

# Medway 2031 Interim Junction Modelling & Mitigation

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## Medway 2031 Interim Junction Modelling & Mitigation

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### London UK

2nd Floor, Cottons Centre  
Cottons Lane  
London SE1 2QG  
United Kingdom

T +44 (0)203 980 2000

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## 1. Introduction

As Kent Transport Model (KTM) custodian to Kent County Council (KCC), Jacobs have supported Medway Council (MC) with their transport evidence base used to support their Regulation 19 (Reg19) Local Plan (LP) consultation.

The Reg19 analysis identified three junctions as requiring mitigation within the first five years of the LP period; Four Elms, Sans Parel and Main Road Hoo roundabouts. In Spring 2026, MC requested interim mitigation options at these locations is identified to enable the delivery of 1,750 new homes on the Hoo Peninsula to be delivered by 2030/2031.

To best inform the mitigation options in these locations, an interim VISUM model was developed to understand the dynamic routing on the network with the planned levels of growth by 2031. The process for the development of this interim model has been outlined in the “2031 strategic modelling forecast report” which should be read in conjunction to this report.

Junction turning counts at the following junctions have been extracted from the 2031 ‘Reference Case’ and 2031 ‘Local Plan’ models for input into the Local Junction Models:

- Junction 1: Four Elms Roundabout (J1)
- Junction 2: Main Road Hoo Roundabout (J2)
- Junction 3: Sans Parel Roundabout (J3)

Initial 2031 Local Plan scenario local junction modelling incorporated existing interim mitigation designs developed by Stantec for Four Elms and Main Road Hoo roundabouts. Where the Stantec designs did not provide sufficient capacity to mitigate Local Plan impacts for 2031 (Year 5), further highway improvements have been identified and developed by Jacobs and assessed for operational performance.

The interim local junction modelling incorporating the Stantec design and Jacobs additional improvements have been tested with 2032 Local Plan scenario trips, representing Year 6 development trips, which comprises 2031 Local Plan flows from the VISUM model plus additional one year development trips proportionally estimated from the ten-year Local Plan growth between 2031 and 2041 Local Plan scenarios.

### 1.1 Technical Note Purpose

The purpose of this Technical Note (TN) is to outline the operational performance of the three junctions for following scenarios:

- 2031 Reference Case – Existing Junction Layout
- 2031 Local Plan – Existing Junction Layout
- 2031 Local Plan – Stantec Interim Mitigation Layout
- 2031 Local Plan – Jacobs Interim Layout
- 2032 Local Plan – Stantec and Jacobs Interim Layouts
- 2036 Local Plan – Stantec and Jacobs Interim Layouts

This technical note summarises local junction model outputs in terms of link capacities and overall junction operational performance. The junction modelling results offer valuable insights into:

1. Junction operational characteristics

2. Link capacity limitations
3. Effectiveness of interim mitigation layouts

The model's input parameters were derived from measurements taken from the CAD drawings; this approach ensures accuracy in representing the junctions' geometric characteristics and operational features.

The results summary tables for each junction refer to the following three traffic performance indicators:

- Vehicle Queue Length: This is the average queue length across the hour for that approach.
- Vehicle Delay: The is the average delay per vehicle in seconds.
- Ratio of Flow to Capacity (RFC) for Priority Controlled Junctions: This is the proportion of an approach's capacity that is being used by traffic. An RFC of 0.5 means half the capacity is being used by traffic while an RFC of 1.0 means an approach's capacity is fully utilised. *or*
- Degree of Saturation (DoS): for Signal Controlled Junctions: This is the proportion of an approach's capacity that is being used by traffic. DoS of 1.0 means an approach's capacity is fully utilised.

Delays and queue lengths are reported in Passenger Car Units (PCUs). A PCU is a measure of a vehicle's road space occupancy based on a typical car. A car has a PCU of 1, which equates to 5.75m of road space.

## 2. Four Elms Roundabout (J1)

### 2.1 Existing Layout

The Four Elms roundabout forms the junction of the A228 Four Elms Road / A289 Hasted Road / Wulfere Way / B2108 Hoo Road. The A289 is a key route from the M2 into Chatham, whilst the A228 is the main access to the Hoo Peninsula. The existing roundabout configuration has been modelled using Junctions 11 software. Figure 2-1 illustrates the current layout, which comprises:

- Four-arm, non-signalised roundabout: This roundabout serves as the critical junction, managing traffic flow from four different directions without the use of traffic signals. The absence of signals means that traffic flow is governed by standard roundabout rules, where entering vehicles yield to those already in the roundabout.
- Multiple lane approaches: Each of the four approaches to the roundabout features either two or three lanes. This multi-lane design is typically implemented to increase capacity and reduce queuing, allowing for more efficient traffic flow, especially during peak hours.
- Dedicated filter lane: A specific lane is provided to allow direct movement from Four Elms Hill to Wulfere Way, bypassing the main roundabout. This filter lane is an important feature for traffic management, as it reduces the volume of vehicles entering the roundabout, potentially easing congestion for other movements.



Figure 2-1: Existing Roundabout Layout – Four Elms Roundabout

## 2.1.1 Results Summary – Existing Junction Layout

The results in Table 2-1 below summarise the model outputs from the 2031 Reference Case and 2031 Local Plan scenario flows. Full results are located in Appendix A.

**Table 2-1: Four Elms Results Summary – Existing Junction Layout**

| Existing Layout                         | AM           |           |      | PM           |           |      |
|-----------------------------------------|--------------|-----------|------|--------------|-----------|------|
|                                         | Queue (PCUs) | Delay (s) | RFC  | Queue (PCUs) | Delay (s) | RFC  |
| <b>2031 Reference Case</b>              |              |           |      |              |           |      |
| Four Elms Hill                          | 30           | 76        | >1.0 | 31           | 74        | >1.0 |
| Wulfere Way                             | 369          | >300      | >1.0 | 73           | 133       | >1.0 |
| Hoo Road                                | 3            | 28        | 0.8  | 2            | 21        | 0.7  |
| A289 Hasted Road                        | 644          | >300      | >1.0 | 787          | >300      | >1.0 |
| Network Reserve Capacity                |              | -32%      |      |              | -33%      |      |
| <b>2031 Local Plan</b>                  |              |           |      |              |           |      |
| Four Elms Hill                          | 58           | 122       | >1.0 | 176          | >300      | >1.0 |
| Wulfere Way                             | 56           | 101       | >1.0 | 17           | 44        | 1.0  |
| Hoo Road                                | 20           | 137       | >1.0 | 2            | 20        | 0.7  |
| A289 Hasted Road                        | 721          | >300      | >1.0 | 582          | >300      | >1.0 |
| Network Reserve Capacity                |              | -30%      |      |              | -27%      |      |
| <b>2031 Local Plan Sensitivity Test</b> |              |           |      |              |           |      |
| Four Elms Hill                          | 100          | 228       | >1.0 | 220          | 228       | >1.0 |
| Wulfere Way                             | 1037         | >300      | >1.0 | 564          | >300      | >1.0 |
| Hoo Road                                | 10           | 58        | 0.9  | 2            | 20        | 0.7  |
| A289 Hasted Road                        | 1171         | >300      | >1.0 | 926          | >300      | >1.0 |
| Network Reserve Capacity                |              | -41%      |      |              | -36%      |      |

Results show that all arms except for the Hoo Road approach operate significantly over capacity (RFC > 1) in both peak periods, with substantial queue lengths and vehicle delays.

The 2031 Reference Case scenario results show significant delays and queue lengths in both AM and PM peak hours. Additional trips from the Local Plan sites exacerbates capacity constraints at the existing junction, which leads to reassignment of traffic away from the junction, specifically on the A289 routes. Therefore, 2031 Local Plan results show improved junction performance due to the re-routing of traffic from the junction.

A VISUM sensitivity test assessment was carried out, which incorporates manual adjustment to capacity constraints at the junction. The changes reduced reassignment of traffic from the junction. The VISUM 2031 Local Plan Sensitivity Test traffic flows have been tested on the existing junction. The results show increased queue length and delays on the A289 Hasted Road and Wulfere Way routes.

## 2.2 Proposed Stantec Junction Layout

The proposed design introduces modifications to the existing roundabout, aiming to improve traffic flow and safety. Key features of the proposed layout include:

1. Additional lane on Wulfere Way:

2. Dedicated left turn filter lane from A289 Hasted Road to Four Elms Hills to improve capacity on the approach.

Figure 2-2 provides a visual representation of this redesigned layout.



Figure 2-2: Proposed Stantec Junction Layout – Four Elms Roundabout

## 2.2.1 Results Summary – Proposed Stantec Junction Layout

The results in Table 2-2 below include testing of the 2031 and 2032 Local Plan Scenario traffic flows with the Stantec interim layout. Full results are included in Appendix A.

Table 2-2: Four Elms Results Summary – Proposed Junction Layout

| Stantec Interim Layout                  | AM           |           |      | PM           |           |      |
|-----------------------------------------|--------------|-----------|------|--------------|-----------|------|
|                                         | Queue (PCUs) | Delay (s) | RFC  | Queue (PCUs) | Delay (s) | RFC  |
| <b>2031 Local Plan Sensitivity Test</b> |              |           |      |              |           |      |
| Four Elms Hill                          | 215          | >300      | >1.0 | 425          | >300      | >1.0 |
| Wulfere Way                             | 338          | >300      | >1.0 | 273          | >300      | >1.0 |
| Hoo Road                                | 60           | >300      | >1.0 | 2            | 15        | 0.6  |

|                          |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| A289 Hasted Road         | 179  | >300 | >1.0 | 26   | 50   | 1.0  |
| Network Reserve Capacity | -25% |      |      | -28% |      |      |
| 2032 Local Plan          |      |      |      |      |      |      |
| Four Elms Hill           | 145  | >300 | >1.0 | 651  | >300 | >1.0 |
| Wulfere Way              | 178  | >300 | >1.0 | 80   | 166  | >1.0 |
| Hoo Road                 | 8    | 55   | 0.9  | 1    | 12   | 0.6  |
| A289 Hasted Road         | 78   | 139  | >1.0 | 24   | 49   | 1.0  |
| Network Reserve Capacity | -19% |      |      | -34% |      |      |
| 2036 Local Plan          |      |      |      |      |      |      |
| Four Elms Hill           | 1326 | >300 | >1.0 | 1427 | >300 | >1.0 |
| Wulfere Way              | 1102 | >300 | >1.0 | 642  | >300 | >1.0 |
| Hoo Road                 | 130  | >300 | >1.0 | 138  | >300 | >1.0 |
| A289 Hasted Road         | 186  | >300 | >1.0 | 119  | 212  | >1.0 |
| Network Reserve Capacity | -47% |      |      | -46% |      |      |

The results show the proposed layout provides sufficient capacity to achieve nil detriment for Local Plan trips at 2031 (Year 5) and 2032 (Year 6).

However, it should be noted that improved link capacity on A289 Hasted Road reduces gap acceptance on Four Elms Hill, which leads to increased queue length and delay on that approach in comparison to the 2031 Reference Case outputs.

Table 2-3 provide summaries of the link counts on the four approach arms of Four Elms Roundabout for Local Plan scenarios 2031 (Year 5), 2032 (Year 6) and 2036 (Year 10).

**Table 2-3: Four Elms Roundabout Local Plan Traffic Flows (Vehicles)**

| Link Counts      | AM      |                |         |         | PM      |                |         |         |
|------------------|---------|----------------|---------|---------|---------|----------------|---------|---------|
|                  | 2031 LP | 2031 LP – Sens | 2032 LP | 2036 LP | 2031 LP | 2031 LP – Sens | 2032 LP | 2036 LP |
| Four Elms Hill   | 2425    | 2714           | 2414    | 4049    | 2551    | 2795           | 3021    | 3539    |
| Wulfere Way      | 1324    | 2469           | 1559    | 2239    | 1146    | 2595           | 1310    | 2086    |
| Hoo Road         | 388     | 1957           | 452     | 631     | 347     | 1759           | 365     | 619     |
| A289 Hasted Road | 2479    | 527            | 2765    | 3350    | 2547    | 330            | 2653    | 3662    |
| Total Flows      | 6615    | 7668           | 7190    | 10269   | 6591    | 7478           | 7349    | 9905    |

The summary shows significant increase local plan trips through the junction between Year 6 and Year 10. Operational performance of the Stantec interim junction at Year 6, suggests scheme just sufficient for 2032 and a significantly improved scheme would be required to mitigate local plan impacts between Year 6 and Year 10.

### 3. A228 Peninsula Way / Main Road Hoo Roundabout (J2)

#### 3.1 Existing Layout

The A228 Peninsula Way / Main Road Hoo is located to the north of Chatham. The A228 is the main access route to the Hoo peninsula, while Main Road Hoo connects the A228 with the village of Hoo. Dunnock Drive provides access to a residential neighbourhood. The existing roundabout configuration was modelled using Junctions 11 software. Figure 3-1 illustrates the current layout, which comprises:

- Peninsula Way: This road is designed as a dual carriageway, providing multiple lanes in each direction. This type of road design typically allows for higher traffic capacity and smoother flow of vehicles entering and exiting the roundabout.
- Main Road Hoo: This approach is primarily a single lane road. However, it features a flare on the approach to the roundabout. A flare is a widening of the road near the roundabout entry, allowing more vehicles to queue side-by-side. This design can increase the capacity of the approach, reducing congestion during peak hours.
- Dunnock Drive: Dunnock Drive is a single carriageway with one lane approach to the roundabout.

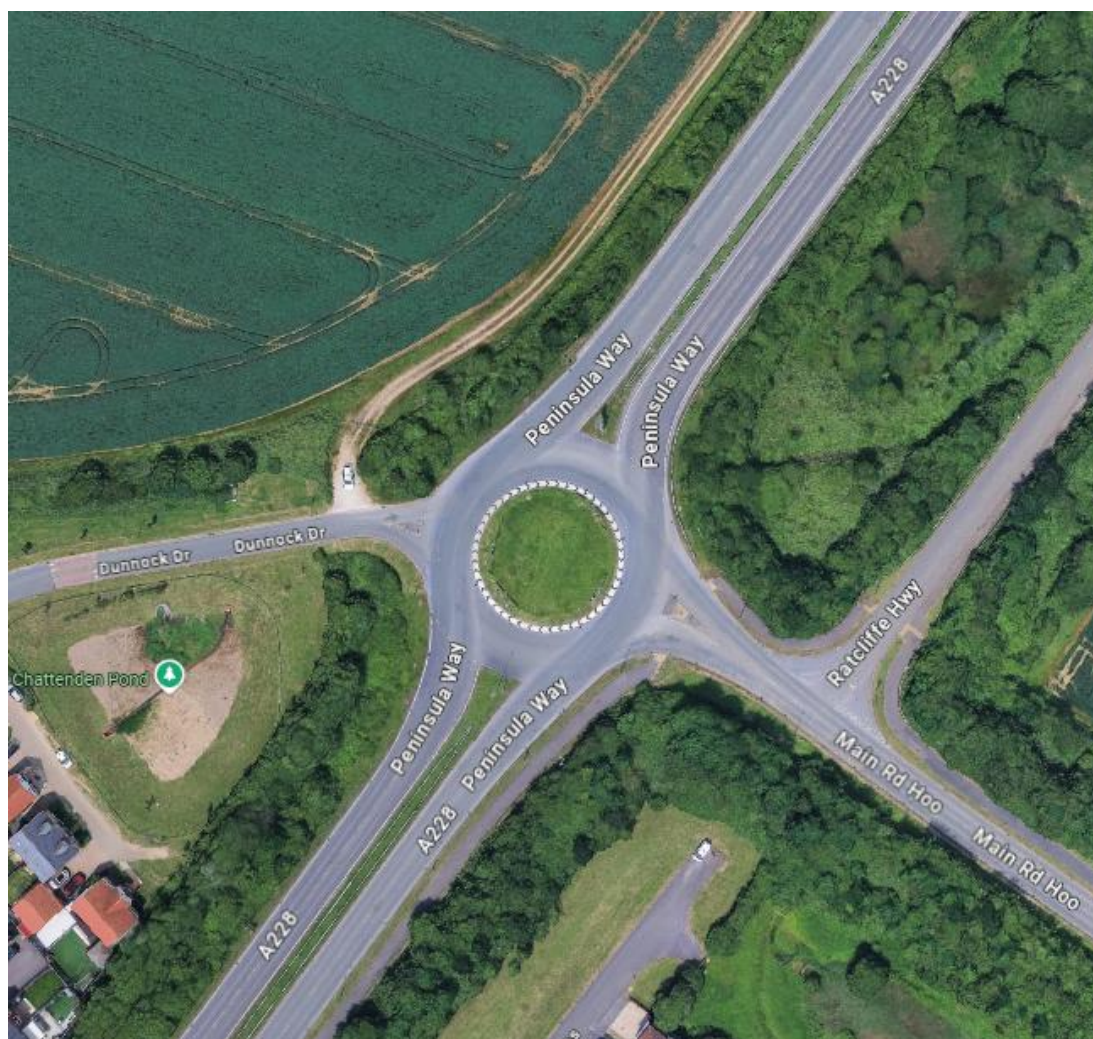


Figure 3-1: Existing Roundabout Layout – A228 Peninsula Way / Main Road Hoo

### 3.1.1 Results Summary – Existing Junction Layout

The results in Table 3-1 below include testing of the 2031 Reference Case and 2031 Local Plan scenario flows. Full results are located in Appendix A.

**Table 3-1: A228 Peninsula Way / Main Road Hoo Results Summary – Existing**

| Existing Layout            | AM           |           |      | PM           |           |      |
|----------------------------|--------------|-----------|------|--------------|-----------|------|
|                            | Queue (PCUs) | Delay (s) | RFC  | Queue (PCUs) | Delay (s) | RFC  |
| <b>2031 Reference Case</b> |              |           |      |              |           |      |
| A228 Peninsula Way (n)     | 2            | 4         | 0.6  | 1            | 4         | 0.6  |
| Main Road Hoo              | 11           | 106       | 0.9  | 9            | 86        | 0.9  |
| A228 Peninsula Way (s)     | 6            | 13        | 0.9  | 14           | 26        | 0.9  |
| Dunnock Drive              | 0            | 0         | 0    | 0            | 0         | 0    |
| Network Reserve Capacity   |              | -4%       |      |              | -10%      |      |
| <b>2031 Local Plan</b>     |              |           |      |              |           |      |
| A228 Peninsula Way (n)     | 2            | 4         | 0.6  | 2            | 5         | 0.7  |
| Main Road Hoo              | 32           | >300      | >1.0 | 55           | >300      | >1.0 |
| A228 Peninsula Way (s)     | 426          | >300      | >1.0 | 87           | 143       | >1.0 |
| Dunnock Drive              | 0            | 38        | 0.1  | 0            | 53        | 0.2  |
| Network Reserve Capacity   |              | -30%      |      |              | -18%      |      |

Table 3-1 provides comparison between the 2031 Reference Case and 2031 Local Plan scenarios and shows increases in queue length and delays on Main Road Hoo and A228 Peninsula Way south arms. The 2031 Reference Case shows moderate queue on A228 Peninsula Way (south) with a maximum queue of 14 PCUs and a 26 second delay. Main Road Hoo experiences similar levels of queue in the AM and PM, with delay of less than 2 minutes.

Whilst the 2031 Local Plan scenario presents a considerably worsened predicted result, both AM and PM peaks exhibit increased queue length and delays on Main Road Hoo and Peninsula Way south arms. Vehicle delay exceeds 300 seconds on Main Road Hoo in AM and PM peaks.

RFC values at or above capacity (>1.0) are observed for Main Road Hoo and Peninsula Way south, indicating both approaches operate over maximum practical capacity. For links operating with RFC greater than 0.85, small increases in flows lead to exponential increase in queue and delays.

### 3.2 Proposed Stantec Junction Layout

The Stantec junction layout in this location comprises:

1. Increased flare length on Main Road Hoo
2. Additional lane on Peninsula Way south arm.

Figure 3-2 provides a visual representation of this updated layout.



Figure 3-2: Proposed Stantec Layout – A228 Peninsula Way / Main Road Hoo

### 3.2.1 Results Summary – Proposed Stantec Layout

The results in Table 3-2 below include testing of the 2031 Local Plan scenario. Full results are located in Appendix A.

Table 3-2: A228 Peninsula Way / Main Road Hoo Results Summary – Proposed Stantec Layout

| Proposed Stantec Layout  | AM           |           |      | PM           |           |      |
|--------------------------|--------------|-----------|------|--------------|-----------|------|
|                          | Queue (PCUs) | Delay (s) | RFC  | Queue (PCUs) | Delay (s) | RFC  |
| <b>2031 Local Plan</b>   |              |           |      |              |           |      |
| A228 Peninsula Way (n)   | 2            | 4         | 0.6  | 2            | 5         | 0.7  |
| Main Road Hoo            | 4            | 34        | 0.8  | 5            | 48        | 0.8  |
| A228 Peninsula Way (s)   | 425          | >300      | >1.0 | 87           | 143       | >1.0 |
| Dunnock Drive            | 0            | 38        | 0.1  | 0            | 53        | 0.2  |
| Network Reserve Capacity |              | -30%      |      |              | -18%      |      |

The comparison between the 2031 Local Plan with the existing layout and the proposed layout shows improved queue length and delays on Main Road Hoo. The proposed capacity improvements on the Peninsula Way south arm were not included in the junction model, due to space constraints on the roundabout circulatory, which limits full use of the three lanes on Peninsula Way south arm. As a result, existing and proposed junction layouts showed similar operational performance for Peninsula Way south arm.

Jacobs have identified additional interim highway measures to improve junction operational performance for 2031 Local Plan scenario. Figure 3-3 provides a visual representation of this proposed Jacobs junction layout, which comprises increasing flare lengths on Peninsula Way south and Main Road Hoo approach arms, as well as increasing the northbound circulatory lanes to accommodate the three lanes entry on Peninsula Way south arm. The detailed drawing of this proposed mitigation can be found in Appendix B.

