

High Wind Traffic Management – M48 Severn Bridge



Introduction

The M4 Prince of Wales Bridge (POW) and M48 Severn Bridge, known collectively as the Severn River crossings are national assets held by the Secretary of State for Transport.

They are maintained and operated by National Highways on behalf of the SoS and the activities, functions and obligations were set out in the 2015 Highways England Framework document - Annex C Protocol agreements, which was transferred to the NH licence in 2021.

These Severn Crossing Protocols with DfT provide additional funds for Traffic Officers in the SW and specifically for Incident Management and the co-ordination of Road Closures in relation to both Bridges.

The SW Region deploys a dedicated Traffic Officer Bridge Car between 0600 – 2200 throughout the year.

During windy conditions the Severn Estuary can funnel strong gusts across the Bridges which can be hazardous to traffic. The newer POW Bridge has barriers to reduce these gusts, but the older M48 Bridge does not.

Since September 2007 the SW Region have been implementing High Wind Traffic Management with measures including the filtering of traffic on the M48 Bridge.

Filtering was suspended during the COVID19 Pandemic.

Data collection shows the M48 Bridge was closed 11 times between April 2021 and April 2022 due to wind speeds above 40 Knots. (Appendix B)

Filtering

The objective of Filtering or High Wind Traffic Management is to maintain the social and economic benefits of the route by ensuring the M48 Severn crossing is a viable and safe link during periods of high winds.

Motorcycles and vehicles over 2.1m high are prevented from using the Severn Bridge westbound if wind counters in the SWROC indicate wind speed of more than 40 knots (46.1 mph) on the Bridge.

The main carriageway is closed by Contractors at J1 and traffic W/B is filtered by Traffic Officers on the J1 Roundabout at its junction with the A403. (Figure 1).

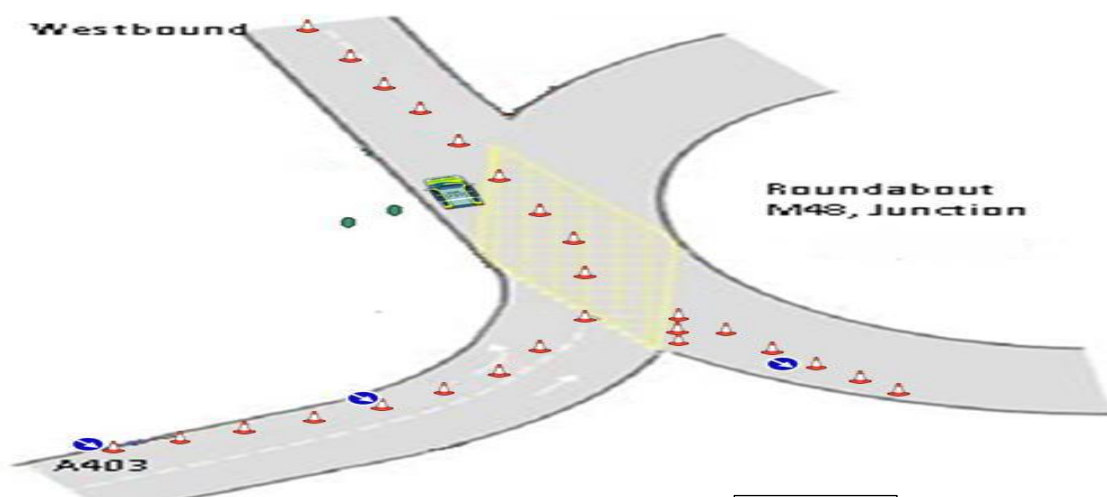
At wind speeds over 60 knots (69 mph) the Bridge is closed to all traffic.

The newer Prince of Wales Bridge on the M4 is not vulnerable to wind speed issues and provides an alternative route for M48 traffic.

Filtering is only available as an option between 0600 and 2200 and requires a minimum of two Traffic Officers to implement.

It is currently only permitted W/B as J2 E/B M48 is considered too dangerous a location to allow filtering. (Mainly due to footpaths used by Motorcyclists which has resulted in several near misses in the past) (Appendix A)

There are a set of comprehensive Work Instructions (WI) for Traffic Officers for Filtering. However, these are under review by the IMRT following a pause during COVID19 when low traffic volumes and the introduction of TOV Single crewing meant Filtering was stopped.



Advantages of Filtering

Can maintain a viable route for some traffic W/B during times of high winds

Provides an alternative Severn Crossing from the Prince of Wales M4 Bridge

Demonstrates National Highways commitment to customers of the SRN particularly those who commute between Monmouthshire and the Forest of Dean district and the economic areas around Bristol.

