

## C TRANSPORT ASSESSMENT

### C.1.1 Introduction

This appendix describes the assessment of the impact of the Proposed Development on the surrounding transport network.

The Proposed Development will provide a total of 16,907 square metres (m<sup>2</sup>) Gross Floor Area (GFA), comprising a 14,176m<sup>2</sup> Operations Building, a 2,515m<sup>2</sup> administrative and welfare Support Building, and a 216m<sup>2</sup> Electrical Substation. A full description of the facility is set out in *Chapter 5: The Proposed Development* of the DEEA.

The Proposed Development will provide a facility that will replace activities carried out elsewhere on the AWE Aldermaston site. It is estimated that up to 50 operational staff will work in the building all of whom currently work at AWE Aldermaston. Accordingly, the application proposal will not generate any additional operational worker vehicle movements over and above the existing facilities and the only additional vehicle movements will be generated by construction activity.

For the purposes of the report, staff and contractors unrelated to construction are referred to as operational personnel, whilst staff and contractors related to the construction are referred to as construction personnel.

The report is divided into six further sections that cover:

- Baseline Transport Situation
- Future Year Situation
- Development Proposals
- Trip Generation and Distribution
- Assessment
- Summary and Conclusions

### C.1.2 Baseline Transport Situation

#### Development Context

The Proposed Hydrus Development is set within the context of the AWE Aldermaston & Burghfield Site Development Context Plan 2008 (SDCP08) that describes the overall approach to the modernisation of AWE Aldermaston and AWE Burghfield, through the refurbishment and replacement of existing facilities. The SDCP08 sets out the new build projects scheduled for the AWE Aldermaston site between 2005 and 2015 including the New Office Accommodation (NOA), the High Explosives Fabrication Facility (HEFF) and the Pegasus facility. NOA was granted planning permission by West Berkshire Council in January 2007 and is now complete, HEFF received planning permission in February 2008, and Pegasus received planning permission in February 2010.

#### Site Location

The location of the AWE Aldermaston site is shown, in relation to the surrounding transport network, on Figure 1.

There are various vehicle weight, height and width restrictions on roads surrounding the AWE Aldermaston site. These are generally in place to facilitate the crossing of the Kennet and Avon Canal and Reading – Bedwyn railway. The restrictions are shown on Figure 2.

## Baseline Traffic Data

Baseline 2008 traffic flows on the highway network surrounding AWE Aldermaston are shown on Figure 3.

Baseline traffic flows indicate that the AM and PM peak hours on the external highway network are 0800 – 0900 hours and 1700 – 1800 hours respectively. This differs to the AWE site generated AM and PM peak hours that are 0715 – 0815 and 1600-1700 hours respectively.

Traffic speeds observed in 2008 are compared to the relevant speed limits in Table 1. 85<sup>th</sup> percentile traffic speeds on links surrounding the AWE Aldermaston site are within the speed limits on the A340 Paices Hill and Red Lane, although slightly exceed the speed limit on Reading Road and the A340, between Falcon Gyratory and Heath End roundabout.

**Table 1: Existing Traffic Speeds**

Location	Average Speed (mph)	85 <sup>th</sup> Percentile Speed (mph)	Speed Limit
A340, Paices Hill	41	47	50
Red Lane	40	47	50
Reading Road	46	53	50
A340 (Falcon Gyratory – Heath End roundabout)	35	42	40

## Baseline Highway Network

The highway works that have been secured as part of the planning consent for the New Office Accommodation (NOA) development have now been implemented and have therefore been included within the baseline situation. These are shown on Figure 4.

## Baseline Pedestrian and Cycle Provision

It is generally accepted that commuters will walk up to a maximum distance of 2km and cycle up to a maximum distance of 5km. These distance thresholds are shown for AWE Aldermaston on Figure 5. Pedestrian and cycle provision in the vicinity of AWE Aldermaston site has been substantially improved with the highway works that have been implemented as part of the NOA planning consent. The implementation of the highway works will encourage walking and cycling to site, particularly from Tadley.

## Baseline Passenger Transport Provision

Existing passenger transport services in the vicinity of the AWE Aldermaston are shown on Figure 6.

The AWE Aldermaston site is well served by bus services from Basingstoke, reasonably well served by bus services from Reading and poorly served by bus services from Newbury.

The 'Jazz' 2 service operates to / from Basingstoke on a 20 minute frequency throughout the day.

The 'Vitality' 2a service operates to / from Reading. The AWE Aldermaston site is served by two services from Reading in the AM peak period and three services to Reading in the PM peak period.

