



WELSH GOVERNMENT

NORTHERN ACCESS ROAD, ST ATHAN

TRANSPORT ASSESSMENT

DECEMBER 2016

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1.0 Introduction

- 1.1.1 WYG have been appointed by AECOM to produce a Transport Assessment (TA) associated with the proposed Northern Access Road (NAR) at St Athan, in the Vale of Glamorgan. AECOM have been awarded a tender by Welsh Government (WG) to design the road and this TA report presents information related to the traffic and transport implications of the scheme.
- 1.1.2 The aim of the NAR is to provide a good quality highway link from the B4265 north-east of Llantwit Major into the existing Aerospace Business Park (ABP) in St Athan, and to also serve the future residential and commercial development that is planned.
- 1.1.3 The planning application is solely related to the actual NAR infrastructure and not the other commercial developments, which would need to be the subject of individual planning applications (and supporting documents) in due course.
- 1.1.4 WYG were initially appointed by Welsh Government to undertake a scoping and traffic surveys commission, and the report of this work is included at **Appendix A** of this report.

1.2 Structure of Report

- 1.2.1 The structure of this report is summarised below:
- Section 2: Describes the existing conditions on the transportation network surrounding the development site;
 - Section 3: Provides information on the background to the site and consented/committed developments;
 - Section 4: Outlines relevant local, regional and national policy documentation;
 - Section 5: Describes the detail of the proposed road;
 - Section 6: Forecasts the trips that may be generated by committed and proposed developments;
 - Section 7: Assesses the impact of the potential development trips on the road and its junctions;
 - Section 8: Presents a summary and conclusions.



2.0 Existing Conditions

2.1 Site Location

- 2.1.1 The proposed Northern Access Road would run from the B4265 (to the north-east of Llantwit Major) in an easterly direction to the north of the existing Aerospace Business Park area, routing just to the north of the existing Eglwys Brewis Road. It ties back in with Eglwys Brewis Road approximately 1 km west of Eglwys Brewis village.
- 2.1.2 The location of the site and the local highway network is illustrated in **Figure 2.1**. The route of the proposed road is currently agricultural land.

2.2 Local Highway Network

- 2.2.1 The NAR would commence from a new junction with the B4265 between Llanmaes and Llantwit Major. The B4265 is a strategic route in the south of the Vale of Glamorgan, connecting Llantwit Major with the A4226 near Cardiff Airport. The A4226 continues to the Waycock Cross roundabout, on the western side of Barry.
- 2.2.2 To the west of the proposed junction the B4265 forms a staggered traffic signalled junction with Llanmaes Road, which heads south-west into Llantwit Major. Llanmaes village can be accessed via the arm to the north-east of this junction. Further west, the B4265 forms a roundabout with Heol Pentre'r Cwrt, a residential development, and to the west of that there is a roundabout with the B4270, which heads north towards Cowbridge and the A48.
- 2.2.3 To the east of the proposed junction with the NAR, the B4265 forms a staggered traffic-signalled junction with Eglwys Brewis Road and the road leading to Boverton/Llantwit Major. Around 400m east of these signals, the B4265 intersects with Llantwit Road at a priority junction. Llantwit Road heads east to provide access to the MOD Housing and the 'main gate' of the existing MOD facility.
- 2.2.4 Eglwys Brewis Road runs in a north-easterly direction from the B4265, passing to the north of the MOD housing and ABP area. Although two-way the route is narrow in places and includes a height restriction where it passes under the railway line, close to its junction with the B4265. Around 2km east of the B4265 there is a gated junction with the MOD area, and it is understood that aircraft/service vehicles occasionally need to cross the road at this point. To the east of this location the road forms a junction with the minor lane leading to Picketston, and then continues through Eglwys Brewis village, before connecting with St Athan Road.



- 2.2.5 From its junction with Eglwys Brewis Road, St Athan Road continues south, becoming known as Gileston Road as it passes through Saint Athan village, and then forming a crossroads junction with the B4265 between Saint Athan and Gileston. Around 5km east of this junction the B4265 forms a roundabout junction with Tredogan Road, which has access to some facilities within Cardiff Airport. To the east of the roundabout the road becomes the A4226 and connects with Port Road at another roundabout, which forms the main access point into the airport. East of this junction Port Road continues to the Waycock Cross roundabout on the western edge of Barry.
- 2.2.6 There is also an eastern access into the MOD/ABP from Saint Athan Road, although it is understood this gate is used much less, with the majority of traffic accessing via the main gate. This gate is located between Clive Road and Flemingston Road. The access arrangement consists of two separate junctions, the southernmost junction is one-way in and the northern junction is one-way out.

2.3 Walking and Cycling

- 2.3.1 Footway provision exists along Gileston Road/Cowbridge Road (on the western side of the road) from its junction with the B4265, through St Athan, to its junction with Eglwys Brewis Road. In St Athan Village itself footway is provided on both sides of the road.
- 2.3.2 At the junction of Gileston Road/B4265 uncontrolled crossing facilities are provided, by way of dropped kerb/tactile paving and a central pedestrian refuge, which allows pedestrians to cross the B4265 in two movements.
- 2.3.3 Eglwys Brewis Road has footway (on the eastern side of the road) for its southern most section, from its junction with the B4265 for approximately 250m in an easterly direction, where it then connects into Eagle Road.
- 2.3.4 The Eglwys Brewis Road/B4265 junction is signal controlled and the layout incorporates a staggered pedestrian crossing, which allows for pedestrian movement across the B4265.
- 2.3.5 A standalone puffin crossing also exists on the B4265 at its junction with Llantwit Road. The crossing provides safe crossing opportunity for pedestrians between the MOD Main Gate and a footpath connecting into to Boverton Road, which leads to Llantwit Major.

