



MAMHILAD

ENVIRONMENTAL STATEMENT

CHAPTER 4

TRANSPORTATION AND ACCESS



Consultation Draft

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Consultation Draft

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4 Transportation and Access

4.1 Introduction

- 4.1.1 This chapter considers the environmental impact of the proposed development in terms of transportation and access. It has been prepared by Clarkebond on behalf Johnsey Estates UK (JEUK).
- 4.1.2 The site is located approximately 3km to the northeast of Pontypool and is bounded by the Old Abergavenny Road which passes immediately to the north and by the A4042 which passes immediately to the east. The northern section of the site is currently partly operational as office space and is accessed from the Old Abergavenny Road whilst the southern section of the site is currently comprised of disused office space and is accessed from the A4042. Principal routes to and from the site include the A472, Usk Road and The Highway as well as the A4042 and Old Abergavenny Road, each of which will experience an impact on the volume of traffic they carry, along with associated impacts, as a result of the proposed development.
- 4.1.3 A site description is provided in Chapter 2 of this ES. A general description of the site, the local highway network, pedestrian and cycle accessibility, proximity to local services and amenities, schools, employment, retail and leisure opportunities is included within the Transport Assessment (TA) which is included as Appendix 4.1 of this ES. Relevant information on these matters is also included in the consideration of baseline conditions in section 4.4 of this chapter.

4.2 Assessment Methodology

Scope

- 4.2.1 Torfaen County Borough Council's (TCBC) EIA Scoping Report identified that the following transportation and access issues should be investigated within the EIA/TA:
- The impact of development on all modes of transport including cycle and pedestrian movements to and from the site;
 - The impact of development on the surrounding trunk road junctions and links including the A472 through Little Mill and Usk;
 - The suitability of the canal tow path to cope with additional use from the proposed development and committed development at Sebastopol; and
 - The impact of the proposed development on existing Public Rights of Way.
- 4.2.2 The pertinent issues for the EIA in terms of transportation and access are the magnitude and consequence of changes within the study area as a result of the development on:
- Traffic Flow;
 - Accidents and Safety;
 - Severance;
 - Driver Delay;
 - Pedestrian and Cycle Delay;
 - Pedestrian and Cycle Amenity; and
 - Fear and Intimidation.

Study Area

- 4.2.3 The study area for the EIA in terms of transportation and access is outlined below for vehicular and non-vehicular modes.

Vehicular

- 4.2.4 The study area for vehicular modes comprises the highway network surrounding the site that is considered likely to bear a significant impact as a result of the proposed development. This area is defined by the following junctions and associated links:

- Mamhilad Park Estate (northern) Site Access with Old Abergavenny Road priority junction/roundabout;
- Old Abergavenny Road with A4042 roundabout;
- Parke-Davis (southern) Site Access with A4042 priority junction/roundabout;
- Usk Road with A4042 roundabout;
- The Highway with Usk Road mini-roundabout; and
- A472 with A4042 roundabout.

Non-Vehicular

- 4.2.5 The study area for non-vehicular modes has been formulated by considering a reasonable travel distance to facilities within Torfaen from the site. Guidance within *Manual for Streets* states that walking offers the greatest potential to replace short car trips for journeys under 2km whilst the *Chartered Institution of Highways and Transportation* state that cycling has the greatest potential to replace car journeys under 5km.
- 4.2.6 The areas that can be reached from each of the northern and southern centroids of the site are shown in the Transport Assessment at Appendix 4.1.
- 4.2.7 The non-vehicular assessment includes an assessment of the journeys to key facilities within the study area which will be accessed by users of the development by foot or cycle. This includes the town centre, the train station, employment areas and health facilities.

Temporal Scope

- 4.2.8 Traffic surveys were carried out in October 2015 for the links and junctions identified in the study area. Growth factors have been obtained using TEMPRO software in order to determine future year baseline traffic flows. The assessment year for the proposed development is 2028 which is to be assessed for the 'with development' and 'without development' scenarios for comparison.
- 4.2.9 Recorded Personal Injury Accidents (PIAs) for the five year period 1st April 2011 to 31st March 2016 have been obtained from Capita Symonds who compile this information on behalf of Gwent Police and TCBC.

Consultation

- 4.2.10 Table 4.1 below summarises the consultations that have been carried out, in particular reference to the Transport Assessment and the traffic and transportation section of the EIA.

Table 4.1: Consultations

Consultees	Comments of Consultees and Date Responded	Response in EIA
TCBC & Welsh Government	i) Meeting 19th March 2015 - agreement of access principles	i) access proposals developed with reference to consultations
Welsh Government	i) Meeting 8th February 2016 - agreement of Transport Assessment Scoping ii) Meeting 18th April 2016 - progress of A4042 access proposals iii) Meeting 5th September 2016 - progress of Transport Assessment	i) Transport Assessment carried out in accordance with scope ii) access designed in accordance with WG requirements iii) Final agreement of A4042 access proposals
TCBC	i) Meeting 7th March 2016 - agreement of Transport Assessment Scoping ii) Meeting 6th September 2016 - progress of Transport Assessment	i) Transport Assessment carried out in accordance with scope ii) Access requirements for old Abergavenny Road discussed

- 4.2.11 This consultation enabled the transport related issues to be identified and agreement to be reached regarding the scope of the Transport Assessment at an early stage.
- 4.2.12 In advance of the planning application being prepared, a series of Technical Notes regarding issues such as Access Strategy, Trip Generation Methodology, Trip Distribution and Walking & Cycling Accessibility have been submitted to Highway Officers at TCBC and Welsh Government in order to resolve as many highways and transportation issues as possible.
- 4.2.13 Discussions in respect of layout and access have been carried out with Highways Officers from as early as February 2015 and have been ongoing on a regular basis.

Sources of Baseline Information

- 4.2.14 The sources of baseline information are included in Table 4.2.

Table 4.2: Sources of Baseline Information

Baseline Topic	Data Source	Date
Weekday Manual Classified Turning Count Traffic Surveys	PCC Traffic Information Consultancy (independent traffic survey specialist, appointed by Clarkebond)	October 2015
Seven Day Automatic Traffic Count Surveys	PCC Traffic Information Consultancy	October 2015
Highway Boundary Information	TCBC	November 2015
Personal Injury Accident Data	TCBC	March 2016
Land Ownership Information	Welsh Government	February 2016
Bus Service Information	Local Bus Operators' Websites	Data collected between 2015 to present
Train Service Information	Published National Rail Timetables	Data collected between 2015 to present
Pedestrian Information	TCBC Website	Data collected between 2015 to present
Cycle Information	Sustrans Interactive Map	Data collected between 2015 to present
Base Mapping	Ordnance Survey	Unknown
Topographical Survey	Azimuth Land Surveys Limited	July 2007

4.3 Legislative and Policy Context

4.3.1 The transportation and access aspects of this scheme have been carried out in accordance with the Institute of Environmental Assessment's *IEA Guidelines for the Environmental Assessment of Road Traffic*, the Department for Transport's (DfT) *Guidance on Transport Assessments*, and *Design Manual for Roads and Bridges (DMRB)*.

4.3.2 The proposals have also been considered in the context of the following documents:

- Manual for Streets (MfS) (DfT, 2007);
- Planning Policy Wales - Edition 9 (Welsh Government, November 2016)
- Wales Spatial Plan – People, Places, Futures (Welsh Government, 2008)
- One Wales: Connecting the Nation - The Wales Transport Strategy (Welsh Government, 2008)
- National Transport Plan (Welsh Government, 2010)
- Torfaen Local Development Plan (TCBC, 2013)

4.3.3 The principal goal of the policy contained within these documents is to reduce car dependency by making walking and cycling trips easier and by encouraging public transport trips between housing and jobs, shops and services.

4.4 Baseline Conditions

Traffic Flows

- 4.4.1 In order to understand the impact of the proposed development on the transportation and access issues covered by this chapter, manual classified turning counts were carried out at the following four junctions in the vicinity of the proposed development, to determine baseline flows at the relevant junctions and on the relevant links.
- Old Abergavenny Road with A4042 roundabout;
 - Usk Road with A4042 roundabout;
 - The Highway with Usk Road mini-roundabout; and
 - A472 with A4042 roundabout.
- 4.4.2 All of the identified junctions were surveyed on Tuesday 6th October 2015 in the AM Peak period of 07:30 to 09:30 and the PM Peak period of 16:30-18:30. The A4042/ A472 junction was re-surveyed on Wednesday 25th May 2016 in the AM Peak period of 07:00 to 10:00 and the PM Peak period of 16:00 to 19:00 to include queue surveys which were considered necessary given the critical nature of this junction.
- 4.4.3 The AM and PM peak hours have been found to be 07:45-08:45 and 16:30-17:30 respectively.
- 4.4.4 In addition to the manual classified turning counts, two Automatic Traffic Counts (ATCs) were carried out at the following locations to determine daily and weekly traffic profiles as well as vehicle speeds.
- Old Abergavenny Road between the Mamhilad Park Access and the Industrial Estate Access opposite and to the north; and
 - A472 Berthin Road between its junction with the A4042 Usk road and the village of Little Mill.
- 4.4.5 The ATC on Old Abergavenny Road was carried out between the 6th and 12th October 2015 whilst the ATC on the A472 Berthin Road carried out between the 24th and 30th May 2016.
- 4.4.6 Given that the proposed development is mixed-use and is comprised of residential as well as employment and commercial land uses, the daily profile of traffic generated from the site is expected to approximately match the profile of the background traffic whilst the greatest absolute impact on the local highway network will be felt in the AM and PM peak hours. Consequently the junctions on the local highway network have been assessed for the AM and PM peak hours whilst the links on the local highway network have been assessed for the 18hr (0600-2400) period.
- 4.4.7 The AM and PM peak hour flows have been used as they were recorded for junction assessments.
- 4.4.8 The 18hr flows used for link assessments have been calculated by applying a factor to the recorded AM and PM peak hour flows. There is a DfT Annual Average Daily Traffic (AADT) count on the A4042 between the Usk Road and A472 roundabouts which gives the AADT for 24hr periods only and includes data up to 2014. This has been multiplied by a 2014-to-2015 growth factor and then by a 24-to-18hr factor which has been obtained from the ATC on Old Abergavenny Road. Using the recorded AM and PM peak hour flows a factor has been derived which relates the recorded AM and PM peak hour flow to the recorded DfT 18hr flow. This factor has been used to scale the AM and PM peak hour flows across the local highway network to 18hr flows.
- 4.4.9 Traffic flow diagrams showing the recorded turning movements at each assessed junction are shown on Figure 4.5 for the AM peak hour and Figure 4.6 of Appendix 4.1 for the PM peak hour.
- 4.4.10 A traffic flow diagram showing the estimated 24hr directional flows on each assessed link are shown on Figure 4.7 of Appendix 4.1.
- 4.4.11 A traffic flow diagram showing the estimated 18hr directional flows on each assessed link are shown on Figure 4.8 of Appendix 4.1.

Driver Delay

- 4.4.12 Driver delay at the assessed junctions has been calculated using the industry standard ARCADY roundabout assessment software. The maximum delay in minutes per vehicle for each assessed roundabout, for each of the AM and PM peaks, is shown in Tables 4.3 to 4.6.

Table 4.3: ARCADY assessment of Old Abergavenny Road/ A4042 roundabout 2028 baseline

Approach	Maximum Delay in Seconds per Vehicle	
	AM Peak Hour	PM Peak Hour
A4042 North	2.05	3.72
Unnamed Road	4.73	19.20
A4042 South	1.92	1.43
Old Abergavenny Road	2.49	3.49

Table 4.4: ARCADY assessment of Usk Road/ A4042 roundabout 2028 baseline

Approach	Maximum Delay in Minutes per Vehicle	
	AM Peak Hour	PM Peak Hour
A4042 North	2.82	6.03
A4042 South	2.47	2.57
Usk Road	4.22	2.81

Table 4.5: ARCADY assessment of The Highway/ Usk road mini-roundabout 2028 baseline

Approach	Maximum Delay in Minutes per Vehicle	
	AM Peak Hour	PM Peak Hour
Usk Road East	4.63	6.01
The Highway	10.49	6.48
Usk Road West	4.28	3.21

Table 4.6: ARCADY assessment of A472/ A4042 roundabout 2028 baseline

Approach	Maximum Delay in Minutes per Vehicle	
	AM Peak Hour	PM Peak Hour
Lower Mill	9.85	7.82
A4042 North	605.74	1292.74
Services	6.40	5.01
A4042 South	527.76	566.52
Skewfields	16.08	60.74
A472	1080.30	955.77

- 4.4.13 There is a minimal amount of delay at each of the assessed junction with the exception of the A472/ A4042 roundabout at which significant delays exist on particular approaches.

