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Project: Proposed Residential Development
Land South of Holt Road, Wrexham

Client: Barratt Homes and Bloor Homes North West

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Contents

1	Introduction	1
	Background	1
	VISSIM Model	1
	Transport Planning Policy - Accessibility Lead Approach	1
	Deposit LDP Policy – Accessibility Lead Approach	3
	Access and Movement Framework	3
	Scope of Transport Assessment	4
	Scope of Report	4
2	Existing Conditions	5
	Site Description	5
	The Local Highway Network	5
	Existing Peak Hour Traffic Flows	6
	Highway Conditions	6
	Personal Injury Accident Record	7
	Overview of Highway Network	8
3	Accessibility by the Sustainable Modes	9
	Context	9
	Access for Pedestrians	9
	Access for Cyclists	9
	Pedestrian Accessibility	9
	Cycling Accessibility	10
	Accessibility by Public Transport	10
	Overview	11
4	Development Proposals	12
	Development Content and Phasing	12
	Access Framework	12
	Pedestrian and Cycle Access	13
	Parking Provision	13
	Potential Offsite Improvements for Pedestrians and Cyclists	13
5	Traffic Generation, Assignment and Future Year Traffic Flows	14
	Trip Rates	14
	Trip Distribution and Assignment	14
	Committed Developments	15
	Traffic Growth	15
6	Operational Assessments and Traffic Impact	17
	Approach	17
	A534 / A5156 / Site Access Roundabout	17
	Greyhound Junction	18
	A534 Industrial Estate Roundabout	18
	A5156 Borrás Park Road Roundabout	18
	A534 Tesco Roundabout	18
7	Conclusions and Recommendations	20
	Conclusions	20
	Recommendations	21



Figures

Figure 1.1: Site Location – Strategic
 Figure 1.2: Site Location - Wrexham
 Figure 1.3: Local Context

Figure 2.1: Existing Traffic Flows: Weekday Morning Peak
 Figure 2.2: Existing Traffic Flows: Weekday Evening Peak

Figure 3.1: Local Facilities

Figure 5.1: Development Traffic Flows: Morning Peak
 Figure 5.2: Development Traffic Flows: Evening Peak
 Figure 5.3: Future Year Existing plus Development Traffic Flows: Morning Peak
 Figure 5.4: Future Year Existing plus Development Traffic Flows: Evening Peak
 Figure 5.5: Future Year TEMPRO Growth Traffic Flows: Morning Peak
 Figure 5.6: Future Year TEMPRO Growth Traffic Flows: Evening Peak
 Figure 5.7: Future Year TEMPRO Growth plus Development Traffic Flows: Morning Peak
 Figure 5.8: Future Year TEMPRO Growth plus Development Traffic Flows: Evening Peak

Appendices

Appendix A: Site Access Drawings
 Appendix B: Site Masterplan
 Appendix C: TRICS Outputs
 Appendix D: Traffic Growth Graph
 Appendix E: A5156 / A534 / Site Access: Model Results
 Appendix F: Greyhound Roundabout: Model Results
 Appendix G: Industrial Estate Roundabout: Model Results
 Appendix H: Borrass Park Road Roundabout: Model Results
 Appendix I: Tesco Roundabout: Model Results
 Appendix J: Indicative Plans of Potential Highway Improvements

1 Introduction

Background

- 1.1 CBO Transport Ltd [CBO] has been commissioned by Barratt Homes and Bloor Homes North West to undertake an assessment of the potential transport issues arising from a residential development on a site to the south of the A534 Holt Road in Wrexham, north Wales. This Transport Assessment has been prepared to accompany an outline planning application for the site for a development of up to 600 dwellings.
- 1.2 The location of the site at a strategic level is shown in **Figure 1.1**. This shows that the site is on the east side of Wrexham and the accessibility to the trunk road network which includes the A483 and A55 in north Wales and the connections to the northwest of England via the M53 and M56. The A534 to the east of Wrexham is less strategic and serves the rural area of west Cheshire before linking with Nantwich and Crewe. **Figure 1.1** also shows the rail connections serving Wrexham.
- 1.3 The site is a proposed allocation in the deposit version of the Wrexham Local Development Plan (LDP) which runs to 2028 and which has now been submitted to Welsh Government for Examination. It forms part of Key Strategic Site 2 (KSS2) within the LDP which is allocated for 1,580 homes in the plan period and represents an essential component of the Council's housing delivery strategy.
- 1.4 **Figure 1.2** shows the site location in a local context. This shows the site boundary and the wider boundary of the KSS2 allocation. In this context the site is bounded by Holt Road to the north, Bryn Estyn Road to the south, existing residential development to the west and open land to the east. The KSS2 allocation extends south and west of Bryn Estyn Road and has a further highway frontage with Cefn Road along its western edge.
- 1.5 **Figure 1.2** also shows the location of the site between Wrexham town centre and Wrexham Industrial Estate both of which are key destinations for people living in Wrexham. Based on 2011 census journey to work data of the existing residents in east Wrexham 40% work in the town centre including the hospital and the university while 22% work in the industrial estate. The only other districts with notable employment destinations are Flintshire (8%) and Cheshire West and Chester (6%).

VISSIM Model

- 1.6 Wrexham County Borough Council has appointed consultants ITP to prepare a VISSIM microsimulation model for the east side of Wrexham to test the cumulative traffic implications of the whole of the KSS2 allocation. The modelling work will form part of Wrexham's evidence base for the LDP examination.
- 1.7 The modelling work has been part funded by Barratt Homes and Bloor Homes North West - as well as the developer of the southern part of KSS2. In this context the modelling work will also feed into the Transport Assessments which will be required for the planning applications for both sites.
- 1.8 The modelling work is on going and will be completed in the near future. Further information will be submitted in relation to the VISSIM modelling when it is concluded.

Transport Planning Policy - Accessibility Lead Approach

- 1.9 Transport Planning in Wales has a very strong focus on following an accessibility lead approach. This is developed from the national policies set out in Planning Policy Wales. In Edition 10 of Planning Policy Wales the transport policies are included in the Section entitled "Active and Social Places". Paragraph 4.1.1 introduces the transport section with:

The planning system should enable people to access jobs and services through shorter, more efficient and sustainable journeys, by walking, cycling and public transport. By influencing the location, scale, density, mix of uses and design of new development, the planning system can improve choice in transport and secure accessibility in a way which supports sustainable development, increases physical activity, improves health and helps to tackle the causes of climate change and airborne pollution by

- **Enabling More Sustainable Travel Choices** – measures to increase walking, cycling and public transport, reduce dependency on the car for daily travel;
- **Network Management** – measures to make best use of the available capacity, supported by targeted new infrastructure; and
- **Demand Management** – the application of strategies and policies to reduce travel demand, specifically that of single-occupancy private vehicles.