2.4 Public Transport



2.4.1 Existing bus stops servicing the area are located on Eglwys Brewis Road, the B4265, Cowbridge Road and Gileston Road. The local bus services are summarised in Table 2.1 below, and also illustrated on **Figure 2.2**.

Table 2.1: Existing Bus Service Summary

Service	Route	Frequency		Operator
		Mon - Sat	Sun & PH	
Services from Eglwys Brewis Road / Cowbridge Road				
303	Bridgend – Barry	Hourly service	Every 2 hours	New Adventure Travel
905	Rhose Railway Station – Cardiff Airport	Hourly service	Hourly service	New Adventure Travel
X91	Cardiff – Llantwit Major (via St Athan)	Every 2 hours	No services	Cardiff Bus

2.4.2 Llantwit Major Railway station is located approximately 5km from St Athan and the ABP, which provides an hourly service westbound to Bridgend and eastbound to Cardiff.

2.5 Traffic Data

2.5.1 Full information on traffic surveys is included in the Traffic Surveys Technical Note, which was included at **Appendix A**.

2.5.2 Following a scoping meeting with VOG, an agreement was reached as to the extent of traffic surveys that should be undertaken. A diagram illustrating surveys is shown on **Figure 2.3** and is summarised below. Junction turning counts were undertaken on Tuesday 7 June 2016, outside of the school holidays, at the following locations:

- 1) B4265 / B4270 (Floodgate roundabout)*
- 2) B4265 / Heol Pentre'r Cwrt (roundabout)
- 3) B4265 / Llanmaes Road (traffic signals)
- 4) B4265 / Eglwys Brewis Road (traffic signals)*
- 5) B4265 / Llantwit Road (priority – to Main Gate of MoD)



- 6) B4265 / Gileston Road (priority – Gileston Cross)*
- 7) St Athan Road / Cowbridge Road / Eglwys Brewis Road (priority)
- 8) B4265 / A4226 (British Airways roundabout)
- 9) A4226 / Port Road (Cardiff Airport roundabout)
- 10) A4226 / B4266 (Waycock Cross roundabout)*

Queue length surveys were undertaken at four of the junctions (as marked *).

2.5.3 In addition Automatic Traffic Count (ATC) loops were placed at the following locations for a 1-week period (6-12 June 2016).

- B4265 (proposed NAR junction location)
- Eglwys Brewis Road (north of Church Meadow)
- St Athan Road (north of Eglwys Brewis Road)
- B4265 (east of Gileston Cross)
- B4265 (west of Gileston Cross)

2.5.4 The traffic flows are illustrated in **Figure 2.4** with the full results attached as **Appendix B**. The network peak hours (weekday) have been identified as 08:00-09:00 and 16:00-17:00.

2.6 Accident Analysis – need to obtain data

2.6.1 text.

2.6.2 Xxxx **Figure 2.5** xxx

2.6.3 Xxxx **Appendix C** xxx



3.0 Committed Development and Planning Background

3.1 Introduction

3.1.1 There are a number of committed developments in the vicinity of the proposed road and a significant recent planning history, and information on this is set out in this section of the report.

3.2 Recent History

3.2.1 In 2009 the ABP site was the subject of an application for a Defence Training College (DTC). The proposals included for a new access road, referred to as the Northern Access Road, which was similar in design and followed the same alignment as the route being proposed this time around.

3.2.2 The DTC was forecast to result in the creation of up to 7,000 jobs and was granted planning permission. However, in 2011 the government announced this would not be proceeding.

3.3 Consented Development

3.3.1 The Aerospace Business Park (ABP) currently employs 200 staff. It is the case that the ABP could be re-developed more intensively than the current situation, in part within the terms of its consented use and also through new proposals that will require planning approval. The Welsh Government are seeking to encourage the expansion of the ABP and an emerging master plan is suggesting that up to 3,000 jobs could be created if the site is developed to its full potential.

3.3.2 Recently it has been announced that the super-hangar within the ABP area is to be redeveloped by Aston Martin to assemble their vehicles, permitted under existing consented use. The Aston Martin factory is expected to be fully operational by 2019 and will provide 700 new jobs.

3.3.3 At this stage any further development, and the timescale for expansion of the ABP is uncertain. However, the emerging master plan is seen to be a basis for the mid to long term development of the site over the next 10-25 years.

3.4 Other Development

3.4.1 As well as the ABP development set out above, there are aspirations for two residential developments, which are to be assessed directly from the proposed Northern Access Road (NAR). Both parcels of land are located north of Eglwys Brewis Road and south of the proposed NAR. These are allocated in the Vale of Glamorgan Local Development Plan (LDP), and listed below.