Accidents and Safety

- 4.4.14 Recorded Personal Injury Accidents (PIAs) for the five year period 1st April 2011 to 31st March 2016 have been obtained from Capita Symonds who compile this information on behalf of Gwent Police and TCBC. The

accident reports supplied by Capita Symonds have information such as the age of drivers involved and suspected contributory factors redacted in line with Gwent Police policy.

4.4.15 These PIA reports have been assessed for the highway network of interest. The highway network of interest is defined by the six assessed junctions and their approaches as well as the links which are contained by these junctions. These junctions and links are as follows:

- Junction - A4042/ Old Abergavenny Road Roundabout
- Junction - A4042/ Usk Road Roundabout
- Junction - A4042/ A472W Roundabout
- Junction - Usk Road/ The Highway Mini-Roundabout
- Link - O.A.R between A4042 Roundabout and Northern Primary Priority Junction Access
- Link - O.A.R. between Northern Primary Priority Junction Access and Northern Secondary Priority Junction Access
- Link - A4042 between A472E Priority Junction and O.A.R. Roundabout
- Link - A4042 between O.A.R. Roundabout and Southern Access Roundabout
- Link - A4042 between Southern Access Roundabout and Usk Road Roundabout
- Link - A4042 between Usk Road Roundabout and A472W Roundabout
- Link - Usk Road between A4042 Roundabout and The Highway Mini-Roundabout

4.4.16 PIAs are classed as Fatal, Serious or Slight and comprise of one or more casualties. A summary of PIAs by link and junction is provided in Table 4.7.

Table 4.7: Recorded Personal Injury Accidents (PIAs) 1st April 2011 - 31st March 2016

Reference Date	Description	Link/Junction	Casualties		
			Fa	Se	SI
Junction - A4042/ Old Abergavenny Road Roundabout					
00194/12 Apr 2012	Car has collided with rear of another car which had stopped suddenly to give way to circulating traffic at roundabout	A4042 S-bound approach			1
00005/13 Jan 2013	Car has collided with rear of another car which has stopped at give way	A4042 N-bound approach			1
00462/13 Aug 2013	Motorcycle has braked suddenly to avoid another vehicle resulting in rider falling from bike	A4042 S-bound approach		1	
Junction - A4042/ Usk Road Roundabout					
00784/ 13 Oct 2013	Car has lost control on entry to roundabout and collided with central island	Central island			1
00625/14 Sep 2014	Motorcycle has lost control on entry to roundabout and collided with car already on circulatory carriageway	Circulatory carriageway			1

00681/14 Nov 2014	Car has collided with rear of another car which was stopped at the give way of the roundabout	A4042 S-bound approach			3
Junction - A4042/ A472W Roundabout					
00305/11 May 2011	Car has collided with rear of another car in slow moving traffic on approach to roundabout	A4042 N-bound approach			1
00668/11 Dec 2011	Car has collided with another car after moving into nearside lane on approach to Heron roundabout	A4042 N-bound approach			2
00181/12 Apr 2012	Car has collided with rear of another car which was slowing on approach to roundabout in the presence of roadworks which were slowing traffic	A4042 S-bound approach			1
00258/12 May 2012	Motorcycle has collided with offside front of car after attempting overtake on circulatory carriageway but failing to realise intended turning movement of car	Circulatory carriageway	1		
00246/12 Jun 2012	Car has collided with rear of HGV on circulatory carriageway of roundabout after failing to give way	A4042 S-bound approach			1
00362/12 Jun 2012	Car has collided with motorcycle after both attempting to exit roundabout using same lane	A4042 S-bound exit			1
00301/12 Jul 2012	Vehicle of unknown type has collided with car after changing lane on circulatory carriageway	Circulatory carriageway			1
00516/12 Sep 2012	Car has collided with side of another car already on circulatory carriageway immediately after entering roundabout	Circulatory carriageway		1	
00578/12 Oct 2012	Car has collided with another car on circulatory carriageway for unknown reason	Circulatory carriageway			1
00638/12 Nov 2012	Car has collided with rear of another car which has slowed on approach to roundabout	A4042 S-bound approach			2
00108/13 Feb 2013	Motorcycle has collided with car on circulatory carriageway for unknown reason	Circulatory carriageway		1	
00339/13 Feb 2013	Car has collided with another car on circulatory carriageway for unknown reason	Circulatory carriageway			1
00504/13 Sep 2013	Mobility scooter collided with car which collided with another car which was stopped for traffic	A4042 N-bound approach			1
00522/13 Sep 2013	Car overtaking on nearside has collided with car slowing for traffic for unknown reason	A4042 N-bound approach			1
00532/13 Sep 2013	Car has collided with motorcycle for unknown reason	A4042 S-bound approach			1
00878/13 Nov 2013	Car has collided with another car which has braked suddenly in slow moving traffic	A4042 S-bound approach			1
00413/14 Jan 2014	Car has collided with another car already on circulatory carriageway immediately after entering roundabout	Circulatory carriageway			1

00420/14 Jan 2014	Car has collided with LGV already on circulatory carriageway immediately after entering roundabout	Circulatory carriageway			1
00121/14 Mar 2014	Police car on emergency call has collided with car on circulatory carriageway which has failed to give way	Circulatory carriageway			1
00521/14 Apr 2014	Mobility scooter has collided with rear of car which was slowing to give way to queuing traffic	A4042 N-bound approach			1
00762/14 Apr 2014	Car has collided with rear of another car which was slowing on approach to roundabout	A4042 N-bound approach			1
00238/14 May 2014	Car travelling at speed has collided with near side of another car on circulatory carriageway	Circulatory carriageway			2
00255/14 May 2014	Car has collided with another car already on circulatory carriageway immediately after entering roundabout	Circulatory carriageway			1
00583/14 Sep 2014	Car making right turn has collided with minibus moving straight ahead after being in wrong lane	Circulatory carriageway			1
00605/14 Sep 2014	LGV making right turn has collided with car moving straight ahead after being in wrong lane	Circulatory carriageway			1
00735/14 Sep 2014	Car has collided with another car whilst exiting roundabout for unknown reasons	A4042 S-bound exit			1
00759/14 Sep 2014	Car has collided with another car immediately after entering roundabout for unknown reason	Circulatory carriageway			1
00134/15 Mar 2015	Car has collided with another car after changing lanes on roundabout	Circulatory carriageway			1
00193/15 Apr 2015	Motorcycle has collided with car after changing lanes on roundabout	Circulatory carriageway			1
00285/15 Apr 2015	Car has collided with another car which has slowed for congestion on approach to roundabout	A4042 N-bound approach			1
00323/15 May 2015	Car has collided with motorcycle whilst exiting roundabout causing rider to fall from bike	A4042 S-bound exit			1
00627/15 Jun 2015	Car has collided with motorcycle on circulatory carriageway of roundabout for unknown reason	Circulatory carriageway			1
00423/15 Aug 2015	Car travelling at excessive speed in wet conditions has collided with rear of another car immediately after exiting roundabout	A4042 S-bound exit			1
00617/15 Oct 2015	Car has collided with rear of another car which has collided with rear of another car which has slowed for congestion on approach to roundabout	A4042 S-bound approach			2
00102/16 Mar 2016	Car has collided with another car already on circulatory carriageway immediately after entering roundabout	Circulatory carriageway			1
Junction - Usk Road/ The Highway Mini-Roundabout					
-	-	-	-	-	-

Link - O.A.R between A4042 Roundabout and Northern Primary Priority Junction Access					
-	-	-	-	-	-
Link - O.A.R. between Northern Primary Priority Junction Access and Northern Secondary Priority Junction Access					
-	-	-	-	-	-
Link - A4042 between A472E Priority Junction and O.A.R. Roundabout					
00404/11 Jul 2011	Motorcycle controlled by intoxicated driver has lost control before colliding with central reservation	Approx 100m NE of Mamhilad roundabout		1	
Link - A4042 between O.A.R. Roundabout and Southern Access Roundabout					
-	-	-	-	-	-
Link - A4042 between Southern Access Roundabout and Usk Road Roundabout					
-	-	-	-	-	-
Link - A4042 between Usk Road Roundabout and A472W Roundabout					
00735/13 Nov 2013	Car has collided with pedal cycle whilst overtaking on nearside lane	Approx 500m N of Pontypool roundabout			1
00105/16 Feb 2016	Motorcycle has braked and skidded causing rider to fall from bike to avoid car which has changed lanes in front	Approx 600m N of Pontypool roundabout		1	
Link - Usk Road between A4042 Roundabout and The Highway Mini-Roundabout					
-	-	-	-	-	-
Totals			1	5	44
			50		

Notes: Fa = Fatal, Se = Serious, Sl = Slight

- 4.4.17 A total of 50 people have suffered personal injury as a result of 44 recorded accidents on the highway network of interest during the specified time period. Of these 50 casualties, 44 were slight, five were serious and one was fatal.
- 4.4.18 At the Pontypool roundabout, there were 35 recorded accidents which makes up the majority of the accidents which occurred on the entire highway network of interest. These accidents have mostly involved rear end shunts on approach to the roundabout, collisions between entering and circulatory traffic, and collisions between circulatory traffic. Most of the 39 casualties from the accidents that occurred at Pontypool roundabout were slight, however two casualties were serious and one was fatal. Both serious accidents involved a collision on the circulatory carriageway with the first being between a car and another car, whilst the second was between a car and a motorcycle.
- 4.4.19 The fatal accident at Pontypool roundabout involved a small motorcycle (50cc-125cc) entering the roundabout on the wrong lane for its intended turning movement (motorcycle entered roundabout on A472 offside lane and intended to turn left). The motorcycle attempted to take the first exit from the roundabout but crossed the path of a car which was attempting to turn right from the A472 to the A4042 southbound to do so. This resulted in a collision during which the car driver was uninjured but the motorcycle rider was fatally injured.
- 4.4.20 At the Court Farm and Mamhilad roundabouts, there have been three recorded incidents at each which have resulted in eight casualties of which all have been slight apart from one serious casualty. The serious accident involved a motorcycle forced to stop suddenly to give way to another vehicle which resulted in the rider falling from his bike and sustaining serious injury.
- 4.4.21 At the A4042/A472 Little Mill priority junction there have been eight recorded incidents, all but one of which involved a vehicle turning right from the A4042 to the A472 towards Little Mill colliding with southbound traffic

on the A4042. These seven accidents resulted in 16 slight and one serious casualty with one of these accidents involving a car overturning following collision.

- 4.4.22 A total of three accidents have occurred on the links which make up the highway network of interest with all of these occurring on the A4042. These accidents have resulted in one slight and two serious injuries which all involved either pedal cycles or motorcycles.
- 4.4.23 Further details of the recorded PIAs as supplied by Capita Symonds, with accident location plot, are included in the Transport Assessment (Appendix 4.1).
- 4.4.24 The expected safety record of each junction and link has been calculated in accordance with the COBA Manual (DMRB Volume 13, Section 1, Chapter 4). This predicts accident rates for junctions and links in accordance with formulas which relate the different junction and link types to the traffic demand on them. The existing safety record of the highway network of interest has been assessed in relation to the expected safety record of the junctions and links of which it is composed with the results shown by Table 4.8.