The 104 service operates to / from Newbury, providing one service from Newbury in the AM peak period and one service to Newbury in the PM peak period.

Aldermaston railway station is located on the Reading – Bedwyn main line, approximately 5km from the AWE Aldermaston site and is served by 6 services, in each direction, during the AM peak period and 4 services, in each direction, during the PM peak period. The services that call at Aldermaston essentially serve all stations between Reading and Newbury.

### Personal Injury Accidents

Personal Injury Accidents (PIA) that have occurred in the vicinity of the AWE Aldermaston site for the latest available five year period, April 2004 to March 2009, are shown on Figure 7.

The analysis of this data identifies that there is a poor safety record, whereby PIA rates exceed Cost Benefit Analysis (COBA) 10 default rates, on the A340 between Heath End roundabout and Aldermaston Village (Paices Hill). However, the implementation of the Aldermaston Gate and A340(N) Gate roundabouts, as part of the NOA development planning consent, should improve road safety on this link.

### Baseline Travel Patterns

The baseline modal split for all movements accessing and egressing AWE Aldermaston, as observed in March 2009, is shown in Table 2:

**Table 2: Travel Modal Split for all Movements Accessing and Egressing AWE Aldermaston as observed in March 2009**

Mode	Proportion
Single occupancy vehicle travel	72%
Car Share	12%
Passenger Transport	4%
Bicycle	5%
Walk	5%
Other	2%
<b>Total</b>	<b>100%</b>

### Baseline Operational Staff and Contractor Distribution

The home location areas of operational staff and contractors based at AWE Aldermaston are shown on Figure 8. It shows that the home locations of operational staff and contractors are relatively evenly distributed in relation to nearby centres of population.

### Baseline Car Parking

The NOA planning consent permits the provision of up to 4,345 parking spaces at AWE Aldermaston.

## C.1.3 Future Year Situation

### Year of Assessment

The Proposed Development will provide a facility that will replace activities carried out elsewhere on the AWE Aldermaston site. It is estimated that up to 50 operational staff will work in the building all of whom currently work at AWE Aldermaston. Accordingly, the application proposal will not generate

any additional operational worker vehicle movements over and above the existing facilities and the only additional vehicle movements will be generated by construction activity.

It is predicted that construction HGV movements will peak in 2013 and that contractor construction vehicle movements will peak in 2014. To assess a worst case situation, the construction traffic assessment year has been taken as 2014, albeit using peak 2013 HGV numbers within total 2014 construction vehicle movements.

### Future Year Traffic Data

In summary, future year traffic flows comprise:

- Baseline traffic flows observed in 2008 factored to the 2014 assessment year using National Road Traffic Forecasts (NRTF) low growth.
- Traffic generated by the operation of the NOA development at AWE Aldermaston.
- Traffic generated by the operation of the HEFF development at AWE Aldermaston.
- Traffic generated by the construction of the Pegasus development at AWE Aldermaston.
- Traffic generated by the operation of the committed development at Easter Park, located to the south east of AWE Aldermaston.

Baseline traffic flows observed in 2008 were factored to the 2014 assessment year using NRTF low growth.

The AWE Travel Plan is currently being implemented. The Travel Plan aims to achieve the AWE Aldermaston targets set out in Table 3.

**Table 3: AWE Aldermaston Travel Plan Targets**

Mode	2009	2012 (Target)
Single Occupancy Vehicle (SOV)	72%	65%
Car share	12%	18%
Passenger Transport	4%	5%
Bicycle	5%	6%
Walk	5%	4%
Other (e.g. powered two wheelers)	2%	2%
	<b>100%</b>	<b>100%</b>

Given that the Travel Plan targets should be met by 2012, the existing AWE generated traffic should be reduced on a pro-rata basis in line with the targets. However, to assess a worst case situation, the reduction in traffic that would result from the achievement of the Travel Plan targets has not been applied to existing AWE traffic.

The NOA development (at Aldermaston) has planning consent. This will be completed and occupied by the 2014 assessment year. Accordingly, traffic estimated to be generated by the operation of the NOA development has been added to future year 2014 flows. The traffic predicted to be generated by the NOA development is summarised in Table 4.

**Table 4: NOA Development Operational Workforce Trip Generation Estimates**

	<b>AWE AM Peak Hour</b>	<b>Network AM Peak Hour</b>	<b>AWE PM Peak Hour</b>	<b>Network PM Peak Hour</b>	<b>Daily</b>
Total Vehicle Movements	456	306	415	283	1658

It should be noted that the above trip generation estimates are based on 1400 new staff, an estimate that was assumed in the planning application. However, it is now envisaged that the NOA development will only accommodate 1200 staff and many of these staff will already work at the AWE Aldermaston site. Accordingly, the trip generation estimates should be considered worst case estimates.

