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

Client: Barratt Homes and Bloor Homes North West

Document: Transport Assessment

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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. The LDP has been through the scheduled Hearing Sessions of its Examination in Public and the Inspectors have not raised any issues which are outstanding with Wrexham's proposed housing strategy. The site 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 and the LDP is expected to be adopted in 2021.
- 1.4 **Figure 1.2** shows the site location in a local context and **Figure 1.3** shows the area immediately surrounding the site in more detail. These Figures show the site boundary and the wider boundary of the KSS2 allocation. In this context the site is bounded by the A534 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 The route to the A483 trunk road is provided by the A5156 which is dual carriageway road linking with the A534 Holt Road at a large roundabout. This is a relatively new roundabout constructed as part of a scheme to improve access to Wrexham Industrial Estate, a scheme which included upgrading the A534 to the east of the 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**.
- 1.6 The location of the Industrial Estate is shown in **Figure 1.2** which also shows how the KSS2 north site is located midway 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%).
- 1.7 The LDP proposes to allocate a large area of land to the north of the Industrial Estate for further employment based development. The location of this site, known as Key Strategic Site 3 (KSS3) is also shown in **Figure 1.2**.

Planning Context

- 1.8 An outline planning application for 600 homes on the site was submitted in 2019 under planning application Reference P/2019/0005. The 2019 application was essentially the same as the application which this TA supports albeit there has been a slight change to the parameters plan which is submitted with this application. Further details of this are provided below.
- 1.9 The committee report for the 2019 application recommended that planning permission should be granted. In terms of highways and transport impacts an agreed position had been reached on the works and contributions required to mitigate the impacts of the proposed development on KSS2 North and this was reflected in the committee report.

- 1.10 This agreed position was based on comprehensive modelling work undertaken for the LDP which looked at the cumulative impacts of development on KSS2 north and south and KSS3. A mitigation strategy was identified from this modelling work to address the cumulative impacts of the three sites and from this, mitigation derived for just KSS2 north. This agreed mitigation involved three elements:-
- The provision of a main site access from the southern side of the A534 Holt Road / A5156 roundabout, together with widening of the westbound A534 approach to the roundabout and the southern section of the circulatory carriageway. The delivery of the scheme would be through planning condition with Barratt and Bloor funding and implementing the works in their entirety.
 - The provision of a link road through the site from the A534 Holt Road / A5156 roundabout to Bryn Estyn Road.
 - Contribution to the cost of the link road crossing of Bryn Estyn Road.
- 1.11 Despite the recommendation for approval the application was refused by members at planning committee. There were a number of reasons for refusal but highways was not one of them. On this basis as well as the above approach to mitigation being agreed with officers, members of the planning committee also agreed that it was a sufficient level of mitigation to address the highway impacts of the proposed development on KSS2 north.

Basis of this 2020 Application

- 1.12 As with the 2019 application the development proposed under this application is for up to 600 homes on the KSS2 north site. The application is in outline with all matters reserved other than the point of access from the A534 Holt Road / A5156 roundabout at the north of this site.
- 1.13 In this context the proposed access arrangement for which planning permission is being sought is shown in CBO drawing CBO-0322-017 in **Appendix A**. This is the same drawing that was recommended for approval in the 2019 application and which members did not find issue with.
- 1.14 The access scheme in drawing CBO-0322-017 shows the first section the access road into the site together with the widening to the A534 Holt Road westbound approach and the southern section of the circulatory carriageway. Again, these works would be delivered through planning condition with Barratt and Bloor funding and implementing them in their entirety.
- 1.15 All other matters are reserved although a parameters plan showing an indicative development framework has been prepared. The parameters plan is shown in Randall Thorp drawing 6618 05 D in **Appendix B**. This parameters plan differs slightly from that submitted with the 2019 application in that the point the link road meets Bryn Estyn Road has been moved to the east. While the alignment of the link road and the point it crosses Bryn Estyn Road are reserved matters and not fixed at this stage, recent discussions with Council officers indicate that this revised location is the most likely to be taken forward by themselves and the developers of KSS2 south.
- 1.16 Barratt and Bloor are committed to providing the link road to Bryn Estyn Road as part of the development of the KSS2 north site. The timing of completion of their part of the link road is considered in this report.
- 1.17 Barratt and Bloor are also committed to providing a contribution to the cost of the link road crossing of Bryn Estyn Road. The other part of the contribution would be provided by the developer of KSS2 south, with the contribution proportioned by the number of units on each site. On this basis Barratt and Bloor would contribute 35% of the cost of the link road crossing of Bryn Estyn Road.
- 1.18 On the basis of the above the same mitigation would be provided with this application as was agreed for the 2019 application. At this highest level, as development with this mitigation was recommended for approval by officers and found adequate by members, there should be no reason why planning permission for this application is withheld on highway and transport grounds.

