HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

6.3.26 ES Volume C - Road traffic-related effects (project-wide) App C2-4 - DCO TA Appendix L - Supplementary information

PINS Reference Number: EN010007

Application Reference Number: 6.3.26

June 2018

Revision 1.0

Regulation Number: 5(2)(a)

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Horizon Internal DCRM Number: WN0902-JAC-PAC-APP-00128

[This page is intentionally blank]

Contents

[This page is intentionally blank]

1 Introduction

1.1.1 This document provides a range of supplementary information to complement the analysis presented in the Transport Assessment. This information does not change the results or conclusions of the Transport Assessment but provides additional information requested or suggested to be included following discussions with stakeholders.

1.1.2 Information is provided as follows:

- National Grid – North Wales Connection
- Car use at Site Campus
- Proposed shift patterns
- Flow Variations over an Average Week
- Traffic growth
- Travel by Facilities Management Workers

2 National Grid – North Wales Connection

2.1 Summary of Information in Wylfa Newydd DCO Project Transport Assessment

2.1.1 The National Grid North Wales Connection will provide a second connection between the Wylfa Nuclear Power Station and the Welsh mainland. The construction of this connection will generate traffic movements and these have the potential to interact with the construction traffic movements generated by the Wylfa Newydd DCO Project.

2.1.2 The potential combined impact of these construction traffic movements has been considered as part of the Transport Assessment for the scheme and details are provided in Section 5.3. A further assessment is provided in Chapter I5 (Cumulative Impacts) of the ES.

2.1.3 Paragraph 5.3.4 of the Transport Assessment states that information provided by the National Grid suggests that up to 239 construction vehicles could be expected to cross the Britannia Bridge in each direction per day in the year of peak construction of the National Grid scheme (currently assumed to be 2023). This is equivalent to approximately 20 construction vehicles per hour per direction across the Britannia Bridge.

2.1.4 These traffic flows have been sourced from the information provided by National Grid and presented in table 2.1

Table 2.1: National Grid Predicted Construction Traffic – Peak Year (2023)

	Average Week in the Peak Year (2023)			
	Two-Way		One-Way	
	LGV	HGV	LGV	HGV
Weekly	1,028	1,357	514	679
Daily	206	271	103	136
Hourly	17	23	9	11

2.1.5 The above flows are based on project knowledge as of December 2017 and are subject to further refinement and change. They are conservative and robust as they assume the following:

- All movements to/from Anglesey are assumed to route via the Britannia Bridge, in reality a proportion could go via Menai Bridge.
- National Grid have yet to decide which end the tunnel under the Menai Straights will be bored from, therefore the above figures account for the highest flows per direction whether it be an eastbound or westbound direction for the tunnel bore. As a result, in reality the flows will be significantly lower.

2.2 Analysis of National Grid Traffic Flows

2.2.1 This information shows that the implementation of the National Grid North Wales Connection scheme would have a very small impact on both daily and hourly traffic flows across the Britannia Bridge.

2.2.2 For example, during the average peak week in the peak year there would be an additional 20 construction vehicles (11+9) in each direction across the Britannia Bridge. This compares to peak flows of approximately 1,800-2,000 vehicles per hour per direction across the bridge in 2023 including Wylfa Newydd DCO related traffic (see figure 11-3 and figure 11-4 of the Transport Assessment).

2.2.3 The assessed level of increase associated with the National Grid scheme is therefore approximately 1% and is within typical daily variations in traffic flows. It should also be noted that the assessment for the Wylfa Newydd DCO Project includes several conservative assumptions (e.g. 60% of material to travel via MOLF when target is 80%) which mean that the additional traffic associated with the North Wales Connection scheme is unlikely to increase traffic flows beyond the levels assessed in the Transport Assessment for the Wylfa Newydd DCO Project (see further commentary on this issue in Chapter 10 of the Transport Assessment).

2.3 Further VISSIM Analysis of Britannia Bridge

2.3.1 As stated above the additional traffic generated by the North Wales Connection scheme is not expected to affect the results presented in the Transport Assessment for the Wylfa Newydd DCO Project because of the conservative nature of the assessment. However, to further confirm this conclusion the VISSIM model of the Britannia Bridge and its approach roads has been re-run incorporating the additional hourly traffic flows generated by the National Grid scheme (i.e. 20 additional construction vehicles per hour per direction). No other changes to the VISSIM model have been made.

