Barratt Homes South Wales

Creigiau Nurseries,
Land adjacent to Llantrisant Road,
Capel Llanilltern

TRANSPORT ASSESSMENT
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1 INTRODUCTION

1.1 Background

1.1.1 Asbri Transport has been appointed by Barratt Homes South Wales to produce a Transport Assessment (TA) in support of an outline planning application for up to a maximum of 100 dwellings on land at Creigiau Nurseries, Capel Llanilltern, Cardiff. It covers an area of approximately 5.23 hectares.

1.1.2 The site is located at Creigiau Nurseries, off Llantrisant Road, to the north west of Cardiff and north of the M4 near junction 33. It is situated on the outskirts of Cardiff, approximately 11km from the centre of the city, with neighbouring villages of Creigiau, Pentyrch and Groes-faen.

1.1.3 It is anticipated that the site is capable of accommodating up to a maximum of 100 residential units, with 30% designated as affordable housing and 70% as open market housing.

1.1.4 Cardiff’s Local Development Plan (LDP) 2006-2026 Deposit Plan identifies that there is a significant need for new housing in Cardiff with provision of a number of key strategic sites to deliver this; including Land North of Junction 33 and South of Creigiau. The identified strategic development sites will require effective public transport connections. For Land North of Junction 33 ‘the potential exists to develop a dedicated public transport corridor connecting Cardiff city centre to the strategic sites in North West Cardiff and strategic development areas beyond Cardiff’s boundary in Rhondda Cynon Taff.’

1.1.5 The two candidate sites near the proposed site are:

- Land North of Junction 33 - allocated for mixed use with 1,500 dwellings, employment and associated community uses (including two primary schools) and strategic park and ride together with provision for an extension to the west; and,

- South of Creigiau - housing based scheme of 650 homes representing a southern extension of the existing village.
1.1 Purpose of the report

1.1.1 The main purpose of the report is to assess the impact of the proposed development on the surrounding transport network; and identify any measures required to mitigate the impact of the proposed development.

1.1.2 The report also compares the proposed development with the relevant local, regional and national planning policies, with particular reference to transport.

1.2 Structure of the report

1.2.1 Following this introductory chapter, the report is structured as follows:

- Section 2 reviews the development proposals in relation to national, regional and local planning policies;
- Section 3 details the characteristics of the transport network surrounding the development site;
- Section 4 outlines the development proposals;
- Section 5 describes the likely demand generated by the proposed development;
- Section 6 assesses the impact of the proposed development on the surrounding transport network;
- Section 7 outline the Transportation Implementation Strategy; and,
- Section 8 provides the conclusions of the report.
2  POLICY REVIEW

2.1.1 This chapter reviews national and local transport related planning policy guidance that is relevant to the proposed development of Creigiau Nurseries on land adjacent to Llantrisant Road, Capel Llanilltern.

2.2  Wales Spatial Plan – People, Places, Futures

2.2.1 The Wales Spatial Plan – People, Places Future (WSP) – was originally adopted by the National Assembly for Wales in November 2004, and updated in 2008 to bring the WSP into line with One Wales [see below] and to give status to the Area work which has developed over the previous two years.

2.2.2 In Wales, spatial planning is the consideration of what can and should happen where. It is a principle of the WSP that development should be sustainable. Sustainable development is about improving wellbeing and quality of life by integrating social, economic and environmental objectives in the context of more efficient use of natural resources.

2.2.3 The purpose of the WSP is to ensure that what is done in the public, private and third sectors in Wales is integrated and sustainable, and that actions within an area support each other and jointly move towards a shared vision for Wales and for the different parts of Wales.

Achieving sustainable development

2.2.4 The WSP states that:

‘Citizens must be able to access job opportunities and public services – health, social services, education, etc – if equality of opportunity is to be successfully promoted in Wales. This is a particular concern for those who face barriers to accessibility, such as people on low incomes, young and old people, disabled people and those living in rural areas.’

2.2.5 The WSP also states that:
'In the context of responding to and mitigating the effects of climate change, the Wales Spatial Plan supports the development of spatially targeted responses. These include reducing the need to travel by co-locating jobs, housing and services, for instance, and changing behaviour in favour of ‘greener’ modes of travel, such as car sharing, public transport, walking and cycling.'

2.3 Planning Policy Wales

2.3.1 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Assembly Government (the Assembly Government). It is supplemented by a series of Technical Advice Notes (TANs). Procedural advice is given in circulars and policy clarification letters.

Transport

2.3.2 The Assembly Government aims to extend choice in transport and secure accessibility in a way which supports sustainable development and helps to tackle the causes of climate change by: encouraging a more effective and efficient transport system, with greater use of the more sustainable and healthy forms of travel, and minimising the need to travel. This will be achieved through the integration:

- Within and between different types of transport;
- Between transport measures and land use planning;
- Between transport measures and policies to protect and improve the environment; and,
- Between transport measures and policies for education, health, social inclusion and wealth creation.

2.3.3 PPW states that:

‘Land use planning can help to achieve the Assembly Government’s objectives for transport through:'
• Reducing the need to travel, especially by private car, and locating development where there is good access by public transport, walking and cycling;
• Locating development near other related uses to encourage multi-purpose trips and reduce the length of journeys;
• Improving accessibility by walking, cycling and public transport;
• Ensuring that transport is accessible to all, taking into account the needs of disabled and other less mobile people;
• Promoting walking and cycling;
• Supporting the provision of high quality public transport;
• Supporting traffic management measures;
• Promoting sustainable travel options in rural areas;
• Supporting necessary infrastructure improvements; and,
• Ensuring that, as far as possible, transport infrastructure does not contribute to land take, urban sprawl or neighbourhood severance.

Promoting walking and cycling

2.3.4 PPW states that:

‘Walking should be promoted for shorter trips. The impact of policies and development on pedestrians should be considered. Planning authorities should promote specific measures to assist pedestrians including the provision of safe, convenient and well-signed routes.’

2.3.5 PPW also states that:

‘Cycling should also be encouraged for short trips and as a substitute for shorter car journeys or, as part of a longer journey when combined with public transport’.

And
'Where appropriate, planning authorities should also seek to assist the completion of the national cycle network and of key links to and from the network.'

Parking

2.3.6 In relation to parking, PPW states that:

'Car parking provision is a major influence on the choice of means of transport and the pattern of development. Local authorities should ensure that new developments provide lower levels of parking than have generally been achieved in the past. Minimum parking standards are no longer appropriate. Local authorities should develop an integrated strategy on parking to support the overall transport and locational policies of the development plan.'

2.4 One Wales: Connecting the Nation

2.4.1 National transport policy for Wales is specified within the Wales Transport Strategy, One Wales: Connecting the Nation, which is supplemented by a series of Technical Advice Notes (TANs).

2.4.2 The goal of One Wales: Connecting the Nation is to:

'Promote sustainable transport networks that safeguard the environment while strengthening our country’s economic and social life. The transport strategy identifies a series of high-level outcomes and sets out the steps to their delivery. The One Wales programme is working to achieve a nation with access for all, where travelling between communities and accessing services, jobs and facilities in different parts of Wales is both easy and sustainable, and which support the growth of our economy.'

2.5 Technical Advice Note (TAN) 18

2.5.1 TAN 18 identifies that Planning Policy Wales and the Wales Transport Strategy both aim to secure the provision of transport infrastructure and services, which improve accessibility, build a stronger economy, improve road safety and foster more sustainable communities. To achieve this and the core objectives, the following initiatives relevant to the proposed development are:
• Reducing the need to travel;
• Promoting walking and cycling;
• Managing parking provision; and,

2.5.2 Encouraging the location of development near other related uses to encourage multi-purpose trips.

2.6 **Cardiff Local Development Plan (LDP) 2006-2026 Deposit Plan**

2.6.1 The emerging LDP states that Cardiff has a significant need for new homes including family homes and affordable homes. In order to deliver sustainable transportation solutions, Cardiff’s approach seeks to minimise travel demand through the provision of a range of measures and opportunities which reduce reliance on the car.

