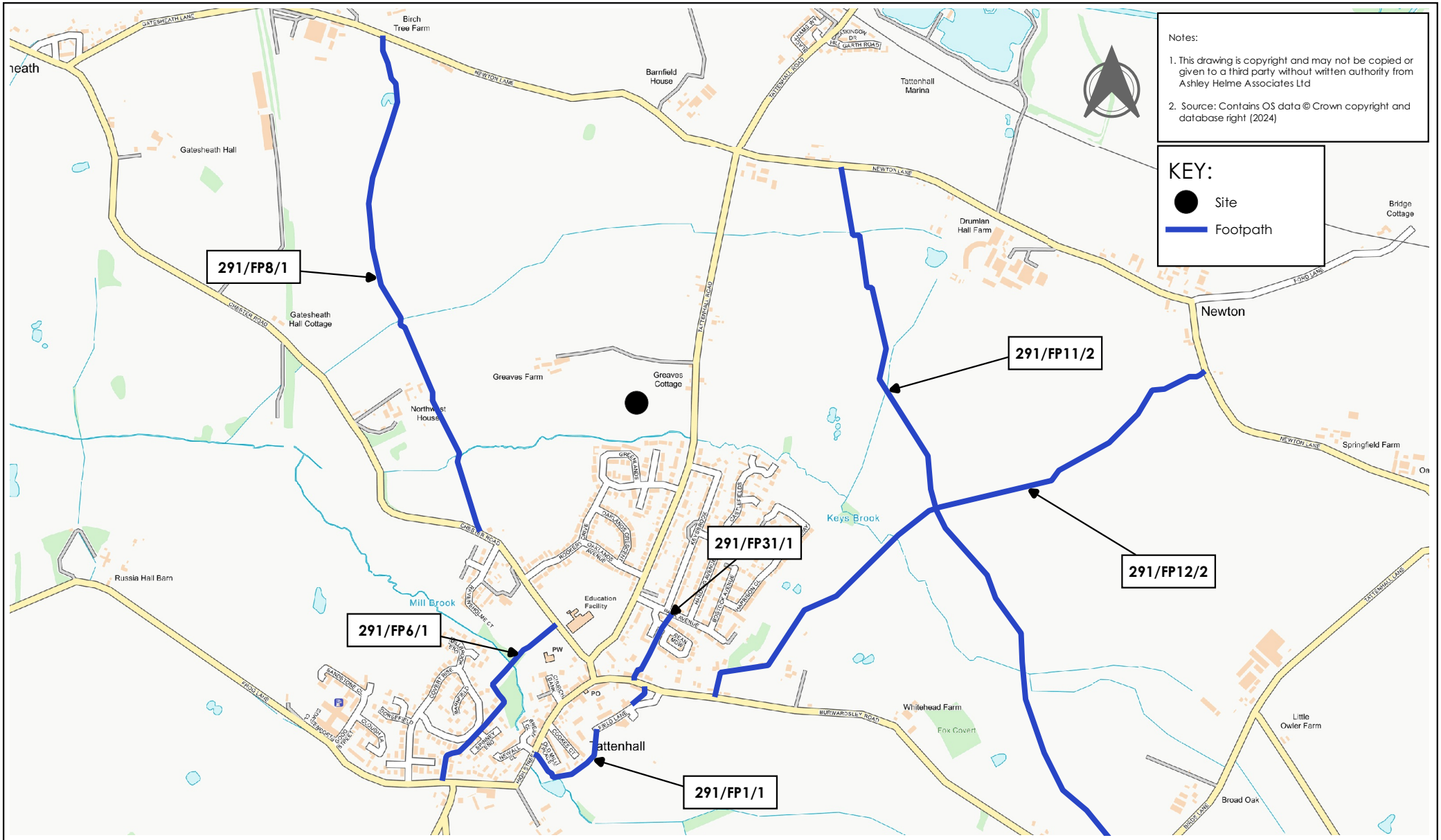
Project: LAND WEST OF TATTENHALL ROAD, TATTENHALL	Title: LOCATION PLAN	FIGURE 1.1	ASHLEY HELME ASSOCIATES
Client: GLADMAN DEVELOPMENTS		Date: OCTOBER 2024 / Scale: NTS	



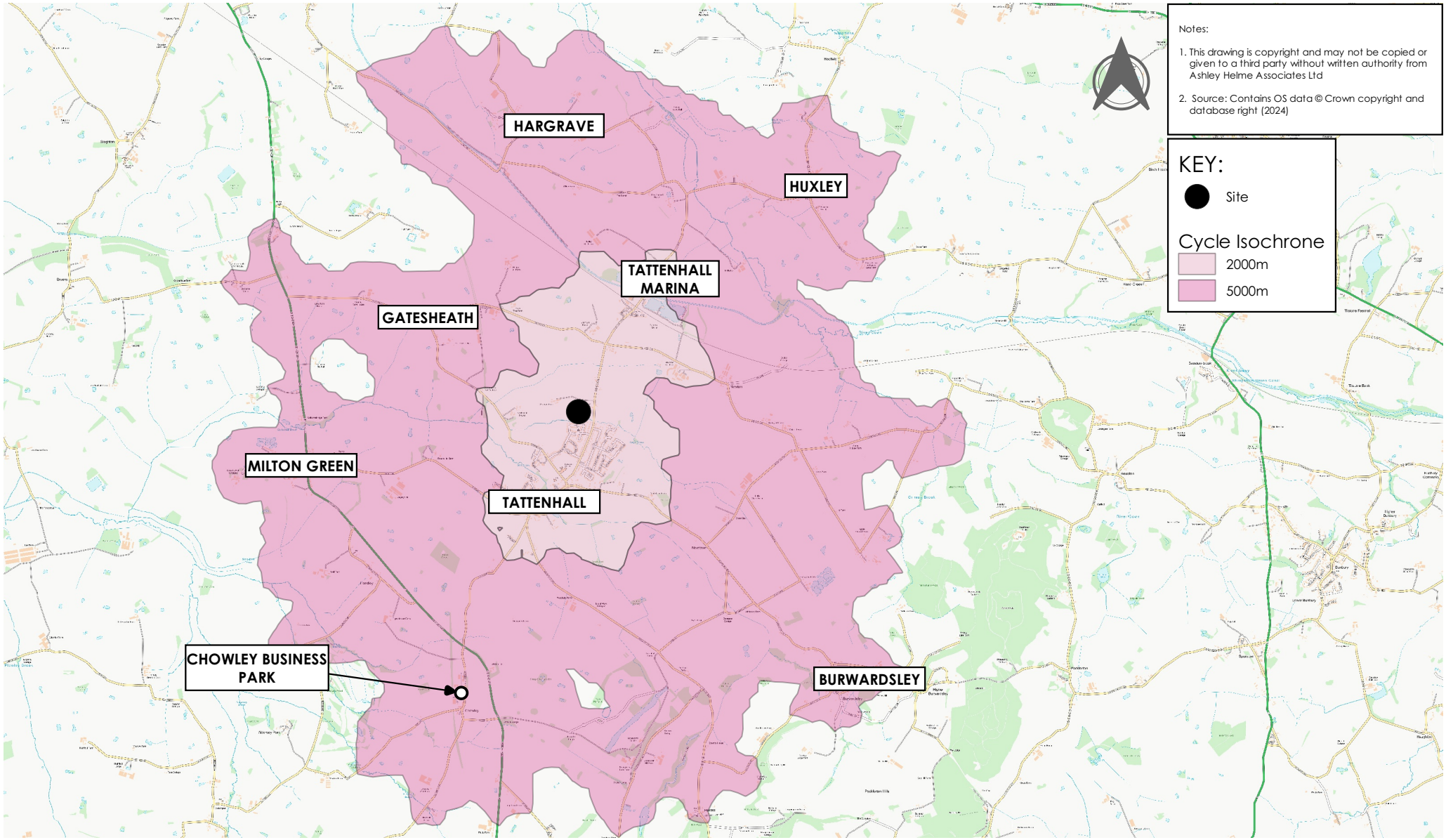
Project: LAND WEST OF TATTENHALL ROAD, TATTENHALL	Title: STUDY JUNCTIONS	FIGURE 3.1	ASHLEY HELME ASSOCIATES
Client: GLADMAN DEVELOPMENTS		Date: OCTOBER 2024 / Scale: NTS	



Project: LAND WEST OF TATTENHALL ROAD, TATTENHALL	Title: WALK ISOCHRONES AND AMENITIES	FIGURE 5.1	ASHLEY HELME ASSOCIATES
Client: GLADMAN DEVELOPMENTS		Date: OCTOBER 2024 / Scale: NTS	



Project: LAND WEST OF TATTENHALL ROAD, TATTENHALL	Title: PUBLIC RIGHTS OF WAY (PROW)	FIGURE 5.2	ASHLEY HELME ASSOCIATES
Client: GLADMAN DEVELOPMENTS		Date: OCTOBER 2024 / Scale: NTS	



Project: LAND WEST OF TATTENHALL ROAD, TATTENHALL	Title: CYCLE ISOCHRONES	FIGURE 5.3	ASHLEY HELME ASSOCIATES
Client: GLADMAN DEVELOPMENTS		Date: OCTOBER 2024 / Scale: NTS	

Tables

AREA OF WORKPLACE RESIDENT POPULATION	ROUTE ASSIGNMENT						
	Tattenhall Road (N)	High Street	Chester Road	Newton Lane (W)	Newton Lane (E)		
LOCAL AUTHORITY/COUNTY/REGION						TOTAL	%
Cheshire East	68	68				**136**	6.3
Halton			19	20		**39**	1.8
Warrington			29	29		**58**	2.7
Bolton			2	2		**4**	0.2
Manchester	23		11	12		**46**	2.1
Oldham	1		1	1		**3**	0.1
Rochdale	1					**1**	0.0
Salford			7	7		**14**	0.6
Stockport	5		2	3		**10**	0.5
Tameside	1					**1**	0.0
Trafford			9	9		**18**	0.8
Wigan			2	2		**4**	0.2
Preston			1	2		**3**	0.1
South Ribble			1	2		**3**	0.1
West Lancashire			2	3		**5**	0.2
Knowsley			1	2		**3**	0.1
Liverpool			23	24		**47**	2.2
Sefton			6	6		**12**	0.6
Wirral			32	32		**64**	2.9
Shropshire		22				**22**	1.0
St Helens			4	4		**8**	0.4
Stoke on Trent	5					**5**	0.2
Telford and Wrekin		4				**4**	0.2
East Staffordshire	1					**1**	0.0
Newcastle Under Lyme	3					**3**	0.1
Isle of Anglesey			1	1		**2**	0.1
Conwy			3	3		**6**	0.3
Denbighshire			3	4		**7**	0.3
Flintshire			94	95		**189**	8.7
Wrexham		122				**122**	5.6
MIDDLE SUPER OUTPUT AREA							%
Cheshire West and Chester 001			2	3		**5**	0.2
Cheshire West and Chester 002	5					**5**	0.2
Cheshire West and Chester 003	4					**4**	0.2
Cheshire West and Chester 004			4	4		**8**	0.4
Cheshire West and Chester 005			1	2		**3**	0.1
Cheshire West and Chester 006				1		**1**	0.0
Cheshire West and Chester 007			15	15		**30**	1.4
Cheshire West and Chester 008				1		**1**	0.0
Cheshire West and Chester 009			1	2		**3**	0.1
Cheshire West and Chester 010			3	4		**7**	0.3
Cheshire West and Chester 011			16	17		**33**	1.5
Cheshire West and Chester 013			1	2		**3**	0.1
Cheshire West and Chester 014			4	4		**8**	0.4
Cheshire West and Chester 015	10					**10**	0.5
Cheshire West and Chester 016			1	1		**2**	0.1
Cheshire West and Chester 017	19					**19**	0.9
Cheshire West and Chester 018	8					**8**	0.4
Cheshire West and Chester 019	7					**7**	0.3
Cheshire West and Chester 020	4					**4**	0.2
Cheshire West and Chester 021	1					**1**	0.0
Cheshire West and Chester 022			18	18		**36**	1.7
Cheshire West and Chester 023	5					**5**	0.2
Cheshire West and Chester 024	5					**5**	0.2
Cheshire West and Chester 025			13	13		**26**	1.2
Cheshire West and Chester 027			6	6		**12**	0.6
Cheshire West and Chester 028			39	40		**79**	3.6
Cheshire West and Chester 029				1		**1**	0.0
Cheshire West and Chester 030	41					**41**	1.9
Cheshire West and Chester 031			5	5		**10**	0.5
Cheshire West and Chester 032			4	5		**9**	0.4
Cheshire West and Chester 033			30	30		**60**	2.8
Cheshire West and Chester 034			118	118		**236**	10.8
Cheshire West and Chester 035	6					**6**	0.3
Cheshire West and Chester 036			10	10		**20**	0.9
Cheshire West and Chester 037	6					**6**	0.3
Cheshire West and Chester 038	7					**7**	0.3
Cheshire West and Chester 039			20	20		**40**	1.8
Cheshire West and Chester 040	3					**3**	0.1
Cheshire West and Chester 041			9	10		**19**	0.9
Cheshire West and Chester 042	8					**8**	0.4
Cheshire West and Chester 043			19	19		**38**	1.7
Cheshire West and Chester 044			3	3		**6**	0.3
Cheshire West and Chester 045	98					**98**	4.5
Cheshire West and Chester 046	86	86	43	43	85	**343**	15.8
Cheshire West and Chester 047		60				**60**	2.8
TOTAL	**431**	**362**	**638**	**660**	**85**	**2176**	100.0
%	19.8	16.6	29.3	30.3	3.9	100.0	

Table 8.1 **2011 Census Distribution**
Place of Work
Residents in Cheshire West and Chester 046 Middle Super Output Area

MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	RFC	QUEUE (pcu)	DELAY (mins/pcu)	RFC	QUEUE (pcu)	DELAY (mins/pcu)
2030 With Development, Proposed Junction Geometry						
Site Access	0.09	0.1	0.12	0.05	0.0	0.12
Tattenhall Road	0.02	0.0	0.10	0.04	0.1	0.10

Notes:
1. Refer Drg No1952/01/A for proposed Site access drawing.
2. Refer Figure C5, Appendix C for 2030 With Development traffic flows.

Table 9.1 PICADY RESULTS SJ1 Proposed Site Access/Tattenhall Road

MOVEMENT	AM PEAK HOUR		PM PEAK HOUR	
	OBSERVED	MODELLED	OBSERVED	MODELLED
Newton Lane (E)	0.4	0.1	0.3	0.2
Tattenhall Road (N)	0.0	0.1	0.0	0.0
Newton Lane (W)	0.0	0.2	0.3	0.1
Tattenhall Road (S)	0.0	0.0	0.0	0.0

Notes:
1. AHA queue survey 17.10.24
2. Average spot queue observed over peak hour period
3. Refer Figure C1, Appendix C for 2024 traffic count flows.

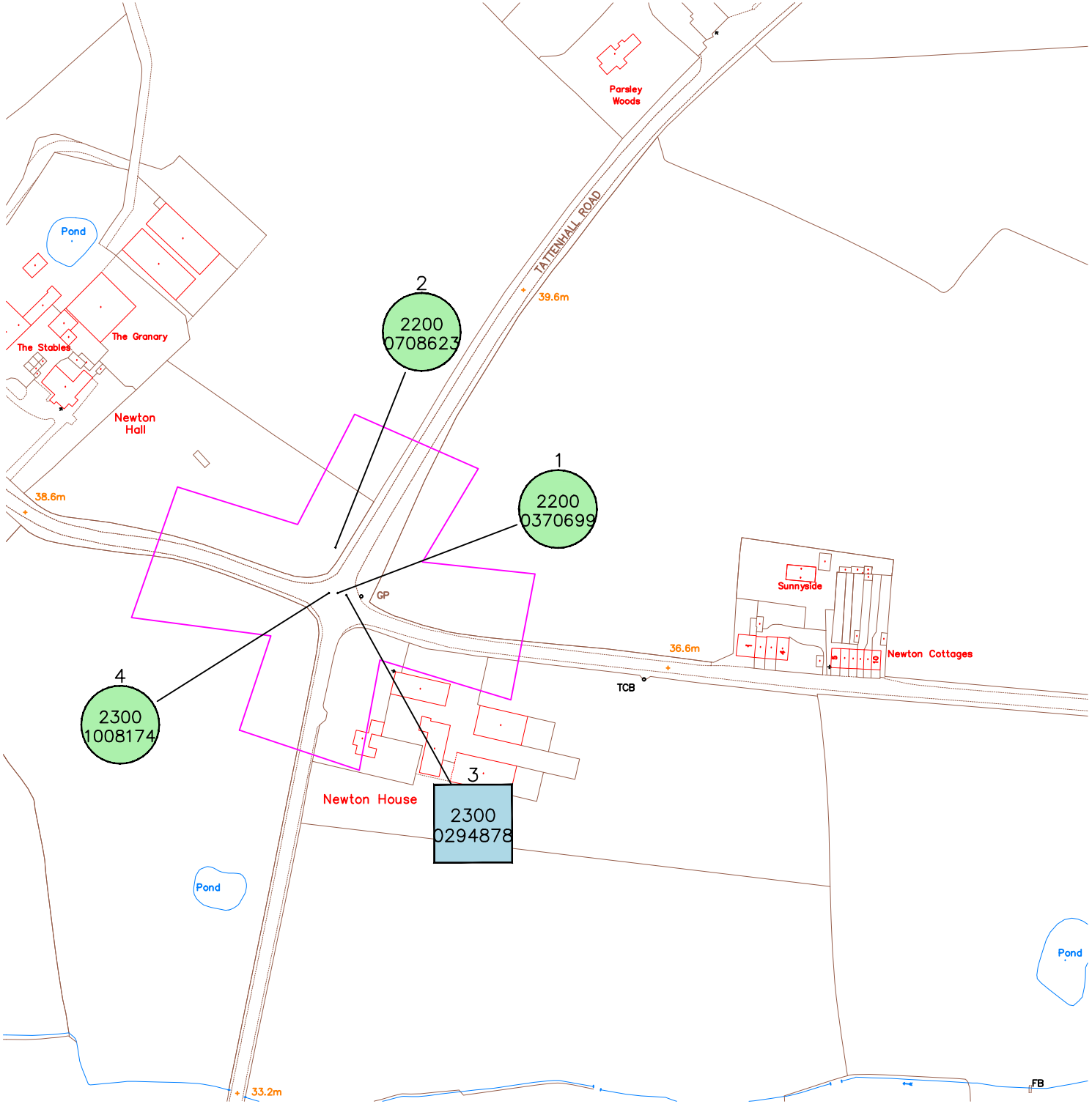
Table 9.2 PICADY VALIDATION SJ2 Tattenhall Road/Newton Lane

MOVEMENT	AM PEAK HOUR			PM PEAK HOUR		
	RFC	QUEUE (pcu)	DELAY (mins/pcu)	RFC	QUEUE (pcu)	DELAY (mins/pcu)
2024 Count, Existing Junction Geometry						
Newton Lane (E)	0.07	0.1	0.14	0.18	0.2	0.14
Tattenhall Road (N)	0.04	0.1	0.09	0.02	0.0	0.08
Newton Lane (W) Left	0.07	0.1	0.12	0.10	0.1	0.10
Newton Lane (W) Right	0.06	0.1	0.15	0.04	0.0	0.14
Tattenhall Road (S)	0.02	0.0	0.09	0.01	0.0	0.10
2030 Base, Existing Junction Geometry						
Newton Lane (E)	0.08	0.1	0.14	0.19	0.2	0.15
Tattenhall Road (N)	0.05	0.1	0.09	0.02	0.0	0.08
Newton Lane (W)	0.08	0.1	0.13	0.10	0.1	0.10
Newton Lane (W) Right	0.07	0.1	0.15	0.05	0.1	0.14
Tattenhall Road (S)	0.03	0.0	0.09	0.01	0.0	0.10
2030 With Development, Existing Junction Geometry						
Newton Lane (E)	0.08	0.1	0.14	0.20	0.2	0.15
Tattenhall Road (N)	0.05	0.1	0.09	0.02	0.0	0.08
Newton Lane (W)	0.08	0.1	0.13	0.11	0.1	0.11
Newton Lane (W) Right	0.08	0.1	0.15	0.07	0.1	0.14
Tattenhall Road (S)	0.03	0.0	0.09	0.02	0.0	0.10

Notes:
1. Refer Drg No 1952/02 for existing junction geometry.
2. Refer Figure C1, Appendix C for 2024 Count traffic flows.
3. Refer Figure C2, Appendix C for 2030 Base traffic flows.
4. Refer Figure C5, Appendix C for 2030 With Development traffic flows.

