

Document Control Sheet

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1. Introduction and Chronology of Basildon Local Plan Transport and Highway Evidence Base Reports Post-Publication

- 1.1 This note provides a summary of the additional work undertaken to support the Basildon Local Plan at Examination through an expansion of the transport and highway evidence base post-publication.
- 1.2 Since the production of the transport evidence base, which was submitted to the Planning Inspectorate in March 2019, there have been some significant developments which have required additional evidence to be prepared. This document provides a short explanatory update note and chronology to document these additional pieces of evidence, building upon the Essex Highways – Transport Planning Update for Inspector – January 2020 (referenced [EX008](#)). Additional studies undertaken between October 2019 and December 2021 have strengthened the evidence base in several key areas and form part of additional pieces of evidence to support the Examination in Public. To assist, Figure 1 summarises the evidence base reports submitted by Essex Highways for publication as part of the initial tranche of material in 2019, as well as supporting documentation submitted (and currently commissioned) in the time since.
- 1.3 The following chapters in this note provide summaries of the post-submission technical notes shown in Figure 1. The technical notes are numbered 1 to 13 to allow for cross-reference with Figure 1.

2. Transport Planning Evidence

Document 1: Publication Local Plan Transport and Highway Impact Assessment, Pound Lane/Cranfield Park Road Junction Addendum (October 2019) – PSD021

- 2.1 The Transport and Highway Impact Appraisal (THIA) studies as submitted with the Local Plan in 2019 considered the need for a new grade-separated junction on the A127 as part of a package of mitigation measures to accommodate the submitted Local Plan growth. However, it is acknowledged that until a full business case for an A127 grade-separated junction has been undertaken, funding and delivery of the scheme is uncertain. Therefore, a package of deliverable smaller-scale junction mitigation was assessed in October 2019 as an alternative to the A127 junction. This additional work demonstrated that development growth* in Basildon could reasonably be accommodated within the Plan period with the alternative mitigation provided.

* Document 5 re-assessed the borough-wide impact of modifications to the Local Plan proposed by Basildon Borough Council as set out in the Post Submission Modifications Consultation on previous findings and conclusions – more particularly, previously identified traffic flows and highway mitigation (i.e. in Document 1).
- 2.2 A pre-Business Case outline economic appraisal of the A127 grade-separated junction was undertaken in 2019 (outside of the Local Plan modelling framework). Findings have suggested that there may be sufficient merit in progressing the scheme through a full Business Case appraisal. Timeframes for this process could align with a review of the Local Plan, at which point the scheme’s deliverability will be better known.
- 2.3 The October 2019 addendum study highlighted opportunities to undertake further modelling work to further strengthen the Local Plan impact and mitigation narrative presented in the THIA studies to date. This additional modelling work was presented in a series of technical notes issued in January-October 2020 and is referenced in more detail in the sections below (Documents 2-4).