- 1.10 In the subsection of Planning Policy Wales entitled Sustainable Transport paragraphs 4.1.8 and 4.1.9 state:

The Welsh Government is committed to reducing reliance on the private car and supporting a modal shift to walking, cycling and public transport. Delivering this objective will make an important contribution to decarbonisation, improving air quality, increasing physical activity, improving the health of the nation and realising the goals of the Well-being of Future Generations Act.

The planning system has a key role to play in reducing the need to travel and supporting sustainable transport, by facilitating developments which:

- *are sited in the right locations, where they can be easily accessed by sustainable modes of travel and without the need for a car;*
- *are designed in a way which integrates them with existing land uses and neighbourhoods; and*
- *make it possible for all short journeys within and beyond the development to be easily made by walking and cycling.*

- 1.11 Locally this has been translated into Wrexham's Sustainable Urban Mobility Plan (SUMP) and informed the policies in the LDP.

- 1.12 Specifically in terms of the transport policy hierarchy sitting above the SUMP is national and regional policy including the Active Travel Act which requires Welsh authorities to provide routes and encourage people to walk and cycle and Technical Advice Note 18: Transport (TAN 18).

- 1.13 TAN 18 (paragraph 3.3) states:

The location of new residential development has a significant influence on travel patterns as the majority of trips start or finish at home.... It should be the key aim of development plans to identify residential sites that are accessible to jobs, shops and services by modes other than the car.

- 1.14 Paragraph 3.4 of TAN 18 continues with:

Settlement policies and residential allocations in development plans should therefore promote housing development at locations with good access by walking and cycling to primary and secondary schools and public transport stops.

- 1.15 Finally, paragraph 3.8 TAN 18 states

Locations that are highly accessible by a variety of modes offer significant opportunities to make travel patterns more sustainable.

- 1.16 The Vision of the SUMP itself makes it clear that transport solutions in the County will be made up of physical, technological, operational and behavioural measures. Its not just about providing road infrastructure to provide 24/7 free flowing traffic.

- 1.17 The SUMP has five Objectives all focused on the provision of sustainable communities within a sustainable transport network.

- *Safer Places: Wrexham Connected will work with partners to create places and environments where people from all walks of life can live, work and play safely together - both on and off the transport network and at the final destination.*
- *Sustainable Places: Wrexham Connected will embrace a 'sustainable', transport-first approach to new development through the planning process. It will facilitate and manage the County Borough's*

growth agenda in the most sustainable and efficient way possible, strengthening its economy and improving access to jobs, education, services and tourism.

- *Healthy Places: Wrexham Connected will reduce the impacts of air and noise pollution, greenhouse gas emissions and energy consumption. It will contribute to raising health standards through the promotion of active travel, particularly along the 'last mile'. By connecting communities we will make it easier for people to access open spaces and the countryside.*
- *Affordable Places: Wrexham Connected will stimulate inward investment and regeneration that leads to job-creation across a wide skill-base, using the planning process to ensure that affordable housing and employment needs are met.*
- *Well Connected Places: Wrexham Connected will enhance connectivity to, from and within Wrexham. Transport solutions will improve the attractiveness and quality of the environment both on key transport corridors and in the town centre.*

Deposit LDP Policy – Accessibility Lead Approach

- 1.18 The policies in the LDP continue this theme of the accessibility lead approach.
- 1.19 Four of the Strategic Objectives of the Plan are relevant to the development of KSS2 in this context.
- *Strategic Objective 4: Promote active travel and use of public transport by locating new development in the most accessible and sustainable locations; and seek to alleviate known highway infrastructure capacity constraints on the road network within the County Borough.*
 - *Strategic Objective 6: Promote and encourage a healthy, active and safe lifestyle.*
 - *Strategic Objective 8: Ensure all development is supported by the necessary provision of, or improvements to infrastructure, services and facilities in an effective and timely manner to make development sustainable and minimise its effect upon existing communities.*
 - *Strategic Objective 10: Reduce carbon emissions and maximise our resilience to and mitigate and adapt to the impact of climate change.*
- 1.20 In this context the planning of KSS2 will follow an accessibility led approach. This theme has formed the basis for the site specific LDP policies (set out in Policy SP5: KSS2: Land to the East of Cefn Road) and for this Transport Assessment.
- 1.21 Wrexham has also commissioned ITP to provide a Sustainable Travel and Connectivity Assessment for KSS2 which includes their advice on Travel Planning for large residential developments and the benefits this can bring in terms of reductions in trip generation. ITP have a particular specialism in this field.

Access and Movement Framework

- 1.22 The main access to the application land, or in other words the northern section of KSS2 will be from the southern side of the A534 Holt Road / A5156 roundabout. This is a relatively new roundabout constructed as part of a scheme to improve access to the industrial estate, a scheme which included upgrading the A534 to the east of junction to a dual carriageway and providing a further new roundabout and dual carriageway access road into the industrial estate. These roads are shown in **Figure 1.3**.
- 1.23 There is no existing connection to the roundabout on its southern side so there is plenty of space to accommodate a new access although the levels between the site and the roundabout provide some constraint to the location. In this context the proposed access to the roundabout is shown in the CBO drawing in **Appendix A**. Full planning approval for this access will be sought.
- 1.24 The access will feed a main site spine road as shown in the masterplan for the northern site in **Appendix B**.
- 1.25 The spine road has been designed to provide a future link through to the southern section of KSS2 and provide a new road link to Cefn Road. The provision of connectivity between the northern and southern parts of the site is a LDP policy requirement for KSS2 (Policy SP5). The provision of the link road

would provide a new bus route and a traffic route to relieve the existing road network most notably the Greyhound roundabout.

- 1.26 The masterplan shows there is the potential to provide a secondary access to the northern site through Thornhurst Drive, for pedestrians, cyclists and potentially vehicles including buses.
- 1.27 The masterplan identifies an illustrative network of pedestrian and cycle routes which provide internal connectivity and linkage to external networks. Policy SP5 of the LDP requires the provision of necessary infrastructure to encourage Active Travel. The LDP policy also requires the provision of a primary school on the KSS2 site.
- 1.28 The link through to the land to the south is shown on the masterplan, although approval of the full details is not sought at this stage.

Scope of Transport Assessment

- 1.29 The geographic scope of this Transport Assessment follows the area covered by the VISSIM model and includes the following key junctions:-
 - A5156 / A534 Holt Road Roundabout (from which the site will be accessed)
 - Greyhound Roundabout (junction of the A534 Holt Road / Dean Road / Cefn Road)
 - Tesco Roundabout (junction of the A534 Holt Road with the town centre road network)
 - Industrial Estate Roundabout (junction of the A534 and the Industrial Estate Access Road)
 - A5156 / Bryn Estyn Road Roundabout

Scope of Report

- 1.30 This report has been produced in 7 sections including this introduction.
- 1.31 Section 2 reviews existing conditions and provides details of the study area from a highways perspective, whilst Section 3 considers the accessibility of the site by the sustainable modes and linkage to the surrounding area.
- 1.32 Section 4 then details the development proposals, whilst Section 5 considers the traffic generations associated with the scheme and the calculation of future year traffic flows.
- 1.33 Section 6 provides details of the findings of capacity assessments for key junctions.
- 1.34 The conclusions and recommendations of the report are included in Section 7.