- Residential Housing (90 units) LDP allocation MG2(6)
- Residential Housing (375 units) LDP allocation MG2(7)

3.4.2 Whilst the residential sites are not fully committed and will be subject to separate planning applications, given their inclusion in relevant planning policy documents, it is considered appropriate to understand the traffic that may be generated by them, in the context of assessing the maximum potential traffic that may be using the NAR. However, as and when the individual housing developments come forward as planning applications, they would have to fully assess their transport impacts.

3.4.3 Full information on committed development and its traffic implications is set out in Section 6.



4.0 Transport Policy Framework

4.1 Introduction

4.1.1 There are numerous local, regional and national policy documents outlining relevant planning policy, as summarised below.

4.2 National Policy

4.2.1 The national planning policies and guidance relevant to the transport aspects of this development are set out in the following documents:

- People, Places, Futures - The Wales Spatial Plan
- One Wales: Connecting the Nation – The Wales Transport Strategy
- Active Travel (Wales) Act

The Wales Spatial Plan

4.2.2 The Wales Spatial Plan provides high level strategic guidance and a framework for future development in Wales. It provides important underpinning for a whole range of matters and helps to deliver priorities set out in the One Wales agreement.

4.2.3 The plan considers six regions, one of which is the South East Wales (Capital Region). Within this region three Strategic Opportunity Areas have been identified, offering potential regional benefits from their sustainable development. Included, is development in the Vale of Glamorgan at St Athan.

The Wales Transport Strategy

4.2.4 One Wales: Connecting the Nation – The Wales Transport Strategy is the Welsh Government's strategy for transport. It sets out how the Welsh Government intends to achieve certain social, economic and environmental outcomes. Five key areas are identified as being areas for progress. These are:

- Reducing greenhouse gas emissions and other environmental impacts;
- Improving public transport and better integration between modes;



- Improving links and access between key settlements and sites across Wales and strategically important all-Wales links;
- Enhancing international connectivity; and
- Increasing safety and security.

4.2.5 The National Transport Finance Plan (2015) recognises that the maximum benefits from transport will only be experienced if Wales has excellent national and international connections, enabling access to markets, employment, education and services. The finance plan is not a policy document, but lists the schemes Welsh Government will deliver between 2015-2020. Included is Metro Phase 1 (bus priority corridor improvements) between Cardiff and St Athan, to be delivered before the end of 2016.

Active Travel (Wales) Act

4.2.6 The Active Travel (Wales) Act places a duty upon all local authorities to plan for and promote active travel journeys, to encourage more walking and cycling in Wales. The Act also requires new road schemes (including road improvement schemes) to consider the needs of pedestrians and cyclists at design stage.

4.3 Local Policies

4.3.1 At a local level, there are policies and strategies with relevance to transport and development in The Vale of Glamorgan, which have been set out and summarised below:

- The Vale of Glamorgan Deposit Local Development Plan (2011-2026)
- The Vale of Glamorgan Local Transport Plan (2015-2030)

Vale of Glamorgan Deposit Local Development Plan (LDP)

4.3.2 The Vale of Glamorgan Council is preparing a new LDP which will set out how land within the Vale of Glamorgan is used between 2011 and 2026.

4.3.3 The plan sets out the vision, objectives, strategy and policies for managing development, and contains a number of local planning policies and makes provision for the use of land for the purposes of housing, employment, retailing, recreation, transport, tourism, minerals, waste, and community uses. It also seeks to identify the infrastructure that will be required to meet the growth anticipated in the Vale of Glamorgan up to 2026.



4.3.4 The LDP identifies a number of strategic objectives that set the context of the LDP strategy. Objective 8 seeks to maximise the opportunities presented by the Vale of Glamorgan's location within the South East Wales Capital Region and capitalise on the designation of the St Athan – Cardiff Airport Enterprise Zone to attract inward investment, and focus on its economic assets such as MoD St Athan and Barry Docks to benefit the region as a whole.

4.3.5 The LDP Strategy comprises four key elements as follows:

"To promote development opportunities in Barry and the South East Zone. The St. Athan area to be a key development opportunity and Cardiff Airport a focus for transport and employment investment. Other sustainable settlements to accommodate further housing and associated development."

- Development in the South East Zone
- St Athan as a Key Development Opportunity
- Cardiff Airport – Employment and Transport Opportunity
- Development in the Other Sustainable Settlements

4.3.6 St. Athan is identified as one of three Strategic Opportunity Areas in the Wales Spatial Plan offering significant potential regional benefits. The designation of the 'St Athan – Cardiff Airport' Enterprise Zone in September 2011, focussing on the aerospace and defence sector, represents a significant opportunity to bring aerospace related inward investment to the area.

4.3.7 The LDP Strategy acknowledges the important role St Athan will play in the future prosperity of the Vale of Glamorgan and the wider South East Wales Capital Region. Policy SP 2 seeks to maximise opportunities for new inward investment and growth arising from these designations, while Policy SP 7 emphasises the strategic importance of a new Northern Access Road to facilitate the further development of the Aerospace Business Park at St Athan as part of the Enterprise Zone. Significant levels of new housing development are also proposed to reflect the importance of St Athan to the Strategy of the Plan, and to support the key employment opportunities within the area.