Table 4.8: Existing Expected Number of Accidents Vs Existing Actual Number of Accidents

Junction/ Link	Expected Number of Accidents (per year)	Actual Number of Accidents (per year)	Difference (Actual-Expected)
Junction - A4042/ Old Abergavenny Road Roundabout	0.9565	0.6	-0.3565
Junction - A4042/ Usk Road Roundabout	1.0142	0.6	-0.4142
Junction - A4042/ A472W Roundabout	5.1401	7.0	1.8599
Junction - Usk Road/ The Highway Mini-Roundabout	0.4029	0.0	-0.4029
Link - O.A.R between A4042 Roundabout and Northern Primary Priority Junction Access	0.0002	0.0	-0.0002
Link - O.A.R. between Northern Primary Priority Junction Access and Northern Secondary Priority Junction Access	0.0001	0.0	-0.0001
Link - A4042 between A472E Priority Junction and O.A.R. Roundabout	0.0035	0.2	0.1965
Link - A4042 between O.A.R. Roundabout and Southern Access Roundabout	0.0043	0.0	-0.0043
Link - A4042 between Southern Access Roundabout and Usk Road Roundabout	0.0028	0.0	-0.0028
Link - A4042 between Usk Road Roundabout and A472W Roundabout	0.0066	0.4	0.3934
Link - Usk Road between A4042 Roundabout and The Highway Mini-Roundabout	0.0017	0.0	-0.0017
Total	7.5362	8.8	1.2638

- 4.4.25 All assessed junctions have a better safety record than expected, given their junction types and traffic demand on them. This is with the exception of the A4042/ A472 Roundabout which has a slightly worse safety record than expected.
- 4.4.26 Most assessed links have a better safety record than expected with the exception of the A4042 for two of its assessed sections. However, the assessed link sections are short and hence just one or two accidents over a five year period can be the difference between a link performing better or worse than expected in terms of its safety record.
- 4.4.27 In total the expected number of accidents for the highway network of interest is 7.5 per year. The actual number of accidents on the highway network of interest is 8.8 per year. This is largely due to the worse than expected safety performance of the A4042/ A472W Roundabout.

Severance

- 4.4.28 Community severance is a relative measure, both the baseline and the development scenarios are considered in the Assessment of Potential Effects section of this chapter (section 4.5) for ease of cross reference. The significance is defined in Table 4.9 below.

Table 4.9 definitions of parameters of impact significance of severance

Impact Significance			
Major	Moderate	Minor	Negligible
People are likely to be deterred from making a trip to an extent sufficient enough to include a re-organisation of their habits or considerable hindrance will be caused to people making journeys. E.g.	Some residents, particularly children and elderly people are likely to be dissuaded from making trips. Other trips will be made longer and less attractive. E.g.	In general, the current journey pattern is likely to be maintained, but there will probably be some hindrance to movement. E.g.	Generally, the current journey pattern is likely to be maintained with very little hindrance to movement E.g.
1. At grade pedestrian crossing of a road carrying over 16,000 vehicles a day during the assessment year.	1. At grade pedestrian crossing of a road carrying between 8,000 -16,000 vehicles per day during the assessment year.	1. At grade pedestrian crossing of the road carrying between 4,000 and 8,000 vehicles per day during the assessment year.	1. At grade pedestrian crossing of a road carrying below 4,000 vehicles a day during the assessment year.
2. An increase in journey length of over 500m	2. An increase in journey length between 250-500m	2. An increase in journey length between 50-250m	
3. Change in traffic flow of 90% or more	3. Changes in traffic flow between 60-90%	3. Changes in traffic flow between 30-60%	2. An increase in journey length up to 50m.
4. Three or more of the hindrances set out under 'minor' or two or more set out under 'moderate'	4. Two or more hindrances set out under 'minor'	4. A new bridge will be needed to be climbed or subway traversed.	

- 4.4.29 Table 4.10 below gives a brief overview of the baseline conditions of severance which can only be assessed against baseline traffic flows and not with the increase in journey length or change in flow. A more accurate representation of severance is provided in the assessment of impact significance.

Table 4.10 impact significance of severance in the baseline scenario

Route	Baseline scenario
Old Abergavenny Road	Minor -ve
A4042	Major -ve
Usk Road	Moderate -ve
Berthin Road A472	Moderate -ve

Pedestrian and Cycle Delay

- 4.4.30 The A4042 passes immediately to the east of the site and causes severance between origins and destinations which are on opposite sides. There are no pedestrian or cycle crossing facilities across the A4042 in the vicinity of the site beyond some hard surfacing which leads to the edge of the carriageway and

over the central reservation at specific locations. These locations are to the north of the site close to the A472 priority junction, adjacent to the northern section of the site either side of the Old Abergavenny Road roundabout and adjacent to the southern section of the site close to the Pen-Y-Llan Lane junction.

- 4.4.31 To the east of the A4042 and within 2km walking distance or 5km cycling distance are facilities such as Little Mill village, Wain-Y-Clare public house (now vacant) and the south-bound bus stops on the A4042. Whilst it would be inadvisable for pedestrians to cross the A4042 or cyclists to use the carriageway given the speed and volume of traffic present, it is likely that these facilities do currently generate trips to and from the development site and as such these journeys will be assessed.
- 4.4.32 Facilities of note which are within 2km walking distance of the site but do not suffer from A4042 severance between themselves and the site include only the Star Inn on Old Abergavenny Road and the Horse & Jockey Inn on Usk Road. Facilities within a 5km cycling distance include Pontypool & New Inn Station, Polo Grounds Industrial Estate, Torfaen County Hospital and the centre of Pontypool itself including all the amenities located there.
- 4.4.33 The existing pedestrian and cycle journey lengths as well as the road crossing delay associated with the journey has been determined between the site and the locations mentioned above. The most appropriate route to each location has been derived with cyclists using a combination of cycle routes, shared footway/cycleways and local roads.
- 4.4.34 The delay caused to pedestrians and cyclists has been calculated with reference to guidance contained within DMRB Vol 11, Section 3, Part 8 - Figure 1 which graphs the relationship between traffic volume and speed, and crossing delay. The crossing delay to pedestrian journeys to relevant facilities is shown in Table 4.11 below.
- 4.4.35 It should be noted that pedestrian delays of over 25 seconds are described as such because the delay extends beyond the range of measurements in Figure 1 of DMRB as referred to above.

Table 4.11: Baseline 2028 Pedestrian Journey delays

Service/ Facility	From Northern Section of Site		From Southern Section of Site	
	Distance	Delay (seconds)	Distance	Delay (seconds)
Bus Stop: Waun-Y-Clare Inn N-bound	470	3	970	3
Bus Stop: Waun-Y-Clare Inn S-bound	510	+25	820	+25
Bus Stop: Cwmoody Cottage (N-bound)	970	0	190	0
Bus Stop: Cwmoody House (S-bound)	1200	+25	220	+25
Wain-Y-Clare Public House	680	+25	970	+25
The Star Inn	1200	0	2100	0
Horse & Jockey Inn	2000	0	1000	0
Little Mill village	1600	+25	2100	+25

- 4.4.36 Table 4.11 shows that many amenities are within a route that does not require a crossing and therefore no delays are suffered. It also shows that there are some locations which would require a crossing of the A4042 which would cause long delays (i.e. over 25 seconds) at peak times.
- 4.4.37 The crossing delay to cycle journeys to relevant facilities is shown by Table 4.12 below.

Table 4.12: Baseline 2028 Cycle Journey delay

Service/ Facility	From Northern Section of Site		From Southern Section of Site	
	Distance	Delay (seconds)	Distance	Delay (seconds)
Wain-Y-Clare Public House	680	+25	970	+25
The Star Inn	1200	0	2100	0
Horse & Jockey Inn	2000	0	1000	0
Little Mill village	1600	+25	2100	+25
Pontypool & New Inn Station	3600	5	2700	5
Polo Grounds Industrial Estate	4000	10	3100	10
Torfaen County Hospital	4200	+25	3300	+25
Pontypool Town Centre	4400	0	3500	0

4.4.38 Table 4.12 shows similar results to table 4.11 with many journeys experiencing no delays and many others experiencing long ones. A noteworthy journey is to Pontypool and New Inn Station, which requires a crossing of Usk Road only and therefore only experiences a delay of five seconds at peak times. The journey to the Polo Grounds Industrial estate is also a noteworthy journey which requires a crossing of Usk Road and The Highway and which results in a 10 second delay at peak times.

4.4.39 Most local sites are accessible from the west side of the A4042 therefore no crossing is required, however for the sites that are located on the east of the A4042 the road will take a considerable amount of time to cross during peak periods. Some destinations which are to the west of the A4042 but further south can be accessed without having to cross the A4042, such as the Polo Ground Industrial Estate and the Pontypool and New Inn Station. Facilities including Torfaen County Hospital and Pontypool Town Centre are accessible from the site but require crossing carriageways outside of the study area, therefore their scores reflect the crossing delay experienced by users from crossing only those links which are within the study area.

Pedestrian and Cycle Amenity

4.4.40 The value of a route should not be considered solely in terms of the quantity and frequency of use; the amenity or the relative pleasantness of a journey should be considered. The pedestrian and cycle amenity of Old Abergavenny Road, the A4042 and Usk Road has been assessed as well as the amenity of the Monmouthshire & Brecon Canal towpath.

4.4.41 Amenity is quantified on a four point scale: very good, good, poor and very poor.

Old Abergavenny Road

4.4.42 Old Abergavenny Road is a predominately rural road and has a 2016 baseline 18hr flow of approximately 6,100 vehicles at its southernmost point. The vast majority of these vehicles use Old Abergavenny Road to access the employment sites at its southern end with very few continuing further north than Mamhilad Park Estate's secondary access. This means that at its southernmost point the road is quite heavily trafficked, particularly during peak periods, but lightly trafficked as it heads north beyond the employment sites.

4.4.43 Footways approximately 1.5m wide are provided on each side of Old Abergavenny Road north of its A4042 roundabout until it meets the Mamhilad Park access on the eastern side with this section of the road the only to be provided with street lighting. Heading north from the Mamhilad Park access, a footway is provided on

the western side of the road only with this terminating as it meets Mamhilad Park Estate's secondary access on the western side. No specific pedestrian facilities are provided north of the employment site accesses at the southern end of the road however pedestrians and cyclists do benefit from a wide carriageway and low vehicle flows for this stretch with pedestrians observed to use the carriageway here during site visit.

- 4.4.44 Despite passing adjacent to employment sites at its southern end, Old Abergavenny Road is bound by trees, hedges and greenery on either side which disguise its commercial setting. North of the employment sites, the route is safe for pedestrians and cyclists in spite of the lack of designated facilities and the rural nature of the area here provides for a pleasant journey.
- 4.4.45 The amenity of Old Abergavenny Road in the vicinity of the site is considered to be good for both pedestrians and cyclists for its southernmost stretch and good as it heads north beyond the employment sites.

A4042

- 4.4.46 The A4042 is a trunk road and has a 2028 baseline 18hr flow of approximately 29,000 vehicles immediately south of its Old Abergavenny Road roundabout and 25,000 vehicles immediately north. It has a baseline of 22,000 south of the Parke-Davis site entrance and 29,000 north. The Usk Road roundabout has a baseline flow of 22,000 south and 29,000 north.
- 4.4.47 Footways approximately 1.5m wide but overgrown in places are provided on the A4042's western side from its Usk Road junction to its A472 junction with this stretch of the road also provided with street lighting. The footways are set back from the edge of carriageway to account for the high volume and speed of vehicles here. Whilst the setback footway is not specifically designated as a cycle route, it is likely that cyclists would use this footway rather than the carriageway which is inappropriate for use by cyclists. The width of the footway and the overgrown and uneven nature of it does not make it an ideal cycle route currently.
- 4.4.48 The A4042 provides no pedestrian-priority crossing points with hard surfacing provided at informal crossing points only. It is therefore considered unsafe for pedestrians and cyclists to cross the A4042 given the volume and speed of vehicles. The 1.5m footpath that runs the length of the road is being used as an informal cycle route by those who believe it is safer than the carriageway.
- 4.4.49 The A4042 provides for only a small number of pedestrians and cyclists given that it does not provide access between many facilities that are within walking or cycling distance of one another. Despite providing pedestrian facilities, the A4042 is a busy trunk road and as such safety, noise and air quality concerns reduce the amenity of the route. Cyclists would not be advised to use the carriageway however off-road provision for cyclists is poor.
- 4.4.50 The amenity of the A4042 in the vicinity of the site is considered to be poor for both pedestrians and cyclists.