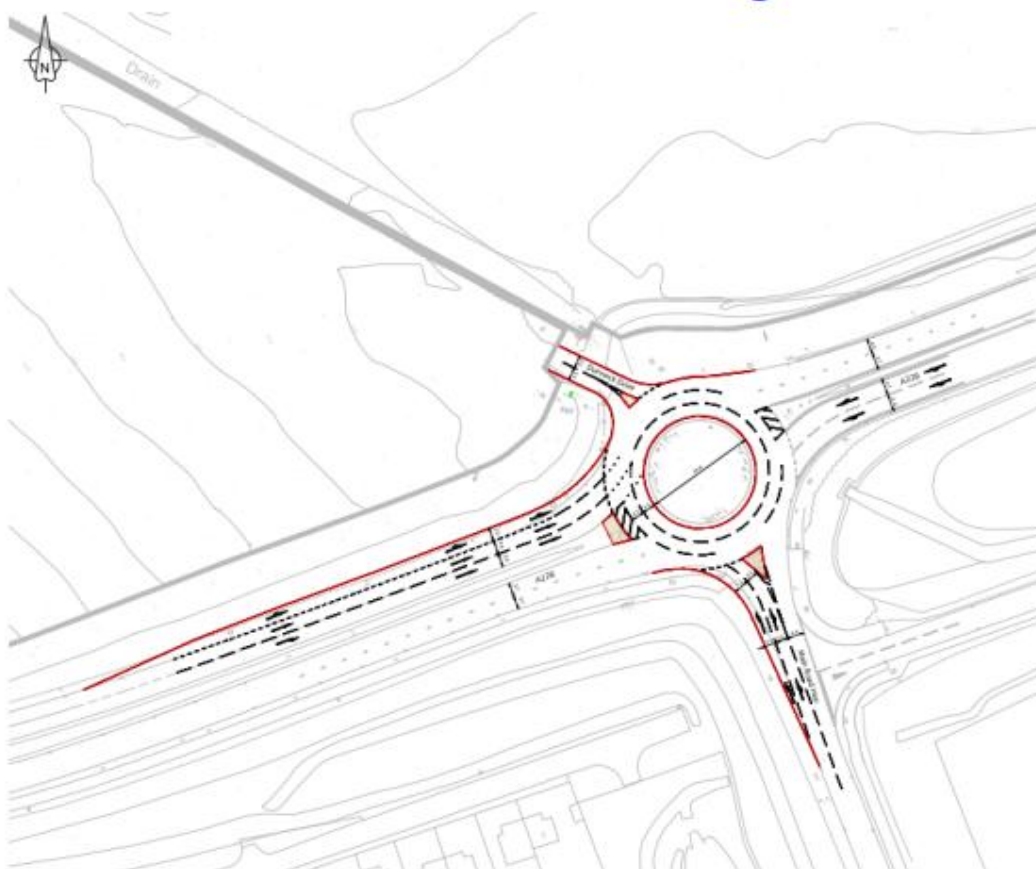


Figure 3-3: Proposed Jacobs Interim Layout – A228 Peninsula Way / Main Road Hoo

### 3.2.2 Results Summary – Proposed Jacobs Junction Layout

The results in Table 3-3 below include testing of the 2031 and 2032 Local Plan Scenario traffic flows with the proposed Jacobs interim junction layout. Full results are located in Appendix A.

Table 3-3: A228 Peninsula Way / Main Road Hoo Results Summary – Proposed Jacobs Junction Layout

| Jacobs Interim Junction Layout | AM           |           |     | PM           |           |     |
|--------------------------------|--------------|-----------|-----|--------------|-----------|-----|
|                                | Queue (PCUs) | Delay (s) | RFC | Queue (PCUs) | Delay (s) | RFC |
| <b>2031 Local Plan</b>         |              |           |     |              |           |     |
| A228 Peninsula Way (n)         | 2            | 4         | 0.7 | 2            | 5         | 0.7 |
| Main Road Hoo                  | 4            | 40        | 0.8 | 5            | 53        | 0.8 |

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|                          |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| A228 Peninsula Way (s)   | 9    | 14   | 0.9  | 4    | 7    | 0.8  |
| Dunnock Drive            | 11   | >300 | >1.0 | 0    | 102  | 0.3  |
| Network Reserve Capacity | -10% |      |      | 0%   |      |      |
| 2032 Local Plan          |      |      |      |      |      |      |
| A228 Peninsula Way (n)   | 2    | 4    | 0.7  | 4    | 8    | 0.8  |
| Main Road Hoo            | 44   | >300 | >1.0 | 41   | >300 | >1.0 |
| A228 Peninsula Way (s)   | 7    | 11   | 0.9  | 8    | 11   | 0.9  |
| Dunnock Drive            | 30   | >300 | >1.0 | 14   | >300 | >1.0 |
| Network Reserve Capacity | -14% |      |      | -16% |      |      |
| 2036 Local Plan          |      |      |      |      |      |      |
| A228 Peninsula Way (n)   | 90   | 139  | 1.0  | 453  | 139  | >1.0 |
| Main Road Hoo            | 667  | >300 | >1.0 | 464  | >300 | >1.0 |
| A228 Peninsula Way (s)   | 917  | >300 | >1.0 | 794  | >300 | >1.0 |
| Dunnock Drive            | 132  | >300 | >1.0 | 70   | >300 | >1.0 |
| Network Reserve Capacity | -45% |      |      | -40% |      |      |

This summary shows the junction performance for the Local Plan scenarios with Jacobs interim layout. At 2031 (Year 5) proposed interim layout improves overall junction performance. The capacity improvements on Peninsula Way south approach leads to significant delays on Dunnock Drive in the AM and PM Peaks.

The results also show Jacobs interim layout would no longer provide sufficient capacity to achieve nil detriment for Local Plan trips at 2032 (Year 6). Therefore, the full mitigation scheme would be required by 2032 (Year 6). Additionally, the 2036 (Year 10) results show significant queue lengths and delays on all arms of the junction, supporting the need for the full scheme.

## 4. Sans Pareil Roundabout (J3)

### 4.1 Existing Layout

The Sans Pareil Roundabout forms the junction of the A289, A228 Berwick Way and Wainscott Road. The A289 links the M2 with Chatham. The A228 Berwick Way provides access to Strood and Wainscott Road provides access to the village of Wainscott. The existing roundabout configuration was modelled using Junctions 11 software. Figure 4-1 illustrates the current layout, which comprises:

- Four-arm, non-signalised roundabout: This configuration indicates that the roundabout has four entry and exit points.
- Berwick Way and Wulfere Way are dual carriageways, which forms the major routes carrying significant traffic volumes through the roundabout.
- Dedicated left turn filter lane is provided to allow direct movement from Wulfere Way to Berwick Way, bypassing the main roundabout. This filter lane is an important feature for traffic management, as it reduces the volume of vehicles entering the roundabout, potentially easing congestion for other movements



Figure 4-1: Existing Roundabout Layout – A289 Wulfere Way / Berwick Way / A228 Frindsbury Hill

### 4.1.1 Results Summary – Existing Junction Layout

The results in Table 4-1 below include testing the 2031 Reference Case and 2031 Local Plan scenario flows. Full results are located in Appendix A.

**Table 4-1: Sans Pareil Roundabout- Existing Junction Layout**

| Existing Layout            | AM           |           |      | PM           |           |      |
|----------------------------|--------------|-----------|------|--------------|-----------|------|
|                            | Queue (PCUs) | Delay (s) | RFC  | Queue (PCUs) | Delay (s) | RFC  |
| <b>2031 Reference Case</b> |              |           |      |              |           |      |
| Wainscott Road             | 138          | >300      | >1.0 | 54           | >300      | >1.0 |
| Wulfere Way                | 0            | 2         | 0.2  | 0            | 2         | 0.2  |
| Berwick Way                | 940          | >300      | >1.0 | 875          | >300      | >1.0 |
| Frindsbury Hill            | 2            | 9         | 0.7  | 2            | 9         | 0.7  |
| Network Reserve Capacity   |              | -48%      |      |              | -47%      |      |
| <b>2031 Local Plan</b>     |              |           |      |              |           |      |
| Wainscott Road             | 116          | >300      | >1.0 | 15           | 94        | 1.0  |
| Wulfere Way                | 0            | 2         | 0.2  | 0            | 3         | 0.2  |
| Berwick Way                | 1244         | >300      | >1.0 | 1091         | >300      | >1.0 |
| Frindsbury Hill            | 2            | 8         | 0.6  | 2            | 8         | 0.6  |
| Network Reserve Capacity   |              | -52%      |      |              | -51%      |      |

The 2031 Reference Case results show capacity issues are evident at two locations; Wainscott Road and Berwick Way. Wainscott Road experiences issues in the AM peak with a queue length of 138 PCUs, delay exceeding 300 seconds, and an RFC of over 1.0, indicating severe capacity constraints. The PM peak shows slightly better results, but still at or exceeding capacity. Berwick Way experiences severe capacity issues in both peaks, with queue lengths of 940 in the AM peak and 875 PCUs in the PM peak, delays exceeding 300 seconds, and RFC values of over 1.0 in both peaks. The Frindsbury Hill and Wulfere Way approaches operate within capacity with minimal delays and queue lengths.

2031 Local Plan scenario results show Wainscott Road experiences some improvement in the AM peak with reduced queue length (116 PCUs), however the RFC is still above 1.0 but delays exceeding 300 seconds. Improved performance of Wainscott Road is due to increase delay on Berwick Way, which leads to improved gap acceptance for vehicles exiting Wainscott Road. The PM peak also shows better results compared to 2031 Reference Case, this is due to combination of lower traffic volumes on Wainscott Road in the 2031 Local Plan scenario and the additional delays on Berwick Way.

Berwick Way experiences worsening of the capacity issues with queue lengths and delay increase in both AM and PM peaks. Whereas the Wulfere Way and Frindsbury Hill operates at similar levels, with minimal queue length and delays.

## 4.2 Proposed Jacobs Interim Layout

The proposed modifications to the existing roundabout incorporate partial signalisation to balance delays and improve overall junction operational performance. The proposed Jacobs interim layout shown in Figure 4-2, comprises signalisation of the Berwick Way and Frindsbury Hill approaches of the roundabout. It also incorporates additional lane markings to improve lane utilisation on the roundabout. The detailed drawing of this proposed mitigation can be found in Appendix B.

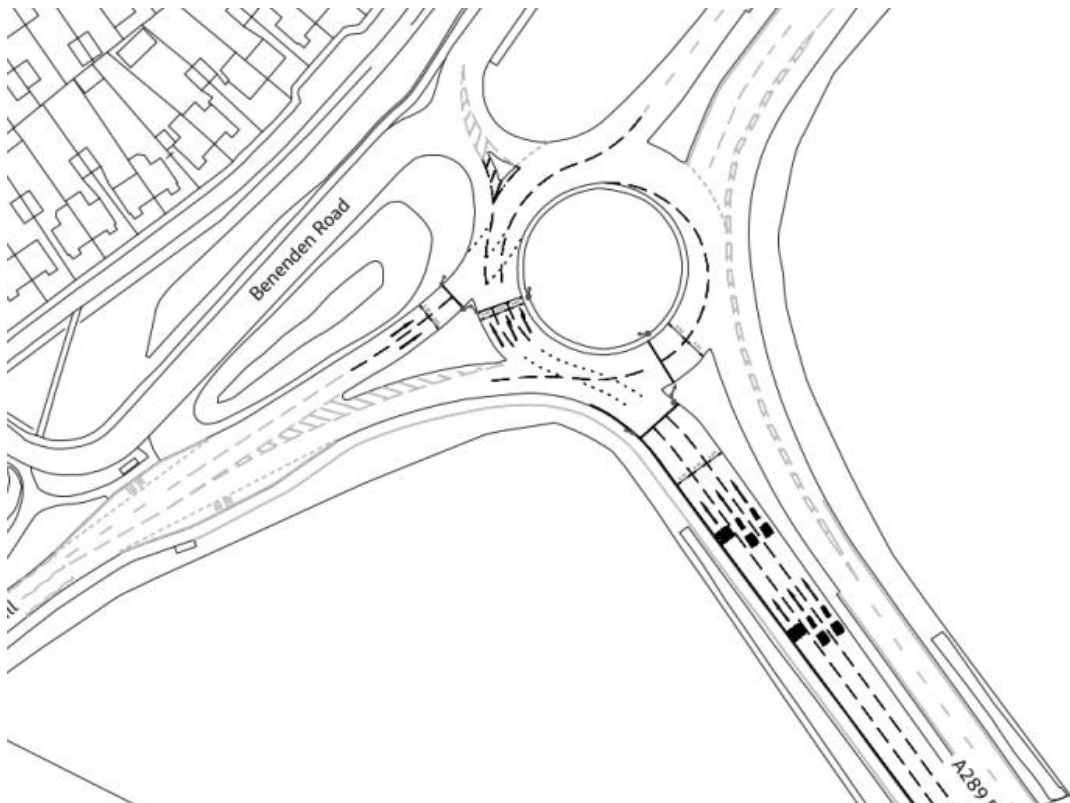


Figure 4-2: Proposed Jacobs Interim Layout – Sans Pareil Roundabout

#### 4.2.1 Interim layout Signal Staging Plan

Figure 4-3 illustrates the proposed signal configuration, which comprises of the following two streams:

- Stream 1 – Berwick Way Junction
- Stream 2 – Frindsbury Hill Junction, which provides increased stage intergreen for increased gap acceptance for vehicles exiting Wainscott Road, the busiest priority-controlled node on the junction.

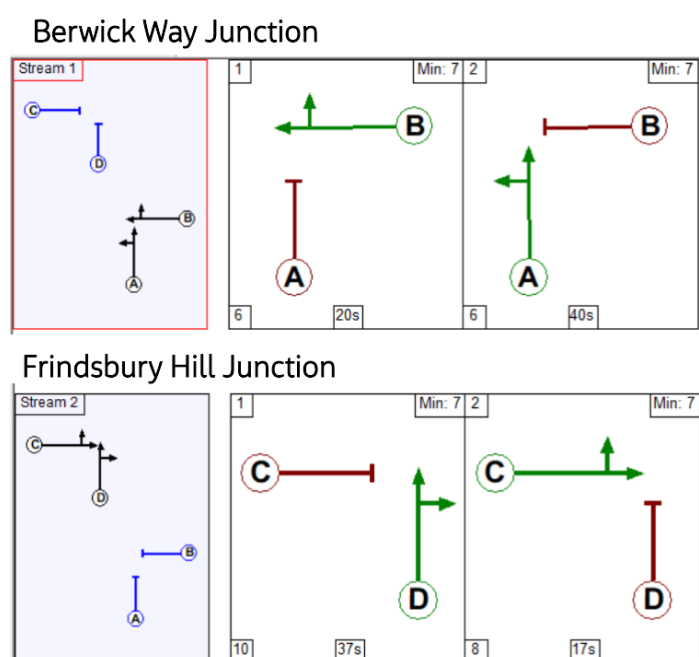


Figure 4-3: Proposed Jacobs Interim Layout – Signal Staging Plan

## 4.2.2 Results Summary – Proposed Jacobs Interim Layout

The results in Table 4-2 below include testing of 2031 and 2032 Local Plan Scenario traffic flows. Full results are located in Appendix A.

**Table 4-2: Sans Pareil Roundabout Results Summary – Proposed Jacobs Interim Layout**

| Jacobs Interim Junction Layout | AM           |           |      | PM           |           |      |
|--------------------------------|--------------|-----------|------|--------------|-----------|------|
|                                | Queue (PCUs) | Delay (s) | DoS  | Queue (PCUs) | Delay (s) | DoS  |
| <b>2031 Local Plan</b>         |              |           |      |              |           |      |
| Wainscott Road                 | 138          | >300      | >1.0 | 43           | 115       | >1.0 |
| Wulfere Way                    | 22           | 39        | 1.0  | 6            | 11        | 0.9  |
| Berwick Way                    | 104          | 262       | >1.0 | 116          | 282       | >1.0 |
| Frindsbury Hill                | 11           | 41        | 0.9  | 11           | 43        | 0.9  |
| <b>2032 Local Plan</b>         |              |           |      |              |           |      |
| Wainscott Road                 | 150          | >300      | >1.0 | 67           | 275       | >1.0 |
| Wulfere Way                    | 22           | 40        | 1.0  | 6            | 11        | 0.9  |
| Berwick Way                    | 180          | >300      | >1.0 | 108          | 244       | >1.0 |
| Frindsbury Hill                | 52           | 223       | >1.0 | 55           | 221       | >1.0 |
| <b>2036 Local Plan</b>         |              |           |      |              |           |      |
| Wainscott Road                 | 12           | 64        | 0.9  | 12           | 63        | 0.9  |
| Wulfere Way                    | 79           | 117       | >1.0 | 60           | 87        | >1.0 |
| Berwick Way                    | 116          | >300      | >1.0 | 107          | 278       | >1.0 |
| Frindsbury Hill                | 30           | 167       | >1.0 | 28           | 250       | >1.0 |

The proposed partial signal reduces queues and delays on Berwick Way. In the AM peak, vehicle delay is significantly reduced from around 30 minutes to 5 minutes.

Frindsbury Hill which operates within capacity with the existing layout, is predicted to experience increase in queue length and delays in both peaks, due to the signal control of the interim design.

In 2032 (Year 6) the interim Jacobs layout would still perform reasonably with delays and queues remaining similar on most arms to the 2031 performance; with the exception of Frindsbury Hill where delays and queues would increase. While these queues and delays are significant, they are unlikely to impact the wider network.

## 5. Conclusion

This report provides a detailed analysis of traffic conditions and proposed interim improvements for Four Elms, Main Road Hoo and San Pareil roundabouts in the Medway area, comparing 2031 Reference Case and 2031 and 2032 Local Plan Scenarios.

The 2031 Local Plan scenario with the existing junction layouts at the three roundabouts (Four Elms, Main Road Hoo and Sans Pareil), illustrate increased congestion when compared to the 2031 Reference Case, indicating potential capacity challenges with future traffic growth.

The proposed Stantec interim layout for Four Elms generally provides sufficient capacity to achieve nil detriment for Local Plan trips at 2031 (Year 5) and 2032 (Year 6), however further improvements would be required from Year 6.

The proposed Stantec interim layout for Main Road Hoo Roundabout generally provides improved capacity to for Main Road Hoo approach. Further improvements were required to improve capacity on Peninsula Way south arm. Jacobs have identified additional interim highway measures to improve junction operational performance for 2031 Local Plan scenario, which comprises increasing flare lengths on Peninsula Way south and Main Road Hoo approach arms, as well increasing the northbound circulatory lanes to accommodate the three lanes entry on Peninsula Way south arm. By 2032 (Year 6), the Jacobs interim layout for Main Road Hoo roundabout would no longer provide sufficient capacity to achieve nil detriment for Local Plan trips. Therefore, a full scheme would be required by 2032 (Year 6).

The proposed Jacobs interim layout for Sans Pareil generally provides improvements in overall junction performance in 2031 (Year 5) and 2032 (Year 6). The proposed partial signal reduces queues and delays on Berwick Way, during the AM peak, vehicle delay is significantly reduced from around 30 minutes to 5 minutes on Berwick Way. However, in 2032 (Year 6), Frindsbury Hill would experience increase in delays and queues compared to 2031 Reference Case suggest further improvements would be required after 2032(Year 6).

Table 5-1 below shows a summary of the modelling assessment for each of the three junctions and each of the three LP scenarios.

**Table 5-1: Modelling Summary**

|                          | 2031 LP (YR5)<br>No Mitigation          | 2031 LP (YR5)<br>Interim Scheme            | 2032 LP (YR6)<br>Interim Scheme            | 2036 LP (YR10)<br>Interim Scheme        |
|--------------------------|-----------------------------------------|--------------------------------------------|--------------------------------------------|-----------------------------------------|
| Four Elms Roundabout     | Significant impact from reference case. | Nil detriment compared to reference case.  | Nil detriment compared to reference case.  | Significant impact from reference case. |
| Main Road Hoo Roundabout | Significant impact from reference case. | Minor impact compared with reference case. | Significant impact from reference case.    | Significant impact from reference case. |
| Sans Pareil Roundabout   | Significant impact from reference case. | Nil detriment compared to reference case.  | Minor impact compared with reference case. | Significant impact from reference case. |

The magnitude of costs associated with the interim mitigations identified in this report have been detailed in Appendix C.