The Vale of Glamorgan Local Transport Plan

4.3.8 The Local Transport Plan (LTP) recognises the need for a collaborative approach to develop the Capital Region's Transport needs, to help deliver enhanced mobility for both residents and visitors and greater accessibility to jobs and services, thereby unlocking the potential for sustainable



economic growth.

4.3.9 The LTP identifies that this can be done by:

- providing new transport capacity to cope with future demand;
- improving accessibility and connectivity, and reducing journey times between key settlements within South East Wales;
- improving access to a wider range of job opportunities by increasing the coverage of public transport, particularly for cross-valley journeys;
- expanding the effective labour market catchment for businesses, enabling local companies to recruit from a wider skills base;
- supporting the growth of business clusters in the larger urban centres (for example, around the designated Enterprise Zones), helping to stimulate competition and innovation ensuring that additional travel demand does not impose costs on businesses through increased congestion and crowding;
- enhancing facilities that support our key airport, ports and freight terminals



5.0 Proposed Development

5.1 Introduction

- 5.1.1 It is proposed to submit a planning application for the Northern Access Road, a two kilometre road providing a link between the B4265 to the north-east of Llantwit Major and the existing Eglwys Brewis Road to the west of Eglwys Brewis village. The general alignment of the new road is illustrated in **Figure 5.1**.
- 5.1.2 The main purpose of the road is to provide a good quality vehicular link between the B4265 and the significant developments that are planned in and around the Aerospace Business Park, including the new Aston Martin facility. The proposed opening year of the road is 2019.
- 5.1.3 The design brief for the NAR has sought to discourage vehicles associated with the ABP and other employment developments from using the NAR to travel to and from the east, via Eglwys Brewis Road, and the access junction into the ABP will prohibit movements into and out of the site from the east. However, it will be possible for residents of Eglwys Brewis (and settlements to the north and east) to use the route to travel to and from the west.

5.2 Start and end points of NAR route

- 5.2.1 The NAR will commence at a new roundabout junction with the B4265, approximately 600m east of the existing B4265/Llanmaes Road traffic signals, and 400m west of the existing Eglwys Brewis Road junction. The proposed roundabout will have a short two lane flared approach on all arms and an inscribed diameter of 50m. The junction is shown in the AECOM layout drawing in **Appendix D**.
- 5.2.2 The NAR will terminate by tying back into the existing Eglwys Brewis Road at a point around 1 km west of Eglwys Brewis village. At this location a number of different routes converge, and it is necessary to form adequate access for ABP traffic, including their sites to the north of Eglwys Brewis Road.
- 5.2.3 A signal controlled junction is proposed at this point, located adjacent to the former super-hangar, which will in future be used for the Aston Martin development. The proposed junction layout includes a flared two-lane approach from the west and a two-lane exit from the ABP site before merging back into a single lane. The junction is shown in the AECOM layout drawing in **Appendix D**.



5.3 Intermediate Junctions

- 5.3.1 It is proposed that, other than its start and end junctions, the NAR will have five other junctions. All of which will take the form of a priority ghost island arrangement. Their location is illustrated in **Figure 5.1**.
- 5.3.2 Starting at the proposed roundabout at the most westerly end of the NAR, the first intermediate junction will be located approximately 240m east, with the minor arm leading south into the proposed residential plot, LDP allocation MG2 (7).
- 5.3.3 The second junction is around 640m further east and provides a connection northbound to an existing country lane, which leads to Llanmaes.
- 5.3.4 Continuing east by approximately 120m a third junction is proposed, which is to serve the second residential plot, LDP allocation MG2(6). The minor arm will lead south into the proposed development site.
- 5.3.5 Approximately 400m further east a fourth junction is proposed, which provides access into ABP land located north of the NAR. It is understood that this junction will be securely gated, with occasional use only, by service and operational vehicles.
- 5.3.6 The fifth and final junction is located a further 200m east and connects with the existing Eglwys Brewis Road, which will form the minor arm.

5.4 Facilities for Pedestrians and Cyclists

- 5.4.1 It is proposed that the NAR will have a 3m shared footway/cycleway on its south side between the B4265 and final signal controlled junction leading onto the ABP, and on the north side there will be a 2m footway. This will allow pedestrian and cyclist access to the developments by sustainable modes.
- 5.4.2 Controlled crossing points will be provided across all arms at the signalised junction accessing the ABP at the east of the road. At the west, uncontrolled crossing facilities will be incorporated into the proposed roundabout, via the roundabout splitter islands.

5.5 Public Transport Strategy

- 5.5.1 The route proposes lay-bys and bus stop provision adjacent to the proposed housing plots and the



access into the ABP site..



6.0 Trip Generation and Distribution

6.1 Introduction

6.1.1 This section sets out the predicted trip generation and distribution that is forecast to use the new road, and considers committed development and traffic growth.

6.2 Traffic Growth

6.2.1 The traffic assessment has considered the daily flows (AADT), as well as AM and PM peak hours.

6.2.2 Following scoping discussions with VOG it has been agreed that the assumed year of opening of the road will be 2019 and that a 10-year design horizon will also be tested (2029).

6.2.3 Background traffic growth from 2016 to 2019 and 2029 has been calculated using the TEMPRO program and is attached at **Appendix E**.