2.3.2 The results of this process are presented in table 2.2 below (note – this format is based on table 11-9 in the Transport Assessment).

Table 2.2: Change in journey times (in seconds) across Britannia Bridge in 2023 with National Grid traffic

Location	AM Peak			PM Peak		
	06:00-07:00	07:00-08:00	08:00-09:00	15:00-16:00	16:00-17:00	17:00-18:00
Britannia Bridge Westbound						
Journey time (without WN)	109	115	192	120	128	327
Journey time (with WN)	108	114	191	120	131	351
Journey time (with WN) + NG	108	114	193	120	135	361
Change due to inclusion of NG	0	0	+2	0	+4	+10
Britannia Bridge Eastbound						
Journey time (without WN)	123	137	327	124	125	126
Journey time (with WN)	124	139	339	124	125	127
Journey time (with WN) + NG	124	139	375	124	126	128
Change due to inclusion of NG	0	0	+36	0	+1	+1

Note: WN=Wylfa Newydd DCO Project; NG=National Grid North Wales Connection Project

2.3.3 This analysis shows that increased travel times are expected in the direction of peak flow across the bridge i.e. westbound towards Anglesey in the PM peak and eastbound towards the mainland in the AM peak.

2.3.4 In considering these results it should be noted that:

- The traffic flow figures provided by the National Grid are being refined as part of the preparation of their DCO application. At present their flow estimates make very conservative assumptions that all of their construction traffic crosses the Britannia Bridge when this may not be the case. The construction traffic flows also assume that construction vehicles related to the construction of the tunnel under the Menai Strait carry spoil in both directions. This means there is double-counting of construction vehicles as the tunnel is expected to be bored in a single direction and hence spoil will only be carried over the bridge in a single direction.

- All National Grid traffic heading eastbound is assumed to avoid A55 junction 8/8a and so some traffic from the south of Anglesey has to make a detour via A55 junction 7.
- There is no allowance in the modelling for the potential rerouting of background traffic via the Menai Bridge in response to any increased delay on the Britannia Bridge

2.3.5 The VISSIM analysis also currently assumes that the peak of construction activity for both projects occurs in the same year (2023). This is likely to be subject to review as both projects progress and there is the potential opportunity for the projects to work together to ensure construction vehicle movements do not have peaks at the same time.

2.3.6 In summary, whilst the inclusion of the National Grid scheme increases the forecasts of traffic delays in the peak year of construction of the Wylfa Newydd Project, there is potential for the National Grid vehicle numbers and routes to be revised and for the timing of the projects to be coordinated to help limit increases in traffic and hence delays across the Britannia Bridge.

3 Car Use at Site Campus

3.1.1 Paragraph 7.5.7 of the Transport Assessment states that the "overall mode share of workers who reside at the Site Campus and who travel by car to get to/ from the Site Campus is estimated at 58%".

3.1.2 The derivation of this result is not presented explicitly in the Transport Assessment and more details are provided in following sections.

3.1.3 The distribution of the peak 7,000 non-homed-based workers is presented in table 8-5 of the Transport Assessment and an extract is provided below. This geographic distribution is based on professional judgement. Numbers have been chosen to the nearest 50 to reflect the level of uncertainty of the forecast.

Table 3-1 Distribution of Non-home-based Workers - Peak Construction Year

Region	% of workers	No. of workers
Ireland (ferry)	11%	750
Rest of Wales	11%	750
England	50%	3,500
Scotland	7%	500
Europe	21%	1,500
TOTALS	**100%**	**7,000**

3.1.4 During peak construction, 4,000 of these non-home-based workers will live at the Site Campus. The permanent home locations of these 4,000 workers has been estimated assuming that those who have permanent homes furthest away are more likely to be unfamiliar with the Anglesey area and hence will choose the more convenient option of the Site Campus rather than living in other types of accommodation on Anglesey or beyond.