The HEFF development has planning consent at AWE Aldermaston. This will be completed and occupied by the 2014 assessment year. Accordingly, traffic estimated to be generated by the operation of the HEFF development has been added to future year 2014 flows. The traffic predicted to be generated by the HEFF development is summarised in Table 5.

**Table 5: HEFF Development Operational Workforce Trip Generation Estimates**

	<b>AWE AM Peak Hour</b>	<b>Network AM Peak Hour</b>	<b>AWE PM Peak Hour</b>	<b>Network PM Peak Hour</b>	<b>Daily</b>
Total Vehicle Movements	4	3	4	2	14

The planning application for the Pegasus development (at Aldermaston) was granted planning approval in February 2010, and it has been assumed that it will be under construction during the 2014 assessment year. Accordingly, traffic estimated to be generated by the construction of the Pegasus development has been added to future year 2014 flows. The traffic predicted to be generated by the Pegasus development is summarised in Table 6.

**Table 6: Pegasus Development Construction Workforce Trip Generation Estimates**

	<b>AWE AM Peak Hour</b>	<b>Network AM Peak Hour</b>	<b>AWE PM Peak Hour</b>	<b>Network PM Peak Hour</b>	<b>Daily</b>
Car Movements	58	59	58	59	234
Van Movements	1	3	0	0	30
HGV Movements	3	4	1	0	30
Total Vehicle Movements	62	66	59	59	294

It should be noted that the construction car movements predicted to be generated by the Pegasus development in 2014 have not been included as committed development flows. This is because at the time the 2008 baseline traffic data was collected, there were approximately 440 cars parked in the construction car park resulting from ongoing construction activity at AWE. This is substantially more than the 117 cars that are predicted to be using the car park at the peak of construction in 2014.

Accordingly, construction car and van movements for the Pegasus committed development has therefore already been included within baseline traffic.

External committed development has also been considered, including the Easter Park development located to the south east of the AWE Aldermaston site. It has been assumed that this development will be fully occupied by the 2014 assessment year. Accordingly, traffic estimated to be generated by the operation of the Easter Park development has been added to future year 2014 flows. The traffic predicted to be generated by the Easter Park development is summarised in Table 7.

**Table 7: Easter Park Trip Generation Estimates**

	<b>AWE AM Peak Hour</b>	<b>Network AM Peak Hour</b>	<b>AWE PM Peak Hour</b>	<b>Network PM Peak Hour</b>	<b>Daily</b>
Total Vehicle Movements	354	267	194	201	1605

These trip generation estimates for Easter Park have been agreed with West Berkshire Council.

It should be noted that the impact of the new Integrated Waste Management Facility (IWMF) at Padworth, that was granted planning consent in March 2009, has not been taken into account. This is because the Transport Assessment that accompanied the IWMF proposal did not assess any of the junctions or links that are assessed in this DEEA. Accordingly, the transport impact of the proposed IWMF can be considered to be negligible in relation to the Hydrus application proposals.

### **Future Year Traffic Flows**

Future year traffic flows on the highway network surrounding AWE Aldermaston are shown on Figure 3.

## **C.1.4 Development Proposals**

### **Land Use Proposals**

The Application Site and Proposed Development has been outlined in detail in Chapter 1: Introduction and Chapter 5: The Proposed Development of the DEEA.

The Proposed Development will provide a total of 16,907 square metres (m<sup>2</sup>) Gross Floor Area (GFA), comprising a 14,176m<sup>2</sup> Operations Building, a 2,516m<sup>2</sup> Support Building, and a 216m<sup>2</sup> Electrical Substation.

The Proposed Development will be occupied by workers who already work at AWE Aldermaston. Accordingly, the application proposals will not generate any additional operational worker vehicle movements and the only additional vehicle movements will be generated by construction activity.

### **Access Proposals**

It is proposed that the operational workforce will access / egress the proposed facility via the existing West Gate, Main Gate, Boiler House Gate and Falcon Gate. The location of these gates is shown on Figure 9.

To minimise the impact on the external highway network, the operational workforce who travel by car will be encouraged to use gates based on their home postcode location.