6.3 Committed Development

6.3.1 As set out in Section 5, the existing super-hanger on the ABP site will be used by Aston Martin for the manufacture of new vehicles. The development is expected to be fully operational by 2019, which is also the proposed opening year for the road.

6.3.2 Aston Martin development traffic will need to be added to the base traffic flows used to assess the opening year of the road. The traffic flows will be calculated for the Aston Martin development based on the provision of 700 new jobs.

6.4 Other Forecast Developments

6.4.1 This section considers potential traffic flows associated with proposed developments which do not already have permission or consent. This primarily relates to the two residential land parcels, and the long term development of the ABP. Traffic flows will be forecast and used in the assessment of the future 2029 year scenario.

6.5 Trip Generation

6.5.1 The potential traffic flows arising from the various land-uses that could reasonably come forward have been considered separately for the following land uses:



- Aerospace Business Park (excluding Aston Martin)
- Aston Martin
- Residential development

6.5.2 To estimate development traffic flows, trip generation for the two residential sites and the Aerospace Business Park (ABP) will be forecast using TRICS. However, due to the specific nature of the Aston Martin development, the trip generation will be estimated based on a 'first principles' calculation, using information provided by the end-user. This is considered to be a more accurate and representative way of forecasting the development flows, rather than using TRICS, which has limited comparable survey sites. The TRICS categories that will be used are:

- 'Residential – Houses Privately Owned' for the proposed residential sites; and
- 'Employment – Industrial Estate' for the development of the Aerospace Business Park

6.5.3 Although referred to as an Aerospace 'Business' Park, the site is home to specialist aerospace manufacture/maintenance and is not a typical edge of town business park. The TRICS land use 'Industrial Estate' is considered more representative and will provide a more realistic estimation of trip rates when considering the future development/expansion of the ABP.

6.5.4 The forecast trip rates and number of vehicle trips, for the residential sites and the ABP, have been provided in Tables 6.1 and 6.2 respectively. Full TRICS output files are attached in **Appendix F**.

Table 6.1 – TRICS Trip Rates (Residential and ABP)

Development	Weekday Morning Peak (07:30-08:30)		Weekday Evening Peak (16:30–17:30)		Weekday Daily
	Arrivals	Departures	Arrivals	Departures	2-way
Residential	0.123	0.352	0.293	0.2	4.373
Residential	0.123	0.352	0.293	0.2	4.373
Employment	0.340	0.088	0.134	0.293	3.196



Note – rates are per dwelling for residential and per job for ABP.

Table 6.2 – Forecast Vehicle Trips (Residential and ABP)

Development	Weekday Morning Peak (07:30-08:30)		Weekday Evening Peak (16:30–17:30)		Weekday Daily
	Arrivals	Departures	Arrivals	Departures	2-way
Residential MG2 (6)	11	32	26	18	394
Residential MG2 (7)	46	132	110	75	1640
ABP (3,000 jobs) *	1020	264	402	879	9588

(*) The timescale and the level of expansion for the ABP is unknown, although the emerging master plan is expected to be the basis for development on the site for the next 10-25 years. Therefore it has been assumed that the ABP will create all 3,000 jobs by 2029 (10 years after road opening) which is the assessment year requested by the Vale of Glamorgan Council. This is considered to be very robust, as it is very unlikely that the ABP will develop at such a rate.

6.5.5 The forecast number of trips for the Aston Martin factory have been calculated based on the following information provided by the end user:

- 700 jobs (total)
- 600 jobs (core) starting at 07:00 and finishing at 17:00;
- 100 jobs (paint shop shift work);
 - 50 jobs shift (1) starting at 06:00 and finishing at 14:00
 - 50 jobs shift (2) starting at 14:00 and finishing at 01:00
- 40 HGV deliveries per day, arriving between 06:00 and 18:00.

6.5.6 Assuming a car occupancy of 1.2 people per vehicle the forecast number of trips associated with the Aston Martin development has been provided in Table 6.3. National occupancy averages have remained fairly stable over recent years and are typically between 1.5 and 1.6. However, rates do vary by purpose of journey. An occupancy rate of 1.2 is considered worst-case and appropriate when considering vehicle journeys to a car manufacturing factory.



Table 6.3 – Forecast Vehicle Trips (Aston Martin)

Development	Weekday Morning Peak (07:30-08:30)		Weekday Evening Peak (16:30–17:30)		Weekday Daily
	Arrivals	Departures	Arrivals	Departures	2-way
Aston Martin	500	25*	25*	400	1250

(*) It would not be realistic to assume that no vehicles will depart in the morning peak or arrive in the afternoon peak. Therefore 5% of the peak hour traffic has been assumed.

6.5.7 Due to the start times and shift patterns, the majority of Aston Martin employees are forecast to arrive prior to 07:00 and therefore will not coincide with the morning peak assessment hour, which has been identified as 07:30-08:30.

6.5.8 As agreed with the VOG two assessment years will be considered (2019 and 2029). The developments to be included when calculating vehicle trips have been set out below:

- 2019 (opening year);
 - Existing ABP (200 jobs);
 - Background Growth; and
 - Aston Martin (700 jobs).
- 2029 (+ 10 years);
 - Background Growth;
 - Aston Martin (700 jobs);
 - LDP allocation MG2(6) Residential Housing (90 units);
 - LDP allocation MG2(7) Residential Housing (375 units); and
 - Future ABP (3,000 jobs).