Table 9.3 PICADY RESULTS SJ2 Tattenhall Road/Newton Lane

Appendix A Plan of CWCC Personal Injury Collison Data


Parsley Woods
TATTENHALL ROAD
39.6m
Pond
The Granary
The Stables
Newton Hall
38.6m
2
2200 0708623
1
2200 0370699
GP
Sunnyside
36.6m
Newton Cottages
TCB
4
2300 1008174
3
Newton House
2300 0294878
Pond
Pond
33.2m
FB

Appendix B CWCC Crash Report

SEVERITY	District	Tattenhall Collision Search Tattenhall Lane / Newton Lane Junction 5 year report	Grid Reference	349153 / 359991
SLIGHT	Ref.No 22000370699	Accident Date BETWEEN '01-Jul-2019' AND '30-Jun-2024'	Police Officer Attend:	Yes

Date	29/05/2022	Day	Sunday
Time	10:44		
Weather	Raining without high winds		
Road Surface	Wet/Damp		
Street Lighting	Daylight		

Road U Location

Description of Accident: Description removed.

SITE DETAILS

Speed Limit	50 MPH
Carriageway	Single carriageway
Junction Detail	Crossroads
Junction Control	Give way or uncontrolled
2nd Road Number	U
Pedestrian Facilities	None within 50 metres
	No physical crossing facility within 50 metre

SPECIAL SITE CONDITIONS: None

CARRIAGEWAY HAZARDS: None

CONTRIBUTORY FACTORS	PARTICIPANT	PROBABILITY
101 Poor or defective road surface (Road Environment Contrib)	Vehicle 001	A
103 Slippery road due to weather (Road Environment Contrib)	Vehicle 001	A
104 Inadequate/Masked signs or road markings (Road Environment	Vehicle 001	B
307 Travelling too fast for conditions (Driver/Rider - Injudicious)	Vehicle 001	B
408 Sudden braking (Driver/Rider - Error)	Vehicle 001	B
707 Rain, sleet, snow or fog (Driver/Rider - Vision Affected)	Vehicle 001	A

VEHICLES INVOLVED 2

Veh.No. 1 Vehicle type Car Make Model
Manoeuvre: Going ahead other
Veh. direction from: East to West Towing? No tow or articulation
Skidded: No skidding, jack-knifing or overturning
Veh location at impact (restricted lane): On main carriageway not in restricted lane
Junct. location of veh. at 1st impact: Approaching junction or waiting
Veh left carriageway?: Did not leave carriageway
Hit object in c'way?: None
Hit object off c'way?: None
First point of impact: Front
Veh registration no. Other veh.hit (ref.no) 0 Hit and run Not hit and run
Drivers age 51 yrs Sex Male Breath test Negative Driving Lic
Left Hand Drive: Unknown Foreign veh. Not foreign registered vehicle
Journey purpose: Other

Veh.No. 2 Vehicle type Car Make Model
Manoeuvre: Going ahead other
Veh. direction from: North to South Towing? No tow or articulation
Skidded: No skidding, jack-knifing or overturning
Veh location at impact (restricted lane): On main carriageway not in restricted lane
Junct. location of veh. at 1st impact: Mid junction - on roundabout or main road
Veh left carriageway?: Did not leave carriageway
Hit object in c'way?: None
Hit object off c'way?: None
First point of impact: Offside
Veh registration no. Other veh.hit (ref.no) 0 Hit and run Not hit and run
Drivers age 23 yrs Sex Female Breath test Negative Driving Lic
Left Hand Drive: Unknown Foreign veh. Not foreign registered vehicle
Journey purpose: Commuting to/from work

CASUALTIES INVOLVED 1

Cas No 1 Cas Class Driver or Rider Veh ref No 2
Severity SLIGHT Age 23 yrs Sex Female Post code
Car Passenger?: Not a passenger PSV Passenger?: Not a passenger
Seat Belt: Worn but not indepenc Cycle Helmet
Ped Movement: Not applicable
Ped Location: Not applicable
Ped Direction to: Not applicable
School Pupil: Other
Roadworker injured: Not applicable

Other Details

SEVERITY	District	Tattenhall Collision Search Tattenhall Lane / Newton Lane Junction 5 year report	Grid Reference	349152 / 360012
SLIGHT	Ref.No 22000708623	Accident Date BETWEEN '01-Jul-2019' AND '30-Jun-2024'	Police Officer Attend:	Yes

Date	23/09/2022	Day	Friday
Time	17:46		
Weather	Fine without high winds		
Road Surface	Dry		
Street Lighting	Daylight		

Road C810 Location

Description of Accident: Description removed.

SITE DETAILS

Speed Limit	40 MPH
Carriageway	Single carriageway
Junction Detail	Crossroads
Junction Control	Give way or uncontrolled
2nd Road Number	C809
Pedestrian Facilities	None within 50 metres
	No physical crossing facility within 50 metre

SPECIAL SITE CONDITIONS

None

CARRIAGEWAY HAZARDS

None

CONTRIBUTORY FACTORS	PARTICIPANT	PROBABILITY
510 Distraction outside vehicle (Driver/Rider - Impairment)	Vehicle 001	B
706 Dazzling sun (Driver/Rider - Vision Affected)	Vehicle 001	B
603 Nervous/Uncertain (Driver/Rider - Behaviour)	Vehicle 001	B

VEHICLES INVOLVED 2

Veh.No. 1 Vehicle type Car Make Model

Manoeuvre	Turning right		
Veh. direction from	Northeast to West	Towing?	No tow or articulation
Skidded	No skidding, jack-knifing or overturning		
Veh location at impact (restricted lane)	On main carriageway not in restricted lane		
Junct. location of veh. at 1st impact	Leaving main road		
Veh left carriageway?	Did not leave carriageway		
Hit object in c'way?	None		
Hit object off c'way?	None		
First point of impact	Front		
Veh registration no.		Other veh.hit (ref.no)	0
Hit and run	Not hit and run		
Drivers age	80 yrs	Sex	Female
Breath test	Negative	Driving Lic	
Left Hand Drive	Unknown	Foreign veh.	Not foreign registered vehicle
Journey purpose	Other		

Veh.No. 2 Vehicle type Pedal Cycle Make Model

Manoeuvre	Waiting to go ahead but held up		
Veh. direction from	West to East	Towing?	No tow or articulation
Skidded	No skidding, jack-knifing or overturning		
Veh location at impact (restricted lane)	On main carriageway not in restricted lane		
Junct. location of veh. at 1st impact	Approaching junction or waiting		
Veh left carriageway?	Did not leave carriageway		
Hit object in c'way?	None		
Hit object off c'way?	None		
First point of impact	Front		
Veh registration no.		Other veh.hit (ref.no)	0
Hit and run	Not hit and run		
Drivers age	37 yrs	Sex	Female
Breath test	Not Applicable	Driving Lic	
Left Hand Drive	Unknown	Foreign veh.	Not foreign registered vehicle
Journey purpose	Other		

CASUALTIES INVOLVED 1

Cas No 1 Cas Class Driver or Rider Veh ref No 2

Severity SLIGHT Age 37 yrs Sex Female Post code

Car Passenger?	Not a passenger	PSV Passenger?	Not a passenger
Seat Belt	Not applicable	Cycle Helmet	
Ped Movement	Not applicable		
Ped Location	Not applicable		
Ped Direction to	Not applicable		
School Pupil	Other		
Roadworker injured	Not applicable		

Other Details

SEVERITY	District	Tattenhall Collision Search Tattenhall Lane / Newton Lane Junction 5 year report	Grid Reference	349157 / 359990
SERIOUS	Ref.No 23000294878	Accident Date BETWEEN '01-Jul-2019' AND '30-Jun-2024'	Police Officer Attend:	Yes

Date	07/04/2023	Day	Friday
Time	13:24		
Weather	Fine without high winds		
Road Surface	Dry		
Street Lighting	Daylight		

Road U Location

Description of Accident: Description removed.

SITE DETAILS

Speed Limit	40 MPH
Carriageway	Single carriageway
Junction Detail	Crossroads
Junction Control	Give way or uncontrolled
2nd Road Number	U
Pedestrian Facilities	None within 50 metres
	No physical crossing facility within 50 metre

SPECIAL SITE CONDITIONS

None

CARRIAGEWAY HAZARDS

None

CONTRIBUTORY FACTORS	PARTICIPANT	PROBABILITY
405 Failed to look properly (Driver/Rider - Error)	Vehicle 001	B
406 Failed to judge other person's path/speed (Driver/Rider - Error)	Vehicle 001	B

VEHICLES INVOLVED 3

Veh.No. 1 Vehicle type Car Make Model
Manoeuvre Going ahead other
Veh. direction from West to East Towing? No tow or articulation
Skidded No skidding, jack-knifing or overturning
Veh location at impact (restricted lane) On main carriageway not in restricted lane
Junct. location of veh. at 1st impact Mid junction - on roundabout or main road
Veh left carriageway? Did not leave carriageway
Hit object in c'way? None
Hit object off c'way? None
First point of impact Nearside
Veh registration no. Other veh.hit (ref.no) 0 Hit and run Not hit and run
Drivers age 44 yrs Sex Male Breath test Negative Driving Lic
Left Hand Drive Unknown Foreign veh. Not foreign registered vehicle
Journey purpose Other

Veh.No. 2 Vehicle type Agric Veh Make Model
Manoeuvre Going ahead other
Veh. direction from Northeast to Southwest Towing? Single trailer
Skidded Overturned
Veh location at impact (restricted lane) On main carriageway not in restricted lane
Junct. location of veh. at 1st impact Approaching junction or waiting
Veh left carriageway? Did not leave carriageway
Hit object in c'way? None
Hit object off c'way? None
First point of impact Front
Veh registration no. Other veh.hit (ref.no) 0 Hit and run Not hit and run
Drivers age 26 yrs Sex Male Breath test Negative Driving Lic
Left Hand Drive Unknown Foreign veh. Not foreign registered vehicle
Journey purpose Journey as part of work

CASUALTIES INVOLVED 5

Cas No 1 Cas Class Driver or Rider Veh ref No 2
Severity SLIGHT Age 26 yrs Sex Male Post code
Car Passenger? Not a passenger PSV Passenger? Not a passenger
Seat Belt Worn but not indepenc Cycle Helmet
Ped Movement Not applicable
Ped Location Not applicable
Ped Direction to Not applicable
School Pupil Other
Roadworker injured Not applicable

Cas No 2 Cas Class Passenger Veh ref No 1
Severity SERIOUS Age 35 yrs Sex Male Post code
Car Passenger? Front seat passenger PSV Passenger? Not a passenger
Seat Belt Worn but not indepenc Cycle Helmet
Ped Movement Not applicable
Ped Location Not applicable
Ped Direction to Not applicable
School Pupil Other
Roadworker injured Not applicable

Cas No 3 Cas Class Passenger Veh ref No 1
Severity SLIGHT Age 39 yrs Sex Male Post code
Car Passenger? Rear seat passenger PSV Passenger? Not a passenger
Seat Belt Worn but not indepenc Cycle Helmet
Ped Movement Not applicable
Ped Location Not applicable
Ped Direction to Not applicable
School Pupil Other
Roadworker injured Not applicable

Veh.No.	3	Vehicle type	Car	Make	Model
Manoeuvre	Waiting to go ahead but held up				
Veh. direction from	East to West	Towing?	No tow or articulation		
Skidded	No skidding, jack-knifing or overturning				
Veh location at impact (restricted lane)	On main carriageway not in restricted lane				
Junct. location of veh. at 1st impact	Approaching junction or waiting				
Veh left carriageway?	Did not leave carriageway				
Hit object in c'way?	None				
Hit object off c'way?	None				
First point of impact	Front				
Veh registration no.		Other veh.hit (ref.no)	0	Hit and run	Not hit and run
Drivers age	74 yrs	Sex	Male	Breath test	Negative
Left Hand Drive	Unknown	Foreign veh.	Not foreign registered vehicle		
Journey purpose	Other				

Cas No	4	Cas Class	Passenger	Veh ref No	1
Severity	SLIGHT	Age	14 yrs	Sex	Male
Post code					
Car Passenger?	Rear seat passenger	PSV Passenger?	Not a passenger		
Seat Belt	Worn but not indepenc	Cycle Helmet			
Ped Movement	Not applicable				
Ped Location	Not applicable				
Ped Direction to	Not applicable				
School Pupil	Other				
Roadworker injured	Not applicable				

Cas No	5	Cas Class	Passenger	Veh ref No	1
Severity	SLIGHT	Age	7 yrs	Sex	Male
Post code					
Car Passenger?	Rear seat passenger	PSV Passenger?	Not a passenger		
Seat Belt	Worn but not indepenc	Cycle Helmet			
Ped Movement	Not applicable				
Ped Location	Not applicable				
Ped Direction to	Not applicable				
School Pupil	Other				
Roadworker injured	Not applicable				

Other Details

SEVERITY	District	Tattenhall Collision Search Tattenhall Lane / Newton Lane Junction 5 year report	Grid Reference	349149 / 359991
SLIGHT	Ref.No 23001008174	Accident Date BETWEEN '01-Jul-2019' AND '30-Jun-2024'	Police Officer Attend:	Yes

Date	14/10/2023	Day	Saturday
Time	17:00		
Weather	Raining without high winds		
Road Surface	Wet/Damp		
Street Lighting	Daylight		

Road C810 Location

Description of Accident: Description removed.

SITE DETAILS

Speed Limit	40 MPH
Carriageway	Single carriageway
Junction Detail	Crossroads
Junction Control	Give way or uncontrolled
2nd Road Number	C809
Pedestrian Facilities	None within 50 metres
	No physical crossing facility within 50 metre

SPECIAL SITE CONDITIONS

None

CARRIAGEWAY HAZARDS

None

CONTRIBUTORY FACTORS	PARTICIPANT	PROBABILITY
302 Disobeyed give way or stop sign markings (Driver/Rider - Injud	Vehicle 001	A
401 Junction overshoot (Driver/Rider - Error)	Vehicle 001	A

VEHICLES INVOLVED 2

Veh.No. 1 Vehicle type Car Make Model

Manoeuvre	Going ahead other		
Veh. direction from	East to West	Towing?	No tow or articulation
Skidded	No skidding, jack-knifing or overturning		
Veh location at impact (restricted lane)	On main carriageway not in restricted lane		
Junct. location of veh. at 1st impact	Entering main road		
Veh left carriageway?	Left carriageway nearside		
Hit object in c'way?	None		
Hit object off c'way?	Wall or fence		
First point of impact	Nearside		
Veh registration no.		Other veh.hit (ref.no)	0
Hit and run	Not hit and run		
Drivers age	32 yrs	Sex	Male
Breath test	Negative	Driving Lic	
Left Hand Drive	Unknown	Foreign veh.	Not foreign registered vehicle
Journey purpose	Other		

Veh.No. 2 Vehicle type Car Make Model

Manoeuvre	Going ahead other		
Veh. direction from	South to North	Towing?	No tow or articulation
Skidded	No skidding, jack-knifing or overturning		
Veh location at impact (restricted lane)	On main carriageway not in restricted lane		
Junct. location of veh. at 1st impact	Mid junction - on roundabout or main road		
Veh left carriageway?	Did not leave carriageway		
Hit object in c'way?	None		
Hit object off c'way?	None		
First point of impact	Front		
Veh registration no.		Other veh.hit (ref.no)	0
Hit and run	Not hit and run		
Drivers age	89 yrs	Sex	Female
Breath test	Not provided (medical reas	Driving Lic	
Left Hand Drive	Unknown	Foreign veh.	Not foreign registered vehicle
Journey purpose	Other		

CASUALTIES INVOLVED 2

Cas No 1 Cas Class Driver or Rider Veh ref No 2

Severity	SLIGHT	Age	89 yrs
Sex	Female	Post code	
Car Passenger?	Not a passenger	PSV Passenger?	Not a passenger
Seat Belt	Unknown	Cycle Helmet	
Ped Movement	Not applicable		
Ped Location	Not applicable		
Ped Direction to	Not applicable		
School Pupil	Other		
Roadworker injured	Not applicable		

Cas No 2 Cas Class Passenger Veh ref No 1

Severity	SLIGHT	Age	4 yrs
Sex	Female	Post code	
Car Passenger?	Front seat passenger	PSV Passenger?	Not a passenger
Seat Belt	Unknown	Cycle Helmet	
Ped Movement	Not applicable		
Ped Location	Not applicable		
Ped Direction to	Not applicable		
School Pupil	Other		
Roadworker injured	Not applicable		

