

Adran yr Economi a'r Seilwaith
Department for Economy and Infrastructure



Llywodraeth Cymru
Welsh Government

The M4 Motorway (Junction 23 (East of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and The M48 Motorway (Junction 23 (East of Magor) Connecting Road) Scheme 201-

The M4 Motorway (Junction 23 (East of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and The M48 Motorway (Junction 23 (East of Magor) Connecting Road) (Amendment) Scheme 201-

The London to Fishguard Trunk Road (East of Magor to Castleton) Order 201-

The M4 Motorway (West of Magor to East of Castleton) and the A48(M) Motorway (West of Castleton to St Mellons)(Variation of Various Schemes) Scheme 201-

The M4 Motorway (Junction 23 (East of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and the M48 Motorway (Junction 23 (East of Magor) Connecting Road) and The London to Fishguard Trunk Road (east of Magor to Castleton) (Side Roads) Order 201-

The Welsh Ministers (The M4 Motorway (Junction 23 (East of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and the M48 Motorway (Junction 23 (East of Magor) Connecting Road) and the London to Fishguard Trunk Road (East of Magor to Castleton)) Compulsory Purchase Order 201-

The M4 Motorway (Junction 23 (East Of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and The M48 Motorway (Junction 23 (East Of Magor) Connecting Road) (Supplementary) Scheme 201-

The Welsh Ministers (The M4 Motorway (Junction 23 (East Of Magor) to West of Junction 29 (Castleton) and Connecting Roads) and The M48 Motorway (Junction 23 (East Of Magor) Connecting Road) and The London to Fishguard Trunk Road (East of Magor to Castleton)) Supplementary Compulsory Purchase Order 201-

Supplementary Evidence

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Port Economics

Document Reference: WG 1.4.5

1. Introduction

- 1.1 This document provides updates to the modelling produced in my Proof of Evidence (WG 1.4.1). In particular, I have revised my assumptions for the calculation of shipping tariffs and betterments, as well as the impact this has on my estimate for the detriment to ABP's undertakings at Newport Docks (section 2).
- 1.2 I have also presented three sensitivities to the analysis which use alternative assumptions for overall cargo forecasts (following ABP's forecast in its Master Plan), the base year for the cargo forecast and the function linking land loss and rental income loss (section 3).

2. Updated estimate of financial detriment

- 2.1 In my Proof of Evidence, I presented calculations for the estimate of the financial detriment to ABP's undertakings. Table 2.1 shows the breakdown of the estimate presented in my Proof with no reallocation of shipping to South Dock or alternative shipping. Table 2.2 shows the breakdown of the estimate presented in my Proof with reallocation of shipping to South Dock and alternative shipping.

Table 2.1 Breakdown of my estimate of detriment to Newport Docks with no reallocation of shipping to South Dock or alternative ships (£m)

	Cash flow	Terminal value	Total
Shipping revenue	1.7	6.8	8.5
Rental income	2.0–4.6	5.9–11.8	8.0–16.4
Betterment	(0.1)	(0.5)	(0.6)
OPEX	(2.0)–(3.4)	(6.8)–(10.1)	(8.8)–(13.5)
CAPEX	(0.6)	(2.3)	(2.8)
Total	1.1–2.2	3.1–5.7	4.2–7.9

Source: Own calculations.

Table 2.2 Breakdown of my estimate of detriment to Newport Docks with reallocation of shipping to South Dock and alternative ships (£m)

	Cash flow	Terminal value	Total
Shipping revenue	0.0	0.1	0.1
Rental income	1.5–4.1	4.0–9.9	5.5–14.0
Betterment	(0.1)	(0.5)	(0.6)
OPEX	(0.8)–(2.2)	(2.0)–(5.3)	(2.8)–(7.5)
CAPEX	(0.0)	(0.0)	(0.0)
Total	0.6–1.8	1.5–4.2	2.2–6.0

Source: Own calculations.

- 2.2 The components of the calculation include the loss in the shipping revenue associated with the reduction in vessel traffic, the loss of land and associated rental income, the gain from time savings for port users (betterment), and the cost savings for ABP based on reduced activity (OPEX and CAPEX savings).
- 2.3 Since producing these estimates, I have been able to update shipping revenues using 2015 as price base instead of 2014¹ and to revise four of the assumptions I have used:
- Origin/destination assumption**—the port access charges are charged to vessels that discharge or load cargo depend on the origin or destination respectively. I have revised my assumption for the split of vessel origins and destinations.
 - Pricing of part cargoes**—I previously applied the part cargo rate to all cargoes. The part cargo rate is higher per unit of cargo and therefore I have revised this to account for a share of cargoes being full cargo.
 - Inclusion of cargo wharfage dues**—cargo wharfage is paid by the owner or receiver of cargo, charged on the weight or volume of cargo loaded or discharged, and can vary across commodities. The cargo wharfage is only available on request, but I have since obtained the price schedule for the ABP cargo wharfage tariffs for South Wales from ABP. I have therefore updated my estimate to include these charges.
 - Outturn cargo for 2016**—I rebase my analysis for cargoes using outturn cargo data for 2016 as provided in Mr Green’s Proof of Evidence.

¹ The commodity volumes and splits are based on 2014 data as before.

