

MEMORANDUM



From: Chief Officer, Environment & Technical **To:** Head of Economy and Planning
FAO: Gwyn Humphreys

Our Ref: ET/DC/MZ/P/2023/0280 **Your Ref:** P/2023/0280

Date: 1st May 2024

Land east of Bryn Lane, Wrexham Industrial Estate, Wrexham LL13 9UT

Hybrid planning application for (a) outline permission (all matters reserved except for means of access) for erection of up to 3 warehouse & distribution units (Use Class B8), including ancillary office accommodation, comprising up to 93,019sqm net floorspace, service yards, car parking, HGV parking, internal circulation, landscaping and ancillary works; and (b) detailed permission for demolition, means of access, earthworks, drainage, landscaping, ecology zone and relative ecological mitigation measures, and ancillary works

Our updated response is as follows:-

A483/ Gresford Interchange

The Kingmoor application has undertaken a number of junction assessments as part of its submitted Transportation Assessments. It is standard to use LinSig to assess signalised junctions and ARCADY/PICADY for roundabouts and priority junctions.

In terms of the Gresford Interchange LinSig modelling was undertaken. When interpreting LinSig results, PRC – Practical Reserve Capacity is taken to be 90% of theoretical capacity, taken to be the limit at which we can say that the junction is performing OK. A PRC of 0% means that the junction is operating at 90% of capacity. A PRC of -5% means that the junction is operating at 95% therefore above the 90% Practical Reserve Capacity theoretical limit. For instance, If the junction is operating below -9% then the Practical Reserve Capacity has been exceeded. If it operates at -11% then the Theoretical capacity as well as the PRC has been exceeded. PRC is based on the worst performing arm of the junction.

The limitations of LinSig are that it models an average cycle during the modelled hour, so it doesn't replicate the variations to traffic during the peak hour, also the traffic entering the network is assumed

to arrive with a flat profile across the cycle / peak hour and the queues are assumed to stack vertically, so if a downstream link is full, the model will still send traffic through. The more robust approach to modelling this type of junction would have been via a microsimulation model such as Vissim.

The submitted TA Addendum provides clear demonstrable impact from the development on the operation of the Gresford Interchange. Table 3.12 demonstrates that in 2027 the Practical Reserve Capacity (which is already exceeding theoretical capacity) increases from -13.5% to -16% in the AM Peak and from -17% to -19.8% in 2036 in the AM Peak. A further sensitivity test was requested on highways grounds which resulted in a further increase of trips, the corresponding assessments for this resulted in an increase from -18.4% to -21.7% in the AM Peak. In all scenarios the junction is operating well over the practical reserve capacity and in some cases also the theoretical reserve capacity.

Table 3.12: Junction Capacity Assessment Results - Gresford Interchange Existing Layout

Item	AM Peak	PM Peak
2022 Observed		
PRC (%)	0.5	12.3
Delay (pcuHr)	56.46	50.72
2027 Without Development		
PRC (%)	-13.5	1.7
Delay (pcuHr)	102.85	69.81
2036 Without Development		
PRC (%)	-17.0	-1.5
Delay (pcuHr)	159.00	79.86
2027 With Development		
PRC (%)	-16.0	-1.9
Delay (pcuHr)	126.90	78.34
2036 With Development		
PRC (%)	-19.8	-6.0
Delay (pcuHr)	170.07	91.70
2027 With Development Sensitivity Test		
PRC (%)	-18.4	-1.9
Delay (pcuHr)	148.06	80.12
2036 With Development Sensitivity Test		
PRC (%)	-21.7	-6.0
Delay (pcuHr)	211.15	94.39

In the applicants Transportation information they state that it is the traffic growth and the committed developments that result in a greater impact than the development proposals, however, it is the cumulative impact on the junction itself that makes further action to upgrade the signals necessary. The baseline scenario in 2022 in Table 3.12 above shows the existing operation as within practical and theoretical reserve capacity at 0.5% PRC. As a result of the development in 2027 (sensitivity test) the junction will operate over practical reserve capacity in 2027 with a PRC of -18.4%, this will cause increased congestion and queuing in the AM peak.

The applicants Transport Consultant has worked up some mitigation measures to try and reduce the impacts of the development on Gresford Interchange and has re-run a LinSig model to reflect the impact. They have run a further model with cycletimes of 75 seconds without demonstrating the impact of these changes on the other arms of the Gresford Interchange, as invariably removing greentime from other arms will have an impact on the capacity and queue lengths on those arms of the junction, which could lead to further queues on the A483 slip roads. They've focussed solely on demonstrating that the impacts on Arm 1 (the A483 southbound off-slip) and Arm 6 (the northern circulatory

carriageway) can be improved by changing the arrows and lining so that the middle lane is for the second exit only. The LHA is concerned that the impact of changing the arrows and lining may be overstated as some drivers are already using these lanes as indicated. Also at peak times the lining proposed would not be visible due to queuing traffic, therefore the LHA stated in its latest set of comments that the proposals may also be further benefitted by the provision of lane allocation signing on the slip road. Ultimately, the installation of both the lining and signing will be subject to discussion and agreement with The North And Mid Wales Trunk Road Agent (NMWTRA), should NMWTRA not be in agreement then these mitigation measures might not be deliverable.