Other Details

Appendix C Traffic Flows

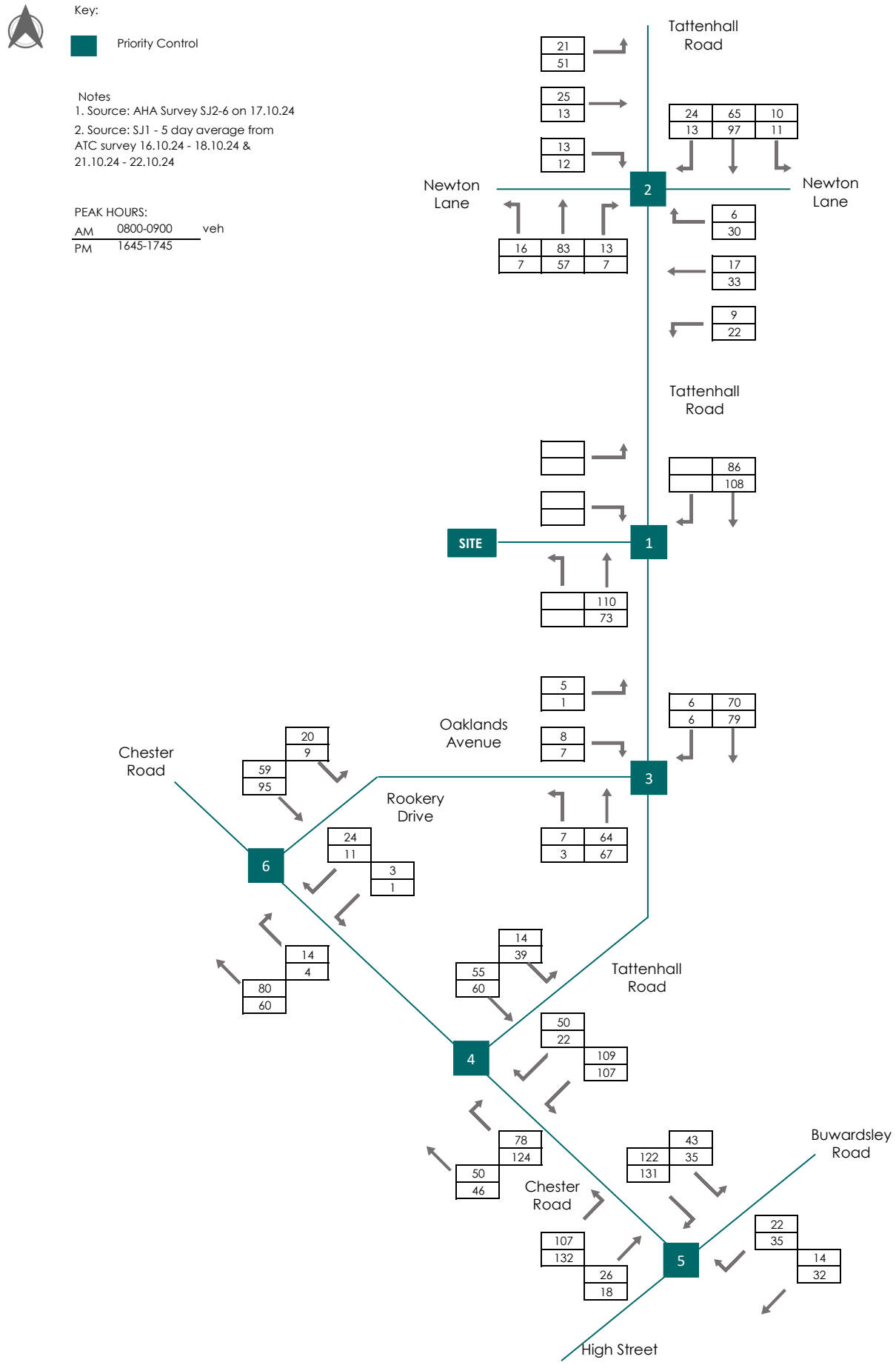


FIGURE C1 **TRAFFIC COUNT: 2024 AM & PM PEAK HOURS**

ASHLEY HELME ASSOCIATES

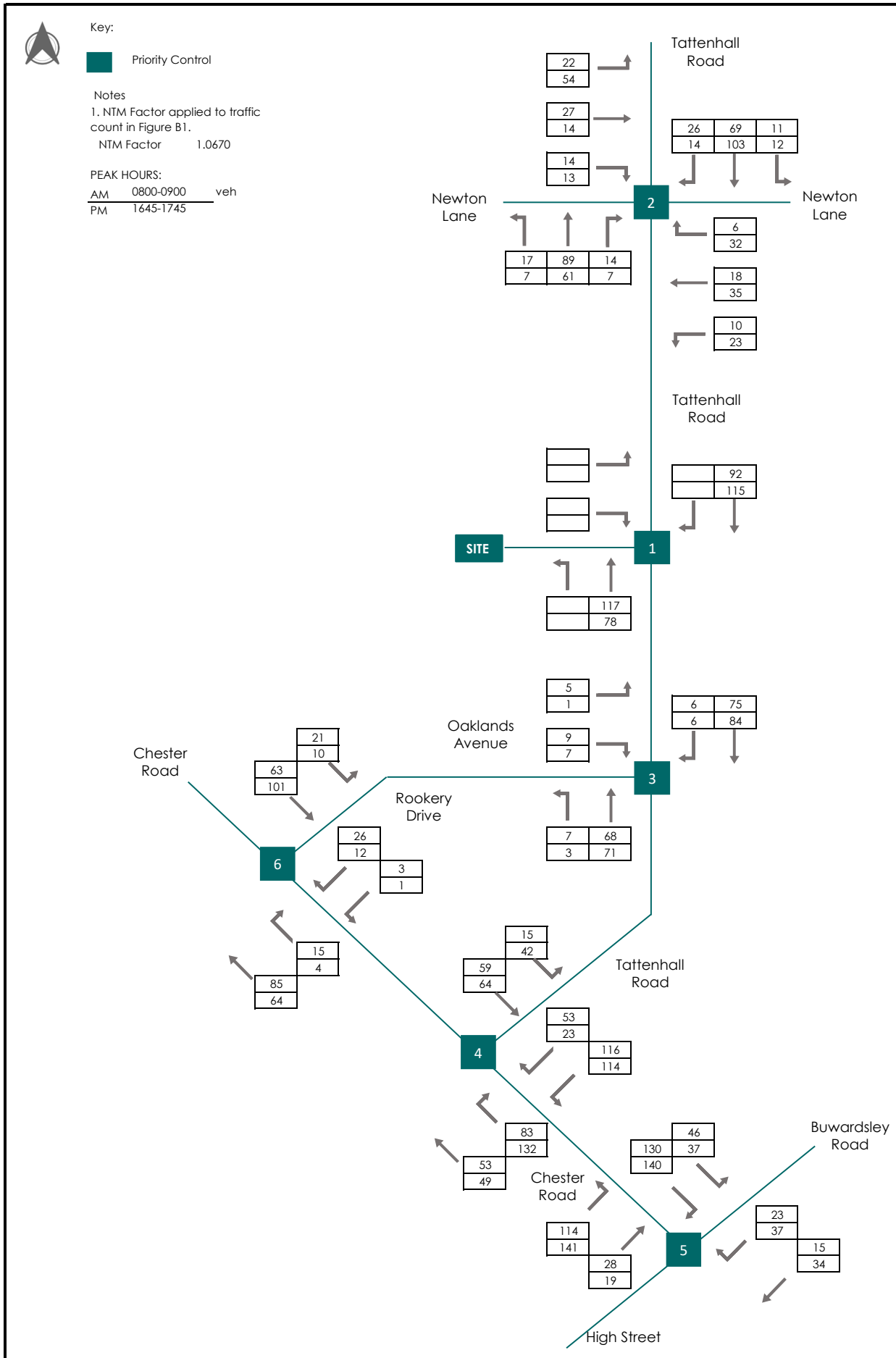


FIGURE C2 **FACTORED COUNT: 2030 AM & PM PEAK HOURS**

ASHLEY HELME ASSOCIATES

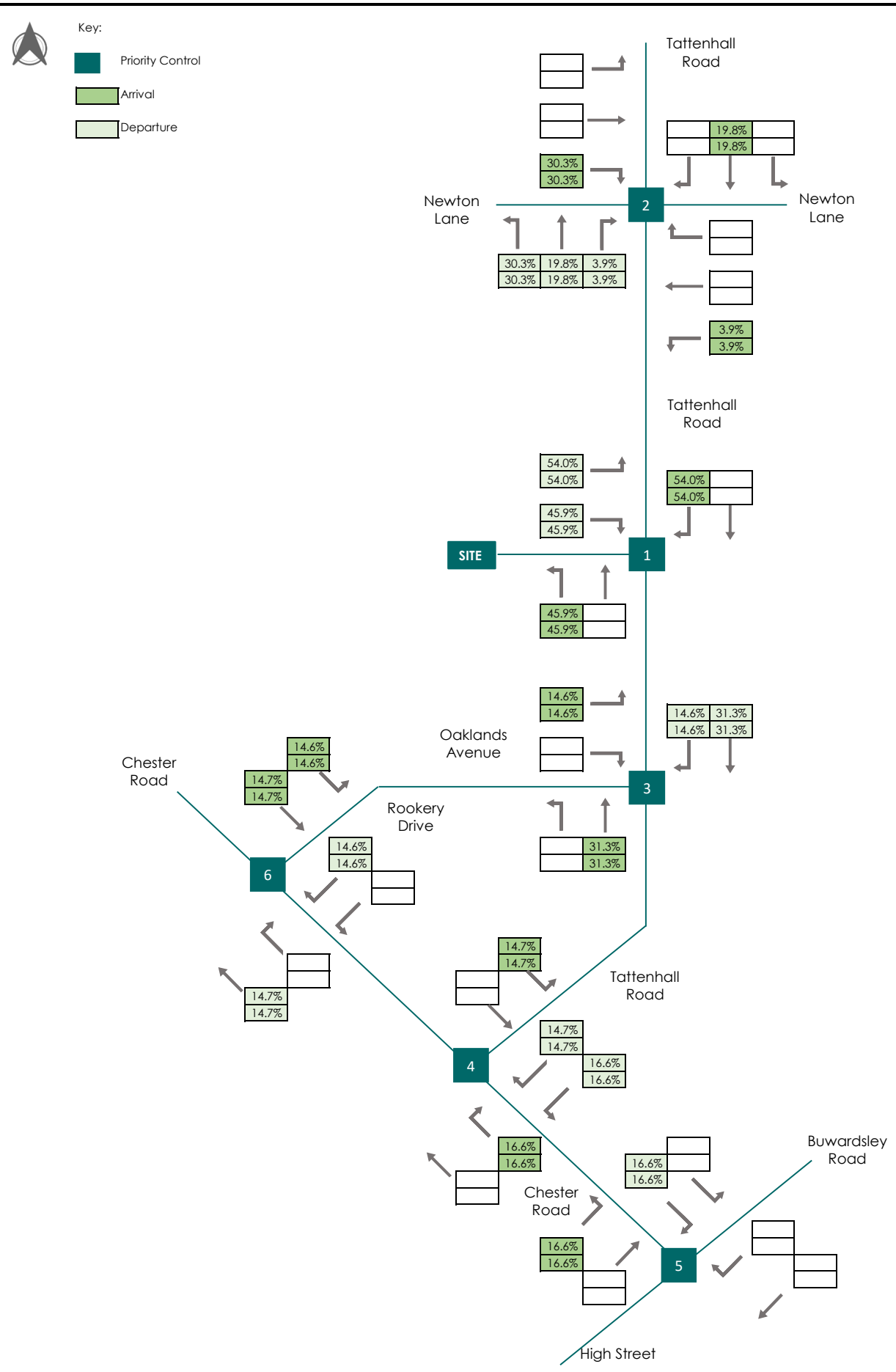


FIGURE C3 **% DISTRIBUTION**
AM & PM PEAK HOURS

ASHLEY HELME ASSOCIATES

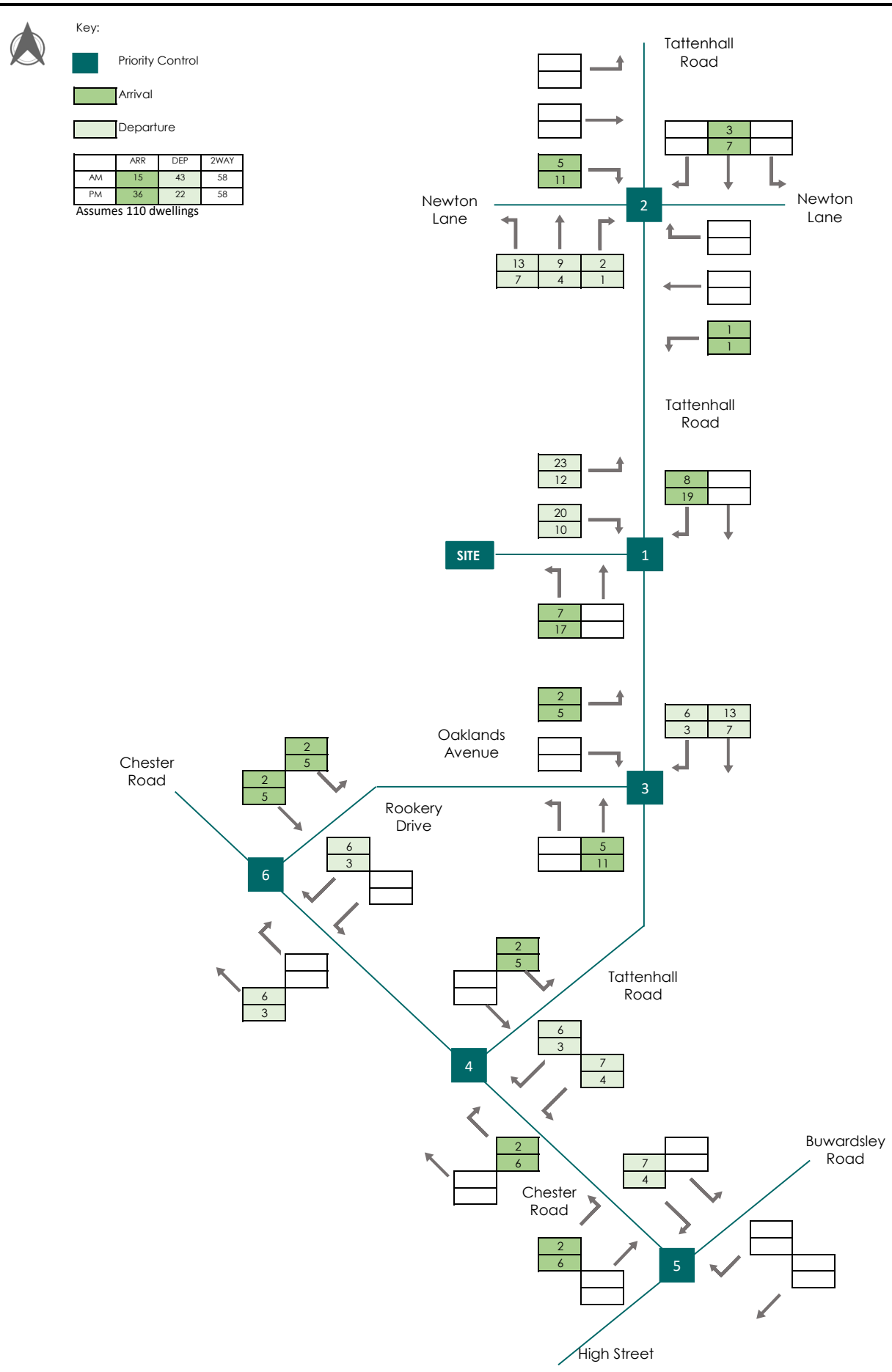


FIGURE C4 **GENERATED TRAFFIC: PROPOSED DEVELOPMENT AM & PM PEAK HOURS**

ASHLEY HELME ASSOCIATES

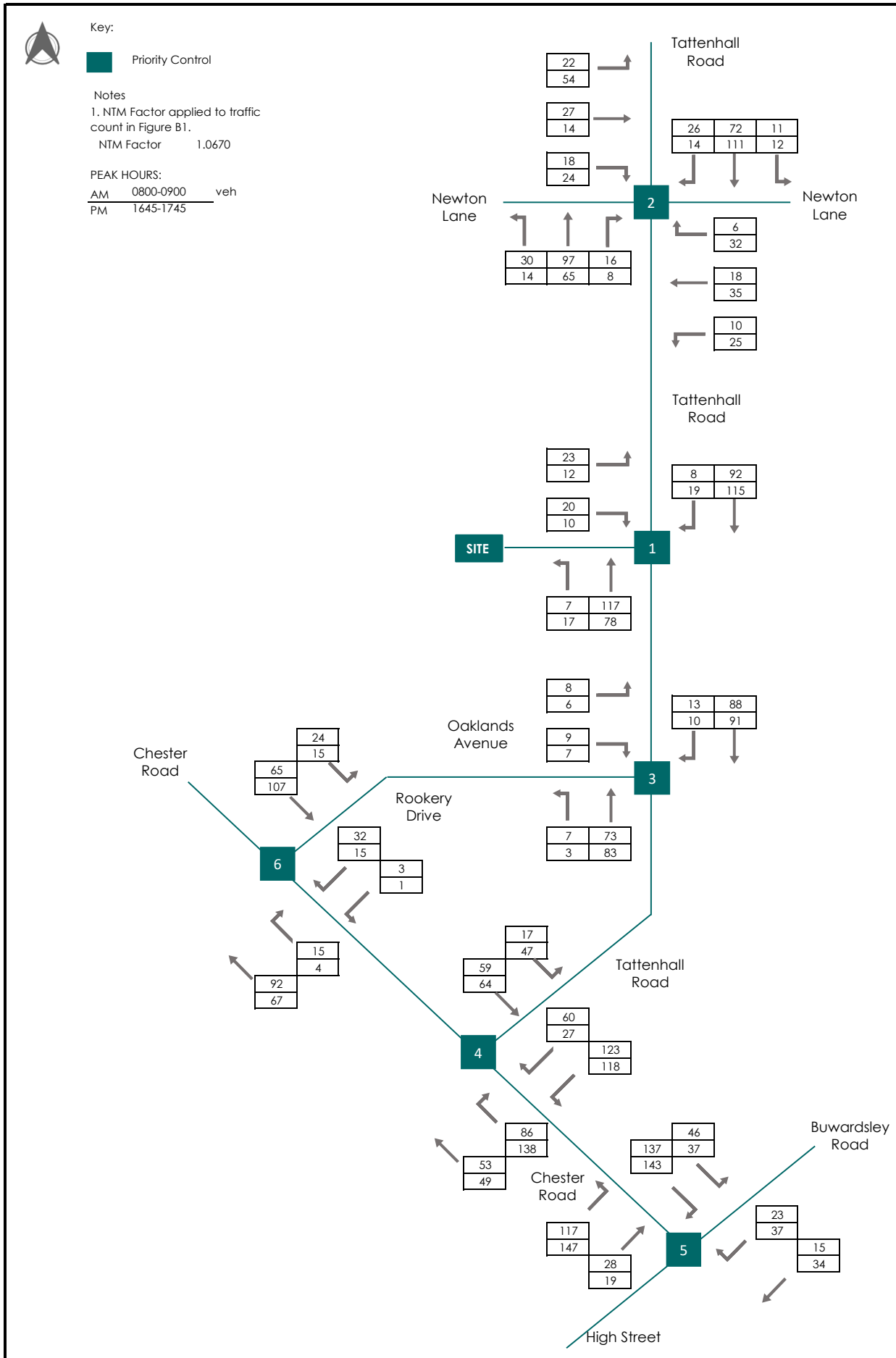


FIGURE C5 **WITH DEVELOPMENT: 2030 AM & PM PEAK HOURS**

ASHLEY HELME ASSOCIATES

Appendix D Technical Filenote 1

TECHNICAL FILE NOTE 1					
Project	Land West of Tattenhall Road, Tattenhall			Project No	1952
Contact		Originator	PL	Date	14.10.24

ASHLEY HELME ASSOCIATES

Traffic Growth: Tempro 8.1

Methodology

Methodology for growthing background traffic from count year (2024) to Development Year of Opening (2030) is to use the Tempro 8.1 methodology, using the following criteria:

- Cheshire West and Chester 046 geographical area,
- All purpose car driver trips,
- Area type: All
- Road type: All

2024 to 2030 <Year of Opening>

AM peak period: 1.0668

PM peak period: 1.0672

Average of AM and PM peak period: 1.067

Appendix E TRICS Outputs

Calculation Reference: AUDIT-733101-241014-1034

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	HF	HERTFORDSHIRE	1 days
04	EAST ANGLIA		
	NF	NORFOLK	3 days
11	SCOTLAND		
	AS	ABERDEENSHIRE	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: No of Dwellings
Actual Range: 80 to 212 (units:)
Range Selected by User: 75 to 225 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/16 to 14/05/24

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:

Monday	1 days
Tuesday	2 days
Wednesday	1 days
Thursday	1 days

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

Selected survey types:

Manual count	5 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	5

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:

Residential Zone	4
Out of Town	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	7 days - Selected
Servicing vehicles Excluded	32 days - Selected

Secondary Filtering selection:

Use Class:

C3	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®.

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

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

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

Car ownership within 5 miles:

1.1 to 1.5	4 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	4 days
No	1 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	5 days

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

LIST OF SITES relevant to selection parameters

1	AS-03-A-02 FARROCHIE ROAD STONEHAVEN	MIXED HOUSES		ABERDEENSHIRE
	Edge of Town Residential Zone Total No of Dwellings:		131	
	Survey date: WEDNESDAY		*20/04/22*	*Survey Type: MANUAL*
2	HF-03-A-03 HARE STREET ROAD BUNTINGFORD	MIXED HOUSES		HERTFORDSHIRE
	Edge of Town Residential Zone Total No of Dwellings:		160	
	Survey date: MONDAY		*08/07/19*	*Survey Type: MANUAL*
3	NF-03-A-33 LONDON ROAD ATTLEBOROUGH	MIXED HOUSES		NORFOLK
	Edge of Town Residential Zone Total No of Dwellings:		143	
	Survey date: THURSDAY		*29/09/22*	*Survey Type: MANUAL*
4	NF-03-A-34 NORWICH ROAD SWAFFHAM	MIXED HOUSES		NORFOLK
	Edge of Town Out of Town Total No of Dwellings:		80	
	Survey date: TUESDAY		*27/09/22*	*Survey Type: MANUAL*
5	NF-03-A-39 HEATH DRIVE HOLT	MIXED HOUSES		NORFOLK
	Edge of Town Residential Zone Total No of Dwellings:		212	
	Survey date: TUESDAY		*27/09/22*	*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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.69

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.076	5	145	0.249	5	145	0.325
08:00 - 09:00	5	145	0.121	5	145	0.296	5	145	0.417
09:00 - 10:00	5	145	0.135	5	145	0.168	5	145	0.303
10:00 - 11:00	5	145	0.125	5	145	0.164	5	145	0.289
11:00 - 12:00	5	145	0.138	5	145	0.125	5	145	0.263
12:00 - 13:00	5	145	0.153	5	145	0.128	5	145	0.281
13:00 - 14:00	5	145	0.158	5	145	0.163	5	145	0.321
14:00 - 15:00	5	145	0.197	5	145	0.169	5	145	0.366
15:00 - 16:00	5	145	0.218	5	145	0.163	5	145	0.381
16:00 - 17:00	5	145	0.252	5	145	0.161	5	145	0.413
17:00 - 18:00	5	145	0.292	5	145	0.176	5	145	0.468
18:00 - 19:00	5	145	0.255	5	145	0.147	5	145	0.402
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.120			2.109			4.229

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.*

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Parameter summary

Trip rate parameter range selected:	80 - 212 (units:)
Survey date date range:	01/01/16 - 14/05/24
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TAXIS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.001	5	145	0.003	5	145	0.004
08:00 - 09:00	5	145	0.001	5	145	0.001	5	145	0.002
09:00 - 10:00	5	145	0.001	5	145	0.001	5	145	0.002
10:00 - 11:00	5	145	0.003	5	145	0.003	5	145	0.006
11:00 - 12:00	5	145	0.003	5	145	0.004	5	145	0.007
12:00 - 13:00	5	145	0.004	5	145	0.003	5	145	0.007
13:00 - 14:00	5	145	0.006	5	145	0.006	5	145	0.012
14:00 - 15:00	5	145	0.003	5	145	0.004	5	145	0.007
15:00 - 16:00	5	145	0.000	5	145	0.001	5	145	0.001
16:00 - 17:00	5	145	0.001	5	145	0.001	5	145	0.002
17:00 - 18:00	5	145	0.001	5	145	0.000	5	145	0.001
18:00 - 19:00	5	145	0.000	5	145	0.000	5	145	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.024			0.027			0.051

