ADDENDUM TO PROOF OF EVIDENCE OF THOMAS BOYLAN [NCC/TB/1]

1.   QUALIFICATIONS AND EXPERIENCE

1.1.   My name is Adam Hall. I am employed as an Associate Director by AECOM Ltd, a large infrastructure consulting firm. I am based in AECOM's Chesterfield office.

1.2.   I have over 20 years' Transport Planning industry experience and I have worked at AECOM (including legacy companies) since 2003. I manage a team of Transport Planners in the East Midlands and I act as the Transport Planning lead on a variety of transport infrastructure proposals working with private developers and public sector bodies.

1.3.   I have a Bachelor of Engineering (**"BEng"**) degree in Civil Engineering from Oxford Brookes University, and I am a Chartered Member of the Chartered Institute of Logistics and Transport.

2.   INVOLVEMENT WITH THE SCHEME

2.1.   I am a member of the project team who are responsible for the delivery of the scheme. I have been involved with the project since 2017 and led on the scheme appraisal tasks and provided Business Case support to Nottinghamshire County Council. I prepared the Traffic & Economic Assessment Report in February 2021 [**Core Document "CD" 14.2**] which supported the Outline Business Case (**"OBC"**). I also produced the Traffic & Economic Assessment Report Addendum in April 2023 [**CD14.2.1**].

3.   SCOPE OF EVIDENCE

3.1.   This Addendum to the Proof of Evidence of Thomas Boylan [**NCC/TB/1**] focuses on matters relating to the scheme economics for the Scheme under consideration, for which

NCC is seeking to acquire the Order Land compulsorily. My Evidence includes detail on the anticipated economic benefits to be generated by the Scheme and the Scheme's Value for Money (**"VFM"**) assessment.

4.   BENEFITS OF THE SCHEME

4.1.   Analysis of Monetised Costs and Benefits

4.1.1.   **Traffic & Economic Assessment Report, February 2021**

4.1.2.   The Traffic & Economic Assessment Report (**"TEAR"**) [**CD14.2**] details the approach to Traffic Forecasting and Economic Appraisal used to support the OBC.

4.1.3.   The Scheme's traffic forecasts were based on traffic surveys undertaken in neutral months between June 2017 and October 2019. A seasonality factor, calculated from long-term traffic data, was applied to adjust for any seasonality effects associated with the month of surveys in line Design Manual for Roads and Bridges (**"DMRB"**), Volume 12, Section 1, Part 1 guidance.

4.1.4.   Future Year Traffic Forecasts were developed for the forecast years of 2023 and 2037. Traffic forecasts aligned to the Department for Transport's (**"DfT"**) Transport Appraisal Guidance (**"TAG"**) Unit M4, Forecasting and Uncertainty, May 2018. The forecasting approach incorporated committed development and accounted for national forecast year trip-end projections. Developments considered to be dependent on the Scheme were excluded from the traffic forecasts used in the Economic appraisal in accordance with the DfT's TAG Unit A2.2, Induced Investment (May 2020).

4.1.5.   High and Low Alternative Growth Forecasts were produced to reflect uncertainty at a national (population, GDP and fuel price forecasts) and local (planning) level in accordance the DfT's TAG Unit M4 (May 2019).

4.1.6.   Junction models of the existing junction layouts and proposed schemes were prepared by Nottinghamshire County Council's delivery partner, VIA East Midlands Ltd (**"ViaEM"**). The junction models were reviewed by AECOM prior to use in the appraisal. Industry standard software, as recommended by the DfT, was used to produce the junction models. ARCADY was used to assess the capacity of roundabout junctions; PICADY was used to assess the capacity of priority junctions (T-junctions and crossroads); and LINSIG was used to assess the highway capacity of signalised junctions. The outputs of the junction models demonstrate that there are overcapacity constraints at the scheme junctions without intervention [Table 2.57 to Table 2.61, **CD14.2**]. The capacity assessments also demonstrated that the Scheme would deliver improved operational performance and that, with the Scheme, all of the junctions are forecast to operate within capacity [Table 2.57 to Table 2.61, **CD14.2**].

4.1.7.   Scheme cost estimates, developed by ViaEM were provided in 2020 Q1 prices including a 15% investment cost optimism bias. Scheme costs were converted to a Present Value of Cost (**"PVC"**) in 2010 market prices, discounted to a 2010 present value year by inflating to outturn costs, using:

  – projected construction related inflation, rebasing to 2010 prices – all costs were in the factor cost units of account (sometimes referred to as resource costs). Costs incurred in 2020 were considered historic and were removed from the PVC calculation. This approach aligns to TAG Unit A1-2, Scheme Costs, July 2017.

- The cost benefit analysis of the scheme included the monetised assessments of Travel Time Savings, Delays during Construction, Noise, Local Air Quality Greenhouse Gases and Collisions.