It is proposed that construction staff will access the site via the Burnham Gate, park in the West End Construction Enclave (WECE) car park and catch a bus that will be provided for construction personnel, routed via Aldermaston Gate, the A340 and the A340 Gate (see EA *Chapter 1: Introduction*, Figure 1-1: Application Site Red Line Boundary).

HGVs will be searched at the WECE then escorted via the A340 to the construction site. The location of these gates is shown on Figure 9. Section 9.1.2 has identified that there are various vehicle weight, height and width restrictions on roads surrounding the AWE Aldermaston site. These are generally in place to facilitate the crossing of the Kennet and Avon Canal and Reading – Bedwyn railway.

With regard to these restrictions, and the desire to restrict construction HGV traffic to the strategic highway network as far as possible, there are limited routing options available to construction HGV traffic. The proposed construction HGV route is shown on Figure 10.

### **Car Parking**

The application proposals will not generate any additional operational worker vehicle movements. Accordingly, operational workers will park in existing general car parking areas on site. As a result it will not be necessary to provide any additional car parking for the Hydrus operational workforce.

It is proposed that the Hydrus construction workforce will park in the WECE and catch a shuttle bus to access / egress the construction site.

## **C.1.5 Trip Generation and Distribution**

### **Trip Generation**

#### *Operational Phase*

The Proposed Development will be occupied by workers who currently work at AWE Aldermaston. Accordingly the application proposals will not generate any additional operational worker vehicle movements and the only additional vehicle movements will be generated by construction activity.

#### *Construction Phase*

Vehicles that will be generated by the construction of the application proposals have been derived by the Hydrus Project Team, in conjunction with AWE's Central Logistics Team.

It is estimated that 354 construction car and van movements (comprising 344 construction worker car and 10 van movements), and 80 construction HGV movements, will be generated each day at the peak of construction.

HGV arrival / departure profiles observed from construction activity resulting from the Investment Programme at AWE Aldermaston have been applied to daily vehicle estimates to derive peak hour trip generation. It has been assumed that construction car arrivals and departures are spread evenly throughout the AM and PM peak periods (0700 – 0900 hours and 1600 – 1800 hours), to derive peak hour trip generation.

During the peak of construction activity, it is estimated that:

- 7 HGVs and 86 car movements will be generated during the AWE AM peak hour;
- 10 HGVs and 87 car and van movements (comprising 86 construction worker car movements and 1 van movement) will be generated during the network AM peak hour;
- 3 HGV and 86 construction car movements will be generated during the AWE PM peak hour; and
- No HGV and 86 construction car movements will be generated during the network PM peak hour.

Overall, therefore, at the peak of construction activity, 93 and 89 vehicle movements are estimated to be generated during each of the AWE AM and PM peak hours respectively, and 97 and 86 vehicle movements are estimated to be generated during the network AM and PM peak hours respectively.

The construction phase trip generation estimates (shown in vehicle trips) are summarised in Table 8.

**Table 8: Construction Phase Trip Generation Estimates for the Proposed Development (Vehicle Trips)**

	AM Peak Hour		PM Peak Hour		Daily
	AWE	Network	AWE	Network	
Construction Worker Vehicle Trips	86	86	86	86	344
Construction Vans Vehicle Trips	0	1	0	0	10
Construction HGV Trips	7	10	3	0	80
<b>Total Construction Trips</b>	93	97	89	86	434

It should be noted that construction worker vehicular trips have not been added to the future year flows. This is because at the time the 2008 baseline traffic data was collected, there were approximately 440 cars parked in the construction car park resulting from ongoing construction activity at AWE. This is substantially more than the 289 (172 from Hydrus and 117 from Pegasus) cars that are predicted to be using the car park at the peak of construction in 2014. Accordingly, construction worker and management trip generation has therefore already effectively been included within baseline traffic. Indeed baseline traffic therefore includes some 151 cars over and above that which will actually be generated. Again therefore, a worst case situation has been assessed.

#### **Trip Distribution / Assignment**

For the purposes of preparing the TA, it has been assumed that the construction personnel will follow the distribution / assignment of existing operational personnel traffic.

Based on the likely distribution of bulk materials that will be used in construction (aggregate, cement, timber and steel), the distribution of construction HGV traffic has been assumed to follow a 70:30 north:south split to take account of the source of this material / port of delivery. The assignment of this construction HGV traffic, takes account of weight, height and width restrictions, and seeks to use the strategic highway network as far as possible. The resulting distribution / assignment is shown on Figure 11.

#### **Future Year Traffic Flows**

The assessment year for the Proposed Development is 2014. Predicted development generated traffic flows were added to these 2014 future year flows.