6.5.9 The total peak hour forecast trips and daily traffic flow for 2019 is provided in Table 6.4.



Table 6.4 – Forecast Vehicle Trips 2019

Development	Weekday Morning Peak (07:30-08:30)		Weekday Evening Peak (16:30-17:30)		Weekday Daily
	Arrivals	Departures	Arrivals	Departures	2-way
MG2 (6)	0	0	0	0	0
MG2 (7)	0	0	0	0	0
ABP (200 jobs)	68	18	27	59	639
Aston Martin	25*	25*	25*	400	1250
TOTAL	93	43	52	459	1889

(* Although the Aston Martin peak has been identified as 06:00-07:00 it would not be realistic to assume that no vehicles will arrive/depart between 07:30-08:30. Therefore 5% of the development peak hour traffic has been assumed.

6.5.10 The total peak hour forecast trips and daily traffic flow for 2029 is provided in Table 6.5.

Table 6.5 – Forecast Vehicle Trips 2029

Development	Weekday Morning Peak (07:30-08:30)		Weekday Evening Peak (16:30-17:30)		Weekday Daily
	Arrivals	Departures	Arrivals	Departures	2-way
MG2 (6)	11	32	26	18	394
MG2 (7)	46	132	110	75	1640
ABP (3,000 jobs)	1020	264	402	879	9588
Aston Martin	25*	25*	25*	400	1250
TOTAL	1102	453	563	1372	12871

(* Although the Aston Martin peak has been identified as 06:00-07:00 it would not be realistic to assume that no vehicles will arrive/depart between 07:30-08:30. Therefore 5% of the development peak hour traffic has been assumed.

6.5.11 It can be seen that in the opening year (2019) the resulting weekday daily flow is forecast to be 1,889 vehicles with a maximum hourly flow of 459. In the horizon year 2029 the AADT is forecast to be 12,871 and the hourly flow 1,372.

6.6 Residential Trip Distribution and Assignment



6.6.1 The development flows will be assigned along the new NAR to its junction with the B4265 based on journey to work census data and local turning count surveys as set-out below:

Residential Distribution (i.e. place of work for persons who will reside in either of the proposed residential developments):

- North 15%
- East 58%
- South 10%
- West 17%

Commercial Distribution (i.e. place of residence for persons who will work at the proposed Aston Martin and ABP developments):

- North 9%
- East 50%
- South 20%
- West 21%

6.6.2 Broadly, the North would include key origins/destinations such as Cowbridge and Ystradowen; the East would include Barry, Dinas Powys, Penarth, Cardiff and South East Wales; the South would include Llantwit Major; and the West would include Bridgend and South West Wales. Full census details and calculations are attached in **Appendix G**.

6.6.3 Development Traffic Flows have been distributed based on the assumptions set out above and traffic flow diagrams are provided in **Appendix H**.



7.0 Traffic Assessment

7.1.1 This section assesses the impact of the proposed development upon the local highway network based on the predicted vehicular flows outlined in the previous section.

7.2 Link Assessment

7.2.1 The opening year and forecast future year traffic flows presented in this section have been discussed with AECOM, and formed a key input into the standards of the road that they have designed. However, information is provided below as to the potential daily traffic on the NAR in the future.

7.2.2 For the purposes of assessing the link capacity, the section of road between the proposed Eglwys Brewis Road junction and the proposed signalised junction will be used, as this will have the greatest level of flow.

7.2.3 In relation to the Design Manual for Bridges (TA46/97 and TA79/99) the opening year flow falls well below 13,000 AADT and a one-way hourly flow of 1,470. Indicating that a single two-way carriageway (7.3m) would be suitable.

7.2.4 In the future forecast year (2029) the link is forecast to have an AADT flow of 14,018 vehicles and a one-way hourly flow of 1,447.

7.3 Junction Assessment

7.3.1 This report considers the traffic capacity of each of the NAR's proposed junctions, as below:

- B4265 / NAR (Roundabout)
- NAR / Residential MG2(7) (Priority Junction)
- NAR / Llanmaes Access (Priority Junction)
- NAR / Residential MG2(6) (Priority Junction)
- NAR / Eglwys Brewis Road (Priority Junction)
- NAR / ABP / Aston Martin (Signals Junction)

7.3.2 Scoping discussions with VOG have confirmed that there will not be a need for junction



assessments beyond the NAR, and that would be a matter for the individual developments coming forward.

7.3.3 The junction assessment programs ARCADY and PICADY estimate the theoretical capacity of a junction (roundabout and priority junction respectively) based on its geometry and other input measures, and produces a Ratio of Flow to Capacity (RFC) based on predicted flows. An RFC figure of 1.0 or higher represents a junction that is exceeding its theoretical capacity. The junction program also estimates predicted queue lengths, and delay for each vehicle.

7.3.4 LINSIG has been used for the proposed traffic signalled junction, and this program estimates a Practical Reserve Capacity (PRC) based on predicted flows. The PRC indicates how much traffic demand can grow before a junction is assumed to work inefficiently.

B4265 / NAR (Roundabout)

7.3.5 This proposed roundabout junction represents the point at which the NAR connects with the local highway network, and it has been assessed using ARCADY. The results are summarised below in Table 7.1, with the full assessment outputs in **Appendix I**.

