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**The Oxfordshire County Council (A40 Access to Witney)
Compulsory Purchase Order 2023**

**The Oxfordshire County Council (Highways Infrastructure –
A40 Access to Witney) Side Roads Order 2023**

PLANNING INSPECTORATE REFERENCE:

DPI/U3100/23/25

**Proof of evidence of
THEODORE FRANSCOIS GENIS
(Traffic Modelling)**

1 INTRODUCTION AND QUALIFICATIONS

- 1.1 I am Theodore (Theo) Franscois Genis and I am a Technical Director in Transport Planning at Stantec, a role I have held since January 2023. I am a Chartered Engineer, a member of the Engineering Council (UK) and a member of the Chartered Institute of Highways and Transportation. I have Bachelor of Engineering in Civil Engineering and a post-graduate qualification in Transportation Engineering from the University of Pretoria in South Africa.
- 1.2 I have 20 years' experience in transport planning and transport modelling, ranging from strategic transport modelling to microsimulation and isolated junction modelling. I have been working in the UK since 2008 across various consultancy firms with a technical focus on transport modelling and the interpretation of transport modelling outputs to inform business cases and assessments for transport-related schemes. My work has been in support of local authorities, combined authorities, National Highways and Transport Scotland, working within the Transport Appraisal Guidance set by the Department for Transport. Alongside my technical roles I have held business management roles with responsibility for commercial and team leadership – I am currently the Director of Operations for Infrastructure South within Stantec.

Scope of Evidence

- 1.3 This proof of evidence has been prepared regarding highways engineering matters relating to:
- 1.3.1 The Oxfordshire County Council (A40 Access to Witney) Compulsory Purchase Order 2023 (the **CPO**) [CDs A.1 and A.2]; and
- 1.3.2 The Oxfordshire County Council (Highways Infrastructure – A40 Access to Witney) Side Roads Order 2023) (the **SRO**) [CDs A.3 and A.4],
- together the **Orders**.
- 1.4 The Orders were made to enable the delivery of improvements to the existing A40 Principal Road, the B4022 and the C16886 South Leigh Road at its junction with the B4022, at Shores Green, Witney at the location of the junction of the A40 with the B4022. The scheme is known as the A40 Access to Witney Scheme (the **Scheme**).
- 1.5 The Scheme will construct two new west-facing slip roads at the Shores Green junction of the A40; a new eastbound exit slip road from the A40 to a new junction with the B4022; and a new westbound entry slip road onto the A40 from a new junction with the B4022. The Scheme will provide new walking and cycling facilities on the B4022 and alongside the A40, which will improve provision for active travel.
- 1.6 The SRO will enable Oxfordshire County Council (the **Council**) as acquiring authority to carry out Classified Road works comprising the improvement, by widening and other works, of the A40, to stop up existing highways affected by the Scheme and to improve other highways as a consequence of the Classified Road works.
- 1.7 The Orders were made by the Council on 27 June 2023 and submitted electronically to the Secretary of State for Transport on 21 July 2021 and in hard copy on 1 August 2023. The Orders are now due to be considered by an Inspector at a Public Inquiry scheduled to open on 12 March 2024. This proof of evidence has been prepared in connection with that Inquiry.
- 1.8 I confirm that the evidence that I have prepared in respect of this Inquiry is given in accordance with the guidance of my professional institution and I can confirm that the opinions expressed are my true and professional opinions.
- 1.9 The purpose of my evidence is to set out the technical work undertaken by Stantec on behalf of the Council. I explain the review undertaken of traffic modelling and trigger point assessment completed by other consultants on behalf of the developer of the East

Witney Strategic Development Area (**EWSDA**) and which formed part of the Transport Assessment undertaken in support of its current planning application. I explain the recent traffic modelling and trigger point assessment undertaken on behalf of the Council using the Council's A40 corridor strategic transport model and the conclusions drawn from this study, including the assessed trigger point for the EWSDA development in relation to the infrastructure associated with the Scheme.

