

Appendix AV A: Post-determination Correspondence with WCBC Highways

Land at Home Farm, Llay: Technical Note 01 – Curtins Reference TPMA5021/TN01
Email Correspondence Regarding the Crown Crossroads

Land at Home Farm, Llay

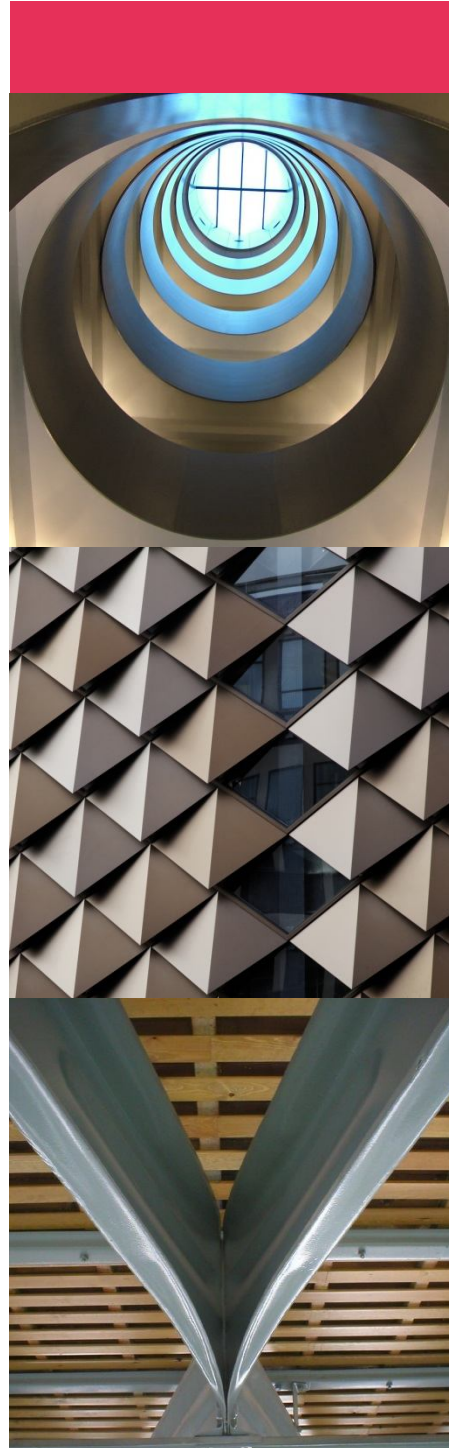
Technical Note 01

Curtins Ref: TPMA5021/TN01

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Client Name: MDG



Curtins
Curtin House, Columbus Quay
Riverside Drive, Liverpool L3 4DB
Tel: 0151 726 2000 www.curtins.com

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Control Sheet

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Author	Signature	Date
Tom Lavin BA (Hons) Transport Planner		03 August 2016

Reviewed	Signature	Date
Jonathan Glanville MEng (Hons) MCIHT CMILT MIET Senior Transport Planner		03 August 2016

Authorised	Signature	Date
Keith York MCIHT FIHE Associate Transport Planner		03 August 2016