‘New development in Cardiff must be integrated with the provision of new transport infrastructure which can help contribute to this objective by putting in place sustainable transport solutions which also provide improved travel choices for the wider community. This approach is fully consistent with on-going work at a city-region scale which seeks to develop a more effective public transport network across the region as a whole, helping people travel from where they live to work and thereby helping to spread prosperity around the entire city-region.’

2.6.2 The LDP continues ‘Currently (2011) 64% of all weekly journeys (work and non-work related) are made by car, whilst 36% are made by other modes. A central aim of the transport strategy supporting the LDP is to achieve a 50:50 split between travel by car and sustainable travel. This target is not simply a policy aspiration; local knowledge of the transportation network and research of travel behaviour, patterns and trends in combination with modelling work carried out by the Council has shown that achieving this ratio is necessary for the transport network to accommodate movements associated with the growth envisaged within this plan in a way which avoids unmanageable levels of congestion on the highway network.’
2.6.3 The transport model considers the transport implications of an increase in both housing and jobs and demonstrates that the growth projected in the LDP will result in a major increase in transport movements generally. This will include significant additional trips on the highway network resulting in congestion and increased journey times in the ‘no change’ scenario. These key findings of the model are set out in the LDP’s Background Technical Paper 12. In order to accommodate the additional vehicular trips on the highway network, it will be necessary that at least 50% of all trips on Cardiff’s transport network are made by sustainable modes by the end of the Plan period in 2026.

2.6.4 To create sustainable neighbourhoods that form part of a sustainable city there is a need to minimise car travel, maximise sustainable transport use and decrease air pollution by creating accessible, permeable and legible places, preventing predominantly car-based developments and focusing new development in accessible locations which are linked to the strategic cycle network and can be served mainly by effective networks of sustainable transport - walking and cycling and fast and frequent public transport around and beyond the city.

2.6.5 New development will make appropriate provision for, or contribute towards, the necessary infrastructure required as a consequence of the proposed development. Such infrastructure will be delivered in a timely manner to meet the needs of existing and planned communities and may include the following:

- Routes and facilities for walking and cycling comprising both on-road and off-road improvements; and,

- Key bus corridors and the wider bus network including bus priority measures and passenger facilities.

2.6.6 Development in Cardiff will be integrated with transport infrastructure and services in order to:

- Achieve the target of a 50:50 modal split between journeys by car and journeys by walking, cycling and public transport;

- Reduce travel demand and dependence on the car;
• Enable and maximise use of sustainable and active modes of transport;
• Integrate travel modes;
• Provide for people with particular access and mobility requirements;
• Improve safety for all travellers; and,
• Maintain and improve the efficiency and reliability of the transport network.

2.6.7 For Cardiff to accommodate the planned levels of growth, existing and future residents will need to be far less reliant on the private car. Therefore, ensuring that more everyday journeys are undertaken by sustainable modes of transport – walking, cycling and public transport – will be essential.

2.6.8 It is accepted that for some development sites it may not be possible to achieve a 50:50 modal split, at least in the short term. For smaller schemes, achieving more sustainable travel could include accommodating through-pedestrian or cycle movements within the development layout or positioning access to the site where it could minimise the walking distance to the nearest bus stop. In all cases, the nature of the measures sought will be in proportion with the scale of the development and the impacts requiring mitigation.

2.7 Summary

2.7.1 It is considered that the proposed development of up to 100 residential dwellings on land adjacent to Llantrisant Road complies with relevant national and local land use and transport policies, as it will:

• Meet an identified significant need for housing including family homes and affordable homes;
• Encourage the use of public transport through supporting the provision of high quality public transport;
• Promote walking and cycling; and,
• Support necessary infrastructure improvements.
3 EXISTING SITUATION

3.1 Introduction

3.1.1 In order to assess the impact of the development site, it is necessary to establish the conditions that exist within the surrounding transport network. Therefore, this section of the report describes the site location and the transport characteristics, including highway network, of the surrounding area.

3.2 Site location and land use

3.2.1 As outlined above, the proposals are for a residential development with up to a maximum of 100 units, situated in Capel Llanilltern, approximately 10km to the north west of Cardiff city centre.

3.2.2 The site covers an area of 5.23 hectares and is on a former nursery site approximately 1.5km south east of Creigiau. Other neighbouring villages are also in close proximity including Pentyrch and Groes-Faen. The site comprises open fields, surrounded by mature trees and hedgerows, and includes some agricultural buildings within the centre of the site for its previous use as a nursery.

3.2.3 The site is fronted by Llantrisant Road to the south, a disused railway line to the north and open farmland and a private residential property to the west. The site is divided by Heol St y Nyll which runs in a north south direction across the eastern end of the site.

3.2.4 There is an existing vehicle access on to Llantrisant Road from the site, which is located approximately 50m from its western boundary.

3.2.5 The location of the site together with the local highway network is shown in Figure 3.1.

3.3 Local highway network

3.3.1 The site fronts the A4119 Llantrisant Road, a strategic route between Cardiff and Llantrisant. The local highway network in the vicinity of the site is described below.
**Llantrisant Road (A4119)**

3.3.2 The A4119 Llantrisant Road fronts the site to the south. It provides a strategic link to Cardiff, and onto Cardiff Bay, to the south east. To the North West it connects with Llantrisant (approximately 7km to the North West) and onto Tonypandy (via Ynysmaerdy and Tonyrefail). Towards Cardiff the route heads through Llandaff and crosses the A48 Western Avenue at a traffic signals junction. Towards Llantrisant, at a traffic signal controlled junction, a spur of the A4119 heads south to link to Junction 34 of the M4 motorway (approximately 5km away).

3.3.3 The speed limit varies along Llantrisant Road. Across the site frontage, the speed limit is 40mph. To the west of the site, this increases to the National Speed Limit. Further west near Groes-Faen the speed limit reduces to 30mph. The reduction in the speed limit along the site frontage and to the east is reinforced with traffic calming measures including dragon’s teeth road markings, coloured surfacing and vehicle activated speed signs.

3.3.4 The road is between 6 and 7m wide and is lit. In the vicinity of the site, there is a footway on the southern edge of the carriageway, which is of a reasonable standard although some sections are overgrown. There are no formal crossing points on this section of Llantrisant Road.

3.3.5 Llantrisant Road is a bus route. The nearest westbound bus stop is directly outside the site (near the junction with Heol St y Nyll) and the nearest eastbound bus stop is approximately 100m from the eastern corner of the site.

**Heol St y Nyll**

3.3.6 Heol St y Nyll forms the minor arms of a crossroads with Llantrisant Road. It heads south towards St Brides Road and north towards Capel Llanilltern crossing the site at its eastern end. North of Llantrisant Road, it is a narrow lane, approximately 4-4.5m wide with no footways.
Cardiff Road

3.3.7 The priority junction of Llantrisant Road and Cardiff Road is approximately 300m from the western edge of the site. Cardiff Road leads to Creigiau and, via Heol Pant y Gored, Pentyrch and is a bus route. At its southern end, Cardiff Road is subject to a 30mph speed limit, is lit and has a footway on the western edge of the carriageway.

3.4 Base traffic flows

3.4.1 Fully classified turning counts were undertaken on Tuesday 16th December 2014 at the following junctions:

- Castell Mynach traffic signal controlled junction on the A4119 Llantrisant Road;
- Llantrisant Road/Crofft y Genau priority junction;
- Llantrisant Road/Clos Parc Radyr roundabout junction; and,
- Llantrisant Road/B4262 roundabout junction; and,
- Llantrisant Road/Waterhall Road roundabout junction.

Peak hour flows

3.4.2 From the surveys, the peak periods on a weekday have been determined as 0800 - 0900 and 1645 - 1745, these surveyed traffic flows are shown in Figure 3.2.