- The economic assessment for the Scheme was undertaken using the DfT's Transport User Benefits Appraisal (**"TUBA"**) economic appraisal software (Version1.9.14) and the DfT's Cost and Benefit to Accidents – Light Touch (COBALT) accident appraisal software, for a 60-year appraisal period of 2023-2082 inclusive. This approach aligns with TAG Unit A1-1, Cost-benefit Analysis, May 2018.

- The economic assessment of the Scheme was based upon the Core Growth Scenario forecast, with sensitivity tests using Low alternative growth and High alternative growth assumptions.

- Outputs from isolated junction models were used in the economic appraisal of the scheme to produce a monetised Transport Economic Efficiency (**"TEE"**) impact.

- An economic assessment of delays under construction was undertaken. The cost to road users of delays caused by the scheme construction was assessed using junction modelling, produced by ViaEM and reviewed by AECOM, representing the junction layouts during the construction phases.

- A monetised noise impact was calculated by ViaEM Environmental Team using the Core growth traffic forecasts.

- A monetised local air quality impact was calculated for the Core growth forecasts, using the DfT's Air Quality Monetisation Spreadsheet.

- A monetised carbon impact was calculated for the Core growth forecasts using the Defra Emission Factor Toolkit.

4.1.8.   The Scheme delivered a positive economic case and represents High value for money under a Core Scenario [Table 8.15, **CD14.2**].

4.1.9.   The assessments of Induced Investment (Land Value Uplift, Transport External Costs and Land Amenity Value) associated with Dependent Development sites identified were documented. Induced Investment impacts were excluded from the initial Value for Money but were included in an adjusted Analysis of Monetised Costs and Benefits assessment to support the value for money case.

4.1.10.   The Scheme delivers a positive economic case and represents High value for money under a Core Scenario with Induced Investment considered [Table 11.1, **CD14.2**].

4.2.   Traffic & Economic Assessment Report Addendum, April 2023

4.2.1.   Following submission of the OBC, and following planning approval on 27th September 2022, NCC commissioned AECOM to revisit and update the TEAR Addendum (April 2023) [**CD14.2.1**] to incorporate the impacts resulting from: A comprehensive cost review and value engineering; a change in the number of junctions included within the package (removal of Mickledale); a change in planning conditions attached to the Thoresby (Vale) Colliery site; and an update to the buildability assessments.

4.2.2.   The TEAR Addendum provided an update to the value for money assessment and forms an interim review of the scheme ahead of a Full Business Case.

4.2.3.   The economic assessment of the A614/A6097 MRN Improvement Scheme was updated using a revised Core traffic growth forecast at Ollerton, reflecting the change in planning conditions at the Thoresby Colliery development site. The revised Ollerton junction

modelling demonstrates that there are overcapacity constraints at the junctions without intervention [Table 3.4, **CD14.2.1**]. The revised Ollerton capacity assessment also demonstrated that the Scheme would deliver improved operational performance and that, with the Scheme, the junction is forecast to operate within capacity [Table 3.4, **CD14.2.1**].

4.2.4.   Following a review of the buildability analysis by ViaEM, the duration of construction periods used in the 2020 TEAR were considered optimistic. To present a robust position, the delays during construction presented in the TEAR Addendum [**CD14.2.1**] were derived by factoring the previously calculated economic efficiencies values to reflect the increased construction period for each junction.

4.2.5.   Cost estimates were updated by ViaEM. A revised PVC was produced in accordance with TAG Unit A1.2, Scheme Costs, May 2022.

4.2.6.   The DfT's TUBA software was used to assess the anticipated economic benefits associated with the revised scheme package. The Present Value of TEE benefits for the 60-year appraisal period demonstrates, that as a combined package, the scheme delivers positive TEE benefits in a Core growth scenario.

4.2.7.   The road safety assessment for the Scheme was carried out using the software COBALT (Cost and Benefit to Accidents – Light Touch) appraisal program, version 2013.02. Mickledale Lane was omitted from the revised safety assessment and an assessment of the Kirk Hill Junction improvement was added.

4.2.8.   Monetised noise, air quality and greenhouse gas impacts were unchanged from the 2021 analysis.

4.2.9.   The Analysis of Monetised Costs and Benefits (**"AMCB"**) for the revised package is presented in Table 1. The Scheme is expected to generate a Present Value of Benefits (**"PVB"**) worth **£39.560 million** over a 60-year appraisal period with a PVC of **£16.399 million**. The majority of benefits are related to journey time savings for commuters and businesses but there are also some minor benefits anticipated that relate to Greenhouse Gases, Air Quality and Noise. The revised BCR for the Core scenario is 2.41, so **£2.41** worth of benefits for every £1 invested in the project.