- 2.4 The following sub-sections describe each of these changes in detail, and the total impact of these on my estimate of detriment.
- 2.5 As set out in my Proof of Evidence paragraph 6.5.3, I also present an estimate of financial detriment by taking into consideration the likely reallocation of vessels to the South Dock and the use of alternative vessels. I apply the updated assumptions to this estimate of financial detriment with reallocation of vessels to the South Dock, and the use of alternative vessels. As in my Proof of Evidence, I rely on the evidence of Mr Vine to inform this scenario.

Tonnage charges: origin/destination of vessels

- 2.6 As described in para 3.4.4 of my Proof of Evidence, the tariff payable for port access, i.e. tonnage charges, depends on the origin or destination of the vessel. Class 1 vessels are those which are going to or coming from a UK port, including the Isle of Man, Channel Islands and Northern Ireland. Class 2 vessels coming from or going to any member of the European Union or EFTA. Class 3 vessels are travelling from or going to any other foreign port or zone.²
- 2.7 In my proof I described port access charges as applying to vessels that do not load or discharge cargo. I assumed that 70% of vessels are to/from the UK, 20% to/from the EU/EFTA and 10% to/from the rest of the world based on the data on vessels provided to me by Mr Vine. This is described in 3.4.7 and 3.4.8 of my Proof.
- 2.8 I now consider that the port access charge would apply to all vessels (cargo and non-cargo) and my previous method was erroneous since it excluded cargo vessels from the charge. To reflect this I have used data from the Department for Transport on inbound and outbound cargoes split by countries for the Port of Newport as a whole for 2013 and 2014.³

² See Associated British Ports tariffs, South Wales Tariff 2016.

³ DfT Port Traffic Tables, Table PORT0498.

I can revise my estimate to 10%/45%/45% for UK/EU/Rest of World respectively.⁴

- 2.9 This has the impact of increasing the estimate of shipping revenues from £9.3m to £9.9m in 2014, and from £12.9m to £13.6m in 2035.⁵

Pricing of part cargoes

- 2.10 In paragraph 3.4.4 of my Proof of Evidence, I described the port access charges as applying to vessels that do not load or discharge cargo, and in 3.4.6 I describe that port access charges are applicable to non-cargo ships. I then apply the cargo loading/unloading tariffs to all cargoes in Table 3.4.

- 2.11 I have revised the calculation for estimating this: the port access charges now apply to all vessels, unless they are carrying part cargoes, in which case the cargo loading/unloading tariffs apply. I do not have available any information on the amount of cargo that incurs the part cargo rates, the number of vessels that contain part cargoes, or the size of these vessels.

- 2.12 If all of the vessels entering the port are part cargoes, the original estimate I have produced in my Proof of Evidence would not contain any bias. If we assume that half of the vessels are full cargoes, and the remainder are part cargoes, evenly distributed across vessel sizes, the revenue estimate for 2014 falls from £9.3m to £5.2m, on the basis of the previous assumption for the origin/destination splits. On the basis of the new splits, the revenue estimate for 2014 falls from £9.9m to £7.5m.

Inclusion of cargo wharfage dues

- 2.13 ABP does not publish cargo wharfage rates. However, I have since been sent the cargo wharfage rates from ABP.

⁴ The cargo split for 2014 is 8/46/46, and for 2013 is 9/47/44.

⁵ As described above, these figures are expressed in 2015 prices.

2.14 Cargo wharfage is paid by the owner or receiver of cargo. The cargo wharfage can be based on the weight or the volume of the cargo handled. The rates are given to a disaggregated level of commodity, however, I do not have this detail for the commodities handled so I have therefore matched the rates to the commodities as summarised in Table 2.3 below.

Table 2.3 Commodity matching

DfT commodity group	Cargo wharfage commodity	Cargo wharfage £ per metric tonne (2017)
Coal	Coal	4.05
Agricultural products	Grain	7.95
Dry bulk	Scrap (aluminium, iron), fertilisers,	6.55
Forestry products	Hardwood, Softwood	3.53
Iron and steel products	Coils, tubes	6.43
Ores	Iron	2.17

Source: ABP Cargo wharfage rates, own estimations.

2.15 Using the above rates for the key commodities handled at Newport, I have estimated the revenues associated with cargo wharfage to be £11.0m. This is in addition to the revenues I have estimated.

HGV traffic to the port

2.16 The Welsh Government has commissioned primary traffic data collection using Automatic Number Plate Recognition (ANPR). Based on this data, an analysis has been undertaken to investigate how the Scheme would affect journey times to and from the port.

2.17 Using the count and the distribution of traffic to and from Newport Docks based on ANPR data allows me to improve the robustness of my betterment calculations.⁶ The approach followed to gather the ANPR data is described in the Appendix to this document.

⁶ M4CaN-DJV-HTR-ZG_GEN-FN-TR-0011.

2.18 To quantify the betterments using the ANPR data, I follow the steps described in section 5.2 of my Proof of Evidence and use the ANPR data for:

- a) **Weighing the time savings by route**—In section 5.2.8 a) of my Proof of Evidence, I average the time savings for each route using weights derived from 2014 HGV traffic count data from the Arup transport model.⁷ I then use HGV traffic count based on ANPR data to compute the weight of each route. I use the same weights to calculate the weighted average distances and speeds with and without the Scheme for both 2022 and 2037. This is described in section 5.2.9 of My Proof of Evidence.
- b) **Determining the number of cargo vehicles benefiting from the Scheme**—In section 5.2.14 of my Proof of Evidence, I forecast the number of cargo vehicles benefiting from the Scheme based on the forecast cargo handled at Newport Docks, the share of this cargo that is likely to be transported via the new M4 and the average cargo transported by each vehicle. I then use the total number of HGVs using key routes⁸ to and from Newport Docks based on ANPR data to compute the number of cargo vehicles on these key routes in 2017. I assume the number of vehicles to grow over the period based on the growth of forecast cargo transported via M4 and computed following the steps described in 5.2.14 a) and 5.2.14 b) of my Proof of Evidence.