The resulting increases in traffic are shown on Figure 3.

### **C.1.6 Assessment**

#### *Operational Phase*

The Proposed Development will be occupied by workers who already work at AWE Aldermaston. Accordingly the application proposals will not generate any additional operational worker vehicle movements and the only additional vehicle movements will be generated by construction activity. The operational phase has not therefore been assessed.



### Construction Phase

Good pedestrian and cycle linkages to the site, together with Travel Plan initiatives, secured as part of the NOA development planning consent, have been and will continue to be implemented by the assessment years. This includes the provision of controlled crossing facilities and foot / cycleways. Further foot / cycleways, secured by way of contribution to the Local Highway Authority, West Berkshire Council, as part of the NOA development are still to be implemented. This includes contributions towards the provision of foot / cycleways between Aldermaston Wharf and Aldermaston Village, and Heath End roundabout and Aldermaston Village. These improved facilities will encourage construction staff and contractors to walk and cycle to and from the site.

Improved passenger transport services, together with travel plan initiatives, secured as part of the NOA development planning consent, have been and will continue to be implemented by the assessment years. Controlled crossings are also in place to aid making connection to services to and from the site. These improved services and facilities will encourage construction staff and contractors to use passenger transport to travel to and from the site.

Highway improvements, secured as part of the NOA development planning consent, have been implemented. Delays on key routes to AWE Aldermaston site in the AM peak periods are summarised in Table 8 for 2014.

**Table 8: Predicted Impact of Proposed Development on Driver Delay in the AM Peak Period in 2014**

		Total Delay (Seconds) (x)			
From	To	AWE Peak		Network Peak	
		2014 Base	2014 Base + Dev	2014 Base	2014 Base + Dev
A340 (N)	West Gate (N)	0 < x < 30	0 < x < 30	0 < x < 30	0 < x < 30
B3051	West Gate (N)	150 < x < 180	150 < x < 180	120 < x < 150	120 < x < 150
B3051	West Gate (S)	150 < x < 180	150 < x < 180	120 < x < 150	120 < x < 150
Heath End Road	West Gate (N)	0 < x < 30	0 < x < 30	0 < x < 30	0 < x < 30
Heath End Road	West Gate (S)	0 < x < 30	0 < x < 30	0 < x < 30	0 < x < 30
Burnham Road	West Gate (S)	0 < x < 30	0 < x < 30	0 < x < 30	0 < x < 30
A340(S)	Main Gate (W)	30 < x < 60	30 < x < 60	30 < x < 60	30 < x < 60
Soke Road	Boiler House Gate	0 < x < 30	0 < x < 30	0 < x < 30	0 < x < 30
Welshman's Road / Reading Road (E)	Boiler House Gate	0 < x < 30	0 < x < 30	0 < x < 30	0 < x < 30

The assessments demonstrate that the traffic generated by the development will have negligible impact on delays.

It is not therefore considered necessary to implement any further mitigation measures.

### **C.1.7 Summary and Conclusions**

This appendix has described the assessment of the impact of the Proposed Development at AWE Aldermaston on the surrounding transport network.

The Proposed Development will provide a total of 16,907 square metres (m<sup>2</sup>) Gross Floor Area (GFA), comprising a 14,176m<sup>2</sup> Operations Building, a 2,515m<sup>2</sup> Support Building, and a 216m<sup>2</sup> Electrical Substation. A full description of the facility is set out in *Chapter 5: The Proposed Development* of the DEEA.

The Proposed Development will provide a facility that will replace activities carried out elsewhere on the AWE Aldermaston site. It is estimated that up to 50 operational staff will work in the building all of whom currently work at AWE Aldermaston. Accordingly, the application proposal will not generate any additional operational worker vehicle movements over and above the existing facilities and the only additional vehicle movements will be generated by construction activity.

It is estimated that 354 construction car and van movements, and 80 construction HGV movements, will be generated each day at the peak of construction. It is estimated that 93 and 89 vehicle movements are estimated to be generated during the AWE AM and PM peak hours respectively, and 97 and 86 vehicle movements are estimated to be generated during the network AM and PM peak hours respectively.

Highway infrastructure improvements and Travel Plan initiatives, secured as part of the NOA development planning consent, have been implemented. An assessment of the impact of the development, has identified that pedestrians, cyclists and passenger transport users will benefit from these infrastructure / initiatives. Car drivers will also benefit and the Proposed Development will have negligible impact on journey times.

The impact of the development is therefore considered to be acceptable and it is not considered necessary to implement any further mitigation measures.