1.1 Introduction

- 1.1.1 Following the submission of planning application (P/2014/0905) in December 2014, for a residential development on land at Home Farm, Llay, this Technical Note (TN) has been produced in order to provide further consideration of the traffic impacts of the proposed development with a particular focus upon the junction at the Crown Public House and along Gresford Road.
- 1.1.2 The current site arrangement is shown on BCA Landscape Drawing 653 LLAY HOUSING Plan 08 Landscape Strategy.
- 1.1.3 The formal comments of Wrexham Council Highways Officers (Wrexham Highways) which were included within the committee report recommended approval of the planning application subject to an exercise to determine and agree further highways mitigation measures at the junction mentioned above. In doing so, the revised junction capacity assessment will take into account any changes in committed developments in the area and will include for two additional years of background traffic growth.
- 1.1.4 This TN also examines the possibility of further enhancing the development's connectivity to the existing residential areas by seeking to encourage more opportunities for pedestrians to cross Gresford Road.
- 1.1.5 A TA was produced in December 2014 in which junction modelling was undertaken to support the planning application for the development of up to 365 new dwellings. Junction performance modelling was undertaken for a number of junctions around the site to ensure that there will be adequate highway capacity for the scheme. The feedback provided by Wrexham County Borough Council (WCBC) at the time highlighted that there were no reasons to halt the development in terms of highways.
- 1.1.6 This report has been produced in order to present the results of the further modelling undertaken at the junction of Llay Road B5102/ Straight Mile/ Gresford Road B5373/ Chapel Lane/ Rackery Lane, referred to henceforth as 'The Crown junction.'

1.2 The Crown Junction Improvements

Pedestrian Crossing Enhancements

- 1.2.1 The Crown junction currently offers pedestrian crossing facilities with refuge islands but has no "Green Man" pedestrian crossing phases in the junction's operation.

- 1.2.2 It is proposed that alterations be made to this junction that provide enhanced crossing opportunities across Gresford Road B5373 by introducing a 'triangle shaped' traffic splitter island. This arm of the junction could then operate under "Green Man" traffic signal control if deemed appropriate by the highway authority.
- 1.2.3 The improvements described above will assist pedestrian movements across this arm of the junction, including those generated by the development proposals.
- 1.2.4 It is felt, however, that there may only be a limited increase in pedestrian movements across this arm of The Crown junction due to the further pedestrian crossing improvements being proposed along Gresford Road which are described in more detail in Section 1.5 of this TN.

Highway Capacity Improvements

- 1.2.5 The primary focus of highway capacity mitigation at The Crown junction is upon improving the width of Straight Mile on approach to the stop-line. The widening scheme will create an additional lane on Straight Mile, for a length of approximately 40 metres. These proposals will involve marking the nearside lane for ahead and left turning movements, with the offside lane exclusively for right turning vehicles.
- 1.2.6 The corner radius for left turning traffic entering Gresford Road from Straight Mile will require amendments in order to accommodate the triangular pedestrian splitter island to highway industry standards as well as maintaining the functionality of the Straight Mile Arm.
- 1.2.7 The measures described above are presented within drawing ref. **TPMA5021-102 Revision B**.
- 1.2.8 The mitigation measures at The Crown junction would also see the introduction of microprocessor optimised vehicle actuation (MOVA) software in place of the existing system D traffic detection. This would have a further improvement in junction performance through the software's constant assessing, modifying and updating of the signal times afforded to each arm of the junction to ensure that it operates at peak efficiency.
- 1.2.9 Land associated with the civil engineering works required to deliver the above is a combination of adopted highway and land within the ownership of the applicant.

1.3 Technical Parameters

- 1.3.1 The original technical parameters and committed development sites used within the original capacity assessments associated with the submitted TA have been reviewed and updated where appropriate for this TN. This update is a direct result of the passage of time from the point when the original capacity assessments were carried out and submitted with the planning application.

Assessment Years

- 1.3.2 Within the TA, the assessment years and growth factors presented in Table 1 were used for the modelling.

Data Source	Peak	Area	Growth Factor	
			2019	2024
TEMPRO	AM	Llay, North Wales	1.0502	1.1127
TEMPRO	PM	Llay, North Wales	1.0528	1.1163
NTM Forecasts	Both	Wales	1.0390	1.0460

Table 1 – Traffic Growth Factors

- 1.3.3 For the purposes of the new modelling exercise, growth factors were used to assess the site in 2026 to reflect the fact that two years have elapsed since the TA was submitted, which assessed a future year of 2024. Table 2 below shows the growth factors used to expand the traffic data from 2024 to 2026 using TRMPRO 6 growth factors:

Data Source	Peak	Area	Growth Factor
			2026
TEMPRO	AM	Llay, North Wales	1.0094
TEMPRO	PM	Llay, North Wales	1.0095
NTM Forecasts	Both	Wales	1.0140

Table 2 – Traffic Growth Factors 2024 to 2026

Committed Development

- 1.3.4 Since the acceptance of the TA some other committed development sites have come online and have either been considered for inclusion within the assessment. The list below sets out the two relevant committed developments:
- North Wales Police - Proposed Eastern Command & Custody Facility Davy Way, Llay, Wrexham
 - Land off New Road, Rhosrobin, Wrexham
- 1.3.5 The North Wales Police facility traffic figures have been included within the committed development for the new modelling as the facility is located on Davy Way which connects directly onto Rackery Lane and then onto The Crown junction.

- 1.3.6 From the data provided within the TA for the North Wales Police facility it is calculated that 1 vehicle will arrive at the facility via Rackery Lane and 25 will leave the site via Rackery Lane to The Crown junction. In the PM peak hour approximately the reverse occurs, with 23 vehicles arriving at the site via Rackery Lane and 2 vehicles will leave the site via Rackery Lane's arm of The Crown junction.
- 1.3.7 The scheme on the Land off New Road in Rhosrobin has been excluded from the assessment at this junction as it is considered that traffic from the scheme would not be likely to pass through The Crown junction due to the alternative routes available to traffic originating from or heading to that – particular committed development site. To expand upon this, traffic heading north and west would be most likely to travel through Bradley; traffic heading north and east would travel through Pandy and onto the A483. Any traffic heading to Llay, itself is not considered likely to head through The Crown junction as such traffic would be most likely to use Llay New Road.

1.4 The Crown Junction Assessment

- 1.4.1 Within the TA, LinSig was used to undertake an assessment of the junction capacity, within this TN LinSig has also been used for consistency.
- 1.4.2 Two scenarios have been assessed; the first scenario is the existing junction with the traffic growth to 2026 baseline plus committed developments and the second scenario an improved junction with this traffic plus the development traffic.
- 1.4.3 As stated, the junction has been modelled using the industry standard LinSig software and at the time of writing LinSig is not configured to model the additional performance benefit of implementing MOVA and therefore the situation with the junction improvements would be expected to be better than the LinSig output indicates.
- 1.4.4 The results for the two scenarios are presented in Table 3 below:

Approach	AM Peak				PM Peak			
	2026 Base + Com		2026 Base + Com. + Dev + Junction Improvements		2026 Base + Com		2026 Base + Com. + Dev + Junction Improvements	
	DoS	Mean Max Queue (PCU)	DoS	Mean Max Queue (PCU)	DoS	Mean Max Queue (PCU)	DoS	Mean Max Queue (PCU)
B5102 Straight Mile	102.4%	20	107.7%	28	104.1%	28	104.0%	22
B5373 Gresford Road	103.9%	27	107.8%	37	103.7%	19	102.3%	21
Llay Road	106.0%	61	110.2%	76	77.4%	14	103.5%	40
Rackery Lane	105.1%	41	109.7%	56	105.4%	51	104.4%	51
Chapel Lane	27.5%	1	28.9%	1	17.2%	1	18.8%	1

Table 3 – LinSig Results for '2026 Base Flows' and '2026 Base + Full Development' Scenarios

- 1.1.1 The results presented in **Table 3** demonstrate that the proposed junction improvements would deliver close to a nil-detriment situation in terms of their ability to mitigate the impact of the proposed development.
- 1.1.2 As most arms of The Crown junction are currently operating with a degree of saturation (DoS) above 100%, the software's ability to accurately forecast increases in queuing levels is diminished, often resulting in inaccurate and exponential forecast increases in queuing. In drawing any conclusions with regard to the benefits of the mitigation measures, it would be appropriate to focus upon the changes in DoS.