Impact on the Trunk Road Network

- 1.19 Welsh Government did not issue a direction in respect of the 2019 application. A copy of their letter advising this, dated 27 April 2020 is included in **Appendix C**.
- 1.20 On this basis as the proposed development in terms of the level of impact on the trunk road network is the same in this application as it was in the 2019 application it is assumed that the Welsh Government will again not issue a direction.

Basis and Structure of this Report

- 1.21 This report sets out the technical basis behind the agreed mitigation strategy set out above. It draws extensively on the modelling which was undertaken for the Local Plan which was part funded by Barratt and Bloor, along with the Council and the then promoters of KSS2 south.
- 1.22 The modelling work was undertaken using VISSIM which is a form of microsimulation modelling. The work was undertaken by consultants ITP initially and completed by consultants Vectos Microsimulation (VM).
- 1.23 The modelling is considered in Section 6 of this the report. Before this there are sections on the following:-
- an overview of relevant policy as it effects the development of the site in the concluding part of this introductory section.
 - A review of existing highway conditions and details of the study area from a highways perspective in Section 2.
 - Section 3 considers the accessibility of the site by the sustainable modes and linkage to the surrounding area.
 - Section 4 details the development proposals
 - Section 5 considers the traffic generations associated with the scheme.
- 1.24 The conclusions and recommendations of the report are included in Section 7.

Transport Planning Policy

- 1.25 As a proposed allocation in the Local Plan and as an application for the same development has been to committee and not refused on highways grounds, residential development on this site, brought forward in the manner proposed, is clearly consistent with policy. Notwithstanding this a summary of relevant policy is provided below.
- 1.26 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.

- 1.27 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.*

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

- 1.29 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).

- 1.30 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.

- 1.31 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.

- 1.32 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.

- 1.33 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.

- 1.34 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

- 1.35 The policies in the LDP continue this theme of the accessibility lead approach.
- 1.36 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.*
- 1.37 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.

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. 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 serves 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.

Peak Hour Traffic Flows

- 2.19 **Figures 2.1** and **2.2** show peak hour from surveys undertaken in 2017 and 2018. 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 Given the impacts of Covid 19 on traffic flows and the continuing uncertainty of how traffic levels will change in the future because of the pandemic, these 2017 and 2018 flows provide a much more robust baseline than any surveys undertaken now or in the foreseeable future.
- 2.22 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.
- 2.23 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.
- 2.24 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 westbound approach the difference is even more extreme with 630 vehicles in the morning peak and 1,870 in the evening.
- 2.25 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 whereas business and goods traffic have a much greater importance in this context.

Highway Conditions

- 2.26 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.
- 2.27 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.
- 2.28 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.
- 2.29 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 queuing on the industrial estate access road and the A534 (east) approach to the A5156 roundabout.
- 2.30 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.
- 2.31 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

- 2.32 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 (2015 to 2019). 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	2	1	0
A534 Tesco to Greyhound	11	6	1
Greyhound Roundabout	2	0	2
A534 Greyhound to A5156	0	0	0
A534/A5156 Roundabout	2	0	0
A534, A5156 to Industrial Estate	2	1	1
Industrial Estate Roundabout	5	0	0
A5156, A534 to Borrass Park Road	0	0	0
Borrass Park Roundabout	3	0	2

-
- 2.33 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.
- 2.34 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.
- 2.35 The position regarding highway safety has not changed materially for a number of years and the numbers of accidents indicated in Table 2.1 is very similar to that presented in the Transport assessment which accompanied the 2019 application.

Overview of Highway Network

- 2.36 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.
- 2.37 Generally, the traffic generated from the residential development will be travelling in the opposite direction to the industrial estate commuter traffic.
- 2.38 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 (Policy SP5) 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 WCBC 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.
- 3.21 A service station has recently open on Holt Road (accessed from the golf club access) and this also includes some convenience retail.