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL OGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.006	5	145	0.006	5	145	0.012
08:00 - 09:00	5	145	0.001	5	145	0.000	5	145	0.001
09:00 - 10:00	5	145	0.006	5	145	0.004	5	145	0.010
10:00 - 11:00	5	145	0.006	5	145	0.007	5	145	0.013
11:00 - 12:00	5	145	0.001	5	145	0.000	5	145	0.001
12:00 - 13:00	5	145	0.001	5	145	0.004	5	145	0.005
13:00 - 14:00	5	145	0.004	5	145	0.004	5	145	0.008
14:00 - 15:00	5	145	0.004	5	145	0.003	5	145	0.007
15:00 - 16:00	5	145	0.007	5	145	0.007	5	145	0.014
16:00 - 17:00	5	145	0.000	5	145	0.001	5	145	0.001
17:00 - 18:00	5	145	0.004	5	145	0.001	5	145	0.005
18:00 - 19:00	5	145	0.004	5	145	0.003	5	145	0.007
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.044			0.040			0.084

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PSVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.001	5	145	0.000	5	145	0.001
08:00 - 09:00	5	145	0.000	5	145	0.001	5	145	0.001
09:00 - 10:00	5	145	0.000	5	145	0.000	5	145	0.000
10:00 - 11:00	5	145	0.000	5	145	0.000	5	145	0.000
11:00 - 12:00	5	145	0.000	5	145	0.000	5	145	0.000
12:00 - 13:00	5	145	0.000	5	145	0.000	5	145	0.000
13:00 - 14:00	5	145	0.000	5	145	0.000	5	145	0.000
14:00 - 15:00	5	145	0.000	5	145	0.000	5	145	0.000
15:00 - 16:00	5	145	0.000	5	145	0.000	5	145	0.000
16:00 - 17:00	5	145	0.001	5	145	0.001	5	145	0.002
17:00 - 18:00	5	145	0.000	5	145	0.000	5	145	0.000
18:00 - 19:00	5	145	0.000	5	145	0.000	5	145	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.002			0.002			0.004

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CYCLISTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.001	5	145	0.003	5	145	0.004
08:00 - 09:00	5	145	0.003	5	145	0.007	5	145	0.010
09:00 - 10:00	5	145	0.000	5	145	0.004	5	145	0.004
10:00 - 11:00	5	145	0.000	5	145	0.003	5	145	0.003
11:00 - 12:00	5	145	0.001	5	145	0.003	5	145	0.004
12:00 - 13:00	5	145	0.004	5	145	0.001	5	145	0.005
13:00 - 14:00	5	145	0.001	5	145	0.001	5	145	0.002
14:00 - 15:00	5	145	0.003	5	145	0.001	5	145	0.004
15:00 - 16:00	5	145	0.010	5	145	0.004	5	145	0.014
16:00 - 17:00	5	145	0.004	5	145	0.006	5	145	0.010
17:00 - 18:00	5	145	0.008	5	145	0.014	5	145	0.022
18:00 - 19:00	5	145	0.015	5	145	0.001	5	145	0.016
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.050			0.048			0.098

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.085	5	145	0.339	5	145	0.424
08:00 - 09:00	5	145	0.140	5	145	0.450	5	145	0.590
09:00 - 10:00	5	145	0.165	5	145	0.238	5	145	0.403
10:00 - 11:00	5	145	0.158	5	145	0.225	5	145	0.383
11:00 - 12:00	5	145	0.183	5	145	0.172	5	145	0.355
12:00 - 13:00	5	145	0.200	5	145	0.167	5	145	0.367
13:00 - 14:00	5	145	0.212	5	145	0.207	5	145	0.419
14:00 - 15:00	5	145	0.275	5	145	0.238	5	145	0.513
15:00 - 16:00	5	145	0.333	5	145	0.208	5	145	0.541
16:00 - 17:00	5	145	0.353	5	145	0.226	5	145	0.579
17:00 - 18:00	5	145	0.416	5	145	0.233	5	145	0.649
18:00 - 19:00	5	145	0.357	5	145	0.208	5	145	0.565
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.877			2.911			5.788

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PEDESTRIANS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.023	5	145	0.047	5	145	0.070
08:00 - 09:00	5	145	0.051	5	145	0.081	5	145	0.132
09:00 - 10:00	5	145	0.034	5	145	0.045	5	145	0.079
10:00 - 11:00	5	145	0.022	5	145	0.021	5	145	0.043
11:00 - 12:00	5	145	0.069	5	145	0.058	5	145	0.127
12:00 - 13:00	5	145	0.050	5	145	0.032	5	145	0.082
13:00 - 14:00	5	145	0.028	5	145	0.039	5	145	0.067
14:00 - 15:00	5	145	0.054	5	145	0.036	5	145	0.090
15:00 - 16:00	5	145	0.088	5	145	0.083	5	145	0.171
16:00 - 17:00	5	145	0.055	5	145	0.039	5	145	0.094
17:00 - 18:00	5	145	0.033	5	145	0.044	5	145	0.077
18:00 - 19:00	5	145	0.051	5	145	0.034	5	145	0.085
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.558			0.559			1.117

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL BUS/TRAM PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.000	5	145	0.022	5	145	0.022
08:00 - 09:00	5	145	0.004	5	145	0.019	5	145	0.023
09:00 - 10:00	5	145	0.001	5	145	0.007	5	145	0.008
10:00 - 11:00	5	145	0.003	5	145	0.001	5	145	0.004
11:00 - 12:00	5	145	0.007	5	145	0.004	5	145	0.011
12:00 - 13:00	5	145	0.003	5	145	0.004	5	145	0.007
13:00 - 14:00	5	145	0.008	5	145	0.003	5	145	0.011
14:00 - 15:00	5	145	0.007	5	145	0.004	5	145	0.011
15:00 - 16:00	5	145	0.030	5	145	0.010	5	145	0.040
16:00 - 17:00	5	145	0.007	5	145	0.003	5	145	0.010
17:00 - 18:00	5	145	0.006	5	145	0.001	5	145	0.007
18:00 - 19:00	5	145	0.003	5	145	0.001	5	145	0.004
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.079			0.079			0.158

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL COACH PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.000	5	145	0.000	5	145	0.000
08:00 - 09:00	5	145	0.000	5	145	0.003	5	145	0.003
09:00 - 10:00	5	145	0.000	5	145	0.000	5	145	0.000
10:00 - 11:00	5	145	0.000	5	145	0.000	5	145	0.000
11:00 - 12:00	5	145	0.000	5	145	0.000	5	145	0.000
12:00 - 13:00	5	145	0.000	5	145	0.000	5	145	0.000
13:00 - 14:00	5	145	0.000	5	145	0.000	5	145	0.000
14:00 - 15:00	5	145	0.000	5	145	0.000	5	145	0.000
15:00 - 16:00	5	145	0.000	5	145	0.000	5	145	0.000
16:00 - 17:00	5	145	0.003	5	145	0.000	5	145	0.003
17:00 - 18:00	5	145	0.000	5	145	0.000	5	145	0.000
18:00 - 19:00	5	145	0.000	5	145	0.000	5	145	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.003			0.003			0.006

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.000	5	145	0.022	5	145	0.022
08:00 - 09:00	5	145	0.004	5	145	0.022	5	145	0.026
09:00 - 10:00	5	145	0.001	5	145	0.007	5	145	0.008
10:00 - 11:00	5	145	0.003	5	145	0.001	5	145	0.004
11:00 - 12:00	5	145	0.007	5	145	0.004	5	145	0.011
12:00 - 13:00	5	145	0.003	5	145	0.004	5	145	0.007
13:00 - 14:00	5	145	0.008	5	145	0.003	5	145	0.011
14:00 - 15:00	5	145	0.007	5	145	0.004	5	145	0.011
15:00 - 16:00	5	145	0.030	5	145	0.010	5	145	0.040
16:00 - 17:00	5	145	0.010	5	145	0.003	5	145	0.013
17:00 - 18:00	5	145	0.006	5	145	0.001	5	145	0.007
18:00 - 19:00	5	145	0.003	5	145	0.001	5	145	0.004
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.082			0.082			0.164

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.69

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.110	5	145	0.410	5	145	0.520
08:00 - 09:00	5	145	0.198	5	145	0.561	5	145	0.759
09:00 - 10:00	5	145	0.201	5	145	0.295	5	145	0.496
10:00 - 11:00	5	145	0.183	5	145	0.249	5	145	0.432
11:00 - 12:00	5	145	0.260	5	145	0.237	5	145	0.497
12:00 - 13:00	5	145	0.256	5	145	0.204	5	145	0.460
13:00 - 14:00	5	145	0.249	5	145	0.249	5	145	0.498
14:00 - 15:00	5	145	0.339	5	145	0.280	5	145	0.619
15:00 - 16:00	5	145	0.461	5	145	0.304	5	145	0.765
16:00 - 17:00	5	145	0.421	5	145	0.273	5	145	0.694
17:00 - 18:00	5	145	0.463	5	145	0.292	5	145	0.755
18:00 - 19:00	5	145	0.426	5	145	0.245	5	145	0.671
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.567			3.599			7.166

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CARS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.061	5	145	0.215	5	145	0.276
08:00 - 09:00	5	145	0.103	5	145	0.269	5	145	0.372
09:00 - 10:00	5	145	0.107	5	145	0.147	5	145	0.254
10:00 - 11:00	5	145	0.090	5	145	0.128	5	145	0.218
11:00 - 12:00	5	145	0.107	5	145	0.095	5	145	0.202
12:00 - 13:00	5	145	0.134	5	145	0.099	5	145	0.233
13:00 - 14:00	5	145	0.124	5	145	0.127	5	145	0.251
14:00 - 15:00	5	145	0.167	5	145	0.145	5	145	0.312
15:00 - 16:00	5	145	0.191	5	145	0.132	5	145	0.323
16:00 - 17:00	5	145	0.215	5	145	0.140	5	145	0.355
17:00 - 18:00	5	145	0.255	5	145	0.157	5	145	0.412
18:00 - 19:00	5	145	0.230	5	145	0.132	5	145	0.362
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.784			1.786			3.570

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL LGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.007	5	145	0.026	5	145	0.033
08:00 - 09:00	5	145	0.014	5	145	0.025	5	145	0.039
09:00 - 10:00	5	145	0.021	5	145	0.015	5	145	0.036
10:00 - 11:00	5	145	0.028	5	145	0.026	5	145	0.054
11:00 - 12:00	5	145	0.025	5	145	0.026	5	145	0.051
12:00 - 13:00	5	145	0.012	5	145	0.021	5	145	0.033
13:00 - 14:00	5	145	0.025	5	145	0.025	5	145	0.050
14:00 - 15:00	5	145	0.021	5	145	0.018	5	145	0.039
15:00 - 16:00	5	145	0.019	5	145	0.021	5	145	0.040
16:00 - 17:00	5	145	0.033	5	145	0.017	5	145	0.050
17:00 - 18:00	5	145	0.030	5	145	0.017	5	145	0.047
18:00 - 19:00	5	145	0.021	5	145	0.012	5	145	0.033
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.256			0.249			0.505

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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL MOTOR CYCLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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									
06:00 - 07:00									
07:00 - 08:00	5	145	0.000	5	145	0.000	5	145	0.000
08:00 - 09:00	5	145	0.001	5	145	0.000	5	145	0.001
09:00 - 10:00	5	145	0.000	5	145	0.000	5	145	0.000
10:00 - 11:00	5	145	0.000	5	145	0.000	5	145	0.000
11:00 - 12:00	5	145	0.001	5	145	0.000	5	145	0.001
12:00 - 13:00	5	145	0.001	5	145	0.001	5	145	0.002
13:00 - 14:00	5	145	0.000	5	145	0.001	5	145	0.001
14:00 - 15:00	5	145	0.003	5	145	0.000	5	145	0.003
15:00 - 16:00	5	145	0.000	5	145	0.001	5	145	0.001
16:00 - 17:00	5	145	0.001	5	145	0.000	5	145	0.001
17:00 - 18:00	5	145	0.001	5	145	0.001	5	145	0.002
18:00 - 19:00	5	145	0.000	5	145	0.000	5	145	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.008			0.004			0.012

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 F PICADY Results

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.4.1693
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+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

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Filename: 1952 SJ1.j10
Path: X:\AHA Data\Modelling\ARCADY & PICADY 10\1952
Report generation date: 13/11/2024 12:33:20

»2030 WITH DEV, AM
»2030 WITH DEV, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (min)	RFC	LOS	Set ID	Queue (Veh)	Delay (min)	RFC	LOS
	2030 WITH DEV									
Stream B-AC	D1	0.1	0.13	0.12	A	D2	0.1	0.12	0.06	A
Stream C-AB		0.0	0.10	0.02	A		0.1	0.10	0.05	A

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

File summary

File Description

Title	
Location	
Site number	
Date	07/11/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	KELLY1\Kelly
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	min	-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 (min)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	0.60	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	2030 WITH DEV	AM	ONE HOUR	07:45	09:15	15	✓

D2	2030 WITH DEV	PM	ONE HOUR	16:30	18:00	15	✓

Analysis Set Details

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

2030 WITH DEV, 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 (min)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.03	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.03	A

Arms

Arms

Arm	Name	Description	Arm type
A	Tattenhall Road (S)		Major
B	Site Access		Minor
C	Tattenhall Road (N)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.00			70.0	✓	0.00

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	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.40	25	22

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	516	0.094	0.238	0.150	0.340
B-C	663	0.102	0.257	-	-
C-B	615	0.238	0.238	-	-

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	2030 WITH DEV	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	✓	127	100.000
B		ONE HOUR	✓	59	100.000
C		ONE HOUR	✓	103	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	10	117
	B	27	0	32
	C	92	11	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	2	6
	B	2	0	2
	C	6	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.12	0.13	0.1	A	54	81
C-AB	0.02	0.10	0.0	A	12	18
C-A					83	124
A-B					9	14
A-C					107	161

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 (min)	Unsignalised level of service
B-AC	44	11	544	0.082	44	0.0	0.1	0.120	A
C-AB	9	2	625	0.015	9	0.0	0.0	0.098	A
C-A	68	17			68				
A-B	8	2			8				
A-C	88	22			88				

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 (min)	Unsignalised level of service

B-AC	53	13	537	0.099	53	0.1	0.1	0.124	A
C-AB	11	3	629	0.018	11	0.0	0.0	0.097	A
C-A	81	20			81				
A-B	9	2			9				
A-C	105	26			105				

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 (min)	Unsignalised level of service
B-AC	65	16	529	0.123	65	0.1	0.1	0.129	A
C-AB	14	4	635	0.023	14	0.0	0.0	0.097	A
C-A	99	25			99				
A-B	11	3			11				
A-C	129	32			129				

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 (min)	Unsignalised level of service
B-AC	65	16	529	0.123	65	0.1	0.1	0.129	A
C-AB	14	4	635	0.023	14	0.0	0.0	0.097	A
C-A	99	25			99				
A-B	11	3			11				
A-C	129	32			129				

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 (min)	Unsignalised level of service
B-AC	53	13	537	0.099	53	0.1	0.1	0.124	A
C-AB	11	3	629	0.018	11	0.0	0.0	0.097	A
C-A	81	20			81				
A-B	9	2			9				
A-C	105	26			105				

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 (min)	Unsignalised level of service
B-AC	44	11	544	0.082	45	0.1	0.1	0.120	A
C-AB	9	2	624	0.015	9	0.0	0.0	0.098	A
C-A	68	17			68				
A-B	8	2			8				
A-C	88	22			88				

2030 WITH DEV, 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 (min)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.02	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.02	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	2030 WITH DEV	PM	ONE HOUR	16:30	18:00	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	✓	100	100.000
B		ONE HOUR	✓	31	100.000
C		ONE HOUR	✓	141	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	22	78
	B	14	0	17
	C	115	26	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	2	1
	B	2	0	2
	C	0	2	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.06	0.12	0.1	A	28	43
C-AB	0.05	0.10	0.1	A	29	43
C-A					101	151
A-B					20	30
A-C					72	107

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	23	6	549	0.043	23	0.0	0.0	0.114	A
C-AB	23	6	643	0.035	22	0.0	0.0	0.097	A
C-A	84	21			84				
A-B	17	4			17				
A-C	59	15			59				

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 (min)	Unsignalised level of service
B-AC	28	7	543	0.051	28	0.0	0.1	0.116	A
C-AB	28	7	651	0.043	28	0.0	0.1	0.096	A
C-A	99	25			99				
A-B	20	5			20				
A-C	70	18			70				

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 (min)	Unsignalised level of service
B-AC	34	9	535	0.064	34	0.1	0.1	0.120	A
C-AB	35	9	663	0.053	35	0.1	0.1	0.096	A
C-A	120	30			120				
A-B	24	6			24				
A-C	86	21			86				

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 (min)	Unsignalised level of service
B-AC	34	9	535	0.064	34	0.1	0.1	0.120	A
C-AB	35	9	663	0.054	35	0.1	0.1	0.096	A
C-A	120	30			120				
A-B	24	6			24				
A-C	86	21			86				

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 (min)	Unsignalised level of service
B-AC	28	7	543	0.051	28	0.1	0.1	0.117	A

C-AB	28	7	651	0.043	28	0.1	0.1	0.096	A
C-A	99	25			99				
A-B	20	5			20				
A-C	70	18			70				

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 (min)	Unsignalised level of service
B-AC	23	6	548	0.043	23	0.1	0.0	0.114	A
C-AB	23	6	643	0.035	23	0.1	0.0	0.097	A
C-A	84	21			84				
A-B	17	4			17				
A-C	59	15			59				

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.4.1693
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+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

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Filename: 1952 SJ2.j10
Path: X:\AHA Data\Modelling\ARCADY & PICADY 10\1952
Report generation date: 13/11/2024 12:34:31

»2024 COUNT, AM
»2024 COUNT, PM
»2030 BASE, AM
»2030 BASE, PM
»2030 WITH DEV, AM
»2030 WITH DEV, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (min)	RFC	LOS	Set ID	Queue (Veh)	Delay (min)	RFC	LOS
	2024 COUNT									
Stream B-ACD	D1	0.1	0.14	0.07	A	D2	0.2	0.14	0.18	A
Stream A-BCD		0.1	0.09	0.04	A		0.0	0.08	0.02	A
Stream D-AB		0.1	0.12	0.07	A		0.1	0.10	0.10	A
Stream D-BC		0.1	0.15	0.06	A		0.0	0.14	0.04	A
Stream C-ABD		0.0	0.09	0.02	A		0.0	0.10	0.01	A
	2030 BASE									
Stream B-ACD	D3	0.1	0.14	0.08	A	D4	0.2	0.15	0.19	A
Stream A-BCD		0.1	0.09	0.05	A		0.0	0.08	0.02	A
Stream D-AB		0.1	0.13	0.08	A		0.1	0.10	0.10	A
Stream D-BC		0.1	0.15	0.07	A		0.1	0.14	0.05	A
Stream C-ABD		0.0	0.09	0.03	A		0.0	0.10	0.01	A
	2030 WITH DEV									
Stream B-ACD	D5	0.1	0.14	0.08	A	D6	0.2	0.15	0.20	A
Stream A-BCD		0.1	0.09	0.05	A		0.0	0.08	0.02	A
Stream D-AB		0.1	0.13	0.08	A		0.1	0.11	0.11	A
Stream D-BC		0.1	0.15	0.08	A		0.1	0.14	0.08	A
Stream C-ABD		0.0	0.09	0.03	A		0.0	0.10	0.02	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

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

File summary

File Description

Title	
Location	
Site number	
Date	07/11/2024
Version	
Status	(new file)
Identifier	

Client	
Jobnumber	
Enumerator	KELLY1\Kelly
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	min	-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 (min)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	0.60	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	2024 COUNT	AM	ONE HOUR	07:45	09:15	15	✓
D2	2024 COUNT	PM	ONE HOUR	16:30	18:00	15	✓
D3	2030 BASE	AM	ONE HOUR	07:45	09:15	15	✓
D4	2030 BASE	PM	ONE HOUR	16:30	18:00	15	✓
D5	2030 WITH DEV	AM	ONE HOUR	07:45	09:15	15	✓
D6	2030 WITH DEV	PM	ONE HOUR	16:30	18:00	15	✓

Analysis Set Details

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

2024 COUNT, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm D - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (min)	Junction LOS
1	untitled	Crossroads	Two-way	Two-way	Two-way	Two-way		0.06	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.06	A

Arms

Arms

Arm	Name	Description	Arm type
A	Tattenhall Road (N)		Major
B	Newton Lane (E)		Minor
C	Tattenhall Road (S)		Major
D	Newton Lane (W)		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	6.50			250.0	✓	0.00
C	6.50			155.0	✓	0.00

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	Lane width (m)	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	3.50								26	42
D	One lane plus flare		10.00	8.70	5.10	3.50	2.50		1.00	32	23