2 Existing Conditions

Site Description

- 2.1 As shown in Figures 1.2 and 1.3 the site is located on the eastern edge of Wrexham and immediately to the south of the A534 Holt Road. The site is approximately rectangular in shape and has an area of 28 hectares. It is currently farm land.
- 2.2 The site is bounded by Holt Road to the north, Bryn Estyn Road to the south, existing residential development to the west and open land to the east. The site fronts the existing adopted highway along its north edge (A534 Holt Road), southern edge (Bryn Estyn Road) and at the eastern end of Thornhurst Drive along its western edge.
- 2.3 The site is located between Wrexham town centre and Wrexham Industrial Estate both of which are key destinations for people living in Wrexham.

The Local Highway Network

- 2.4 The A534 Holt Road is the main radial route serving the eastern side of Wrexham. It links with the town centre road network at the Tesco's roundabout and the runs through the eastern residential areas of the town to its junction with the A5156. This section of the road is single carriageway with footways and covered by the urban 30mph speed limit. The road is urban in nature with frontage access, frequent junctions and a number of controlled pedestrian crossing points.
- 2.5 The Greyhound Roundabout is located on this section of the Holt Road and is about 900m from the A5156 junction. The roundabout is at the junction of Holt Road with Dean Road and Cefn Road which provide an inter-radial connection through east Wrexham. There is also a fifth arm at the junction formed by Bryn Estyn Road. The roundabout has a diameter of 35m and all arms have single lane approaches.
- 2.6 The pedestrian environment at the junction is poor with limited crossing opportunities and a general lack of basic provision such as dropped crossings.
- 2.7 The junction of Holt Road and A5156 is a large roundabout with a diameter of about 90m. The national speed limit applies at the junction and the junction is lit. The A534 continues to the east of the junction and the A5156 forms the northern arm of the roundabout. There is also a local access to Wrexham Golf Club between the A5156 and A534 (east) approaches. As described in the introduction there is no connection to the southern side of the roundabout which is where access to the application site will be taken.
- 2.8 All approaches to the junction have two lanes other than the golf club. All approaches have pedestrian crossing points but there are no footways provided on the A5156 or the northside of the A534 (east).
- 2.9 The A534 east of the roundabout is a derestricted dual carriageway road built to a modern standard. As explained in the introduction it forms part of a recently constructed scheme to improve access to the industrial estate. The road is unlit. About 1.3km to the east of the A5156 roundabout there is another roundabout junction from which the access road to the industrial estate is taken.
- 2.10 This is another large roundabout with a diameter of about 70m. The junction is de-restricted and lit. The Industrial Estate access forms the southern arm of the junction and is a dual carriageway road which runs for about 1.2km before linking with the industrial estate road network.
- 2.11 The A534 continues on the eastern side of the roundabout where it is known as Wrexham Road. Wrexham Road is a rural single carriageway road which served the rural area of west Cheshire before linking with Nantwich and Crewe.
- 2.12 As well as these relatively strategic connections to the roundabout there are two other roads at the junction. On the northside is Borrass Hall Lane which is rural lane and on the southwestern side is Sandy Lane. Sandy Lane is the original A534 road which has now been bypassed by the new dual

carriageway. It now forms part of a pedestrian and cycle route which runs along the southern side of the A534 to the A5156 junction.

- 2.13 The A5156 is a dual carriageway road built to a modern standard. It runs north from the A534 roundabout and connects with the A483 trunk road at Junction 6. The road is derestricted and unlit. The A483 is the strategic road which connects Wrexham with north Wales and northwest England via the A55, M53 and M56.
- 2.14 Between the A534 and A483 junctions there is a roundabout on the A5156 with Borrass Park Road. This roundabout is lit and has a diameter of about 50m. Borrass Park Road provides a local road connection into the Borrass Park area of Wrexham. Borrass Road forms a fourth arm to the junction and is rural lane.
- 2.15 Bryn Estyn Road runs along the southern edge of the site. It has the character of a rural lane and runs west to the Greyhound Roundabout and east to the industrial estate. Immediately to the east of the site the road is closed to motor vehicles so the connection to the east is for cyclists and pedestrians only.
- 2.16 To the south and west of the site a number of existing properties take access from Bryn Estyn Road but the cul-de-sac nature of the road means it is very lightly trafficked. There are connections to pedestrian and cycle routes which link into the relatively new housing on the north side of the road but there is no vehicular access to these developments.
- 2.17 Thornhurst Drive forms part of this relatively new residential development. It is a 6.5m wide cul-de-sac road which terminates at the western boundary of the site. There are footways on both sides and it is lit.
- 2.18 Thornhurst Drive links with St Mellion Crescent which is the main access road within the estate. St Mellion Crescent has a junction with the A534 Holt Road about 250m from the A5156 junction. St Mellion Crescent is a bus route.

Existing Peak Hour Traffic Flows

- 2.19 The existing peak hour traffic flows on the network described above are shown in **Figures 2.1** and **2.2**. These flows are from the same data sets as is being used for the VISSIM modelling and show the flows for the same peak hours (08:00-09:00 and 16:30 to 17:30) as are being tested in the VISSIM model.
- 2.20 The flows at the Tesco Roundabout, Industrial Estate Roundabout and A5156 / Borrass Park Road roundabout are from surveys undertaken in June 2017. The flows at the Greyhound Roundabout and A534 Holt Road / A5156 roundabout are from surveys undertaken in March 2018.
- 2.21 The traffic flow figures show how dominant the industrial estate is as a car trip generator on the local network. In the morning peak hour there are nearly 1,600 vehicles entering the estate, 91% of which approach from the west on the A534. The majority of these come from the A5156 north with the flow from the A5156 to the A534 at 1,470 vehicles. A much smaller proportion come from Wrexham on the A534 Holt Road.
- 2.22 In the evening peak hour 1,700 vehicles leave the industrial estate with again the majority (85%) heading to the A534 west. Again the majority of these head to the A5156 north with the flow from the A534 to the A5156 at 1,420 vehicles. A much smaller proportion head into Wrexham on the A534 Holt Road.
- 2.23 As a consequence the flows on the A5156 and A534 are extremely peaky. On the A5156 approach to the Holt Road roundabout the morning peak flow is 1,750 vehicles but the evening peak is 880 vehicles. On the A534 east approach the difference is even more extreme with 630 vehicles in the morning peak and 1,870 in the evening.
- 2.24 In the peak direction the majority of vehicles will be associated with the commute to and from the industrial estate with the majority no doubt single occupancy cars. In the off peak direction the traffic will be associated with HGVs and business travel. The single occupancy car commuter is the lowest tier of the travelling hierarchy when considering transport issues where as business and goods traffic have a much greater importance in this context.