Usk Road

- 4.4.51 Usk Road is a B-road with 2028 baseline 18hr flow of approximately 7,800 vehicles between its junctions with the A4042 and The Highway.
- 4.4.52 A footway of approximately 1.5m but with slightly varying width is provided on its western side, which is interrupted for a stretch of approximately 55m by the Horse & Jockey Inn access. Opposite the Horse & Jockey Inn a footway commences on the eastern side of the road extending all the way toward The Highway mini-roundabout however no formal crossing points are provided. The speed limit changes from 60mph to 30mph approximately 500m west of the A4042 junction and cyclists can be expected to use either the carriageway or the lightly trafficked footway for the 60mph section depending on their confidence. However as the footway enters the 30mph zone it becomes inappropriate for use by cyclists given the volume of pedestrians and number of property accesses across it.
- 4.4.53 Usk Road accommodates a significant volume of traffic but is bound by green fields, trees and hedgerows for its 60mph section and by a quiet residential area for its 30mph section which provide for pleasant journeys.
- 4.4.54 The amenity of Usk Road in the vicinity of the site is considered to be good for pedestrians but poor for cyclists.

A472 Berthin Road

- 4.4.55 The A472 Berthin Road has a 2028 baseline 18hr flow of approximately 7,100. It leaves the A4042 north of the Old Abergavenny Road roundabout and passes through the village of Little Mill immediately to the east of the A4042 heading in the direction of Usk.
- 4.4.56 A footpath is provided on Berthin Road's eastern side and measures roughly 1.5m wide. A footpath is also provided on the western side and begins approximately 100m from the A4042 junction, continuing through Little Mill and terminating just before the 40mph speed limit is introduced leaving Little Mill to its east.
- 4.4.57 The speed limit leaving the A4042 is 30mph though the village of Little Mill then increases to 40mph approximately 50m after. Approximately 0.75km east of Little Mill a national speed limit is introduced. The speed limit maintains national through the road however it lowers to 40 and 30mph for intermittent periods when the road passes through residential areas.
- 4.4.58 Most of the A472 is flanked by fields and woodland for most of the 60mph sections whilst for the slower 30mph sections the road is flanked by pleasant residential areas.
- 4.4.59 The amenity of the A472 Berthin Road as it passes through Little Mill is considered to be good for pedestrians and poor for cyclists.

Monmouthshire & Brecon Canal Towpath

- 4.4.60 The Monmouthshire & Brecon Canal was built in the late 18th century, is the subject of a restoration plan and is contained within Brecon Beacons National Park as it passes the development site. It now carries a limited number of waterborne vessels and instead functions primarily as a pedestrian and cycle route.
- 4.4.61 On the eastern side of the canal is the towpath which functions also as a cycle and pedestrian route, designated by National Cycle Network as Route 49. The towpath is constructed of compacted gravel and is generally in good condition however does not benefit from street lighting. It can be accessed from Usk Road as it passes beneath and also from various other access points north and south of the development site.
- 4.4.62 The canal towpath provides a scenic off-road route for pedestrians and cyclists, boasting beautiful surroundings and a rural feel even as it enters wider urban surroundings. The route can be used for both practical and recreational journeys.
- 4.4.63 The amenity of the Monmouthshire & Brecon Canal towpath in the vicinity of the site is considered to be very good for both pedestrians and cyclists.

Fear and Intimidation

- 4.4.64 Fear and intimidation experienced by pedestrians, cyclists and motorists is dictated principally by the volume and speed of traffic on a route, however it can be amplified or mitigated by factors such as HGV composition, proximity and level of protection. The 2015 baseline level of fear and intimidation has been assessed for pedestrians, cyclists and motorists.

Pedestrians and Cyclists

- 4.4.65 The fear and intimidation experienced by pedestrians and cyclists has been assessed based on the parameters set out by the IEA's *Guidance on the Environmental Impact of Road Traffic*. These parameters are shown in Table 4.13.

Table 4.13: Pedestrian and cyclist fear and intimidation parameters

Parameter	Degree of Hazard			
	Extreme	Great	Moderate	Low
Peak hour two-way traffic flow	1800+	1200-1800	600-1200	0-600
Daily HGV two-way traffic flow	3000+	2000-3000	1000-2000	0-1000
Average Speed	20+	15-20	10-15	0-10

- 4.4.66 Old Abergavenny Road, the A4042 and Usk Road have been assessed in relation to these parameters with the results shown in Table 4.13.

Table 4.13: Pedestrian and cyclist fear and intimidation assessment 2028 baseline

Parameter	Assessed Link			
	Old Abergavenny Rd	A4042	Usk Road	A472 Berthin Road
Peak hour two-way traffic flow	Moderate	Extreme	Moderate	Moderate
Daily HGV two-way traffic flow	Low	Moderate	Low	Low
Average Speed	Extreme	Extreme	Extreme	Extreme

- 4.4.67 Pedestrians and cyclists could be expected to experience some extreme levels of fear and intimidation on all assessed links as a result of traffic flow, HGV flow, vehicle speeds or a combination.

Motorists

- 4.4.68 Fear and intimidation (or stress) experienced by drivers is also dictated principally by the volume and speed of traffic on a route however conversely higher vehicle speeds result in lower levels of stress. Drivers can become stressed due to frustration, fear of potential accidents and route uncertainty. The stress experienced by drivers has been assessed based on the parameters set out by *DMRB Vol 11, Section 3, Vehicle Travellers*. These parameters are shown in Table 4.14.

Table 4.14: Driver stress parameters 2028 baseline

Average Peak Hourly Flow per Lane	Average Journey Speed (mph)		
	0-30	30-45	45+
0-600	High	Moderate	Low
600-800	High	Moderate	Moderate
800+	High	High	High

- 4.4.69 Old Abergavenny Road, the A4042, Usk Road, and the A472 Berthin Road have been assessed in relation to these parameters with the results shown in Table 4.15.

Table 4.15: Driver stress assessment 2028 baseline

Parameter	Assessed Link			
	Old Abergavenny Rd	A4042	Usk Road	A472 Berthin Road
Driver Stress	Moderate	High	High	High

4.4.70 Drivers on Old Abergavenny Road could be expected to experience a moderate level of stress whilst drivers on the A4042 could be expected to experience a high level of stress. The stress expected to be experienced by drivers on Usk Road is dependent on the speed limit of the section of road on which they are travelling and varies from low for the 60mph stretch to high for the 30mph stretch.

4.5 Assessment of Potential Effects

Identification of Impacts

4.5.1 The Transport Assessment (Appendix 4.1) which supports the planning application for the proposed development has considered the adequacy of both car based and non-car based transport and the highway elements of the scheme which includes access, capacity and safety. As well as using DfT guidelines the assessment has been supplemented by matters raised by Highway Officers, Planning Officers, key stakeholders and interested parties during meetings and consultation.

4.5.2 As stated previously in this chapter, the issues which are specifically relevant to this EIA, in terms of transportation and access, as identified by TCBC's Scoping Report are:

- The impact of development on all modes of transport including cycle and pedestrian movements to and from the site;
- The impact of development on the surrounding trunk road junctions and links including the A472 through Little Mill and Usk;
- The suitability of the canal tow path to cope with additional use, from this development and committed development at Sebastopol; and
- The impact of development on existing Public Rights of Way.

4.5.3 These matters are considered having regard to the pertinent issues for the EIA in terms of transportation and access, which as set out previously in this chapter, are:

- Traffic Flow
- Accidents and Safety;
- Severance;
- Driver Delay;
- Pedestrian and Cycle Delay;
- Pedestrian and Cycle Amenity; and
- Fear and Intimidation.

4.5.4 It is anticipated that the proposed development would have an impact on each of the above issues and as such each will be assessed to determine its significance. This assessment of impacts takes into account primary mitigation ie mitigation measures which have been incorporated into the design of the development

such as essential pedestrian and cycle facilities. The assessment does not include secondary mitigation ie soft mitigation measures such as improved bus services or design mitigation measures which are deemed necessary retrospectively as a result of the EIA process.

Traffic Flow

Table 4.16: Parameters of impact significance of traffic flow

	Impact significance			
	Major	Moderate	Minor	Negligible
Traffic flow within the subject area	Traffic associated with the development changes peak 24hr traffic within the study area by 30% or more	Traffic associated with the development changes peak 24hr traffic within the study area between 15 and 30%	Traffic associated with the development changes peak 24hr traffic within the study area between 5 and 15%	Traffic associated with the development changes peak 24hr traffic within the study area by less than 5%

- 4.5.5 There are four categories of impact significance considered, which are Negligible (not material to the decision making process), Minor (not noteworthy or material), Moderate (noteworthy/material) and Major (extremely noteworthy/material). See Table 4.16 above.
- 4.5.6 The traffic flow impact significance will be measured against specific impact criteria which are identified in the assessment of each of the other pertinent issues identified for assessment in this chapter.
- 4.5.7 Table 4.17 below sets out the impact significance of the proposed development on traffic flow. It is based on the guidance from the institute for environmental assessments document 'Guidance for the Environmental Impact of Road Traffic'.

Table 4.17. Effects of development on traffic flow

Section	Peak Hour	Baseline Total Traffic Flow	With Development Total Traffic Flow	% change	Impact significance
Old Abergavenny Road - West of overflow carpark	AM	79	79	0	Negligible
	PM	82	82	0	Negligible
	24hr	814	814	0	Negligible
Old Abergavenny Road/A4042 roundabout	AM	760	903	28.2	Moderate Significance
	PM	758	1001	35.1	Major Significance

	24hr	7592	9560	31.2	Major Significance
A4042 - north of Old Abergavenny Road/A4042 roundabout	AM	2572	2598	2	Negligible
	PM	2913	2957	2.5	Negligible
	24hr	27694	28052	2.9	Negligible
A472 Berthin Road	AM	701	714	1.8	Negligible
	PM	803	825	2.7	Negligible
	24hr	7548	7773	2.2	Negligible
Old Abergavenny Road/A4042 roundabout to Park Davis Site access	AM	2990	3128	6.2	Minor Significance
	PM	3245	3478	8.2	Minor Significance
	24hr	31487	33369	7.3	Minor Significance
Park Davis Site access to A4042/Usk Road roundabout	AM	2971	3181	12.2	Minor Significance
	PM	3206	3557	15.5	Moderate Significance
	24hr	31192	33062	14	Minor Significance

A4042/Usk Road roundabout to Usk Road/ The Highway roundabout	AM	858	897	9	Minor Significance
	PM	813	879	13.6	Minor Significance
	24hr	8434	8971	11.3	Minor Significance
Usk Road south of Usk Road/ The Highway roundabout	AM	1186	1207	3.5	Negligible
	PM	981	1016	6	Minor Significance
	24hr	10939	11224	4.7	Negligible
A4042/Usk Road roundabout to A4042/ A472 Roundabout	AM	2113	2427	22.7	Moderate Significance
	PM	2032	2720	43.2	Major Significance
	24hr	23690	26004	17.4	Moderate Significance
South of A4042/ A472 Roundabout	AM	5020	5135	4.7	Minor Significance
	PM	4532	4722	7.3	Minor Significance
	24hr	48235	49782	5.9	Minor Significance

Prediction

- 4.5.8 There is a varied range of impact significance with some aspects of the local network predicted to experience minor or negligible effects, some moderate effects, and a few areas predicted to experience major effects.

Assessment of Impact Significance

- 4.5.9 Having regard to the traffic flow effects identified above, the assessment of impact significance considers the pertinent issues identified previously in this chapter in order to determine the effects of the proposed development on transport and access.

Accidents and Safety

- 4.5.10 The impact of the proposed development on highway safety has been determined in accordance with COBA Manual (DMRB Volume 13, Section 1, Chapter 4). This forecasts future accident rates at links in accordance with a predetermined accident change rate coefficient that has been established in the guidance, the Table 4.18 sets out the parameters used for the purpose of the assessment and Table 4.19 sets out the effects on the junctions and links assessed.