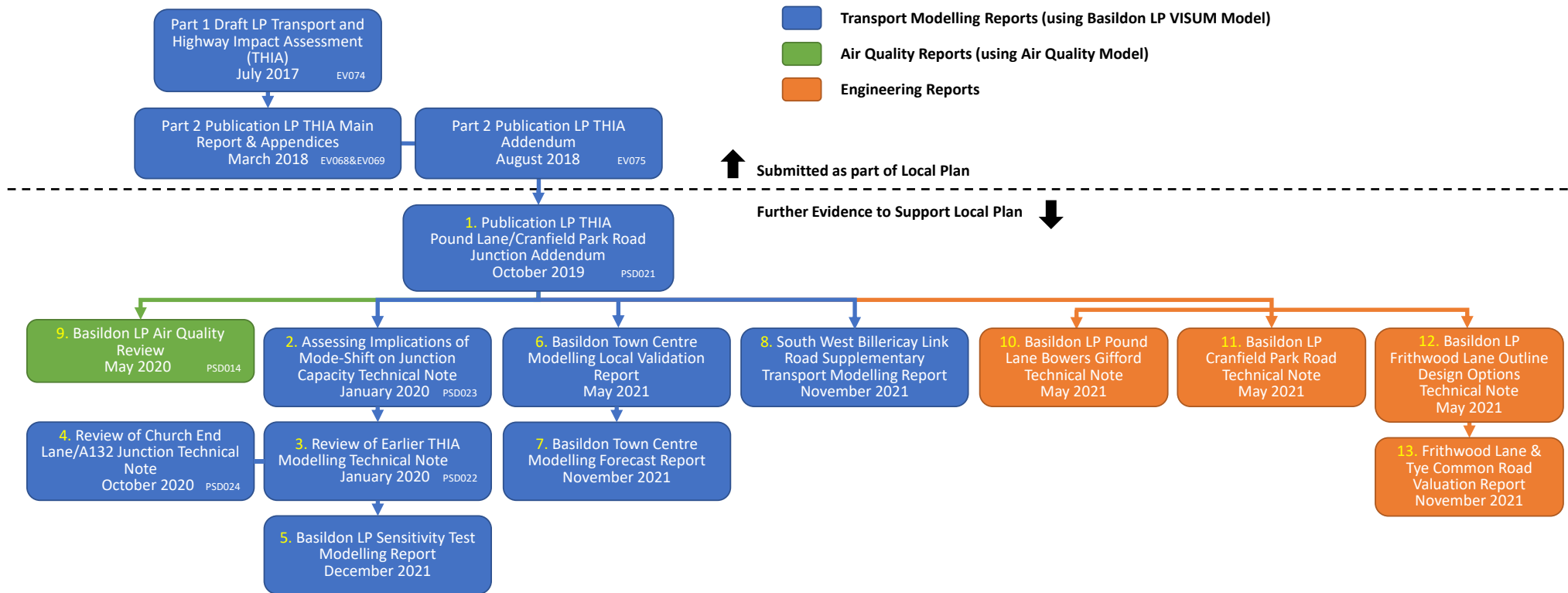


Figure 1: Transport, air quality and engineering Evidence Base reports produced for the Basildon Local Plan pre and post-submission

Document 2: Assessing Implications of Mode-Shift on Junction Capacity Technical Note (January 2020) – PSD023

- 2.4 The THIA modelling utilised a fixed-demand approach to forecasting traffic flows. This was understood to meet NPPF guidelines for a strategic transport appraisal of Local Plan impacts and offered a good degree of modelling transparency.
- 2.5 The approach, however, presented a worse-case depiction of forecast traffic demand in peak hours. To further strengthen the evidence base, an assessment of mode-shift amongst Local Plan development trips to existing sustainable alternatives (walking, cycling, passenger transport) was undertaken.
- 2.6 The sensitivity testing suggested that there was scope for a 15% reduction in Local Plan development trips (on average) at junctions as a result of potential mode-shift. This was, however, dependent on there being available capacity on the existing public transport network to accommodate growth in demand from new developments.
- 2.7 Whilst this represented a small reduction in overall forecast traffic flows at junctions, it was concluded that further improvements made to public transport accessibility in Basildon Borough would be expected to encourage a broader scope of mode-shift away from private car use amongst both Local Plan development trips and background traffic flows.

Document 3: Review of Earlier THIA Modelling Technical Note (January 2020) – PSD022

- 2.8 A review of the 2018 THIA modelling was undertaken to better understand the impact of the proposed A127 grade-separated junction on traffic flows through Wickford, to re-evaluate the impact of Local Plan development on the Nevendon Interchange, and to further validate the assumptions made in the modelling around sustainable mitigation impact.
- 2.9 Findings revealed that the proposed A127 junction led to a moderate reassignment of background traffic away from the A132 route through Wickford and to the A130/A127 strategic routes – thus explaining the reductions shown in the THIA Part 2 (March 2018).
- 2.10 A review of the 2018 THIA confirmed the forecast modelling of flows at the Nevendon Interchange to be reasonable, and that the approaches to the junction itself would not be impacted significantly by development trips from nearby Local Plan sites in Wickford and North Benfleet – despite perceived congestion at the junction.
- 2.11 Instead, delays were identified along Nevendon Road and Christopher Martin Road in the vicinity of the Interchange. Surrounding congestion in the local area has been considered within the A127 Air Quality Management Plan Outline Business Case.
- 2.12 The final part of the review considered the threshold used in the 2018 THIA to determine the point at which infrastructure provision was considered in addition to sustainable measures to mitigate the impact of Local Plan development at junctions. The review considered the level of unmet peak hour demand modelled at a junction identified at the capacity threshold, and then evaluated the extent to which this demand might reasonably be accommodated by sustainable measures. Through this evaluation it was determined that the threshold values could be considered reasonable.