3.1.5 The assumed split of workers is presented in table 3.2

Table 3-2 Distribution of Non-home-based Workers - Peak Construction Year – Site Campus and Elsewhere

Region	% of workers	No. of non-home-based workers	No. of workers at Site Campus	No. of workers elsewhere	% of non-home-based workers at Site Campus
Ireland (ferry)	11%	750	600	150	80%
Rest of Wales	11%	750	0	750	0%
England	50%	3,500	1,820	1680	52%
Scotland	7%	500	380	120	76%
Europe	21%	1,500	1,200	300	80%
TOTALS	**100%**	**7,000**	**4,000**	**3,000**	

3.1.6 The next step is to consider the mode of travel used by residents of the Site Campus when they travel to their permanent homes (noting that they will not necessarily travel home each fortnightly cycle). The mode splits are based on professional judgement relating to the availability of different modes of travel.

Table 3-3 Mode Share of Site Campus Trips - Peak Construction Year

Region	No. of workers at Site Campus	Road	Rail	Sea (foot)	Air
Ireland (ferry)	600	60%	0%	40%	0%
Rest of Wales	0	N/A – these workers are not expected to live at the Site Campus			
England	1,820	68%	30%	0%	2%
Scotland	380	80%	20%	0%	0%
Europe	1,200	35%	15%	0%	50%
TOTAL	**4,000**				

3.1.7 When the mode split for road is applied to the number of workers then the following results are obtained.

Table 3-4 Update - Site Campus Trips by Road - Peak Construction Year

Region	No. of workers at Site Campus	Road	No. of car trips
Ireland (ferry)	600	60%	360
Rest of Wales	0		
England	1,820	68%	1,238
Scotland	380	80%	304
Europe	1,200	35%	420
TOTAL	**4,000**		**2,322**

3.1.8 This means that there are 2,322 worker trips by car to/from the Site Campus when workers travel to/from their permanent home. This means that 58% (2,322/4,000) of worker trips to/from the Site Campus will be by car when they return to their permanent homes (Note: workers are not expected to travel home each fortnightly cycle). This is the number (58%) presented in Chapter 7 of the Transport Assessment.

Further Commentary

3.1.9 The Transport Assessment presents an analysis of non-home-based trips at weekends which incorporates the effect of the frequency of trips by non-home-based workers to their permanent homes. This leads to the mode split of trips by car each weekend being higher than 58% - in fact the result is 78% (see table 8-6). This is because workers who can reach their permanent home by car are likely to return home more frequently than those who must travel by sea or air.

3.1.10 In addition, the mode split of trips to / from the Site Campus is not assumed to be the same as the mode split for non-home-based worker trips for workers who live elsewhere.

3.1.11 This is shown in the following tables which show the mode splits for the Site Campus, other non-home-based workers and how they are consistent with the value of 58% (the split of car trips by residents at the Site Campus when they travel home) and 78% (the split of weekend trips by car by all non-home-based workers).

Table 3-5 Trip Generation for Non-home-based Workers living at Site Campus – Peak Construction Year

Region	No. of workers at Site Campus	Road	No. of car trips	Frequency of trips home	Trips per shift cycle	Trips per week	Car trips per week
Ireland (ferry)	600	60%	360	80%	480	240	144
Rest of Wales	0			100%	0	0	0
England	1,820	68%	1,238	80%	1,456	728	495
Scotland	380	80%	304	60%	228	114	91
Europe	1,200	35%	420	20%	240	120	42
TOTAL	**4,000**		**2,322**		**2,404**	**1,202**	**772**
Mode split by car			**58%**				**64%**

Table 3-6 All Non-home-based Workers not living at Site Campus – Peak Construction Year

Region	No. of workers away from Site Campus	Road	No. of car trips	Frequency of trips home	Trips per shift cycle	Trips per week	Car trips per week
Ireland (ferry)	150	85%	128	80%	120	60	51
Rest of Wales	750	95%	713	100%	750	375	356
England	1,680	93%	1,562	80%	1,344	672	625
Scotland	120	90%	108	60%	72	36	32
Europe	300	65%	195	20%	60	30	20
TOTAL	**3,000**		**2,705**		**2,346**	**1,173**	**1,084**
Mode split by car			**90%**				**92%**

Table 3-7 Total for all non-home-based workers – Car trips per weekend

Region	Site Campus Workers	Workers living away from Site Campus	All non-home-based workers
Ireland (ferry)	144	51	195
Rest of Wales	0	356	356
England	495	625	1,120
Scotland	91	32	124
Europe	42	20	62
TOTAL	**772**	**1,084**	**1,856**
Mode split by car for trips per week (=1,202 + 1,173)			**78%**

3.1.13 This number of 78% matches the number presented in the Transport Assessment.

4 Proposed Shift Patterns

4.1.1 The shift timings for construction workers at the Wylfa Newydd DCO Project have been developed to help manage travel and avoid periods of peak traffic flows across the Britannia Bridge.