Table 1 - Revised AMCB for five scheme package – April 2023

Impact	With Scheme
Greenhouse Gases	872
Local Air Quality	13
Noise	286
Travel Time Savings – Business	4,667
Travel Time Savings – Commuting & Other	37,421
Collisions	-3,699
Vehicle Operating Costs	Not Assessed
Indirect tax revenue	Not Assessed
PVB	39,560
PVC	16,399
NPV	23,161
BCR	**2.41**

Note: Costs appear as positive numbers. All entries are discounted to 2010 present values, in 2010 market prices; except for the BCR figures.

4.2.10.   The DfT's "Value for Money Guidance" (2017, www.dft.gov.uk) [**CD12.17**] describes how value for money can be categorised into four classes:

Table 2 – DfT Value for Money Guidance

Box 5.1 Standard Categories
(Transport cost outlays exceed revenues or cost savings)

VfM Category	Implied by...*
Very High	BCR greater than or equal to 4
High	BCR between 2 and 4
Medium	BCR between 1.5 and 2
Low	BCR between 1 and 1.5
Poor	BCR between 0 and 1
Very Poor	BCR less than or equal to 0

Relevant indicative monetised and/or non-monetised impacts must also be considered and may result in a final value for money category different to that which is implied solely by the BCR. This chapter provides guidance on how to select the final value for money category.

5.1.1.   The BCR value of 2.41 demonstrates that the package of improvements delivers a positive economic case and represents high value for money [Table 8-6, **CD14.2.1**].

5.2.   Induced Investment

5.2.1.   The Wider Economic Impacts Report (April 2023) contained in Appendix L of the TEAR [**CD14.2.2**] details the change in benefits resulting from change in planning conditions attached to the Thoresby Colliery development. The DfT's Value for Money Framework states that, whilst benefits associated with Induced Investment should not be included in the initial benefit-cost metrics, it may still be used to help inform the scheme's value for money assessment. As such, whilst Land Value benefits are excluded from the initial Analysis of Monetised Costs and Benefits (BCR of 2.41) they can still be presented to support the value for money case.

5.2.2.   The value of Induced Investment benefits is estimated to be worth £1.379m (discounted to 2010 present values, in 2010 market prices). Inclusion of the Induced Investment

benefits would increase the BCR to 2.49 demonstrating that the Scheme delivers a positive economic case and represents High value for money under a Core Scenario with Induced Investment considered. [Table 10-1; **CD14.2.1**].

Table 3 – Core AMCB with induced Investment included – April 2023

Impact	With Scheme
Greenhouse Gases	872
Local Air Quality	13
Noise	286
Travel Time Savings – Business	4,667
Travel Time Savings – Commuting & Other	37,421
Collisions	-3,699
Induced Investment	1,379
Vehicle Operating Costs	Not Assessed
Indirect tax revenue	Not Assessed
PVB	40,939
PVC	16,399
NPV	23,161
BCR	**2.49**

Note: Costs appear as positive numbers. All entries are discounted to 2010 present values, in 2010 market prices; except for the BCR figures.

5.3.   Wider Non-monetised Impacts – Job Creation

5.3.1.   The two dependent sites at Thoresby Colliery and Teal Close that are supported by the Scheme are of strategic importance for the area and will support a large number of employment opportunities. The Thoresby Colliery site will support 1,048 gross direct jobs, making an economic contribution to the local economy in Newark and Sherwood and wider afield. Only 7.5% of the employment space at the site could come forward without the Ollerton Roundabout improvements being implemented, therefore the Scheme plays a crucial role in ensuring that that the employment impacts on the site are to materialise in full.

5.3.2.   The Scheme will also benefit the site at Teal Close, which is estimated to support a further 684 gross direct jobs locally. The employment land at Teal Close is not identified as dependent on the Lowdham Roundabout improvements; however, given the constraints

to the residential aspect of the development, the implementation of the Scheme will be beneficial in ensuring the site is built out in full and employment impacts materialise.

5.3.3.   Gross value impacts associated with the jobs created at the two sites were calculated to demonstrate their value and significance for the local economy [Table 0-6, **CD14.2.2**]. The combined total was valued at £78.93m. In accordance with TAG Unit A2.1, Wider Economic Impacts Appraisal, May 2018, whilst GVA is useful economic indicator of economic performance, GVA benefits are not used to inform the assessment of Value for Money.

5.3.4.   Furthermore, the gross direct jobs would support further indirect and induced jobs. The HCA Additionality Guide provides economic multiplier ready reckoner values and states that the majority of interventions are expected to have a multiplier of 1.1 at the neighbourhood level and 1.5 at the regional level. Based on the above, a total of 1,153 direct, indirect and induced jobs could be supported locally by the development at Thoresby Colliery and 752 total jobs at Teal Close. At the regional level, the two sites could support 2,598 direct, indirect and induced jobs.

6.   STATEMENT OF TRUTH

6.1.   I confirm that I am able to give evidence in light of my relevant experience as summarised above. I can confirm that the evidence I prepared is in accordance with the guidance of my professional institution and that the opinions given are my true professional opinions.

Date: 4 September 2023