Document 4: Review of Church End Lane/A132 Junction Technical Note (October 2020) – PSD024

- 2.13 The purpose of the technical note was to provide an expanded and contextualised evaluation of future traffic conditions predicted at the junction of Church End Lane with the A132, following findings from the October 2019 addendum study that it would likely remain over-capacity at the end of the Local Plan period, despite provision of proposed mitigation.
- 2.14 The January 2020 mode-shift modelling study suggested that the provision of further bus, rail, walking and cycling infrastructure and/or services would likely result in a modest reduction in development trips through the Church End Lane / A132 junction. However, there would seem to be scope for a further reduction in traffic at the junction through mode-shift amongst existing local (background) trips.
- 2.15 The importance placed on new sustainable transport links would likely be shaped by the extent to which the wider peak periods could accommodate excess demand from the peak hours, and the tolerance levels considered acceptable by the public and local authorities, for extended periods of congestion at the junction. There would also be an expectation that a proportion of excess peak hour demand would re-route away from the A132 to avoid congestion.
- 2.16 Whilst neither re-routing or peak spreading is desirable, the extent to which excess modelled demand would take the form of peak hour queuing at the junction, would be expected to be smaller than the junction capacity modelling suggests.

Document 5: Basildon Local Plan, Sensitivity Test Modelling Report (December 2021)

- 2.17 In addition to the above reports, previously identified in the 2020 update note (EX008), Basildon Borough Council commissioned further transport modelling evidence to re-assess the borough-wide impact of modifications to the Local Plan proposed by Basildon Borough Council as set out in the Post Submission Modifications Consultation on previous findings and conclusions – more particularly, previously identified traffic flows and highway mitigation.
- 2.18 The work was undertaken using the same approach used in the THIA March 2018 assessment (i.e. two-tier in nature and involving a simple skeleton Visum model and spreadsheet-based modelling framework for the borough area generating flows for a set of as many as thirty-five junctions) but with a number of key changes proposed for the Local Plan Growth scenario. The most significant changes included a focus on the increase in residential units in Basildon Town Centre, the removal of the Pound Lane A127 grade-separated junction from the ‘Do Something’ scenario to account for a change in committed and Local Plan proposals, and adjustments made to the residential trip rates to account for a suitable level of mode shift as a result of potential sustainable travel impacts in the borough (almost identical to the approach reported on in Document 2).
- 2.19 The assessment demonstrated that the modified growth could reasonably be accommodated within the Plan period with a revised package of proposed mitigation.

Documents 6 & 7: Basildon Town Centre Modelling Local Model Validation Report (May 2021) & Forecast Report (November 2021)

- 2.20 A separate Vissim modelling exercise was undertaken using the Basildon Town Centre Vissim Model (BTCVM) to test the impact of proposed revisions to the highway network in Basildon Town Centre assuming the same modifications to the Local Plan proposed by Basildon Borough Council assumed in Document 5. Document 6 reports on the update and re-validation of an existing Vissim model to reflect 2019 flows and traffic conditions. Document 7 reports on the use of the re-based and re-validated model in forecast mode to test the highway revisions and Local Plan modifications just mentioned.
- 2.21 The town centre improvements tested in the modelling include the downgrading of key links and changes effected to junctions (Southernhay and Great Oaks) and the removal of vehicular traffic from Little Oaks. While there is overlap with the sensitivity modelling, the BTCVM provides a more detailed assessment across a much smaller study area, generating detailed modelling outputs such as network statistics, journey times, congestion heat maps and video files.
- 2.22 Analysis of the model outputs indicated that traffic conditions are not significantly affected by changes in the number of dwellings within the town centre, largely because residential trip generation is relatively small. The downgrading of Great Oaks does not do any harm to the performance of the town centre network and the opening of the bus gate at Ghyllgrove has a net neutral effect, with some small positive impacts and some small negative impacts depending on location. The removal of Little Oaks is not recommended unless capacity improvements are effected to the junction of Broadmayne, Southernhay and Ghyllgrove or there is a reduction in traffic across the town centre in general.