Table 4.18 Impact significance of the development scenario bandwidths for the study of accidents and safety.

Subject area	Impact significance			
	Major	Moderate	Minor	Negligible
Accidents and safety	Accident rates or number of accidents per year change within the study area by 30% or more.	Accident rates or number of accidents per year change within the study area between 15 and 30%	Accident rates or number of accidents per year change within the study area between 5 and 15%	Accident rates or number of accidents per year changes within the study area by less than 5%

Table 4.19: Impact Significance on Accidents and Safety of the Proposed Development

Junction/ Link	2028 Baseline: Number of Accidents (per year)	2028 with Development: Number of Accidents (per year)	Difference (with Development - Baseline)	Impact Significance
Junction - A4042/ Old Abergavenny Road Roundabout	1.26	1.61	0.36 (28.3%)	Moderate
Junction - A4042/ Usk Road Roundabout	1.30	1.48	0.18 (13.6%)	Minor
Junction - A4042/ A472W Roundabout	6.81	7.83	1.02 (15.0%)	Moderate
Junction - Usk Road/ The Highway Mini-Roundabout	0.57	0.63	0.06 (10.5%)	Minor
Link - O.A.R between A4042 Roundabout and Northern Primary Priority Junction Access	0.00	0.00	0.00 (0.0%)	Negligible
Link - O.A.R. between Northern Primary Priority Junction Access and Northern Secondary Priority Junction Access	0.00	0.00	0.00 (0.0%)	Negligible

Link - A4042 between A472E Priority Junction and O.A.R. Roundabout	0.21	0.23	0.02 (8.0%)	Minor
Link - A4042 between O.A.R. Roundabout and Southern Access Roundabout	0.00	0.00	0.00 (0.0%)	Negligible
Link - A4042 between Southern Access Roundabout and Usk Road Roundabout	0.00	0.00	0.00 (0.0%)	Negligible
Link - A4042 between Usk Road Roundabout and A472W Roundabout	0.43	0.47	0.05 (10.8%)	Minor
Link - Usk Road between A4042 Roundabout and The Highway Mini-Roundabout	0.00	0.00	0.00 (0.0%)	Negligible
Total	10.57	12.25	1.67 (15.8%)	Moderate

- 4.5.11 The impact of the proposed development ranges from Negligible to Moderate across all links and junctions with the overall impact classified as Moderate.
- 4.5.12 The biggest impact in terms of percentage increase in number of accidents is felt at the A4042/Old Abergavenny Road Roundabout which is forecast to see an increase of accident occurrences of 28.3%. In absolute terms this amounts to 0.36 additional accidents per year which is approximately one additional accident every three years.
- 4.5.13 The A4042/ A472 Roundabout is forecast to experience an increase of accident occurrences of 15.0%. In absolute terms this amounts to an additional 1.02 accidents per year.
- 4.5.14 In total the impact of the proposed development on the accident rate of the highway network of interest is 15.8% or 1.67 additional accidents per year. The majority of this increase is due to changes to the accident rate at the A4042/ A472W Roundabout.

Severance

- 4.5.15 Severance is defined as the separation of residents from facilities and services in their community as a result of new or improved roads or by changes in traffic flow.
- 4.5.16 The links that have been considered are:
- Old Abergavenny Road - between the A4042 junction and Mamhilad Park Estate access
 - A4042 - between the Old Abergavenny Road junction and the Parker Davis site entrance
 - Usk Road - between the A4042 junction and The Highway junction
 - A472 Berthin Road - from the A4042 junction
- 4.5.17 The method for determining community severance is set out in the DMRB Volume 11, Section 3, Part 8 and the IEA Guidance for the Environmental Assessment of Road Traffic. The DMRB and IEA guidance define impact levels as Severe, Moderate, Slight and Negligible which have been converted to Major, Moderate, Minor and Negligible in order to maintain consistency of terminology within the ES. These are defined in Table 4.20.

Table 4.20: Definitions of impact significance of severance

Impact Significance			
Major	Moderate	Minor	Negligible
People are likely to be deterred from making a trip to an extent sufficient enough to include a re-organisation of their habits or considerable hindrance will be caused to people making journeys. E.g.	Some residents, particularly children and elderly people are likely to be dissuaded from making trips. Other trips will be made longer and less attractive. E.g.	In general, the current journey pattern is likely to be maintained, but there will probably be some hindrance to movement. E.g.	Generally, the current journey pattern is likely to be maintained with very little hindrance to movement E.g.
1. At grade pedestrian crossing of a road carrying over 16,000 vehicles a day during the assessment year.	1. At grade pedestrian crossing of a road carrying between 8,000 -16,000 vehicles per day during the assessment year.	1. At grade pedestrian crossing of the road carrying between 4,000 and 8,000 vehicles per day during the assessment year.	1. At grade pedestrian crossing of a road carrying below 4,000 vehicles a day during the assessment year.
2. An increase in journey length of over 500m	2. An increase in journey length between 250-500m	2. An increase in journey length between 50-250m	
3. Change in traffic flow of 90% or more	3. Changes in traffic flow between 60-90%	3. Changes in traffic flow between 30-60%	2. An increase in journey length up to 50m.
4. Three or more of the hindrances set out under 'minor' or two or more set out under 'moderate'	4. Two or more hindrances set out under 'minor'	4. A new bridge will be needed to be climbed or subway traversed.	

Old Abergavenny Road

- 4.5.18 This route is a single carriageway A-road that connects the A4042 to the existing Mamhilad Park Estate access that will be developed into the northern vehicle access point of the proposed development.
- 4.5.19 In the baseline scenario Old Abergavenny Road severance is considered Minor as it carries over 7500 vehicles a day during the assessment year.
- 4.5.20 In the development scenario the impact significance of community severance for Old Abergavenny Road becomes Moderate as the route is carrying over 9000 vehicles a day during the assessment year although with a change of only 31.2% there would be no increase in journey length.

A4042

- 4.5.21 The route is a dual carriageway divided by a safety barrier which follows the eastern side of the site. It will incorporate a new roundabout and link to the roundabout with Old Abergavenny Road as part of the proposed development.
- 4.5.22 In the baseline scenario severance is Major as the road carries over 31,000 vehicles a day during the assessment year.
- 4.5.23 In the development scenario the impact significance of community severance along the A4042 is Major. With a 7.9% increase in vehicles over 33,000 vehicles are predicted to use the road. With or without the proposed development the traffic using the road will grow to be difficult to cross at peak hours.

Usk Road

- 4.5.24 Usk Road is a B road to the south of the site that heads from the A4042 into Pontypool; it is an important access route for large parts of the town including the local train station.

- 4.5.25 In the baseline scenario over 8,400 vehicles travel on the road a day in the assessment year which is a Moderate impact in terms of severance. There are no existing measures in place to assist crossing.
- 4.5.26 In the development scenario the impact significance for community severance along Usk Road remains Moderate, with an increase in traffic flow to 8900 vehicles per day. The development will only run along a small section of the northern end of the road therefore there will be no immediate effects on the road that could increase journey distance.

A472 Berthin Road

- 4.5.27 The highway is a road that heads from Usk Road, over the A4042 and to the Pontypool and New Inn Train station; it is a single carriageway B-road.
- 4.5.28 In the baseline scenario the daily traffic flow is over 9,400 which is classified as a Moderate impact in terms of severance. Similar to Usk Road there are no measures to help pedestrians or cyclists cross the road however as the speed limit is 30mph there is a greater opportunity to cross without assistance.
- 4.5.29 In the development scenario the impact significance for severance remains Moderate with roughly 9,900 vehicles using the road in a 24hr period with an increase of only 4.7%.

Table 4.21: Summary of impact significance of community severance

Route	Baseline Significance	With Development Significance
Old Abergavenny Road	Minor -ve	Moderate -ve
A4042	Major -ve	Major -ve
Usk Road	Moderate -ve	Moderate -ve
Berthin Road A472	Moderate -ve	Moderate -ve

Driver Delay

- 4.5.30 Driver delay at the assessed junctions has been calculated using the industry standard ARCADY roundabout assessment software. The maximum delay in minutes per vehicle for each assessed roundabout, for each of the AM and PM peaks, is shown in Tables 4.22 to 4.25.

Table 4.22: ARCADY assessment of Old Abergavenny Road/ A4042 roundabout

Approach	Maximum Delay in Seconds per Vehicle	
	AM Peak Hour	PM Peak Hour
A4042 North	2.22	4.30
Unnamed Road	5.40	49.44
A4042 South	2.96	1.52
Old Abergavenny Road (OAR)	2.65	3.96

- 4.5.31 Table 4.22 shows the maximum delay for vehicles during the peak hours. It shows that the PM peak hour is greater than the AM peak for all approaches to the roundabout except for the A4042 south. It should also be noted that although the unnamed access has over one and a half minutes of delay, this access is such a small and rarely used one this delay will be of little significance.

Table 4.23: ARCADY assessment of Usk Road/ A4042 roundabout

Approach	Maximum Delay in Seconds per Vehicle	
	AM Peak Hour	PM Peak Hour
A4042 North	3.23	7.60
A4042 South	2.55	2.95
Usk Road (UR)	4.33	3.14

- 4.5.32 Table 4.23 shows the Usk Road A4042 roundabout has small driver delays in the peak hour that have very little significance.

Table 4.24: ARCADY assessment of The Highway/ Usk road mini-roundabout

Approach	Maximum Delay in Seconds per Vehicle	
	AM Peak Hour	PM Peak Hour
Usk Road East	4.79	6.01
The Highway	10.96	6.81
Usk Road West	4.31	3.33

- 4.5.33 Table 4.24 shows a similar scenario to Table 4.23. The Highway/Usk Road roundabout has small driver delays which are considered reasonable for peak hour traffic.

Table 4.25: ARCADY assessment of A472/ A4042 roundabout

Approach	Maximum Delay in Seconds per Vehicle	
	AM Peak Hour	PM Peak Hour
Lower Mill	9.72	8.08
A4042 North	589.42	1029.52
Services	6.24	4.73
A4042 South	251.69	415.48
Skewfields	16.50	66.40
A472	695.30	369.39

- 4.5.34 Table 4.25 shows that the A472/A4042 roundabout has some significant issues relating to driver delay, both in the AM and the PM in the development scenario. The three large delays are on the main arms of the roundabout that are important and well-travelled links. The most significant issue is the A4042 north which is predicted to have a delay of 28.6 minutes.
- 4.5.35 The method for determining the impact significance of driver delay is set out in Table 4.26. Table 4.27 then sets out the driver delay and the impact significance compared to the baseline scenario for the junctions assessed.
- 4.5.36 IEA guidance suggests that a significant increase of driver delay occurs when the local traffic is already close to the capacity of the system. A system is at full capacity when the ratio of flow to capacity (RFC) is 1.00. For this assessment a delay is considered to be significant if the RFC has exceeded 1.00. The method of identifying driver delay in Table 4.27 has been measured by the maximum mean delay per vehicle predicted by the model for any 15-minute time period.