4.1.2 Further details are provided in this section on the assumptions underpinning the assessment of shift times.

- There are proposed to be three staggered start times for the day shift and night shift once the main construction works begin.
- Workers travelling from the Wylfa Newydd Development Area and crossing the Britannia Bridge eastbound can be considered in two parts
  - i) Workers parking at the Wylfa Newydd Development Area will typically take at least 60 minutes to finish work and arrive at the Britannia Bridge based on:
    - Typical time for shift sign-out / sign-in, walk between construction area and car park for daily workers – 20 minutes
    - Typical time by car between car park for daily workers and Britannia Bridge – 40 minutes
  - ii) Workers parking at the Park and Ride facility will typically take at least 70 minutes to finish work and arrive at the Britannia Bridge based on:
    - Typical time for shift sign-out / sign-in, walk between construction area and car park for daily workers – 20 minutes
    - Wait for Park and Ride bus – 5 minutes
    - Park and Ride journey time – 25-30 minutes
    - Time to get to car – 2 minutes
    - Time to drive to Britannia Bridge – 15 minutes

4.1.3 Workers travelling to the Wylfa Newydd Development Area can be expected to have similar journey times between the westbound Britannia Bridge and arriving at the Wylfa Newydd Development Area to start work (and in practice the overall durations may be a bit longer as workers aim to arrive on time).

4.1.4 As part of the Transport Assessment, this means that westbound traffic associated with workers travelling towards the Wylda Newydd Development Area and crossing the Britannia Bridge are allocated to hours 05:00-06:00 and 06:00-07:00 for the start of the day shift and hours 15:00-16:00 and 16:00-17:00 for the start of night shift.

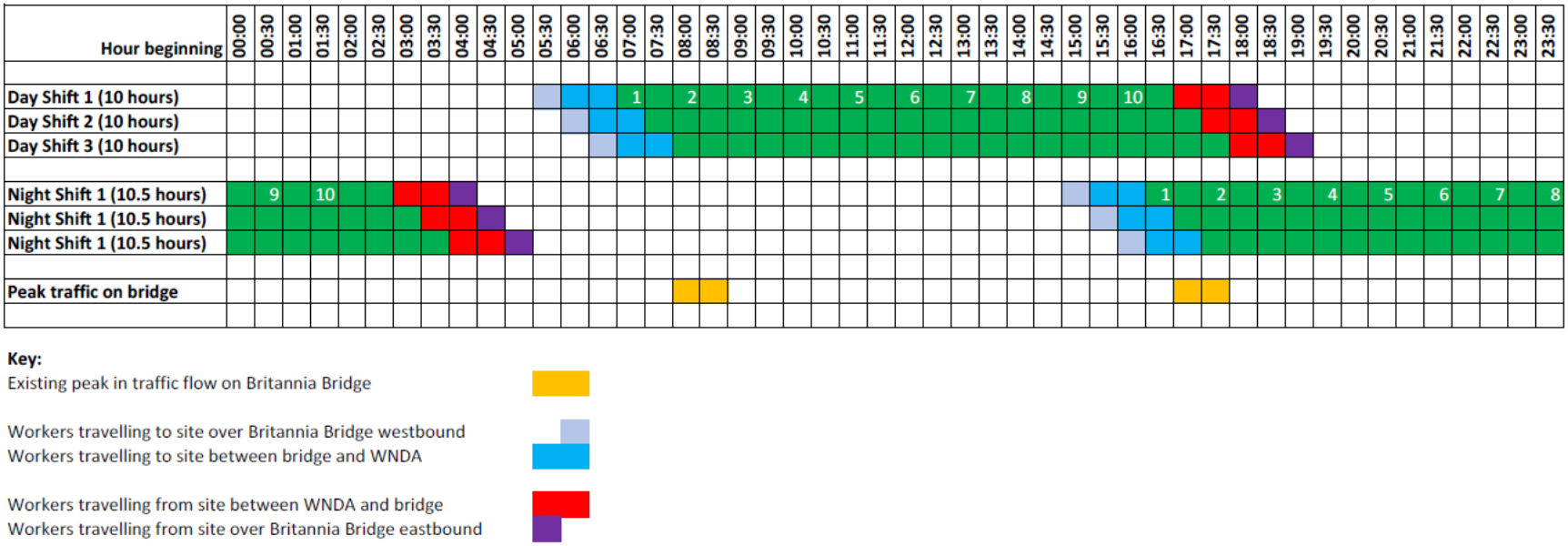
4.1.5 Similarly, for workers leaving the Wylfa Newydd Development Area, eastbound worker traffic crossing the Britannia Bridge is allocated to 04:00-05:00 and 05:00-06:00 for end of the night shift and 18:00-19:00 and 19:00-20:00 for the end of the day shift.