Highway Conditions

- 2.25 In the context of typical urban peak period traffic conditions, Holt Road is not an unduly congested corridor. The Greyhound Roundabout is recognised locally as a congested junction but our

observations supported by queue surveys undertaken for the VISSIM modelling indicate that periods of queuing are relatively short. There is clearly a spike in traffic demand in the evening peak hour associated with commuters leaving the industrial estate (the industrial estate seems to have more influence on traffic flows at this junction than the town centre) but associated queueing is relatively quick to clear.

- 2.26 The modern dual carriageway road network which serves the industrial estate, made up of the A5156, A534 (east) and the industrial estate access road is heavily trafficked in the peak direction as set out above. At the roundabouts there are relatively low levels of opposing traffic and consequently approach speeds are high and the capacity of the approaches are maximised.
- 2.27 In the morning peak hour traffic does not queue on the A5156/A534/Industrial Estate route into the industrial estate but the high flow of traffic turning right at the industrial estate roundabout (into the industrial estate) causes some delay to traffic on the A534 Wrexham Road.
- 2.28 In the evening peak there are surges of traffic leaving the industrial estate associated with different work finish times the most pronounced being just after 17:00. This can lead to slow moving queueing on the industrial estate access road and the A534 (east) approach to the A5156 roundabout.
- 2.29 It is practically impossible to provide highway capacity to accommodate the surges of commuter traffic flow which occur at large employment sites when trip generation is concentrated into short periods of time. The access to the industrial estate is typical in this context and although the estate has a new modern high capacity highway network serving it, there are times when the demand from commuter traffic mean some of the roundabout approaches are operating close to their design capacity.
- 2.30 This should not be interpreted as an indication that the network as a whole is operating at capacity or is not fit for purpose. During the majority of the day and in the non-peak direction in the peaks, when the roads will be accommodating goods and business traffic and other more strategic movements, the network has significant levels of spare capacity and provides the industrial estate with an excellent connection to the strategic road network and Wrexham.

Personal Injury Accident Record

- 2.31 With regard to personal injury accidents (PIA) in the study area, a review has been undertaken of accident information for the most recent five year period on the Crashmap website. This PIA information is summarised below in Table 2.1.

Table 2.1: Personal Injury Accidents

Location	All Casualties	Pedestrian Casualties	Cycle Casualties
Tesco Roundabout	3	1	0
A534 Tesco to Greyhound	10	5	2
Greyhound Roundabout	5	1	3
A534 Greyhound to A5156	2	0	0
A534/A5156 Roundabout	4	0	1
A534, A5156 to Industrial Estate	4	1	1
Industrial Estate Roundabout	5	0	1
A5156, A534 to Borrass Park Road	0	0	0
Borrass Park Roundabout	1	0	1

- 2.32 The accident data does not indicate a particular issue with highway safety in the local area. None of the junctions have a particularly poor accident record although the three accidents involving cyclists at the Greyhound junction could indicate an issue with cyclists using the small roundabout.

- 2.33 The number of accidents on the A534 Holt Road to the west of Greyhound reflects the multi-function nature of this section of the road where it serves frontage commercial development, residential development on both sides as well as accommodating town centre traffic. As this section of the road is about 1.5km long the number of accidents is not unduly high.

Overview of Highway Network

- 2.34 The A5156 and A534 (west) provide a modern high capacity road network. The fact that there is the opportunity to provide a direct connection to this network at the A5156 / A534 roundabout is a notable benefit of the site and means that the impact of site generated traffic on the urban roads to the west of the site is minimised.
- 2.35 Generally, the traffic generated from the residential development will be travelling in the opposite direction to the industrial estate commuter traffic.
- 2.36 The A534 Holt Road corridor is a typical urban road corridor with some peak period queueing associated with commuting and education trips. The deposit LDP policy requires consideration of the impact on this corridor particularly the Greyhound Roundabout, but conditions along this corridor do not indicate it would be a particular constraint to development of KSS2 given the ability to access the site directly from the strategic network and to provide a future connection to Cefn Road which bypasses the Greyhound junction.

3 Accessibility by the Sustainable Modes

Context

- 3.1 As set out in the introduction, the Holt Road site is a proposed allocation for residential development in the deposit LDP. As part of the process Wrexham Council went through in determining the site allocations, consideration will have been given to site sustainability, based on its proximity to Wrexham town centre and industrial estate. It therefore follows that the inclusion of the site with a residential allocation indicates an acceptance of the principle that the site is accessible and sustainable.
- 3.2 Notwithstanding the above, this section of the Transport Assessment considers the accessibility of the site by the sustainable modes and describes how the development of the site will enhance this level of accessibility.
- 3.3 **Figure 1.2** shows the location of the site in the context of Wrexham and the industrial estate. **Figure 1.3** shows the local context including designated cycle routes and bus stops. **Figure 3.1** shows the location of local facilities such as schools and shops.
- 3.4 The importance of walking and cycling in contributing to sustainable travel patterns is detailed in the guidance contained in TAN 18. The guidance emphasises the role they play as a main mode of transport for local journeys but also the part they play in longer journeys by public transport.

Access for Pedestrians

- 3.5 The site can be accessed on foot from the existing footways on Holt Road and Thornhurst Drive and from Bryn Estyn Road. The footways on Holt Road and Thornhurst Drive link to the junction of Holt Road and St Mellion Crescent from where the general footway provision on the urban network provides pedestrian access to the local area. There are a number of controlled crossing points on Holt Road to the west of the site.
- 3.6 Bryn Estyn Road has the nature of a country lane. Although there are no footways provided the lightly trafficked nature of the road means it is a safe walking route. To the east of the site driving is prohibited over the section of road to Sandy Lane and ErLas Road so this section of the lane is solely for the use of pedestrians and cyclists.

Access for Cyclists

- 3.7 Bryn Estyn Road and the footway which runs around the southern side of the A534 / A5156 roundabout, extending west along the Holt Road corridor are both identified and signed cycle routes in the Wrexham cycle route network. The site can be accessed from either of these cycle routes.
- 3.8 To the west these cycle routes converge at the Greyhound Roundabout and a signed route continues along the Holt Road to the town centre.
- 3.9 To the east the signed cycle route on Bryn Estyn Road continues to the industrial estate. The section between the site and the junction of Sandy Lane and ErLas Road is a cycle / pedestrian route only and the section to the east of the junction is very lightly trafficked so it provides a very convenient and safe cycle route to the industrial estate particularly in daylight hours.
- 3.10 Sandy Lane and ErLas Road are also very lightly trafficked so provide safe and convenient cycle routes. ErLas Road provides a link to the southern section of the industrial estate and Sandy Lane provides a link back to the cycle route which follows the A534 corridor.
- 3.11 As well as these cycle route connections to the site cyclists would be able to access the site from the general highway network. Other than the A5156 and dual carriageway section of the A534 the roads in the vicinity of the site are suitable for general on carriageway cycling. Cycle access to the network could be provided via Thornhurst Drive as well as Bryn Estyn Road and Holt Road.