**Appendix A. Junction Models Output Results**

## J1. Four Elms Roundabout, Existing Junction Performance

| Junctions 11                                                                                                                                                     |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| ARCADY 11 - Roundabout Module                                                                                                                                    |  |  |  |  |  |
| Version: 11.1.1.2424                                                                                                                                             |  |  |  |  |  |
| © Copyright TRL Software Limited, 2026                                                                                                                           |  |  |  |  |  |
| For sales and distribution information, program advice and maintenance, contact TRL Software:                                                                    |  |  |  |  |  |
| +44 (0)1344 379777 software@trl.co.uk trlsoftware.com                                                                                                            |  |  |  |  |  |
| The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution |  |  |  |  |  |

Filename: J1\_Four Elms Rbt\_v2.j11

Path: Z:\KCC Model Custodian Framework\Call-off Tasks\Medway Local Plan\Technical\06 Local Jct Modelling\May 2026 Local Junction Modelling\Base Models\1 Four Elms RBT

Report generation date: 17/07/2026 12:12:54

- »Base AM - D1 - 2024 | Base | AM
- »Base PM - D2 - 2024 | Base | PM
- »RC AM - D3 - 2031 | RC Demand | AM
- »RC PM - D4 - 2031 | RC Demand | PM
- »DS LP AM - D5 - 2031 | DS LP Demand | AM
- »DS LP PM - D6 - 2031 | DS LP Demand | PM

#### Summary of junction performance

| AM                    |          |         |           |      |                           |
|-----------------------|----------|---------|-----------|------|---------------------------|
|                       | Set ID   | Q (PCU) | Delay (s) | RFC  | Res Cap                   |
| Base AM - 2024 - Base |          |         |           |      |                           |
| 1 - Four Elms Hill    | A1<br>D1 | 11.8    | 34.65     | 0.94 | -10 %<br>[2 - Wulfere Wy] |
| 2 - Wulfere Wy        |          | 81.5    | 150.09    | 1.09 |                           |
| 3 - Hoo Rd            |          | 7.3     | 66.06     | 0.91 |                           |
| 4 - A289              |          | 16.0    | 34.72     | 0.95 |                           |

| PM                    |          |         |           |      |                       |
|-----------------------|----------|---------|-----------|------|-----------------------|
|                       | Set ID   | Q (PCU) | Delay (s) | RFC  | Res Cap               |
| Base PM - 2024 - Base |          |         |           |      |                       |
| 1 - Four Elms Hill    | A2<br>D2 | 2.0     | 6.93      | 0.66 | -11 %<br>[3 - Hoo Rd] |
| 2 - Wulfere Wy        |          | 22.9    | 46.48     | 0.98 |                       |
| 3 - Hoo Rd            |          | 17.6    | 148.04    | 1.04 |                       |
| 4 - A289              |          | 3.5     | 7.90      | 0.77 |                       |

| AM                       |          |         |           |      |                     |
|--------------------------|----------|---------|-----------|------|---------------------|
|                          | Set ID   | Q (PCU) | Delay (s) | RFC  | Res Cap             |
| RC AM - 2031 - RC Demand |          |         |           |      |                     |
| 1 - Four Elms Hill       | A3<br>D3 | 30.0    | 76.22     | 1.01 | -32 %<br>[4 - A289] |
| 2 - Wulfere Wy           |          | 369.1   | 821.82    | 1.41 |                     |
| 3 - Hoo Rd               |          | 3.3     | 28.33     | 0.76 |                     |
| 4 - A289                 |          | 644.4   | 1110.00   | 1.44 |                     |

| PM |        |         |           |     |         |
|----|--------|---------|-----------|-----|---------|
|    | Set ID | Q (PCU) | Delay (s) | RFC | Res Cap |

## J1. Four Elms Roundabout, Stantec Design

| Junctions 11                                                                                                                                                     |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| ARCADY 11 - Roundabout Module                                                                                                                                    |  |  |
| Version: 11.1.1.2424                                                                                                                                             |  |  |
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| +44 (0)1344 379777    software@trl.co.uk    trlsoftware.com                                                                                                      |  |  |
| The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution |  |  |

**Filename:** J1\_Four Elms Rbt\_Stantec\_v2.j11

**Path:** Z:\KCC Model Custodian Framework\Call-off Tasks\Medway Local Plan\Technical\06 Local Jct Modelling\May 2026 Local Junction Modelling\Proposed Models\10 Year Models

**Report generation date:** 22/07/2026 08:56:36

---

»2032 DS LP AM - D7 - 2032 | DS LP Demand | AM  
 »2032 DS LP PM - D8 - 2032 | DS LP Demand | PM  
 »2036 DS LP AM - D9 - 2036 | DS LP Demand | AM  
 »2036 DS LP PM - D10 - 2036 | DS LP Demand | PM

## Summary of junction performance

| AM                                  |          |         |           |      |                           |
|-------------------------------------|----------|---------|-----------|------|---------------------------|
|                                     | Set ID   | Q (PCU) | Delay (s) | RFC  | Res Cap                   |
| 2032 DS LP AM - 2032 - DS LP Demand |          |         |           |      |                           |
| 1 - Four Elms Hill                  | A7<br>D7 | 145.5   | 400.79    | 1.22 | -19 %<br>[2 - Wulfere Wy] |
| 2 - Wulfere Wy                      |          | 177.8   | 370.64    | 1.19 |                           |
| 3 - Hoo Rd                          |          | 8.2     | 54.80     | 0.91 |                           |
| 4 - A289                            |          | 77.7    | 139.25    | 1.08 |                           |

| PM                                  |          |         |           |      |                               |
|-------------------------------------|----------|---------|-----------|------|-------------------------------|
|                                     | Set ID   | Q (PCU) | Delay (s) | RFC  | Res Cap                       |
| 2032 DS LP PM - 2032 - DS LP Demand |          |         |           |      |                               |
| 1 - Four Elms Hill                  | A8<br>D8 | 651.1   | 1579.14   | 1.73 | -34 %<br>[1 - Four Elms Hill] |
| 2 - Wulfere Wy                      |          | 80.4    | 165.95    | 1.09 |                               |
| 3 - Hoo Rd                          |          | 1.3     | 11.59     | 0.57 |                               |
| 4 - A289                            |          | 24.3    | 48.88     | 0.98 |                               |

| AM                                  |          |         |           |      |                           |
|-------------------------------------|----------|---------|-----------|------|---------------------------|
|                                     | Set ID   | Q (PCU) | Delay (s) | RFC  | Res Cap                   |
| 2036 DS LP AM - 2036 - DS LP Demand |          |         |           |      |                           |
| 1 - Four Elms Hill                  | A9<br>D9 | 1326.2  | 3730.50   | 2.11 | -47 %<br>[2 - Wulfere Wy] |
| 2 - Wulfere Wy                      |          | 1102.2  | 2245.78   | 1.70 |                           |
| 3 - Hoo Rd                          |          | 130.3   | 825.11    | 1.34 |                           |
| 4 - A289                            |          | 185.9   | 389.43    | 1.20 |                           |

| PM                                  |            |         |           |      |                               |
|-------------------------------------|------------|---------|-----------|------|-------------------------------|
|                                     | Set ID     | Q (PCU) | Delay (s) | RFC  | Res Cap                       |
| 2036 DS LP PM - 2036 - DS LP Demand |            |         |           |      |                               |
| 1 - Four Elms Hill                  | A10<br>D10 | 1427.0  | 3867.81   | 2.18 | -46 %<br>[1 - Four Elms Hill] |
| 2 - Wulfere Wy                      |            | 641.8   | 1375.27   | 1.49 |                               |
| 3 - Hoo Rd                          |            | 138.0   | 965.29    | 1.37 |                               |
| 4 - A289                            |            | 118.9   | 211.83    | 1.12 |                               |

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Res Cap indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

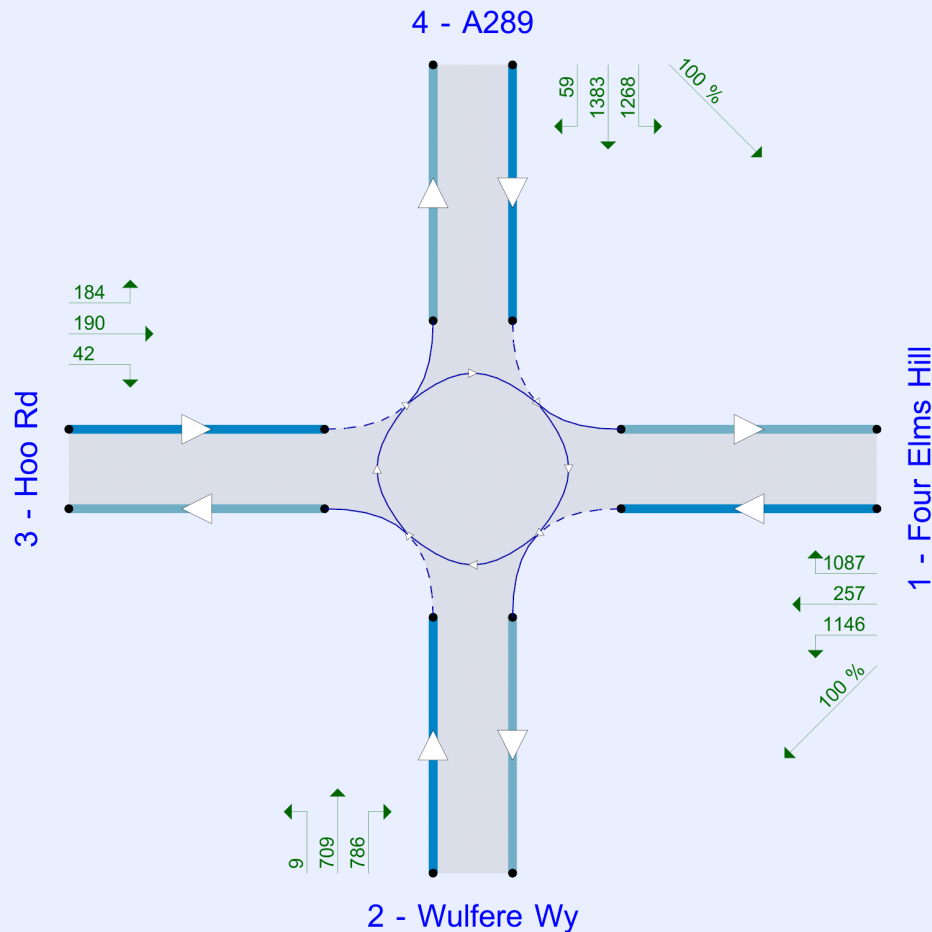
## File summary

### File Description

|             |                 |
|-------------|-----------------|
| Title       |                 |
| Location    |                 |
| Site number |                 |
| Date        | 12/09/2024      |
| Version     |                 |
| Status      | (new file)      |
| Identifier  |                 |
| Client      |                 |
| Jobnumber   |                 |
| Enumerator  | JEGINTL\siudzis |
| Description |                 |

## Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units | Av. delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|------------|-----------------|-------------------|---------------------|
| m              | kph         | Veh                 | PCU                   | perHour    | s               | -Min              | perMin              |



Flows show original traffic demand (Veh/hr)

*The junction diagram reflects the last run of Junctions.*

## Analysis Options

| Vehicle length (m) | Calculate Q Percentiles | Calculate detailed queueing delay | Show lane queues in feet / metres | Show all PICADY stream intercepts | Calculate residual capacity | Residual capacity criteria type | RFC Threshold | Av. Delay threshold (s) | Q threshold (PCU) | Use simulation for HCM roundabouts | Use iterations for HCM roundabouts |
|--------------------|-------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------|---------------------------------|---------------|-------------------------|-------------------|------------------------------------|------------------------------------|
| 5.75               |                         |                                   |                                   |                                   | ✓                           | Delay                           | 0.85          | 36.00                   | 20.00             |                                    |                                    |

## Demand Set Summary

| ID  | Year | Scenario     | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|-----|------|--------------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D3  | 2031 | RC Demand    | AM          | ONE HOUR             | 07:15              | 08:45               | 15                        | ✓                 |
| D4  | 2031 | RC Demand    | PM          | ONE HOUR             | 16:45              | 18:15               | 15                        | ✓                 |
| D5  | 2031 | DS LP Demand | AM          | ONE HOUR             | 07:15              | 08:45               | 15                        | ✓                 |
| D6  | 2031 | DS LP Demand | PM          | ONE HOUR             | 16:45              | 18:15               | 15                        | ✓                 |
| D7  | 2032 | DS LP Demand | AM          | ONE HOUR             | 07:15              | 08:45               | 15                        | ✓                 |
| D8  | 2032 | DS LP Demand | PM          | ONE HOUR             | 16:45              | 18:15               | 15                        | ✓                 |
| D9  | 2036 | DS LP Demand | AM          | ONE HOUR             | 07:15              | 08:45               | 15                        | ✓                 |
| D10 | 2036 | DS LP Demand | PM          | ONE HOUR             | 16:45              | 18:15               | 15                        | ✓                 |



# 2032 DS LP AM - D7 - 2032 | DS LP Demand | AM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A7 | 2032 DS LP AM | ✓                 | ✓                           | D7                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name      | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|-----------|---------------------|------------|--------------------|--------------|
| 1        | Four Elms | Standard Roundabout | 1, 2, 3, 4 | 270.50             | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -19         | 2 - Wulfere Wy               | 270.50            | F           |

## Arms

### Arms

| Arm | Name           | Description | No give-way line |
|-----|----------------|-------------|------------------|
| 1   | Four Elms Hill |             |                  |
| 2   | Wulfere Wy     |             |                  |
| 3   | Hoo Rd         |             |                  |
| 4   | A289           |             |                  |

### Roundabout Geometry

| Arm                | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|--------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - Four Elms Hill | 7.28  | 9.64  | 18.0   | 22.2  | 86.0  | 48.0      |            |           |
| 2 - Wulfere Wy     | 9.50  | 9.50  | 0.0    | 30.7  | 86.0  | 49.0      |            |           |
| 3 - Hoo Rd         | 3.10  | 10.80 | 26.0   | 27.0  | 86.0  | 18.1      |            |           |
| 4 - A289           | 9.56  | 10.33 | 16.8   | 19.1  | 86.0  | 44.0      |            |           |

### Bypass

| Arm                | Arm has bypass | Bypass Util (%) |
|--------------------|----------------|-----------------|
| 1 - Four Elms Hill | ✓              | 100             |
| 2 - Wulfere Wy     |                |                 |
| 3 - Hoo Rd         |                |                 |
| 4 - A289           | ✓              | 100             |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                | Final slope | Final intercept (PCU/hr) |
|--------------------|-------------|--------------------------|
| 1 - Four Elms Hill | 0.571       | 2553                     |
| 2 - Wulfere Wy     | 0.599       | 2738                     |
| 3 - Hoo Rd         | 0.552       | 2253                     |
| 4 - A289           | 0.628       | 2942                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                | Type       | Reason | Percentage capacity adjustment (%) |
|--------------------|------------|--------|------------------------------------|
| 1 - Four Elms Hill | Percentage |        | 82.00                              |
| 2 - Wulfere Wy     | Percentage |        | 88.00                              |
| 3 - Hoo Rd         | Percentage |        | 85.00                              |
| 4 - A289           | Percentage |        | 77.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario     | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|--------------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D7 | 2032 | DS LP Demand | AM          | ONE HOUR             | 07:15              | 08:45               | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                | Linked arm | Profile type | Use O-D data | Av. Demand (Veh/hr) | Scaling Factor (%) |
|--------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - Four Elms Hill |            | ONE HOUR     | ✓            | 2516                | 100.000            |
| 2 - Wulfere Wy     |            | ONE HOUR     | ✓            | 1740                | 100.000            |
| 3 - Hoo Rd         |            | ONE HOUR     | ✓            | 479                 | 100.000            |
| 4 - A289           |            | ONE HOUR     | ✓            | 2997                | 100.000            |

## Origin-Destination Data

### Demand (Veh/hr)

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 38                 | 1141           | 255        | 1082     |
|      | 2 - Wulfere Wy     | 932                | 0              | 9          | 799      |
|      | 3 - Hoo Rd         | 222                | 42             | 0          | 215      |
|      | 4 - A289           | 1414               | 1516           | 67         | 0        |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 0                  | 1              | 0          | 3        |
|      | 2 - Wulfere Wy     | 2                  | 0              | 100        | 9        |
|      | 3 - Hoo Rd         | 1                  | 100            | 0          | 0        |
|      | 4 - A289           | 3                  | 3              | 0          | 0        |

## Results

### Results Summary for whole modelled period

| Arm                | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|--------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - Four Elms Hill | 1.22    | 400.79        | 145.5       | F       | 2349                | 1937                          |
| 2 - Wulfere Wy     | 1.19    | 370.64        | 177.8       | F       | 1688                | 2532                          |
| 3 - Hoo Rd         | 0.91    | 54.80         | 8.2         | F       | 480                 | 720                           |
| 4 - A289           | 1.08    | 139.25        | 77.7        | F       | 2831                | 2241                          |

# 2032 DS LP PM - D8 - 2032 | DS LP Demand | PM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A8 | 2032 DS LP PM | ✓                 | ✓                           | D8                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name      | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|-----------|---------------------|------------|--------------------|--------------|
| 1        | Four Elms | Standard Roundabout | 1, 2, 3, 4 | 677.90             | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -34         | 1 - Four Elms Hill           | 677.90            | F           |

## Arms

### Arms

| Arm | Name           | Description | No give-way line |
|-----|----------------|-------------|------------------|
| 1   | Four Elms Hill |             |                  |
| 2   | Wulfere Wy     |             |                  |
| 3   | Hoo Rd         |             |                  |
| 4   | A289           |             |                  |

### Roundabout Geometry

| Arm                | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|--------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - Four Elms Hill | 7.28  | 9.64  | 18.0   | 22.2  | 86.0  | 48.0      |            |           |
| 2 - Wulfere Wy     | 9.50  | 9.50  | 0.0    | 30.7  | 86.0  | 49.0      |            |           |
| 3 - Hoo Rd         | 3.10  | 10.80 | 26.0   | 27.0  | 86.0  | 18.1      |            |           |
| 4 - A289           | 9.56  | 10.33 | 16.8   | 19.1  | 86.0  | 44.0      |            |           |

### Bypass

| Arm                | Arm has bypass | Bypass Util (%) |
|--------------------|----------------|-----------------|
| 1 - Four Elms Hill | ✓              | 100             |
| 2 - Wulfere Wy     |                |                 |
| 3 - Hoo Rd         |                |                 |
| 4 - A289           | ✓              | 100             |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                | Final slope | Final intercept (PCU/hr) |
|--------------------|-------------|--------------------------|
| 1 - Four Elms Hill | 0.571       | 2553                     |
| 2 - Wulfere Wy     | 0.599       | 2738                     |
| 3 - Hoo Rd         | 0.552       | 2253                     |
| 4 - A289           | 0.628       | 2942                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                | Type       | Reason | Percentage capacity adjustment (%) |
|--------------------|------------|--------|------------------------------------|
| 1 - Four Elms Hill | Percentage |        | 81.00                              |
| 2 - Wulfere Wy     | Percentage |        | 80.00                              |
| 3 - Hoo Rd         | Percentage |        | 83.00                              |
| 4 - A289           | Percentage |        | 83.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario     | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|--------------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D8 | 2032 | DS LP Demand | PM          | ONE HOUR             | 16:45              | 18:15               | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                | Linked arm | Profile type | Use O-D data | Av. Demand (Veh/hr) | Scaling Factor (%) |
|--------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - Four Elms Hill |            | ONE HOUR     | ✓            | 3118                | 100.000            |
| 2 - Wulfere Wy     |            | ONE HOUR     | ✓            | 1402                | 100.000            |
| 3 - Hoo Rd         |            | ONE HOUR     | ✓            | 374                 | 100.000            |
| 4 - A289           |            | ONE HOUR     | ✓            | 2766                | 100.000            |

## Origin-Destination Data

### Demand (Veh/hr)

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 48                 | 1234           | 359        | 1477     |
|      | 2 - Wulfere Wy     | 823                | 0              | 8          | 571      |
|      | 3 - Hoo Rd         | 178                | 12             | 0          | 184      |
|      | 4 - A289           | 1224               | 1376           | 166        | 0        |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 0                  | 2              | 0          | 3        |
|      | 2 - Wulfere Wy     | 4                  | 0              | 100        | 9        |
|      | 3 - Hoo Rd         | 1                  | 7              | 0          | 0        |
|      | 4 - A289           | 5                  | 9              | 0          | 0        |

## Results

### Results Summary for whole modelled period

| Arm                | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|--------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - Four Elms Hill | 1.73    | 1579.14       | 651.1       | F       | 2924                | 2654                          |
| 2 - Wulfere Wy     | 1.09    | 165.95        | 80.4        | F       | 1371                | 2057                          |
| 3 - Hoo Rd         | 0.57    | 11.59         | 1.3         | B       | 346                 | 518                           |
| 4 - A289           | 0.98    | 48.88         | 24.3        | E       | 2708                | 2293                          |

# 2036 DS LP AM - D9 - 2036 | DS LP Demand | AM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A9 | 2036 DS LP AM | ✓                 | ✓                           | D9                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name      | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|-----------|---------------------|------------|--------------------|--------------|
| 1        | Four Elms | Standard Roundabout | 1, 2, 3, 4 | 2084.93            | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -47         | 2 - Wulfere Wy               | 2084.93           | F           |

## Arms

### Arms

| Arm | Name           | Description | No give-way line |
|-----|----------------|-------------|------------------|
| 1   | Four Elms Hill |             |                  |
| 2   | Wulfere Wy     |             |                  |
| 3   | Hoo Rd         |             |                  |
| 4   | A289           |             |                  |

### Roundabout Geometry

| Arm                | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|--------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - Four Elms Hill | 7.28  | 9.64  | 18.0   | 22.2  | 86.0  | 48.0      |            |           |
| 2 - Wulfere Wy     | 9.50  | 9.50  | 0.0    | 30.7  | 86.0  | 49.0      |            |           |
| 3 - Hoo Rd         | 3.10  | 10.80 | 26.0   | 27.0  | 86.0  | 18.1      |            |           |
| 4 - A289           | 9.56  | 10.33 | 16.8   | 19.1  | 86.0  | 44.0      |            |           |

### Bypass

| Arm                | Arm has bypass | Bypass Util (%) |
|--------------------|----------------|-----------------|
| 1 - Four Elms Hill | ✓              | 100             |
| 2 - Wulfere Wy     |                |                 |
| 3 - Hoo Rd         |                |                 |
| 4 - A289           | ✓              | 100             |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                | Final slope | Final intercept (PCU/hr) |
|--------------------|-------------|--------------------------|
| 1 - Four Elms Hill | 0.571       | 2553                     |
| 2 - Wulfere Wy     | 0.599       | 2738                     |
| 3 - Hoo Rd         | 0.552       | 2253                     |
| 4 - A289           | 0.628       | 2942                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                | Type       | Reason | Percentage capacity adjustment (%) |
|--------------------|------------|--------|------------------------------------|
| 1 - Four Elms Hill | Percentage |        | 81.00                              |
| 2 - Wulfere Wy     | Percentage |        | 88.00                              |
| 3 - Hoo Rd         | Percentage |        | 72.00                              |
| 4 - A289           | Percentage |        | 78.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario     | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|--------------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D9 | 2036 | DS LP Demand | AM          | ONE HOUR             | 07:15              | 08:45               | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                | Linked arm | Profile type | Use O-D data | Av. Demand (Veh/hr) | Scaling Factor (%) |
|--------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - Four Elms Hill |            | ONE HOUR     | ✓            | 4197                | 100.000            |
| 2 - Wulfere Wy     |            | ONE HOUR     | ✓            | 2474                | 100.000            |
| 3 - Hoo Rd         |            | ONE HOUR     | ✓            | 653                 | 100.000            |
| 4 - A289           |            | ONE HOUR     | ✓            | 3676                | 100.000            |

## Origin-Destination Data

### Demand (Veh/hr)

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 54                 | 1930           | 420        | 1793     |
|      | 2 - Wulfere Wy     | 1131               | 0              | 10         | 1333     |
|      | 3 - Hoo Rd         | 335                | 174            | 0          | 144      |
|      | 4 - A289           | 1972               | 1590           | 114        | 0        |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 0                  | 2              | 0          | 3        |
|      | 2 - Wulfere Wy     | 4                  | 0              | 100        | 9        |
|      | 3 - Hoo Rd         | 1                  | 7              | 0          | 0        |
|      | 4 - A289           | 5                  | 9              | 0          | 0        |

## Results

### Results Summary for whole modelled period

| Arm                | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|--------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - Four Elms Hill | 2.11    | 3730.50       | 1326.2      | F       | 3936                | 3194                          |
| 2 - Wulfere Wy     | 1.70    | 2245.78       | 1102.2      | F       | 2431                | 3646                          |
| 3 - Hoo Rd         | 1.34    | 825.11        | 130.3       | F       | 613                 | 920                           |
| 4 - A289           | 1.20    | 389.43        | 185.9       | F       | 3595                | 2542                          |