4.1.6 The existing peaks of traffic flow on the Britannia Bridge are from 08:00-09:00 and 17:00-18:00.

4.1.7 All these assumptions are shown graphically in figure 4-1.

4.1.8 These assumptions are reflected in the development traffic profiles shown in figure 11-3 and figure 11-4 of the Transport Assessment.

Figure 4-1 Effect of shift patterns on travel over Britannia Bridge

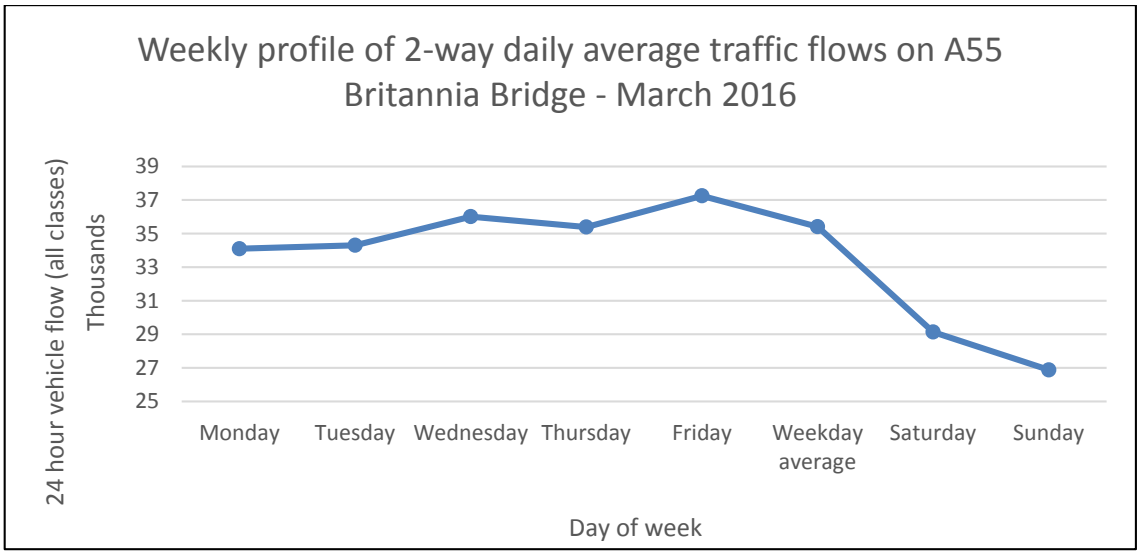


5 Flow variations over an average week

5.1.1 The analysis presented in the Transport Assessment examines the operation of the road network during peak periods on weekdays. This is standard practice in analysing road network performance as traffic flows are generally higher on weekdays than on Saturdays or Sundays. The figures below confirm this for the road network on Anglesey by presenting an average of daily traffic flows taken from automatic traffic count data. Data is provided for sites on the A55 and A5025 and for periods in spring and during the peak holiday period.