Table 4.26 Definitions of the Impact significance of driver delay

Subject area	Impact significance			
	Major	Moderate	Minor	Negligible
Driver delay	RFC has exceeded 1.00 and the development has increased peak hourly driver delay by more than 30%	RFC has exceeded 1.00 and the development has increased peak hourly driver delay between 10 and 30%	RFC below 1.00 however development increases driver delay between 0 and 10%	RFC below 0.85

Table 4.27: impact significance of driver delay on the development scenario against the baseline scenario

Approach	AM/PM	Baseline		With development			Impact Significance
		RFC	Delay	RFC	Delay	% Change	
A4042/ Old Abergavenny Road roundabout							
A4042 N	AM	0.45	2.0	0.47	2.2	7.6	Negligible
	PM	0.64	3.7	0.67	4.3	13.5	Negligible
Unnamed access	AM	0.02	4.7	0.02	5.4	12.4	Negligible
	PM	0.06	19.2	0.09	49.4	61.1	Negligible
A4042 S	AM	0.51	1.9	0.52	1.9	2	Negligible
	PM	0.34	1.4	0.38	1.5	6	Negligible
Old Abergavenny Road	AM	0.10	2.4	0.16	2.6	6.0	Negligible
	PM	0.42	3.4	0.49	3.8	9.1	Negligible
The Highway/ Usk road mini-roundabout							
Usk Road East	AM	0.29	4.6	0.31	4.7	3.3	Negligible
	PM	0.51	6.0	0.53	6.2	4.1	Negligible
The Highway	AM	0.70	10.4	0.70	10.9	4.3	Negligible
	PM	0.47	6.4	0.47	6.8	4.8	Negligible
Usk Road West	AM	0.44	4.2	0.44	4.3	0.7	Negligible
	PM	0.28	3.2	0.28	3.3	3.6	Negligible
Usk Road/ A4042 roundabout							
A4042 N	AM	0.53	2.8	0.60	3.2	12.7	Negligible
	PM	0.79	6.0	0.84	7.6	20.7	Negligible
A4042 S	AM	0.46	2.4	0.47	2.5	3.1	Negligible
	PM	0.44	2.5	0.51	2.9	12.9	Negligible
Usk Road	AM	0.44	4.2	0.45	4.3	2.0	Negligible
	PM	0.19	2.8	0.23	3.1	10.5	Negligible
A472/ A4042 roundabout							
Lower Mill	AM	0.12	9.6	0.12	9.7	0.7	Negligible
	PM	0.24	7.6	0.25	8.0	5.3	Negligible
A4042 N	AM	1.18	265.5	1.30	689.4	61.5	Major
	PM	1.26	777.8	1.33	1029.5	24.4	Moderate
Services	AM	0.26	6.2	0.26	6.2	0.3	Negligible
	PM	0.24	4.8	0.23	4.7	-2.5	Negligible
A4042 S	AM	1.10	228.4	1.11	251.6	9.2	Moderate
	PM	1.14	264.3	1.19	415.4	36.4	Major
Skewfields	AM	0.07	16.3	0.07	16.4	0.6	Negligible
	PM	0.85	63.9	0.86	66.4	3.6	Minor
A472	AM	1.23	668.5	1.24	695.3	3.8	Moderate
	PM	1.14	212.3	1.19	369.3	42.5	Major

- 4.5.37 The results show that the proposed development will have a range of effects on driver delay in the study area.
- 4.5.38 The negative effects of the proposed development are mostly Negligible. However there are three major negative impacts alongside one moderate impact which indicate a potential strain on the network.
- 4.5.39 The modelling has shown a positive impact on driver delay into the services off the A4042/A472 roundabout, however the impact significance in the AM is less than 1% and is only 4% in the PM.

Pedestrian and Cycle Delay

- 4.5.40 While two vehicular access points will be developed and a further ten pedestrian and cycle access points are proposed they will not provide any extra access to facilities outside of the development site.
- 4.5.41 The distance to facilities is measured from the vehicular access point. Being on the edge of the site and travelling to existing services out of the development site the journey lengths will remain the same from these locations.
- 4.5.42 The impact significance for pedestrian journeys is defined in Table 4.28. If the impact significance is zero it indicates that there is no quantifiable impact, as the journey is not affected by crossing a road.

Table 4.28: Definition of impact significance of journey delay for pedestrians

Subject area	Impact significance			
	Major	Moderate	Minor	Negligible
Pedestrian Journeys	A change in journey length by 50% or more or a change in journey delay of 40 seconds or more	A change in journey length between 15% and 50% or a change in journey delay of 20-40 seconds	A change in journey length between 5% and 15% or a change in journey delay of 10-20 seconds	A change in journey length by up to 5% or change in journey delay of up to 10 seconds

- 4.5.43 The development scenario takes the methodology applied to calculate the baseline conditions and applies it to the development scenario. The pedestrian delay can be seen in Table 4.29 for the northern section of the site and Table 4.30 for the southern section of the site.

Table.4.29: Journey delay form northern site access

Service/ Facility	Journey delay from northern section		% change	Impact significance
	Existing	With Dev.		
Bus Stop: Waun-Y-Clare Inn N-bound	3	6	100	Moderate significance
Bus Stop: Waun-Y-Clare Inn S-bound	+25	+25	0	Negligible
Bus Stop: Cwmoody Cottage (N-bound)	0	0	0	No change
Bus Stop: Cwmoody House (S-bound)	+25	+25	0	Negligible
Wain-Y-Clare Public House	+25	+25	0	Negligible
The Star Inn	0	0	0	No change
Horse & Jockey Inn	0	0	0	No change
Little Mill village	+25	+25	0	Negligible

Table 4.30: Journey delay from southern site access.

Service/ Facility	Journey delay from southern section		% change	Impact significance
	Existing	With Dev.		
Bus Stop: Waun-Y-Clare Inn N-bound	3	6	100	Moderate significance
Bus Stop: Waun-Y-Clare Inn S-bound	+25	+25	0	Negligible
Bus Stop: Cwmoody Cottage (N-bound)	0	0	0	No change
Bus Stop: Cwmoody House (S-bound)	+25	+25	0	Negligible
Wain-Y-Clare Public House	+25	+25	0	Negligible
The Star Inn	0	0	0	No change
Horse & Jockey Inn	0	0	0	No change
Little Mill village	+25	+25	0	Negligible

4.5.44 The pedestrian delays are in keeping with the baseline analysis whereby three services do not require crossing a road and four services require crossing the A4042 which will become difficult at peak hours. Pedestrian delays in relation to the Bus Stop: Waun-Y-Clare Inn N-bound in the development scenario will double. This is due to the increase in traffic flows along Old Abergavenny Road.

4.5.45 The impact significance for cyclist journeys is defined in Table 4.31. If the impact significance is zero it indicates that there is no quantifiable impact, as the journey is not affected by crossing a road.

Table 4.31: Definitions of impact significance of journey delay for cyclists

Subject area	Impact significance			
	Major	Moderate	Minor	Negligible
Cyclist journey	A change in journey length by 50% or more or a change in journey delay of 160 seconds or more	A change in journey length between 15% and 50% or a change in journey delay of 80-160 seconds	A change in journey length between 5% and 15% or a change in journey delay of 40-80 seconds	A change in journey length by up to 5% or change in journey delay of up to 40 seconds

4.5.46 In Table 4.32 the cyclist delays are presented for the development scenario from the northern section of the site, and in Table 4.33 the cyclist delays are presented for the southern section of the site.

Table 4.32 Journey delay form northern site access

Service/ Facility	Journey delay from northern section		% change	Impact significance
	Existing	With Dev.		
Wain-Y-Clare Public House	+25	+25	0	Negligible
The Star Inn	0	0	0	None
Horse & Jockey Inn	0	0	0	None
Little Mill village		+25		Negligible

	+25		0	
Pontypool & New Inn Station	5	5	0	Negligible
Polo Grounds Industrial Estate	10	11	10%	Minor
Torfaen County Hospital	+25	+25	0	Negligible
Pontypool Town Centre	0	0	0	None

4.5.47 Table 4.32 shows the cyclist delay from the northern section of the site which follows the baseline whereby some journeys do not have to cross a road and some have to cross a well-travelled one. The only noteworthy change from the baseline is a 10% increase in the time it takes to cross The Highway to get to the Polo Grounds Industrial Estate, although this impact is only considered to be Minor.

Table 4.33: Journey delay form southern site access

Service/ Facility	Journey delay from southern section		% change	Impact significance
	Existing	With Dev.		
Wain-Y-Clare Public House	+25	+25	0	Negligible
The Star Inn	0	0	0	None
Horse & Jockey Inn	0	0	0	None
Little Mill village	+25	+25	0	Negligible
Pontypool & New Inn Station	5	5	0	Negligible
Polo Grounds Industrial Estate	10	11	10%	Minor
Torfaen County Hospital	+25	+25	0	Negligible
Pontypool Town Centre	0	0	0	None

4.5.48 The cyclist delays are similar to the pedestrian delays where there are several journeys that do not require crossing a road therefore they experience no delay. There are several journeys that require crossing of the A4042 and there are also journeys which require several crossings to reach destinations outside of the study area. Again, there is only one noteworthy change from the baseline, although this impact is only considered to be Minor.

Pedestrian and Cycle Amenity

4.5.49 The pedestrian and cycle amenity of the routes described previously in this chapter has been identified for the development scenario and compared with the baseline scenario

4.5.50 Amenity has been measured on a quantified on a four point scale: Very Good, Good, Poor, and Very Poor.

4.5.51 In terms of defining the environmental impact significance on pedestrian and cycle amenity, a Major impact significance is said to have occurred when the amenity moves three points on the scale, for example from Very Poor to Very Good. Moderate impact significance is quantified by a change of two points on the scale, for example from very poor to good. Minor impact significance is quantified by a change of one scale point, for example from poor to good. Negligible impact significance is quantified by no change in scale points.

Old Abergavenny Road

- 4.5.52 No new pedestrian or cycle improvements are proposed to Old Abergavenny Road as part of the development proposal. However, new pedestrian and cycle links will be created into and throughout the development which would diversify the travel options of pedestrians and cyclists.
- 4.5.53 As no direct changes will occur, the amenity for both pedestrians and cyclists remains good. This means that the impact significance of the development scenario on Old Abergavenny Road is Negligible

A4042

- 4.5.54 No new pedestrian or cycle facilities are proposed to the A4042 that are directly linked to the proposed development. There is a proposal to implement a cyclepath improvement along the western side of the A4042 which would improve cycle amenity. This scheme would be delivered by Welsh Government and there is the potential for part of the proposed route to be diverted through the proposed development site.
- 4.5.55 As there will be no direct changes amenity will remain to be considered poor for both pedestrians and cyclists. This is a Negligible impact.

Usk Road

- 4.5.56 No new pedestrian or cycle facilities are proposed to Usk Road directly as part of the development proposal. There is a pedestrian and cycle access point proposed that could link the south of the site to Usk Road using an existing public right of way in-between the Horse and Jockey Inn and the church. Additionally a pedestrian and cycle access to the site could from the side of the Usk Road and A4042 roundabout. These would diversify the options for pedestrian and cycle travel if successfully implemented.
- 4.5.57 While there will be improvements to the local area but not Usk Road itself the amenities for pedestrians will remain good. Due the fact that there are currently no appropriate amenities for cyclist to travel down this route the cycle amenities will remain poor.
- 4.5.58 The impact significance as a result of changes from the baseline survey is Negligible.

Berthin Road A472

- 4.5.59 No new pedestrian or cycle facilities are proposed to the A472 Berthin Road. Due to the distance from the site and lack of proposed changes, both pedestrian and cycle amenity will remain good and poor respectively.
- 4.5.60 The impact significance is therefore considered to be negligible.
- 4.5.61 Table 4.34 displays the impact significance of the 2028 with development scenario on pedestrian and cycle amenity.

Table 4.34: Impact significance of development on pedestrian and cycle amenity

Route	Impact significance
Old Abergavenny Road	Negligible
A4042	Negligible
Usk Road	Negligible
Berthin Road A472	Negligible

Fear and Intimidation

Pedestrians and Cyclists

- 4.5.62 With the development, fear and intimidation has been defined for pedestrians and cyclists using the same parameters as the baseline scenarios to maintain consistency. These parameters can be seen in Table 4.35.

Table 4.35: Definition of parameters of fear and intimidation

Parameter	Degree of Hazard			
	Extreme	Great	Moderate	Low
Peak hour two-way traffic flow	1800+	1200-1800	600-1200	0-600
Daily HGV two-way traffic flow	3000+	2000-3000	1000-2000	0-1000
Average Speed	20+	15-20	10-15	0-10

4.5.63 Table 4.36 displays the results of the development scenario on fear and intimidation.

Table 4.2Table 4.36: Development scenario fear and intimidation.

Parameter	Assessed Link			
	Old Abergavenny Rd	A4042	Usk Road	Berthin Road A472
Peak hour two-way traffic flow	Moderate	Extreme	Moderate	Moderate
Daily HGV two-way traffic flow	Low	Low	Low	Low
Average Speed	Extreme	Extreme	Extreme	Extreme

4.5.64 All of the links are in the same classification in the development scenario as they were in the baseline scenario. The proposed development therefore results in no change in relation to fear and intimidation to pedestrians and cyclists.