Health Facility

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

Bus Stops

- 3.23 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

- 3.24 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

- 3.25 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.
- 3.26 This puts the whole of Wrexham town centre, including the university and hospital within cycling distance of the site.
- 3.27 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

- 3.28 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 is operated by Arriva and runs on 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**.
- 3.29 Based on the current timetable (December 2020) 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 less than 15 minutes.
- 3.30 This bus services would provide future residents with opportunities to use buses for a range of journey purposes including employment, retail and leisure.
- 3.31 There would be the opportunity for the bus operator to divert this service through the site which would enhance the bus accessibility of the eastern part of the site particularly. 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.
- 3.32 Service 5 runs along the A534 Holt Road corridor between Chester and Wrexham. The closest stop for this service is to the west of St Andrews Crescent and some 650m from the site boundary at Thornhurst Drive and 700m from the site boundary at the site access on the A534 Holt Road / A5156 roundabout.
- 3.33 Based on current timetables (December 2020) the bus runs an irregular frequency, at times once every hour and at others once every two hours. There is a bus which leaves for Chester at 07:45 which arrives at 08:30 and a return service which leaves Chester at 16:59 so the bus could be used for some journeys to work in Chester. The service runs Monday to Saturday so the no 5 bus could also be used for shopping and leisure trips as well.
- 3.34 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

- 3.35 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.
- 3.36 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.
- 3.37 Wrexham General is also served by Welsh cross country trains providing links to Cardiff, Holyhead and Birmingham International. These trains stop at Chester and there tends to be one train an hour between Chester and Wrexham in each direction.
- 3.38 In terms of the daily use of the train as a means to get to work Chester is the main destination served.

Overview

- 3.39 The proposed allocation of the site indicates the Council consider the site to be in an accessible location, to the east of Wrexham.
- 3.40 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.
- 3.41 The town centre and Wrexham Industrial estate are within easy cycling distance with cycle routes provided to both.
- 3.42 The site is well served by existing bus services and there is the opportunity to enhance bus services through the diversion of existing services if bus operators choose to do so.
- 3.43 There would be a comprehensive travel plan in place for the site secured through a planning condition. This would outline 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 20% of the units would be affordable housing split between the 2 and 3 bedroom properties.
- 4.3 First occupation is anticipated in 2022 with approximately a six year build out programme and therefore completion in 2028.

Access Framework

- 4.4 As outlined in the introduction 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 CBO drawing CBO-0322-017 in **Appendix A**. Full planning approval for this access is being sought.
- 4.6 Again, as outlined in the introduction this is the same drawing that was recommended for approval in the 2019 application and which members did not find issue with.
- 4.7 The access will feed a main site spine road as shown in the masterplan for the site in **Appendix B**.
- 4.8 The spine road has been designed to provide the future link through to the southern section of KSS2 and provide a new link road 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.
- 4.9 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.
- 4.10 As outlined in the introduction, Barratt and Bloor are committed to providing the link road to Bryn Estyn Road as part of the development of the KSS2 north site and to providing a contribution to the cost of the link road crossing of Bryn Estyn Road.
- 4.11 The masterplan shows there is the potential to provide a secondary access to the northern site through Thornhurst Drive but planning permission is not being sought for this access in this outline application. The nature and form of any access to Thornhurst Drive is a reserved matter.
- 4.12 There would however be notable accessibility benefits of providing access for pedestrians, cyclists and potentially buses through Thornhurst Drive. 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.
- 4.13 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.

- 4.14 Should bus operators choose to do so, 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.
- 4.15 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.
- 4.16 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 to traffic from the KSS2 development and link road. Whilst an issue for reserved matters, it is anticipated that 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

- 4.17 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).
- 4.18 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

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

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 in 2018 by ITP – the consultants initially undertaking the VISSIM modelling and were approved by Council officers in this context. The TRICS outputs are included in **Appendix D**.
- 5.2 Trip rates derived from TRICS now (December 2020) would be consistent with these rates which were derived in 2018.
- 5.3 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.
- 5.4 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 20%, 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)	21	31	28	22
Total	85	224	195	108

Trip Distribution and Assignment

- 5.5 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.
- 5.6 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.
- 5.7 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%

- 5.8 This distribution based on journey to work data was used in the VISSIM model. The model will assign traffic to the most appropriate routes taking account of traffic conditions across the modelled network.
- 5.9 To give a broad indication of the level of development traffic on key corridors, **Figures 5.1** and **5.2** illustratively show peak hour development traffic flows based on the assignment assumptions set out in Table 5.3. These will not be precisely replicated in the VISSIM model as they do not take account of the implications of network conditions on vehicle assignment as the model does.

