

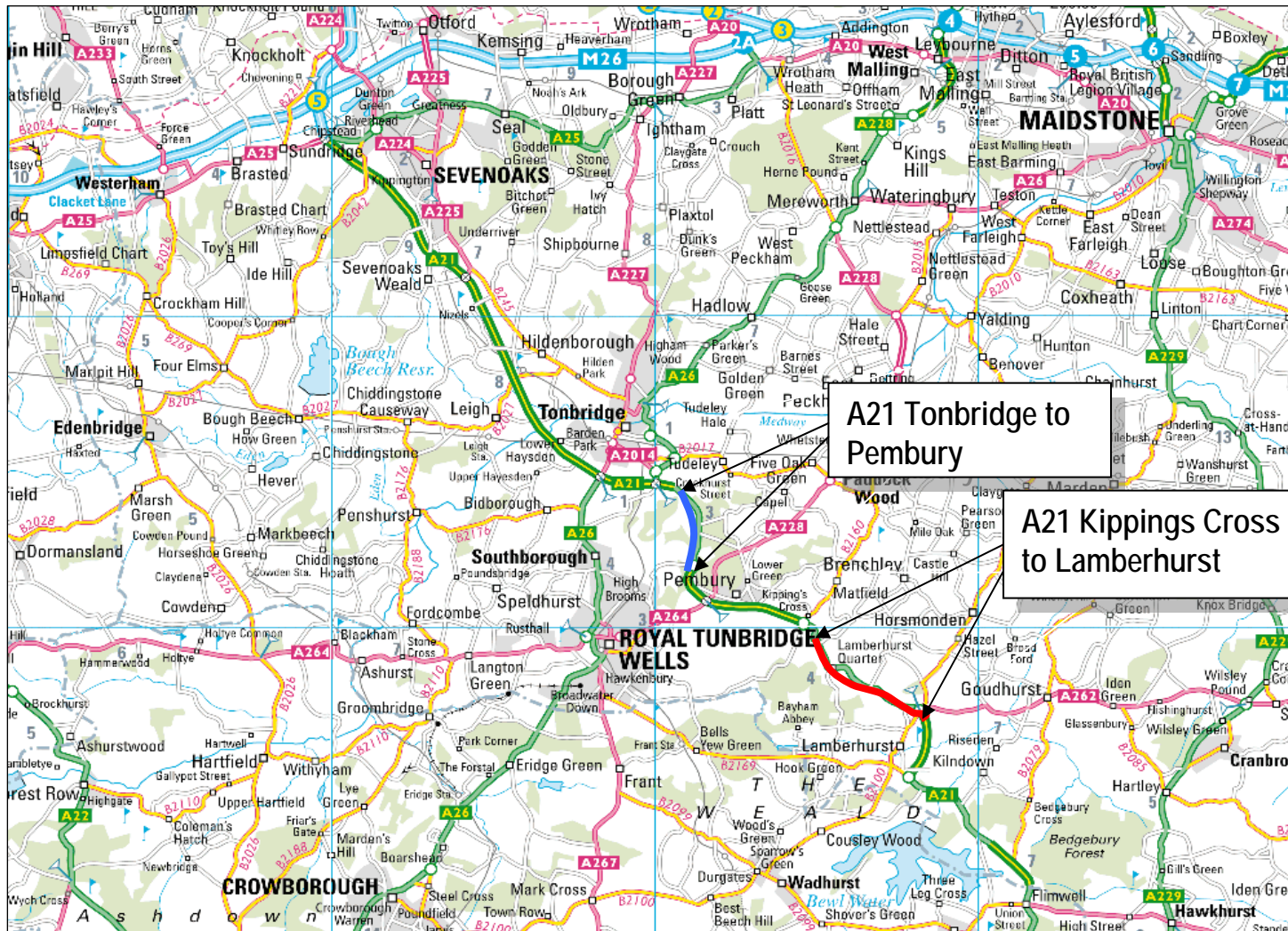
TUBA User Group Meeting

Calculation of Carbon Emissions on A21 Trunk Road Improvements

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A21 ECI Contract Package



Tonbridge to Pembury Dualling

Carbon Emission Results

a) COBA (AADT)

- Fuel Consumption = + 301.9 m litres
- Carbon Emissions = +204,576 tonnes
- Cost = + £6.76 million

b) TUBA (12 hour weekday)

- Fuel Consumption = + 17.4 m litres
- Carbon Emissions = +11,027 tonnes
- Cost (medium) = + £437,000

c) DMRB Spreadsheet (AADT)

- Fuel Consumption = n/a
- Carbon Emissions = +150,093 tonnes
- Cost = + £5.13 million

Kippings Cross to Lamberhurst Improvement Carbon Emission Results

a) COBA (AADT)

- Fuel Consumption = + 120.6 m litres
- Carbon Emissions = +82,005 tonnes
- Cost = + £2.66 million

b) TUBA (12 hour weekday)

- Fuel Consumption = + 24.3 m litres
- Carbon Emissions = +15,421 tonnes
- Cost (medium) = + £526,000

c) DMRB Spreadsheet (AADT)

- Fuel Consumption = n/a
- Carbon Emissions = +102,324 tonnes
- Cost = + £3.46 million

Kippings Cross to Lamberhurst Improvement Changes to DMRB methodology

- We used manual method to calculate emissions - combined method of DMRB v1.02 with DfT webTAG global emissions calculator
- DMRB spreadsheet v1.02 contained CO₂ emission rates, from NAEI 2002
- webTAG 3.3.5 guidance updated October 2006
- A21 KC-L AST required March 2007
- A21 AST was produced **post** webTAG release but **before** new DMRB v1.03 available
- DMRB new release v1.03 in May 2007 provided C emission rates, consistent with webTAG

Kippings Cross to Lamberhurst Improvement

DMRB methodology

- Estimated social cost using DMRB is reasonably small negative figure, agrees in order of magnitude with COBA
- Possible explanations for differences between COBA and DMRB results:
 - DMRB v1.02 used old CO₂ emission rates (NAEI 2002)
 - Future changes in exhaust emissions incorporated in DMRB up to 2025 only
 - DMRB assessment only included roads with significant change in (a) AADT > 5%, or (b) average speed > 5kph
 - Speed and flow for each link in traffic network assumed to change by a uniform annual increment between opening year (2011) and design year (2026)
 - All cost benefit analyses assume no traffic growth beyond 2026 and the traffic network remains static for the remainder of the appraisal period (2071)
- Small improvements in emissions on other roads in network not captured in DMRB-derived NPV