2.19 Based on the estimates described in 5.2.14 of my Proof of Evidence, c. 31,000 cargo vehicles will use the key routes in 2017. Based on the extrapolation of ANPR data observed in January 2017, c. 122,000 cargo vehicles will use these routes in 2017.

⁷ I use the distribution of two-way heavy goods vehicle traffic to and from Newport Docks for 2014 for the routes described in Tables 5.1–5.5, using data provided by the Welsh Government. See M4CaN-DJV-HTR-ZG_GEN-FN-TR-0011.

⁸ In his Statement of Evidence, Mr Bryan Whittaker has described the travel times and distances for key routes to and from Newport Docks.

2.20 Using traffic information based on ANPR data, the total betterments associated with time savings, fuel cost savings and non-fuel operating cost savings increase four-fold and are included in Table 2.4 below.

Outturn cargo for 2016

2.21 The analysis in my Proof of Evidence begins the shipping revenue forecast from 2015, as 2014 is the most recent year with vessel data from ABP, cargo commodity splits from DfT, and total cargo handled by ABP from the Master Plan.

2.22 Mr Green (paragraph 3.4 of his Proof of Evidence) refers to cargo volumes handled by ABP at Newport in 2016. My forecast for cargo volumes in 2016 is 2.0 million tonnes, compared to the stated outturns of 1.8 million tonnes. While I do not have the detailed data on vessel visits or the splits across commodities handled for 2016, I can rebase my analysis for cargoes using this figure.

2.23 This change has the impact of decreasing the estimate of shipping revenues from £10.1m to £9.1m in 2016, and from £12.9m to £11.6m in 2035.⁹

Rechartering of vessels

2.24 As described in paragraph 6.5.3 of my Proof of Evidence, I take into account the likely reallocation of vessels to the South Dock, and the use of alternative vessels as per Mr Vine's evidence. Using this alternative scenario, average shipping revenues at the port with the Scheme are £12.4m compared to the No-Scheme case of £12.2m over the period 2023-2035.

Summary of changes

2.25 Taking all of these changes together gives a revised estimate of revenues at the port, of £18.6m instead of £9.3m in 2014. It gives a

⁹ As described above, these figures are expressed in 2015 prices.

revised estimate of betterments of around £0.1m per year instead of £0.01m in 2022. The impact on the estimate of the detriment of the port is an increase of £1.7m. The range of detriment increases from £4.2m-£7.9m to £5.9m-£9.7m. Figure 2.1 illustrates the impact of these changes.

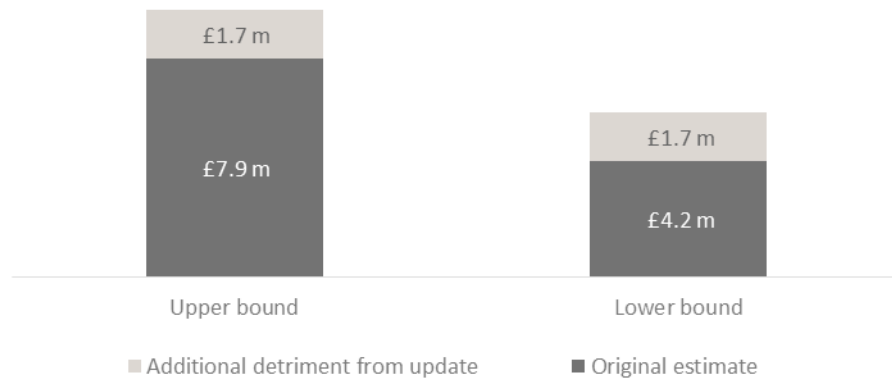
2.26 In the alternative shipping scenario described in paragraph 6.5.3 of my Proof of Evidence the impact of these changes together on the estimate of detriment is a decrease of £1.5m. The range of detriment decreases from £2.2m-£6.0m to £0.7m-£4.5m. Figure 2.2 illustrates the impact of these changes.

Table 2.4 Comparison of the breakdown of my estimate of detriment to Newport Docks (£m)

	Original estimate, Proof of Evidence				Updated estimate, Supplementary Evidence	Updated estimate, alternative shipping scenario
Change 1: pricing of part cargoes with updated origin / destination of vessels	x	✓	✓	✓	✓	✓
Change 2: including cargo wharfage dues	x	x	✓	✓	✓	✓
Change 3: including ANPR data	x	x	x	✓	✓	✓
Change 4: outturn cargo for 2016	x	x	x	x	✓	✓
Shipping revenue	8.5	6.9	16.9	16.9	15.2	0.2
Rental income	8.0–16.4	8.0–16.4	8.0–16.4	8.0–16.4	8.0–16.4	5.5–14.0
Betterment	(0.6)	(0.6)	(0.6)	(4.0)	(4.0)	(4.1)
OPEX	(8.8)–(13.5)	(7.9)–(12.6)	(13.6)–(18.2)	(11.6)–(16.3)	(10.7)–(15.4)	(0.9)–(5.6)
CAPEX	(2.8)	(2.8)	(2.8)	(2.8)	(2.5)	(0.0)
Total	4.2–7.9				5.9–9.7	0.7–4.5