6 VISSIM Modelling and Mitigation Strategy

Approach

- 6.1 The VISSIM model was developed jointly by the Council and the developers of the KSS2 site – Barratt and Bloor for KSS2 north and Countryside who were the then developers on KSS2 south.
- 6.2 The aim of the modelling was to develop a mitigation strategy which addressed the cumulative impacts of the three sites.
- 6.3 The VISSIM modelling work was initially undertaken by consultants ITP. ITP produced the base model and prepared a Local Model Validation Report (LMVR). The LMVR demonstrated that the model validated to an acceptable level.
- 6.4 The testing of development impacts and mitigation was undertaken by a different organisation, Vectos Microsim (VM), utilising ITP's validated model. The VM modelling considered the traffic implication of employment development on KSS3 as well as the residential development on the north and south parts of KSS2.
- 6.5 The modelling was used as technical evidence for the LDP and an agreed Statement of Common Ground (EIP Ref: SoCG002) (SoCG) between the Council and the KSS2 developers was prepared for the LDP EIP.
- 6.6 The SoCG is included in **Appendix E** to this report. Appendix 2 of the SoCG contains a full copy of VMs report 'Holt Road VISSIM Modelling: Forecast, Mitigation Proposals & Summary Results' and provides a summary of the modelling work and plans (Appendix 3 of the SoCG) of the junction improvements which the modelling identified as being required for the mitigation strategy.

Extent of Modelled Network

- 6.7 The extent of the VISSIM model network is shown in Figure 1 of the VM Report.
- 6.8 The model includes the whole A534 Holt Road corridor from the A5152 / Tesco Roundabout in the town centre to the Industrial Estate roundabout on the eastern edge of the town. It also includes the Cefn Road / Dean Road / Jeffreys Road north south corridor which intercepts with the Holt Road corridor at the Greyhound Roundabout.
- 6.9 As well as these main east west and north south corridors the model includes Queensway / Ffordd Montgomery and Hullah Lane which provide alternative routes between Cefn Road and Holt Road and Borrass Road / Borrass Park Road which provides an alternative route between Holt Road and the A5156.
- 6.10 Within this network are the following key junctions:-
 - A5156 / A534 Holt Road Roundabout
 - 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 / Borrass Park Road Roundabout
- 6.11 This modelled network was agreed with Council officers. They agreed that the model did not need to include the A5156 north of the Borrass Park Road junction and therefore it did not include the A483 Junction 6. This is noted in the SoCG which states at paragraph 4.6:-

The northern extent of the model is the roundabout on the A5156 with Borrass Park Road. Traffic on the A5156 is dominated by the Industrial Estate. In the morning commuter peak southbound (towards the industrial estate) traffic is much higher than northbound and vice versa in the evening. In this context KSS2 traffic is counter peak with the highest flows being northbound in the morning and southbound in the evening. On this basis the impacts of KSS2 traffic to the north of the Borrass Park Road junction are not expected to be significant.

- 6.12 The fact that developments impact on the trunk road network would not be significant is reflected in the fact that the Welsh Government did not issue a direction in respect of the 2018 application. A copy of their letter advising this, dated 27 April 2020 is included in **Appendix C**.