1.10 My proof of evidence should be read in conjunction with other separate but interrelated proofs of evidence submitted on behalf of the Council, including:

1.10.1 Strategic Case and Need, prepared by Nicholas Blades of Oxfordshire County Council [CDs G.1, G.2 and G.3];

1.10.2 Highways and Traffic, prepared by Philippe Nirmalendran of AECOM [CDs G.16, G.17 and G.18];

1.10.3 Planning policy, prepared by Baljinder Tiwana of Stantec [CDs G.10, G.11 and G.12];

1.10.4 Environmental effects, prepared by Alison Morrissy of AECOM [CDs G.19, G.20 and G.21];

Delivery and Funding, prepared by Gareth Slocombe of Oxfordshire County Council [CDs G.4, G.5 and G.6]; and

1.10.5 Negotiations and Acquisition, prepared by Jessica Bere of Gately Hamer [CDs G.7, G.8 and G.9].

2 TRANSPORT MODELLING AND TRIGGER POINT ASSESSMENT

- 2.1 This Proof of Evidence sets out the recent transport modelling and trigger point assessment for the EWSDA undertaken by Stantec on behalf of the Council to determine the degree of dependency of the EWSDA on the proposed Scheme, to identify the trigger point of need for the Scheme and the benefits of the Scheme in mitigating the traffic impacts of the development. This is described in the first part of this evidence.
- 2.2 The assessment followed on from an earlier review undertaken by Stantec on behalf of the Council to review a trigger point assessment undertaken by consultant Glanville on behalf of the EWSDA developer. This review is described in the second part of this evidence.
- 2.3 This proof provides technical evidence in relation to the need for the Scheme to mitigate the impact of the proposed development at the EWSDA and its benefits more widely in reducing congestion in the town centre and rendering the highway network more capable of supporting the delivery of new housing in Witney.
- 2.4 The Stantec Transport Modelling and Trigger Point Assessment is provided at Appendix 8 to the Statement of Case [CD A.6].
- 2.5 In this Proof of Evidence, the Scheme is referenced in its entirety or in terms of its key component highway parts - two west facing slip roads at Shores Green (one to the north of the existing A40 carriageways (**the Off-Slip**) and one to the south of the existing carriageways (**the On-Slip**).
- 2.6 The following terms are used within this evidence:
- 2.6.1 'Trigger point' - in transport modelling terms, the 'trigger point' represents the quantum of development that could be delivered at EWSDA prior to the implementation of improvements at the Shores Green junction – either the Off-Slip or the On-Slip, or the Scheme in its entirety. The requirement for an infrastructure improvement at the trigger point is determined by the quantified impact of forecast traffic from the EWSDA on the operation of junctions located within Witney based on calibrated and validated isolated junction models. The operational performance in isolated junctions is measured as the Level of Service.
- 2.6.2 'Actual flows' and 'Demand flows' – these refer to modelled vehicle flows along a link or through a junction in the modelled network. The difference between 'actual' flows (which represent flows that the transport model predicts would make it to a point in a congested network) and 'demand' flows (which represent the total flow which wants to reach a point in a congested network) provides an indication of the level and impact of congestion in the assigned network.

Part 1 - Transport Modelling and Trigger Point Assessment for the EWSDA

- 2.7 Stantec was commissioned by the Council in July 2023 to assess the forecast impact of proposed development as part of the EWSDA on the transport network and network operations with and without the Scheme using a strategic model – the A40 Corridor Highway model. Through this assessment any degree of dependency of the EWSDA on the proposed Access to Witney Scheme and the trigger point for the Scheme (or elements of the Scheme) was to be identified.
- 2.8 The A40 Corridor Highway model was used instead of the Witney Highway Model (which was used in the Glanville assessment) as this model covers a wider scope of the transport network (including impacts from planned highway infrastructure and land use changes along the A40 corridor). The Oxfordshire County Council A40 Corridor Strategic Highway Model was developed by transport consultants Pell Frischman and has been validated to 2018 traffic data in accordance with DfT Transport Appraisal Guidance (TAG)

calibration and validation guidance criteria and was used to inform the Transport Assessment which supported the planning application for the Scheme.

- 2.9 A range of modelled forecast scenarios were considered – without the Scheme (Do-Nothing), with the Off-Slip only (described in the Stantec report as ‘Half AtW’) and with the full Scheme (i.e., both Off- and On-Slips). The forecast scenarios modelled a range of development scenarios – No development at EWSDA, 248 units at EWSDA, 371 units at EWSDA and 450 units at EWSDA. This mimicked the development scenarios tested in the Glanville Report.