3.5 Highway safety

3.5.1 This section of the report reviews collision data within 1km of the site. Personal injury accident data for the study area was obtained for the five year period 2009 – 2013. Table 3.1 below summarises details of the number of collisions resulting in personal injury, the number of casualties and the severity of personal injury.
### Personal injuries and Casualties

<table>
<thead>
<tr>
<th>Year</th>
<th>Fatal</th>
<th>Serious</th>
<th>Slight</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>14</td>
</tr>
</tbody>
</table>

#### Table 3.1 Summary of personal injury accident statistics

3.5.2 It can be seen from the table above that there have been a total of six collisions within the study area, resulting in a total of 14 casualties, with slight injuries being sustained in all casualties (refer Figure 3.3 for the location of these accidents).

**Analysis of collision data**

3.5.3 It can also be seen from Figure 3.3 that the collisions are spread throughout the study area, and there are no significant accident clusters that require further investigation.

#### 3.6 Mode split

3.6.1 **Table 3.2** below outlines the current ‘journey to work’ mode share for existing Creigiau residents (the nearest major settlement to the proposed development), which is based on the Census 2011 National Statistics Travel to Work datasets. The modal split excludes those not currently working and those working from home.
Mode | Mode share %
---|---
Rail | 4%
Bus | 2%
Taxi | 0%
Car (driver) | 84%
Car (passenger) | 4%
Motorcycle | 1%
Bicycle | 1%
On foot | 4%
Other | 1%
Total | 100

Table 3.2 Mode split – journeys to work

3.7 Public transport

3.7.1 Llantrisant Road is reasonably well served by public transport, with regular scheduled bus services passing along the road connecting the South Wales Valleys with Cardiff.

Bus services

3.7.2 There are a number of existing bus stops along Llantrisant Road with the westbound service being served by a bus stop outside the site (west of the junction with Heol St y Nyll) and the eastbound service being served by a bus stop approximately 100m east of the eastern edge of the site. These stops are within easy walking distance of the proposed development, with services to Cardiff via Danescourt and Llandaff and to Maerdy and Tonypandy via Talbot Green.

3.7.3 There are also bus stops within 500m of the site to both the east (near Graig-y-Parc) and west (Robin Hill Cardiff Road) which serve routes 136 and 138.

3.7.4 Table 3.3 below outlines the services that call at bus stops within the vicinity of the site.
Table 3.3  Existing scheduled bus services

<table>
<thead>
<tr>
<th>Route No.</th>
<th>Route</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>122</td>
<td>Cardiff Greyfriars Road – Llandaff – Danescourt – Creigiau – Pontyclun – Talbot Green – Tonyrefail -Tonyypandy</td>
<td>Mon-Sat every 20 mins Sun two hourly</td>
</tr>
<tr>
<td>124</td>
<td>Cardiff bus station – Llandaff – Creigiau – Talbot Green – Tonyrefail – Porth - Maerdy</td>
<td>Mon-Sat hourly</td>
</tr>
<tr>
<td>136</td>
<td>Cardiff bus station – Whitchurch – Pentyrch - Creigiau</td>
<td>Mon – Sat 6 per day</td>
</tr>
<tr>
<td>138</td>
<td>Cardiff bus station – Llandaff – Radyr – Pentyrch - Creigiau</td>
<td>Mon – Sat 6 per day</td>
</tr>
</tbody>
</table>

3.7.5  The existing bus stops in close proximity to the site are shown in Figure 3.4.

**Rail services**

3.7.6  The nearest rail stations to the site are Pontyclun, 6km to the west, Radyr 5km to the east and Danescourt, 6km to the south east. Pontyclun and Radyr stations both have parking free of charge for rail users. Danescourt station is accessible from the site by bus using routes 122 and 124. Routes to Pontypridd, Merthyr Tydfil, Aberdare to the north and Cardiff Central and Barry Island to the south are served by Radyr and Danescourt stations. Routes to Maesteg and Bridgend to the north and west and Cardiff Central and Cheltenham Spa to the south and east are served by Pontyclun station.

3.8  Pedestrians and cyclists

**Pedestrian routes**

3.8.1  As described above, there is a pedestrian footway on Llantrisant Road, along the southern edge of the carriageway. There is also a footway along the western edge of the carriageway on Cardiff Road, leading to Creigiau, that provides a route to the local facilities in Creigiau including: primary school, Post Office, doctor’s surgery, Tesco Express, public house and pharmacy. There are no footways along Heol St y Nyll to the north of Llantrisant Road passing the site, although this route is designated as a public footpath.

3.8.2  There are no formalised crossing facilities on Llantrisant Road in the vicinity of the site.
3.8.3 The Chartered Institute of Highways and Transportation (CIHT) guidelines indicate that the desirable walking distance for commuting/school journeys is 500 metres, the acceptable walking distance is 1km and 2km is the preferred maximum. For walking trips for other purposes, the desirable walking distance is 400m, acceptable is 800m and the preferred maximum is 1.2km.

3.8.4 Figure 3.4 also shows the 1km isochrone (divided into 200m bands) from the centre of the proposed site, together with local amenities within walking distance.

*Cycle routes*

3.8.5 There are no cycle routes in the vicinity of the site.
4 DEVELOPMENT PROPOSALS

4.1 Development land use

4.1.1 As set out in Section 1, it is proposed to develop land at Creigiau Nurseries, Capel Llanilltern, north of Cardiff, for up to 100 houses. Of the 100 dwellings it is anticipated that 30% will be affordable homes and 70% will be open market.

4.1.2 The site is located to the north of Llantrisant Road (A4119) and straddles Heol St y Nyll with a small parcel of land to the east of Heol St y Nyll.

4.2 Access and parking provision

4.2.1 The following section of the report outlines:

- The proposed access arrangements (for pedestrians, cyclists and vehicular traffic); and,
- On-site car parking provision.

Vehicle access

4.2.2 As part of the redevelopment of the site, it is proposed to construct two new vehicular and pedestrian accesses:

- An access from LLantrisant Road for the western area of the site approximately 50m south of the north western corner of the site; and,
- An access from Heol St y Nyll for the eastern area of the site approximately 50m from its junction with Llantrisant Road.

4.2.3 The proposed access on to Llantrisant Road (see Figure 4.1) will be a simple priority junction with a ‘ghost-island’ right turn lane, providing a secure waiting area for right-turning traffic. As part of the access design, a pedestrian refuge will be included. This will provide an informal pedestrian crossing on Llantrisant Road to access the footway on the southern edge of the carriageway.

4.2.4 The proposed access has been designed in accordance with the standards set out in Manual for Streets, including:

- Lane widths;
• Junction radii; and,
• Visibility splays.

4.2.5 As detailed in Section 3, the section of Llantrisant Road fronting the site is subject to a 40mph speed limit.

4.2.6 In order to access the eastern portion of the site, it is proposed to divert Heol St y Nyll into the site with the northern section of Heol St y Nyll accessed via a simple priority junction (see Figure 4.2), designed in accordance with standards set out in Manual for Streets. It is also proposed to modify the existing crossroads junction of Llantrisant Road and Heol St y Nyll with improved radii, increased with and provision of footways (also shown on Figure 4.2).

**Car parking provision**

4.2.7 As stated previously, an illustrative masterplan (see Figure 4.3) has been developed for the site, however, parking provision is not detailed on the plan.

4.2.8 Notwithstanding the above, car parking provision will be provided in accordance with County Surveyors Society (CSS) Wales Parking Standards 2008 for residential developments, as set out in Table 4.1 below.

<table>
<thead>
<tr>
<th>Dwelling type</th>
<th>Parking standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 bed house</td>
<td>1 space per bedroom</td>
</tr>
<tr>
<td>2 bed house</td>
<td>1 space per bedroom</td>
</tr>
<tr>
<td>3 bed house</td>
<td>1 space per bedroom</td>
</tr>
<tr>
<td>4 bed house</td>
<td>1 space per bedroom (max 3 spaces)</td>
</tr>
<tr>
<td>Visitors</td>
<td>1 space per 5 units</td>
</tr>
</tbody>
</table>

**Table 4.1 Car parking guidelines – residential development**

4.2.9 All parking spaces will be provided within the curtilage of the site, with a mixture of on-plot spaces, garages and dedicated parking areas, and will be provided in accordance with the above parking standards.