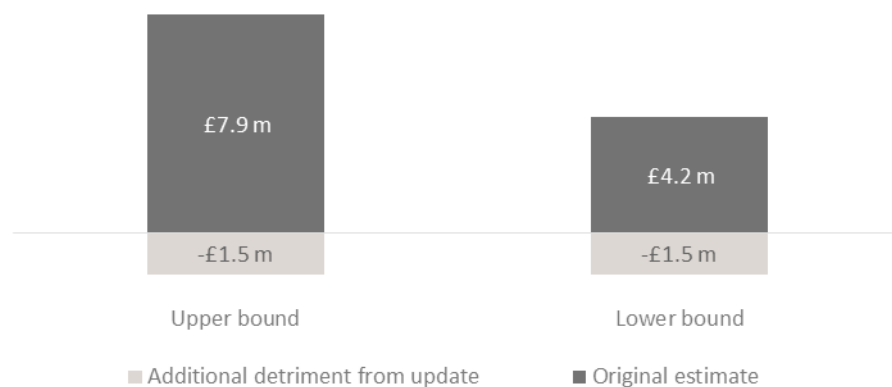
Source: Own calculations.

Figure 2.1 Comparison of my estimate of detriment to Newport Docks with no reallocation of shipping to South Dock or alternative ships (£m)



Source: Own calculations.

Figure 2.2 Comparison of my estimate of detriment to Newport Docks with reallocation of shipping to South Dock and alternative ships (£m)



Source: Own calculations.

3. Sensitivity analysis

3.1 I have produced two additional sensitivities to show the variation in certain assumptions from additional analysis:

- a) Use ABP’s cargo forecast from the Master Plan instead of estimating these using UK wide forecasts commissioned by the DfT, to 2020.
- b) Take the maximum relative loss of rented land, i.e. the larger of the relative tenant land loss and the relative ABP (non-tenanted) land loss.

3.2 The following sub-sections describe these in more detail.

ABP's cargo forecast

- 3.3 ABP has produced its own cargo forecast for the years 2014 to 2020 in their Master Plan. These forecasts rely on certain investments being made, and assume that there is growth of 3.5% on average per year from 2016 to 2020, compared to my estimate which assumes there is compound annual growth of 1.7% over this period. While my cargo forecast differs, adopting the ABP forecast does not change the overall estimate by such a large proportion.
- 3.4 Using ABP's cargo forecast for these years, and then reverting back to my forecast for 2021 to 2035 increases the forecast of revenues by 23.5% in 2035, from £23.0m (with the changes described in section 2) to £28.4m under both scenarios.
- 3.5 This changes the estimated range of detriment from £5.9m-£9.7m to £7.1m-£11.2m and from £0.7m-£4.5m to £0.8m-£5.1m in the alternative shipping scenario.

Max function for land loss

- 3.6 The land loss analysis in my Proof of Evidence is based on two scenarios: the land loss of tenants relative to (i) the area they occupy at the Port (areas under leasehold agreements) or to (ii) the total land at the Port. The rationale behind this was to emphasise the land loss that directly generates rental income to ABP.
- 3.7 Alternatively, one could take the land loss that is not under leasehold agreements (non-tenanted land or 'ABP land') relative to (i) the total ABP land or to (ii) the total land at the Port, as above. In this sensitivity, I take a conservative view by taking the maximum of the relative tenant and ABP land loss for the high detriment scenario (i). Essentially, this can be interpreted as the loss of infrastructure land (i.e. ABP land) having a proportional effect on the Port of Newport's capacity to make land available for tenants. By construction, this approach to modelling would increase the detriment as ABP land may also include non-used land.

3.8 This changes the estimated range of detriment from £5.9m-£9.7m to £5.9m-£12.4m and from £0.7m-£4.5m to £0.7m-£7.3m in the alternative shipping scenario.

Summary

3.9 Overall, the sensitivities related to ABP's cargo forecast and the max function for land loss lead the estimated range of detriment in the first scenario to change from £5.9m-£9.7m to £7.1m-£14.3m. Table 3.1 summarises the impact of each sensitivity as well as the combined impact of both sensitivities on the estimated detriment.

Table 3.1 Comparison of the breakdown of my estimate of detriment to Newport Docks with no reallocation of shipping to South Dock or alternative ships (£m)

Total estimate of detriment to Newport Docks	Updated estimate, Supplementary Evidence	Updated estimate and ABP's cargo forecast	Updated estimate and max function for land loss	Updated estimate and combined sensitivities
Shipping revenue	15.2	18.8	15.2	18.8
Rental income	8.0–16.4	8.9–18.3	8.0–22.6	8.9–25.3
Betterment	(4.0)	(4.3)	(4.0)	(4.3)
OPEX	(10.7)–(15.4)	(13.0)–(18.2)	(10.7)–(18.9)	(13.0)–(22.1)
CAPEX	(2.5)	(3.3)	(2.5)	(3.3)
Total	5.9–9.7	7.1–11.2	5.9–12.4	7.1–14.3

Source: Own calculations.