# 2036 DS LP PM - D10 - 2036 | DS LP Demand | PM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

| ID  | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|-----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A10 | 2036 DS LP PM | ✓                 | ✓                           | D10                     | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name      | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|-----------|---------------------|------------|--------------------|--------------|
| 1        | Four Elms | Standard Roundabout | 1, 2, 3, 4 | 1826.25            | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -46         | 1 - Four Elms Hill           | 1826.25           | F           |

## Arms

### Arms

| Arm | Name           | Description | No give-way line |
|-----|----------------|-------------|------------------|
| 1   | Four Elms Hill |             |                  |
| 2   | Wulfere Wy     |             |                  |
| 3   | Hoo Rd         |             |                  |
| 4   | A289           |             |                  |

### Roundabout Geometry

| Arm                | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|--------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - Four Elms Hill | 7.28  | 9.64  | 18.0   | 22.2  | 86.0  | 48.0      |            |           |
| 2 - Wulfere Wy     | 9.50  | 9.50  | 0.0    | 30.7  | 86.0  | 49.0      |            |           |
| 3 - Hoo Rd         | 3.10  | 10.80 | 26.0   | 27.0  | 86.0  | 18.1      |            |           |
| 4 - A289           | 9.56  | 10.33 | 16.8   | 19.1  | 86.0  | 44.0      |            |           |

### Bypass

| Arm                | Arm has bypass | Bypass Util (%) |
|--------------------|----------------|-----------------|
| 1 - Four Elms Hill | ✓              | 100             |
| 2 - Wulfere Wy     |                |                 |
| 3 - Hoo Rd         |                |                 |
| 4 - A289           | ✓              | 100             |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                | Final slope | Final intercept (PCU/hr) |
|--------------------|-------------|--------------------------|
| 1 - Four Elms Hill | 0.571       | 2553                     |
| 2 - Wulfere Wy     | 0.599       | 2738                     |
| 3 - Hoo Rd         | 0.552       | 2253                     |
| 4 - A289           | 0.628       | 2942                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                | Type       | Reason | Percentage capacity adjustment (%) |
|--------------------|------------|--------|------------------------------------|
| 1 - Four Elms Hill | Percentage |        | 80.00                              |
| 2 - Wulfere Wy     | Percentage |        | 89.00                              |
| 3 - Hoo Rd         | Percentage |        | 68.00                              |
| 4 - A289           | Percentage |        | 80.00                              |

## Traffic Demand

### Demand Set Details

| ID  | Year | Scenario     | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|-----|------|--------------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D10 | 2036 | DS LP Demand | PM          | ONE HOUR             | 16:45              | 18:15               | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                | Linked arm | Profile type | Use O-D data | Av. Demand (Veh/hr) | Scaling Factor (%) |
|--------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - Four Elms Hill |            | ONE HOUR     | ✓            | 3736                | 100.000            |
| 2 - Wulfere Wy     |            | ONE HOUR     | ✓            | 2197                | 100.000            |
| 3 - Hoo Rd         |            | ONE HOUR     | ✓            | 628                 | 100.000            |
| 4 - A289           |            | ONE HOUR     | ✓            | 3820                | 100.000            |

## Origin-Destination Data

### Demand (Veh/hr)

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 54                 | 1421           | 372        | 1889     |
|      | 2 - Wulfere Wy     | 1021               | 0              | 8          | 1168     |
|      | 3 - Hoo Rd         | 436                | 34             | 0          | 158      |
|      | 4 - A289           | 2076               | 1559           | 185        | 0        |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 0                  | 2              | 0          | 6        |
|      | 2 - Wulfere Wy     | 2                  | 0              | 100        | 4        |
|      | 3 - Hoo Rd         | 1                  | 15             | 0          | 0        |
|      | 4 - A289           | 3                  | 3              | 0          | 0        |

## Results

### Results Summary for whole modelled period

| Arm                | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|--------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - Four Elms Hill | 2.18    | 3867.81       | 1427.0      | F       | 3558                | 3342                          |
| 2 - Wulfere Wy     | 1.49    | 1375.27       | 641.8       | F       | 2085                | 3127                          |
| 3 - Hoo Rd         | 1.37    | 965.29        | 138.0       | F       | 585                 | 877                           |
| 4 - A289           | 1.12    | 211.83        | 118.9       | F       | 3605                | 2465                          |

## J1. Four Elms Roundabout, Stantec Design -Sensitivity Flows

| Junctions 11                                                                                                                                                     |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| ARCADY 11 - Roundabout Module                                                                                                                                    |  |  |  |  |  |
| Version: 11.1.1.2424                                                                                                                                             |  |  |  |  |  |
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| The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution |  |  |  |  |  |

Filename: J1\_Four Elms Rbt\_Stantec\_v3\_Sensi.j11

Path: Z:\KCC Model Custodian Framework\Call-off Tasks\Medway Local Plan\Technical\06 Local Jct Modelling\May 2026 Local Junction Modelling\Proposed Models\1 Four Elms RBT

Report generation date: 17/07/2026 12:30:51

»DS LP AM - D5 - 2031 | DS LP Demand | AM

»DS LP PM - D6 - 2031 | DS LP Demand | PM

### Summary of junction performance

| AM                             |          |         |           |      |                       |
|--------------------------------|----------|---------|-----------|------|-----------------------|
|                                | Set ID   | Q (PCU) | Delay (s) | RFC  | Res Cap               |
| DS LP AM - 2031 - DS LP Demand |          |         |           |      |                       |
| 1 - Four Elms Hill             | A5<br>D5 | 214.6   | 614.02    | 1.29 | -25 %<br>[3 - Hoo Rd] |
| 2 - Wulfere Wy                 |          | 337.6   | 593.98    | 1.28 |                       |
| 3 - Hoo Rd                     |          | 59.8    | 401.63    | 1.19 |                       |
| 4 - A289                       |          | 179.3   | 371.52    | 1.19 |                       |

| PM                             |          |         |           |      |                               |
|--------------------------------|----------|---------|-----------|------|-------------------------------|
|                                | Set ID   | Q (PCU) | Delay (s) | RFC  | Res Cap                       |
| DS LP PM - 2031 - DS LP Demand |          |         |           |      |                               |
| 1 - Four Elms Hill             | A6<br>D6 | 425.1   | 1092.32   | 1.55 | -28 %<br>[1 - Four Elms Hill] |
| 2 - Wulfere Wy                 |          | 273.0   | 565.48    | 1.25 |                               |
| 3 - Hoo Rd                     |          | 1.6     | 15.10     | 0.61 |                               |
| 4 - A289                       |          | 26.2    | 50.10     | 0.99 |                               |

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Res Cap indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

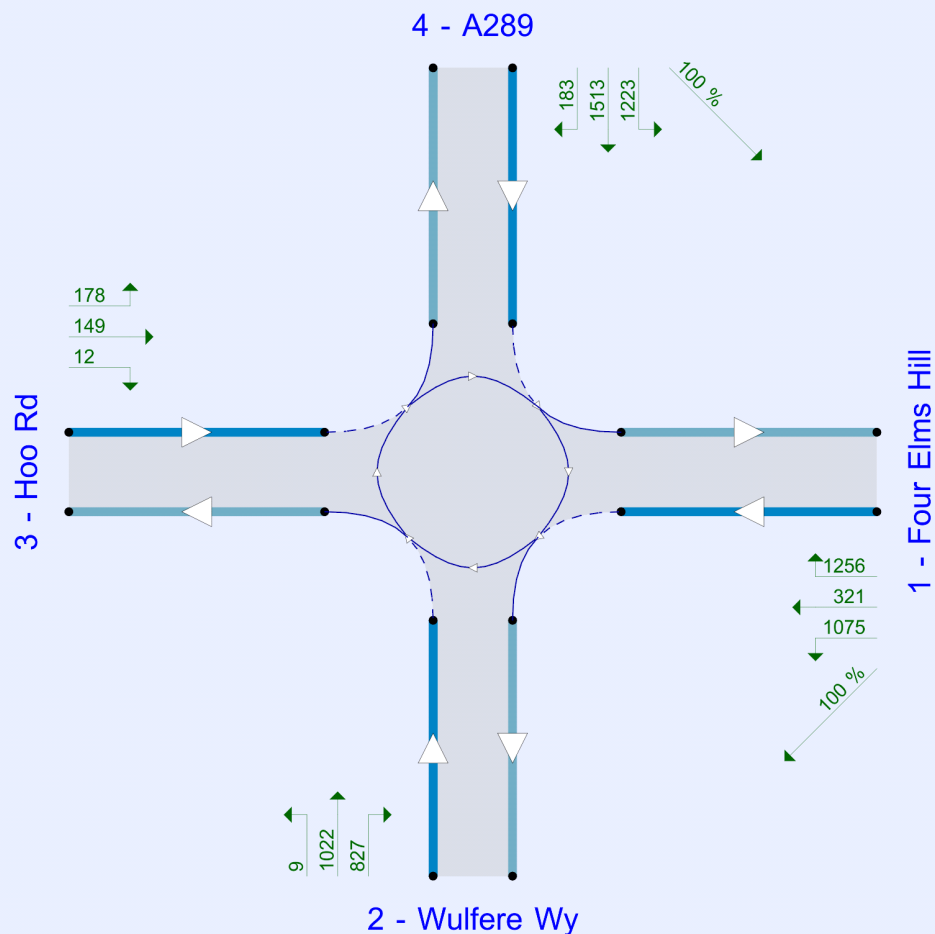
## File summary

### File Description

|             |                 |
|-------------|-----------------|
| Title       |                 |
| Location    |                 |
| Site number |                 |
| Date        | 12/09/2024      |
| Version     |                 |
| Status      | (new file)      |
| Identifier  |                 |
| Client      |                 |
| Jobnumber   |                 |
| Enumerator  | JEGINTL\siudzis |
| Description |                 |

## Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units | Av. delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|------------|-----------------|-------------------|---------------------|
| m              | kph         | Veh                 | PCU                   | perHour    | s               | -Min              | perMin              |



Flows show original traffic demand (Veh/hr)

The junction diagram reflects the last run of Junctions.

## Analysis Options

| Vehicle length (m) | Calculate Q Percentiles | Calculate detailed queueing delay | Show lane queues in feet / metres | Show all PICADY stream intercepts | Calculate residual capacity | Residual capacity criteria type | RFC Threshold | Av. Delay threshold (s) | Q threshold (PCU) | Use simulation for HCM roundabouts | Use iterations for HCM roundabouts |
|--------------------|-------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------|---------------------------------|---------------|-------------------------|-------------------|------------------------------------|------------------------------------|
| 5.75               |                         |                                   |                                   |                                   | ✓                           | Delay                           | 0.85          | 36.00                   | 20.00             |                                    |                                    |

## Demand Set Summary

| ID | Year | Scenario     | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|--------------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D1 | 2024 | Base         | AM          | ONE HOUR             | 07:15              | 08:45               | 15                        | ✓                 |
| D2 | 2024 | Base         | PM          | ONE HOUR             | 16:45              | 18:15               | 15                        | ✓                 |
| D3 | 2031 | RC Demand    | AM          | ONE HOUR             | 07:15              | 08:45               | 15                        | ✓                 |
| D4 | 2031 | RC Demand    | PM          | ONE HOUR             | 16:45              | 18:15               | 15                        | ✓                 |
| D5 | 2031 | DS LP Demand | AM          | ONE HOUR             | 07:15              | 08:45               | 15                        | ✓                 |
| D6 | 2031 | DS LP Demand | PM          | ONE HOUR             | 16:45              | 18:15               | 15                        | ✓                 |

# DS LP AM - D5 - 2031 | DS LP Demand | AM

## Data Errors and Warnings

| Severity | Area     | Item                                 | Description                                                                                                      |
|----------|----------|--------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 2 - Wulfere Wy - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name     | Include in report | Use specific Demand Set(s) | Specific Demand Set(s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|----------|-------------------|----------------------------|------------------------|---------------------------------|-------------------------------------|
| A5 | DS LP AM | ✓                 | ✓                          | D5                     | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name      | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|-----------|---------------------|------------|--------------------|--------------|
| 1        | Four Elms | Standard Roundabout | 1, 2, 3, 4 | 506.92             | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -25         | 3 - Hoo Rd                   | 506.92            | F           |

## Arms

### Arms

| Arm | Name           | Description | No give-way line |
|-----|----------------|-------------|------------------|
| 1   | Four Elms Hill |             |                  |
| 2   | Wulfere Wy     |             |                  |
| 3   | Hoo Rd         |             |                  |
| 4   | A289           |             |                  |

### Roundabout Geometry

| Arm                | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|--------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - Four Elms Hill | 7.28  | 9.64  | 18.0   | 22.2  | 86.0  | 48.0      |            |           |
| 2 - Wulfere Wy     | 9.47  | 10.68 | 59.1   | 30.7  | 86.0  | 49.0      |            |           |
| 3 - Hoo Rd         | 3.10  | 10.80 | 26.0   | 27.0  | 86.0  | 18.1      |            |           |
| 4 - A289           | 9.56  | 10.33 | 16.8   | 19.1  | 86.0  | 44.0      |            |           |

### Bypass

| Arm                | Arm has bypass | Bypass Util (%) |
|--------------------|----------------|-----------------|
| 1 - Four Elms Hill | ✓              | 100             |
| 2 - Wulfere Wy     |                |                 |
| 3 - Hoo Rd         |                |                 |
| 4 - A289           | ✓              | 100             |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                | Final slope | Final intercept (PCU/hr) |
|--------------------|-------------|--------------------------|
| 1 - Four Elms Hill | 0.571       | 2553                     |
| 2 - Wulfere Wy     | 0.645       | 3056                     |
| 3 - Hoo Rd         | 0.552       | 2253                     |
| 4 - A289           | 0.628       | 2942                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                | Type       | Reason | Percentage capacity adjustment (%) |
|--------------------|------------|--------|------------------------------------|
| 1 - Four Elms Hill | Percentage |        | 82.00                              |
| 2 - Wulfere Wy     | Percentage |        | 90.00                              |
| 3 - Hoo Rd         | Percentage |        | 85.00                              |
| 4 - A289           | Percentage |        | 77.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario     | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|--------------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D5 | 2031 | DS LP Demand | AM          | ONE HOUR             | 07:15              | 08:45               | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                | Linked arm | Profile type | Use O-D data | Av. Demand (Veh/hr) | Scaling Factor (%) |
|--------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - Four Elms Hill |            | ONE HOUR     | ✓            | 2573                | 100.000            |
| 2 - Wulfere Wy     |            | ONE HOUR     | ✓            | 2154                | 100.000            |
| 3 - Hoo Rd         |            | ONE HOUR     | ✓            | 556                 | 100.000            |
| 4 - A289           |            | ONE HOUR     | ✓            | 2950                | 100.000            |

## Origin-Destination Data

### Demand (Veh/hr)

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 39                 | 1186           | 293        | 1055     |
|      | 2 - Wulfere Wy     | 875                | 0              | 13         | 1266     |
|      | 3 - Hoo Rd         | 204                | 161            | 0          | 191      |
|      | 4 - A289           | 1249               | 1600           | 101        | 0        |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 0                  | 3              | 0          | 4        |
|      | 2 - Wulfere Wy     | 2                  | 0              | 100        | 10       |
|      | 3 - Hoo Rd         | 1                  | 12             | 0          | 1        |
|      | 4 - A289           | 3                  | 9              | 1          | 0        |

## Results

### Results Summary for whole modelled period

| Arm                | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|--------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - Four Elms Hill | 1.29    | 614.02        | 214.6       | F       | 2432                | 1967                          |
| 2 - Wulfere Wy     | 1.28    | 593.98        | 337.6       | F       | 2121                | 3181                          |
| 3 - Hoo Rd         | 1.19    | 401.63        | 59.8        | F       | 532                 | 797                           |
| 4 - A289           | 1.19    | 371.52        | 179.3       | F       | 2874                | 2541                          |

# DS LP PM - D6 - 2031 | DS LP Demand | PM

## Data Errors and Warnings

| Severity | Area     | Item                                 | Description                                                                                                      |
|----------|----------|--------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 2 - Wulfere Wy - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name     | Include in report | Use specific Demand Set(s) | Specific Demand Set(s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|----------|-------------------|----------------------------|------------------------|---------------------------------|-------------------------------------|
| A6 | DS LP PM | ✓                 | ✓                          | D6                     | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name      | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|-----------|---------------------|------------|--------------------|--------------|
| 1        | Four Elms | Standard Roundabout | 1, 2, 3, 4 | 530.42             | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -28         | 1 - Four Elms Hill           | 530.42            | F           |

## Arms

### Arms

| Arm | Name           | Description | No give-way line |
|-----|----------------|-------------|------------------|
| 1   | Four Elms Hill |             |                  |
| 2   | Wulfere Wy     |             |                  |
| 3   | Hoo Rd         |             |                  |
| 4   | A289           |             |                  |

### Roundabout Geometry

| Arm                | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|--------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - Four Elms Hill | 7.28  | 9.64  | 18.0   | 22.2  | 86.0  | 48.0      |            |           |
| 2 - Wulfere Wy     | 9.47  | 10.68 | 59.1   | 30.7  | 86.0  | 49.0      |            |           |
| 3 - Hoo Rd         | 3.10  | 10.80 | 26.0   | 27.0  | 86.0  | 18.1      |            |           |
| 4 - A289           | 9.56  | 10.33 | 16.8   | 19.1  | 86.0  | 44.0      |            |           |

### Bypass

| Arm                | Arm has bypass | Bypass Util (%) |
|--------------------|----------------|-----------------|
| 1 - Four Elms Hill | ✓              | 100             |
| 2 - Wulfere Wy     |                |                 |
| 3 - Hoo Rd         |                |                 |
| 4 - A289           | ✓              | 100             |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                | Final slope | Final intercept (PCU/hr) |
|--------------------|-------------|--------------------------|
| 1 - Four Elms Hill | 0.571       | 2553                     |
| 2 - Wulfere Wy     | 0.645       | 3056                     |
| 3 - Hoo Rd         | 0.552       | 2253                     |
| 4 - A289           | 0.628       | 2942                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                | Type       | Reason | Percentage capacity adjustment (%) |
|--------------------|------------|--------|------------------------------------|
| 1 - Four Elms Hill | Percentage |        | 81.00                              |
| 2 - Wulfere Wy     | Percentage |        | 81.00                              |
| 3 - Hoo Rd         | Percentage |        | 83.00                              |
| 4 - A289           | Percentage |        | 83.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario     | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|--------------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D6 | 2031 | DS LP Demand | PM          | ONE HOUR             | 16:45              | 18:15               | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                | Linked arm | Profile type | Use O-D data | Av. Demand (Veh/hr) | Scaling Factor (%) |
|--------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - Four Elms Hill |            | ONE HOUR     | ✓            | 2693                | 100.000            |
| 2 - Wulfere Wy     |            | ONE HOUR     | ✓            | 1858                | 100.000            |
| 3 - Hoo Rd         |            | ONE HOUR     | ✓            | 339                 | 100.000            |
| 4 - A289           |            | ONE HOUR     | ✓            | 2919                | 100.000            |

## Origin-Destination Data

### Demand (Veh/hr)

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 41                 | 1075           | 321        | 1256     |
|      | 2 - Wulfere Wy     | 827                | 0              | 9          | 1022     |
|      | 3 - Hoo Rd         | 149                | 12             | 0          | 178      |
|      | 4 - A289           | 1223               | 1513           | 183        | 0        |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                 |                    |                |            |          |
|------|--------------------|--------------------|----------------|------------|----------|
|      |                    | 1 - Four Elms Hill | 2 - Wulfere Wy | 3 - Hoo Rd | 4 - A289 |
| From | 1 - Four Elms Hill | 0                  | 2              | 0          | 4        |
|      | 2 - Wulfere Wy     | 2                  | 0              | 100        | 10       |
|      | 3 - Hoo Rd         | 1                  | 100            | 0          | 0        |
|      | 4 - A289           | 3                  | 3              | 0          | 0        |

## Results

### Results Summary for whole modelled period

| Arm                | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|--------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - Four Elms Hill | 1.55    | 1092.32       | 425.1       | F       | 2537                | 2296                          |
| 2 - Wulfere Wy     | 1.25    | 565.48        | 273.0       | F       | 1822                | 2733                          |
| 3 - Hoo Rd         | 0.61    | 15.10         | 1.6         | C       | 323                 | 485                           |
| 4 - A289           | 0.99    | 50.10         | 26.2        | F       | 2754                | 2397                          |

## J2. Main Road Hoo, Existing Junction Performance

| 2031 DS LP PM - 2031 - DS LP |          |      |        |      |                                       |
|------------------------------|----------|------|--------|------|---------------------------------------|
| 1 - A228 Peninsula Way [N]   | A4<br>D4 | 2.3  | 4.92   | 0.70 | -18 %<br>[3 - A228 Peninsula Way [S]] |
| 2 - Main Road Hoo            |          | 54.9 | 564.27 | 1.16 |                                       |
| 3 - A228 Peninsula Way [S]   |          | 86.7 | 143.14 | 1.03 |                                       |
| 4 - Dunnock Dr               |          | 0.2  | 53.48  | 0.17 |                                       |

|                            | AM                           |         |           |      |                                           |
|----------------------------|------------------------------|---------|-----------|------|-------------------------------------------|
|                            | Set ID                       | Q (PCU) | Delay (s) | RFC  | Res Cap                                   |
|                            | 2032 DS LP AM - 2032 - DS LP |         |           |      |                                           |
| 1 - A228 Peninsula Way [N] | A5<br>D5                     | 1.7     | 3.98      | 0.63 | -33 %<br><br>[3 - A228 Peninsula Way [S]] |
| 2 - Main Road Hoo          |                              | 157.8   | 1370.32   | 1.43 |                                           |
| 3 - A228 Peninsula Way [S] |                              | 512.0   | 817.91    | 1.26 |                                           |
| 4 - Dunnock Dr             |                              | 0.4     | 47.11     | 0.28 |                                           |

|                            | PM                           |         |           |      |                                           |
|----------------------------|------------------------------|---------|-----------|------|-------------------------------------------|
|                            | Set ID                       | Q (PCU) | Delay (s) | RFC  | Res Cap                                   |
|                            | 2032 DS LP PM - 2032 - DS LP |         |           |      |                                           |
| 1 - A228 Peninsula Way [N] | A6<br>D6                     | 3.5     | 6.64      | 0.78 | -34 %<br><br>[3 - A228 Peninsula Way [S]] |
| 2 - Main Road Hoo          |                              | 135.2   | 1764.58   | 1.55 |                                           |
| 3 - A228 Peninsula Way [S] |                              | 557.5   | 860.02    | 1.27 |                                           |
| 4 - Dunnock Dr             |                              | 0.2     | 55.35     | 0.18 |                                           |