**Cycle parking provision**

4.2.10 As part of the development, secure cycle parking will be provided in accordance with guidelines.
4.3 **Travel Plan**

4.3.1 The implementation of a development-wide Travel Plan will improve the sustainability of the site through promotion and raising awareness of more sustainable modes of travel. A Travel Plan is a management tool designed to enable the users of a site to make more informed decisions about their travel. It aims to increase the attractiveness of travelling by more sustainable modes thus minimising adverse impacts of travel on the surroundings.

4.3.2 This is achieved by setting out a strategy for eliminating the barriers that prevent users of the site from using sustainable modes, within local policy aims. The Travel Plan will apply to both residents and visitors to the site.

4.3.3 The implementation of a well-designed, and properly managed Travel Plan can lead to an increase in the proportion of residents travelling by more sustainable modes.
5 TRIP GENERATION

5.1 Introduction

5.1.1 In order to assess the impact of the allocated site (up to 100 dwellings) on the existing transport infrastructure, it is necessary to assess the likely volume of vehicles accessing the site. This section therefore outlines the methodology used to predict the future traffic generation and provides an estimate of future trips to/from the development site.

5.2 Trip rates

*Residential, houses privately owned*

5.2.1 The person trip generation rates for the privately owned houses (up to 70 dwellings) have been obtained from the TRICS 7.1.3 trip generation database. Sites have been selected on the basis of the following selection criteria:

- Land use: residential, houses privately owned;
- Survey days: Monday – Friday;
- Number of units: 50 - 150 households; and,
- Location of the development: UK, excluding Greater London, Northern Ireland and Republic of Ireland.

5.2.2 The daily arrival/departure profile is set out in Appendix A and the peak periods are summarised in Table 5.1. It should be noted that 85th percentile trip rates have been used to represent a ‘worst-case’ scenario.
Peak period | Trip rates | Resultant trip generation
---|---|---
| arrive | depart | total | arrive | depart | total |
| Total persons | | | | | |
| 0800-0900 | 0.380 | 0.886 | 1.266 | 27 | 62 | 89 |
| 1700-1800 | 0.833 | 0.426 | 1.259 | 58 | 30 | 88 |

Table 5.1  Person trip rates/generation – houses privately owned

5.2.3  It can be seen from the table above that the privately owned dwellings could generate up to 89 person trips (two-way) in the AM peak period and up to 88 person trips (two-way) in the PM peak period.

Residential, affordable/Local Authority houses

5.2.4  The person trip generation rates for the affordable/Local Authority houses (up to 30 dwellings) have been obtained from the TRICS 7.1.3 trip generation database. Sites have been selected on the basis of the following selection criteria:

- Land use: Residential, affordable/Local Authority Houses
- Survey days: Monday – Friday;
- Number of units: 15 - 40 households; and,
- Location of the development: UK, excluding Greater London, Northern Ireland and Republic of Ireland.

1.2.2  The daily arrival/departure profile is set out in Appendix B and the peak periods are summarised in Table 5.2 over the page. It should be noted that average trip rates have been used as there are insufficient sites within the TRICS trip generation database to obtain 85th percentile trip rates.
<table>
<thead>
<tr>
<th>Peak period</th>
<th>Trip rates</th>
<th>Resultant trip generation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>arrive</td>
<td>depart</td>
</tr>
<tr>
<td>Total persons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0800-0900</td>
<td>0.243</td>
<td>0.958</td>
</tr>
<tr>
<td>1700-1800</td>
<td>0.604</td>
<td>0.486</td>
</tr>
</tbody>
</table>

**Table 5.2  Person trip rates/generation – affordable/Local Authority houses**

5.2.5 It can be seen from the table above that the affordable/Local Authority dwellings could generate up to 36 person trips (two-way) in the AM peak period and up to 33 person trips (two-way) in the PM peak period.

**Combined trip generation**

1.2.3 **Table 5.3** below summarises the likely trips by mode for the entire development. This has been determined by combining the total person trips identified in Tables 5.1 and 5.2 above, and then applying the existing (Creigiau) modal splits identified in Table 3.2.

<table>
<thead>
<tr>
<th>Peak period</th>
<th>Trip generation by mode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrive</td>
</tr>
<tr>
<td>Total persons</td>
<td></td>
</tr>
<tr>
<td>0800-0900</td>
<td>34</td>
</tr>
<tr>
<td>1700-1800</td>
<td>76</td>
</tr>
<tr>
<td>Vehicles</td>
<td></td>
</tr>
<tr>
<td>0800-0900</td>
<td>29</td>
</tr>
<tr>
<td>1700-1800</td>
<td>64</td>
</tr>
<tr>
<td>Pedestrians</td>
<td></td>
</tr>
<tr>
<td>0800-0900</td>
<td>1</td>
</tr>
<tr>
<td>1700-1800</td>
<td>3</td>
</tr>
<tr>
<td>Cyclists</td>
<td></td>
</tr>
<tr>
<td>0800-0900</td>
<td>0</td>
</tr>
<tr>
<td>1700-1800</td>
<td>1</td>
</tr>
<tr>
<td>Public transport users</td>
<td></td>
</tr>
<tr>
<td>0800-0900</td>
<td>2</td>
</tr>
<tr>
<td>1700-1800</td>
<td>5</td>
</tr>
</tbody>
</table>

**Table 5.3  Trip generation by mode**

5.2.6 It can be seen from the table above that the proposed development could generate up to 125 vehicle movements (two-way) in the AM peak and up to 121 vehicle movements (two-way) in the PM peak.
5.3 Assignment and distribution of development traffic

5.3.1 For the purposes of this assessment, it has been assumed that 85% of development generated traffic will access/egress the site via the northern access on to the A4119 Llantrisant Road, and the remaining 15% will access/egress via the access on to Heol St Y Nyll.

5.3.2 Development traffic has then been assigned to the local highway network on the basis of journey to work census data (2011) for Creigiau residents, with 61% eastbound (towards Cardiff) and 39% westbound along Llantrisant Road in the AM peak. These flows are reversed in the PM peak.

5.3.3 Beyond the immediate highway network adjacent to the site, vehicle trips are distributed to Cardiff, Creigiau/Caerphilly, Llantrisant, M4 (west), M4 (east) and Cardiff Bay/Vale of Glamorgan. This distribution of development traffic is summarised in Figure 5.1.

5.4 Future traffic flows

5.4.1 As outlined above, the impact of the development has been assessed for the following future year scenarios:

- 2016, representing the opening year of the development; and,
- 2026, year of opening + 10 years; and,

5.4.2 In order to obtain the base traffic flows (i.e. with no development traffic) in 2016 and 2026, the surveyed traffic flows (2014) have been factored using NTM growth. The factors to be applied to the base (surveyed) flows are identified in Table 5.4 below.

<table>
<thead>
<tr>
<th>Period</th>
<th>NTMF growth factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014 to 2016</td>
<td></td>
</tr>
<tr>
<td>Weekday AM</td>
<td>1.0112</td>
</tr>
<tr>
<td>Weekday PM</td>
<td>1.0118</td>
</tr>
<tr>
<td>2016 to 2026</td>
<td></td>
</tr>
<tr>
<td>Weekday AM</td>
<td>1.0832</td>
</tr>
<tr>
<td>Weekday PM</td>
<td>1.0832</td>
</tr>
</tbody>
</table>

Table 5.4 NTM growth factors
5.4.3 It should be noted that the above growth factors take account of committed development within the local area, as the factors are based on the most recent planning data contained in the Local Plan.

5.4.4 Traffic on Cardiff’s roads grew on average by 9% between 2002 and 2012, although the recession has reduced the rate of traffic growth since 2008, this upward trend is likely to resume during the LDP plan period. Cardiff’s highway network remains under considerable strain, with a number of key junctions and roads either at or approaching capacity at peak times. Many short trips in Cardiff are currently made by car, but could easily be made by other, more sustainable modes.