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	719	-	-	-	-	-	-	0.272	0.389	0.272	-	-	-
B-A	532	0.095	0.240	0.240	-	-	-	0.151	0.342	-	0.240	0.240	0.120
B-C	683	0.102	0.259	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	532	0.095	0.240	0.240	-	-	-	0.151	0.342	0.151	-	-	-
B-D, offside lane	532	0.095	0.240	0.240	-	-	-	0.151	0.342	0.151	-	-	-
C-B	664	0.252	0.252	0.359	-	-	-	-	-	-	-	-	-
D-A	700	-	-	-	-	-	-	0.265	-	0.105	-	-	-

D-B, nearside lane	548	0.155	0.155	0.352	-	-	-	0.247	0.247	0.098	-	-	-
D-B, offside lane	548	0.155	0.155	0.352	-	-	-	0.247	0.247	0.098	-	-	-
D-C	548	-	0.155	0.352	0.123	0.247	0.247	0.247	0.247	0.098	-	-	-

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	2024 COUNT	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	✓	99	100.000
B		ONE HOUR	✓	32	100.000
C		ONE HOUR	✓	112	100.000
D		ONE HOUR	✓	59	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	10	65	24
	B	6	0	9	17
	C	83	13	0	16
	D	21	25	13	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	10	0	8
	B	17	0	11	6
	C	1	0	0	13
	D	5	20	8	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-ACD	0.07	0.14	0.1	A	29	44
A-BCD	0.04	0.09	0.1	A	25	37
A-B					9	13
A-C					57	86
D-AB	0.07	0.12	0.1	A	31	47
D-BC	0.06	0.15	0.1	A	23	35
C-ABD	0.02	0.09	0.0	A	14	21

C-D					14	22
C-A					75	112

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 (min)	Unsignalised level of service
B-ACD	24	6	490	0.049	24	0.0	0.1	0.129	A
A-BCD	20	5	679	0.029	20	0.0	0.0	0.091	A
A-B	7	2			7				
A-C	48	12			48				
D-AB	25	6	537	0.047	25	0.0	0.0	0.117	A
D-BC	19	5	448	0.042	19	0.0	0.0	0.140	A
C-ABD	11	3	689	0.016	11	0.0	0.0	0.088	A
C-D	12	3			12				
C-A	61	15			61				

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 (min)	Unsignalised level of service
B-ACD	29	7	485	0.059	29	0.1	0.1	0.132	A
A-BCD	24	6	681	0.035	24	0.0	0.0	0.091	A
A-B	9	2			9				
A-C	56	14			56				
D-AB	30	8	530	0.057	30	0.0	0.1	0.120	A
D-BC	23	6	442	0.051	23	0.0	0.1	0.143	A
C-ABD	13	3	695	0.019	13	0.0	0.0	0.088	A
C-D	14	4			14				
C-A	73	18			73				

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 (min)	Unsignalised level of service
B-ACD	35	9	477	0.074	35	0.1	0.1	0.136	A
A-BCD	30	8	685	0.044	30	0.0	0.1	0.092	A
A-B	11	3			11				
A-C	68	17			68				
D-AB	37	9	522	0.072	37	0.1	0.1	0.124	A
D-BC	28	7	433	0.064	28	0.1	0.1	0.148	A
C-ABD	17	4	702	0.024	17	0.0	0.0	0.088	A
C-D	17	4			17				
C-A	89	22			89				

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 (min)	Unsignalised level of service
B-ACD	35	9	477	0.074	35	0.1	0.1	0.136	A
A-BCD	30	8	685	0.044	30	0.1	0.1	0.092	A
A-B	11	3			11				
A-C	68	17			68				
D-AB	37	9	521	0.072	37	0.1	0.1	0.124	A
D-BC	28	7	433	0.064	28	0.1	0.1	0.148	A
C-ABD	17	4	702	0.024	17	0.0	0.0	0.088	A
C-D	17	4			17				
C-A	89	22			89				

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 (min)	Unsignalised level of service
B-ACD	29	7	485	0.059	29	0.1	0.1	0.132	A
A-BCD	24	6	681	0.035	24	0.1	0.0	0.091	A
A-B	9	2			9				
A-C	56	14			56				
D-AB	30	8	530	0.057	30	0.1	0.1	0.120	A
D-BC	23	6	442	0.051	23	0.1	0.1	0.143	A
C-ABD	13	3	695	0.019	13	0.0	0.0	0.088	A
C-D	14	4			14				
C-A	73	18			73				

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 (min)	Unsignalised level of service
B-ACD	24	6	490	0.049	24	0.1	0.1	0.129	A
A-BCD	20	5	679	0.029	20	0.0	0.0	0.091	A
A-B	7	2			7				
A-C	48	12			48				
D-AB	25	6	537	0.047	25	0.1	0.1	0.117	A
D-BC	19	5	448	0.042	19	0.1	0.0	0.140	A
C-ABD	11	3	689	0.016	11	0.0	0.0	0.088	A
C-D	12	3			12				
C-A	61	15			61				

2024 COUNT, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm D - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (min)	Junction LOS
1	untitled	Crossroads	Two-way	Two-way	Two-way	Two-way		0.06	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.06	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	2024 COUNT	PM	ONE HOUR	16:30	18:00	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	✓	121	100.000
B		ONE HOUR	✓	85	100.000
C		ONE HOUR	✓	71	100.000
D		ONE HOUR	✓	76	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	11	97	13
	B	30	0	22	33
	C	57	7	0	7
	D	51	13	12	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
	A	0	0	0	0

From	B	0	0	0	0
	C	0	14	0	14
	D	2	15	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-ACD	0.18	0.14	0.2	A	78	117
A-BCD	0.02	0.08	0.0	A	14	21
A-B					10	15
A-C					87	131
D-AB	0.10	0.10	0.1	A	53	79
D-BC	0.04	0.14	0.0	A	17	25
C-ABD	0.01	0.10	0.0	A	7	11
C-D					6	10
C-A					52	77

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-ACD	64	16	531	0.121	63	0.0	0.1	0.128	A
A-BCD	11	3	753	0.015	11	0.0	0.0	0.081	A
A-B	8	2			8				
A-C	72	18			72				
D-AB	43	11	662	0.066	43	0.0	0.1	0.097	A
D-BC	14	3	464	0.030	14	0.0	0.0	0.133	A
C-ABD	6	1	594	0.010	6	0.0	0.0	0.102	A
C-D	5	1			5				
C-A	42	11			42				

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 (min)	Unsignalised level of service
B-ACD	76	19	524	0.146	76	0.1	0.2	0.134	A
A-BCD	13	3	759	0.018	13	0.0	0.0	0.080	A
A-B	10	2			10				
A-C	86	21			86				
D-AB	52	13	657	0.079	52	0.1	0.1	0.099	A
D-BC	16	4	458	0.036	16	0.0	0.0	0.136	A
C-ABD	7	2	597	0.012	7	0.0	0.0	0.102	A
C-D	6	2			6				
C-A	51	13			51				

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 (min)	Unsignalised level of service
B-ACD	94	23	515	0.182	93	0.2	0.2	0.142	A
A-BCD	17	4	769	0.022	17	0.0	0.0	0.080	A
A-B	12	3			12				
A-C	104	26			104				

D-AB	64	16	651	0.097	63	0.1	0.1	0.102	A
D-BC	20	5	449	0.045	20	0.0	0.0	0.140	A
C-ABD	9	2	600	0.015	9	0.0	0.0	0.102	A
C-D	8	2			8				
C-A	62	15			62				

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 (min)	Unsignalised level of service
B-ACD	94	23	515	0.182	94	0.2	0.2	0.142	A
A-BCD	17	4	769	0.022	17	0.0	0.0	0.080	A
A-B	12	3			12				
A-C	104	26			104				
D-AB	64	16	651	0.098	64	0.1	0.1	0.102	A
D-BC	20	5	449	0.045	20	0.0	0.0	0.140	A
C-ABD	9	2	600	0.015	9	0.0	0.0	0.101	A
C-D	8	2			8				
C-A	62	15			62				

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 (min)	Unsignalised level of service
B-ACD	76	19	524	0.146	77	0.2	0.2	0.134	A
A-BCD	13	3	759	0.018	13	0.0	0.0	0.080	A
A-B	10	2			10				
A-C	86	21			86				
D-AB	52	13	657	0.079	52	0.1	0.1	0.099	A
D-BC	16	4	458	0.036	17	0.0	0.0	0.136	A
C-ABD	7	2	597	0.012	7	0.0	0.0	0.102	A
C-D	6	2			6				
C-A	51	13			51				

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 (min)	Unsignalised level of service
B-ACD	64	16	531	0.121	64	0.2	0.1	0.129	A
A-BCD	11	3	753	0.015	11	0.0	0.0	0.081	A
A-B	8	2			8				
A-C	72	18			72				
D-AB	43	11	662	0.066	43	0.1	0.1	0.097	A
D-BC	14	3	464	0.030	14	0.0	0.0	0.133	A
C-ABD	6	1	594	0.010	6	0.0	0.0	0.102	A
C-D	5	1			5				
C-A	42	11			42				

2030 BASE, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm D - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (min)	Junction LOS
1	untitled	Crossroads	Two-way	Two-way	Two-way	Two-way		0.06	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.06	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
D3	2030 BASE	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	✓	106	100.000
B		ONE HOUR	✓	34	100.000
C		ONE HOUR	✓	120	100.000
D		ONE HOUR	✓	62	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	11	69	26
	B	6	0	10	18
	C	89	14	0	17
	D	22	27	13	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
	A	0	10	0	8

From	B	17	0	11	6
	C	1	0	0	13
	D	5	20	8	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-ACD	0.08	0.14	0.1	A	31	47
A-BCD	0.05	0.09	0.1	A	27	40
A-B					10	15
A-C					61	91
D-AB	0.08	0.13	0.1	A	33	49
D-BC	0.07	0.15	0.1	A	24	36
C-ABD	0.03	0.09	0.0	A	15	23
C-D					15	23
C-A					80	120

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 (min)	Unsignalised level of service
B-ACD	26	6	491	0.052	25	0.0	0.1	0.129	A
A-BCD	21	5	679	0.032	21	0.0	0.0	0.091	A
A-B	8	2			8				
A-C	50	13			50				
D-AB	27	7	533	0.051	27	0.0	0.1	0.118	A
D-BC	20	5	445	0.044	20	0.0	0.0	0.141	A
C-ABD	12	3	691	0.017	12	0.0	0.0	0.088	A
C-D	13	3			13				
C-A	66	16			66				

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 (min)	Unsignalised level of service
B-ACD	31	8	485	0.063	31	0.1	0.1	0.132	A
A-BCD	26	7	682	0.038	26	0.0	0.0	0.091	A
A-B	10	2			10				
A-C	60	15			60				
D-AB	32	8	526	0.061	32	0.1	0.1	0.121	A
D-BC	24	6	438	0.054	23	0.0	0.1	0.145	A
C-ABD	15	4	697	0.021	15	0.0	0.0	0.088	A
C-D	15	4			15				
C-A	78	20			78				

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 (min)	Unsignalised level of service
B-ACD	37	9	476	0.079	37	0.1	0.1	0.137	A
A-BCD	33	8	686	0.048	33	0.0	0.1	0.092	A
A-B	12	3			12				
A-C	72	18			72				

D-AB	40	10	517	0.077	39	0.1	0.1	0.126	A
D-BC	29	7	429	0.067	29	0.1	0.1	0.150	A
C-ABD	18	5	705	0.026	18	0.0	0.0	0.087	A
C-D	18	5			18				
C-A	95	24			95				

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 (min)	Unsignalised level of service
B-ACD	37	9	476	0.079	37	0.1	0.1	0.137	A
A-BCD	33	8	687	0.048	33	0.1	0.1	0.092	A
A-B	12	3			12				
A-C	72	18			72				
D-AB	40	10	517	0.077	40	0.1	0.1	0.126	A
D-BC	29	7	429	0.067	29	0.1	0.1	0.150	A
C-ABD	18	5	705	0.026	18	0.0	0.0	0.087	A
C-D	18	5			18				
C-A	95	24			95				

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 (min)	Unsignalised level of service
B-ACD	31	8	485	0.063	31	0.1	0.1	0.132	A
A-BCD	26	7	682	0.038	26	0.1	0.0	0.091	A
A-B	10	2			10				
A-C	60	15			60				
D-AB	32	8	526	0.061	32	0.1	0.1	0.122	A
D-BC	24	6	438	0.054	24	0.1	0.1	0.145	A
C-ABD	15	4	697	0.021	15	0.0	0.0	0.088	A
C-D	15	4			15				
C-A	78	20			78				

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 (min)	Unsignalised level of service
B-ACD	26	6	490	0.052	26	0.1	0.1	0.129	A
A-BCD	21	5	679	0.032	22	0.0	0.0	0.091	A
A-B	8	2			8				
A-C	50	13			50				
D-AB	27	7	533	0.051	27	0.1	0.1	0.119	A
D-BC	20	5	445	0.044	20	0.1	0.0	0.141	A
C-ABD	12	3	691	0.017	12	0.0	0.0	0.088	A
C-D	13	3			13				
C-A	66	16			66				

2030 BASE, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm D - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (min)	Junction LOS
1	untitled	Crossroads	Two-way	Two-way	Two-way	Two-way		0.07	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.07	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
D4	2030 BASE	PM	ONE HOUR	16:30	18:00	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	✓	129	100.000
B		ONE HOUR	✓	90	100.000
C		ONE HOUR	✓	75	100.000
D		ONE HOUR	✓	81	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	12	103	14
	B	32	0	23	35
	C	61	7	0	7
	D	54	14	13	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
	A	0	0	0	0

From	B	0	0	0	0
	C	0	14	0	14
	D	2	15	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-ACD	0.19	0.15	0.2	A	83	124
A-BCD	0.02	0.08	0.0	A	15	22
A-B					11	16
A-C					93	139
D-AB	0.10	0.10	0.1	A	56	84
D-BC	0.05	0.14	0.1	A	18	27
C-ABD	0.01	0.10	0.0	A	7	11
C-D					6	10
C-A					55	83

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-ACD	68	17	528	0.128	67	0.0	0.1	0.130	A
A-BCD	12	3	755	0.016	12	0.0	0.0	0.081	A
A-B	9	2			9				
A-C	76	19			76				
D-AB	46	12	659	0.070	46	0.0	0.1	0.098	A
D-BC	15	4	463	0.032	15	0.0	0.0	0.134	A
C-ABD	6	1	595	0.010	6	0.0	0.0	0.102	A
C-D	5	1			5				
C-A	45	11			45				

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 (min)	Unsignalised level of service
B-ACD	81	20	521	0.155	81	0.1	0.2	0.136	A
A-BCD	15	4	762	0.019	15	0.0	0.0	0.080	A
A-B	11	3			11				
A-C	91	23			91				
D-AB	55	14	655	0.084	55	0.1	0.1	0.100	A
D-BC	18	4	456	0.039	18	0.0	0.0	0.137	A
C-ABD	7	2	597	0.012	7	0.0	0.0	0.102	A
C-D	6	2			6				
C-A	54	14			54				

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 (min)	Unsignalised level of service
B-ACD	99	25	511	0.194	99	0.2	0.2	0.145	A
A-BCD	18	5	772	0.024	18	0.0	0.0	0.080	A
A-B	13	3			13				
A-C	111	28			111				

D-AB	67	17	648	0.104	67	0.1	0.1	0.103	A
D-BC	22	5	446	0.049	22	0.0	0.1	0.141	A
C-ABD	9	2	601	0.015	9	0.0	0.0	0.101	A
C-D	8	2			8				
C-A	66	17			66				

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 (min)	Unsignalised level of service
B-ACD	99	25	511	0.194	99	0.2	0.2	0.146	A
A-BCD	18	5	772	0.024	18	0.0	0.0	0.080	A
A-B	13	3			13				
A-C	111	28			111				
D-AB	67	17	648	0.104	67	0.1	0.1	0.103	A
D-BC	22	5	446	0.049	22	0.1	0.1	0.141	A
C-ABD	9	2	601	0.015	9	0.0	0.0	0.101	A
C-D	8	2			8				
C-A	66	17			66				

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 (min)	Unsignalised level of service
B-ACD	81	20	521	0.155	81	0.2	0.2	0.136	A
A-BCD	15	4	762	0.019	15	0.0	0.0	0.080	A
A-B	11	3			11				
A-C	91	23			91				
D-AB	55	14	655	0.084	55	0.1	0.1	0.100	A
D-BC	18	4	456	0.039	18	0.1	0.0	0.137	A
C-ABD	7	2	597	0.012	7	0.0	0.0	0.102	A
C-D	6	2			6				
C-A	54	14			54				

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 (min)	Unsignalised level of service
B-ACD	68	17	528	0.128	68	0.2	0.1	0.130	A
A-BCD	12	3	755	0.016	12	0.0	0.0	0.081	A
A-B	9	2			9				
A-C	76	19			76				
D-AB	46	12	659	0.070	46	0.1	0.1	0.098	A
D-BC	15	4	463	0.032	15	0.0	0.0	0.134	A
C-ABD	6	1	595	0.010	6	0.0	0.0	0.102	A
C-D	5	1			5				
C-A	45	11			45				

2030 WITH DEV, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm D - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (min)	Junction LOS
1	untitled	Crossroads	Two-way	Two-way	Two-way	Two-way		0.05	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.05	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
D5	2030 WITH DEV	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	✓	111	100.000
B		ONE HOUR	✓	34	100.000
C		ONE HOUR	✓	151	100.000
D		ONE HOUR	✓	69	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	11	74	26
	B	6	0	10	18
	C	100	16	0	35
	D	22	27	20	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
	A	0	10	0	8

From	B	17	0	11	6
	C	1	0	0	13
	D	5	20	8	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-ACD	0.08	0.14	0.1	A	31	47
A-BCD	0.05	0.09	0.1	A	27	41
A-B					10	15
A-C					65	98
D-AB	0.08	0.13	0.1	A	33	50
D-BC	0.08	0.15	0.1	A	30	45
C-ABD	0.03	0.09	0.0	A	18	27
C-D					31	47
C-A					89	134

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 (min)	Unsignalised level of service
B-ACD	26	6	487	0.053	25	0.0	0.1	0.130	A
A-BCD	22	5	676	0.032	21	0.0	0.0	0.092	A
A-B	8	2			8				
A-C	54	13			54				
D-AB	27	7	527	0.051	27	0.0	0.1	0.120	A
D-BC	25	6	446	0.056	25	0.0	0.1	0.142	A
C-ABD	14	4	704	0.020	14	0.0	0.0	0.087	A
C-D	26	6			26				
C-A	74	18			74				

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 (min)	Unsignalised level of service
B-ACD	31	8	480	0.064	31	0.1	0.1	0.133	A
A-BCD	26	7	678	0.039	26	0.0	0.0	0.092	A
A-B	10	2			10				
A-C	64	16			64				
D-AB	32	8	519	0.062	32	0.1	0.1	0.123	A
D-BC	30	7	438	0.068	30	0.1	0.1	0.147	A
C-ABD	17	4	712	0.024	17	0.0	0.0	0.086	A
C-D	31	8			31				
C-A	88	22			88				

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 (min)	Unsignalised level of service
B-ACD	37	9	471	0.079	37	0.1	0.1	0.138	A
A-BCD	33	8	681	0.049	33	0.0	0.1	0.093	A
A-B	12	3			12				
A-C	77	19			77				

D-AB	40	10	508	0.078	40	0.1	0.1	0.128	A
D-BC	36	9	427	0.085	36	0.1	0.1	0.153	A
C-ABD	22	6	723	0.031	22	0.0	0.0	0.086	A
C-D	37	9			37				
C-A	107	27			107				

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 (min)	Unsignalised level of service
B-ACD	37	9	471	0.079	37	0.1	0.1	0.138	A
A-BCD	33	8	681	0.049	33	0.1	0.1	0.093	A
A-B	12	3			12				
A-C	77	19			77				
D-AB	40	10	508	0.078	40	0.1	0.1	0.128	A
D-BC	36	9	427	0.085	36	0.1	0.1	0.153	A
C-ABD	22	6	723	0.031	22	0.0	0.0	0.086	A
C-D	37	9			37				
C-A	107	27			107				

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 (min)	Unsignalised level of service
B-ACD	31	8	480	0.064	31	0.1	0.1	0.134	A
A-BCD	26	7	678	0.039	26	0.1	0.0	0.092	A
A-B	10	2			10				
A-C	64	16			64				
D-AB	32	8	519	0.062	32	0.1	0.1	0.123	A
D-BC	30	7	438	0.068	30	0.1	0.1	0.147	A
C-ABD	17	4	712	0.024	17	0.0	0.0	0.087	A
C-D	31	8			31				
C-A	88	22			88				

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 (min)	Unsignalised level of service
B-ACD	26	6	487	0.053	26	0.1	0.1	0.130	A
A-BCD	22	5	676	0.032	22	0.0	0.0	0.092	A
A-B	8	2			8				
A-C	54	13			54				
D-AB	27	7	527	0.051	27	0.1	0.1	0.120	A
D-BC	25	6	446	0.056	25	0.1	0.1	0.143	A
C-ABD	14	4	704	0.020	14	0.0	0.0	0.087	A
C-D	26	6			26				
C-A	74	18			74				