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Res Cap indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

## File summary

### File Description

|             |                |
|-------------|----------------|
| Title       |                |
| Location    |                |
| Site number |                |
| Date        | 05/02/2025     |
| Version     |                |
| Status      | (new file)     |
| Identifier  |                |
| Client      |                |
| Jobnumber   |                |
| Enumerator  | JEGINTLPIEPRZJ |
| Description |                |

## Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units | Av. delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|------------|-----------------|-------------------|---------------------|
| m              | kph         | PCU                 | PCU                   | perHour    | s               | -Min              | perMin              |

## J2. Main Road Hoo, Stantec Design

| Junctions 11                                                                                                                                                     |  |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| ARCADY 11 - Roundabout Module                                                                                                                                    |  |  |  |  |  |  |
| Version: 11.1.1.2424                                                                                                                                             |  |  |  |  |  |  |
| © Copyright TRL Software Limited, 2026                                                                                                                           |  |  |  |  |  |  |
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| +44 (0)1344 379777   software@trl.co.uk   trlsoftware.com                                                                                                        |  |  |  |  |  |  |
| The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution |  |  |  |  |  |  |

Filename: J2\_A228\_Stantec.j11

Path: Z:\KCC Model Custodian Framework\Call-off Tasks\Medway Local Plan\Technical\06 Local Jct Modelling\May 2026 Local Junction Modelling\Proposed Models\2 A228 Peninsula Wy\_Main Rd Hoo

Report generation date: 17/07/2026 13:18:56

»2031 DS LP AM - D3 - 2031 | DS LP | AM

»2031 DS LP PM - D4 - 2031 | DS LP | PM

### Summary of junction performance

| AM                           |          |         |           |      |     |                                       |
|------------------------------|----------|---------|-----------|------|-----|---------------------------------------|
|                              | Set ID   | Q (PCU) | Delay (s) | RFC  | LOS | Res Cap                               |
| 2031 DS LP AM - 2031 - DS LP |          |         |           |      |     |                                       |
| 1 - A228 Peninsula Way [N]   | A3<br>D3 | 1.7     | 3.94      | 0.63 | A   | -30 %<br>[3 - A228 Peninsula Way [S]] |
| 2 - Main Road Hoo            |          | 3.6     | 34.04     | 0.78 | D   |                                       |
| 3 - A228 Peninsula Way [S]   |          | 425.8   | 680.83    | 1.21 | F   |                                       |
| 4 - Dunnock Dr               |          | 0.1     | 38.04     | 0.10 | E   |                                       |

| PM                           |          |         |           |      |     |                                       |
|------------------------------|----------|---------|-----------|------|-----|---------------------------------------|
|                              | Set ID   | Q (PCU) | Delay (s) | RFC  | LOS | Res Cap                               |
| 2031 DS LP PM - 2031 - DS LP |          |         |           |      |     |                                       |
| 1 - A228 Peninsula Way [N]   | A4<br>D4 | 2.3     | 4.92      | 0.70 | A   | -18 %<br>[3 - A228 Peninsula Way [S]] |
| 2 - Main Road Hoo            |          | 4.7     | 48.15     | 0.83 | E   |                                       |
| 3 - A228 Peninsula Way [S]   |          | 86.7    | 143.14    | 1.03 | F   |                                       |
| 4 - Dunnock Dr               |          | 0.2     | 53.48     | 0.17 | F   |                                       |

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Res Cap indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

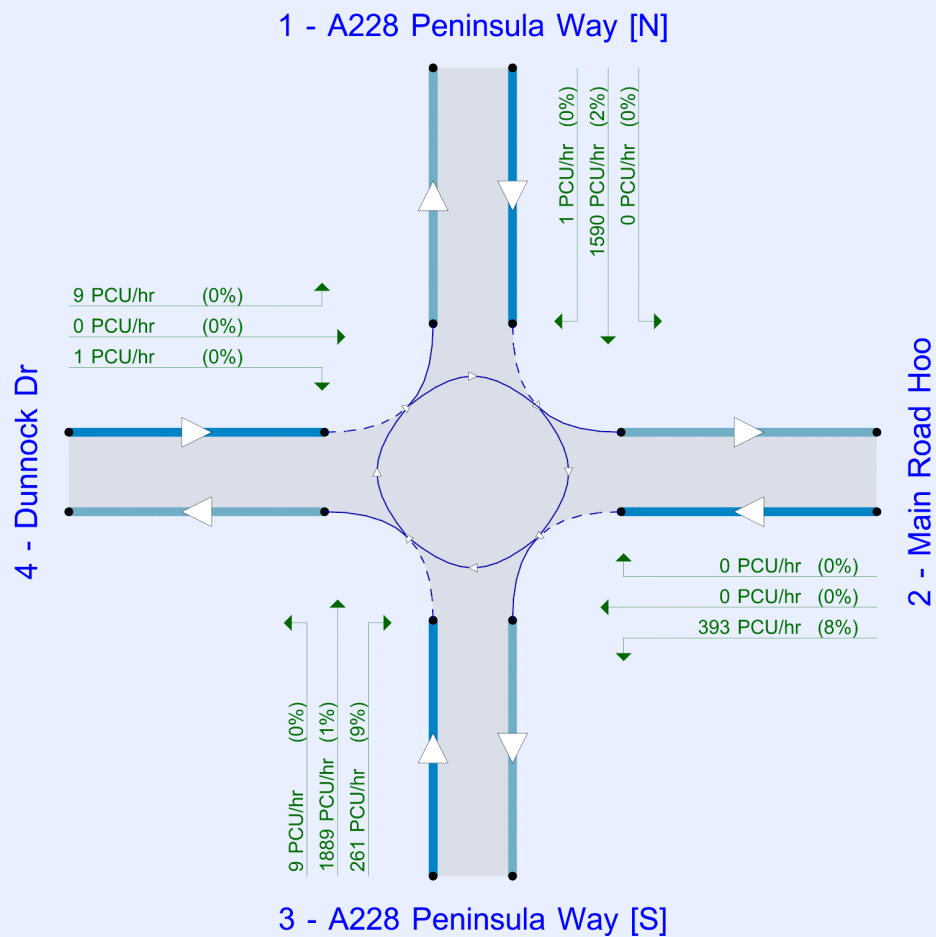
## File summary

### File Description

|             |                |
|-------------|----------------|
| Title       |                |
| Location    |                |
| Site number |                |
| Date        | 05/02/2025     |
| Version     |                |
| Status      | (new file)     |
| Identifier  |                |
| Client      |                |
| Jobnumber   |                |
| Enumerator  | JEGINTLPIEPRZJ |
| Description |                |

## Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units | Av. delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|------------|-----------------|-------------------|---------------------|
| m              | kph         | PCU                 | PCU                   | perHour    | s               | -Min              | perMin              |



Flows show original traffic demand (PCU/hr) with (HV %)

The junction diagram reflects the last run of Junctions.

## Analysis Options

| Vehicle length (m) | Calculate Q Percentiles | Calculate detailed queueing delay | Show lane queues in feet / metres | Show all PICADY stream intercepts | Calculate residual capacity | Residual capacity criteria type | RFC Threshold | Av. Delay threshold (s) | Q threshold (PCU) | Use simulation for HCM roundabouts | Use iterations for HCM roundabouts |
|--------------------|-------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------|---------------------------------|---------------|-------------------------|-------------------|------------------------------------|------------------------------------|
| 5.75               |                         |                                   |                                   |                                   | ✓                           | RFC/DOS                         | 0.85          | 36.00                   | 20.00             |                                    |                                    |

## Demand Set Summary

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|--------------------------|---------------------------|-------------------|
| D1 | 2031 | RC       | AM          | FLAT                 | 08:00              | 09:00               | 60                       | 15                        | ✓                 |
| D2 | 2031 | RC       | PM          | FLAT                 | 16:00              | 17:00               | 60                       | 15                        | ✓                 |
| D3 | 2031 | DS LP    | AM          | FLAT                 | 08:00              | 09:00               | 60                       | 15                        | ✓                 |
| D4 | 2031 | DS LP    | PM          | FLAT                 | 16:00              | 17:00               | 60                       | 15                        | ✓                 |

# 2031 DS LP AM - D3 - 2031 | DS LP | AM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A3 | 2031 DS LP AM | ✓                 | ✓                           | D3                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name    | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|---------|---------------------|------------|--------------------|--------------|
| 1        | J1 A228 | Standard Roundabout | 1, 2, 3, 4 | 376.56             | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -30         | 3 - A228 Peninsula Way [S]   | 376.56            | F           |

## Arms

### Arms

| Arm | Name                   | Description | No give-way line |
|-----|------------------------|-------------|------------------|
| 1   | A228 Peninsula Way [N] |             |                  |
| 2   | Main Road Hoo          |             |                  |
| 3   | A228 Peninsula Way [S] |             |                  |
| 4   | Dunnock Dr             |             |                  |

### Roundabout Geometry

| Arm                        | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|----------------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - A228 Peninsula Way [N] | 9.00  | 9.00  | 0.0    | 29.0  | 49.5  | 18.2      |            |           |
| 2 - Main Road Hoo          | 3.60  | 8.00  | 30.0   | 14.0  | 49.5  | 32.0      |            |           |
| 3 - A228 Peninsula Way [S] | 7.00  | 9.00  | 13.5   | 26.0  | 49.5  | 55.9      |            |           |
| 4 - Dunnock Dr             | 2.80  | 5.40  | 3.6    | 14.0  | 49.5  | 39.3      |            |           |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                        | Final slope | Final intercept (PCU/hr) |
|----------------------------|-------------|--------------------------|
| 1 - A228 Peninsula Way [N] | 0.851       | 2880                     |
| 2 - Main Road Hoo          | 0.649       | 1942                     |
| 3 - A228 Peninsula Way [S] | 0.708       | 2333                     |
| 4 - Dunnock Dr             | 0.468       | 1030                     |

The slope and intercept shown above include any corrections and adjustments.

#### Arm Capacity Adjustments

| Arm                        | Type       | Reason | Percentage capacity adjustment (%) |
|----------------------------|------------|--------|------------------------------------|
| 2 - Main Road Hoo          | Percentage |        | 65.00                              |
| 3 - A228 Peninsula Way [S] | Percentage |        | 85.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|--------------------------|---------------------------|-------------------|
| D3 | 2031 | DS LP    | AM          | FLAT                 | 08:00              | 09:00               | 60                       | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                        | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|----------------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - A228 Peninsula Way [N] |            | FLAT         | ✓            | 1591                | 100.000            |
| 2 - Main Road Hoo          |            | FLAT         | ✓            | 393                 | 100.000            |
| 3 - A228 Peninsula Way [S] |            | FLAT         | ✓            | 2403                | 100.000            |
| 4 - Dunnock Dr             |            | FLAT         | ✓            | 11                  | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
| From |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
|      | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 1590                       | 1              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 393                        | 0              |
|      | 3 - A228 Peninsula Way [S] | 1889                       | 261               | 244                        | 9              |
|      | 4 - Dunnock Dr             | 9                          | 0                 | 1                          | 1              |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
| From |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
|      | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 2                          | 0              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 8                          | 0              |
|      | 3 - A228 Peninsula Way [S] | 1                          | 9                 | 2                          | 0              |
|      | 4 - Dunnock Dr             | 0                          | 0                 | 0                          | 0              |

## Results

### Results Summary for whole modelled period

| Arm                        | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|----------------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - A228 Peninsula Way [N] | 0.63    | 3.94          | 1.7         | A       | 1591                | 1591                          |
| 2 - Main Road Hoo          | 0.78    | 34.04         | 3.6         | D       | 393                 | 393                           |
| 3 - A228 Peninsula Way [S] | 1.21    | 680.83        | 425.8       | F       | 2403                | 2403                          |
| 4 - Dunnock Dr             | 0.10    | 38.04         | 0.1         | E       | 11                  | 11                            |

# 2031 DS LP PM - D4 - 2031 | DS LP | PM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A4 | 2031 DS LP PM | ✓                 | ✓                           | D4                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name    | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|---------|---------------------|------------|--------------------|--------------|
| 1        | J1 A228 | Standard Roundabout | 1, 2, 3, 4 | 78.28              | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -18         | 3 - A228 Peninsula Way [S]   | 78.28             | F           |

## Arms

### Arms

| Arm | Name                   | Description | No give-way line |
|-----|------------------------|-------------|------------------|
| 1   | A228 Peninsula Way [N] |             |                  |
| 2   | Main Road Hoo          |             |                  |
| 3   | A228 Peninsula Way [S] |             |                  |
| 4   | Dunnock Dr             |             |                  |

### Roundabout Geometry

| Arm                        | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|----------------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - A228 Peninsula Way [N] | 9.00  | 9.00  | 0.0    | 29.0  | 49.5  | 18.2      |            |           |
| 2 - Main Road Hoo          | 3.60  | 8.00  | 30.0   | 14.0  | 49.5  | 32.0      |            |           |
| 3 - A228 Peninsula Way [S] | 7.00  | 9.00  | 13.5   | 26.0  | 49.5  | 55.9      |            |           |
| 4 - Dunnock Dr             | 2.80  | 5.40  | 3.6    | 14.0  | 49.5  | 39.3      |            |           |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                        | Final slope | Final intercept (PCU/hr) |
|----------------------------|-------------|--------------------------|
| 1 - A228 Peninsula Way [N] | 0.851       | 2880                     |
| 2 - Main Road Hoo          | 0.649       | 1942                     |
| 3 - A228 Peninsula Way [S] | 0.708       | 2333                     |
| 4 - Dunnock Dr             | 0.468       | 1030                     |

The slope and intercept shown above include any corrections and adjustments.

#### Arm Capacity Adjustments

| Arm                        | Type       | Reason | Percentage capacity adjustment (%) |
|----------------------------|------------|--------|------------------------------------|
| 2 - Main Road Hoo          | Percentage |        | 65.00                              |
| 3 - A228 Peninsula Way [S] | Percentage |        | 88.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|--------------------------|---------------------------|-------------------|
| D4 | 2031 | DS LP    | PM          | FLAT                 | 16:00              | 17:00               | 60                       | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                        | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|----------------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - A228 Peninsula Way [N] |            | FLAT         | ✓            | 1712                | 100.000            |
| 2 - Main Road Hoo          |            | FLAT         | ✓            | 371                 | 100.000            |
| 3 - A228 Peninsula Way [S] |            | FLAT         | ✓            | 2114                | 100.000            |
| 4 - Dunnock Dr             |            | FLAT         | ✓            | 14                  | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|                            | To                         |                   |                            |                |
|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From                       |                            |                   |                            |                |
| 1 - A228 Peninsula Way [N] | 0                          | 0                 | 1711                       | 1              |
| 2 - Main Road Hoo          | 0                          | 0                 | 371                        | 0              |
| 3 - A228 Peninsula Way [S] | 1587                       | 288               | 220                        | 19             |
| 4 - Dunnock Dr             | 10                         | 0                 | 2                          | 2              |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|                            | To                         |                   |                            |                |
|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From                       |                            |                   |                            |                |
| 1 - A228 Peninsula Way [N] | 0                          | 0                 | 2                          | 0              |
| 2 - Main Road Hoo          | 0                          | 0                 | 8                          | 0              |
| 3 - A228 Peninsula Way [S] | 2                          | 8                 | 2                          | 0              |
| 4 - Dunnock Dr             | 0                          | 0                 | 0                          | 0              |

## Results

### Results Summary for whole modelled period

| Arm                        | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|----------------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - A228 Peninsula Way [N] | 0.70    | 4.92          | 2.3         | A       | 1712                | 1712                          |
| 2 - Main Road Hoo          | 0.83    | 48.15         | 4.7         | E       | 371                 | 371                           |
| 3 - A228 Peninsula Way [S] | 1.03    | 143.14        | 86.7        | F       | 2114                | 2114                          |
| 4 - Dunnock Dr             | 0.17    | 53.48         | 0.2         | F       | 14                  | 14                            |

## J2. Main Road Hoo, Jacobs Design

| Junctions 11                                                                                                                                                     |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| ARCADY 11 - Roundabout Module                                                                                                                                    |  |  |  |  |  |
| Version: 11.1.1.2424                                                                                                                                             |  |  |  |  |  |
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| The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution |  |  |  |  |  |

Filename: J2\_A228\_Stantec\_Jacobs.j11

Path: Z:\KCC Model Custodian Framework\Call-off Tasks\Medway Local Plan\Technical\06 Local Jct Modelling\May 2026 Local Junction Modelling\Proposed Models\10 Year Models

Report generation date: 22/07/2026 09:11:44

»2031 DS LP AM - D3 - 2031 | DS LP | AM  
 »2031 DS LP PM - D4 - 2031 | DS LP | PM  
 »2032 DS LP AM - D5 - 2032 | DS LP | AM  
 »2032 DS LP PM - D6 - 2032 | DS LP | PM  
 »2036 DS LP AM - D7 - 2036 | DS LP | AM  
 »2036 DS LP PM - D8 - 2036 | DS LP | PM

### Summary of junction performance

| AM                           |          |         |             |              |                           |
|------------------------------|----------|---------|-------------|--------------|---------------------------|
|                              | Set ID   | Q (PCU) | Delay (s)   | RFC          | Res Cap                   |
| 2031 DS LP AM - 2031 - DS LP |          |         |             |              |                           |
| 1 - A228 Peninsula Way [N]   | A3<br>D3 | 1.9     | 4.27        | 0.65         | -10 %<br>[4 - Dunnock Dr] |
| 2 - Main Road Hoo            |          | 4.2     | 39.84       | 0.80         |                           |
| 3 - A228 Peninsula Way [S]   |          | 9.0     | 13.85       | 0.90         |                           |
| 4 - Dunnock Dr               |          | 11.0    | 59999940.00 | 999999999.00 |                           |

| PM                           |          |         |           |      |                            |
|------------------------------|----------|---------|-----------|------|----------------------------|
|                              | Set ID   | Q (PCU) | Delay (s) | RFC  | Res Cap                    |
| 2031 DS LP PM - 2031 - DS LP |          |         |           |      |                            |
| 1 - A228 Peninsula Way [N]   | A4<br>D4 | 2.4     | 5.06      | 0.70 | 0 %<br>[2 - Main Road Hoo] |
| 2 - Main Road Hoo            |          | 5.2     | 52.71     | 0.84 |                            |
| 3 - A228 Peninsula Way [S]   |          | 3.9     | 6.73      | 0.79 |                            |
| 4 - Dunnock Dr               |          | 0.4     | 101.83    | 0.28 |                            |

| AM                           |          |         |             |              |                           |
|------------------------------|----------|---------|-------------|--------------|---------------------------|
|                              | Set ID   | Q (PCU) | Delay (s)   | RFC          | Res Cap                   |
| 2032 DS LP AM - 2032 - DS LP |          |         |             |              |                           |
| 1 - A228 Peninsula Way [N]   | A5<br>D5 | 1.9     | 4.29        | 0.65         | -14 %<br>[4 - Dunnock Dr] |
| 2 - Main Road Hoo            |          | 44.1    | 307.41      | 1.07         |                           |
| 3 - A228 Peninsula Way [S]   |          | 7.2     | 10.68       | 0.88         |                           |
| 4 - Dunnock Dr               |          | 30.0    | 59999940.00 | 999999999.00 |                           |

| PM |        |         |           |     |         |
|----|--------|---------|-----------|-----|---------|
|    | Set ID | Q (PCU) | Delay (s) | RFC | Res Cap |

| 2032 DS LP PM - 2032 - DS LP |          |      |             |              |                           |
|------------------------------|----------|------|-------------|--------------|---------------------------|
| 1 - A228 Peninsula Way [N]   | A6<br>D6 | 4.3  | 8.13        | 0.81         | -16 %<br>[4 - Dunnock Dr] |
| 2 - Main Road Hoo            |          | 40.9 | 401.15      | 1.10         |                           |
| 3 - A228 Peninsula Way [S]   |          | 7.9  | 11.16       | 0.89         |                           |
| 4 - Dunnock Dr               |          | 14.0 | 59999940.00 | 999999999.00 |                           |

| AM                           |          |           |             |              |                           |
|------------------------------|----------|-----------|-------------|--------------|---------------------------|
| Set ID                       | Q (PCU)  | Delay (s) | RFC         | Res Cap      |                           |
| 2036 DS LP AM - 2036 - DS LP |          |           |             |              |                           |
| 1 - A228 Peninsula Way [N]   | A7<br>D7 | 89.8      | 138.51      | 1.03         | -45 %<br>[4 - Dunnock Dr] |
| 2 - Main Road Hoo            |          | 667.8     | 8029.72     | 3.58         |                           |
| 3 - A228 Peninsula Way [S]   |          | 916.9     | 1049.51     | 1.33         |                           |
| 4 - Dunnock Dr               |          | 132.0     | 59999940.00 | 999999999.00 |                           |

| PM                           |          |           |             |              |                              |
|------------------------------|----------|-----------|-------------|--------------|------------------------------|
| Set ID                       | Q (PCU)  | Delay (s) | RFC         | Res Cap      |                              |
| 2036 DS LP PM - 2036 - DS LP |          |           |             |              |                              |
| 1 - A228 Peninsula Way [N]   | A8<br>D8 | 452.5     | 663.64      | 1.21         | -40 %<br>[2 - Main Road Hoo] |
| 2 - Main Road Hoo            |          | 463.6     | 5095.27     | 2.62         |                              |
| 3 - A228 Peninsula Way [S]   |          | 794.3     | 956.18      | 1.30         |                              |
| 4 - Dunnock Dr               |          | 70.0      | 59999940.00 | 999999999.00 |                              |

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Res Cap indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

