

# A2 Bean and Ebbsfleet Junction Improvements Detailed Modification MOD-3 De-signalisation of Bean South Roundabout

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## Document history

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# 1. Introduction

## 1.1 Purpose of this report

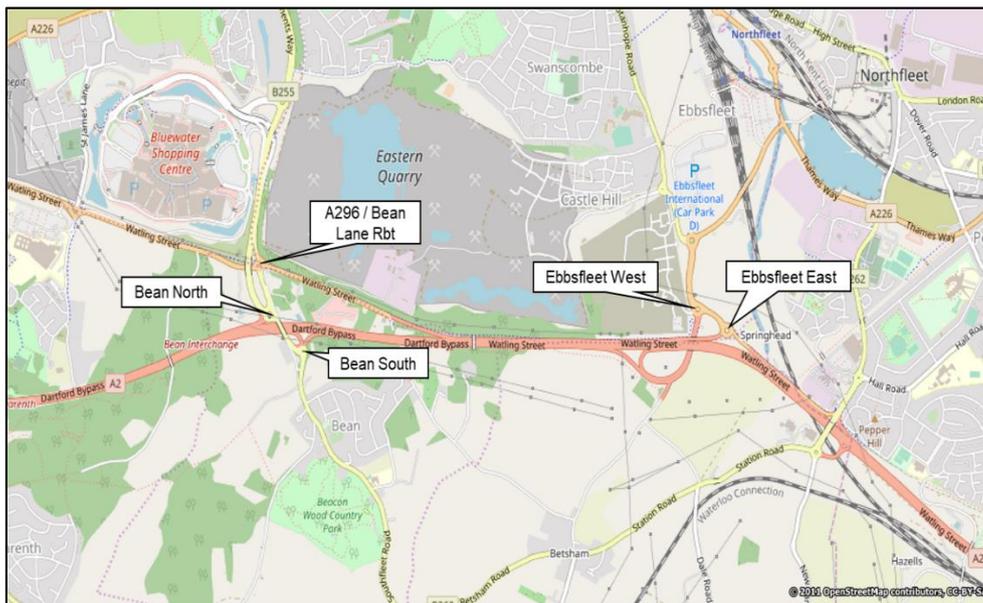
1.1.1 The Modification MOD-3 for the Bean South roundabout is being promoted by Highways England as a modification to the Published Orders. The purpose of this report is to assess the implications of the modification on highways engineering and design, safety, traffic and operation, cost and environment.

# 2. Appraisal of the Bean South roundabout MOD-3

## 2.1 Highway Engineering

2.1.1 The Preliminary Design included for the enlargement of Bean South roundabout and the introduction of traffic signals. Whilst it is proposed to retain the overall size and lane allocation of the roundabout, consistent with the published orders, this modification removes the proposed traffic signals. The location of the Bean South roundabout in context of the overall scheme is outlined in Figure 2.1 below.

**Figure 2.1: A2 Bean Junction Location Plan**



## 2.2 Impact on Traffic and Operation

2.2.1 The removal of the traffic signals on Bean South roundabout has been assessed in both the strategic and operational transport models. The key impacts are summarised below:

### Strategic Model Impacts

- Traffic flows increase marginally on all approaches of Bean North roundabout and Bean South roundabout;
- Slight reduction in traffic flow approaching the Ebbsfleet West roundabout;
- No change in delay at the Bean North roundabout; and
- Reduction in delays at the Bean South due to de-signalisation.

### Operational Model Impacts (2038 PM peak)

- Significant reduction in queue on A2 WB off-slip at the Bean South roundabout;
- There is an increase in queue on Bean Lane Northbound approach of Bean South roundabout due to de-signalisation;
- No major changes were seen at Ebbsfleet junctions; and
- Reduction in queue lengths for Hall Road / Station Road roundabout and Hall Road / Sainsbury roundabout.

2.2.2 Overall this shows that there is, in general, a benefit to traffic as a result of the modification. Mean max queues on the Bean Lane northbound are predicted to increase by around 12 vehicles in the 2038 PM peak compared to the published scheme.

## 2.3 Impact on Economic Benefits

2.3.1 An initial TUBA assessment of the de-signalisation of Bean South roundabout has been undertaken. This indicated that user benefits would increase by about £25 million comparison to core scenario TUBA assessment. Assessment under RTF18 indicates that user benefits would increase by about £12 million as a result of de-signalisation. For further detail refer to the RTF18 technical note.

## 2.4 Impact on Costs

2.4.1 The removal of the signals from Bean South roundabout is estimated to reduce construction costs by circa £100,000.

## 2.5 Air Quality and Noise Review

2.5.1 The changes to traffic flows and queuing traffic could potentially affect air quality at the nearest receptors. Further analysis would be required to determine the effect, however, the modification is considered unlikely to significantly adversely affect air quality even if there is an increase in traffic flows or queuing traffic at the Bean North or South roundabouts, given that with the Scheme, estimated pollutant concentrations at the nearest receptors (Hope Cottages) are below the relevant national air quality objectives, and the change in pollutant concentrations is

expected to be imperceptible or a small decrease compared to the situation without the Scheme.

- 2.5.2 The proposed designalisation of Bean South roundabout, and the resultant changes to the flow of traffic on the network, could potentially lead to an increase in noise. Further analysis would be required to determine the effect at the nearest receptors, but it is expected any changes in noise at these receptors are likely to be negligible.

## 2.6 Operational Safety

- 2.6.1 An assessment of the operational safety at Bean South roundabout has been undertaken.
- 2.6.2 There are two key factors to consider regarding operational safety: ensuring suitable geometric, signing and marking design to ensure that roundabouts will operate safely using normal priority basis without signalling; and ensuring that the signalling strategy keeps traffic moving and on the appropriate routes.
- 2.6.3 The first factor is assured through design. The design of Bean South roundabout, where a change to de-signalisation is proposed, has been assessed by Atkins and HE operational safety specialists with positive feedback. Also, the design has successfully passed an independent road safety audit. Based on this and on the fact that the layout provides suitable capacity for design year peak traffic, it is considered that the design should operate acceptably safely on a priority basis as a conventional un-signalised roundabout.
- 2.6.4 The second factor, in the context of Bean Junction, relates to maximising traffic flow on the new A2 eastbound merge slip from Bean roundabout and not providing an incentive to increase traffic flow on the lower standard A296 and associated merge slip. In this respect the proposed modification does not reduce flows on the new slip, hence would not induce traffic on to lower standard routes that may reduce safety.
- 2.6.5 Mean max queues on the Bean Lane northbound approach to Bean South roundabout, assessed in the operational model for the 2038 PM peak forecast year, are shown to increase by around 12 vehicles compared to the core scenario.
- 2.6.6 There are no impacts to non- motorised users as a consequence of removing the signals from Bean South roundabout.

## 3. Conclusion

- 3.1.1 The modification proposes a value engineered solution at a reduced implementation cost while enhancing operational performance overall, economic benefits, retaining operational safety, and an estimated minimal impact on the environmental assessments presented in the Environmental Statement.

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