Strategic Modelling Outputs and Review of Congestion Impacts

- 2.10 The strategic model outputs included link and turning flows (‘actual’ and ‘demand’), total junction delay, total junction queue levels (at the end of the modelled period).
- 2.11 The strategic model outputs were carefully scrutinised as part of the assessment in order to evaluate the level of congestion in the strategic model, which was one of the aspects identified as a weakness in the review of the Glanville Report (refer to Part 2 in this evidence).
- 2.12 Due to the significant level of forecast traffic growth in combination with the existing traffic congestion issues, there is a significant level of queued traffic within the forecast Do-Nothing scenario (i.e., without any EWSDA development and without the Scheme) in both the AM (morning) and PM (evening) peak hours. The queued traffic within the transport network is the difference between ‘actual flows’ and ‘demand flows’. The level of queued traffic is highest around the A4095/B4022 double-mini roundabouts, and at the junction of Cogges Hill Road and Jubilee Way. At the double-mini roundabouts there are 271 vehicles not able to pass through the western roundabout junction within the modelled PM peak hour - this represents approximately 11% of the ‘demand’ through the junction.
- 2.13 The congestion in the strategic model, and in particular at the Cogges Hill Rd/Jubilee Way junction with the Scheme in place, may result in some re-routing in the network that reduces the demand that reaches key junctions in the network. As such, the localised modelling results provide an indication of forecast junction performance across relative scenarios but may not be fully representative of future operational conditions.
- 2.14 The congestion is most severe in the Do-Nothing scenario, and in the EWSDA development scenarios without any mitigation at the Shores Green junction. The assessment of the scenarios shows that when tested in isolation against a Do-Nothing scenario, the full Scheme results in substantially greater congestion reduction to trips crossing the town centre (via the A4095 Bridge Street) compared to other options. However, the delays at the Cogges Hill Rd/Jubilee Way junction do increase significantly because of traffic re-routing through the junction.
- 2.15 The assessment of the introduction of the EWSDA development in combination with the Off-Slip only shows that the delay along the A4095 through the town centre does reduce slightly – however, delays are still high at the A4095 double mini roundabouts. When modelled in combination with the full Scheme, the network shows substantial reduction in delay along the A4095 through the town centre and the at double mini roundabouts. However, the level of delay at the Cogges Hill Rd/Jubilee Way junction is still significantly higher than in the Do-Nothing due to the increased traffic passing through the junction.

Localised Junction Modelling Assessment

- 2.16 Junction capacity assessments were carried out at 5 junctions within Witney using industry standard modelling software (Junctions 10 and LinSig). Models were calibrated and validated for the following junctions:
- Junction 1: West End / Hailey Road/ Crawley Road Roundabout

- Junction 2: High Street / A4095 Roundabout
 - Junction 3: A4095 / B4022 Double Mini Roundabout
 - Junction 4: High Street / Witan Way Signalised Tee Junction
 - Junction 5: Cogges Hill Road / Jubilee Way/ B4022 Signalised Crossroads
- 2.17 The 'demand' turning flows from the strategic modelling scenarios were applied to the junction models for all the scenarios modelled within the strategic model. The outputs from the junction modelling software considered the Ratio of Flow to Capacity (RFC) for arms on unsignalised junctions/roundabouts, and the Degree of Saturation (DoS) for signalised junctions.
- 2.18 The worst performance of the worst arm on each junction for each scenario was considered in the evaluation, and the results from scenarios were considered relative to each other. In this way the impact of the EWSDA development traffic on the junction performance with and without interventions at the Shores Green junction (either Off-Slip only or the full Scheme) could be compared.
- 2.19 The junction modelling assessment indicates that at Junction 3 (the western mini-roundabout) and Junction 4 (High Street/Witan Way) the introduction of the first 248 development units forming part of the EWSDA represent the trigger point for the requirement for an intervention at the Shores Green junction in some form. The modelling results indicate that – across both AM and PM peaks – the introduction of the Off-slip only as part of the Scheme mitigates the impact of the EWSDA demand.
- 2.20 The modelling results indicate that – across both AM and PM peaks – the A4095 / B4022 Double Mini Roundabout junction performs best with the full Scheme in place.