The re-run of the model has only been undertaken for all of the 'With Development Scenarios' and with a blanket 75 second cycle time adhered to it. Therefore the impact cannot be clearly compared to the Without Development Scenarios and the modelling does not consider the impact on other arms of the junction. Ultimately, table 3.13 demonstrates that even with the mitigation proposed the worst arm of the Gresford Interchange has exceeded the practical reserve capacity in the AM peak, with a measurement of -6.2% predicted in 2027 and -9.6% predicted for 2036.

Table 3.13: Junction Capacity Assessment Results - Gresford Interchange Suggested Changes

Item	AM Peak	PM Peak
2027 With Development		
PRC (%)	-4.1	4.5
Delay (pcuHr)	87.60	72.16
2036 With Development		
PRC (%)	-7.5	1.5
Delay (pcuHr)	105.50	80.44
2027 With Development Sensitivity Test		
PRC (%)	-6.2	2.3
Delay (pcuHr)	95.70	73.61
2036 With Development Sensitivity Test		
PRC (%)	-9.6	-0.6
Delay (pcuHr)	117.18	82.36

The Gresford Interchange has traffic signals that are not intelligent or adaptive, they operate via vehicle actuation which means they can only respond a little to traffic flow to extend green time upto an upper limit. Technology has moved on considerably since the time of their installation and new systems to optimise the timings on each arm of the signals to increase efficiency are available, systems such as SCOOT and MOVA have proved exceptionally effective. TRL/Department of Transport (DOT) trials have shown that MOVA reduces delays by an average of 13% compared to vehicle actuated systems.

It is therefore the LHA's view that the optimisation of the signals at Gresford Interchange is necessary to mitigate the impacts of the proposed development. The proposed optimisation of the signals will increase capacity, reduce congestion and queuing. It is therefore requested by the LHA that a contribution of £25,000 would be required to cover the costs of adding MOVA into a future traffic signals installation at this junction to make the proposed development acceptable on highways grounds.

Conclusion

It is considered that the proposed mitigation measures and financial contributions requested above acceptably mitigate the impact of the development on the local highway network. Therefore, should

the Planning Authority be minded to approve the application we request the following are provided and in place prior to the first occupation of the site:

- A Road Safety audit will be required for all highway works proposed on the public highway that have not already been subject to a road safety audit as part of the application.
- The provision of a Construction Management Plan which details parking for contractors during the construction works, loading/unloading arrangements for deliveries and ways to mitigate dust and detritus building up on the public highway in the vicinity of the site.
- The delivery of a scheme at the A483/ Gresford Interchange to provide amended lane allocation lining and signing in coordination with NMWTRA, some of which is shown on drawing number P21066-202.
- A financial contribution of £25,000 towards the long term upgrade of the controller and signals at the Gresford Interchange.
- The delivery of a scheme at the A534/Sandy Lane / Borrass Hall Lane / Wrexham Road roundabout to increase the flare length on the Wrexham Road approach to provide an extended two lane approach as shown on drawing number P21066-201.
- The delivery of a scheme at the Abenbury Way / Bryn Lane / Ash Road North Roundabout to provide an extended two lane approach on the Abenbury Way arm of the junction and amended lining to the circulatory carriageway as shown on drawing number P21066-200.
- The delivery of a scheme on Bryn Lane to provide a crossing facility for pedestrians and cyclists adjacent to the site entrance incorporating a reduction in speed limit across the Industrial Estate. The costs for the required Traffic Regulation Order and signage / lining amendments and crossing and associated related highway works should be borne by the developer.
- A financial contribution for Active Travel to support the delivery of a series of improvements to upgrade Active Travel routes in and within the locality of Bryn Lane, the provision of 2 number bus stops including shelters, raised kerbs, white lining and associated works, and a contribution towards extending bus routes along Bryn Lane to serve the development.
- Prior to first occupation of the development a travel plan shall be submitted to and agreed in writing by the Local Planning Authority. The travel plan shall be implemented in accordance with the approved details and shall be retained as such thereafter.

Prior to the commencement of works on the public highway, an agreement under Section 278 of the Highways Act 1980 shall be entered into with the Council. Detailed design work and considerations to be undertaken in co-ordination with the Council's highway operations team.

It is felt that the financial contributions for Active Travel, The Gresford Interchange and TRO process and change of speed limit works could be secured via a Section 106 agreement.

Subject to suitably worded conditions covering the above elements, there are no objections to the proposals on highways grounds.

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Chief Officer, Environment & Technical