Pedestrian Accessibility

- 3.12 Considering the site's accessibility on foot, it is commonly accepted that walking has the greatest potential to replace short car trips, particularly those under two kilometres, whilst the Institution of

Highways and Transportation [IHT] "Guidelines for Providing for Journeys on Foot" states that "Walking accounts for over a quarter of all journeys and four fifths of journeys less than one mile".

- 3.13 The "Guidelines for Providing for Journeys on Foot" also includes a table which suggests that 800 metres is an acceptable maximum walking distance in a town centre and that 1.2km is an acceptable maximum walking distance elsewhere. It also suggests a distance of 2km is an acceptable maximum for commuter and education journeys, although statutory guidance indicates that just over 3km is an acceptable walk distance for primary school pupils, with secondary school pupils being expected to walk up to 5km.

Local Schools

- 3.14 The closest primary schools to the site are the Borrass Park schools on Borrass Park Road. They are about a 1.1 km walk from the site. There are other existing Primary Schools located to the west of Cefn Road.
- 3.15 The allocation of KSS2 requires the provision of a primary school on site. Once this is in place a primary school would in all likelihood be located much closer to the site.
- 3.16 The closest secondary schools are Rhosnesni High School (1.2km walk from the site) and Ysgol Morgan Llwyd (1.4km walk from the site)
- 3.17 These schools are well within the recognised 2km walk distance for educational journeys.
- 3.18 In the context of the above, the site is well placed to allow future pupils to walk to and from school.

Local Shops

- 3.19 There are local shops on Dean Road which includes a post office which are a 1km walk from the site. There are also local shops on Borrass Park Road which include a Coop supermarket and a chemist. These are a 1.2km walk from the site.
- 3.20 The closest main supermarkets are Tesco and ASDA located on the eastern edge of the town centre and are a 2km walk from the site.

Health Facility

- 3.21 The closest health facilities are about a 2km walk from the site on Holt Road and Prince Charles Road.

Bus Stops

- 3.22 The closest existing bus stops are located on St Mellion Crescent. With a pedestrian access to Thornhurst Drive these stops would be within 400m of the majority of the site.

Summary

- 3.23 The above demonstrates that the site is well placed in terms of local pedestrian connectivity and that walking represents an alternative to the car for future residents undertaking educational, retail and other key journeys, as well as linking to the local bus network.

Cycling Accessibility

- 3.24 Considering the site's accessibility by bicycle, it is commonly accepted that cycling also has the potential to substitute for short car trips, particularly those under five kilometres, and to form part of a longer journey by public transport.
- 3.25 This puts the whole of Wrexham town centre, including the university and hospital within cycling distance of the site.
- 3.26 It also puts the whole of the industrial estate within cycling distance of the site. As described earlier in this section the industrial estate is accessible from the site via lightly trafficked lanes and there is a cycle route which follows the A534 corridor to the town centre.

Accessibility by Public Transport

Bus

- 3.27 As set out above the closest bus stops to the site are situated on St Mellion Crescent. These stops are served by bus 35 which operates a circular service between the town centre and the residential areas to the east of Wrexham. The route of the bus is shown in **Figure 3.1**.

- 3.28 Based on the current timetable the service runs from 08:00 to 18:00 Monday to Saturday on a 30 minute frequency. The travel time to and from the town centre is about 15 minutes.
- 3.29 This bus services would provide future residents with opportunities to use buses for a range of journey purposes including employment, retail and leisure.
- 3.30 There would be the opportunity to divert this service through the site which would enhance the accessibility of the eastern part of the site particularly by bus. The diversion would be particularly effective with access to Thornhurst Drive as this would allow the service to loop through the site via the main access to the A534 roundabout.
- 3.31 There are a number of other services in east Wrexham which provide access to the Industrial Estate. These are not currently accessible from the site but with the provision of the link road from the A534 to Cefn Road there are the opportunities to divert existing or provide new services through the site.

Rail

- 3.32 There are two stations in Wrexham, Wrexham Central and Wrexham General. Both are about 3.5km from the site so within cycling distance rather than walking.
- 3.33 Trains from Wrexham Central run on an hourly frequency to and from Bidston on the Wirral from where there is a connecting service into Liverpool. All these trains stop at Wrexham General as well.
- 3.34 Wrexham General is also served by Welsh cross country trains providing links to Cardiff, Holyhead and Birmingham International. These train stop at Chester and there tends to be one train an hour between Chester and Wrexham in each direction.
- 3.35 In terms of the daily use of the train as a means to get to work Chester is the main destination served.

Overview

- 3.36 The proposed allocation of the site indicates Wrexham Council consider the site to be in an accessible location, to the east of Wrexham.
- 3.37 The analysis of local facilities shows that there are a number of local schools and shops, including two high schools, within walking distance of the site. There is an existing primary school within walking distance and a new primary school will be provided on the KSS2 site.
- 3.38 The town centre and Wrexham Industrial estate are within easy cycling distance with cycle routes provided to both.
- 3.39 There is the opportunity to serve the site by bus through a relatively straight forward diversion of an existing town centre service. Once the link road is provided to Cefn Road there will be the opportunity to provide additional bus services and link the site to the industrial estate by bus.
- 3.40 There would be a comprehensive travel plan in place for the site secured through a planning condition. This would outline the improvements which would be made to enhance existing linkages and the measures that would be put in place to increase the use of walking, cycling and public transport.

4 Development Proposals

Development Content and Phasing

- 4.1 The site will accommodate a development of up to 600 dwellings. This will be made up of a mix of 2, 3 and 4 bedroom units with an indicative split of 20% 2 bed, 60% 3 bed and 20% 4 bed.
- 4.2 Up to 40% of the units would be affordable housing split between the 2 and 3 bedroom properties.
- 4.3 First occupation is anticipated in 2020 with a six year build out programme and therefore completion in 2026.