Forecast Demand Methodology

- 6.13 The modelling included two forecast years 2023 and 2028. 2028 was used as this is the end of the LDP plan period and 2023 reflects the midpoint between 2028 and the modelled base year which is 2018.
- 6.14 For these two forecast years three scenarios were developed:-
- Do-nothing (DN) which assumes no development on KSS2 or KSS3 with background growth calculated using TEMPRO growth assumptions. For both 2023 and 2028 the modelled DN network was as existing.
 - Do-minimum (DM) which assumes development on KSS2 and KSS3 with TEMPRO included but adjusted to take account of the levels of development on the strategic sites to reduce the level of double counting. In the modelling at 2023, traffic from 250 units on KSS2 north; 460 on KSS2 south and half of KSS3 was included. At 2028 traffic from the full development of KSS2 and KSS3 was included. The 2023 DM model was based on the existing network, but the 2028 DM model included the mitigation works identified from the 2023 Do-something model.
 - Do-something (DS) which uses the same level of traffic demand as the DM but includes highway mitigation measures.
- 6.15 The assumptions on traffic growth, including the use of adjusted TEMPRO in the DM and DS models were agreed with the Council. The inclusion of TEMPRO in the modelling represents a robust approach in that sustained year on year traffic growth is no longer occurring, the trend for car ownership is falling and people are travelling less. In this context we consider it would have been more appropriate to run the modelling on a no background growth assumption which just tested the impacts of the development.
- 6.16 In this context it follows that the two assessment scenarios (2023 - 250 units on KSS2 north; 460 on KSS2 south and half of KSS3 and 2028 – full development on all sites) are more tests of different development levels and less tests of traffic levels at specific years. The uncertainties that have arisen over future traffic levels as a result of Covid 19 mean the specific years the models have been tested at are even less relevant.
- 6.17 On this basis, the fact that the level of development included in the 2023 model is unlikely to materialise in this timeframe will not have an impact on the findings of the modelling of the mitigation strategy. In other words if it takes 2 or 3 more years for the levels of development in the 2023 models to come forward this would not change the level of highway works required to mitigate the impacts of the levels of development included in these models.

Development Traffic

- 6.18 The trip rates and associated development traffic used in the modelling was agreed with the Council. The KSS2 residential trip generation is based on trip rates from the TRICS "houses privately owned" category with an allowance for affordable housing. Further details on these trip rates is provided in Section 5 of this report.
- 6.19 The KSS3 employment trip generation is based on trip rates from large sites in the TRICS "industrial estate" category.
- 6.20 Based on the levels of development included in the 2023 and 2028 modelling the peak hour traffic generation from the three sites is set out in Tables 6.1 and 6.2.

Table 6.1: 2023 Peak Hour Traffic Generations

	Weekday Morning Peak		Weekday Evening Peak	
	Arrivals	Departures	Arrivals	Departures
KSS2 North (250 units)	35	93	81	45
KSS2 South (460 units)	65	171	150	82
KSS3 (50% developed)	177	69	71	186

Table 6.2: 2028 Peak Hour Traffic Generations

	Weekday Morning Peak		Weekday Evening Peak	
	Arrivals	Departures	Arrivals	Departures
KSS2 North (600 units)	85	224	195	108
KSS2 South (1080 units)	152	402	352	194
KSS3 (100% developed)	355	137	142	371

- 6.21 The trip generation for KSS2 north in Table 6.2 is the same as that in Table 5.2 which presents the KSS2 north trip generation broken down into private and affordable housing.
- 6.22 The trip distribution used in the VISSIM modelling for the residential development on KSS2 is based on local journey to work patterns derived from the 2011 census data. Further detail on this is provided in Section 5.
- 6.23 The trip distribution used in the modelling for the employment development on KSS3 is based on the distribution to and from the industrial estate zone in the base model and therefore reflects that of the current industrial estate traffic.
- 6.24 Trip distribution has been agreed with the Council.

2023 Modelling Results

- 6.25 The 2023 do-minimum (DM) model runs show the addition of KSS2 and KSS3 traffic has some impact on the local road network.
- 6.26 In the morning peak the average delay per vehicle increases by about 17 seconds compared to the do-nothing (DN) so the overall impact is not that significant. There are some increases in queue lengths at the Greyhound roundabout; the A5156 approach to the A534 Holt Road roundabout and the A534 westbound (Wrexham Road) approach to the industrial estate roundabout but the model shows that queues do not persist for prolonged periods and dissipate quickly enough to ensure the network continues to operate efficiently – which is reflected in the relatively small increase in average journey time.
- 6.27 In this context VM concluded that mitigation was not required to mitigate impacts at 2023 in the morning peak.
- 6.28 In the evening peak the average delay per vehicle is about 40 seconds which is still not that significant but the increase in delay is almost exclusively on the industrial estate approach to the industrial estate roundabout (ie people leaving work in the evening) where the model indicates an increase in delay of about 2 minutes with a corresponding queue length increase of about 100 vehicles.
- 6.29 On this basis VM recommended a partial signalisation improvement scheme at the industrial estate roundabout is implemented at 2023 to address the impact in the evening peak. The scheme includes signalisation of the industrial estate approach to the roundabout and signalisation of the two A534 approaches to better manage traffic flow through the roundabout.
- 6.30 These improvements were developed into the improvement scheme shown in CBO drawing CBO-0322-015 which was included in the EiP SoCG (**Appendix A**).