2030 WITH DEV, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm D - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (min)	Junction LOS
1	untitled	Crossroads	Two-way	Two-way	Two-way	Two-way		0.07	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.07	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
D6	2030 WITH DEV	PM	ONE HOUR	16:30	18:00	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	✓	139	100.000
B		ONE HOUR	✓	92	100.000
C		ONE HOUR	✓	93	100.000
D		ONE HOUR	✓	95	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		A	B	C	D
From	A	0	12	113	14
	B	32	0	25	35
	C	67	9	0	17
	D	54	14	27	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
	A	0	0	0	0

From	B	0	0	0	0
	C	0	14	0	14
	D	2	15	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-ACD	0.20	0.15	0.2	A	84	127
A-BCD	0.02	0.08	0.0	A	15	23
A-B					11	16
A-C					102	152
D-AB	0.11	0.11	0.1	A	56	84
D-BC	0.08	0.14	0.1	A	31	46
C-ABD	0.02	0.10	0.0	A	10	14
C-D					15	23
C-A					60	91

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-ACD	69	17	526	0.132	69	0.0	0.2	0.131	A
A-BCD	12	3	756	0.016	12	0.0	0.0	0.081	A
A-B	9	2			9				
A-C	84	21			84				
D-AB	46	12	641	0.072	46	0.0	0.1	0.101	A
D-BC	25	6	476	0.053	25	0.0	0.1	0.133	A
C-ABD	8	2	601	0.013	8	0.0	0.0	0.101	A
C-D	13	3			13				
C-A	50	12			50				

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 (min)	Unsignalised level of service
B-ACD	83	21	519	0.159	83	0.2	0.2	0.138	A
A-BCD	15	4	763	0.019	15	0.0	0.0	0.080	A
A-B	11	3			11				
A-C	100	25			100				
D-AB	55	14	635	0.087	55	0.1	0.1	0.103	A
D-BC	30	8	468	0.065	30	0.1	0.1	0.137	A
C-ABD	9	2	605	0.015	9	0.0	0.0	0.101	A
C-D	15	4			15				
C-A	59	15			59				

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 (min)	Unsignalised level of service
B-ACD	101	25	508	0.199	101	0.2	0.2	0.147	A
A-BCD	19	5	773	0.024	19	0.0	0.0	0.079	A
A-B	13	3			13				
A-C	121	30			121				

D-AB	68	17	627	0.108	68	0.1	0.1	0.107	A
D-BC	37	9	457	0.081	37	0.1	0.1	0.143	A
C-ABD	12	3	611	0.019	12	0.0	0.0	0.100	A
C-D	18	5			18				
C-A	72	18			72				

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 (min)	Unsignalised level of service
B-ACD	101	25	508	0.199	101	0.2	0.2	0.148	A
A-BCD	19	5	773	0.024	19	0.0	0.0	0.080	A
A-B	13	3			13				
A-C	121	30			121				
D-AB	68	17	627	0.108	68	0.1	0.1	0.107	A
D-BC	37	9	457	0.081	37	0.1	0.1	0.143	A
C-ABD	12	3	611	0.019	12	0.0	0.0	0.100	A
C-D	18	5			18				
C-A	72	18			72				

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 (min)	Unsignalised level of service
B-ACD	83	21	519	0.160	83	0.2	0.2	0.138	A
A-BCD	15	4	763	0.019	15	0.0	0.0	0.080	A
A-B	11	3			11				
A-C	100	25			100				
D-AB	55	14	635	0.087	55	0.1	0.1	0.103	A
D-BC	30	8	468	0.065	30	0.1	0.1	0.137	A
C-ABD	9	2	605	0.015	9	0.0	0.0	0.101	A
C-D	15	4			15				
C-A	59	15			59				

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 (min)	Unsignalised level of service
B-ACD	69	17	526	0.132	69	0.2	0.2	0.131	A
A-BCD	12	3	756	0.016	12	0.0	0.0	0.081	A
A-B	9	2			9				
A-C	84	21			84				
D-AB	46	12	641	0.072	46	0.1	0.1	0.101	A
D-BC	25	6	476	0.053	25	0.1	0.1	0.133	A
C-ABD	8	2	601	0.013	8	0.0	0.0	0.101	A
C-D	13	3			13				
C-A	50	12			50				

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.4.1693
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+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

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Filename: 1952 SJ3.j10
Path: X:\AHA Data\Modelling\ARCADY & PICADY 10\1952
Report generation date: 13/11/2024 12:35:14

»2024 COUNT, AM
»2024 COUNT, PM
»2030 BASE, AM
»2030 BASE, PM
»2030 WITH DEV, AM
»2030 WITH DEV, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (Veh)	Delay (min)	RFC	LOS	Set ID	Queue (Veh)	Delay (min)	RFC	LOS
	2024 COUNT									
Stream B-AC	D1	0.0	0.14	0.03	A	D2	0.0	0.14	0.02	A
Stream C-AB		0.0	0.13	0.02	A		0.0	0.10	0.01	A
	2030 BASE									
Stream B-AC	D3	0.0	0.14	0.03	A	D4	0.0	0.14	0.02	A
Stream C-AB		0.0	0.13	0.02	A		0.0	0.10	0.01	A
	2030 WITH DEV									
Stream B-AC	D5	0.0	0.13	0.04	A	D6	0.0	0.13	0.04	A
Stream C-AB		0.0	0.13	0.02	A		0.0	0.10	0.02	A

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

File summary

File Description

Title	
Location	
Site number	
Date	07/11/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	KELLY1\Kelly
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	min	-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 (min)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	0.60	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	2024 COUNT	AM	ONE HOUR	07:45	09:15	15	✓
D2	2024 COUNT	PM	ONE HOUR	16:30	18:00	15	✓
D3	2030 BASE	AM	ONE HOUR	07:45	09:15	15	✓
D4	2030 BASE	PM	ONE HOUR	16:30	18:00	15	✓
D5	2030 WITH DEV	AM	ONE HOUR	07:45	09:15	15	✓
D6	2030 WITH DEV	PM	ONE HOUR	16:30	18:00	15	✓

Analysis Set Details

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

2024 COUNT, 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 (min)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.02	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.02	A

Arms

Arms

Arm	Name	Description	Arm type
A	Tattenhall Road (S)		Major
B	Oaklands Avenue		Minor
C	Tattenhall Road (N)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.00			0.0	✓	0.00

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	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.20	0	0

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	440	0.080	0.202	0.127	0.289
B-C	574	0.088	0.222	-	-
C-B	574	0.222	0.222	-	-

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	2024 COUNT	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	✓	71	100.000
B		ONE HOUR	✓	13	100.000
C		ONE HOUR	✓	76	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	7	64
	B	8	0	5
	C	70	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	6	0
	B	0	0	0
	C	6	33	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.03	0.14	0.0	A	12	18
C-AB	0.02	0.13	0.0	A	6	10
C-A					63	95
A-B					6	10
A-C					59	88

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 (min)	Unsignalised level of service
B-AC	10	2	466	0.021	10	0.0	0.0	0.132	A
C-AB	5	1	462	0.011	5	0.0	0.0	0.131	A
C-A	52	13			52				
A-B	5	1			5				
A-C	48	12			48				

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 (min)	Unsignalised level of service

B-AC	12	3	462	0.025	12	0.0	0.0	0.133	A
C-AB	6	2	468	0.013	6	0.0	0.0	0.130	A
C-A	62	16			62				
A-B	6	2			6				
A-C	58	14			58				

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 (min)	Unsignalised level of service
B-AC	14	4	458	0.031	14	0.0	0.0	0.135	A
C-AB	8	2	477	0.017	8	0.0	0.0	0.128	A
C-A	76	19			76				
A-B	8	2			8				
A-C	70	18			70				

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 (min)	Unsignalised level of service
B-AC	14	4	458	0.031	14	0.0	0.0	0.135	A
C-AB	8	2	477	0.017	8	0.0	0.0	0.128	A
C-A	76	19			76				
A-B	8	2			8				
A-C	70	18			70				

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 (min)	Unsignalised level of service
B-AC	12	3	462	0.025	12	0.0	0.0	0.133	A
C-AB	6	2	468	0.013	6	0.0	0.0	0.129	A
C-A	62	16			62				
A-B	6	2			6				
A-C	58	14			58				

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 (min)	Unsignalised level of service
B-AC	10	2	466	0.021	10	0.0	0.0	0.132	A
C-AB	5	1	462	0.011	5	0.0	0.0	0.131	A
C-A	52	13			52				
A-B	5	1			5				
A-C	48	12			48				

2024 COUNT, 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 (min)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.01	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.01	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	2024 COUNT	PM	ONE HOUR	16:30	18:00	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	✓	70	100.000
B		ONE HOUR	✓	8	100.000
C		ONE HOUR	✓	85	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	3	67
	B	7	0	1
	C	79	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.02	0.14	0.0	A	7	11
C-AB	0.01	0.10	0.0	A	6	9
C-A					72	108
A-B					3	4
A-C					61	92

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	6	2	434	0.014	6	0.0	0.0	0.140	A
C-AB	5	1	603	0.008	5	0.0	0.0	0.100	A
C-A	59	15			59				
A-B	2	0.56			2				
A-C	50	13			50				

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 (min)	Unsignalised level of service
B-AC	7	2	430	0.017	7	0.0	0.0	0.142	A
C-AB	6	2	609	0.010	6	0.0	0.0	0.100	A
C-A	70	18			70				
A-B	3	0.67			3				
A-C	60	15			60				

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 (min)	Unsignalised level of service
B-AC	9	2	425	0.021	9	0.0	0.0	0.144	A
C-AB	8	2	617	0.012	8	0.0	0.0	0.099	A
C-A	86	21			86				
A-B	3	0.83			3				
A-C	74	18			74				

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 (min)	Unsignalised level of service
B-AC	9	2	425	0.021	9	0.0	0.0	0.144	A
C-AB	8	2	617	0.012	8	0.0	0.0	0.099	A
C-A	86	21			86				
A-B	3	0.83			3				
A-C	74	18			74				

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 (min)	Unsignalised level of service
B-AC	7	2	430	0.017	7	0.0	0.0	0.142	A

C-AB	6	2	609	0.010	6	0.0	0.0	0.100	A
C-A	70	18			70				
A-B	3	0.67			3				
A-C	60	15			60				

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 (min)	Unsignalised level of service
B-AC	6	2	434	0.014	6	0.0	0.0	0.140	A
C-AB	5	1	603	0.008	5	0.0	0.0	0.100	A
C-A	59	15			59				
A-B	2	0.56			2				
A-C	50	13			50				

2030 BASE, 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 (min)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.02	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.02	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
D3	2030 BASE	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	✓	75	100.000
B		ONE HOUR	✓	14	100.000
C		ONE HOUR	✓	81	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	7	68
	B	9	0	5
	C	75	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	6	0
	B	0	0	0
	C	6	33	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.03	0.14	0.0	A	13	19
C-AB	0.02	0.13	0.0	A	6	10
C-A					68	102
A-B					6	10
A-C					62	94

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 (min)	Unsignalised level of service
B-AC	11	3	461	0.023	10	0.0	0.0	0.133	A
C-AB	5	1	464	0.011	5	0.0	0.0	0.131	A
C-A	56	14			56				
A-B	5	1			5				
A-C	51	13			51				

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 (min)	Unsignalised level of service
B-AC	13	3	458	0.028	13	0.0	0.0	0.135	A
C-AB	6	2	471	0.013	6	0.0	0.0	0.129	A
C-A	67	17			67				
A-B	6	2			6				
A-C	61	15			61				

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 (min)	Unsignalised level of service
B-AC	15	4	453	0.034	15	0.0	0.0	0.137	A
C-AB	8	2	480	0.017	8	0.0	0.0	0.127	A
C-A	81	20			81				
A-B	8	2			8				
A-C	75	19			75				

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 (min)	Unsignalised level of service
B-AC	15	4	453	0.034	15	0.0	0.0	0.137	A
C-AB	8	2	480	0.017	8	0.0	0.0	0.127	A
C-A	81	20			81				
A-B	8	2			8				
A-C	75	19			75				

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 (min)	Unsignalised level of service
B-AC	13	3	458	0.028	13	0.0	0.0	0.135	A

C-AB	6	2	471	0.013	6	0.0	0.0	0.129	A
C-A	67	17			67				
A-B	6	2			6				
A-C	61	15			61				

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 (min)	Unsignalised level of service
B-AC	11	3	461	0.023	11	0.0	0.0	0.133	A
C-AB	5	1	465	0.011	5	0.0	0.0	0.130	A
C-A	56	14			56				
A-B	5	1			5				
A-C	51	13			51				

2030 BASE, 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 (min)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.01	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.01	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
D4	2030 BASE	PM	ONE HOUR	16:30	18:00	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	✓	74	100.000
B		ONE HOUR	✓	8	100.000
C		ONE HOUR	✓	90	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	3	71
	B	7	0	1
	C	84	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.02	0.14	0.0	A	7	11
C-AB	0.01	0.10	0.0	A	6	9
C-A					76	114
A-B					3	4
A-C					65	98

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	6	2	433	0.014	6	0.0	0.0	0.141	A
C-AB	5	1	605	0.008	5	0.0	0.0	0.100	A
C-A	63	16			63				
A-B	2	0.56			2				
A-C	53	13			53				

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 (min)	Unsignalised level of service
B-AC	7	2	429	0.017	7	0.0	0.0	0.142	A
C-AB	6	2	611	0.010	6	0.0	0.0	0.099	A
C-A	75	19			75				
A-B	3	0.67			3				
A-C	64	16			64				

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 (min)	Unsignalised level of service
B-AC	9	2	424	0.021	9	0.0	0.0	0.145	A
C-AB	8	2	620	0.013	8	0.0	0.0	0.098	A
C-A	91	23			91				
A-B	3	0.83			3				
A-C	78	20			78				

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 (min)	Unsignalised level of service
B-AC	9	2	424	0.021	9	0.0	0.0	0.145	A
C-AB	8	2	620	0.013	8	0.0	0.0	0.098	A
C-A	91	23			91				
A-B	3	0.83			3				
A-C	78	20			78				

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 (min)	Unsignalised level of service
B-AC	7	2	429	0.017	7	0.0	0.0	0.142	A

C-AB	6	2	611	0.010	6	0.0	0.0	0.099	A
C-A	75	19			75				
A-B	3	0.67			3				
A-C	64	16			64				

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 (min)	Unsignalised level of service
B-AC	6	2	433	0.014	6	0.0	0.0	0.141	A
C-AB	5	1	605	0.008	5	0.0	0.0	0.100	A
C-A	63	16			63				
A-B	2	0.56			2				
A-C	53	13			53				

2030 WITH DEV, 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 (min)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.02	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.02	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
D5	2030 WITH DEV	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	✓	82	100.000
B		ONE HOUR	✓	17	100.000
C		ONE HOUR	✓	99	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	7	75
	B	9	0	8
	C	93	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	6	0
	B	0	0	0
	C	6	33	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.04	0.13	0.0	A	16	23
C-AB	0.02	0.13	0.0	A	7	10
C-A					84	126
A-B					6	10
A-C					69	103

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 (min)	Unsignalised level of service
B-AC	13	3	474	0.027	13	0.0	0.0	0.130	A
C-AB	5	1	474	0.011	5	0.0	0.0	0.128	A
C-A	69	17			69				
A-B	5	1			5				
A-C	56	14			56				

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 (min)	Unsignalised level of service
B-AC	15	4	470	0.033	15	0.0	0.0	0.132	A
C-AB	7	2	482	0.014	7	0.0	0.0	0.126	A
C-A	82	21			82				
A-B	6	2			6				
A-C	67	17			67				

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 (min)	Unsignalised level of service
B-AC	19	5	465	0.040	19	0.0	0.0	0.135	A
C-AB	8	2	494	0.017	8	0.0	0.0	0.124	A
C-A	101	25			101				
A-B	8	2			8				
A-C	83	21			83				

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 (min)	Unsignalised level of service
B-AC	19	5	465	0.040	19	0.0	0.0	0.135	A
C-AB	8	2	494	0.017	8	0.0	0.0	0.124	A
C-A	101	25			101				
A-B	8	2			8				
A-C	83	21			83				

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 (min)	Unsignalised level of service
B-AC	15	4	470	0.033	15	0.0	0.0	0.132	A

C-AB	7	2	482	0.014	7	0.0	0.0	0.126	A
C-A	82	21			82				
A-B	6	2			6				
A-C	67	17			67				

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 (min)	Unsignalised level of service
B-AC	13	3	474	0.027	13	0.0	0.0	0.130	A
C-AB	5	1	474	0.011	5	0.0	0.0	0.128	A
C-A	69	17			69				
A-B	5	1			5				
A-C	56	14			56				

2030 WITH DEV, 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 (min)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.02	A

Junction Network

Driving side	Lighting	Network delay (min)	Network LOS
Left	Normal/unknown	0.02	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
D6	2030 WITH DEV	PM	ONE HOUR	16:30	18:00	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	✓	90	100.000
B		ONE HOUR	✓	15	100.000
C		ONE HOUR	✓	105	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	3	87
	B	7	0	8
	C	94	11	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	1
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.04	0.13	0.0	A	14	21
C-AB	0.02	0.10	0.0	A	12	18
C-A					85	127
A-B					3	4
A-C					80	120

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	11	3	481	0.023	11	0.0	0.0	0.128	A
C-AB	9	2	608	0.015	9	0.0	0.0	0.100	A
C-A	70	17			70				
A-B	2	0.56			2				
A-C	65	16			65				

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 (min)	Unsignalised level of service
B-AC	13	3	477	0.028	13	0.0	0.0	0.130	A
C-AB	11	3	614	0.019	11	0.0	0.0	0.100	A
C-A	83	21			83				
A-B	3	0.67			3				
A-C	78	20			78				

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 (min)	Unsignalised level of service
B-AC	17	4	471	0.035	16	0.0	0.0	0.132	A
C-AB	15	4	623	0.023	15	0.0	0.0	0.099	A
C-A	101	25			101				
A-B	3	0.83			3				
A-C	96	24			96				

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 (min)	Unsignalised level of service
B-AC	17	4	471	0.035	17	0.0	0.0	0.132	A
C-AB	15	4	624	0.023	15	0.0	0.0	0.099	A
C-A	101	25			101				
A-B	3	0.83			3				
A-C	96	24			96				

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 (min)	Unsignalised level of service
B-AC	13	3	477	0.028	14	0.0	0.0	0.130	A

C-AB	11	3	614	0.019	12	0.0	0.0	0.100	A
C-A	83	21			83				
A-B	3	0.67			3				
A-C	78	20			78				

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 (min)	Unsignalised level of service
B-AC	11	3	481	0.023	11	0.0	0.0	0.128	A
C-AB	9	2	608	0.015	9	0.0	0.0	0.100	A
C-A	70	17			70				
A-B	2	0.56			2				
A-C	65	16			65				