Access Framework

- 4.4 The main access to the application land, or in other words the northern section of KSS2 will be from the southern side of the A534 Holt Road / A5156 roundabout. This is a relatively new roundabout constructed as part of a scheme to improve access to the industrial estate, a scheme which included upgrading the A534 to the east of junction to a dual carriageway and providing a further new roundabout and dual carriageway access road into the industrial estate. These roads are shown in **Figure 1.3**.
- 4.5 There is no existing connection to the roundabout on its southern side so there is plenty of space to accommodate a new access although the levels between the site and the roundabout provide some constraint to the location which can be addressed. In this context the proposed access to the roundabout is shown in the CBO drawing in **Appendix A**. Full planning approval for this access will be sought. A stage 1 safety audit has been undertaken for this access and the location of the access on the roundabout agreed with highway officers.
- 4.6 The access will feed a main site spine road as shown in the masterplan for the northern site in **Appendix B**.
- 4.7 The spine road has been designed to provide the future link through to the southern section of KSS2 and provide a new road link to Cefn Road. The provision of connectivity between the northern and southern parts of the site is a LDP policy requirement for KSS2 (Policy SP5). The provision of the link road would provide a new bus route and a traffic route to relieve the existing road network most notably the Greyhound roundabout.
- 4.8 The main site spine road would have a carriageway width of 7.0m, suitable for bus use and a moderate level of traffic flow. 3m wide shared footway/cycleways would be provided alongside the main route. It is envisaged the road would have a 30mph speed limit with frontage access to provide an urban feel to the road and act as a form of natural traffic calming.
- 4.9 The masterplan shows there is the potential to provide a secondary access to the northern site through Thornhurst Drive. There would be notable accessibility benefits of providing access for pedestrians, cyclists and buses. The masterplan shows a loop road arrangement in the site to maximise the opportunity for bus penetration. The access could potentially be used as an emergency access and a secondary access for vehicles.
- 4.10 Note that Planning Policy Wales supports the integration of new development with existing neighbourhoods. Paragraph 4.1.9 states

The planning system has a key role to play in reducing the need to travel and supporting sustainable transport, by facilitating developments which:

- *are sited in the right locations, where they can be easily accessed by sustainable modes of travel and without the need for a car;*
- *are designed in a way which integrates them with existing land uses and neighbourhoods; and*
- *make it possible for all short journeys within and beyond the development to be easily made by walking and cycling.*

- 4.11 With the arrangement shown the existing bus (service 35) which serves the residential area to the west could be diverted into the site via the main A534 access, circulate within the site and leave via Thornhurst Drive. This would minimise the disruption to the existing service and maximise the proportion of the site with close access to a 30 minute bus service to and from Wrexham.
- 4.12 Any access to Thornhurst Drive would have a carriageway width of 6.5m which is consistent with its existing width and suitable for bus and lighter traffic use.
- 4.13 The LDP policy requires the provision of a primary school on the KSS2 site.
- 4.14 There would be no vehicular access to Bryn Estyn Road. It is envisaged that once the link road has been provided into the site to the south, there would be a prohibition of driving on a short section of Bryn Estyn Road to the west of the link road to prevent access to the Greyhound junction. Access to Bryn Estyn Road to the east of the link road would then be provided by site roads as indicated by the illustrative secondary access on the masterplan.

Pedestrian and Cycle Access

- 4.15 The masterplan identifies a network of pedestrian and cycle routes which provide internal connectivity and linkage to external networks. The provision of infrastructure to promote active travel is another policy requirement of the LDP (Policy SP5).
- 4.16 As well as pedestrian and cycle access via the vehicular access points there would be pedestrian and cycle access to each end of Bryn Estyn Road and an access to the cycle route which runs along the southern side of the A534. This access links into a key north south cycle route through the site which would be provided within a green corridor.

Parking Provision

- 4.17 Parking would be considered on the site in the context of Wrexham Council parking standards. The details of parking cannot be shown on the indicative Masterplan but will be addressed through future reserved matters applications.

Potential Offsite Improvements for Pedestrians and Cyclists

- 4.18 The following are potential improvements to pedestrian and cycle facilities which could be funded by contributions from all KSS2 developers and where they improve access to the industrial estate developers of KSS3 – the strategic employment site on the north side of the industrial estate:
 - Improvements to pedestrian facilities on Holt Road between the site and St Mellion Roundabout. This could be in the form of a new footway on the south side of the road (to replace the existing grass verge) or a controlled crossing to the existing footway on the north side.
 - Improvements to pedestrian crossing facilities at the Greyhound junction. An indicative scheme showing the provision of pedestrian islands on Holt Road east and Cefn Road and improved dropped crossings on other approaches is shown in **Appendix J**.
 - Provision of lighting on the Bryn Estyn Road cycle route to the industrial estate.

5 Traffic Generation, Assignment and Future Year Traffic Flows

Trip Rates

- 5.1 In order to determine the trip rates associated with the main residential elements of the proposed development, the trip rates being used for the VISSIM modelling have been used. These have been derived from the TRICS database which is the industry standard source of information on trip generation from development. These rates were derived by ITP – the consultants undertaking the VISSIM modelling and were approved by Wrexham officers in this context. The TRICS outputs are included in **Appendix C**.
- 5.2 Separate rates are being used for the private and affordable housing as set out below in Table 5.1. Where trip rates are only provided for whole hours, the evening peak hour rates are an average of the 16:00-17:00 and 17:00-18:00 rates reflecting the fact that the peak hour is between 16:30 and 17:30.
- 5.3 On the basis of these trip rates the peak hour trip generations are shown in Table 5.2. Note these trip generations are based on a 20% level of affordable housing. The planning application is for a level of affordable housing up to 40%, in line with the KSS2 LDP policy (Policies SP5 and H2), and therefore these figures are likely to overestimate the trip generation from the site. This is a robust approach.

Table 5.1: Peak Hour Trip Rates – Per Dwelling

	Weekday Morning Peak		Weekday Evening Peak	
	Arrivals	Departures	Arrivals	Departures
Residential (private)	0.134	0.403	0.347	0.180
Residential (affordable)	0.170	0.251	0.243	0.178

Table 5.2: Peak Hour Traffic Generations

	Weekday Morning Peak		Weekday Evening Peak	
	Arrivals	Departures	Arrivals	Departures
Residential (private)	64	193	167	86
Residential (Affordable)	20	30	29	21
Total	84	223	196	107

Trip Distribution and Assignment

- 5.4 Trip distribution has been based on the 2011 census journey to work (JTW) information using journeys to work made by car drivers at the middle super output areas level [MSOA] level.
- 5.5 The site is in Wrexham MSOA 020 which is the large predominately rural area to the east of Wrexham also incorporating the industrial estate. The journey to work patterns from this area are unlikely to be particularly representative of journeys made from housing right on the eastern edge of Wrexham and therefore MSOA's 007 and 010 have been used which cover the existing residential areas on the east side of Wrexham. Only the journeys of people who currently drive to work have been used in this analysis.
- 5.6 This analysis identified the broad work based distributions set out in Table 5.3.

Table 5.3: Trip Distribution and Assignment

Route	Origin / Destination	
(1) A534 (West)	Central Wrexham including town centre, hospital and university	32%
(2) Cefn Road	South Wrexham	5%
(3) Dean Road	Central north Wrexham	4%
(4) Industrial Estate Access Road	Industrial Estate	24%
(5) A534 West	Part of Cheshire West and Cheshire East	3%
(6) A5156 North	North Wales, Chester, West Wrexham and A484 South	32%
Total		100%

- 5.7 Based on this trip distribution and assignment the peak hour development traffic flows are shown in **Figure 5.1** and **5.2**.