Given the absence of an available entry/exit for freight traffic from the M49 to the Severn Side economic area; the M48 provides a good quality route between this area and South Wales for commercial traffic.

Demonstrates that NH are trying to actively manage the M48 Bridge and whenever possible keep a viable route open to some road users.

Maintains a level of trade for Severn Services.

Disadvantages

Inconsistent and confusing application – No filtering E/B, not available 24/7 and relies on wind gusts and variable wind speeds for implementation.

There is little by way of evidence base as to the wind speed thresholds listed. This means that as the SWROC monitor gusts and variable wind speeds there is a risk of implementing traffic management measures too soon or too late or maintaining them for longer or less than necessary.

Resource and cost heavy – Contractor support required for the J1 Roundabout filter TM, minimum of two Traffic Officers and reliefs to manage W/B filtering.

Detrimental to staff safety and welfare – risk of abuse from upset customers, operating in live lanes in inclement weather and poor visibility.

Existing signage and customer information assets on the M48 are antiquated and of poor quality. Customers may not be aware of the filtering set up ahead of them which can cause confusion and risk the safety of Highways staff working on the M48 ahead.

Risk to incident clearance performance, other KPI's and customer support if TO resources tied up with filtering in poor weather.

Operational experience indicates that it is difficult to capture vehicle information for those that break the height restriction due to bend on the K Slip Junction 1 and therefore support prosecutions.

Height restriction is confusing as it makes no distinction between an empty Box van able to cross and a 44t flat-bed HGV with equipment exceeding the height limit which is not.

Conclusions

The M48 Bridge manual filtering is an inconsistent and antiquated process, which is labour and resource intensive. It puts staff at risk by placing them on the SRN in times of poor weather and putting them in the way of potential confrontation with customers.

Filtering relies on wind speed thresholds which can vary considerably leading to subjective and confusing closures, discrepancies as to which vehicles could be permitted to cross and an inconsistent on or off approach.

There is an alternative route on the M4 POW which is not subject to weather restrictions.

Technological solutions being explored for M48 Closures (Such as Swift Gate) could potentially incorporate upgraded signs and signals to restrict traffic.

Limiting Filtering to peak times does reduce the commitment and the risks but is only available W/B and could add to confusion and uncertainty for customers.

Filtering is a local historical approach not contained within DfT protocols.

Customer messages during COVID19 and the suspension of Filtering have been clear – High winds M48 closed, Use M4. Such clarity reduces confusion and congestion and improves safety.

Options

Resume Filtering once TO WI have been finalised and published by IMRT

Limit W/B Filtering to times of high demand, 0800 -1000 and 1600 -1800 weekdays.

Suspend Filtering pending IT and automated solutions currently being explored by Bridge Contractors

Close the M48 Bridge to all traffic during periods of high and gusting winds exceeding 40 knots.

Appendix A – M48 J1 and J2



Appendix B - M48 Bridge closures Data table

M48 Severn Bridge Closures 01/04/2021 - 31/03/2022										
Day	Date	Time of Closure	Speed at Closure	Peak Speed if recorded on log	Date Reopen	Time of reopening	Closure active within parameters for Filtering	Time closed which may have been mitigated by filtering (less periods 2200-0600)		
Monday	03/05/2021	18:07:00	46	N/A	04/05/2021	7:00:00	Yes	4hrs 53mins		
Thursday	20/05/2021	18:27:00	Not Recorded	N/A	21/05/2021	19:10:00	Yes	4hrs 14mins		
Sunday	31/10/2021	14:26:00	57	57	01/11/2021	09:42:00	Yes	11hrs 8mins		
Saturday	27/11/2021	00:14:00	46	66	28/11/2021	11:43:00	Yes	5hrs 14mins		
Tuesday	07/12/2021	19:59:00	48	48	08/12/2021	11:04:11	Yes	6hrs 5 mins		
Tuesday	28/12/2021	05:00:00	Not Recorded	38	28/12/2021	11:40:00	Yes	5hrs 40mins		
Wednesday	29/12/2021	11:08:00	46	50	29/12/2021	15:58:00	Yes	6hrs 50mins		
Saturday	05/02/2022	16:12:00	46	52	06/02/2022	10:00:00	Yes	9hrs 48mins		
Wednesday	16/02/2022	12:02:00	50	67	17/02/2022	06:46:00	Yes	10hrs 44mins		
Friday	18/02/2022	01:50:00	42	83	19/02/2022	18:14:00	No	40hrs 24mins		
Sunday	20/02/2022	04:55:00	45	50	21/02/2022	16:25:00	Yes	26hrs 30mins		
Total								91.5hrs		