

POPE of Major Schemes Summary Report

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| Scheme Title | A2/A282 Dartford Improvement & M25 Jn 1b- Jn 3 Widening |
| Opening Date | December 2007 and July 2008 |
| POPE Stage | Five Years After |

Scheme Description

The A2/A282 Dartford Improvement scheme and M25 Junction 1b to 3 Widening scheme are Highways England major schemes located around M25 Junction 2 in Kent. The schemes opened in December 2007 and July 2008 respectively. The schemes overlap geographically and the majority of construction occurred during the same periods hence the reason for the combined Post Opening Project Evaluations. A description of each scheme is provided below.

A2/A282 Dartford Improvement

- Viaduct linking A2 westbound to M25/A282 northbound.
- Viaduct linking M25/A282 southbound to A2 eastbound.
- Free flow slip road for traffic travelling from the A2 westbound onto the M25 southbound.
- Widening of the A2 from three to four lanes in each direction between the M25/A282 and the Bean junction, mainly within existing highway boundary with hard shoulders.

M25 Junction 1b to 3 Widening

- M25 both carriageways from three to four lanes from Junction 3 to south facing slips of Junction 2.
- M25 southbound from two to three lanes between Junction 1b and 2 and through Junction 2.
- Lighting on the previously unlit section (Junction 2 to 3).

| A2/A282 Improvement Scheme | | M25 Junction 1b - 3 Widening Scheme | |
|--|---------------------|--|---------------------|
| Objective | Objective Achieved? | Objective | Objective Achieved? |
| Reduce journey times and improve reliability | Partial | Reduce journey times by 30 - 60 seconds per vehicle | Partial |
| Improve safety at the junction | ✓ | Improve reliability | ✓ |
| Provide enhance access from the M25 to the major regeneration area of Kent Thames-side and other regeneration areas in north and east Kent | ✓ | Create jobs in Kent Thames-side regeneration area through increase labour pool and impacts on companies relying on distribution of goods | ✓ |

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|---|---|--|---|
| Facilitate access to Ebbsfleet International Rail Station from the national motorway and trunk road network | ✓ | Mitigate the environmental impacts of the scheme and upgrade water control measures | ✓ |
| Limit the environmental impact of the scheme especially regarding noise | ✓ | Mitigate the environmental impacts of the scheme and upgrade water control measures | ✓ |
| | | Facilitate future demand management measures to provide some constraints on induced traffic and lock in benefits from the widening | ✓ |

Summary of Scheme Impacts

Key Findings

- Traffic volumes using the circulatory at the A2/A282 junction have reduced by 35% due to the new free-flow movements provided by the A2/A282 scheme
- Traffic forecasts for both schemes overestimated traffic levels both before and after scheme opening.
- Journey times along the A2/A282 eastbound have improved during the PM peak and there have been journey time savings of up to 2 minutes in the peak periods for traffic using the new free flow links.
- The A2/A282 scheme delivers a BCR of 1.6, close to the expected result, whereas the M25 Junction 1b to 3 delivers a BCR of 0.5, which is below the forecast 2.3. Therefore, when combined the results of the M25 scheme reduce the overall BCR to 1.2.
- Average annual collision numbers have reduced for the A2/A282 scheme area (4.2 collision saving per annum) but increased for the M25 scheme (9.8 collision increase per annum). In combining the scheme collision results, there has been an increase of 5.6 collisions per annum.
- The majority of the environmental impacts for both schemes are as expected and most mitigation measures have been successful.

Traffic

- Traffic volumes using the circulatory at the A2/A282 junction have reduced by 35% due to the new free-flow movements provided by the A2/A282 scheme.
- Traffic volumes on the M25 between Junction 2 and 3 and between Junction 3 and 4 have reduced.
- Traffic forecasts for both schemes overestimated traffic levels for before scheme opening and after scheme opening periods.
- Journey times in the PM peak have decreased by 2 minutes in the northbound direction between Junction 2 and 3, and by 35 seconds on the A2 eastbound (west of A2/A282 junction).
- There have been savings of up to 2 minutes in the peak periods for traffic using the new free flow links provided by the A2/282 scheme. Overall for movements still requiring use of the circulatory, there have been savings of up to 40 seconds in the peak periods, attributable to the reduced traffic using the roundabout. Such journey time reductions have not occurred on the A2 eastbound to M25 northbound movement.

- Journey time forecasts stated that there would be saving between 30 and 60 seconds on the M25 Junction 1b to 3. Observed journey times indicate that only Junction 2 to Junction 3 has achieved such savings.
- Journey time reliability has improved in the southbound direction on the M25 between Junctions 2 and 3 and on the A2 both east and west of the M25 Junction 2. The evidence indicates however, that there are still reliability issues for many parts of the day, with for instance the AM peak still showing unreliable journey times to the east of the junction in the westbound direction.