Committed Developments

- 5.8 Wrexham Council have advised that there are no significant committed developments in the study area.

Traffic Growth

- 5.9 Typical traffic assessment methodology would add a level of background traffic growth to the existing flows.
- 5.10 Background growth rates are calculated by The Department for Transport TEMPRO 7 software. The TEMPRO growth factors include an allowance for development in the local area and therefore include a level of double counting when specifically taking account of development traffic within a modelling or assessment procedure.
- 5.11 Calculating future year traffic flows is always an estimate and no one can pretend that it is an exact science. The Transport Planning profession has been consistently over estimating the level of traffic growth since 1990 as shown in the graph in **Appendix D**. The graph shows actual traffic growth against that predicted by DfT Forecasts. These are national figures and show how the growth in traffic flow started to slow in the early 1990's and flattened off in the early 2000's but this picture is mirrored across the Country. Notwithstanding this, growth forecasts, of which TEMPRO is the latest incarnation, continue to predict a notable upward trajectory.
- 5.12 There is considerable debate about the approach to growth within the Transport Planning profession both in the context of assessing future demand in developing transport schemes and in the TA procedure. This debate is being driven by a number of issues;
- a recognition that current procedures have consistently significantly over estimated traffic demand as outlined above;
 - inconsistency between policy which is focused on sustainable travel and reducing the need to travel and traffic growth predictions;
 - inconsistency with National Travel Survey data which shows people are making fewer and shorter journeys than they have in the past;
 - uncertainty over the future where alternatively powered and autonomous vehicles and the sharing economy are now necessary considerations within medium to long term planning.
- 5.13 A national commission considering these issues has recently reported its initial findings with the aim of providing the profession with new guidance on forecasting. The commission is known as The Commission on Travel Demand and is part of the Research Council UK-funded DEMAND (Dynamics of

Energy, Mobility and Demand) Centre. Its broad conclusion is that there is great uncertainty over the future and that a range of scenarios should be considered. The commission was critical of the ongoing reliance of the DfT on forecasting techniques which are aimed at providing justification for new roads and infrastructure rather than a balanced planning approach.

- 5.14 In the context of the above we have considered two assessment scenarios the first which just considers the impact of the development traffic on the local network and the second which includes the application of a TEMPRO growth factor to the existing flows before the development traffic is included.
- 5.15 We have used the alternative planning assumption facility within TEMPRO where we have removed 600 housing units from the TEMPRO zones closest to the site to ensure the level of double counting is minimised. The VISSIM modelling is using the TEMPRO growth rates which use the alternative planning assumption facility and this methodology has been agreed with Wrexham.
- 5.16 In this context the TEMPRO growth rate from 2018 to 2028 based on the MSOA 020 zone in which the site is located is 1.06 in both the morning and evening peak periods.
- 5.17 On this basis the following show the peak hour assessment traffic flows:-
- Figures 5.3 and 5.4 - Future Year Existing plus Development
 - Figures 5.5 and 5.6 – Future Year TEMPRO to 2028
 - Figures 5.7 and 5.8 – Future Year TEMPRO to 2028 plus Development
- 5.18 The operation of the local highway network has been considered in the context of these traffic flows and this is covered in the following section of this report.

6 Operational Assessments and Traffic Impact

Approach

- 6.1 All the junctions identified for assessment are roundabouts and have therefore been assessed using the ARCADY section of Junctions 9 software. ARCADY is the industry standard software for considering the capacity of roundabouts.
- 6.2 Consistent with the VISSIM modelling the models have been run over a 2 hour period – 30 minutes each side of the peak hour - with flows input for each 15 minute period based on the 15 minute flow profiles from the traffic surveys. The morning peak model covers 07:30 – 09:30 and evening 16:00 to 18:00.
- 6.3 Using this approach allows consideration of the specific surges in demand that occur from the industrial estate and show how quickly periods of queuing dissipate.
- 6.4 Adjustments have been made to the capacities of a number of the roundabout approaches, so they better replicate existing queuing levels. On the approaches to the large roundabouts on the A5156 and A534 where traffic approaches at speed and there is very little opposing flow this has meant increasing some of the capacities. At more constrained Greyhound roundabout the capacities have been reduced to replicate existing queuing.
- 6.5 Further information on junction operation and network performance will be provided when the VISSIM modelling has been completed by ITP. ITP will also test the benefits of site travel plans and trip banking on traffic flows and network operation.

A534 / A5156 / Site Access Roundabout

- 6.6 The ARCADY outputs and a table summarising the results of the model of the A534 / A5156 / Site Access roundabout are included in **Appendix E**.
- 6.7 There are two approaches which experience some queueing during the assessment periods. In the morning peak hour it is the A5156 approach. Based on existing flows there is a 15 minute period between 07:45 and 08:00 when capacity is exceeded and some queuing builds up. This dissipates in the following 15 minutes and then there is another period of higher flow between 08:15 and 08:30 although capacity is not exceeded in this period. These periods tie into 08:00 and 08:30 work start times.
- 6.8 The impact of the development traffic on this arm in this period is minimal as the residential peak is in the opposite direction but the application of traffic growth does exacerbate the level of queuing. That said the queuing continues to be limited to the short periods before 08:00 and 08:30 and queues continue to clear in the following 15 minutes.
- 6.9 In the evening peak queuing occurs on the A534 westbound approach with commuter traffic leaving the industrial estate.
- 6.10 There are two periods of higher demand, between 16:30 and 16:45 associated with a 16:30 work finish and 17:00 to 17:15 associated with a 17:00 finish time. On this approach in this time period the development traffic has more impact as it coincides with the peak direction for residential traffic and this is exacerbated by traffic growth. The periods of queuing however continue to coincide with the surges in demand associated with commuters leaving work and queuing clears in following periods.
- 6.11 The queuing on these approaches is of relatively short duration and entirely linked with commuter traffic heading to and from the industrial estate.
- 6.12 There may be the need to consider an improvement to this junction although we would consider that these are typical traffic conditions in an area such as this and are not representative of significant traffic impacts. An improvement scheme could take the form of approach road widening on the A5156 and A534 westbound approaches and or part time traffic signals on these approaches to manage queuing.
- 6.13 An indicative improvement scheme showing widening on the A5156 and A534 westbound approaches is shown in **Appendix J**. With an improvement of this nature all arms of the junction would be operating within capacity during the whole of both peak periods with spare capacity to accommodate wider development on KSS2.

- 6.14 The VISSIM modelling will consider the need for and form of any required improvements in the context of the cumulative impacts of the whole KSS2 site and the implications of the link road through the site.
- 6.15 All other arms of the junction and these arms in the non-peak direction operate well within capacity. The site access has notable levels of spare capacity to accommodate traffic from the southern part of the KSS2 and traffic which diverts to the link road through the site.