Document 8: South West Billericay Link Road, Supplementary Transport Modelling Report (November 2021)

- 2.23 A separate strategic modelling exercise was undertaken, using the Enhanced Essex Countywide Strategic Model (EECSM) in order to assess the concept of a link road in South West Billericay, testing the function of both a development-only access (with limited through traffic) or a more strategic full link road (for through traffic and development access). While there is overlap with the sensitivity modelling, the EECSM provides a more appropriate tool than the previous THIA March 2018 spreadsheet-based approach, and provides a more robust assessment of the scheme and better understanding of the need for infrastructure.
- 2.24 The key finding of the modelling exercise, with the particular development and highways assumptions associated with it, was that a full link road is needed to mitigate new development in Billericay as well as wider Local Plan growth. While a full link road is unlikely to have significant impacts beyond the A129/A176 corridor in and around Billericay, it offers some wider benefit by attracting traffic back on to the primary road network from lower classified rural routes.
- 2.25 The conversion of Laindon Road to two-way was also investigated. Although it is only likely to have localised impacts, it offers a complementary scheme that is needed to deliver additional benefit to a full link road particularly at the junction of A129 London Road, High Street and Sun Street.
- 2.26 It should be noted that the sensitivity test assessment (Document 5) has excluded modelling of the junction which joins the Billericay Link Road (A176 / Kennel Lane / Laindon Road junction), on the assumption that this would be upgraded to accommodate the Billericay Link Road and designed with sufficient capacity to accommodate forecast growth.

3. A127 Air Quality Modelling and Assessment

Document 9: Basildon Local Plan Air Quality Review (May 2020) – PSD014

- 3.1 The Basildon Local Plan Air Quality Review (May 2020) was published as a post-submission document (PSD014) by Basildon Borough Council along with their Climate Change and Air Quality Topic Paper in September 2020.
- 3.2 During 2019, pollution climate modelling was undertaken and determined that there were exceedances on the A127 between east and west Basildon, and roads leading to the business area to the south (East Mayne and Upper Mayne). These areas were shown to have poor air quality that breaks national safe limits ($40\mu\text{g m}^{-3}$ max annual mean). To address this, an outline business case was submitted to Government (Joint Air Quality Unit (Defra/DfT)) in April 2019, which included introducing a 50-mph speed limit along the section of the A127 (between Fortune of War and Pound Lane junctions), as well as proposing cycling improvements, electric charging points and travel planning measures to support a shift to more sustainable modes.
- 3.3 As a result of the business case submission, Defra directed Essex County Council and Basildon Borough Council to urgently progress the plans for the 50mph speed limit in June 2019. This was approved and implemented. Defra also directed Essex County Council and Basildon Borough Council to undertake a baseline modelling exercise to identify if any charging Clean Air Zone options (excluding the A127 itself) could bring about compliance in the shortest possible time. An Outline Business Case was prepared for an alternative to a charging CAZ and was subsequently approved by Defra. Instead of a charging CAZ, a full business case has now been approved which will relocate the pedestrian and cycle route in East Mayne away from the central reservation to reduce people's exposure to air pollution at the roadside. This will be implemented in early 2022.
- 3.4 Given the identification of these issues and prior to examination of the Basildon Local Plan, a review of submitted Local Plan development in 2019 and forecast traffic growth assumptions used across both transport and air quality modelling studies was undertaken. Whilst transport modelling uses Local Plan development projections, air quality modelling works with National Trip End Model (NTEM) local growth assumptions. Both approaches are considered appropriate for their relevant studies, but both present different levels of growth in Basildon – raising concerns around compatibility.
- 3.5 The divergence between NTEM growth forecasts used in the original Basildon Air Quality Management Plan (AQMP) modelling and those determined for the Local Plan modelling, raised concerns that emissions in Basildon may have been underestimated. The results of a comparative exercise showed that the original air quality modelling approach and conclusions around growth were acceptable and that NO₂ compliance thresholds are likely to be achieved in 2023 in the absence of mitigation measures.
- 3.6 Modelling in a 2020 assessment year has nevertheless determined that new annual mean NO₂ exceedances in Basildon may occur as a result of additional Local Plan growth in the submitted Local Plan. The results indicated that the subsequent increase in the traffic would create new reportable exceedances at receptors adjacent to PCM network as well as other receptors which would be required to be considered for AQMP. These locations may need closer attention in the short to medium term.