3.10 In the alternative shipping scenario the two sensitivities together lead the estimated range of detriment to change from £0.7m-£4.5m to £0.8m-£8.2m. Table 3.2 summarises the impact of each sensitivity as well as the combined impact of both sensitivities on the estimated detriment in the alternative shipping scenario.

Table 3.2 Comparison of the breakdown of my estimate of detriment to Newport Docks with reallocation of shipping to South Dock and alternative ships (£m)

Total estimate of detriment to Newport Docks	Updated estimate, Supplementary Evidence	Updated estimate and ABP's cargo forecast	Updated estimate and max function for land loss	Updated estimate and combined sensitivities
Shipping revenue	0.2	0.2	0.2	0.2
Rental income	5.5–14.0	6.2–15.7	5.5–20.4	6.2–22.8
Betterment	(4.1)	(4.4)	(4.1)	(4.4)
OPEX	(0.9)–(5.6)	(1.1)–(6.4)	(0.9)–(9.2)	(1.1)–(10.4)
CAPEX	(0.0)	(0.0)	(0.0)	(0.0)
Total	0.7–4.5	0.8–5.1	0.7–7.3	0.8–8.2

Source: Own calculations.

4. Appendix

Project title M4 Corridor around Newport

cc	Stephen Bussell Bryan Whittaker Suzanne Pritchard	File reference M4CaN-DJV-HTR-ZG_GEN-FN-TR-0011
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Prepared by	Philip Thiele Ringo Chan	Date
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Subject Access to Newport Docks by Road

1. Introduction

An analysis has been undertaken to investigate how the M4CaN Scheme would affect journey times to and from Newport Docks by road. The ‘do minimum’ (without the Scheme) and ‘do something’ (with the Scheme) scenarios have been analysed and compared for the years 2022 and 2037. The distribution of traffic to and from Newport Docks has also been analysed. This was based on Automatic Number Plate Recognition (ANPR) data collected over a seven day period in January 2017, supplemented by traffic route choice data from the base year traffic model where ANPR cameras were not positioned directly in the locations of interest. The analysis has been split into light vehicles (cars and light goods vehicles combined) and heavy goods vehicles.

2. Trip distribution to / from Newport Docks

The trip distribution of vehicles to and from Newport Docks has been analysed with a view to identifying the split of traffic passing a set of locations on the strategic road network around Newport, which are defined as follows:

- Location A: A48(M) J29a – J29

- Location B: M4 J30 – J29
- Location C: A449 north of Coldra
- Location D: M48 J23 – J2
- Location E: M4 J23 – J22 (Second Severn Crossing Toll Plaza).