Motorists

4.5.65 Similar to pedestrians and cyclists the fear and intimidation, or stress, experienced by drivers has been assessed based on the parameters set out by IEA's *Guidance on the Environmental Impact of Road Traffic*. These parameters are shown by Table 4.37.

Table 4.37: Definition of parameters of stress

Average Peak Hourly Flow per Lane	Average Journey Speed (mph)		
	0-30	30-45	45+
0-600	High	Moderate	Low
600-800	High	Moderate	Moderate
800+	High	High	High

4.5.66 Old Abergavenny Road, A4042, Usk Road, and The Highway have been assessed using these parameters and the results are displayed in Table 4.38.

Table 4.38: development scenario driver stress

Parameter	Assessed Link			
	Old Abergavenny Rd	A4042	Usk Road	Berthin Road A472
Driver Stress	High	High	High	High

4.5.67 Old Abergavenny Road changes from Moderate in the baseline scenario to a high driver stress link in the development scenario. This brings Old Abergavenny Road in line with the other roads in the vicinity of the

site which remain high. The reason that the levels of driver stress are so high is that the average peak hourly flow of vehicles is over 800 for every link in the study area whereby even high speeds will cause large amounts of driver stress. The proposed development therefore results in very little change in relation to driver stress.

4.6 Mitigation Proposals

Transport Impacts

- 4.6.1 The assessment of transport impact described in Section 4.5 shows that all of the junctions modelled will operate satisfactorily with the addition of the proposed development traffic, with the exception of the Pontypool (Heron) Roundabout. An improvement scheme is therefore identified in this section of the chapter together with brief details of the proposed Framework Travel Plan (see Appendix 4.2) that will be introduced to serve the development, and the proposal for a new bus route. The combination of these three initiatives provides suitable mitigation to the identified negative impacts of the proposed development.

Pontypool (Heron) Roundabout Improvement Scheme

- 4.6.2 Over half of the recorded personal injury accidents that occurred over the five year study period happened at the Pontypool roundabout, including the one fatality which occurred. It is evident from site observations that this is a fast roundabout with high vehicle approach speeds particularly on the A4042 and A472 arms and high vehicle speeds around the circulating carriageway. With a large diameter of 120m and limited road markings several options for improvements could be beneficial. These include reducing the width of the approach lane, introducing a spiral lane marking scheme and reducing the speed limit at the roundabout. It is also noted that the roundabout has six arms which is undesirable in design terms and contributes to the accident rate. It is however considered that is not feasible or appropriate for the proposed development to address this particular issue.
- 4.6.3 The junction capacity assessments described in the Transport Assessment indicate the roundabout is operating at a poorer level of performance than the ARCADY model predicts and hence capacity adjustment factors have had to be considered as mitigation. Clarkebond have prepared a proposed improvement scheme for the roundabout as illustrated on Drawing WB03660/SK28 within Appendix 4.1. The scheme has been designed with reference to the Design Manual for Roads and Bridges (DMRB) Volume 6 Section 2 Junctions TD16/07 Geometric Design of Roundabouts and TA 78/97 Design of Road Markings at Roundabouts.
- 4.6.4 The key features of the proposed improvement scheme include the introduction of three lane entries on the A4042 and A472 approaches with lane widths of 3.5m. Balancing of approach traffic flows on the A4042 and A472 approaches through the identified lane allocation; and Spiral and Concentric lane markings on the circulating carriageway reducing lane widths to 3.5m typically and providing easy paths for vehicles entering and exiting the roundabout. The full details of the proposal are set out in the Transport Assessment (Appendix 4.1).
- 4.6.5 Table 4.39 identifies the impact significance of the proposed mitigation scheme in terms of driver delay. Within the Impact Significance column, where an impact has changed from the baseline the previous impact is identified in the brackets. Most impacts are unchanged, however on the critical A4042 and A472 arms the previously major impacts are addressed by the scheme when viewed in the assessment year of 2028. These benefits outweigh the disbenefit caused to the Skewfields arm in the PM Peak Hour. This arm is not heavily used. It is evident, therefore, that the mitigation scheme will deliver significant benefits.

Table 4.39 Impact Significance of Heron Roundabout Mitigation Scheme

Approach	AM/PM	Baseline		With development and mitigation			Impact significance
		RFC	Delay	RFC	Delay	% change	
A472/ A4042 roundabout							
Lower Mill	AM	0.12	9.6	0.23	21.3	(120.8)	Negligible
	PM	0.24	7.6	0.32	12.6	(64.8)	Negligible
A4042 N	AM	1.18	265.5	0.92	21.8	(-91.8)	Moderate (Major)
	PM	1.26	777.8	0.71	6.61	(-99.2)	Moderate
Services	AM	0.26	6.2	0.46	15.5	(150.2)	Negligible
	PM	0.24	4.8	0.32	7.8	(61.6)	Negligible
A4042 S	AM	1.10	228.4	0.99	40.8	(-82.12)	Moderate
	PM	1.14	264.3	1.16	311.4	(17.8)	Moderate (Major)
Skewfields	AM	0.07	16.3	0.12	26.5	(62.3)	Negligible
	PM	0.85	63.9	1.77	433.4	(577.4)	Major (Minor)
A472	AM	1.23	668.5	0.97	31.3	(-95.3)	Moderate
	PM	1.14	212.32	0.78	6.4	(-96.9)	Moderate (Major)

Framework Travel Plan

- 4.6.6 A Travel Plan is 'a long term management strategy for an organisation or site that seeks to deliver sustainable transport objectives through action and is articulated in a document that is regularly reviewed'. The travel plan is a key tool for exploiting the use of sustainable modes at the proposed development. An appropriate Framework Travel Plan (FTP) has been prepared and is included as Appendix 4.2.
- 4.6.7 The effects of the FTP should increase the number and frequency of journeys made through other modes of transport to the car. If the targets are met then the effect should be a reduction in the use of single occupancy vehicles and an increase in public transport use and cycling and walking. Consequently the strain on local infrastructure will be lower which will increase its capabilities and accordingly all of the negative impacts assessed previously could be reduced. An example of which would be a decrease in severance as the roads will be less congested, which will also lead to reduced driver delay.

New Bus Service

- 4.6.8 A new bus service will be introduced to serve the proposed development as part of Phase 1 of the development (redevelopment of the Parke Davis site) and will evolve to respond to future phases. The principal aspects of the bus service which must be decided are the route and the frequency. Two options have been identified and are considered below.

Option 1 – New Direct Service

- 4.6.9 Route - Mamhilad Urban Village, A4042, Usk Road, Rockhill Road, Clarence Road, Pontypool Town Centre and return.
- 4.6.10 The route distance is approximately 9km return and the bus journey time is anticipated to be 18 minutes (calculated from timetables of existing services which cover parts of this route). Hence, it should be possible to operate a 20 minute service frequency with one vehicle.

Option 2 – Proposed New Loop Service

- 4.6.11 Route - Mamhilad Urban Village, A4042, Usk Road, The Hwy, New Road, Greenhill Road, Rockhill Road, Clarence Road, Pontypool Town Centre, Usk Road, A4042, Mamhilad Urban Village.
- 4.6.12 The service would operate in a clockwise and anti-clockwise direction calling at Pontypool & New Inn Railway Station, Polo Grounds Industrial Estate, the County Hospital, West Monmouth (secondary) School (500m walking distance from), and Pontypool town centre.

- 4.6.13 The route distance is approximately 12km and the bus journey time is anticipated to be 24 minutes (calculated from timetables of existing services which cover parts of this route). Hence, it should be possible to operate a 30 minute service frequency with one vehicle operating in each direction.
- 4.6.14 Both Option 1 and Option 2 would complement the existing 63, X20 and X33 bus timetables. Critically their timetables would also be synced with the train timetables at Pontypool & New Inn Railway Station.
- 4.6.15 The proposed bus routes of Option 1 and Option 2 are included in the Transport Assessment (Appendix 4.1).
- 4.6.16 Table 4.40 summarises the proposed bus strategy for the Mamhilad development with reference to the identified phases.

Table 4.40 Proposed Bus Strategy

Development Phasing	Bus Service Option	Service Frequencies			Estimated Start Year
		Weekday	Saturday	Sunday	
Phase 1	Option 1	60mins (30mins in peaks)	60mins	-	2019/2020
Phase 2	Option 1	30mins	60mins	60mins	2022/2023
Phase 3	Option 2	30mins (15mins in peaks)	30mins	60mins	2025/2026

- 4.6.17 The bus strategy is based on increasing the level of service as the development is built out to ensure that a cost-effective solution is achieved with a modest level of 'pump priming' in the early years. The intention would be the service to be commercially viable by the completion of the development
- 4.6.18 The bus services will offer a cheaper alternative to access local amenities than using a vehicle and will help increase the mobility of those who cannot drive. Having access to the railway station will diversify the employment opportunities to those who live in the area. It will even benefit those who can drive but will have additional travel options available to them.

4.7 Residual Effects

- 4.7.1 The mitigation proposed in the form of the FTP, the roundabout improvement scheme and the new bus service will reduce the impact that the development will have on the local highway network such that all impacts can be considered to be acceptable.

4.8 Assessment of Cumulative Effects

Identification of Impacts

- 4.8.1 The preceding sections of this chapter have considered the potential impacts of the proposed development the subject of the planning application (i.e. Phase 1 and 2). The third phase of the development of the Mamhilad Strategic Site is in the ownership of others and is considered in a cumulative context in the following paragraphs.

Traffic Flow

- 4.8.2 Table 4.41 shows the impact of the development and the cumulative effects on AM, PM and 24 hour flows against the baseline and displays the change and its significance.

Table 4.41 cumulative effects of traffic flow

Link	Time	Baseline Total Traffic Flow	With Development Total Traffic Flow	Cumulative effects Traffic Flow	Cumulative % change	Impact significance
Old Abergavenny Road - West of overflow carpark	AM	79	79	79	0	Negligible
	PM	82	82	82	0	Negligible
	24hr	814	814	814	0	Negligible
Old Abergavenny Road/A4042 roundabout	AM	760	903	974	7.3	Minor Significance
	PM	758	1001	1024	2.2	Negligible
	24hr	7592	9560	9964	4.1	Negligible
A4042 - north of Old Abergavenny Road/A4042 roundabout	AM	2572	2598	2623	1	Negligible
	PM	2913	2957	2986	1	Negligible
	24hr	27694	28052	28328	1	Negligible
A472 Berthin Road	AM	701	714	728	1.9	Negligible
	PM	803	825	840	1.8	Negligible
	24hr	7548	7773	7920	4	Negligible
Old Abergavenny Road/A4042 roundabout to Park Davis Site access	AM	2990	3128	3187	1.9	Negligible
	PM	3245	3478	3535	1.6	Negligible
	24hr	31487	33369	33959	1.7	Negligible
Park Davis Site access to A4042/Usk Road roundabout	AM	2971	3181	3384	6	Minor Significance
	PM	3206	3557	3792	6.2	Minor Significance
	24hr	31192	33062	36267	8.8	Minor Significance
A4042/Usk Road roundabout to	AM	858	897	935	4.1	Negligible

Usk Road/ The Highway roundabout	PM	813	879	923	4.8	Negligible
	24hr	8434	8971	9390	4.5	Negligible
Usk Road south of Usk Road/ The Highway roundabout	AM	1186	1207	1227	1.6	Negligible
	PM	981	1016	1040	2.3	Negligible
	24hr	10939	11224	11450	2	Negligible
A4042/Usk Road roundabout to A4042/ A472 Roundabout	AM	2113	2427	2592	6.4	Minor Significance
	PM	2032	2720	2910	6.5	Minor Significance
	24hr	23690	26004	27810	6.5	Minor Significance
South of A4042/ A472 Roundabout	AM	5020	5135	5256	2.3	Negligible
	PM	4532	4722	4861	2.9	Negligible
	24hr	48235	49782	51101	2.	Negligible