5.1.2 Figure 5-1 shows daily traffic flows on the Britannia Bridge in March 2016.

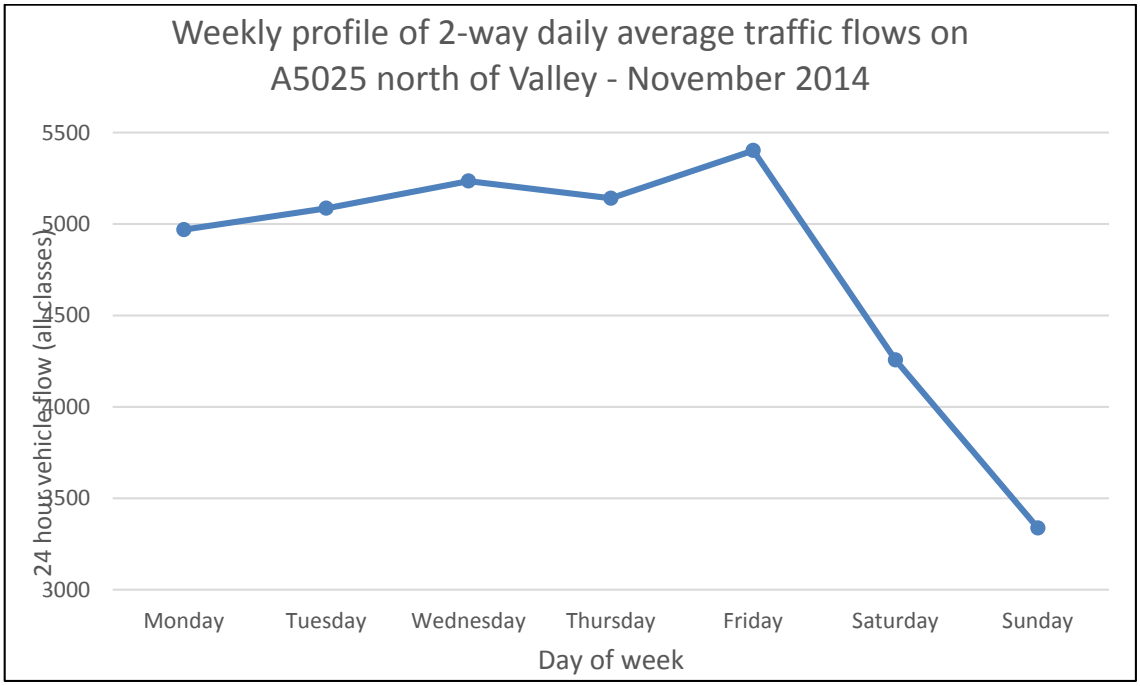
Figure 5-1 Traffic flow profile over a week on the A55 – March 2016



5.1.3 This data shows that traffic flows during March (which is outside the peak holiday period) are substantially lower at a weekend compared to weekdays.