1.5 Gresford Road Pedestrian Crossing Enhancements

- 1.1.3 In addition to the pedestrian crossing improvements outlined above within The Crown junction, highways officers at Wrexham Council also requested consideration of accessibility; generally, how the site connects to the existing residential area and to the village centre.
- 1.1.4 In response to this, two new crossing points of Gresford Road are proposed. The locations are shown on the current site arrangement BCA Landscape Drawing 653 LLAY HOUSING Plan 08 Landscape Strategy.
- 1.1.5 The first new crossing point will be located some 70 metres from The Crown junction and will take the form of a zebra crossing. This crossing would be connected to the proposed development via a new section of footway parallel to the eastern side of Gresford Road. This footway would require the relocation of some 2m width of hedgerow and trees, as shown on the landscaping drawing.
- 1.1.6 The second proposed crossing point is incorporated within the northern arm of the new site access roundabout on Gresford Road. Again it is proposed that this facility will take the form of a zebra crossing.
- 1.1.7 The two new crossing points are presented on BCA Landscape drawing ref. **653 Llay Housing Plan 08** which is included at the end of this TN.
- 1.1.8 These new crossing points will not only cater for some of the new pedestrian movements associated with the proposed development, they will also enable existing residents to cross Gresford Road and enter the proposed development in order to access the proposed local retail facilities and amenities including open space.
- 1.1.9 An additional request by the highways officers at Wrexham Council was made in relation to the applicant considering a contribution towards street lighting improvements to the existing footpath which links Gresford Road to the village. This footpath runs from the rear of Park Community Primary School, across the stream within Nant-y-gear Wood, to the rear of the housing at Meadow Rise.

- 1.1.10 From a qualitative review of this potential pedestrian route, the applicant would be willing to contribute towards a street lighting scheme, via a S106 agreement, for sections of this footpath, which are within the control of Wrexham Council to carry out such improvement works. At the time of writing, the details are to be agreed.

1.6 Summary & Conclusion

- 1.1.11 This TN has been produced in order to provide further consideration of additional highway mitigation measures at The Crown junction and to consider enhancements to the pedestrian connectivity of the proposed development site with the existing residential areas and the village centre.
- 1.1.12 Following the submission of the original TA, some technical parameters have been updated and additional committed development sites have been considered upon the request of highways officers at Wrexham Council.
- 1.1.13 A highway impact mitigation scheme has been developed (as presented within drawing **TPMA5021-102 Revision B**) comprising the creation of an additional traffic lane on the Straight Mile approach to the traffic signal controlled junction along with the introduction of MOVA to the traffic signal controller. The physical mitigation measures have been subjected to highway capacity assessment using the appropriate LinSIG software, and the junction's operation will be further enhanced by the introduction of MOVA.
- 1.1.14 The results of this assessment demonstrate that the proposed mitigation scheme delivers close to a nil detriment situation in terms of the junction's performance which is measured by the degree of saturation (DoS) for each arm. The residual impact of the traffic generated by the development is not considered to be severe, which is the key test set out within NPPF guidance, indeed the forecast residual impact is likely to be imperceptible.
- 1.1.15 Pedestrian connectivity enhancements have been duly considered and four additional features have been identified over and above those which were contained within the original planning submission. These are as follows:
- A new pedestrian island within The Crown junction to aid pedestrian movement across the Gresford Road arm of this junction. Potential to introduce "Green Man" traffic signal control for this movement;
 - A new zebra crossing located c.70 metres to the south of The Crown junction on Gresford Road;

- A new zebra crossing to be incorporated into the northern arm of the proposed new site access roundabout on Gresford Road; and
- A possible contribution, via Section 106 agreement, towards the introduction of street lighting along the footpath which passes through Nant-y-gaer Wood at the rear of the primary school, subject to improvements to that footpath being within the ability of Wrexham Council to deliver.