- 6.31 The modelling showed that the improvement to the industrial estate roundabout released more traffic onto the A534 westbound approach to the A534 / A5156 roundabout to the extent that an improvement would be required here as well. On this basis VM recommended a widening scheme on the A534 westbound approach to this roundabout, widening from 2 lanes to 3, and corresponding widening of the roundabout.
- 6.32 This improvement was developed into the improvement scheme shown in CBO drawing CBO-0322-014 which was included in the EIP SoCG (**Appendix A**).
- 6.33 With these improvements in place the 2023 Do-something (DS) model runs show the impacts of the KSS2 and KSS3 would be mitigated.
- 6.34 In the morning peak the implementation of the traffic signals at the industrial estate roundabout actually increases the average delay compared to the DM (some traffic is stopped at the signals when in the DM it free flows) but the increase is only 21 seconds.
- 6.35 In the evening peak the implementation of the improvement schemes reduces the increase in delay between the DS and DM to 5 seconds. On the industrial estate approach the 2023 journey time is lower than in the 2018 base.

2028 Modelling Results

- 6.36 The traffic from the full development of KSS2 and KSS3 has a significant impact on the DM network even allowing from the improvements to the industrial estate and A534 / A5156 roundabouts outlined above and further mitigation is required in both the morning and evening peaks.
- 6.37 VM undertook two sets of Do-something model runs. The first included just the link road through the KSS2 site linking the A534 with Cefn Road. This showed that some of the impact was mitigated but further improvements were required at the A5156 / A534 roundabout.
- 6.38 On this basis a second Do-something model run was undertaken which included widening from 2 lanes to 3 and signalisation of the A5156 approach and signalisation of the A534 westbound approach – this approach had already been widened from 2 lanes to 3 in the 2023 mitigation scheme.
- 6.39 These improvements were developed into the improvement scheme shown in CBO drawing CBO-0322-016 which was included in the EIP SoCG (**Appendix A**).
- 6.40 With the link road in place and with these improvements to the A534 / A5156 roundabout the modelling shows the impacts of the KSS2 and KSS3 traffic are mitigated. The average delay per vehicle in the morning peak hour only increases by 13 seconds relative to the 2028 Do-nothing despite there being more than 1,000 more trips completed.
- 6.41 In the evening peak hour the average delay per vehicle is only 14 seconds higher than the 2028 Do-nothing despite there being about 950 more trips completed.

Factors Effecting the Timing of Improvements and Proposed Mitigation

Improvements to A534 Holt Road / A5156 and Industrial Estate Roundabouts

- 6.42 Traffic flows at the A534 Holt Road / A5156 and industrial estate roundabouts are dominated by industrial estate traffic heading to and from the A483. In the morning peak the south and east bound flows are much higher than the west and north and vice versa in the evening peak.
- 6.43 As explained in the previous section of the report the improvements at these junctions, required at 2023 are aimed at dealing with traffic flows leaving the industrial estate in the evening peak.
- 6.44 Similarly, at 2028 the improvement on the A5156 approach to the A534 Holt Road roundabout is aimed at dealing with traffic heading towards the industrial estate in the morning peak with the additional improvement to the A534 westbound approach required to accommodate traffic leaving the industrial estate in the evening.
- 6.45 In this context it appears likely that the traffic from KSS3 is highly significant in determining the timing of these improvements.

- 6.46 Table 6.3 sets out the total traffic flows on these key links during the critical time periods and provides a breakdown on traffic associated with KSS2 and KSS3. It confirms how significant KSS3 is to the timing of the improvements at these junctions.