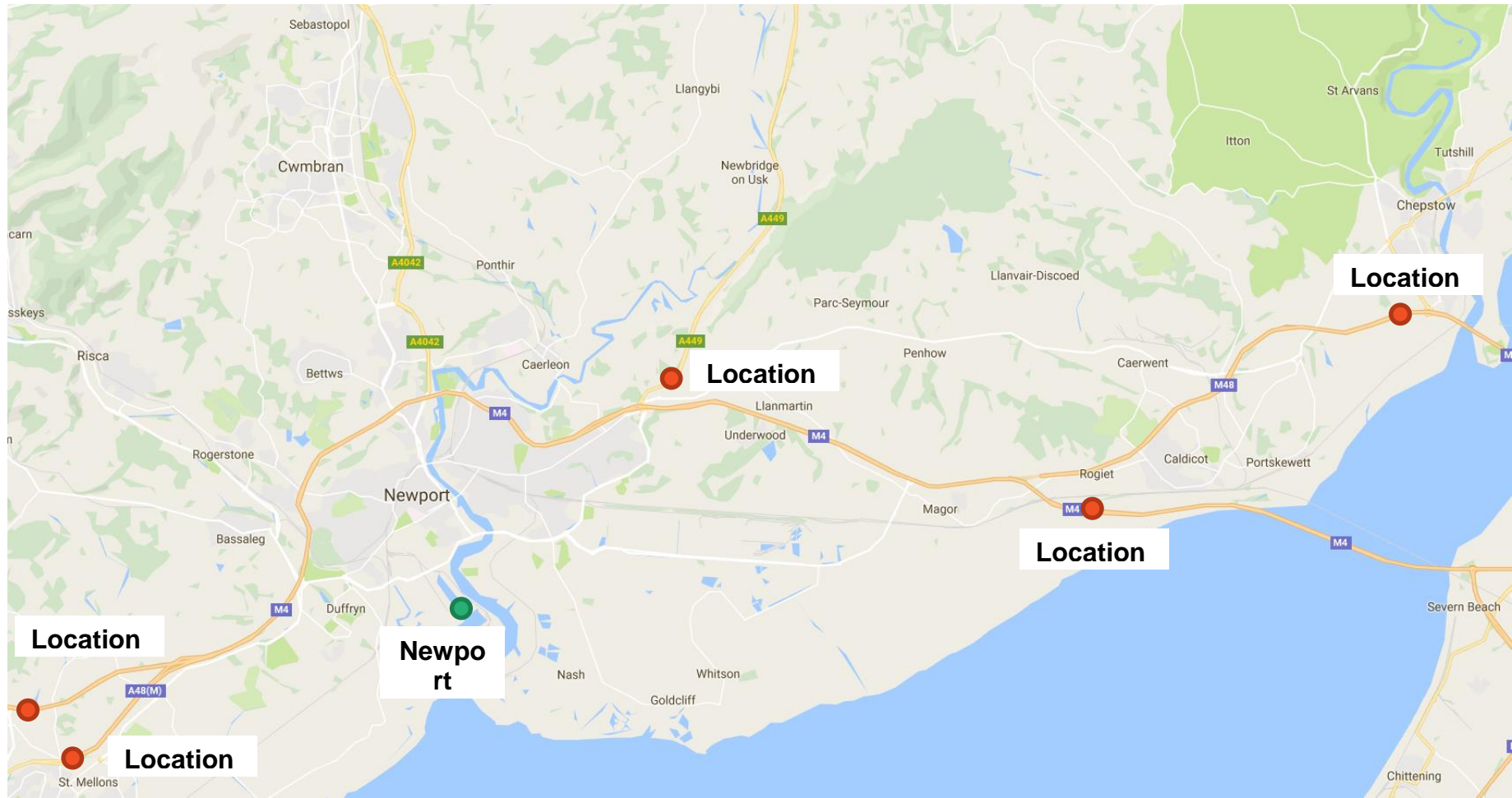


Figure 2.1: Strategic road network locations used for analysis of distribution and journey times to and from Newport Docks

Table 2.1 presents the results of the trip distribution analysis. These locations account for 11 to 14 % of all light vehicles and 36 to 46% of all HGVs entering and leaving the docks (via the two access routes – West Way Road and East Way Road). The remainder of traffic has an origin or destination within Newport (to the south of the M4), or enters/leaves Newport via other routes (for example the A467/A4051/A4042). Journeys using these other routes to access Newport Docks are unlikely to be greatly affected by the Scheme.

Table 2.1: Distribution of traffic to Newport Docks

Location	Description	Mon-Fri (Weekday)				Sat & Sun (Weekend)			
		Number of Vehicles*		Percentage		Number of Vehicles*		Percentage	
		LV	HGV	LV	HGV	LV	HGV	LV	HGV
A	A48(M) J29a – J29	136	66	2%	3%	10	1	2%	3%
B	M4 J30 – J29	264	338	4%	14%	19	7	5%	15%
C	A449 north of Coldra	150	184	2%	8%	5	3	1%	6%
D	M48 J23 – J2	51	42	1%	2%	3	0	1%	1%
E	M4 J23 – J22	169	231	2%	10%	8	3	2%	5%
-	All other locations not passing the above	6,157	1,530	89%	64%	371	33	89%	69%

* Number of vehicles based on ANPR survey hours of 06:00-22:00. Data has not been adjusted to account for number plate capture rate.

Table 2.2: Distribution of traffic from Newport Docks

Location	Description	Mon-Fri (Weekday)				Sat & Sun (Weekend)			
		Number of Vehicles*		Percentage		Number of Vehicles*		Percentage	
		LV	HGV	LV	HGV	LV	HGV	LV	HGV
A	A48(M) J29a – J29	171	72	2%	2%	16	1	3%	2%
B	M4 J30 – J29	431	226	6%	7%	40	4	7%	6%
C	A449 north of Coldra	179	595	2%	19%	3	7	1%	11%
D	M48 J23 – J2	54	83	1%	3%	2	2	0%	3%
E	M4 J23 – J22	207	464	3%	15%	8	9	1%	15%
-	All other locations not passing the above	6,368	1,708	86%	54%	497	38	88%	62%

** Number of vehicles based on ANPR survey hours of 06:00-22:00. Data has not been adjusted to account for number plate capture rate.*

3. Journey Times

The modelled light vehicle journey times between the selected locations and Newport Docks are given in Tables 3.1 to 3.5. The equivalent journey times for heavy goods vehicles are shown in Tables 3.6 to 3.10.

Table 3.1: Light vehicle journey times to / from the A48(M) Junction 29a

Direction	Route	Distance (km)	Time Period	Journey Time (mm:ss)			
				2022		2037	
				Without M4CaN	With M4CaN	Without M4CaN	With M4CaN
Eastbound (to Docks)	Via Existing M4 J28 and A48 Southern Distributor Road	10.0	AM Peak Hour	10:56	10:33	11:51	11:06
			Interpeak Hour	09:34	09:44	09:53	10:03
			PM Peak Hour	10:35	10:18	11:59	10:53
	Via New M4 and Docks Way Junction	11.9	AM Peak Hour	N/A	09:03	N/A	09:19
			Interpeak Hour	N/A	08:45	N/A	09:03
			PM Peak Hour	N/A	08:57	N/A	09:12
Westbound (from Docks)	Via Existing M4 J28 and A48 Southern Distributor Road	9.7	AM Peak Hour	09:25	09:10	10:13	09:18
			Interpeak Hour	08:47	08:54	09:04	09:09
			PM Peak Hour	10:04	09:27	11:52	09:38
	Via New M4 and Docks Way Junction	11.9	AM Peak Hour	N/A	09:13	N/A	09:22
			Interpeak Hour	N/A	08:57	N/A	09:14
			PM Peak Hour	N/A	09:41	N/A	09:54

Table 3.2: Light vehicle journey times to / from the M4 West (M4 Junction 30)