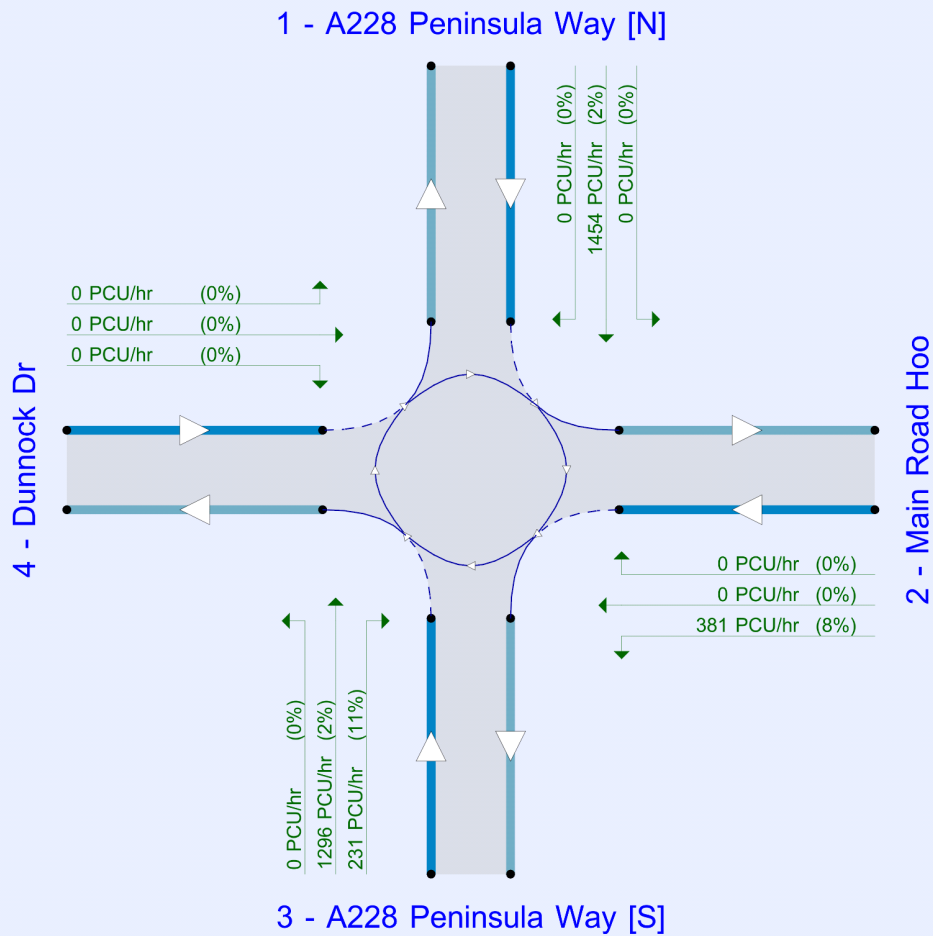
## File summary

### File Description

|             |                 |
|-------------|-----------------|
| Title       |                 |
| Location    |                 |
| Site number |                 |
| Date        | 05/02/2025      |
| Version     |                 |
| Status      | (new file)      |
| Identifier  |                 |
| Client      |                 |
| Jobnumber   |                 |
| Enumerator  | JEGINTL\PIEPRZJ |
| Description |                 |

## Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units | Av. delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|------------|-----------------|-------------------|---------------------|
| m              | kph         | PCU                 | PCU                   | perHour    | s               | -Min              | perMin              |



Flows show original traffic demand (PCU/hr) with (HV %)

*The junction diagram reflects the last run of Junctions.*

### Analysis Options

| Vehicle length (m) | Calculate Q Percentiles | Calculate detailed queueing delay | Show lane queues in feet / metres | Show all PICADY stream intercepts | Calculate residual capacity | Residual capacity criteria type | RFC Threshold | Av. Delay threshold (s) | Q threshold (PCU) | Use simulation for HCM roundabouts | Use iterations for HCM roundabouts |
|--------------------|-------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------|---------------------------------|---------------|-------------------------|-------------------|------------------------------------|------------------------------------|
| 5.75               |                         |                                   |                                   |                                   | ✓                           | RFC/DOS                         | 0.85          | 36.00                   | 20.00             |                                    |                                    |

### Demand Set Summary

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|--------------------------|---------------------------|-------------------|
| D1 | 2031 | RC       | AM          | FLAT                 | 08:00              | 09:00               | 60                       | 15                        | ✓                 |
| D2 | 2031 | RC       | PM          | FLAT                 | 16:00              | 17:00               | 60                       | 15                        | ✓                 |
| D3 | 2031 | DS LP    | AM          | FLAT                 | 08:00              | 09:00               | 60                       | 15                        | ✓                 |
| D4 | 2031 | DS LP    | PM          | FLAT                 | 16:00              | 17:00               | 60                       | 15                        | ✓                 |
| D5 | 2032 | DS LP    | AM          | FLAT                 | 08:00              | 09:00               | 60                       | 15                        | ✓                 |
| D6 | 2032 | DS LP    | PM          | FLAT                 | 16:00              | 17:00               | 60                       | 15                        | ✓                 |
| D7 | 2036 | DS LP    | AM          | FLAT                 | 08:00              | 09:00               | 60                       | 15                        | ✓                 |
| D8 | 2036 | DS LP    | PM          | FLAT                 | 16:00              | 17:00               | 60                       | 15                        | ✓                 |

# 2031 DS LP AM - D3 - 2031 | DS LP | AM

## Data Errors and Warnings

| Severity | Area     | Item                                             | Description                                                                                                      |
|----------|----------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 3 - A228 Peninsula Way [S] - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A3 | 2031 DS LP AM | ✓                 | ✓                           | D3                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name    | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|---------|---------------------|------------|--------------------|--------------|
| 1        | J1 A228 | Standard Roundabout | 1, 2, 3, 4 | 150080.74          | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -10         | 4 - Dunnock Dr               | 150080.74         | F           |

## Arms

### Arms

| Arm | Name                   | Description | No give-way line |
|-----|------------------------|-------------|------------------|
| 1   | A228 Peninsula Way [N] |             |                  |
| 2   | Main Road Hoo          |             |                  |
| 3   | A228 Peninsula Way [S] |             |                  |
| 4   | Dunnock Dr             |             |                  |

### Roundabout Geometry

| Arm                        | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|----------------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - A228 Peninsula Way [N] | 9.00  | 9.00  | 0.0    | 29.0  | 49.5  | 18.2      |            |           |
| 2 - Main Road Hoo          | 3.60  | 8.00  | 30.0   | 14.0  | 49.5  | 32.0      |            |           |
| 3 - A228 Peninsula Way [S] | 7.20  | 12.25 | 119.0  | 14.0  | 50.0  | 40.0      |            |           |
| 4 - Dunnock Dr             | 2.80  | 5.40  | 3.6    | 14.0  | 49.5  | 39.3      |            |           |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                        | Final slope | Final intercept (PCU/hr) |
|----------------------------|-------------|--------------------------|
| 1 - A228 Peninsula Way [N] | 0.851       | 2880                     |
| 2 - Main Road Hoo          | 0.649       | 1942                     |
| 3 - A228 Peninsula Way [S] | 0.902       | 3332                     |
| 4 - Dunnock Dr             | 0.468       | 1030                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                        | Type       | Reason | Percentage capacity adjustment (%) |
|----------------------------|------------|--------|------------------------------------|
| 2 - Main Road Hoo          | Percentage |        | 65.00                              |
| 3 - A228 Peninsula Way [S] | Percentage |        | 80.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|--------------------------|---------------------------|-------------------|
| D3 | 2031 | DS LP    | AM          | FLAT                 | 08:00              | 09:00               | 60                       | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                        | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|----------------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - A228 Peninsula Way [N] |            | FLAT         | ✓            | 1591                | 100.000            |
| 2 - Main Road Hoo          |            | FLAT         | ✓            | 393                 | 100.000            |
| 3 - A228 Peninsula Way [S] |            | FLAT         | ✓            | 2403                | 100.000            |
| 4 - Dunnock Dr             |            | FLAT         | ✓            | 11                  | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|      |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 1590                       | 1              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 393                        | 0              |
|      | 3 - A228 Peninsula Way [S] | 1889                       | 261               | 244                        | 9              |
|      | 4 - Dunnock Dr             | 1                          | 0                 | 9                          | 1              |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
| From |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
|      | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 2                          | 0              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 8                          | 0              |
|      | 3 - A228 Peninsula Way [S] | 1                          | 9                 | 2                          | 0              |
|      | 4 - Dunnock Dr             | 0                          | 0                 | 0                          | 0              |

## Results

### Results Summary for whole modelled period

| Arm                        | Max RFC      | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|----------------------------|--------------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - A228 Peninsula Way [N] | 0.65         | 4.27          | 1.9         | A       | 1591                | 1591                          |
| 2 - Main Road Hoo          | 0.80         | 39.84         | 4.2         | E       | 393                 | 393                           |
| 3 - A228 Peninsula Way [S] | 0.90         | 13.85         | 9.0         | B       | 2403                | 2403                          |
| 4 - Dunnock Dr             | 999999999.00 | 59999940.00   | 11.0        | F       | 11                  | 11                            |



# 2031 DS LP PM - D4 - 2031 | DS LP | PM

## Data Errors and Warnings

| Severity | Area     | Item                                             | Description                                                                                                      |
|----------|----------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 3 - A228 Peninsula Way [S] - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A4 | 2031 DS LP PM | ✓                 | ✓                           | D4                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name    | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|---------|---------------------|------------|--------------------|--------------|
| 1        | J1 A228 | Standard Roundabout | 1, 2, 3, 4 | 10.43              | B            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | 0           | 2 - Main Road Hoo            | 10.43             | B           |

## Arms

### Arms

| Arm | Name                   | Description | No give-way line |
|-----|------------------------|-------------|------------------|
| 1   | A228 Peninsula Way [N] |             |                  |
| 2   | Main Road Hoo          |             |                  |
| 3   | A228 Peninsula Way [S] |             |                  |
| 4   | Dunnock Dr             |             |                  |

### Roundabout Geometry

| Arm                        | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|----------------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - A228 Peninsula Way [N] | 9.00  | 9.00  | 0.0    | 29.0  | 49.5  | 18.2      |            |           |
| 2 - Main Road Hoo          | 3.60  | 8.00  | 30.0   | 14.0  | 49.5  | 32.0      |            |           |
| 3 - A228 Peninsula Way [S] | 7.20  | 12.25 | 119.0  | 14.0  | 50.0  | 40.0      |            |           |
| 4 - Dunnock Dr             | 2.80  | 5.40  | 3.6    | 14.0  | 49.5  | 39.3      |            |           |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                        | Final slope | Final intercept (PCU/hr) |
|----------------------------|-------------|--------------------------|
| 1 - A228 Peninsula Way [N] | 0.851       | 2880                     |
| 2 - Main Road Hoo          | 0.649       | 1942                     |
| 3 - A228 Peninsula Way [S] | 0.902       | 3332                     |
| 4 - Dunnock Dr             | 0.468       | 1030                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                        | Type       | Reason | Percentage capacity adjustment (%) |
|----------------------------|------------|--------|------------------------------------|
| 2 - Main Road Hoo          | Percentage |        | 65.00                              |
| 3 - A228 Peninsula Way [S] | Percentage |        | 80.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|--------------------------|---------------------------|-------------------|
| D4 | 2031 | DS LP    | PM          | FLAT                 | 16:00              | 17:00               | 60                       | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                        | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|----------------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - A228 Peninsula Way [N] |            | FLAT         | ✓            | 1712                | 100.000            |
| 2 - Main Road Hoo          |            | FLAT         | ✓            | 372                 | 100.000            |
| 3 - A228 Peninsula Way [S] |            | FLAT         | ✓            | 2114                | 100.000            |
| 4 - Dunnock Dr             |            | FLAT         | ✓            | 14                  | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|      |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 1711                       | 1              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 371                        | 1              |
|      | 3 - A228 Peninsula Way [S] | 1587                       | 288               | 220                        | 19             |
|      | 4 - Dunnock Dr             | 2                          | 0                 | 10                         | 2              |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|      |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 2                          | 0              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 8                          | 0              |
|      | 3 - A228 Peninsula Way [S] | 2                          | 8                 | 2                          | 0              |
|      | 4 - Dunnock Dr             | 0                          | 0                 | 0                          | 0              |

## Results

### Results Summary for whole modelled period

| Arm                        | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|----------------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - A228 Peninsula Way [N] | 0.70    | 5.06          | 2.4         | A       | 1712                | 1712                          |
| 2 - Main Road Hoo          | 0.84    | 52.71         | 5.2         | F       | 372                 | 372                           |
| 3 - A228 Peninsula Way [S] | 0.79    | 6.73          | 3.9         | A       | 2114                | 2114                          |
| 4 - Dunnock Dr             | 0.28    | 101.83        | 0.4         | F       | 14                  | 14                            |



# 2032 DS LP AM - D5 - 2032 | DS LP | AM

## Data Errors and Warnings

| Severity | Area     | Item                                             | Description                                                                                                      |
|----------|----------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 3 - A228 Peninsula Way [S] - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A5 | 2032 DS LP AM | ✓                 | ✓                           | D5                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name    | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|---------|---------------------|------------|--------------------|--------------|
| 1        | J1 A228 | Standard Roundabout | 1, 2, 3, 4 | 389399.16          | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -14         | 4 - Dunnock Dr               | 389399.16         | F           |

## Arms

### Arms

| Arm | Name                   | Description | No give-way line |
|-----|------------------------|-------------|------------------|
| 1   | A228 Peninsula Way [N] |             |                  |
| 2   | Main Road Hoo          |             |                  |
| 3   | A228 Peninsula Way [S] |             |                  |
| 4   | Dunnock Dr             |             |                  |

### Roundabout Geometry

| Arm                        | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|----------------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - A228 Peninsula Way [N] | 9.00  | 9.00  | 0.0    | 29.0  | 49.5  | 18.2      |            |           |
| 2 - Main Road Hoo          | 3.60  | 8.00  | 30.0   | 14.0  | 49.5  | 32.0      |            |           |
| 3 - A228 Peninsula Way [S] | 7.20  | 12.25 | 119.0  | 14.0  | 50.0  | 40.0      |            |           |
| 4 - Dunnock Dr             | 2.80  | 5.40  | 3.6    | 14.0  | 49.5  | 39.3      |            |           |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                        | Final slope | Final intercept (PCU/hr) |
|----------------------------|-------------|--------------------------|
| 1 - A228 Peninsula Way [N] | 0.851       | 2880                     |
| 2 - Main Road Hoo          | 0.649       | 1942                     |
| 3 - A228 Peninsula Way [S] | 0.902       | 3332                     |
| 4 - Dunnock Dr             | 0.468       | 1030                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                        | Type       | Reason | Percentage capacity adjustment (%) |
|----------------------------|------------|--------|------------------------------------|
| 2 - Main Road Hoo          | Percentage |        | 65.00                              |
| 3 - A228 Peninsula Way [S] | Percentage |        | 85.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|--------------------------|---------------------------|-------------------|
| D5 | 2032 | DS LP    | AM          | FLAT                 | 08:00              | 09:00               | 60                       | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                        | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|----------------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - A228 Peninsula Way [N] |            | FLAT         | ✓            | 1581                | 100.000            |
| 2 - Main Road Hoo          |            | FLAT         | ✓            | 523                 | 100.000            |
| 3 - A228 Peninsula Way [S] |            | FLAT         | ✓            | 2489                | 100.000            |
| 4 - Dunnock Dr             |            | FLAT         | ✓            | 30                  | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|      |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 1580                       | 1              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 522                        | 1              |
|      | 3 - A228 Peninsula Way [S] | 1958                       | 269               | 252                        | 10             |
|      | 4 - Dunnock Dr             | 2                          | 0                 | 26                         | 2              |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|      |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 2                          | 0              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 6                          | 0              |
|      | 3 - A228 Peninsula Way [S] | 1                          | 9                 | 2                          | 0              |
|      | 4 - Dunnock Dr             | 0                          | 0                 | 0                          | 0              |

## Results

### Results Summary for whole modelled period

| Arm                        | Max RFC       | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|----------------------------|---------------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - A228 Peninsula Way [N] | 0.65          | 4.29          | 1.9         | A       | 1581                | 1581                          |
| 2 - Main Road Hoo          | 1.07          | 307.41        | 44.1        | F       | 523                 | 523                           |
| 3 - A228 Peninsula Way [S] | 0.88          | 10.68         | 7.2         | B       | 2489                | 2489                          |
| 4 - Dunnock Dr             | 9999999999.00 | 59999940.00   | 30.0        | F       | 30                  | 30                            |



# 2032 DS LP PM - D6 - 2032 | DS LP | PM

## Data Errors and Warnings

| Severity | Area     | Item                                             | Description                                                                                                      |
|----------|----------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 3 - A228 Peninsula Way [S] - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A6 | 2032 DS LP PM | ✓                 | ✓                           | D6                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name    | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|---------|---------------------|------------|--------------------|--------------|
| 1        | J1 A228 | Standard Roundabout | 1, 2, 3, 4 | 171433.53          | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -16         | 4 - Dunnock Dr               | 171433.53         | F           |

## Arms

### Arms

| Arm | Name                   | Description | No give-way line |
|-----|------------------------|-------------|------------------|
| 1   | A228 Peninsula Way [N] |             |                  |
| 2   | Main Road Hoo          |             |                  |
| 3   | A228 Peninsula Way [S] |             |                  |
| 4   | Dunnock Dr             |             |                  |

### Roundabout Geometry

| Arm                        | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|----------------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - A228 Peninsula Way [N] | 9.00  | 9.00  | 0.0    | 29.0  | 49.5  | 18.2      |            |           |
| 2 - Main Road Hoo          | 3.60  | 8.00  | 30.0   | 14.0  | 49.5  | 32.0      |            |           |
| 3 - A228 Peninsula Way [S] | 7.20  | 12.25 | 119.0  | 14.0  | 50.0  | 40.0      |            |           |
| 4 - Dunnock Dr             | 2.80  | 5.40  | 3.6    | 14.0  | 49.5  | 39.3      |            |           |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                        | Final slope | Final intercept (PCU/hr) |
|----------------------------|-------------|--------------------------|
| 1 - A228 Peninsula Way [N] | 0.851       | 2880                     |
| 2 - Main Road Hoo          | 0.649       | 1942                     |
| 3 - A228 Peninsula Way [S] | 0.902       | 3332                     |
| 4 - Dunnock Dr             | 0.468       | 1030                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                        | Type       | Reason | Percentage capacity adjustment (%) |
|----------------------------|------------|--------|------------------------------------|
| 2 - Main Road Hoo          | Percentage |        | 65.00                              |
| 3 - A228 Peninsula Way [S] | Percentage |        | 88.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|--------------------------|---------------------------|-------------------|
| D6 | 2032 | DS LP    | PM          | FLAT                 | 16:00              | 17:00               | 60                       | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                        | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|----------------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - A228 Peninsula Way [N] |            | FLAT         | ✓            | 1904                | 100.000            |
| 2 - Main Road Hoo          |            | FLAT         | ✓            | 379                 | 100.000            |
| 3 - A228 Peninsula Way [S] |            | FLAT         | ✓            | 2604                | 100.000            |
| 4 - Dunnock Dr             |            | FLAT         | ✓            | 14                  | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|      |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 1902                       | 2              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 378                        | 1              |
|      | 3 - A228 Peninsula Way [S] | 1963                       | 346               | 271                        | 24             |
|      | 4 - Dunnock Dr             | 2                          | 0                 | 10                         | 2              |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
| From |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
|      | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 2                          | 0              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 7                          | 0              |
|      | 3 - A228 Peninsula Way [S] | 1                          | 6                 | 2                          | 0              |
|      | 4 - Dunnock Dr             | 0                          | 0                 | 0                          | 0              |

## Results

### Results Summary for whole modelled period

| Arm                        | Max RFC       | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|----------------------------|---------------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - A228 Peninsula Way [N] | 0.81          | 8.13          | 4.3         | A       | 1904                | 1904                          |
| 2 - Main Road Hoo          | 1.10          | 401.15        | 40.9        | F       | 379                 | 379                           |
| 3 - A228 Peninsula Way [S] | 0.89          | 11.16         | 7.9         | B       | 2604                | 2604                          |
| 4 - Dunnock Dr             | 9999999999.00 | 59999940.00   | 14.0        | F       | 14                  | 14                            |



# 2036 DS LP AM - D7 - 2036 | DS LP | AM

## Data Errors and Warnings

| Severity | Area     | Item                                             | Description                                                                                                      |
|----------|----------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 3 - A228 Peninsula Way [S] - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A7 | 2036 DS LP AM | ✓                 | ✓                           | D7                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name    | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|---------|---------------------|------------|--------------------|--------------|
| 1        | J1 A228 | Standard Roundabout | 1, 2, 3, 4 | 1133097.52         | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -45         | 4 - Dunnock Dr               | 1133097.52        | F           |

## Arms

### Arms

| Arm | Name                   | Description | No give-way line |
|-----|------------------------|-------------|------------------|
| 1   | A228 Peninsula Way [N] |             |                  |
| 2   | Main Road Hoo          |             |                  |
| 3   | A228 Peninsula Way [S] |             |                  |
| 4   | Dunnock Dr             |             |                  |

### Roundabout Geometry

| Arm                        | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|----------------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - A228 Peninsula Way [N] | 9.00  | 9.00  | 0.0    | 29.0  | 49.5  | 18.2      |            |           |
| 2 - Main Road Hoo          | 3.60  | 8.00  | 30.0   | 14.0  | 49.5  | 32.0      |            |           |
| 3 - A228 Peninsula Way [S] | 7.20  | 12.25 | 119.0  | 14.0  | 50.0  | 40.0      |            |           |
| 4 - Dunnock Dr             | 2.80  | 5.40  | 3.6    | 14.0  | 49.5  | 39.3      |            |           |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                        | Final slope | Final intercept (PCU/hr) |
|----------------------------|-------------|--------------------------|
| 1 - A228 Peninsula Way [N] | 0.851       | 2880                     |
| 2 - Main Road Hoo          | 0.649       | 1942                     |
| 3 - A228 Peninsula Way [S] | 0.902       | 3332                     |
| 4 - Dunnock Dr             | 0.468       | 1030                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                        | Type       | Reason | Percentage capacity adjustment (%) |
|----------------------------|------------|--------|------------------------------------|
| 2 - Main Road Hoo          | Percentage |        | 66.00                              |
| 3 - A228 Peninsula Way [S] | Percentage |        | 83.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|--------------------------|---------------------------|-------------------|
| D7 | 2036 | DS LP    | AM          | FLAT                 | 08:00              | 09:00               | 60                       | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                        | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|----------------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - A228 Peninsula Way [N] |            | FLAT         | ✓            | 2259                | 100.000            |
| 2 - Main Road Hoo          |            | FLAT         | ✓            | 937                 | 100.000            |
| 3 - A228 Peninsula Way [S] |            | FLAT         | ✓            | 3672                | 100.000            |
| 4 - Dunnock Dr             |            | FLAT         | ✓            | 132                 | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|      |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From | 1 - A228 Peninsula Way [N] | 0                          | 14                | 2238                       | 7              |
|      | 2 - Main Road Hoo          | 10                         | 0                 | 925                        | 2              |
|      | 3 - A228 Peninsula Way [S] | 2539                       | 796               | 278                        | 59             |
|      | 4 - Dunnock Dr             | 7                          | 3                 | 122                        | 0              |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|      |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 3                          | 0              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 3                          | 0              |
|      | 3 - A228 Peninsula Way [S] | 4                          | 7                 | 2                          | 0              |
|      | 4 - Dunnock Dr             | 0                          | 0                 | 0                          | 0              |