4. Engineering Studies

- 4.1 Finally, a number of design and engineering studies were undertaken that expand on work undertaken to-date in identifying measures necessary to accommodate Local Plan development. Specific tasks involve engineering reviews of preliminary mitigation scheme designs, and safety-led audits of existing routes to determine further infrastructure required to accommodate future housing and employment.

Document 10: Basildon Local Plan, Pound Lane, Bowers Gifford, Technical Note (May 2021) – PSD035

- 4.2 This technical note catalogues potential safety, capacity and sustainable transport improvements required along Pound Lane (including the junctions at either end) to make it more suitable for additional traffic expected as a result of Local Plan development growth. These include alterations to the main junctions to facilitate the expected additional traffic flows and improvements along the southern section of Pound Lane to enhance the current facilities to bring them up to an acceptable standard to support the additional housing and community services (school, doctor's surgery etc.) proposed.
- 4.3 In progressing the identified improvements, a number of matters are noted as needing further consideration and investigation: the ability of the existing highway structure to take the amount of improvement without major structural upgrade; utility records for potential diversions; early appraisal of ground conditions, flood risk and environmental constraints; known issues with drainage and flooding; and construction phasing including whether the current use of Pound Lane will add further constraints with a traffic management or diversion route strategy.

Document 11: Basildon Local Plan, A127 Junction with Cranfield Park Road, Technical Note (May 2021) – PSD036

- 4.4 This technical note outlines the safety and capacity -related mitigation required at the junction of Cranfield Park Road with the A127 (Eastbound) to make it more suitable for additional traffic expected as a result of Local Plan development growth.
- 4.5 In progressing the identified mitigation, a number of matters are noted as needing further consideration and investigation: early discussions with affected landowners; utility records for potential diversions; and an early appraisal of ground conditions, flood risk and environmental constraints.
- 4.6 It assumes that other improvements proposed for the rest of Cranfield Park Road will be designed by other parties.

Document 12: Basildon Local Plan, Frithwood Lane, Billericay, Outline Design Options Technical Note (May 2021)

- 4.7 A new road, currently known as South West Billericay Link Road (see Document 8 above), is proposed between the A129 and the A176 to support Local Plan development between Frithwood Lane and London Road and Blunts Wall Road and Tye Common Road. The new road will pass through the existing junction of Frithwood Lane and Tye Common Lane. This technical note comprises an outline design exercise for two options for the route through the Frithwood Lane corridor. Although the designs have been completed using a topographical survey base, further additional design work

(i.e. preliminary and detailed design) would be required prior to the schemes being suitable for approval.

- 4.8 It is recommended that if the provision of a Relief Road utilising the existing route of Frithwood Road is pursued then the second of the two options considered (the DMRB compliant option) is progressed subject to a number of actions listed in the report.

Document 13: Frithwood Lane and Tye Common Road, Billericay, Essex, Valuation Report (November 2021)

- 4.9 This report provides an estimate of the land costs required to accommodate a link road between the A129 and the A176, currently known as South West Billericay Link Road (see Documents 8 and 12 above), via Tye Common Road and Frithwood Lane.