1.1.16 In conclusion it is suggested that the proposed additional highway mitigation measures at The Crown junction, along with the various additional measures to improve the proposed development's connectivity to the existing residential areas and to the village centre will serve to reinforce the highways officers' own conclusions contained within the original committee report that the proposed development is acceptable from a traffic and transport perspective.

1.7 Conclusion

- 1.7.1 This TN has established that the proposed improvements at the Crown junction and along Gresford Road will mitigate the highway impact of the development at Home Farm in Llay.
- 1.7.2 The amendments at this junction would improve the accessibility of the site and its surrounding area to one another, both by foot and by motor vehicle. The improvements for pedestrians would provide a signal controlled crossing across Gresford Road B5373 with a triangle splitter island.
- 1.7.3 The improvements for all road users will be enhanced by the implementation of MOVA software to this traffic signal controlled junction, which would improve the capacity continuously.
- 1.7.4 The junction improvements will benefit road users when the committed developments and the proposed residential development are implemented.

Our Locations

Birmingham

2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol

3/8 Redcliffe Parade West
Bristol
BS1 6SP
T. 0117 925 2825
bristol@curtins.com

Cardiff

3 Cwrt-y-Parc
Earlswood Road
Cardiff
CF14 5GH
T. 029 2068 0900
cardiff@curtins.com

Douglas

Varley House
29-31 Duke Street
Douglas Isle of Man
IM1 2AZ
T. 01624 624 585
douglas@curtins.com

Edinburgh

35 Manor Place
Edinburgh
EH3 7DD
T. 0131 225 2175
edinburgh@curtins.com

Kendal

28 Lower Street
Kendal
Cumbria LA9 4DH
T. 01539 724 823
kendal@curtins.com

Leeds

Woodside Mews
Clayton Wood Close
Leeds LS16 6QE
T. 0113 274 8509
leeds@curtins.com

Liverpool

Curtin House
Columbus Quay
Riverside Drive
Liverpool L3 4DB
T. 0151 726 2000
liverpool@curtins.com

London

Units 5/6
40 Compton Street
London
EC1V 0BD
T. 020 73242240
london@curtins.com

Manchester

Merchant Exchange
17-19 Whitworth Street West
Manchester
M1 5WG
T. 0161 236 2394
manchester@curtins.com

Nottingham

7 College Street
Nottingham
NG1 5AQ
T. 0115 941 5551
nottingham@curtins.com



Registered in England and Wales number: 2054159
Registered office: Curtin House, Columbus Quay, Riverside Drive, Liverpool L3 4DB

Danny Jones

Subject: Land at Home Farm, Llay

From: [Peter Douthwaite](#)

Sent: 23/09/2016 09:24

To: [Keith York](#); [Jonathan Glanville](#)

Subject: FW: Land at Home Farm, Llay

Keith

Please see below comments from Dave Hesketh.

Regards

Pete

From: David Hesketh

Sent: 22 September 2016 16:25

To: Peter Douthwaite

Subject: Land at Home Farm, Llay

Pete,

They acknowledge the junction is operating over its design capacity during both AM/PM peaks in 2026.

What they are proposing (additional approach lane/MOVA) will at best mitigate development growth traffic. There will be no improvement.

It would have been useful to have included the trip distribution figures and assumptions in the report and perhaps a more detailed plan showing junction layout (including swept path analysis). Placement and alignment of the proposed splitter island looks awkward.

Not sure of the timescales but it might be worth asking for these together with some details on traffic signal operation (stage/phase diagram and timings).

Hope this helps. Back in next Wednesday if you want to have a further chat.

Papers are on my desk if you need them.

Dave

Mr D J Hesketh

(01978) 729644

david.hesketh@wrexham.gov.uk

Wrexham County Borough Council
Environment Department
Abbey Road South
Wrexham Industrial Estate
Wrexham
LL13 9PW

Cyngor Bwrdeistref Sirol Wrecsam
Adran Yr Amgylchedd
Ffordd Abaty De
Ystad Ddiwydiannol Wrecsam
Wrecsam
LL13 9PW

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