Direction	Route	Distance (km)	Time Period	Journey Time (mm:ss)			
				2022		2037	
				Without M4CaN	With M4CaN	Without M4CaN	With M4CaN
Eastbound (to Docks)	Via Existing M4 J28 and A48 Southern Distributor Road	9.9	AM Peak Hour	10:38	10:18	11:50	11:06
			Interpeak Hour	09:24	09:36	09:44	09:55
			PM Peak Hour	10:21	10:07	11:54	10:51
	Via New M4 and Docks Way Junction	11.8	AM Peak Hour	N/A	08:38	N/A	09:07
			Interpeak Hour	N/A	08:28	N/A	08:46
			PM Peak Hour	N/A	08:35	N/A	08:57
Westbound (from Docks)	Via Existing M4 J28 and A48 Southern Distributor Road	9.9	AM Peak Hour	09:47	09:30	10:59	10:17
			Interpeak Hour	08:55	09:02	09:14	09:18
			PM Peak Hour	10:06	09:25	12:19	10:08
	Via New M4 and Docks Way Junction	12.1	AM Peak Hour	N/A	09:20	N/A	10:04
			Interpeak Hour	N/A	08:53	N/A	09:11
			PM Peak Hour	N/A	09:25	N/A	10:09

Table 3.3: Light vehicle journey times to / from the A449 north of Coldra

Direction	Route	Distance (km)	Time Period	Journey Time (mm:ss)			
				2022		2037	
				Without M4CaN	With M4CaN	Without M4CaN	With M4CaN
Northbound (from Docks)	Via J24 and A48 Southern Distributor Road	9.2	AM Peak Hour	13:06	12:13	16:41	13:34
			Interpeak Hour	12:43	12:01	14:01	12:43
			PM Peak Hour	13:29	12:31	17:43	14:02
Southbound (to Docks)	Via J24 and A48 Southern Distributor Road	9.3	AM Peak Hour	14:34	14:05	22:28	18:40
			Interpeak Hour	12:00	12:07	13:01	12:59
			PM Peak Hour	12:06	12:16	15:38	14:50

Table 3.4: Light vehicle journey times to / from the M48 J2

Direction	Route	Distance (km)	Time Period	Journey Time (mm:ss)			
				2022		2037	
				Without M4CaN	With M4CaN	Without M4CaN	With M4CaN
Eastbound (from Docks)	Via Existing M4 J24 and A48 Southern Distributor Road	27.8	AM Peak Hour	24:16	23:29	28:22	25:28
			Interpeak Hour	23:30	22:52	25:06	23:50
			PM Peak Hour	24:19	23:27	28:45	25:11
	Via New M4 and Docks Way Junction	26.8	AM Peak Hour	N/A	17:27	N/A	18:28
			Interpeak Hour	N/A	17:20	N/A	17:56
			PM Peak Hour	N/A	17:33	N/A	18:11
Westbound (to Docks)	Via Existing M4 J24 and A48 SDR	27.5	AM Peak Hour	22:39	23:29	25:20	24:39
			Interpeak Hour	21:35	22:50	22:29	23:43
			PM Peak Hour	22:24	23:13	25:00	24:33
	Via New M4 and Docks Way Junction	27.1	AM Peak Hour	N/A	18:38	N/A	19:15
			Interpeak Hour	N/A	18:01	N/A	18:32
			PM Peak Hour	N/A	18:22	N/A	19:17

Table 3.5: Light vehicle journey times to / from the M4 East (Toll Plaza of Second Severn Crossing)

Direction	Route	Distance (km)	Time Period	Journey Time (mm:ss)			
				2022		2037	
				Without M4CaN	With M4CaN	Without M4CaN	With M4CaN
Eastbound (from Docks)	Via Existing M4 J24 and A48 Southern Distributor Road	19.4	AM Peak Hour	19:55	20:16	24:07	21:53
			Interpeak Hour	19:05	19:29	20:49	20:24
			PM Peak Hour	19:47	19:54	24:16	21:41
	Via New M4 and Docks Way Junction	18.4	AM Peak Hour	N/A	12:29	N/A	13:10
			Interpeak Hour	N/A	12:28	N/A	12:59
			PM Peak Hour	N/A	12:32	N/A	13:04
Westbound (to Docks)	Via Existing M4 J24 and A48 SDR	19.1	AM Peak Hour	17:58	17:30	20:43	18:37
			Interpeak Hour	16:53	17:06	17:49	17:52
			PM Peak Hour	17:32	17:44	20:10	18:45
	Via New M4 and Docks Way Junction	18.6	AM Peak Hour	N/A	12:49	N/A	13:21
			Interpeak Hour	N/A	12:24	N/A	12:47
			PM Peak Hour	N/A	12:50	N/A	13:27

Table 3.6: Heavy goods vehicle journey times to / from the A48(M) Junction 29a

Direction	Route	Distance (km)	Time Period	Journey Time (mm:ss)			
				2022		2037	
				Without M4CaN	With M4CaN	Without M4CaN	With M4CaN
Eastbound (to Docks)	Via Existing M4 J28 and A48 Southern Distributor Road	10.0	AM Peak Hour	11:02	10:52	11:58	11:25
			Interpeak Hour	09:41	10:03	10:00	10:22
			PM Peak Hour	10:42	10:37	12:06	11:12
	Via New M4 and Docks Way Junction	11.9	AM Peak Hour	N/A	09:39	N/A	09:54
			Interpeak Hour	N/A	09:20	N/A	09:39
			PM Peak Hour	N/A	09:33	N/A	09:47
Westbound (from Docks)	Via Existing M4 J28 and A48 Southern Distributor Road	9.7	AM Peak Hour	09:32	09:27	10:19	09:35
			Interpeak Hour	08:54	09:11	09:10	09:26
			PM Peak Hour	10:11	09:44	11:59	09:55
	Via New M4 and Docks Way Junction	11.9	AM Peak Hour	N/A	09:46	N/A	09:55
			Interpeak Hour	N/A	09:30	N/A	09:47
			PM Peak Hour	N/A	10:14	N/A	10:27