Accidents and Safety

Table 4.41: Impact Significance on Accidents and Safety of the Proposed Development

Junction/ Link	2028 Baseline: Number of Accidents (per year)	2028 with Development: Number of Accidents (per year)	Difference (with Development - Baseline)	Impact Significance
Junction - A4042/ Old Abergavenny Road Roundabout	1.26	1.69	0.43 (34.3%)	Major
Junction - A4042/ Usk Road Roundabout	1.30	1.60	0.30 (22.8%)	Moderate
Junction - A4042/ A472W Roundabout	6.81	8.22	1.41 (20.7%)	Moderate
Junction - Usk Road/ The Highway Mini-Roundabout	0.57	0.67	0.11 (19.1%)	Moderate
Link - O.A.R between A4042 Roundabout and Northern Primary Priority Junction Access	0.00	0.00	0.00 (0.0%)	Negligible
Link - O.A.R. between Northern Primary Priority Junction Access and Northern Secondary Priority Junction Access	0.00	0.00	0.00 (0.0%)	Negligible
Link - A4042 between A472E Priority Junction and O.A.R. Roundabout	0.21	0.23	0.02 (9.0%)	Minor
Link - A4042 between O.A.R. Roundabout and Southern Access Roundabout	0.00	0.00	0.00 (0.0%)	Negligible
Link - A4042 between Southern Access Roundabout and Usk Road Roundabout	0.00	0.00	0.00 (0.0%)	Negligible
Link - A4042 between Usk Road Roundabout and A472W Roundabout	0.43	0.51	0.08 (18.9%)	Moderate
Link - Usk Road between A4042 Roundabout and The Highway Mini-Roundabout	0.00	0.00	0.00 (0.0%)	Negligible
Total	10.57	12.92	2.34 (22.2%)	Moderate

- 4.8.3 The impact of the proposed development ranges from Negligible to Moderate across all links and junctions with the overall impact classified as Moderate.
- 4.8.4 The biggest impact in terms of percentage increase in number of accidents is felt at the A4042/ Old Abergavenny Road Roundabout which is forecast to see an increase in accidents of 34.3% meaning the impact significance is classified as Major. In absolute terms the impact at this junction amounts to 0.43 additional accidents per year which is approximately 1 additional accident every two years.
- 4.8.5 The A4042/ Usk Road Roundabout is forecast to experience an increase of accident occurrences of 22.8%. In absolute terms this amounts to an additional 0.30 accidents per year.
- 4.8.6 The A4042/ A472W Roundabout is forecast to experience an increase of accident occurrences of 20.7%. In absolute terms this amounts to an additional 1.41 accidents per year.
- 4.8.7 The Usk Road/ The Highway Mini-Roundabout is forecast to experience an increase of accident occurrences of 19.1%. In absolute terms this amounts to an additional 0.11 accidents per year.
- 4.8.8 In total the impact of the proposed development on the accident rate of the highway network of interest is 22.2% or 2.34 additional accidents per year. The majority of this increase is due to changes to the accident rate at the A4042/ A472W Roundabout.

Severance

Old Abergavenny Road

- 4.8.9 The cumulative effects result in an increase to almost 10,000 vehicles a day and as such the impact remains moderate.

A4042

- 4.8.10 The cumulative effects will have only result in a slightly increased number of vehicles (36,000) with the impact remaining Major.

Usk Road

- 4.8.11 Similar to the other links and due to a negligible change in traffic flows the severance of Usk Road remains moderate in the cumulative scenario, as it is for the baseline scenario and development scenario.

A472 Berthin Road

- 4.8.12 Berthin Road remains with a moderate impact significance in terms of severance in the cumulative scenario because the increase only amounts to 4%.

Table 4.42 impact significance of severance

Route	Baseline Significance	With Development Significance	Cumulative effects
Old Abergavenny Road	Minor -ve	Moderate -ve	Moderate -ve
A4042	Major -ve	Major -ve	Major -ve
Usk Road	Moderate -ve	Moderate -ve	Moderate -ve
Berthin Road A472	Moderate -ve	Moderate -ve	Moderate -ve

Driver Delay

- 4.8.13 Driver delay at the assessed junctions in the cumulative context has been calculated using the industry standard ARCADY roundabout assessment software. The maximum delay in minutes per vehicle for each assessed roundabout, for each of the AM and PM peaks, is shown in Tables 4.43 to 4.47.

Table 4.43 Maximum delay for the OAR/A4042 roundabout

Approach	Maximum Delay in Seconds per Vehicle	
	AM Peak Hour	PM Peak Hour
A4042 North	2.28	4.49
Unnamed Road	5.65	92.94
A4042 South	2.00	1.55
Old Abergavenny Road (OAR)	2.74	3.96

- 4.8.14 Table 4.43 shows the driver delay for the Old Abergavenny Road/A4042 roundabout, which is mostly without issue apart from the PM delay to the unnamed access which has a delay of over a minute and a half, due to the fact that the road is so infrequently used this should not be an issue.

Table 4.44 maximum delay for the A4042/Usk Road roundabout

Approach	Maximum Delay in Seconds per Vehicle	
	AM Peak Hour	PM Peak Hour
A4042 North	3.70	9.17
A4042 South	2.66	3.28
Usk Road (UR)	4.52	3.40

- 4.8.15 Table 4.44 shows us that there are very few issues with the driver delays to the A4042/Usk road roundabouts, the longest delay is less than 10 seconds and no junction is in danger of exceeding capacity.

Table 4.45 Maximum Delay for the Usk Road/The Highway roundabout

Approach	Maximum Delay in Seconds per Vehicle	
	AM Peak Hour	PM Peak Hour
Usk Road East	4.95	6.45
The Highway	11.47	7.06
Usk Road West	4.36	3.41

- 4.8.16 Table 4.45 shows the Usk road Mini Roundabout having no important cumulative effects from the development with arms remaining well under capacity.

Table 4.46 Maximum Delay for the A4042/A472 roundabout

Approach	Maximum Delay in Seconds per Vehicle	
	AM Peak Hour	PM Peak Hour
Lower Mill	9.85	8.34
A4042 North	886.32	1716.86
Services	6.21	4.81
A4042 South	287.41	831.02
Skewfields	16.50	62.53
A472	730.59	1251.86

- 4.8.17 Table 4.46 shows the main issue with the development, the three main arms of the roundabout, the A4042 north, A4042 south and the A472 all have developed delays which are extremely noteworthy, these delays have been addressed in the mitigation proposal to redesign this roundabout, the effects of which can be seen in Table 4.47.

Table 4.47 impact significance of driver delay

Approach	AM/PM	With development		Cumulative effects			Impact significance
		RFC	Delay	RFC	Delay	% change	
A4042/ Old Abergavenny Road roundabout							
A4042 N	AM	0.47	2.2	0.47	2.2	2.6	Negligible
	PM	0.67	4.3	0.68	4.4	4.2	Negligible
Unnamed access	AM	0.02	5.4	0.02	5.6	4.4	Negligible
	PM	0.09	49.4	0.11	92.9	46.8	Negligible
A4042 S	AM	0.52	1.9	0.52	2.0	2	Negligible
	PM	0.38	1.5	0.39	1.5	1.9	Negligible
Old Abergavenny Road	AM	0.16	2.6	0.52	2.7	3.3	Negligible
	PM	0.49	3.8	0.49	3.9	3.0	Negligible
The Highway/ Usk road mini-roundabout							
Usk Road East	AM	0.31	4.7	0.34	4.9	3.2	Negligible
	PM	0.53	6.2	0.54	6.4	2.7	Negligible
The Highway	AM	0.70	10.9	0.72	11.4	4.4	Negligible

	PM	0.47	6.8	0.50	7.0	3.5	Negligible
Usk Road West	AM	0.44	4.3	0.45	4.3	1.1	Negligible
	PM	0.28	3.3	0.31	3.4	2.3	Negligible
Usk Road/ A4042 roundabout							
A4042 N	AM	0.60	3.2	0.65	3.7	12.7	Negligible
	PM	0.84	7.6	0.87	9.1	17.1	Moderate
A4042 S	AM	0.47	2.5	0.49	2.6	4.1	Negligible
	PM	0.51	2.9	0.56	3.2	10	Negligible
Usk Road	AM	0.45	4.3	0.47	4.5	4.2	Negligible
	PM	0.23	3.1	0.26	3.4	7.6	Negligible
A472/ A4042 roundabout							
Lower Mill	AM	0.12	9.7	0.12	9.8	1.3	Negligible
	PM	0.25	8.0	0.26	8.3	3	Negligible
A4042 N	AM	1.30	689.4	1.40	886.3	22.2	Moderate
	PM	1.33	1029.5	1.39	1203.9	14.5	Moderate
Services	AM	0.26	6.2	0.25	6.2	-0.5	Negligible
	PM	0.23	4.7	0.23	4.6	-1.5	Negligible
A4042 S	AM	1.11	251.6	1.12	287.4	12.4	Moderate
	PM	1.19	415.4	1.23	524.1	20.70	Moderate
Skewfields	AM	0.07	16.4	0.07	16.5	0.3	Negligible
	PM	0.86	66.4	0.86	66.9	0.8	Minor
A472	AM	1.24	695.3	1.25	730.5	4.8	Moderate
	PM	1.19	369.3	1.23	470.5	20.7	Moderate

- 4.8.18 Table 4.47 shows the cumulative effects of the development when compared to development scenario for phases one and two. As the impact significance shows all of the effects are negligible, apart from some for the A472/A4042 roundabout.

Pedestrian and Cycle Delays

- 4.8.19 The differences between the development scenario and the cumulative scenario are so small in comparison to the factors that affect the journey delay that there are no recorded differences between the two.

Pedestrian and Cycling Amenities

- 4.8.20 Table 4.48 summarises the cumulative effects on pedestrian and cycling amenity. The cumulative effects are in keeping with the effects of the development scenario.

Table 4.48 cumulative effects of impact significance

Route	Development Impact significance	Cumulative effects
Old Abergavenny Road	Negligible	Negligible
A4042	Negligible	Negligible
Usk Road	Negligible	Negligible
Berthin Road A472	Negligible	Negligible

Fear and Intimidation

Pedestrians and Cyclists

- 4.8.21 Any increase of effects due to the cumulative scenario are negligible when compared to the development scenario and as such there are no changes in the potential for fear and intimidation of pedestrians and cyclists. This is demonstrated in Table 4.49 (when compared to Table 4.36).

Table 4.49 Cumulative effects of development on fear and intimidation

Parameter	Assessed Link			
	Old Abergavenny Rd	A4042	Usk Road	Berthin Road A472
Peak hour two-way traffic flow	Moderate	Extreme	Moderate	Moderate
Daily HGV two-way traffic flow	Low	Low	Low	Low
Average Speed	Extreme	Extreme	Extreme	Extreme

Motorists

- 4.8.22 Similar to the impact on pedestrians and cyclists the impact on motorists does not change when assessing the cumulative effects. This is demonstrated by Table 4.50 below (which can be compared to Table 4.37).

Table 4.50 cumulative effects on driver stress

Parameter	Assessed Link			
	Old Abergavenny Rd	A4042	Usk Road	Berthin Road A472
Driver Stress	High	High	High	High

4.9 Summary

- 4.9.1 This chapter has considered the environmental impacts of the proposed development in terms of traffic, transportation and access. It has been produced considering the relevant and important aspects of the local area in the study year of 2028 considering the proposed development against the baseline.
- 4.9.2 Table 4.51 sets out a summary of the effects of the development against the baseline conditions. It should be noted that it has been simplified to provide an indicative summary only and the specific impacts of each topic should be referred to in the main text of the chapter.

Table 4.51 indicative summary of impacts of the development

Topic	With Development
Accidents and Safety	Moderate negative
Severance	Moderate negative
Driver Delay	Negligible
Pedestrian and Cycle Delay	Negligible
Pedestrian and Cycle Amenity	Negligible
Fear and Intimidation	Moderate negative

- 4.9.3 Proposed improvements to public transport services alongside the FTP are likely to increase the walking, cycling and public transport trips leading to a subsequent reduction in in both the number and length of car journeys.