Summary and Conclusions

- 2.21 A range of scenarios have been assessed for a 2031 forecast year (aligned with the reference forecast year in the A40 Corridor model) for scenarios with/without different levels of EWSDA development, and for a half Scheme option (west-facing Off-Slip only) and full Scheme option (west facing On- and Off-slips).
- 2.22 Whilst the strategic modelling network is very congested, so that the influence of this on network re-routing creates a degree of uncertainty in the assessment, the modelling and trigger point assessment indicate that there is a dependency between the EWSDA and the Scheme, and that prior to 248 (circa 50%) of the EWSDA development coming forward, there is a need to introduce the west-facing Off-Slip to mitigate the full development's traffic impacts on the local road network.
- 2.23 As the assessment did not include a series of interim scenarios between 0 units and 248 units, the assessment is not able to pinpoint the exact trigger point above 0 units when the requirement for a scheme in some form is required. However, it is concluded that prior to 248 units being reached, an intervention (in the form of either the Off Slip, or else the Scheme in full) is required.
- 2.24 The assessment does indicate that introduction of the west-facing Off-Slip only would mitigate the network impacts of the full EWSDA buildout (i.e., 450 units) and hence indicates that only the west-facing Off-Slip is required to facilitate the EWSDA development.
- 2.25 Delivery of the full Scheme (both Off-Slip and On-Slip) would deliver greater benefits and better meet the wider objectives of the Scheme compared to the delivery of the Off-Slip only. It would provide substantially greater congestion reduction benefits for trips crossing the town centre (via the A4095 Bridge Street), further reduce demand along A4095 Bridge Street and deliver greater wider road network benefits (by re-routing traffic away from unsuitable minor local roads). The introduction of the full Scheme would

provide more routing options for public transport services to serve the current and future residents of the East Witney area.

Part 2 - Stantec Review of the Glanville report (Trigger point assessment for the EWSDA)

- 2.26 Prior to the development of the trigger point assessment reflect in the evidence above, Stantec was commissioned by the Council to review a trigger point assessment undertaken by Glanville on behalf of the developer for the EWSDA. The following documents and outputs (pertaining to the work by Glanville) were reviewed:
- 2.26.1 East Witney Strategic Development Area, Application Ref: 20/02654/OUT, Shores Green Junction Improvements, Trigger Point Assessment, Glanville, 30 November 2021 (the **Glanville Report**) (Appendix TG3.1);
 - 2.26.2 Transport Modelling Brief – Work on behalf of Glanville's - East Witney SDA, Revised 10 May 2021 (the **Transport Modelling Brief**) (Appendix TG3.2); and
 - 2.26.3 Traffic assignment models from Oxfordshire County Council's Witney Highways Model (covering the immediate Witney Area highway network only) as provided by transport consultants Tetrattech which informed the Glanville Report. The traffic assignment models are technical outputs (which can be analysed using specialist modelling software) and hence have not been appended to this proof of evidence.
- 2.27 The Glanville Report sets out that the strategic modelling which informed the trigger point assessment is drawn from the Witney Highway Model. Turning flows were taken from the strategic modelling to inform assessment at a number of junctions within Witney. The trigger points assessment was concentrated upon the Bridge Street / West End / Newland / Woodgreen (Double Mini-Roundabout) junction.
- 2.28 The Glanville Report concludes that up to 371 units can come forward at EWSDA before any infrastructure improvements at the Shores Green junction are required. Beyond 371 units, the Off-Slip is required to mitigate the development impacts.
- 2.29 The Stantec review identified that the Witney Highway Model showed high levels of congestion within the town centre and at the Double Mini-roundabout junction. It was not clear from the Glanville report that the impacts of several aspects associated with this congestion had been considered, and as such represented potential key weaknesses impacting on the accuracy of their assessment:
- 2.29.1 There is no reporting of any wider impacts of development traffic from East Witney Development from the strategic model. This approach creates a risk that potential routing through the town centre and wider network congestion resulting from the EWSDA is under-represented.
 - 2.29.2 Application of modelled turning flows (taken from the strategic model network assignments) are not appropriate to use to inform isolated junction assessments without full consideration of the over-saturated nature of the network and the difference between actual and demand flows. There is a likelihood that junction demand is under-estimated due to this and that the impacts from the development trips (without the infrastructure) are not adequately reflected. It is not clear from the Glanville report if they took the oversaturated network into account and whether the standalone junction modelling applied the 'demand' flows or 'actual' flows as extracted from the Witney Highway Model.
 - 2.29.3 It is not clear that full consideration has been taken of the wider development context and that appropriate levels of background growth (in the absence of NWSDA) are included in the strategic modelling forecast scenarios.