## Results

### Results Summary for whole modelled period

| Arm                        | Max RFC      | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|----------------------------|--------------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - A228 Peninsula Way [N] | 1.03         | 138.51        | 89.8        | F       | 2259                | 2259                          |
| 2 - Main Road Hoo          | 3.58         | 8029.72       | 667.8       | F       | 937                 | 937                           |
| 3 - A228 Peninsula Way [S] | 1.33         | 1049.51       | 916.9       | F       | 3672                | 3672                          |
| 4 - Dunnock Dr             | 999999999.00 | 59999940.00   | 132.0       | F       | 132                 | 132                           |



# 2036 DS LP PM - D8 - 2036 | DS LP | PM

## Data Errors and Warnings

| Severity | Area     | Item                                             | Description                                                                                                      |
|----------|----------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 3 - A228 Peninsula Way [S] - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name          | Include in report | Use specific Demand Set (s) | Specific Demand Set (s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|---------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------------------------|
| A8 | 2036 DS LP PM | ✓                 | ✓                           | D8                      | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name    | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|---------|---------------------|------------|--------------------|--------------|
| 1        | J1 A228 | Standard Roundabout | 1, 2, 3, 4 | 614875.61          | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -40         | 2 - Main Road Hoo            | 614875.61         | F           |

## Arms

### Arms

| Arm | Name                   | Description | No give-way line |
|-----|------------------------|-------------|------------------|
| 1   | A228 Peninsula Way [N] |             |                  |
| 2   | Main Road Hoo          |             |                  |
| 3   | A228 Peninsula Way [S] |             |                  |
| 4   | Dunnock Dr             |             |                  |

### Roundabout Geometry

| Arm                        | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|----------------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - A228 Peninsula Way [N] | 9.00  | 9.00  | 0.0    | 29.0  | 49.5  | 18.2      |            |           |
| 2 - Main Road Hoo          | 3.60  | 8.00  | 30.0   | 14.0  | 49.5  | 32.0      |            |           |
| 3 - A228 Peninsula Way [S] | 7.20  | 12.25 | 119.0  | 14.0  | 50.0  | 40.0      |            |           |
| 4 - Dunnock Dr             | 2.80  | 5.40  | 3.6    | 14.0  | 49.5  | 39.3      |            |           |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                        | Final slope | Final intercept (PCU/hr) |
|----------------------------|-------------|--------------------------|
| 1 - A228 Peninsula Way [N] | 0.851       | 2880                     |
| 2 - Main Road Hoo          | 0.649       | 1942                     |
| 3 - A228 Peninsula Way [S] | 0.902       | 3332                     |
| 4 - Dunnock Dr             | 0.468       | 1030                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm                        | Type       | Reason | Percentage capacity adjustment (%) |
|----------------------------|------------|--------|------------------------------------|
| 2 - Main Road Hoo          | Percentage |        | 66.00                              |
| 3 - A228 Peninsula Way [S] | Percentage |        | 79.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|--------------------------|---------------------------|-------------------|
| D8 | 2036 | DS LP    | PM          | FLAT                 | 16:00              | 17:00               | 60                       | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                        | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|----------------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - A228 Peninsula Way [N] |            | FLAT         | ✓            | 2608                | 100.000            |
| 2 - Main Road Hoo          |            | FLAT         | ✓            | 752                 | 100.000            |
| 3 - A228 Peninsula Way [S] |            | FLAT         | ✓            | 3415                | 100.000            |
| 4 - Dunnock Dr             |            | FLAT         | ✓            | 70                  | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|      |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From | 1 - A228 Peninsula Way [N] | 0                          | 14                | 2586                       | 8              |
|      | 2 - Main Road Hoo          | 12                         | 0                 | 738                        | 2              |
|      | 3 - A228 Peninsula Way [S] | 2205                       | 874               | 228                        | 108            |
|      | 4 - Dunnock Dr             | 7                          | 2                 | 61                         | 0              |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                         |                            |                   |                            |                |
|------|----------------------------|----------------------------|-------------------|----------------------------|----------------|
|      |                            | 1 - A228 Peninsula Way [N] | 2 - Main Road Hoo | 3 - A228 Peninsula Way [S] | 4 - Dunnock Dr |
| From | 1 - A228 Peninsula Way [N] | 0                          | 0                 | 1                          | 0              |
|      | 2 - Main Road Hoo          | 0                          | 0                 | 15                         | 0              |
|      | 3 - A228 Peninsula Way [S] | 3                          | 3                 | 2                          | 0              |
|      | 4 - Dunnock Dr             | 0                          | 0                 | 0                          | 0              |

## Results

### Results Summary for whole modelled period

| Arm                        | Max RFC      | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|----------------------------|--------------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - A228 Peninsula Way [N] | 1.21         | 663.64        | 452.5       | F       | 2608                | 2608                          |
| 2 - Main Road Hoo          | 2.62         | 5095.27       | 463.6       | F       | 752                 | 752                           |
| 3 - A228 Peninsula Way [S] | 1.30         | 956.18        | 794.3       | F       | 3415                | 3415                          |
| 4 - Dunnock Dr             | 999999999.00 | 59999940.00   | 70.0        | F       | 70                  | 70                            |



### J3. Sans Pareil Roundabout, Jacobs Design

| Junctions 11                                                                                                                                                     |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| ARCADY 11 - Roundabout Module                                                                                                                                    |  |  |
| Version: 11.1.1.2424                                                                                                                                             |  |  |
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**Filename:** J3\_Sans\_v2\_1hour Profile.j11

**Path:** Z:\KCC Model Custodian Framework\Call-off Tasks\Medway Local Plan\Technical\06 Local Jct Modelling\May 2026 Local Junction Modelling\Base Models\3 Sans Pareil Roundabout

**Report generation date:** 17/07/2026 13:29:41

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»2031 RC AM - D1 - 2031 | RC | AM  
 »2031 RC PM - D2 - 2031 | RC | PM  
 »2031 DS AM - D3 - 2031 | DS | AM  
 »2031 DS PM - D4 - 2031 | DS | PM

## Summary of junction performance

| AM                     |          |         |           |      |     |                            |
|------------------------|----------|---------|-----------|------|-----|----------------------------|
|                        | Set ID   | Q (PCU) | Delay (s) | RFC  | LOS | Res Cap                    |
| 2031 RC AM - 2031 - RC |          |         |           |      |     |                            |
| 1 - Wainscott Rd       | A1<br>D1 | 137.9   | 969.11    | 1.48 | F   | -48 %<br>[3 - Berwick Way] |
| 2 - Wulfere Way        |          | 0.2     | 2.27      | 0.15 | A   |                            |
| 3 - Berwick Way        |          | 939.5   | 2044.33   | 1.69 | F   |                            |
| 4 - Frindsbury Hill    |          | 1.9     | 9.23      | 0.66 | A   |                            |

| PM                     |          |         |           |      |     |                            |
|------------------------|----------|---------|-----------|------|-----|----------------------------|
|                        | Set ID   | Q (PCU) | Delay (s) | RFC  | LOS | Res Cap                    |
| 2031 RC PM - 2031 - RC |          |         |           |      |     |                            |
| 1 - Wainscott Rd       | A2<br>D2 | 53.8    | 314.77    | 1.18 | F   | -47 %<br>[3 - Berwick Way] |
| 2 - Wulfere Way        |          | 0.2     | 2.28      | 0.17 | A   |                            |
| 3 - Berwick Way        |          | 874.9   | 1969.59   | 1.67 | F   |                            |
| 4 - Frindsbury Hill    |          | 2.0     | 9.20      | 0.67 | A   |                            |

| AM                     |          |         |           |      |     |                            |
|------------------------|----------|---------|-----------|------|-----|----------------------------|
|                        | Set ID   | Q (PCU) | Delay (s) | RFC  | LOS | Res Cap                    |
| 2031 DS AM - 2031 - DS |          |         |           |      |     |                            |
| 1 - Wainscott Rd       | A3<br>D3 | 116.1   | 725.95    | 1.38 | F   | -52 %<br>[3 - Berwick Way] |
| 2 - Wulfere Way        |          | 0.2     | 2.37      | 0.18 | A   |                            |
| 3 - Berwick Way        |          | 1243.5  | 2698.28   | 1.85 | F   |                            |
| 4 - Frindsbury Hill    |          | 1.7     | 8.29      | 0.63 | A   |                            |

| PM                     |          |         |           |      |     |                            |
|------------------------|----------|---------|-----------|------|-----|----------------------------|
|                        | Set ID   | Q (PCU) | Delay (s) | RFC  | LOS | Res Cap                    |
| 2031 DS PM - 2031 - DS |          |         |           |      |     |                            |
| 1 - Wainscott Rd       | A4<br>D4 | 14.7    | 94.30     | 0.98 | F   | -51 %<br>[3 - Berwick Way] |
| 2 - Wulfere Way        |          | 0.3     | 2.49      | 0.21 | A   |                            |
| 3 - Berwick Way        |          | 1091.3  | 2507.80   | 1.82 | F   |                            |
| 4 - Frindsbury Hill    |          | 1.8     | 8.20      | 0.64 | A   |                            |

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Res Cap indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

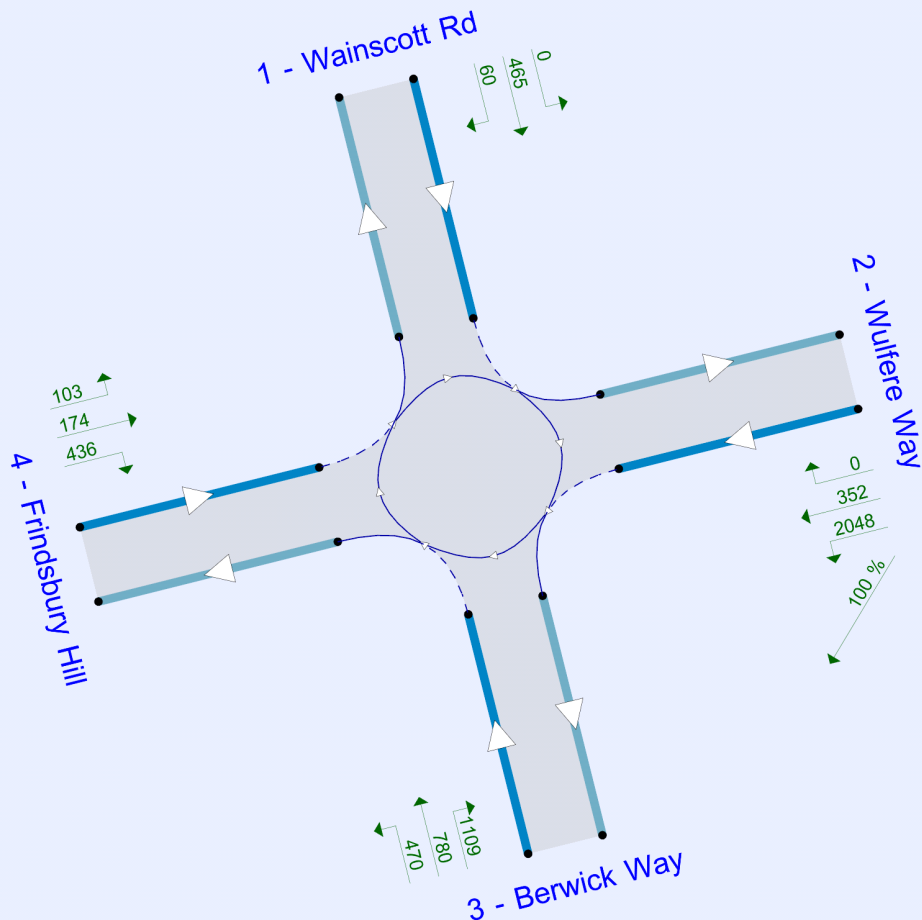
## File summary

### File Description

|             |                 |
|-------------|-----------------|
| Title       |                 |
| Location    |                 |
| Site number |                 |
| Date        | 14/02/2025      |
| Version     |                 |
| Status      | (new file)      |
| Identifier  |                 |
| Client      |                 |
| Jobnumber   |                 |
| Enumerator  | JEGINTL\HAMIDMH |
| Description |                 |

## Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units | Av. delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|------------|-----------------|-------------------|---------------------|
| m              | kph         | PCU                 | PCU                   | perHour    | s               | -Min              | perMin              |



Flows show original traffic demand (PCU/hr)

*The junction diagram reflects the last run of Junctions.*

## Analysis Options

| Vehicle length (m) | Calculate Q Percentiles | Calculate detailed queueing delay | Show lane queues in feet / metres | Show all PICADY stream intercepts | Calculate residual capacity | Residual capacity criteria type | RFC Threshold | Av. Delay threshold (s) | Q threshold (PCU) | Use simulation for HCM roundabouts | Use iterations for HCM roundabouts |
|--------------------|-------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------|---------------------------------|---------------|-------------------------|-------------------|------------------------------------|------------------------------------|
| 5.75               |                         |                                   |                                   |                                   | ✓                           | RFC/DOS                         | 0.85          | 36.00                   | 20.00             |                                    |                                    |

## Demand Set Summary

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D1 | 2031 | RC       | AM          | ONE HOUR             | 07:00              | 08:30               | 15                        | ✓                 |
| D2 | 2031 | RC       | PM          | ONE HOUR             | 16:00              | 17:30               | 15                        | ✓                 |
| D3 | 2031 | DS       | AM          | ONE HOUR             | 07:00              | 08:30               | 15                        | ✓                 |
| D4 | 2031 | DS       | PM          | ONE HOUR             | 16:00              | 17:30               | 15                        | ✓                 |

# 2031 RC AM - D1 - 2031 | RC | AM

## Data Errors and Warnings

| Severity | Area     | Item                                      | Description                                                                                                      |
|----------|----------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 4 - Frindsbury Hill - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name       | Include in report | Use specific Demand Set(s) | Specific Demand Set(s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|------------|-------------------|----------------------------|------------------------|---------------------------------|-------------------------------------|
| A1 | 2031 RC AM | ✓                 | ✓                          | D1                     | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name                   | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|------------------------|---------------------|------------|--------------------|--------------|
| 1        | Sans Pareil Roundabout | Standard Roundabout | 1, 2, 3, 4 | 888.30             | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -48         | 3 - Berwick Way              | 888.30            | F           |

## Arms

### Arms

| Arm | Name            | Description | No give-way line |
|-----|-----------------|-------------|------------------|
| 1   | Wainscott Rd    |             |                  |
| 2   | Wulfere Way     |             |                  |
| 3   | Berwick Way     |             |                  |
| 4   | Frindsbury Hill |             |                  |

### Roundabout Geometry

| Arm                 | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|---------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - Wainscott Rd    | 3.87  | 6.50  | 2.9    | 15.1  | 58.9  | 64.8      |            |           |
| 2 - Wulfere Way     | 9.00  | 9.00  | 0.0    | 45.0  | 58.9  | 52.4      |            |           |
| 3 - Berwick Way     | 11.73 | 11.73 | 0.0    | 34.5  | 58.9  | 46.7      |            |           |
| 4 - Frindsbury Hill | 3.60  | 7.00  | 95.5   | 21.4  | 58.9  | 45.0      |            |           |

### Bypass

| Arm                 | Arm has bypass | Bypass Util (%) |
|---------------------|----------------|-----------------|
| 1 - Wainscott Rd    |                |                 |
| 2 - Wulfere Way     | ✓              | 100             |
| 3 - Berwick Way     |                |                 |
| 4 - Frindsbury Hill |                |                 |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                 | Final slope | Final intercept (PCU/hr) |
|---------------------|-------------|--------------------------|
| 1 - Wainscott Rd    | 0.437       | 1187                     |
| 2 - Wulfere Way     | 0.706       | 2589                     |
| 3 - Berwick Way     | 0.855       | 3421                     |
| 4 - Frindsbury Hill | 0.588       | 1917                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm             | Type       | Reason | Percentage capacity adjustment (%) |
|-----------------|------------|--------|------------------------------------|
| 3 - Berwick Way | Percentage |        | 50.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D1 | 2031 | RC       | AM          | ONE HOUR             | 07:00              | 08:30               | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                 | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|---------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - Wainscott Rd    |            | ONE HOUR     | ✓            | 600                 | 100.000            |
| 2 - Wulfere Way     |            | ONE HOUR     | ✓            | 2527                | 100.000            |
| 3 - Berwick Way     |            | ONE HOUR     | ✓            | 2415                | 100.000            |
| 4 - Frindsbury Hill |            | ONE HOUR     | ✓            | 684                 | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                  |                  |                 |                 |                     |
|------|---------------------|------------------|-----------------|-----------------|---------------------|
|      |                     | 1 - Wainscott Rd | 2 - Wulfere Way | 3 - Berwick Way | 4 - Frindsbury Hill |
| From | 1 - Wainscott Rd    | 0                | 0               | 558             | 42                  |
|      | 2 - Wulfere Way     | 0                | 0               | 2267            | 260                 |
|      | 3 - Berwick Way     | 450              | 1485            | 66              | 414                 |
|      | 4 - Frindsbury Hill | 63               | 180             | 441             | 0                   |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                  |                  |                 |                 |                     |
|------|---------------------|------------------|-----------------|-----------------|---------------------|
|      |                     | 1 - Wainscott Rd | 2 - Wulfere Way | 3 - Berwick Way | 4 - Frindsbury Hill |
| From | 1 - Wainscott Rd    | 0                | 0               | 0               | 0                   |
|      | 2 - Wulfere Way     | 0                | 0               | 8               | 2                   |
|      | 3 - Berwick Way     | 0                | 10              | 1               | 1                   |
|      | 4 - Frindsbury Hill | 0                | 2               | 2               | 0                   |

## Results

### Results Summary for whole modelled period

| Arm                 | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|---------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - Wainscott Rd    | 1.48    | 969.11        | 137.9       | F       | 551                 | 826                           |
| 2 - Wulfere Way     | 0.15    | 2.27          | 0.2         | A       | 2319                | 358                           |
| 3 - Berwick Way     | 1.69    | 2044.33       | 939.5       | F       | 2216                | 3324                          |
| 4 - Frindsbury Hill | 0.66    | 9.23          | 1.9         | A       | 628                 | 941                           |



# 2031 RC PM - D2 - 2031 | RC | PM

## Data Errors and Warnings

| Severity | Area     | Item                                      | Description                                                                                                      |
|----------|----------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 4 - Frindsbury Hill - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name       | Include in report | Use specific Demand Set(s) | Specific Demand Set(s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|------------|-------------------|----------------------------|------------------------|---------------------------------|-------------------------------------|
| A2 | 2031 RC PM | ✓                 | ✓                          | D2                     | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name                   | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|------------------------|---------------------|------------|--------------------|--------------|
| 1        | Sans Pareil Roundabout | Standard Roundabout | 1, 2, 3, 4 | 807.27             | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -47         | 3 - Berwick Way              | 807.27            | F           |

## Arms

### Arms

| Arm | Name            | Description | No give-way line |
|-----|-----------------|-------------|------------------|
| 1   | Wainscott Rd    |             |                  |
| 2   | Wulfere Way     |             |                  |
| 3   | Berwick Way     |             |                  |
| 4   | Frindsbury Hill |             |                  |

### Roundabout Geometry

| Arm                 | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|---------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - Wainscott Rd    | 3.87  | 6.50  | 2.9    | 15.1  | 58.9  | 64.8      |            |           |
| 2 - Wulfere Way     | 9.00  | 9.00  | 0.0    | 45.0  | 58.9  | 52.4      |            |           |
| 3 - Berwick Way     | 11.73 | 11.73 | 0.0    | 34.5  | 58.9  | 46.7      |            |           |
| 4 - Frindsbury Hill | 3.60  | 7.00  | 95.5   | 21.4  | 58.9  | 45.0      |            |           |

### Bypass

| Arm                 | Arm has bypass | Bypass Util (%) |
|---------------------|----------------|-----------------|
| 1 - Wainscott Rd    |                |                 |
| 2 - Wulfere Way     | ✓              | 100             |
| 3 - Berwick Way     |                |                 |
| 4 - Frindsbury Hill |                |                 |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                 | Final slope | Final intercept (PCU/hr) |
|---------------------|-------------|--------------------------|
| 1 - Wainscott Rd    | 0.437       | 1187                     |
| 2 - Wulfere Way     | 0.706       | 2589                     |
| 3 - Berwick Way     | 0.855       | 3421                     |
| 4 - Frindsbury Hill | 0.588       | 1917                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm             | Type       | Reason | Percentage capacity adjustment (%) |
|-----------------|------------|--------|------------------------------------|
| 3 - Berwick Way | Percentage |        | 49.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D2 | 2031 | RC       | PM          | ONE HOUR             | 16:00              | 17:30               | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                 | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|---------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - Wainscott Rd    |            | ONE HOUR     | ✓            | 540                 | 100.000            |
| 2 - Wulfere Way     |            | ONE HOUR     | ✓            | 2302                | 100.000            |
| 3 - Berwick Way     |            | ONE HOUR     | ✓            | 2312                | 100.000            |
| 4 - Frindsbury Hill |            | ONE HOUR     | ✓            | 712                 | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                  |                  |                 |                 |                     |
|------|---------------------|------------------|-----------------|-----------------|---------------------|
|      |                     | 1 - Wainscott Rd | 2 - Wulfere Way | 3 - Berwick Way | 4 - Frindsbury Hill |
| From | 1 - Wainscott Rd    | 0                | 0               | 479             | 61                  |
|      | 2 - Wulfere Way     | 0                | 0               | 2017            | 285                 |
|      | 3 - Berwick Way     | 538              | 1324            | 48              | 402                 |
|      | 4 - Frindsbury Hill | 109              | 192             | 411             | 0                   |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                  |                  |                 |                 |                     |
|------|---------------------|------------------|-----------------|-----------------|---------------------|
|      |                     | 1 - Wainscott Rd | 2 - Wulfere Way | 3 - Berwick Way | 4 - Frindsbury Hill |
| From | 1 - Wainscott Rd    | 0                | 0               | 0               | 0                   |
|      | 2 - Wulfere Way     | 0                | 0               | 3               | 0                   |
|      | 3 - Berwick Way     | 0                | 5               | 0               | 1                   |
|      | 4 - Frindsbury Hill | 0                | 1               | 1               | 0                   |