5.1.4 Figure 5-2 provides similar information for the A5025 in November 2014.

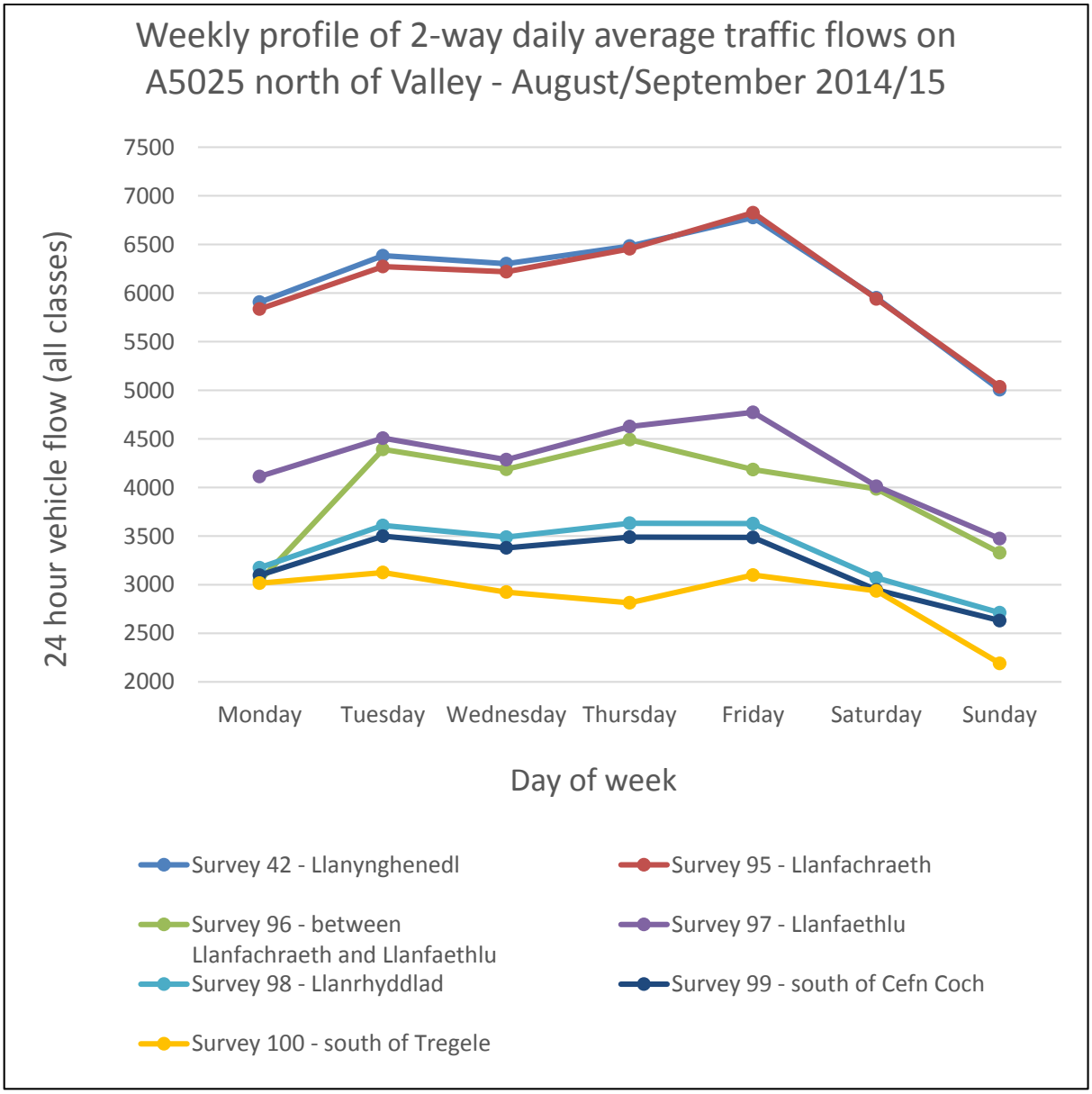
Figure 5-2 Traffic flow profile over a week on the A5025 – November 2014



5.1.5 Again, flows in this period (which is outside the peak holiday period) are substantially lower at weekends compared to weekdays.

5.1.7 Figure 5-3 presents similar information for the A5025 during the late holiday period (mid-August and mid-September).

Figure 5-3 Traffic flow profile over a week on the A5025 – August / September 2014



5.1.8 This data shows that during the holiday period there is a much smaller variation in traffic flows between the weekend and weekdays.

6 Traffic Growth

6.1.1 The Transport Assessment for the DCO application for the Wylfa Newydd Project has been based on traffic growth factors associated with three years: 2016; 2023; and 2033. This commentary provides an overview of the change in average weekday traffic growth if the programme for scheme delivery was scheduled for one and two years later than currently assessed.

6.1.2 TEMPRO Version 7.2 has been used to extract average weekday traffic growth data for the various time periods, using the following parameters:

- Result type: Trip ends by time period
- Geographical area: Isle of Anglesey
- Transport mode: Car Driver
- Trip end type: Origin / Destination
- Area type: All
- Road type: All

6.1.3 The growth factors are presented within the Strategic Traffic Model Method Statement for the Wylfa Newydd Project, which forms Appendix G of the Transport Assessment.

6.1.4 Table 6.1 presents the increases in traffic flows that have been applied to convert 2016 weekday traffic data to the estimated traffic data for 2020, 2023 (peak construction year) and 2033 (opening year) which has been used to prepare forecast of traffic conditions in each year of assessment (this is a copy of table 9-1 of the Transport Assessment).