Table 6.3: Traffic Flows on Critical Approaches to A534 / A5156 and Industrial Estate Roundabouts

	Industrial Estate Access Road Approach to Industrial Estate R'bout		A534 Westbound Approach to A534/A5156 Roundabout		A5156 Approach to A534/A5156 Roundabout	
Traffic Flow	2023 PM	2028 PM	2023 PM	2028 PM	2023 AM	2028 AM
Total	2038	2195	2206	2365	1963	2014
KSS2	36	85	42	97	25	69
KSS3	181	348	152	290	146	286

- 6.47 On this basis if development on KSS3 does not come forward as quickly as anticipated in the modelling work (or at all in the plan period) then the need for the improvements, or the improvements at the scale identified in the modelling work would not be required.
- 6.48 During the determination of the 2019 application, initial discussions over delivery of mitigation focused on the provision of a contribution to the funding of the junction improvements. Developers of KSS2 south and KSS3 would similarly be required to provide contributions when development on these sites came forward. The problem with this approach is that if development on one or more of the sites is delayed there is a delay in delivering any form of mitigation.
- 6.49 Recognising this, it was agreed that rather than paying a contribution to all the works, the KSS2 north developer should implement specific improvements at the A534 Holt Road / A5156 roundabout which were in line with the overall mitigation strategy.
- 6.50 On this basis the highway improvement scheme shown in CBO drawing CBO-0322-017 was prepared (**Appendix A**). As outlined in the introduction the scheme involves the widening of the A534 Holt Road westbound approach and the southern section of the circulatory carriageway as well as the provision of the site access itself.
- 6.51 This is the same scheme identified through the VISSIM modelling to address the impacts of development on the A534 Holt Road / A5156 roundabout at 2023, albeit the extent of widening on the A534 westbound approach has been reduced from 100m to 50m. The lesser degree of widening reflects the fact that KSS2 north traffic represents a relatively small proportion of the total development traffic on the A534 westbound approach which necessitates the longer widening scheme.
- 6.52 This is illustrated by the traffic flows in Table 6.3 and Figure 5.2. With full development of KSS2 north there would be some 53 vehicles using the A534 westbound approach to the roundabout (Figure 5.2) in the critical evening peak hour. With the level of development tested at 2023 there would be 194 development generated vehicles on the approach (4th column of Table 6.3 shaded pale grey), the majority from KSS3. Therefore, even with full development on KSS2 north the level of development traffic on the A534 westbound approach is much less than the total development tested at 2023, so less widening would clearly be required.
- 6.53 Again, as outlined in the Introduction the scheme identified in CBO drawing CBO-0322-017 was agreed as part of the mitigation strategy associated with the 2019 application. On this basis it is put forward as part of the mitigation strategy for this application with delivery through planning condition with Barratt and Bloor funding and implementing the works in their entirety.

Timing of the Link Road

- 6.54 Development on KSS3 is unlikely to be such a significant factor in determining the timing of the link road. At the Greyhound roundabout in the 2023 models (models without the link road) there is notably more traffic from KSS2 than KSS3. In the morning peak Do-something model out of a total of 2,232 vehicles 233 are associated with KSS2 and 43 from KSS3. The corresponding figures in the evening peak hour are 187 KSS2 and 47 KSS3 in a total of 2,291 vehicles.

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- 6.55 The timing of the link road is therefore more likely to be influenced by the levels of development on the north and south parts of KSS2. The 2023 model runs were based on 250 units on KSS2 north and 460 on KSS2 south ie a total of 710 units. This exceeds the total development capacity of the KSS2 north site which is 600 units. If development on KSS2 south does not come forward as quickly as anticipated in the modelling work, its highly likely that more development on KSS2 north could be accommodated before the link road is required.
- 6.56 Indeed, if there is a significant delay to development on KSS2 south it is highly likely the whole of KSS2 north could be delivered without requiring the link road in full.
- 6.57 The Council accepted this point in agreeing the mitigation strategy for the 2019 application in that there was no requirement for the link road to be completed to Cefn Road for the full KSS2 north site to be developed out. The only requirement is for the link road to be completed to the site's boundary with Bryn Estyn Road.
- 6.58 In the context of this application and as outlined in the introduction Barratt and Bloor are committed to delivering the link road to Bryn Estyn Road and providing a contribution to the cost of the link road crossing of Bryn Estyn Road. If development on KSS2 south proceeds at the rate anticipated in the 2023 models, ie if 460 units are occupied on KSS2 south when 250 units are occupied on KSS2 north, then Barratt and Bloor would construct the link road to Bryn Esty Road and provide the contribution at that time.
- 6.59 If development on KSS2 south does not progress at that rate than Barratt and Bloor may delay completion of the link road and payment of the contribution until the cumulative total of units on the two sites reached 710 units, or until full completion of the KSS2 north development which ever was the soonest. These matters will be discussed in further detail with the Council during the determination of this planning application along with suitable wording relating to delivery, for the associated planning conditions or Section 106 agreement.