2.30 The Stantec review recommended that the Council undertake an updated trigger point modelling assessment using a wider area model (the Council's more recently developed A40 Corridor Highway model) to allow the assessment of strategic re-routing impacts from the EWSDA development and wider network changes. This recommendation resulted in the assessment reported under the first part of this evidence.

3 RESPONSE TO OBJECTORS

- 3.1 I have set out in the following section a summary of the grounds of the objections relevant to my evidence and my response.
- 3.2 Jeremy Michael Walker, Paula June Walker and Roger Jeremy Michael Walker (objection 2), John William Kearns and Anne Kearns (objection 3), Susan Caroline Morrish (objection 4) [CDs D.2, D.3 and D.4] have a general objection in relation to the public need for and public benefit of the Scheme which, the objection states, is not proven.
- 3.3 The public need and benefits of the Scheme generally are set out in the Council's Statement of Case [CD A.6] and in the Proof of Evidence of Nicholas Blades of the Council [CD G.2]. My evidence specifically describes the benefits the Scheme will deliver in helping mitigate the impact of the proposed new housing development at the EWSDA and more widely in reducing congestion in Witney town centre. My evidence demonstrates that whilst the Off-Slip only mitigates the impacts of development at the EWSDA, the full Scheme supports substantially greater congestion reduction benefits for trips crossing the town centre (via the A4095 Bridge Street), further reducing demand along A4095 Bridge Street and delivering greater wider road network benefits (by re-routing traffic away from unsuitable minor local roads).
- 3.4 My evidence therefore helps to demonstrate how the Scheme will achieve its objectives of supporting the delivery of new housing in Witney and reducing congestion in Witney Town Centre and supports the compelling case in the public interest for delivery of the Scheme.

4 CONCLUSION

- 4.1 Stantec has assessed the forecast impact of proposed EWSDA development on the highway network and network operations with and without the Scheme using outputs from the Council's A40 Corridor Highway model. The A40 Corridor Strategic Highway Model was developed for the Council by transport consultants Pell Frischman and has been validated to 2018 traffic data in accordance with DfT Transport Appraisal Guidance (TAG) calibration and validation guidance criteria.
- 4.2 This was undertaken to determine the degree of dependency of the EWSDA on the proposed Scheme, to identify the trigger point of need for the Scheme (or elements of the Scheme) and to identify the benefits of the Scheme in mitigating the traffic impacts of the development. The process included scrutiny of the strategic highway model outputs, including the degree of congestion in the network and associated routing/re-routing in the strategic model. Junction capacity assessments were carried out at 5 key town centre junctions within Witney using industry standard modelling software (Junctions 10 and LinSig).
- 4.3 The assessment showed that there is a degree of dependency between the EWSDA and the Scheme, and that prior to 248 units (circa 50%) of the EWSDA development coming forward, there is a need to introduce the west-facing Off-Slip to mitigate the full development's traffic impacts on the local road network. Delivery of the full Scheme (both Off-Slip and On-Slip) would, however, deliver greater benefits and better meet the objectives of the Scheme. The full Scheme would provide substantially greater congestion reduction benefits for trips crossing the town centre (via the A4095 Bridge Street), further reducing demand along A4095 Bridge Street and delivering greater wider road network benefits (by re-routing traffic away from unsuitable minor local roads).

5 STATEMENT OF TRUTH AND DECLARATION

- 5.1 I confirm that, insofar as the facts stated in my proof evidence are within my own knowledge, I have made clear what they are and I believe them to be true and that the opinions I have expressed represent my true and complete professional opinion.
- 5.2 I confirm that my proof of evidence includes all facts that I regard as being relevant to the opinions that I have expressed and that I have drawn attention to any matter which would affect the validity of those opinions.
- 5.3 I confirm that my duty to the Inquiry as an expert witness overrides any duty to those instructing or paying me, and I have understood this duty and complied with it in giving my evidence impartially and objectively, and I will continue to comply with that duty as required.
- 5.4 I confirm that, in preparing this proof of evidence, I have assumed that same duty that would apply to me when giving my expert opinion in a court of law under oath or affirmation. I confirm that this duty overrides any duty to those instructing or paying me, and I have understood this duty and complied with it in giving my evidence impartially and objectively, and I will continue to comply with that duty as required.
- 5.5 I confirm that I have no conflicts of interest of any kind other than those already disclosed in this proof of evidence.



THEODORE FRANCOIS GENIS

19 FEBRUARY 2024