Table 3.7: Heavy goods vehicle journey times to / from the M4 West (M4 Junction 30)

Direction	Route	Distance (km)	Time Period	Journey Time (mm:ss)			
				2022		2037	
				Without M4CaN	With M4CaN	Without M4CaN	With M4CaN
Eastbound (to Docks)	Via Existing M4 J28 and A48 Southern Distributor Road	9.9	AM Peak Hour	10:47	10:35	11:58	11:23
			Interpeak Hour	09:33	09:53	09:52	10:11
			PM Peak Hour	10:29	10:24	12:02	11:07
	Via New M4 and Docks Way Junction	11.8	AM Peak Hour	N/A	09:17	N/A	09:46
			Interpeak Hour	N/A	09:08	N/A	09:25
			PM Peak Hour	N/A	09:14	N/A	09:36
Westbound (from Docks)	Via Existing M4 J28 and A48 Southern Distributor Road	9.9	AM Peak Hour	09:54	09:43	11:07	10:30
			Interpeak Hour	09:03	09:15	09:22	09:31
			PM Peak Hour	10:14	09:38	12:27	10:21
	Via New M4 and Docks Way Junction	12.1	AM Peak Hour	N/A	09:57	N/A	10:41
			Interpeak Hour	N/A	09:30	N/A	09:48
			PM Peak Hour	N/A	10:03	N/A	10:46

Table 3.8: Heavy goods vehicle journey times to / from the A449 north of Coldra

Direction	Route	Distance (km)	Time Period	Journey Time (mm:ss)			
				2022		2037	
				Without M4CaN	With M4CaN	Without M4CaN	With M4CaN
Northbound (from Docks)	Via J24 and A48 Southern Distributor Road	9.2	AM Peak Hour	13:06	12:13	16:41	13:34
			Interpeak Hour	12:43	12:01	14:01	12:43
			PM Peak Hour	13:29	12:31	17:43	14:02
Southbound (to Docks)	Via J24 and A48 Southern Distributor Road	9.3	AM Peak Hour	14:34	14:05	22:28	18:40
			Interpeak Hour	12:00	12:07	13:01	12:59
			PM Peak Hour	12:06	12:16	15:38	14:50

Table 3.9: Heavy goods vehicle journey times to / from the M48 J2

Direction	Route	Distance (km)	Time Period	Journey Time (mm:ss)			
				2022		2037	
				Without M4CaN	With M4CaN	Without M4CaN	With M4CaN
Eastbound (from Docks)	Via Existing M4 J24 and A48 Southern Distributor Road	27.8	AM Peak Hour	24:52	24:10	28:58	26:09
			Interpeak Hour	24:06	23:33	25:42	24:31
			PM Peak Hour	24:55	24:08	29:21	25:51
	Via New M4 and Docks Way Junction	26.8	AM Peak Hour	N/A	18:45	N/A	19:46
			Interpeak Hour	N/A	18:38	N/A	19:15
			PM Peak Hour	N/A	18:52	N/A	19:29
Westbound (to Docks)	Via Existing M4 J24 and A48 SDR	27.5	AM Peak Hour	23:14	24:07	25:55	25:16
			Interpeak Hour	22:11	23:27	23:04	24:21
			PM Peak Hour	23:00	23:51	25:36	25:11
	Via New M4 and Docks Way Junction	27.1	AM Peak Hour	N/A	19:48	N/A	20:25
			Interpeak Hour	N/A	19:11	N/A	19:42
			PM Peak Hour	N/A	19:31	N/A	20:27

Table 3.10: Heavy goods vehicle journey times to / from the M4 East (Toll Plaza of Second Severn Crossing)

Direction	Route	Distance (km)	Time Period	Journey Time (mm:ss)			
				2022		2037	
				Without M4CaN	With M4CaN	Without M4CaN	With M4CaN
Eastbound (from Docks)	Via Existing M4 J24 and A48 Southern Distributor Road	19.4	AM Peak Hour	20:31	21:00	24:44	22:37
			Interpeak Hour	19:41	20:14	21:25	21:08
			PM Peak Hour	20:23	20:39	24:53	22:26
	Via New M4 and Docks Way Junction	18.4	AM Peak Hour	N/A	13:54	N/A	14:35
			Interpeak Hour	N/A	13:53	N/A	14:24
			PM Peak Hour	N/A	13:57	N/A	14:29
Westbound (to Docks)	Via Existing M4 J24 and A48 SDR	19.1	AM Peak Hour	18:34	18:12	21:18	19:19
			Interpeak Hour	17:28	17:48	18:24	18:34
			PM Peak Hour	18:07	18:26	20:46	19:27
	Via New M4 and Docks Way Junction	18.6	AM Peak Hour	N/A	14:10	N/A	14:42
			Interpeak Hour	N/A	13:45	N/A	14:08
			PM Peak Hour	N/A	14:11	N/A	14:48