Table 6-1 Average weekday traffic growth

Table 6.1: Average weekday traffic growth factors

Vehicle type	Growth from 2016 to 2020	Growth from 2016 to 2023	Growth from 2016 to 2033
Car	5%	7%	13%
Light goods vehicles	11%	19%	45%
Heavy goods vehicles*	3%	5%	15%

*Note: Average of OGV1 and OGV2 growth rates

6.1.5 Table 6.2 presents the increases in traffic flows that would need to be applied to convert 2016 weekday traffic data to the estimated traffic data for the same assessment years plus one year (i.e. 2021, 2024 and 2034) i.e. this assumes that the Power Station would be opened one year later than the current programme for scheme delivery.

Table 6-2 Average weekday traffic growth factors – scheme delivery one year later than original programme

Vehicle type	Growth from 2016 to 2021	Growth from 2016 to 2024	Growth from 2016 to 2034
Car	6%	8%	14%
Light goods vehicles	14%	22%	47%
Heavy goods vehicles*	5%	7%	17%

*Note: Average of OGV1 and OGV2 growth rates

6.1.6 Table 6.3 presents the increases in traffic flows that would need to be applied to convert 2016 weekday traffic data to the estimated traffic data for the same assessment years plus two years (i.e. 2022, 2025 and 2035) i.e. this assumes that the Power Station would be opened two years later than the current programme for scheme delivery.

Table 6-3 Average weekday traffic growth factors – scheme delivery two years later than original programme

Vehicle type	Growth from 2016 to 2022	Growth from 2016 to 2025	Growth from 2016 to 2035
Car	7%	9%	15%
Light goods vehicles	17%	25%	49%
Heavy goods vehicles*	5%	8%	18%

*

Note: Average of OGV1 and OGV2 growth rates

6.1.7 These results can be summarised as follows:

- For car drivers, there is an approximate 1% increase in traffic growth each year the scheme is delayed.
- For light goods vehicles, there is an approximate 2-3% increase in traffic growth each year the scheme is delayed.
- For heavy goods vehicles, there is an approximate 1-2% increase in traffic growth each year the scheme is delayed.

6.1.8 If these revised traffic growth factors were to be applied as part of the Transport Assessment they would be applied to both the “without Project” and “with Project” scenarios. This means that the assessment of the change due to the implementation of the Project would not be affected. It should also be noted that the forecasts for increases in light goods vehicles (49% to 2035) look high and further assessment could review these forecasts in the light of potential economic growth and activity on Anglesey and potential Brexit impacts on traffic to/from Holyhead.

7 Travel by Facilities Management Workers

7.1.1 Travel by facilities management workers represents a small proportion of travel of travel by all workers (i.e. there are 400 facilities management workers out of up to 9,000 workers at peak construction). The assessment of travel by the facilities workers has been undertaken in two slightly different ways in the Transport Assessment and VISSIM modelling of Britannia Bridge.

7.1.2 In the Transport Assessment, the analysis of all worker locations indicates the following split for all construction workers (see table 8-1 of the Transport Assessment):

- Anglesey 87%
- Mainland 13%

7.1.3 This split has been used to provide an assessment of the car parking requirements for the 400 facilities management workers at the Wylfa Newydd Development Area, Park and Ride facility and Logistics Centre (see table 7-2 of the Transport Assessment). Applying this split leads to an estimate of 50 vehicles crossing the Britannia Bridge to travel to or from the Wylfa Newydd Development Area each day. This split is used to calculate the parking requirement for facilities management workers.

7.1.4 If more facilities management workers were to live on the mainland this could lead to a higher requirement for car parking and this is allowed for within the 10% contingency applied to the calculation of car parking numbers. It should be noted that having more workers living on the mainland could lead to a greater level of car sharing than that assumed in calculating the car parking requirement.

7.1.5 Further analysis of potential worker home locations is provided in Appendix C1.2 (see table 3-4) and this includes an analysis of home locations for home-based workers who are likely to make up the majority of facilities management workers. The results in table 3-4 for 'Operations' show that 38% of workers are expected to live on the mainland with 62% living on Anglesey.

7.1.6 This split of home locations for facilities management workers has been used within the VISSIM model to provide a robust analysis of traffic conditions across the Britannia Bridge. Applying this split means that 147 out of the 400 facilities management workers are included within the VISSIM model (see paragraph 5.2.1 of Appendix I (VISSIM Model Results) of the Transport Assessment).