Table 7.1 – ARCADY Results for B4265 / NAR (Roundabout)

Arm	AM Peak			PM Peak		
	Queue (PCU)	Delay (sec)	RFC	Queue (PCU)	Delay (sec)	RFC
2019						
Arm 1 – B4265 (NW)	0.2	2.83	0.19	0.2	2.81	0.18
Arm 2 – NAR	0.0	2.38	0.02	0.4	3.17	0.26
Arm 3 – B4265 (SE)	0.3	2.83	0.20	0.4	3.13	0.25
2029						
Arm 1 – B4265 (NW)	1.2	7.11	0.53	0.5	3.95	0.31
Arm 2 – NAR	0.4	3.25	0.28	8.3	21.22	0.90
Arm 3 – B4265 (SE)	3.1	9.22	0.74	1.4	5.92	0.56

7.3.6 It can be seen from the table above that in the opening year the roundabout is forecast to operate well within capacity, with the maximum RFC across all junction arms forecast to be 0.26, on the NAR approach in the PM peak period. In the future forecast year the junction is forecast to operate within capacity during the AM peak. In the PM peak the RFC on the NAR approach arm is forecast to reach 0.90 in the PM peak period, with some delay and queuing being reported.



NAR / Residential MG2(7) (Priority Junction)

7.3.7 This junction has been assessed using the PICADY computer program. The results are summarised in Table 7.2, with the full assessment outputs in **Appendix J**.

Table 7.2 – PICADY results for NAR / Residential MG2(7) (Priority Junction)

Arm	AM Peak			PM Peak		
	Queue (PCU)	Delay (sec)	RFC	Queue (PCU)	Delay (sec)	RFC
2019						
Residential Access	0 *	0 *	0 *	0 *	0 *	0 *
NAR (w)	0 *	0 *	0 *	0 *	0 *	0 *
2029						
Residential Access	0.3	8.32	0.25	0.3	13.67	0.24
NAR (w)	0.1	5.67	0.06	0.3	11.16	0.24

(* no residential development modelled in opening year 2019.

7.3.8 It can be seen from the table above that there the junction is forecast to operate within capacity for both the opening and future forecast years assessed.

NAR / Llanmaes Access (Priority Junction)

7.3.9 This junction has been assessed using the PICADY computer program. The results are summarised in Table 7.3, with the full assessment outputs in **Appendix J**.

Table 7.3 – PICADY results for NAR / Llanmaes Access (Priority Junction)

Arm	AM Peak			PM Peak		
	Queue (PCU)	Delay (sec)	RFC	Queue (PCU)	Delay (sec)	RFC
2019						
Llanmaes -AC	0.0	0.00	0.00	0.0	0.00	0.00
NAR (e) C-AB	0.0	0.00	0.00	0.0	0.00	0.00
2029						
B-AC	0.0	0.00	0.00	0.0	0.00	0.00



C-AB	0.0	0.00	0.00	0.0	0.00	0.00
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7.3.10 The results above indicate ...

NAR / Residential MG2(6) (Priority Junction)

7.3.11 This junction has been assessed using the PICADY computer program. The results are summarised in Table 7.4, with the full assessment outputs in **Appendix J**.

Table 7.4 – PICADY results for NAR / Residential MG2(6) (Priority Junction)

Arm	AM Peak			PM Peak		
	Queue (PCU)	Delay (sec)	RFC	Queue (PCU)	Delay (sec)	RFC
2019						
Residential Access	0 *	0 *	0 *	0 *	0 *	0 *
NAR (w)	0 *	0 *	0 *	0 *	0 *	0 *
2029						
Residential Access	0.1	6.83	0.06	0.1	10.90	0.06
NAR (w)	0.0	5.52	0.01	0.1	9.27	0.06

(*) no residential development modelled in opening year 2019.

7.3.12 The results above indicate the junction is forecast to operate well within capacity for both the opening and future forecast years.

NAR / Eglwys Brewis Road (Priority Junction)

7.3.13 This junction has been assessed using the PICADY computer program. The results are summarised in Table 7.5, with the full assessment outputs in **Appendix J**.

Table 7.5 – PICADY results for NAR / Eglwys Brewis Road (Priority Junction)

Arm	AM Peak			PM Peak		
	Queue (PCU)	Delay (sec)	RFC	Queue (PCU)	Delay (sec)	RFC
2019						
Eglwys Brewis Rd	0.3	8.13	0.20	0.3	10.18	0.23
NAR (w)	0.0	0.00	0.00	0.0	0.00	0.00
2029						
Eglwys Brewis Rd	0.5	16.23	0.33	1.4	45.88	0.58



NAR (w)	0.0	0.00	0.00	0.0	0.00	0.00
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7.3.14 It can be seen from the table above that in the opening year the junction is forecast to operate within capacity, with the maximum RFC across all junction arms forecast to be 0.26, on the NAR approach in the PM peak period. In the future forecast year the junction is forecast to operate within capacity during the AM peak. In the PM peak the RFC on the NAR approach arm is forecast to reach 0.90 in the PM peak period, with some delay and queuing being reported.