Greyhound Junction

- 6.16 The ARCADY outputs and a table summarising the results of the model of the Greyhound roundabout are included in **Appendix F**.
- 6.17 In the morning peak hour there is a short period after 08:30 when queues build up on Cefn Road and Holt Road westbound. The timing suggests this is associated with school traffic and queuing clears after 09:00.
- 6.18 In the evening peak queuing is evident on the Holt Road westbound approach for the majority of the hour between 17:00 and 18:00. There is also a short period of queuing on Cefn Road between 17:15 and 17:30. These clearly coincide with commuter traffic leaving the industrial estate (Cefn Road provides a route to the industrial estate as well) but unlike the bigger roundabouts on the bypass the Holt Road westbound approach does not clear as quickly.
- 6.19 The provision of the link road through the KSS2 site as a means of reducing traffic at the Greyhound junction has been outlined previously in the report and is included in the deposit LDP policy. The VISSIM modelling will test the benefits of the link road in the context of mitigating impacts at the Greyhound junction.
- 6.20 Notwithstanding this we would say that these are representative of typical urban traffic conditions in an area such as this and are certainly not representative of a significant traffic impact, particularly given maximum queue lengths are only predicted to be 36 vehicles.

A534 Industrial Estate Roundabout

- 6.21 The ARCADY outputs and a table summarising the results of the model of the Industrial Estate roundabout are included in **Appendix G**.
- 6.22 The junction operates within capacity under all assessment scenarios.
- 6.23 The existing queue on the A534 westbound (Wrexham Road) approach in the morning peak hour is not replicated in the model. This probably because it is of relatively short duration and is not being picked up in the 15 minute assessment periods.

A5156 Borrass Park Road Roundabout

- 6.24 The ARCADY outputs and a table summarising the results of the model of the Borrass Park Road roundabout are included in **Appendix H**.
- 6.25 The junction operates within capacity under all assessment scenarios other than on Borrass Road for a short period in the morning peak hour when the level of the southeast bound flow through the roundabout makes it difficult to join from Borrass Road. Borrass Road is a county lane, very lightly trafficked and operates well within capacity during other time periods. Given the very limited duration of the issue it would not warrant specific mitigation.

A534 Tesco Roundabout

- 6.26 The ARCADY outputs and a table summarising the results of the model of the Tesco roundabout are included in **Appendix I**.
- 6.27 The junction operates within capacity under all assessment scenarios.
- 6.28 As the traffic flows at this junction will be significantly influenced by retail activity the evening peak period will be one of the busiest periods of demand. Retail flows will also be relatively high at the

weekend but the level of traffic generation from the site would be lower than during the evening peak. It is not normally a requirement to consider the impact of residential development on weekend traffic conditions and WCBC have not asked for the VISSIM model to assess this time period.

- 6.29 In this context we would consider the assessments of the morning and evening peak periods will provide an adequate and robust test of impact at the Tesco roundabout.

7 Conclusions and Recommendations

Conclusions

- 7.1 The Holt Road site is a proposed allocation in the Deposit version of the Wrexham Local Development Plan (LDP), which has now been submitted to the Welsh Government for Examination. It forms the northern element of the wider KSS2 allocation which extends south and west to Cefn Road. The allocation of the site in the LDP demonstrates its broad compliance with national and local transport planning policy and the site is fundamental to the delivery of the Council's housing growth strategy.
- 7.2 The proposed access to the site is from the Holt Road roundabout. The location of the access on the southern half of the roundabout has been agreed with Wrexham highway officers.
- 7.3 The site masterplan includes provision for a link road which would run from Holt Road through the southern part of KSS2 to Cefn Road. The provision of this link road is a LDP policy requirement for KSS2 with the aim of providing connectivity between the two parts of the site, a new bus route and a traffic route to relieve the existing road network most notably the Greyhound roundabout.
- 7.4 The masterplan shows there is the potential to provide a secondary access through Thornhurst Drive. Planning Policy Wales identifies the accessibility benefits of integrating development with existing neighbourhoods. In this context there would be notable benefit for an access accommodating pedestrians, cycles and buses. It could also be used as an emergency access and light general traffic.
- 7.5 The masterplan identifies an illustrative network of pedestrian and cycle routes which provide internal connectivity and linkage to external networks. This is another policy requirement of the LDP.
- 7.6 The site is in an accessible location. There are a number of local schools and shops, including two high schools, within walking distance of the site. There is an existing primary school within walking distance and a new primary school will be provided on the KSS2 site.
- 7.7 The town centre and Wrexham Industrial estate are within easy cycling distance with cycle routes provided to both.
- 7.8 Contributions to improve accessibility could be made by KSS2 developers and where they benefit access to the industrial estate KSS3 development as well. Potential improvements could include the provision of a footway and or crossing on Holt Road to the west of the site; crossing improvements at Greyhound roundabout and lighting on the cycle route to the industrial estate.
- 7.9 There is the opportunity to serve the site by bus through a relatively straight forward diversion of an existing town centre service. Once the link road is provided to Cefn Road there will be the opportunity to provide additional bus services and link the site to the industrial estate by bus.
- 7.10 There would be a comprehensive travel plan in place for the site which would be secured through a planning condition. This would outline the improvements which would be made to enhance existing linkages and the measures that would be put in place to increase the use of walking, cycling and public transport.
- 7.11 Traffic flows in the local area are dominated by commuter flows to and from the industrial estate which occur over relatively short periods in the morning and evening peaks. During the majority of the day and in the non-peak direction in the peaks, when the roads will be accommodating goods and business traffic and other more strategic movements, the network has significant levels of spare capacity and provides the local area with an excellent connection to the strategic road network and Wrexham.
- 7.12 There are no issues with highway safety on the local road network.
- 7.13 Wrexham have appointed consultants ITP to prepare a VISSIM microsimulation model for the east side of Wrexham to test the traffic implications of the whole of the KSS2 allocation. Further information will be provided when this modelling work is concluded.
- 7.14 To inform this Transport Assessment on highway capacity issues ARCADY assessments have been carried out at a number of key junctions.
- 7.15 There may be the need to consider an improvement at the A5156 / A534 / Site Access roundabout although we consider with development traffic conditions are typical given the proximity of the industrial estate and do not represent a significant impact. This could take the form of approach

widening and or part time traffic signals on the A5156 and A534 westbound approaches. All other arms of the junction and these arms in the non-peak direction operate well within capacity. The site access has notable levels of spare capacity to accommodate traffic from the southern part of the KSS2 and traffic which diverts to the link road through the site.

- 7.16 There are periods when the capacity of the Greyhound roundabout would be exceeded. The provision of the link road through the KSS2 site would reduce traffic at the Greyhound junction which is one of the reasons why it is included in the LDP policy for the site.
- 7.17 The level of impact associated with the development is not be considered significant.

Recommendations

- 7.18 In light of the above and subject to the findings of the VISSIM modelling, it is the recommendation of CBO Transport that there are no traffic or transportation grounds on which to refuse the application for the proposed development.