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). 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 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.
- 7.3 The town centre and Wrexham Industrial estate are within easy cycling distance with cycle routes provided to both.
- 7.4 The site is served by a local bus service running at a 30 minute frequency to and from Wrexham town centre. There is also a bus service to Chester accessible from the site.
- 7.5 An outline planning application for 600 homes on the site was submitted in 2019 under planning application Reference P/2019/0005. The 2019 application was essentially the same as the application which this TA supports.
- 7.6 The committee report for the 2019 application recommended that planning permission should be granted. In terms of highways and transport impacts an agreed position had been reached on the works and contributions required to mitigate the impacts of the proposed development on KSS2 North and this was reflected in the committee report.
- 7.7 This agreed mitigation involved three elements:-
 - The provision of a main site access from the southern side of the A534 Holt Road / A5156 roundabout, together with widening of the westbound A534 approach to the roundabout and the southern section of the circulatory carriageway. The delivery of the scheme would be through planning condition with Barratt and Bloor funding and implementing the works in their entirety.
 - The provision of a link road through the site from the A534 Holt Road / A5156 roundabout to Bryn Estyn Road (part of the full KSS2 link road to Cefn Road required by LPD policy)
 - Contribution to the cost of the link road crossing of Bryn Estyn Road.
- 7.8 Despite the recommendation for approval the application was refused by members at planning committee. Highways was not however a reason for refusal. On this basis, as well as the above approach to mitigation being agreed with officers, members of the planning committee also agreed that it was a sufficient level of mitigation to address the highway impacts of the proposed development on KSS2 north.
- 7.9 The mitigation strategy was developed from comprehensive VISSIM modelling undertaken to test the impacts of and develop a mitigation strategy for cumulative development on KSS2 north and south and KSS3 – a strategic employment site located to the north of the Wrexham Industrial Estate and allocated in the LDP.
- 7.10 There has been no material change to the highway baseline position in place at the time the 2019 application was made or the VISSIM model developed.
- 7.11 The same mitigation strategy as agreed for the 2019 application is therefore put forward for this application.
- 7.12 In this context the proposed access arrangement for which planning permission is being sought is shown in CBO drawing CBO-0322-017 in **Appendix A**. This is the same drawing that was recommended for approval in the 2019 application and which members did not find issue with.
- 7.13 The access scheme in drawing CBO-0322-017 shows the first section of the access road into the site together with the widening to the A534 Holt Road westbound approach and the southern section of the circulatory carriageway. This is the same scheme identified through the VISSIM modelling to address the impacts of development on the A534 Holt Road / A5156 roundabout at 2023, albeit the extent of widening on the A534 westbound approach has been reduced from 100m to 50m. The reduced

length of widening reflects the fact that KSS2 north traffic represents a relatively small proportion of the total development traffic on the A534 westbound approach.

- 7.14 Again, these works would be delivered through planning condition with Barratt and Bloor funding and implementing them in their entirety.
- 7.15 The completion of the full KSS2 link road from Holt Road to Cefn Road is not required if no development takes place on KSS2 south during the build out of KSS2 north. This point was agreed with the Council in the context of the 2019 application.
- 7.16 Notwithstanding this and as agreed in the mitigation strategy for the 2019 application, Barratt and Bloor are committed to delivering the link road to Bryn Estyn Road and providing a contribution to the cost of the link road crossing of Bryn Estyn Road. The timing of the construction of the link road to Bryn Estyn Road and payment of the contribution are dependent on the rate of delivery of housing on KSS2 north and KSS2 south.

Recommendations

- 7.17 In light of the above and subject to the provision of the highway works shown in CBO drawing CBO-0322-017, construction of the link road to Bryn Estyn Road and payment of a contribution to the link road crossing of Bryn Estyn Road, 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.