Safety

- There has been an average annual collision saving of 4.2 collisions for the A2/A282 scheme area, which is slightly higher than the forecast saving. Statistical tests have shown that this reduction is a direct impact of the scheme.
- The M25 Junction 1b to Junction 3 scheme area shows an annual average increase of 9.8 collisions. Statistical tests have demonstrated that this increase can be directly related to the scheme.
- Combining the changes in collisions for both schemes, there has been an overall increase of 5.6 collisions a year.
- The collision severity index has reduced in the wider area (which includes the schemes and adjoining links), A2/A282 scheme area and M25 Junction 1b to 3 scheme area.
- The section of the A2 east of the M25 Junction 2 has seen a large reduction in the number of fatal and serious injuries and a noticeable reduction in the seriousness of collisions.
- The A2/A282 has delivered slightly higher safety savings than forecast, whilst for the M25 Junction 1b to 3, the small saving predicted has not occurred to date.

Environment

- Based on traffic flows, impacts on noise are as expected for the A2/A282 scheme. The impacts on noise are better than expected for the M25 Junction 1 to 3b scheme due to lower than forecast increases in traffic volumes between Junction 2 and 3.
- Local air quality is better than expected for both schemes based on changes in traffic flows.
- There has been an increase in carbon emissions for the A2/A282 scheme, although this is based on A2 mainline flows only. This increase is slightly lower than forecast due to a lower than forecast traffic growth rate.
- Due to limited journey time data for M25 Junction 1b to 2, it has not been possible to evaluate carbon emission impacts for the M25 Junction 1b to 3 scheme.
- Landscape mitigation measures have been implemented as expected for both schemes. Planting throughout the schemes is progressing well and visual screening and landscape integration function are also developing well.
- The full range of ecological mitigation measures have been implemented. Habitat establishment and maintenance is in line with ecological mitigation proposals for both schemes.
- A new wetland constructed as an ecological enhancement measures for the M25 Junction 1b to 3 scheme may provide a suitable habitat for water voles.
- Water and drainage mitigation measures have been implemented as expected, however, the widening scheme may have impeded drainage on the A2 near Wood Lane overbridge, with 8 collisions occurring during the five years after opening due to wet/damp road conditions and driving into standing water/aquaplaning.

Accessibility and Integration

- Both schemes have had a beneficial impact on access to employment opportunities in regeneration areas, Ebbsfleet International Railway Station and retail facilities at Bluewater shopping centre.

- The A2/A282 scheme has had a negative impact on Land Use and Other Government Policies due to negative impacts on good agricultural land and Green Belt. Impacts for the M25 Junction 1b to 3 are as expected.
- All other accessibility and integration impacts are as expected for both schemes.

Summary of Scheme Economic Performance

| All monetary figures in 2002 prices and values | | Pre Scheme Forecast | | Post Opening Outturn Reforecast | |
|---|--|---------------------|----------------------------------|---------------------------------|----------------------------------|
| | | A2/A282 | M25 J1b – 3 (& controlled m'way) | A2/A282 | M25 J1b – 3 (& controlled m'way) |
| Investment Cost in present value (PVC) | | £97.3m | £72.1m | £111.4m | £59.7m |
| Journey Time Benefits | | £155.4m | £221.0m | £149.6m | £56.7m |
| Vehicle Operating Costs | | £25.0m | £2.8m | £25.0m | £2.8m |
| Safety Benefits | | £1.3m | £16.5m | £10.0m | -£27.8m |
| Net Impact on Dartford Tolls and Business and Users | | £1.2m | £0.9m | £1.2m | £0.9m |
| Present Value Benefit | | £182.7m | £241.1m | £185.8m | £32.6m |
| Indirect Tax | | £5.0m | £3.9m | £3.9m | £3.9m |
| Benefit Cost Ratio (BCR) | Indirect Tax impact treated as a cost | 1.8 | 2.1 | 1.6 | 0.5 |
| | | 2.4 | | 1.2 | |
| Benefit Cost Ratio (BCR) | Indirect Tax impact treated as a benefit | 1.9 | 3.2 | 1.7 | 0.6 |
| | | 2.4 | | 1.2 | |

- When the economic results of each scheme are considered separately, the results demonstrate that the A2/A282 scheme has delivered benefits in line with those forecast, with the exception of safety benefits which were tenfold the forecast. In contrast, the M25 Junction 1b to 3 scheme has delivered a notable safety disbenefit and lower than forecast journey time benefit thus reducing the combined benefit cost ratio.
- The overall present value benefit for the A2/A282 scheme is in line with forecast, however, the M25 present value benefit is 85% lower than forecast.
- The observed journey time monetary benefits are below forecast for the A2/A282 and M25 Junction 1b to 3 scheme by 4% and 74% respectively.
- For the A2/A282, safety benefits are £2.6 million, which is higher than forecast, however this is in contrast to a safety disbenefit of £27.8 million for the M25 Junction 1b to 3. When the benefits of the two schemes are combined, the M25 safety disbenefit significantly reduces the overall safety benefits.
- The total investment cost for the two schemes is £164.9 million, which is 4% lower than forecast.
- In following the current appraisal methodology by considering indirect tax as a benefit, the outturn benefit cost ratio is for the A2/A282 is almost as forecast, whereas the M25 benefit cost ratio is 0.5, significantly lower than the 2.3 forecast. The combined BCR was forecast as 2.3 and the outturn BCR is 1.2 and this is a result of the significantly lower than forecast safety and journey time benefits for the M25 scheme.

This document summarises the findings of the Five Years After (FYA) post opening evaluation study completed in 2015.