5.4.5 For Cardiff to accommodate the planned levels of growth in housing and jobs, the Deposit LDP states that ‘existing and future residents will need to be far less reliant on the private car’. Ensuring that more everyday journeys are undertaken by sustainable modes of transport will be essential. This is the cornerstone of their key transport policy in order to ensure developments are accessible by sustainable travel modes and achieve a necessary shift away from car-based travel across Cardiff.

5.4.6 In order to accommodate the growth, Cardiff proposes significant new transport infrastructure, improvements to existing transport facilities, measures to manage travel demand and widen travel choices both within existing and new communities in Cardiff. These interventions include a bus rapid transit, key public transport corridors, park and ride, measures to encourage walking and cycling and network management. Highway improvements will focus on schemes that assist with managing network resilience, improve access and road safety and facilitate sustainable travel and development.

5.4.7 Unconstrained traffic growth is not achievable, or indeed desirable, and highway networks will not be improved to accommodate unrestricted traffic growth. In the LDP’s Background Technical Paper 5 Infrastructure the Sewta Regional Transport Plan includes a Making Better Use programme which supports junction improvements in order to improve journey time reliability, reduce congestion, keep traffic moving, reduce the negative impact of traffic on people and the environment and support public transport proposals.
5.4.8 Adding traffic growth to background traffic flows together with the addition of candidate sites’ development traffic is in essence double counting. It is considered more appropriate to substitute specific development related traffic with general growth, particularly given the status of the candidate sites in the vicinity of this development site. Adding both growth and candidate sites’ development traffic is contrary to the Council’s ambitions to accommodate housing and job growth by increasing the number of trips made by sustainable modes. In order for their strategy to be successful, the number of vehicle trips currently on the network during the peak hours will need to be maintained.

**Future base traffic flows**

5.4.9 The future base traffic flows (i.e. with no development) for all assessment periods have been obtained by factoring the surveyed flows (Figure 3.2) using the factors set out in Table 5.4 above.

5.4.10 The 2016 base flows are set out in Figure 5.2 and the 2026 base flows are set out in Figure 5.3.

**Final future traffic flows**

5.4.11 The final future traffic flows have been obtained by combining the development generated traffic flows (identified in Figure 5.1), with the 2016 and 2026 base traffic flows (identified in Figures 5.2 and 5.3).

5.4.12 The final future flows in 2016 and 2026 are set out in the Figures 5.4 and 5.5 respectively.
6 IMPACT OF THE DEVELOPMENT PROPOSALS

6.1 Introduction

6.1.1 This section of the report identifies the impact of up to 100 dwellings on the
surrounding highway network, and identifies any mitigation measures required
to reduce the impact of development generated traffic, should these be
required.

6.1.2 As outlined in Section 1, the junctions to be assessed are as follows:

- Proposed site access on to the A4119 Llantrisant Road;
- A4119 Llantrisant Road/Heol St Y Nyll priority junction
- A4119 Llantrisant Road/A4119 traffic signal controlled junction;
- A4119 Llantrisant Road/Crofft y Gennau priority junction;
- A4119 Llantrisant Road/Clos Parc Radyr roundabout;
- A4119 Llantrisant Road/B4246 roundabout; and,
- A4119 Llantrisant Road/Danescourt Way/Waterhall Road roundabout.

6.2 Site access on to the A4119 Llantrisant Road

6.2.1 The operation of the proposed Llantrisant Road site access junction (see Figure
4.1) has been assessed, for each of the assessment periods, using the TRL
program Junction 8. The results of the analysis are presented in full in
Appendix C, and summarised in Table 6.1 below.

<table>
<thead>
<tr>
<th>Arm</th>
<th>Base + development</th>
<th>Movement</th>
<th>2016 AM peak</th>
<th>2016 PM peak</th>
<th>2026 AM peak</th>
<th>2026 PM peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RFC Queue RFC Queue RFC Queue RFC Queue RFC Queue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site access</td>
<td></td>
<td>B-C (left)</td>
<td>0.10 &lt;1 veh.</td>
<td>0.04 &lt;1 veh.</td>
<td>0.11 &lt;1 veh.</td>
<td>0.06 &lt;1 veh.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B-A (right)</td>
<td>0.12 &lt;1 veh.</td>
<td>0.05 &lt;1 veh.</td>
<td>0.15 &lt;1 veh.</td>
<td>0.06 &lt;1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road</td>
<td>C-AB</td>
<td>0.05 &lt;1 veh.</td>
<td>0.11 &lt;1 veh.</td>
<td>0.06 &lt;1 veh.</td>
<td>0.12 &lt;1 veh.</td>
<td>0.06 &lt;1 veh.</td>
</tr>
</tbody>
</table>

Table 6.1 Junction capacity analysis – proposed site access on to A4119
Llantrisant Road
6.2.2 It can be seen from the table above that the western site access has sufficient capacity to accommodate the proposed development up to and including the 2026 ‘with development’ scenario, with a maximum RFC of 0.15 and a queue of less than one vehicle on the site access approach in the AM peak period.

6.3 A4119 Llantrisant Road/Heol St Y Nyll priority junction

6.3.1 The operation of the existing, modified junction (see figure 4.2) has been assessed, for each of the assessment periods, using the TRL program Junction 8. The results of the analysis are presented in full in Appendix D, and summarised in Table 6.2 below.

<table>
<thead>
<tr>
<th></th>
<th>Movement</th>
<th>Base + development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM peak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RFC</td>
</tr>
<tr>
<td>2016 Heol St Y Nyll (n)</td>
<td>B-ACD</td>
<td>0.05</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (w)</td>
<td>A-D</td>
<td>0</td>
</tr>
<tr>
<td>Heol St Y Nyll (s)</td>
<td>D-ABC</td>
<td>0.02</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (e)</td>
<td>C-B</td>
<td>0.01</td>
</tr>
<tr>
<td>2026 Heol St Y Nyll (n)</td>
<td>B-ACD</td>
<td>0.06</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (w)</td>
<td>A-D</td>
<td>0</td>
</tr>
<tr>
<td>Heol St Y Nyll (s)</td>
<td>D-ABC</td>
<td>0.02</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (e)</td>
<td>C-B</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Table 6.2 Junction capacity analysis – A4119 Llantrisant Road/Heol St Y Nyll junction

6.3.2 It can be seen from the table above that the existing, modified junction has sufficient capacity to accommodate the proposed development up to and including the 2026 ‘with development’ scenario, with a maximum RFC of 0.06 and a queue of less than one vehicle on the Heol St Y Nyll (n) approach in the AM peak period.
6.4  A4119 Llantrisant Road/A4119 (Castell Mynach) traffic signal controlled junction

6.4.1  The operation of the existing junction (see Figure 6.1) has been assessed, for each of the assessment periods, using the computer program LINSIG. The results of the analysis are presented in full in Appendix E, and summarised in Table 6.3 below.