Drawings

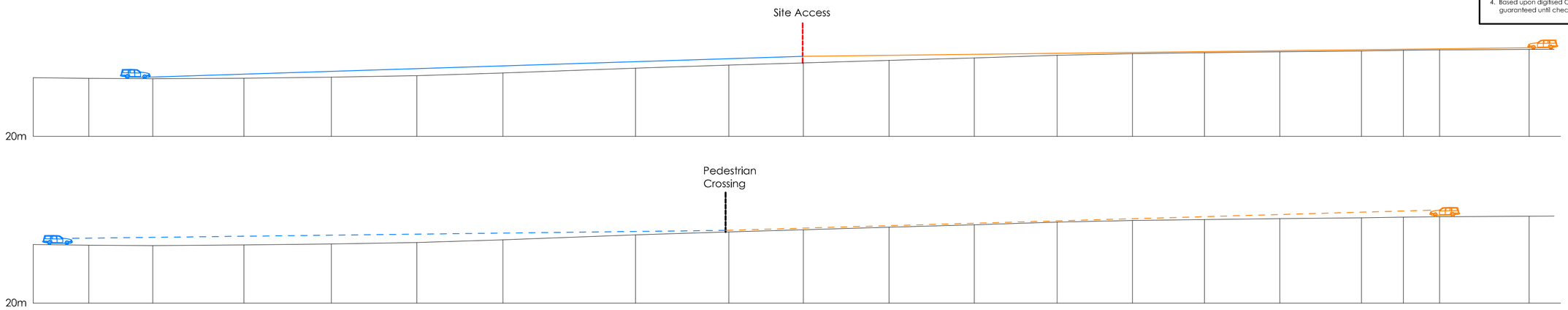
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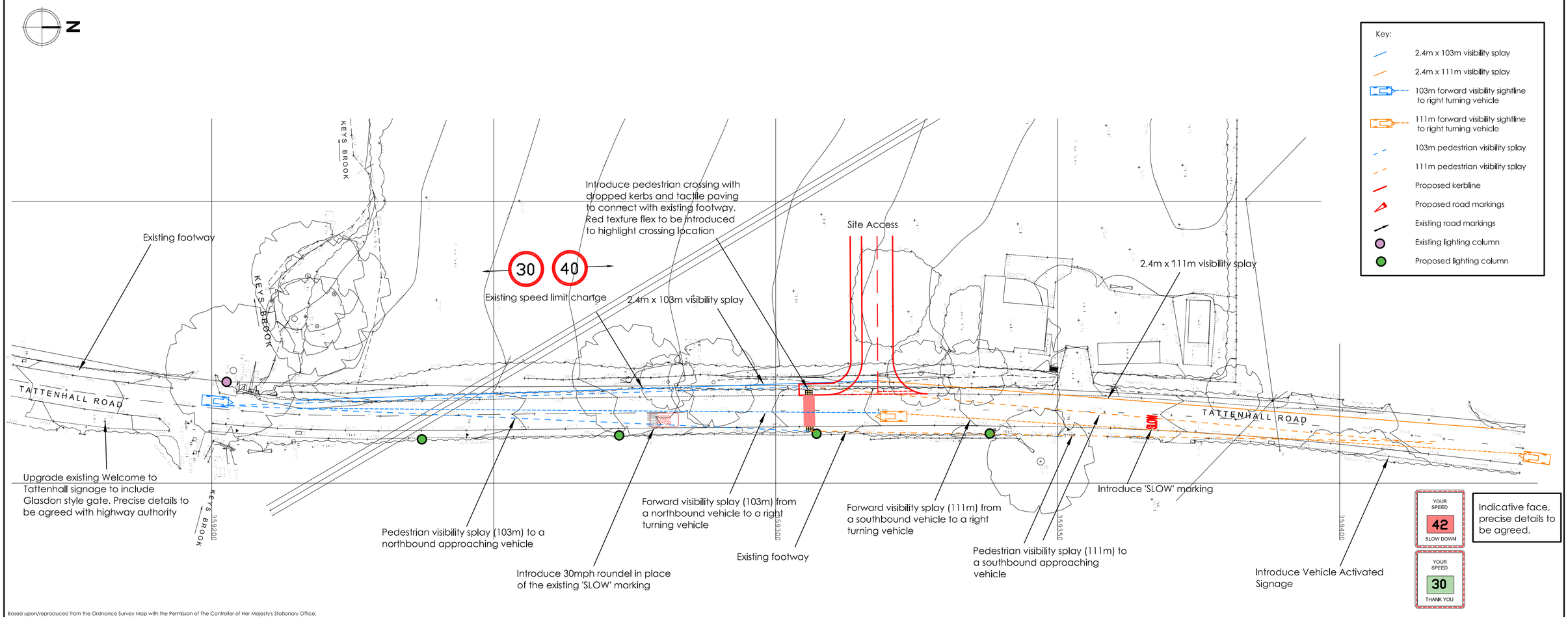
VERTICAL ALIGNMENT

Driver's eye height: 1.05m
Object height: 0.26m

Notes:

1. Do not scale from this drawing
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3. Subject to detailed design
4. Based upon digitised OS plan, accuracy can not be guaranteed until checked with topographical survey



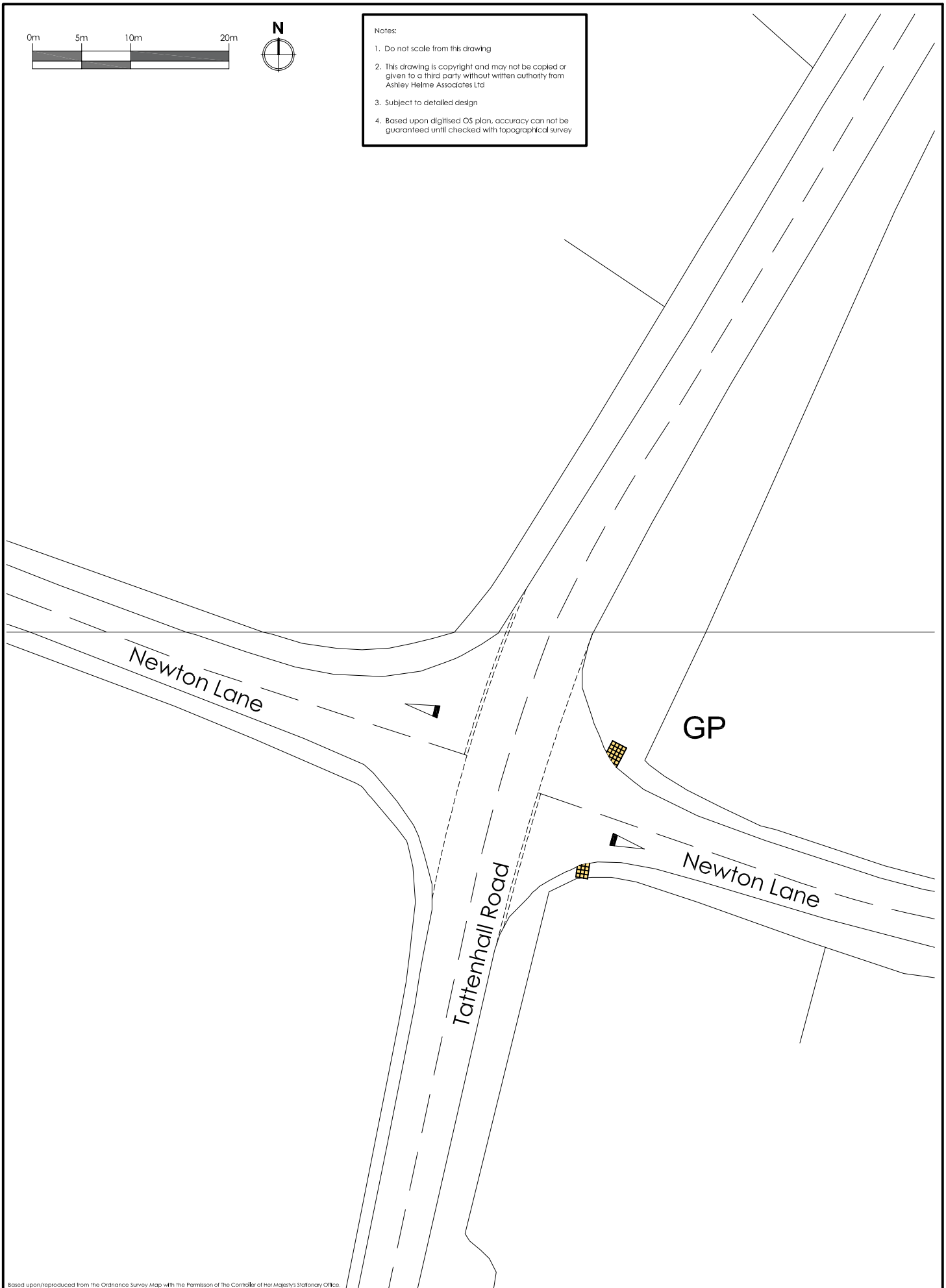


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Project: LAND OFF TATTENHALL ROAD, TATTENHALL	Title: PROPOSED SITE ACCESS ARRANGEMENTS	Drg No: 1952/01	Rev: A
Client: GLADMAN DEVELOPMENTS LTD		Date: NOVEMBER 2024	Scale: 1:500@A2

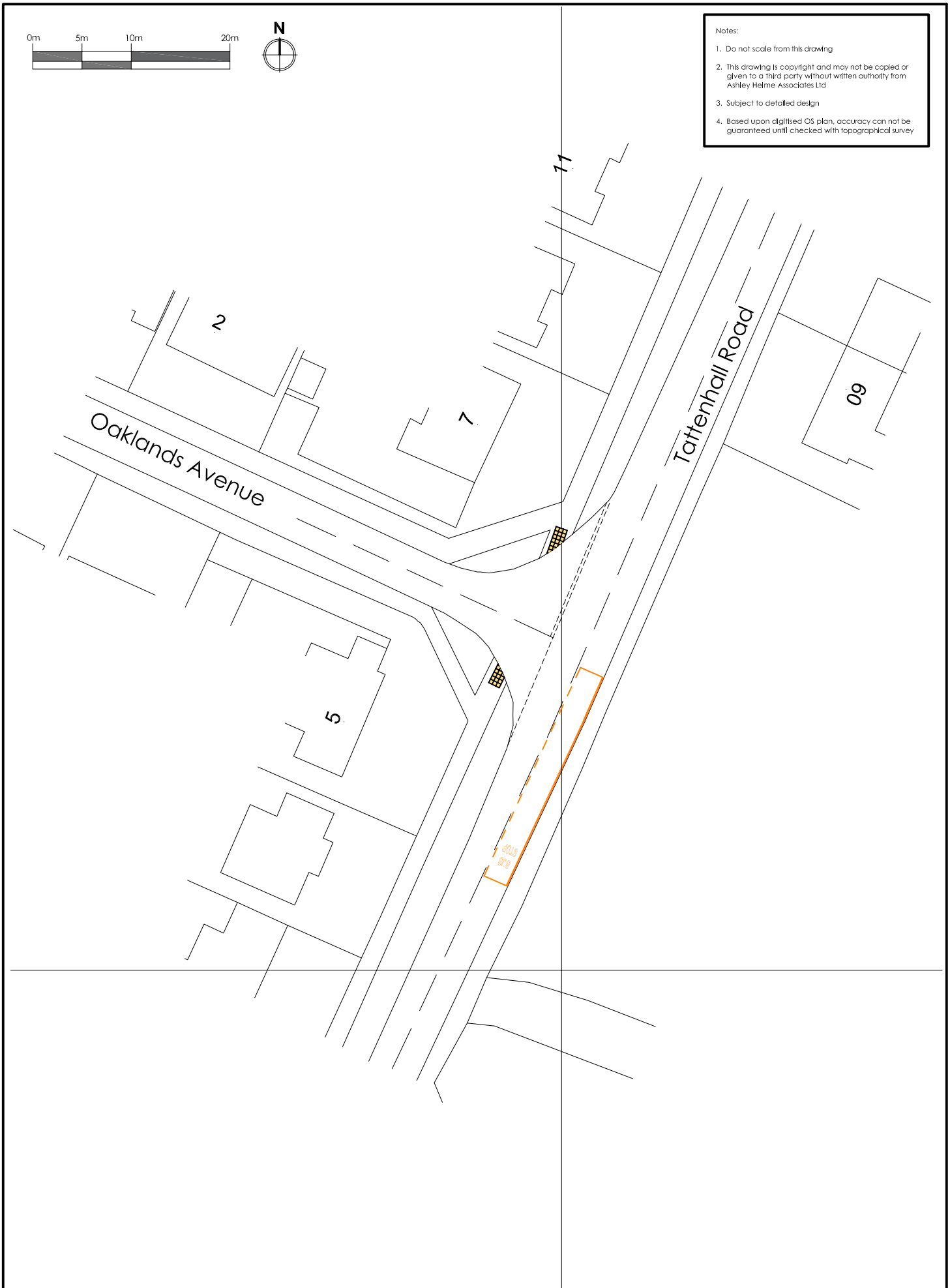
ASHLEY HELME ASSOCIATES

Telephone 0161 972 0552
Email aha@ashleyhelme.co.uk
Website www.ashleyhelme.co.uk
Address 76 Washway Road, Sale, Manchester, M33 7RE



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Project: LAND WEST OF TATTENHALL ROAD, TATTENHALL	Client: GLADMAN DEVELOPMENTS	Drawing No: 1952/02	Rev:	ASHLEY HELME ASSOCIATES
Title: EXISTING JUNCTION ARRANGEMENTS: STUDY JUNCTION 2		Date: NOV 2024	Scale: 1:500@A4	



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Project: LAND WEST OF TATTENHALL ROAD, TATTENHALL	Client: GLADMAN DEVELOPMENTS	Drawing No: 1952/03	Rev:	ASHLEY HELME ASSOCIATES
Title: EXISTING JUNCTION ARRANGEMENTS: STUDY JUNCTION 3		Date: NOV 2024	Scale: 1:500@A4	

0m 5m 10m 20m

N

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4. Based upon digitised OS plan, accuracy can not be guaranteed until checked with topographical survey

Chester Road

Tattenhall Road

Chester Road

1

2

ESS

PH

Burwardsley Road

The Old School

PH

9

9

j

h

LB

BUS STOP

BUS STOP

PO

9a

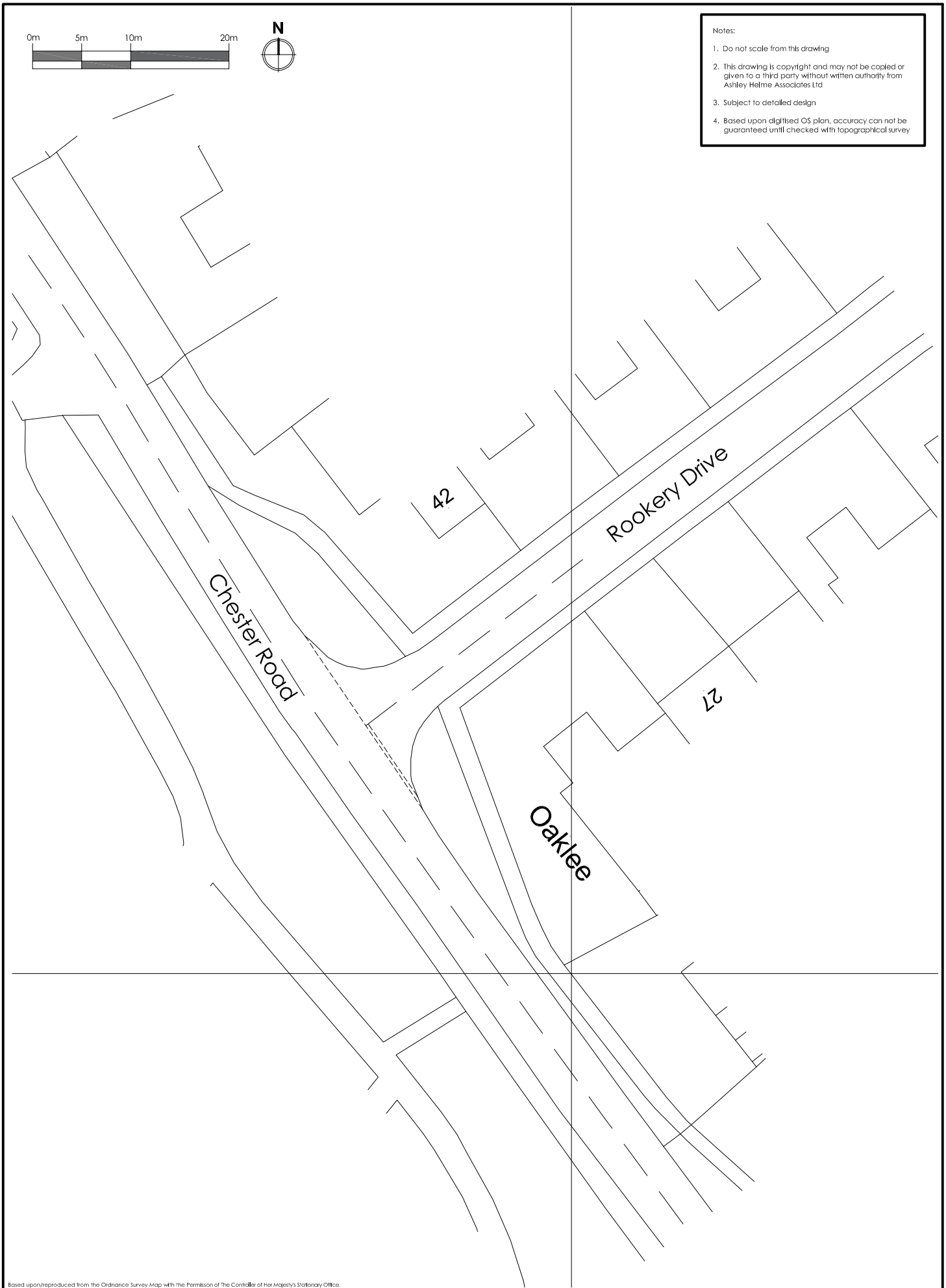
High Street

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Project: LAND WEST OF TATTENHALL ROAD, TATTENHALL	Client: GLADMAN DEVELOPMENTS	Drawing No: 1952/04	
Title: EXISTING JUNCTION ARRANGEMENTS: STUDY JUNCTIONS 4 & 5	Date: NOV 2024	Scale: 1:500@A3	Rev:

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Telephone 0161 972 0552
Email aha@ashleyhelme.co.uk
Website www.ashleyhelme.co.uk
Address 76 Washway Road, Sale, Manchester, M33 7RE

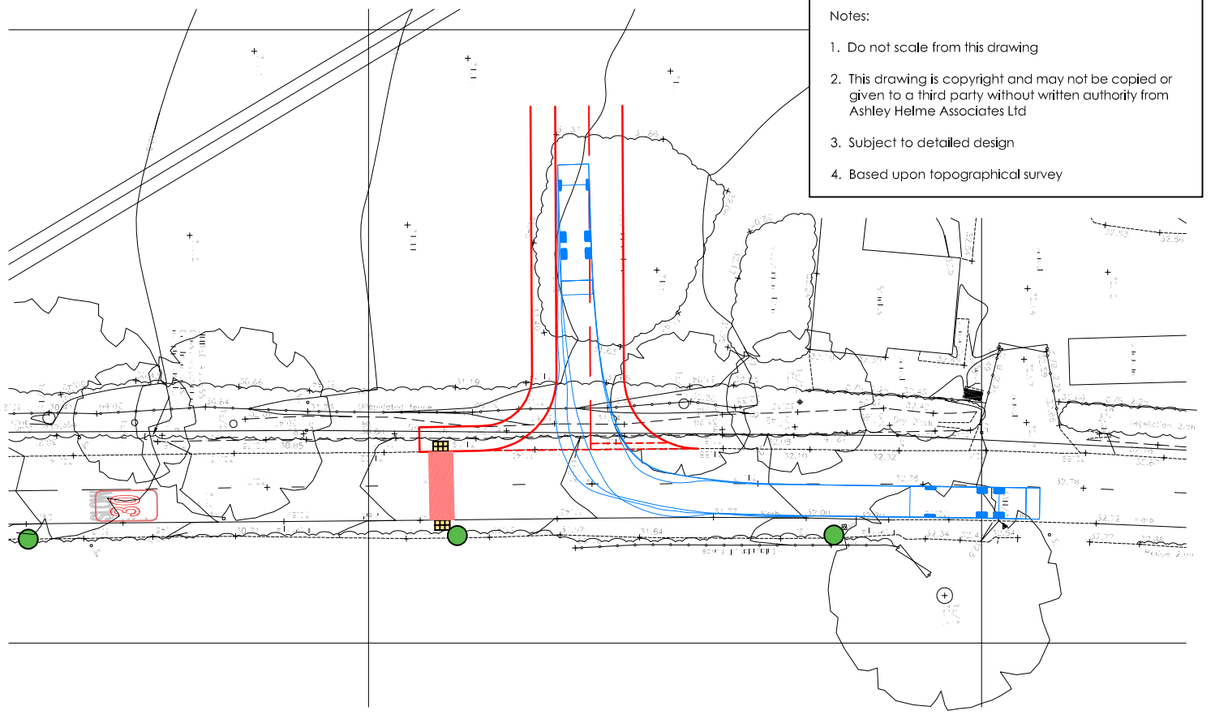


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Project: LAND WEST OF TATTENHALL ROAD, TATTENHALL	Client: GLADMAN DEVELOPMENTS	Drawing No: 1952/05	Rev:
Title: EXISTING JUNCTION ARRANGEMENTS: STUDY JUNCTION 6		Date: NOV 2024	Scale: 1:500@A4