NAR / ABP / Aston Martin Signals Junction

7.3.15 This junction is the furthest east of the NAR junctions and will actually be signal controlled, the results are set out in Table 7.6 below with the full assessment outputs in **Appendix K**.

Table 7.6 – LINSIG Results for NAR / ABP / Aston Martin Signals Junction

Approach	AM Peak			PM Peak		
	Deg. of Sat.	Max. Queue	Ave. Delay	Deg. of Sat.	Max. Queue	Ave. Delay
	2019					
NAR (w) [Right/Left/Ahead]	19.6%	2.1	28.9	19.8%	2.1	29.9
NAR (w) [Right]	4.9%	0.5	27.6	5.1%	0.5	28.5
Picketston [Ahead/Right]	0.0%	0.0	0.0	0.0%	0.0	0.0
St Athan [Ahead]	19.6%	2.1	28.9	25.4%	2.9	28.8
NAR (merge) (Ahead A)	5.5%	0.0	1.0	17.4%	0.1	1.1
NAR (merge) (Ahead B)	1.2%	0.0	0.9	10.3%	0.1	1.0
ABP [Left A]	2.9%	0.3	17.0	25.9%	3.4	20.0
ABP [Left B]	0.2%	0.0	17.0	25.2%	3.4	19.9
ABP [Ahead C]	0.0%	0.0	0.0	0.0%	0.0	0.0
ABP [Ahead D]	1.3%	0.0	0.9	20.4%	0.1	1.1
PRC (%)	359.1			247.8		
2029						
NAR (w) [Right/Left/Ahead]	68.5	12.5	20.7	42.0%	5.3	20.7
NAR (w) [Right]	61.2%	10.3	23.5	33.4%	4.2	24.7
Picketston [Ahead/Right]	30.9%	1.5	53.3	59.9%	4.4	53.7
St Athan [Ahead]	64.1%	3.5	67.6	56.7%	4.4	50.4
NAR (merge) (Ahead A)	13.8%	0.1	1.1	43.9%	0.4	1.6
NAR (merge) (Ahead B)	6.6%	0.0	1.0	29.5%	0.2	1.3
ABP [Left A]	11.4%	1.4	8.7	60.7%	10.7	19.8
ABP [Left B]	10.1%	1.2	8.6	58.0%	10.1	19.2
ABP [Ahead C]	5.7%	0.3	48.7	5.7%	0.3	48.7
ABP [Ahead D]	13.0%	0.1	1.1	58.2%	0.7	2.2
PRC (%)	31.3			48.4		



7.3.16 The results indicate that in the opening year the junction is forecast to operate within capacity, with a PRC of xxx% in the morning peak hour and xxx% in the afternoon peak. In the forecast future year the junction is shown to have a PRC of 31.3% in the morning peak and 48.4 in the afternoon peak hour.



8.0 Summary and Conclusions

- 8.1.1 WYG have been appointed by AECOM to produce a Transport Assessment report associated with plans for a Northern Access Road (NAR) in St Athan, Vale of Glamorgan. The purpose of the NAR is to provide a quality link into a future proposed employment and residential development area, including the intensification of the Aerospace Business Park and the development of a unit for Aston Martin. The NAR is being promoted by the Welsh Government, and this report has been prepared to support the more detailed highway design work that AECOM have produced.
- 8.1.2 The NAR is proposed to have a length of 2 km and to run from the B4265 to the north of Llantwit Major, east into the existing ABP area, tying back into Eglwys Brewis Road around 1km west of Eglwys Brewis village. The road has been designed as a 7.3m wide single carriageway, with a roundabout junction with the B4265, and a combined priority/traffic signals junction at the point it connects with ABP and the access into Aston Martin. There will be five other junctions with proposed housing sites and existing local roads, which will all be priority junctions with right-turn lanes.
- 8.1.3 There are a number of consented and committed developments proposed for the area to be served by the NAR, and these have been quantified in order to ascertain the required format of the link and junctions. For the year of opening (2019) it is estimated that the total daily traffic flow on the NAR is likely to be 1,889 vehicles, with around 459 vehicles in the peak hour. In the horizon year 2029 the AADT is forecast to be 12,871 and the hourly flow 1,372.
- 8.1.4 The new road will have 3m shared footway/cycleway on its southern side, and a 2m footway on its northern side, in order to facilitate appropriate access to and from the employment and residential elements that will come forward.
- 8.1.5 Public Transport
- 8.1.6 The various junctions along the length of the NAR have been assessed (for both the assumed opening year of 2019, and a future test year of 2029) and are forecast to operate acceptably.
- 8.1.7 It is considered that the proposed road as set out in this TA will provide a suitable access for all modes of travel from the B4265 to the Aerospace Business Park. The road and its junctions will have sufficient spare capacity to accommodate for future growth and development served by the new road.





Figures



Appendices



Appendix A – Transport Assessment Scoping



Appendix B – Traffic Surveys



Appendix C – Accident Data



Appendix D – Junction Layout Drawings



Appendix E – Traffic Count Data



Appendix F – TEMPRO Growth Factors



Appendix G – TRiCS Output



Appendix H – Census Data & Distribution



Appendix I – Traffic Flow Diagrams



Appendix J – ARCADY Outputs



Appendix K – PICADY Outputs



Appendix L – LINSIG Outputs