<table>
<thead>
<tr>
<th>Arm</th>
<th>Base</th>
<th>BASE + development</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM peak</td>
<td>PM peak</td>
<td>AM peak</td>
<td>PM peak</td>
<td>AM peak</td>
<td>PM peak</td>
<td>AM peak</td>
<td>PM peak</td>
</tr>
<tr>
<td></td>
<td>Deg of sat (%)</td>
<td>Queue (pcus)</td>
<td>Deg of sat (%)</td>
<td>Queue (pcus)</td>
<td>Deg of sat (%)</td>
<td>Queue (pcus)</td>
<td>Deg of sat (%)</td>
<td>Queue (pcus)</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4119 (s)</td>
<td>- ahead</td>
<td>46.8</td>
<td>8 pcus</td>
<td>82.8</td>
<td>21 pcus</td>
<td>47.8</td>
<td>8 pcus</td>
<td>84.5</td>
</tr>
<tr>
<td></td>
<td>- right</td>
<td>13.2</td>
<td>2 pcus</td>
<td>29.2</td>
<td>4 pcus</td>
<td>13.9</td>
<td>2 pcus</td>
<td>30.9</td>
</tr>
<tr>
<td>A4119 Llantrisant Rd</td>
<td>- left</td>
<td>27.0</td>
<td>4 pcus</td>
<td>13.4</td>
<td>2 pcus</td>
<td>28.9</td>
<td>4 pcus</td>
<td>14.4</td>
</tr>
<tr>
<td></td>
<td>- right</td>
<td>88.9</td>
<td>11 pcus</td>
<td>79.8</td>
<td>12 pcus</td>
<td>81.5</td>
<td>13 pcus</td>
<td>81.8</td>
</tr>
<tr>
<td>A4119 (n)</td>
<td>- left</td>
<td>23.7</td>
<td>&lt;1 pcu</td>
<td>28.2</td>
<td>2 pcus</td>
<td>24.3</td>
<td>&lt;1 pcu</td>
<td>29.5</td>
</tr>
<tr>
<td></td>
<td>- ahead</td>
<td>90.0</td>
<td>26 pcus</td>
<td>73.4</td>
<td>15 pcus</td>
<td>91.9</td>
<td>27 pcus</td>
<td>74.9</td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4119 (s)</td>
<td>- ahead</td>
<td>47.8</td>
<td>8 pcus</td>
<td>84.5</td>
<td>22 pcus</td>
<td>47.8</td>
<td>8 pcus</td>
<td>84.5</td>
</tr>
<tr>
<td></td>
<td>- right</td>
<td>13.4</td>
<td>2 pcus</td>
<td>29.8</td>
<td>4 pcus</td>
<td>13.9</td>
<td>2 pcus</td>
<td>30.9</td>
</tr>
<tr>
<td>A4119 Llantrisant Rd</td>
<td>- left</td>
<td>27.5</td>
<td>4 pcus</td>
<td>13.7</td>
<td>2 pcus</td>
<td>28.9</td>
<td>4 pcus</td>
<td>14.4</td>
</tr>
<tr>
<td></td>
<td>- right</td>
<td>90.6</td>
<td>12 pcus</td>
<td>81.5</td>
<td>12 pcus</td>
<td>81.5</td>
<td>13 pcus</td>
<td>81.8</td>
</tr>
<tr>
<td>A4119 (n)</td>
<td>- left</td>
<td>24.1</td>
<td>&lt;1 pcu</td>
<td>28.9</td>
<td>2 pcus</td>
<td>24.3</td>
<td>&lt;1 pcu</td>
<td>29.5</td>
</tr>
<tr>
<td></td>
<td>- ahead</td>
<td>91.9</td>
<td>28 pcus</td>
<td>74.9</td>
<td>15 pcus</td>
<td>91.9</td>
<td>27 pcus</td>
<td>74.9</td>
</tr>
<tr>
<td>2026</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4119 (s)</td>
<td>- ahead</td>
<td>51.4</td>
<td>9 pcus</td>
<td>97.1</td>
<td>36 pcus</td>
<td>54.8</td>
<td>10 pcus</td>
<td>97.1</td>
</tr>
<tr>
<td></td>
<td>- right</td>
<td>15.4</td>
<td>2 pcus</td>
<td>34.2</td>
<td>5 pcus</td>
<td>15.9</td>
<td>2 pcus</td>
<td>35.3</td>
</tr>
<tr>
<td>A4119 Llantrisant Rd</td>
<td>- left</td>
<td>31.5</td>
<td>5 pcus</td>
<td>15.8</td>
<td>2 pcus</td>
<td>33.0</td>
<td>5 pcus</td>
<td>16.4</td>
</tr>
<tr>
<td></td>
<td>- right</td>
<td>104.4</td>
<td>25 pcus</td>
<td>93.7</td>
<td>18 pcus</td>
<td>106.0</td>
<td>27 pcus</td>
<td>94.0</td>
</tr>
<tr>
<td>A4119 (n)</td>
<td>- left</td>
<td>28.2</td>
<td>1 pcu</td>
<td>34.2</td>
<td>2 pcus</td>
<td>28.5</td>
<td>1 pcu</td>
<td>34.9</td>
</tr>
<tr>
<td></td>
<td>- ahead</td>
<td>105.4</td>
<td>66 pcus</td>
<td>85.9</td>
<td>20 pcus</td>
<td>105.4</td>
<td>66 pcus</td>
<td>85.9</td>
</tr>
</tbody>
</table>

Table 6.3 Junction capacity analysis – A4119 Llantrisant Road/A4119 (Castell Mynach) traffic signal controlled junction

6.4.2  It can be seen from the table above that with the ‘all-red’ pedestrian stage, the existing junction has reached and exceeded its practical reserve capacity in the 2026 AM peak base scenario (i.e. with no development), with:

- a maximum degree of saturation of 106.0% on the A4119 Llantrisant Road approach in the AM peak period 2026 + development; and,
6.4.3 With the introduction of development generated traffic, there is a marginal increase in the degree of saturation (from 104.4 to 106%) on the A4119 Llantrisant Road approach. The maximum queue at the junction, in the base scenario, occurs on the A4119 (n) with 66 vehicles and this remains the same in the base + development scenario.

6.4.4 It should be noted that development traffic flows at this junction are very low. Less than 1% of all traffic at the junction is attributable to the development in the AM and PM peaks, for both the 2016 and 2026 scenarios.

6.5 A4119 Llantrisant Road/Croft Y Genau Road priority junction

6.5.1 The operation of the existing junction (see Figure 6.2) has been assessed, for each of the assessment periods, using the TRL program Junctions 8. The results of the analysis are presented in full in Appendix F, and summarised in Table 6.4 over the page.
<table>
<thead>
<tr>
<th>Arm</th>
<th>Movement</th>
<th>Base</th>
<th>Base + development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Movement</td>
<td>AM peak RFC Queue RFC Queue</td>
<td>AM peak RFC Queue RFC Queue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AM peak RFC Queue RFC Queue</td>
<td>AM peak RFC Queue RFC Queue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PM peak RFC Queue RFC Queue</td>
<td>PM peak RFC Queue RFC Queue</td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crofft Y Genau Rd</td>
<td>B-C (left)</td>
<td>0.17 &lt; 1 veh. 0.37 &lt; 1 veh.</td>
<td>0.18 &lt; 1 veh. 0.39 &lt; 1 veh.</td>
</tr>
<tr>
<td></td>
<td>B-A (right)</td>
<td>0.13 &lt; 1 veh. 0.21 &lt; 1 veh.</td>
<td>0.15 &lt; 1 veh. 0.22 &lt; 1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Rd</td>
<td>C-B</td>
<td>0.60 1 veh. 0.14 &lt; 1 veh.</td>
<td>0.62 2 vehs. 0.15 &lt; 1 veh.</td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crofft Y Genau Rd</td>
<td>B-C (left)</td>
<td>0.18 &lt; 1 veh. 0.38 &lt; 1 veh.</td>
<td>0.18 &lt; 1 veh. 0.39 &lt; 1 veh.</td>
</tr>
<tr>
<td></td>
<td>B-A (right)</td>
<td>0.14 &lt; 1 veh. 0.21 &lt; 1 veh.</td>
<td>0.15 &lt; 1 veh. 0.22 &lt; 1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Rd</td>
<td>C-AB</td>
<td>0.61 1 veh. 0.14 &lt; 1 veh.</td>
<td>0.62 2 vehs. 0.15 &lt; 1 veh.</td>
</tr>
<tr>
<td>2026</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crofft Y Genau Rd</td>
<td>B-C (left)</td>
<td>0.21 &lt; 1 veh. 0.46 1 veh.</td>
<td>0.21 &lt; 1 veh. 0.47 1 veh.</td>
</tr>
<tr>
<td></td>
<td>B-A (right)</td>
<td>0.19 &lt; 1 veh. 0.27 &lt; 1 veh.</td>
<td>0.20 &lt; 1 veh. 0.28 &lt; 1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Rd</td>
<td>C-AB</td>
<td>0.72 3 vehs. 0.17 &lt; 1 veh.</td>
<td>0.73 3 vehs. 0.17 &lt; 1 veh.</td>
</tr>
</tbody>
</table>

Table 6.4  Junction capacity analysis – A4119 Llantrisant Road/Croft y Genau priority junction

6.5.2 It can be seen from the table above that the existing junction has sufficient capacity to accommodate the proposed development up to and including the 2026 ‘with development’ scenario, with a maximum RFC of 0.73 and a queue of three vehicles on the A4119 Llantrisant Road (w) in the AM peak period.