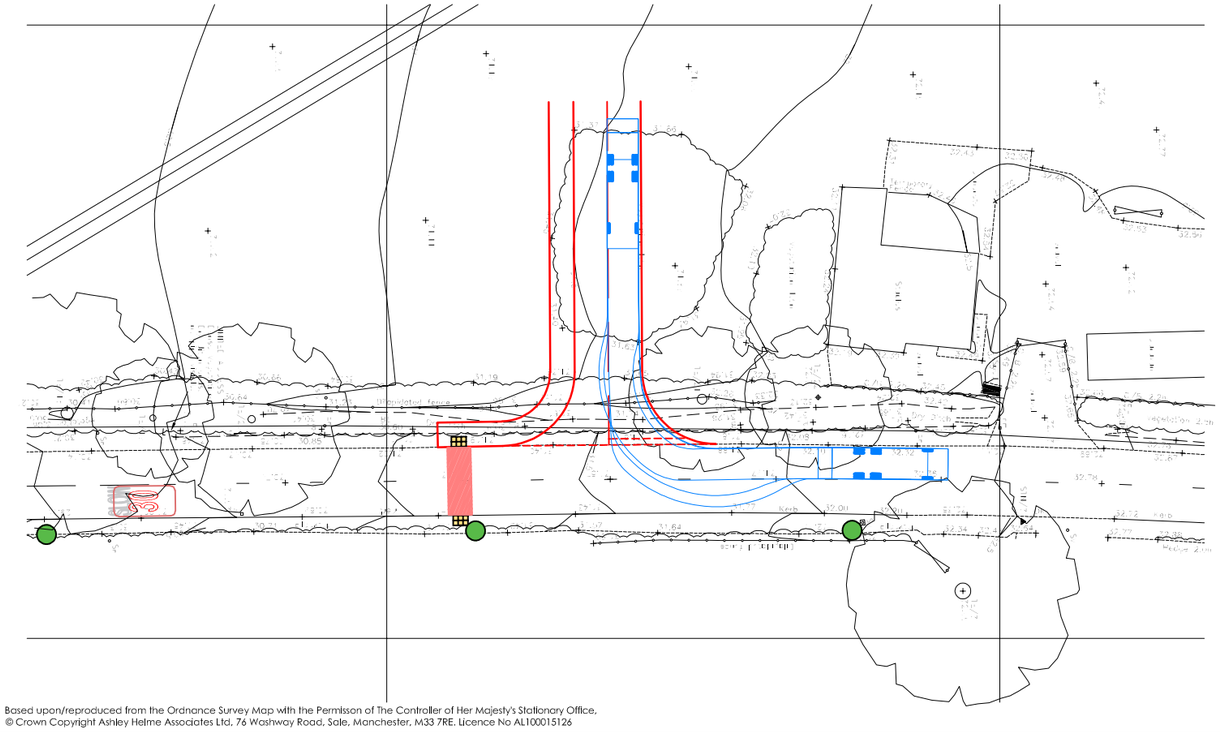
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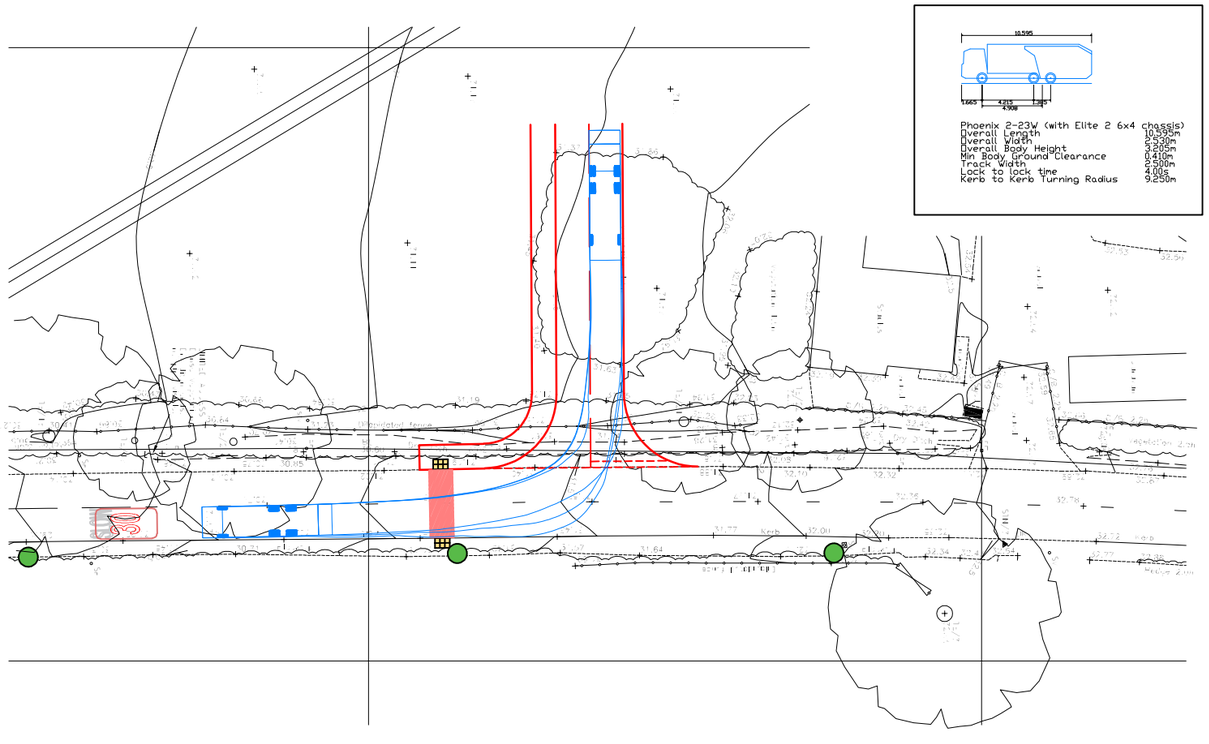




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Phoenix 2-23V (with Elite 2 6x4 chassis)

Overall Length	10.595m
Overall Width	2.538m
Overall Body Height	3.205m
Min Body Ground Clearance	0.410m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.250m

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Project: TATTENHALL ROAD, TATTENHALL	Title: SWEPT PATH ANALYSIS: REFUSE VEHICLE	Drawing No: 1952/SP/01	Rev:
Client: GLADMAN DEVELOPMENTS LTD		Date: NOVEMBER 2024	Scale: 1:500@A3

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Telephone 0161 972 0552
Email aha@ashleyhelme.co.uk
Website www.ashleyhelme.co.uk

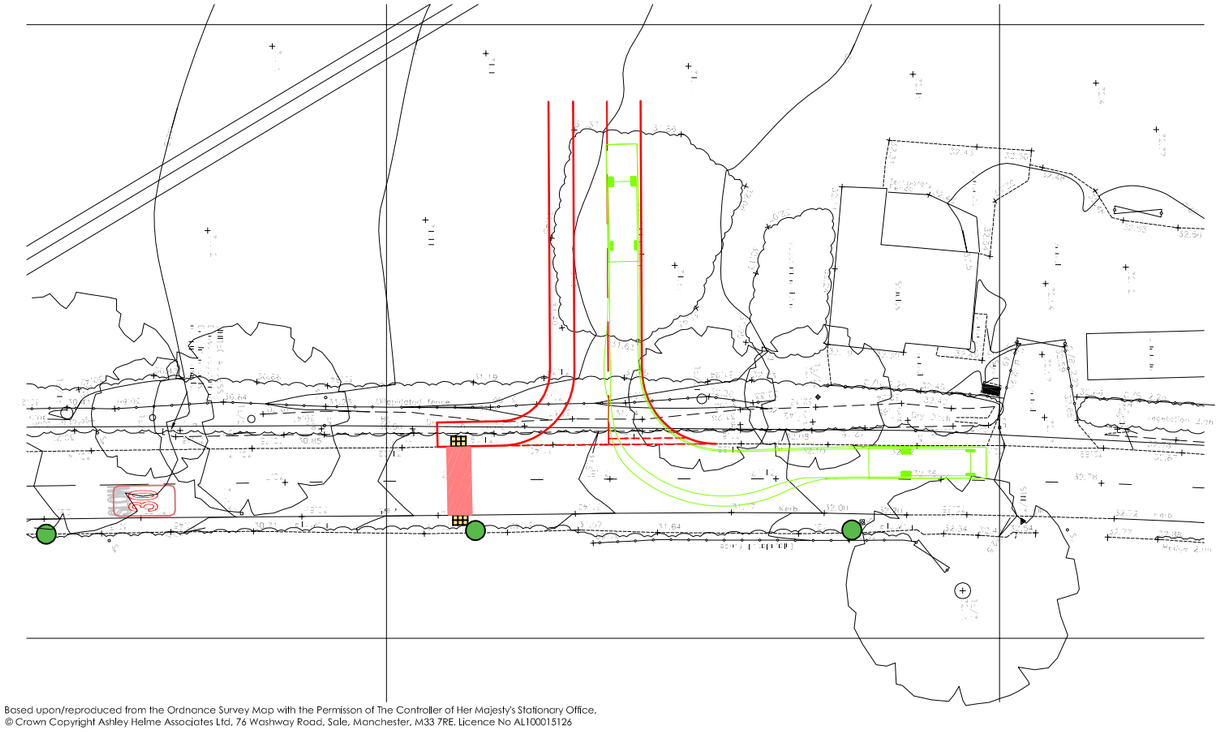
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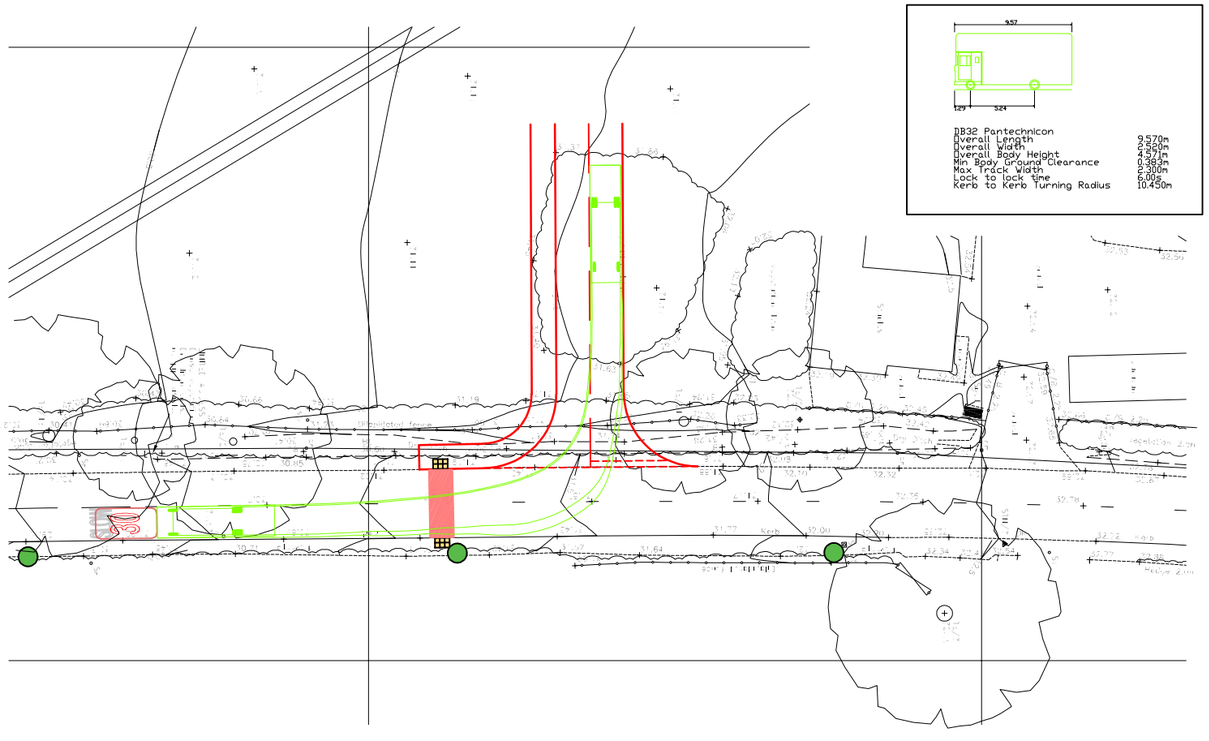




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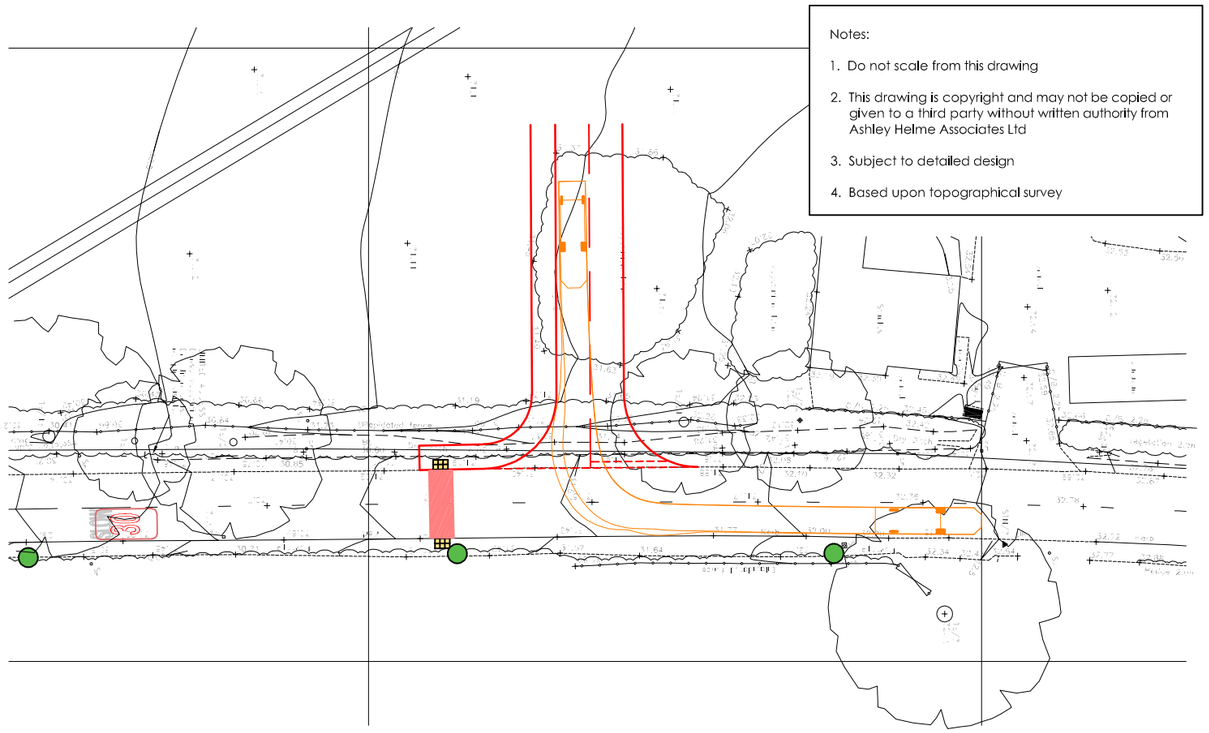
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Project: TATTENHALL ROAD, TATTENHALL	Title: SWEPT PATH ANALYSIS: PANTECHNICON	Drawing No: 1952/SP/02	Rev:
Client: GLADMAN DEVELOPMENTS LTD		Date: NOVEMBER 2024	Scale: 1:500@A3

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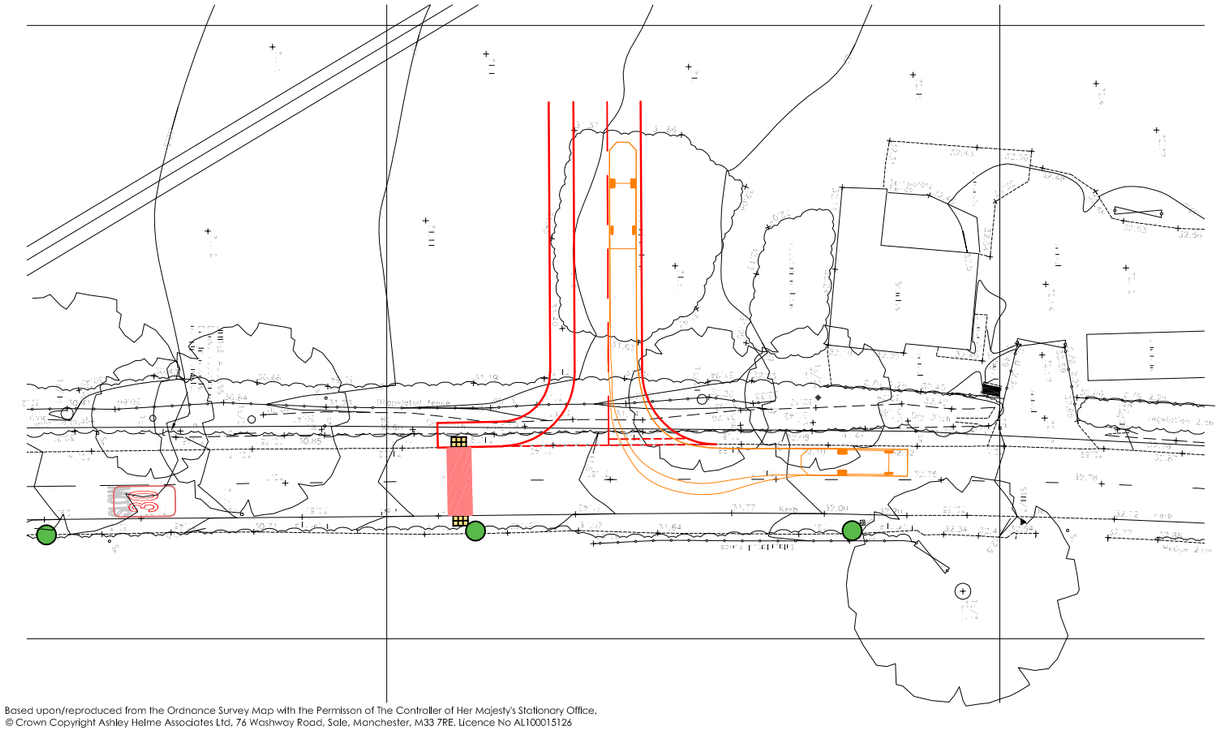
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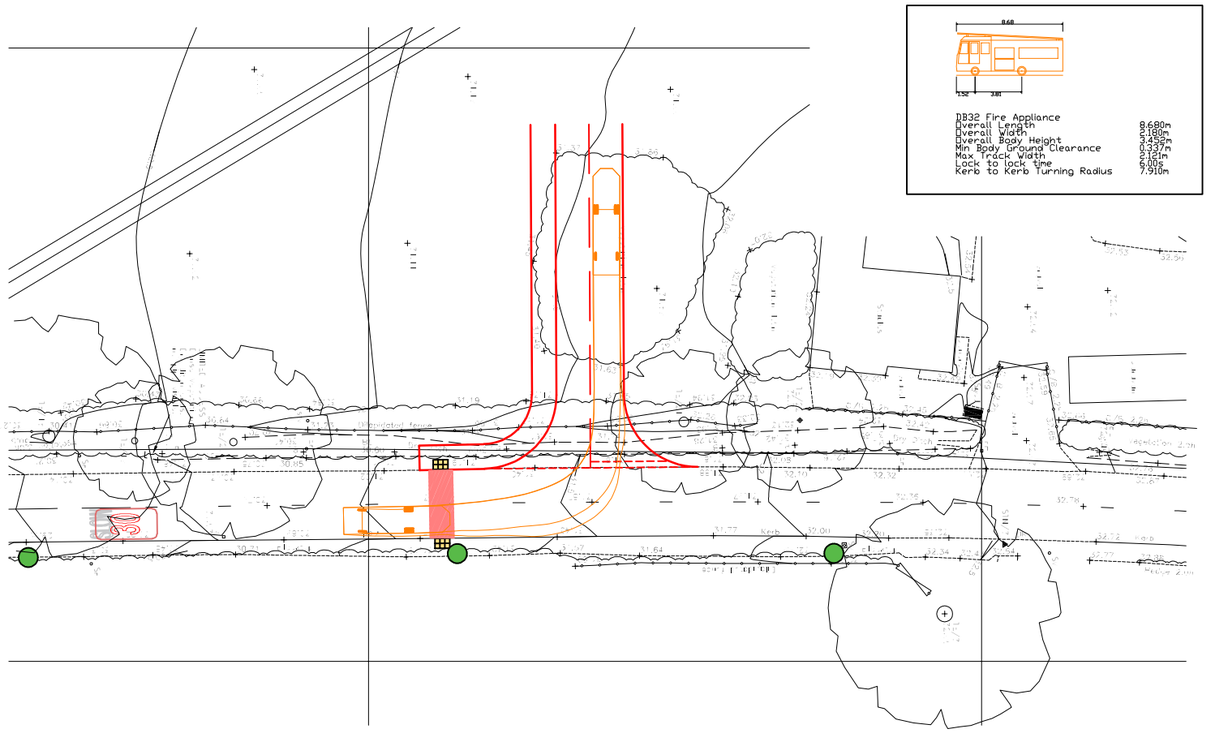




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Project: TATTENHALL ROAD, TATTENHALL	Title: SWEPT PATH ANALYSIS: FIRE APPLIANCE	Drawing No: 1952/SP/03	Rev:
Client: GLADMAN DEVELOPMENTS LTD		Date: NOVEMBER 2024	Scale: 1:500@A3

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