6.6 A4119 Llantrisant Road/Clos Parc Radyr roundabout junction

6.6.1 The operation of the existing junction (see Figure 6.3) has been assessed, for each of the assessment periods, using the TRL computer program Junctions 8. The results of the analysis are presented in full in Appendix G, and summarised in Table 6.5 over the page.
<table>
<thead>
<tr>
<th>Arm</th>
<th>Base</th>
<th>Base + development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM peak</td>
<td>PM peak</td>
</tr>
<tr>
<td></td>
<td>RFC</td>
<td>Queue</td>
</tr>
<tr>
<td>Clos Parc Radyr</td>
<td>0.07</td>
<td>&lt; 1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (e)</td>
<td>0.34</td>
<td>1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (w)</td>
<td>0.34</td>
<td>1 veh.</td>
</tr>
<tr>
<td>Clos Parc Radyr</td>
<td>0.07</td>
<td>&lt; 1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (e)</td>
<td>0.34</td>
<td>1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (w)</td>
<td>0.35</td>
<td>1 veh.</td>
</tr>
<tr>
<td>Clos Parc Radyr</td>
<td>0.09</td>
<td>&lt; 1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (e)</td>
<td>0.40</td>
<td>1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (w)</td>
<td>0.40</td>
<td>1 veh.</td>
</tr>
<tr>
<td>Clos Parc Radyr</td>
<td>0.09</td>
<td>&lt; 1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (e)</td>
<td>0.41</td>
<td>1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (w)</td>
<td>0.43</td>
<td>1 veh.</td>
</tr>
</tbody>
</table>

Table 6.5  Junction capacity analysis – A4119 Llantrisant Road/Clos Parc Radyr roundabout

6.6.2 It can be seen from the table above that the existing junction has sufficient capacity to accommodate the proposed development up to and including the 2026 ‘with development’ scenario, with a maximum RFC of 0.59 and a queue of one vehicle on the A4119 Llantrisant Road (e) approach to the junction in the PM peak.

6.7 A4119 Llantrisant Road/B4262 roundabout junction

6.7.1 The operation of the existing junction (see Figure 6.4) has been assessed, for each of the assessment periods, using the computer program Junctions 8. The results of the analysis are presented in full in Appendix H, and summarised in Table 6.6 below.
### Table 6.6  Junction capacity analysis – A4119 Llantrisant Road/B4246 roundabout

6.7.2 It can be seen from the table above that the existing junction is operating at capacity, and that with increases in traffic (background traffic growth to 2016 and 2026) the operation of the junction deteriorates. It should be noted that as the RFCs exceed 1, the modelled queue lengths becomes unreliable and do not accurately reflect the queue lengths that would occur on the road network.

6.7.3 The level of development traffic using this junction is low, with only 3% of vehicle movements attributable to the development in the AM peak and 2.9% in the PM peak for the 2016 scenario. In 2026, only 2.5% of the vehicle movements at the junction are attributable to the development in the AM peak and 2.6% in the PM peak.

6.7.4 Modifications to this junction are not recommended as development traffic is a small proportion of the total traffic using this junction. In any event, full growth to 2026 is unlikely to be achieved given Cardiff’s strategy to increase travel by sustainable modes.
6.8 A4119 Llantrisant Road/Danescourt Way/Waterhall Road roundabout

6.8.1 The operation of the existing junction (see Figure 6.5) has been assessed, for each of the assessment periods, using the computer program Junctions 8. The results of the analysis are presented in full in Appendix I, and summarised in Table 6.7 over the page.
<table>
<thead>
<tr>
<th>Arm</th>
<th>2014 AM peak</th>
<th>2014 PM peak</th>
<th>2016 AM peak</th>
<th>2016 PM peak</th>
<th>2026 AM peak</th>
<th>2026 PM peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RFC</td>
<td>Queue</td>
<td>RFC</td>
<td>Queue</td>
<td>RFC</td>
<td>Queue</td>
</tr>
<tr>
<td>Danescourt Way</td>
<td>0.34</td>
<td>&lt; 1 veh.</td>
<td>0.36</td>
<td>&lt; 1 veh.</td>
<td>0.47</td>
<td>1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (e)</td>
<td>0.36</td>
<td>&lt; 1 veh.</td>
<td>0.53</td>
<td>1 veh.</td>
<td>0.46</td>
<td>2 vehs.</td>
</tr>
<tr>
<td>Waterhall Road</td>
<td>0.42</td>
<td>1 veh.</td>
<td>0.49</td>
<td>1 veh.</td>
<td>0.51</td>
<td>1 veh.</td>
</tr>
<tr>
<td>A4119 Llantrisant Road (w)</td>
<td>0.57</td>
<td>1 veh.</td>
<td>0.41</td>
<td>1 veh.</td>
<td>0.58</td>
<td>1 veh.</td>
</tr>
</tbody>
</table>

Table 6.7 Junction capacity analysis – A4119 Llantrisant Road/Danescourt Way/Waterhall Road roundabout

6.8.2 It can be seen from the table above that the existing junction has sufficient capacity to accommodate the proposed development up to and including the 2026 ‘with development’ scenario, with a maximum RFC of 0.65 and a queue of two vehicles on the A4119 Llantrisant Road (e) approach in the PM peak.

6.9 Summary

6.9.1 Given the major and strategic nature of the transport schemes proposed for Cardiff, particularly those in association with adjacent sites, it is inappropriate to assume that simply adding traffic growth will reliably predict the level of traffic using the highway network in the vicinity of the site in 2026. However, for the scale of the development and the likely number of trips associated with it, this technique, whilst simplistic, is sufficient to provide a general outline of any impacts related to the development.

6.9.2 Cardiff’s aspirations to achieve a 50% modal share by sustainable modes for all trips in order to maintain existing levels of congestion and vehicle journey times, despite the planned housing and employment growth, relies on peak hour flows remaining at existing levels.
6.9.3 Notwithstanding the above, it can be seen that to the east of the site heading into Cardiff, other than the A4117 Llantrisant Road/B4246 junction, the highway network has sufficient capacity to accommodate both growth and development related vehicle trips. The A4117 Llantrisant Road/B4246 junction is currently at capacity and its operation deteriorates when background traffic growth is added. Although it deteriorates further following the addition of development traffic, the proportion of development traffic at this junction is less than 3% in all scenarios.

6.9.4 To the west of the site, heading to Llantrisant, the traffic signals junction of Castell Mynach is currently operating at capacity and its operation deteriorates when background growth is added. However, it should be noted that development generated traffic equates to less than 1% of the total traffic flows through the junction.
7 TRANSPORTATION IMPLEMENTATION STRATEGY

7.1 Introduction

7.1.1 In accordance with TAN 18, a Transport Implementation Strategy needs to be included in the Transport Assessment process, which sets the objectives and targets relating to managing travel demand.

7.1.2 Table 7.1 over the page outlines the Transport Implementation Strategy for the proposed development, which provides additional details on the measures outlined in Section 4. These measures are organised into four categories, and include likely timescale for implementation. The four categories are:

- Speed reduction measures from 40mph to 30mph to reflect the changing character of the nature;
- Pedestrian and public transport user measures;
- Travel Plan; and,
- Car based user provision.
<table>
<thead>
<tr>
<th>Measures</th>
<th>Commentary</th>
<th>Timescale for implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Introduce a 30 mph zone fronting the site</td>
<td>This is likely to be a pre-commencement condition, with details submitted to and approved in writing by the local highway authority.</td>
<td>6-9 months to prepare, advertise and publish traffic (speed reduction) order</td>
</tr>
<tr>
<td>(i) Prepare traffic speed reduction order</td>
<td></td>
<td>To be installed following confirmation of the traffic order(s)</td>
</tr>
<tr>
<td>(ii) Provide terminal signs (sign diag. 674 and 675) at either end of the 30mph zone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iii) Provide 'roundels' (sign diag. 1065) at either end of the 30 mph zone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iv) Provide 'repeater' signs (sign diag. 670) throughout the 30mph zone</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B</strong> Introduce a 'gateway' feature at the western end of the 30mph speed limit</td>
<td></td>
<td>6-9 months to prepare, advertise and publish traffic (speed reduction) order</td>
</tr>
<tr>
<td>(i) Prepare appropriate traffic order(s)</td>
<td></td>
<td>To be installed following confirmation of the traffic order(s)</td>
</tr>
<tr>
<td>(ii) Construct 'gateway' feature</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pedestrian and public transport user provision</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>A</td>
<td>Provide a footway connection along the northern edge of the A4119 Llantrisant Road, in the vicinity of the site access, and provide dropped kerb crossing points with central pedestrian refuge across the A4119 Llantrisant Road, to the existing footway along the southern edge of the road.</td>
<td>This is likely to be a pre-commencement condition, with details submitted to and approved in writing by the local highway authority.</td>
</tr>
<tr>
<td>B</td>
<td>Provide a footway connection along the northern edge of the A4119 Llantrisant Road, in the vicinity of the junction with Heol St Y Nyll, and provide dropped kerb crossing points with central pedestrian refuge across the A4119 Llantrisant Road, to the existing footway along the southern edge of the road.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Provide a footway along Heol St Y Nyll (north of the A4119 Llantrisant Road) to connect the eastern section of the site with existing/proposed facilities along Llantrisant Road.</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Examine potential for the use of the adjacent disused railway as a sustainable transportation route.</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Improve passenger waiting facilities at existing bus stops at Heol St Y Nyll and Cardiff Road</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Increase service frequencies</td>
<td>Discussions with bus operator to establish level of initial subsidies to pump prime services for 3 years.</td>
</tr>
</tbody>
</table>
## Travel Plan

<table>
<thead>
<tr>
<th>A</th>
<th>Occupiers to adopt the principles within the outline Travel Plan</th>
<th>An over-arching Travel Plan will need to be submitted to and approved in writing by the local highway authority.</th>
<th>This will need to be completed prior to the beneficial occupation of the site.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i)</td>
<td>On-site traffic and parking management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ii)</td>
<td>Encouraging the use of more sustainable modes (walking, cycling and public transport)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iii)</td>
<td>Setting mode share targets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iv)</td>
<td>On-going monitoring</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Car based user provision

<table>
<thead>
<tr>
<th>A</th>
<th>Construct vehicular access to the western section of the site from the A4119 Llantrisant Road</th>
<th>This is likely to be a condition of consent, with details submitted to and approved in writing by the local highway authority.</th>
<th>This will be constructed prior to beneficial occupation of the site.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Divert Heol St Y Nyll in to the eastern section of the site, and construct a new priority junction to Heol St Y Nyll to the north.</td>
<td>This is likely to be a condition of consent, with details submitted to and approved in writing by the local highway authority.</td>
<td>This will be constructed prior to beneficial occupation of the site.</td>
</tr>
</tbody>
</table>
8 SUMMARY AND CONCLUSIONS

8.1 Summary

8.1.1 Asbri Transport has been appointed by Barratt Homes to produce a Transport Assessment in support of an outline planning application for up to a maximum of 100 dwellings on land at Creigiau Nurseries, Capel Llanilltern, Cardiff.

8.1.2 The site is located at Creigiau Nurseries, off Llantrisant Road, to the north west of Cardiff and north of the M4 near junction 33. It is situated on the outskirts of Cardiff, approximately 11km from the centre of the city, with neighbouring villages of Creigiau, Pentyrch and Groes-faen. It is anticipated that the site is capable of accommodating up to a maximum of 100 residential units, with 30% designated as affordable housing and 70% as open market housing.

8.1.3 It is considered that the proposed development of up to 100 residential dwellings on land adjacent to Llantrisant Road complies with relevant national and local land use and transport policies, as it will:

- Meet an identified significant need for housing including family homes and affordable homes;
- Encourage the use of public transport through supporting the provision of high quality public transport;
- Promote walking and cycling; and,
- Support necessary infrastructure improvements.

8.1.4 There are a number of candidate sites in close proximity to the development including Land North of Junction 33 and South of Creigiau. These schemes include residential, employment, education and other community uses. The Council has aspirations to achieve a 50% modal share by sustainable modes by 2026 across Cardiff, which will be funded by the Council together with contributions from the private sector. These significant transport enhancements include a public transport corridor to Cardiff, bus rapid transit, park and ride, measures to encourage walking and cycling and network management.
8.1.5 The layout of the site will be designed to ensure ease of pedestrian and cyclist access and will include links to the surrounding pedestrian and cycling networks. Access to the existing public transport network will be improved through funding to improve passenger waiting facilities and to increase service frequencies where required.

8.1.6 In order to access the two sections of the site, it is proposed to construct two vehicular and pedestrian accesses:

- An access from Llantrisant Road for the western area of the site approximately 50m south of the north western corner of the site at the location of the existing access; and,

- A new access from Heol St y Nyll for the eastern area of the site approximately 50m from its junction with Llantrisant Road.

8.1.7 The proposed access on to Llantrisant Road will be a simple priority junction with a ‘ghost-island’ right turn lane, providing a secure waiting area for right-turning traffic. As part of the access design, a pedestrian refuge will be included. This will provide an informal pedestrian crossing on Llantrisant Road to access the footway on the southern edge of the carriageway. For the access off Heol St y Nyll, it is proposed to divert Heol St y Nyll into the site with the northern section of Heol St y Nyll accessed via a simple priority junction.

8.1.8 It is predicted that the development could generate up to 125 vehicle movements (two-way) in the AM peak and up to 121 vehicle movements (two-way) in the PM peak.

8.1.9 Capacity assessments have been carried out at six existing junctions and the proposed site access, and the results of the assessments indicate:

- A4119 Llantrisant Road/site access priority junction has sufficient capacity to accommodate the predicted development traffic in 2016 (year of opening) and 2026 (year of opening + 10 year);

- A4119 Llantrisant Road/Heol St Y Nyll priority junction has sufficient capacity to accommodate the predicted development traffic in 2016 and 2026;
- A4119 Llantrisant Road/A4119 traffic signal controlled junction is currently operating at capacity and its operation deteriorates when background growth is added. However, development generated traffic accounts for less than 1% of the traffic using the junction;

- A4119 Llantrisant Road/Clos Parc Radyr roundabout has sufficient capacity to accommodate the predicted development traffic in 2016 and 2026;

- A4119 Llantrisant Road/B4246 roundabout is currently operating at capacity and the operation of the junction deteriorates with the addition of background traffic growth for 2016 and 2026. However, the development is responsible for less than 3% of the vehicle movements at this junction; and,

- A4119 Llantrisant Road/Danescourt Way/Waterhall Road roundabout has sufficient capacity to accommodate the predicted development traffic in 2016 and 2026.

8.2 Conclusion

8.2.1 In summary, it is considered that the existing highway network has sufficient capacity to accommodate the proposed development, with minimal increases in existing queues and delays for road users, other than the A4117 Llantrisant Road/B4246 junction and the Castell Mynach junction. The A4117 Llantrisant Road/B4246 junction is currently at capacity and its operation deteriorates when background traffic growth is added. Although it deteriorates further following the addition of development traffic, the proportion of development traffic at this junction is less than 3% in all scenarios. At the Castell Mynach junction, development generated traffic accounts for less than 1% of the traffic using the junction.

8.2.2 It is considered that the impact of the development can be further reduced through the provision of improvements and additions to the existing pedestrian network and funding for changes to public transport routes. The adoption of an effective Travel Plan will also increase the attractiveness of travelling by more sustainable modes and minimise any adverse impact of travel on the local environment.
8.2.3 The proposals for the candidate sites in the vicinity of the development, and their associated transport facilities and community amenities will ensure that the development is better placed for trips by sustainable modes.
Figures
Appendices