## Results

### Results Summary for whole modelled period

| Arm                 | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|---------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - Wainscott Rd    | 1.18    | 314.77        | 53.8        | F       | 496                 | 743                           |
| 2 - Wulfere Way     | 0.17    | 2.28          | 0.2         | A       | 2112                | 392                           |
| 3 - Berwick Way     | 1.67    | 1969.59       | 874.9       | F       | 2122                | 3182                          |
| 4 - Frindsbury Hill | 0.67    | 9.20          | 2.0         | A       | 653                 | 980                           |



# 2031 DS AM - D3 - 2031 | DS | AM

## Data Errors and Warnings

| Severity | Area     | Item                                      | Description                                                                                                      |
|----------|----------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 4 - Frindsbury Hill - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name       | Include in report | Use specific Demand Set(s) | Specific Demand Set(s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|------------|-------------------|----------------------------|------------------------|---------------------------------|-------------------------------------|
| A3 | 2031 DS AM | ✓                 | ✓                          | D3                     | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name                   | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|------------------------|---------------------|------------|--------------------|--------------|
| 1        | Sans Pareil Roundabout | Standard Roundabout | 1, 2, 3, 4 | 1158.23            | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -52         | 3 - Berwick Way              | 1158.23           | F           |

## Arms

### Arms

| Arm | Name            | Description | No give-way line |
|-----|-----------------|-------------|------------------|
| 1   | Wainscott Rd    |             |                  |
| 2   | Wulfere Way     |             |                  |
| 3   | Berwick Way     |             |                  |
| 4   | Frindsbury Hill |             |                  |

### Roundabout Geometry

| Arm                 | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|---------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - Wainscott Rd    | 3.87  | 6.50  | 2.9    | 15.1  | 58.9  | 64.8      |            |           |
| 2 - Wulfere Way     | 9.00  | 9.00  | 0.0    | 45.0  | 58.9  | 52.4      |            |           |
| 3 - Berwick Way     | 11.73 | 11.73 | 0.0    | 34.5  | 58.9  | 46.7      |            |           |
| 4 - Frindsbury Hill | 3.60  | 7.00  | 95.5   | 21.4  | 58.9  | 45.0      |            |           |

### Bypass

| Arm                 | Arm has bypass | Bypass Util (%) |
|---------------------|----------------|-----------------|
| 1 - Wainscott Rd    |                |                 |
| 2 - Wulfere Way     | ✓              | 100             |
| 3 - Berwick Way     |                |                 |
| 4 - Frindsbury Hill |                |                 |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                 | Final slope | Final intercept (PCU/hr) |
|---------------------|-------------|--------------------------|
| 1 - Wainscott Rd    | 0.437       | 1187                     |
| 2 - Wulfere Way     | 0.706       | 2589                     |
| 3 - Berwick Way     | 0.855       | 3421                     |
| 4 - Frindsbury Hill | 0.588       | 1917                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm             | Type       | Reason | Percentage capacity adjustment (%) |
|-----------------|------------|--------|------------------------------------|
| 3 - Berwick Way | Percentage |        | 50.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D3 | 2031 | DS       | AM          | ONE HOUR             | 07:00              | 08:30               | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                 | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|---------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - Wainscott Rd    |            | ONE HOUR     | ✓            | 638                 | 100.000            |
| 2 - Wulfere Way     |            | ONE HOUR     | ✓            | 2585                | 100.000            |
| 3 - Berwick Way     |            | ONE HOUR     | ✓            | 2621                | 100.000            |
| 4 - Frindsbury Hill |            | ONE HOUR     | ✓            | 672                 | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                  |                  |                 |                 |                     |
|------|---------------------|------------------|-----------------|-----------------|---------------------|
|      |                     | 1 - Wainscott Rd | 2 - Wulfere Way | 3 - Berwick Way | 4 - Frindsbury Hill |
| From | 1 - Wainscott Rd    | 0                | 0               | 597             | 41                  |
|      | 2 - Wulfere Way     | 0                | 0               | 2286            | 299                 |
|      | 3 - Berwick Way     | 690              | 1351            | 68              | 512                 |
|      | 4 - Frindsbury Hill | 25               | 213             | 434             | 0                   |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                  |                  |                 |                 |                     |
|------|---------------------|------------------|-----------------|-----------------|---------------------|
|      |                     | 1 - Wainscott Rd | 2 - Wulfere Way | 3 - Berwick Way | 4 - Frindsbury Hill |
| From | 1 - Wainscott Rd    | 0                | 0               | 0               | 0                   |
|      | 2 - Wulfere Way     | 0                | 0               | 8               | 1                   |
|      | 3 - Berwick Way     | 0                | 10              | 1               | 1                   |
|      | 4 - Frindsbury Hill | 0                | 1               | 2               | 0                   |

## Results

### Results Summary for whole modelled period

| Arm                 | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|---------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - Wainscott Rd    | 1.38    | 725.95        | 116.1       | F       | 585                 | 878                           |
| 2 - Wulfere Way     | 0.18    | 2.37          | 0.2         | A       | 2372                | 412                           |
| 3 - Berwick Way     | 1.85    | 2698.28       | 1243.5      | F       | 2405                | 3608                          |
| 4 - Frindsbury Hill | 0.63    | 8.29          | 1.7         | A       | 617                 | 925                           |



# 2031 DS PM - D4 - 2031 | DS | PM

## Data Errors and Warnings

| Severity | Area     | Item                                      | Description                                                                                                      |
|----------|----------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Warning  | Geometry | 4 - Frindsbury Hill - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Analysis Set Details

| ID | Name       | Include in report | Use specific Demand Set(s) | Specific Demand Set(s) | Network flow scaling factor (%) | Network capacity scaling factor (%) |
|----|------------|-------------------|----------------------------|------------------------|---------------------------------|-------------------------------------|
| A4 | 2031 DS PM | ✓                 | ✓                          | D4                     | 100.000                         | 100.000                             |

## Junction Network

### Junctions

| Junction | Name                   | Junction type       | Arm order  | Junction Delay (s) | Junction LOS |
|----------|------------------------|---------------------|------------|--------------------|--------------|
| 1        | Sans Pareil Roundabout | Standard Roundabout | 1, 2, 3, 4 | 1009.45            | F            |

### Junction Network

| Driving side | Lighting       | Res Cap (%) | First arm reaching threshold | Network delay (s) | Network LOS |
|--------------|----------------|-------------|------------------------------|-------------------|-------------|
| Left         | Normal/unknown | -51         | 3 - Berwick Way              | 1009.45           | F           |

## Arms

### Arms

| Arm | Name            | Description | No give-way line |
|-----|-----------------|-------------|------------------|
| 1   | Wainscott Rd    |             |                  |
| 2   | Wulfere Way     |             |                  |
| 3   | Berwick Way     |             |                  |
| 4   | Frindsbury Hill |             |                  |

### Roundabout Geometry

| Arm                 | V (m) | E (m) | I' (m) | R (m) | D (m) | PHI (deg) | Entry only | Exit only |
|---------------------|-------|-------|--------|-------|-------|-----------|------------|-----------|
| 1 - Wainscott Rd    | 3.87  | 6.50  | 2.9    | 15.1  | 58.9  | 64.8      |            |           |
| 2 - Wulfere Way     | 9.00  | 9.00  | 0.0    | 45.0  | 58.9  | 52.4      |            |           |
| 3 - Berwick Way     | 11.73 | 11.73 | 0.0    | 34.5  | 58.9  | 46.7      |            |           |
| 4 - Frindsbury Hill | 3.60  | 7.00  | 95.5   | 21.4  | 58.9  | 45.0      |            |           |

### Bypass

| Arm                 | Arm has bypass | Bypass Util (%) |
|---------------------|----------------|-----------------|
| 1 - Wainscott Rd    |                |                 |
| 2 - Wulfere Way     | ✓              | 100             |
| 3 - Berwick Way     |                |                 |
| 4 - Frindsbury Hill |                |                 |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm                 | Final slope | Final intercept (PCU/hr) |
|---------------------|-------------|--------------------------|
| 1 - Wainscott Rd    | 0.437       | 1187                     |
| 2 - Wulfere Way     | 0.706       | 2589                     |
| 3 - Berwick Way     | 0.855       | 3421                     |
| 4 - Frindsbury Hill | 0.588       | 1917                     |

The slope and intercept shown above include any corrections and adjustments.

### Arm Capacity Adjustments

| Arm             | Type       | Reason | Percentage capacity adjustment (%) |
|-----------------|------------|--------|------------------------------------|
| 3 - Berwick Way | Percentage |        | 48.00                              |

## Traffic Demand

### Demand Set Details

| ID | Year | Scenario | Time period | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) | Run automatically |
|----|------|----------|-------------|----------------------|--------------------|---------------------|---------------------------|-------------------|
| D4 | 2031 | DS       | PM          | ONE HOUR             | 16:00              | 17:30               | 15                        | ✓                 |

### Demand overview (Traffic)

| Arm                 | Linked arm | Profile type | Use O-D data | Av. Demand (PCU/hr) | Scaling Factor (%) |
|---------------------|------------|--------------|--------------|---------------------|--------------------|
| 1 - Wainscott Rd    |            | ONE HOUR     | ✓            | 525                 | 100.000            |
| 2 - Wulfere Way     |            | ONE HOUR     | ✓            | 2400                | 100.000            |
| 3 - Berwick Way     |            | ONE HOUR     | ✓            | 2410                | 100.000            |
| 4 - Frindsbury Hill |            | ONE HOUR     | ✓            | 713                 | 100.000            |

## Origin-Destination Data

### Demand (PCU/hr)

|      | To                  |                  |                 |                 |                     |
|------|---------------------|------------------|-----------------|-----------------|---------------------|
|      |                     | 1 - Wainscott Rd | 2 - Wulfere Way | 3 - Berwick Way | 4 - Frindsbury Hill |
| From | 1 - Wainscott Rd    | 0                | 0               | 465             | 60                  |
|      | 2 - Wulfere Way     | 0                | 0               | 2048            | 352                 |
|      | 3 - Berwick Way     | 780              | 1109            | 51              | 470                 |
|      | 4 - Frindsbury Hill | 103              | 174             | 436             | 0                   |

## Vehicle Mix

| HV data entry mode | PCU Factor for a HV (PCU) |
|--------------------|---------------------------|
| HV Percentages     | 2.00                      |

### Heavy Vehicle %

|      | To                  |                  |                 |                 |                     |
|------|---------------------|------------------|-----------------|-----------------|---------------------|
|      |                     | 1 - Wainscott Rd | 2 - Wulfere Way | 3 - Berwick Way | 4 - Frindsbury Hill |
| From | 1 - Wainscott Rd    | 0                | 0               | 0               | 0                   |
|      | 2 - Wulfere Way     | 0                | 0               | 3               | 0                   |
|      | 3 - Berwick Way     | 0                | 6               | 0               | 1                   |
|      | 4 - Frindsbury Hill | 0                | 1               | 1               | 0                   |

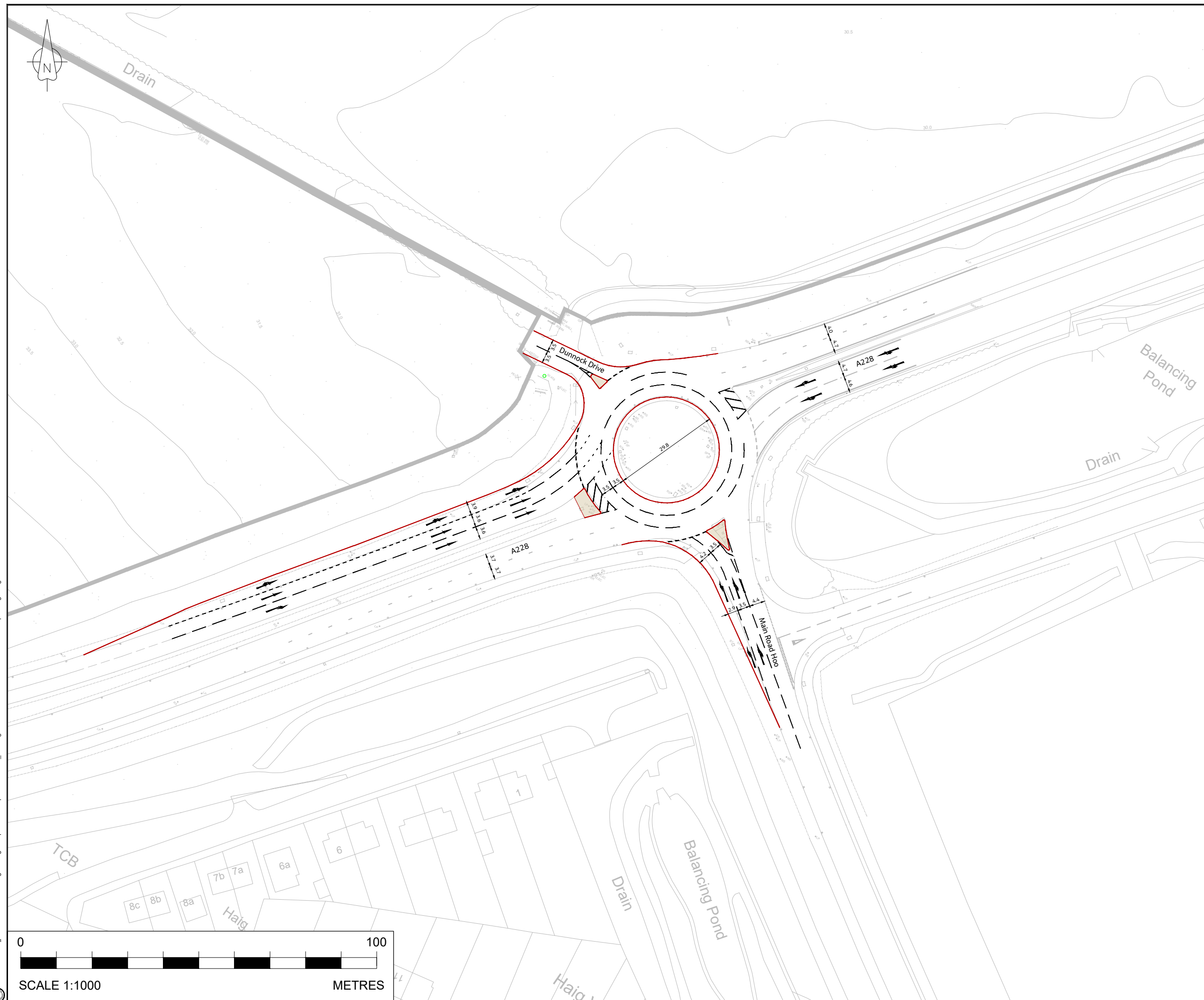
## Results

### Results Summary for whole modelled period

| Arm                 | Max RFC | Max Delay (s) | Max Q (PCU) | Max LOS | Av. Demand (PCU/hr) | Total Junction Arrivals (PCU) |
|---------------------|---------|---------------|-------------|---------|---------------------|-------------------------------|
| 1 - Wainscott Rd    | 0.98    | 94.30         | 14.7        | F       | 482                 | 723                           |
| 2 - Wulfere Way     | 0.21    | 2.49          | 0.3         | A       | 2202                | 485                           |
| 3 - Berwick Way     | 1.82    | 2507.80       | 1091.3      | F       | 2211                | 3317                          |
| 4 - Frindsbury Hill | 0.64    | 8.20          | 1.8         | A       | 654                 | 981                           |



**Appendix B. Proposed Mitigation Design Layouts**



NOTES

KEY

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FOR DISCUSSION ONLY

**Jacobs**

|        |  |
|--------|--|
| Client |  |
|--------|--|

Drawing title

Drawing status

Scale

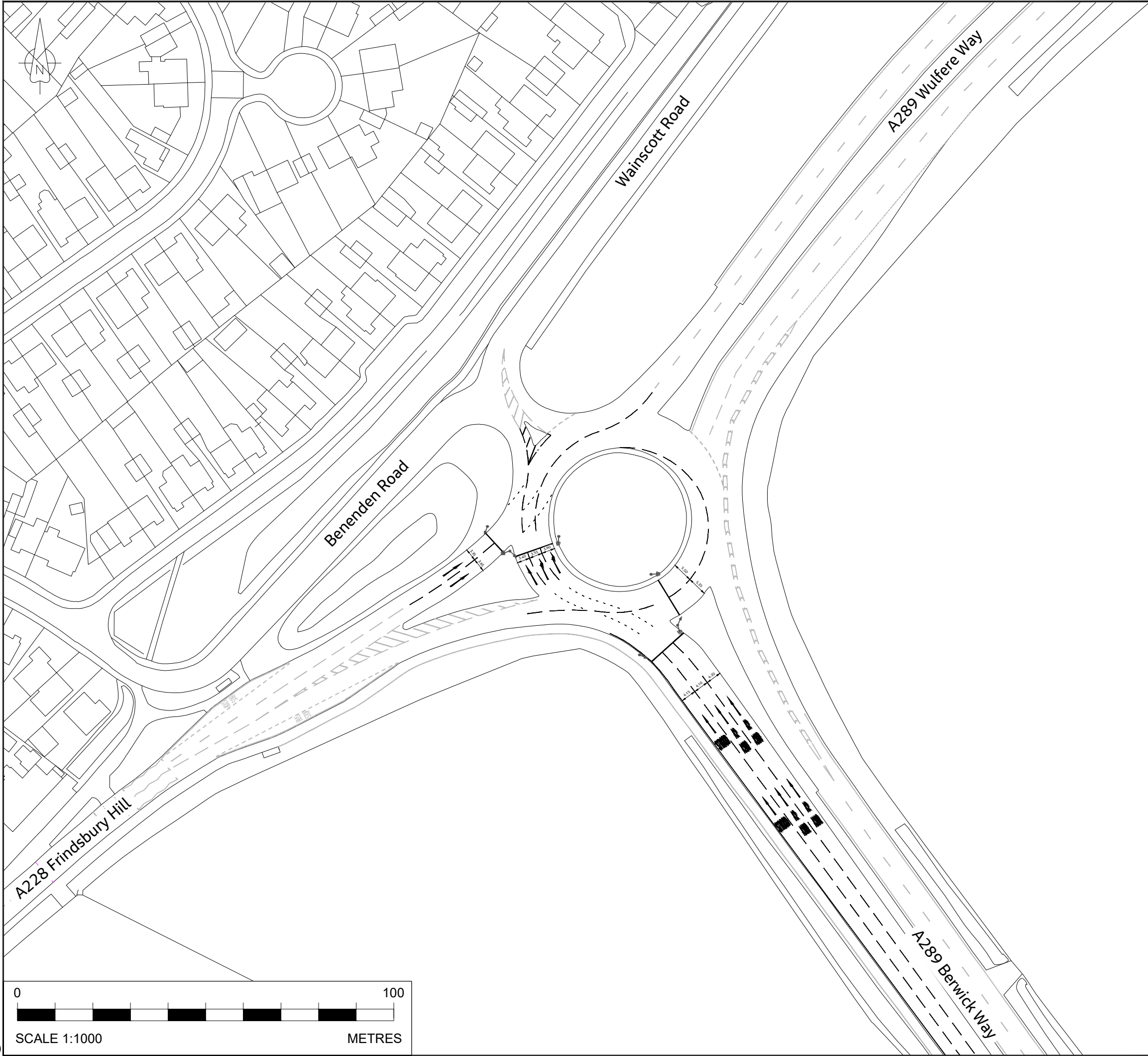
Jacobs No

Client No.

Drawing number

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GBLON\VS01\europa.jacobs.com\Projects\UNIP\Projects\BES\016 Kent Countywide Model\KCC Model Custodian Framework\Call-off Tasks\Tonbridge & Mailing and Sevenoaks LP119 Mitigation\Sans Pareil Roundabout\3 Lane Spiral.dwg - 23.06.2026 13:21:46 - 01 - WITOWSJ



- NOTES
1. Drawing to be printed in colour.
  2. Layouts to be agreed with relevant land owners / stakeholder.
  3. Do not scale from this drawing.
  4. All dimensions in metres unless otherwise noted
  5. Existing infrastructure such as drainage, street lighting, traffic signs and signal ducts are subject to alteration as required.
  6. All road markings and signs are as per the traffic signs regulations and general directions 2016 (tsrgd) and traffic signs manual.
  7. The feasibility of this design solution is subject to further work to be conducted during the next design stage.
  8. The contractor to be responsible for establishing the position and status of all statutory utility apparatus prior to commencing of excavation works.
  9. This plan is based on Ordnance Survey Mapping provided by Kent County Council. © Crown copyright and database rights 0100019238

- KEY
- Proposed White Road Markings
  - Proposed Kerbs
  - Proposed Signal Heads
  - Existing Road Markings

DRAFT  
FOR DISCUSSION ONLY

|     |           |                     |      |         |       |         |  |
|-----|-----------|---------------------|------|---------|-------|---------|--|
|     |           |                     |      |         |       |         |  |
|     |           |                     |      |         |       |         |  |
|     |           |                     |      |         |       |         |  |
| P01 | June 2026 | First Issue         | JW   | BS      | BS    | MT      |  |
| Rev | Rev. Date | Purpose of revision | Orig | Check'd | Rev'd | Apprv'd |  |

**Jacobs**  
Cottons Centre, Cottons Lane, London SE1 2QG  
Tel: +44(0)20 3980 2000  
www.jacobs.com

Client

**Kent County Council**  
kent.gov.uk

Project

Kent Model Custodianship  
Tonbridge and Mailing Local Plan

Drawing title

Sans Pareil Roundabout  
Concept Mitigation Design

Sheet 1 of 1

|                |             |              |
|----------------|-------------|--------------|
| Drawing status | DRAFT       | Suitability  |
| Scale          | 1:1000 @ A3 | DO NOT SCALE |
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| Client No.     |             | P01          |

Drawing number

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**Appendix C. Order of Magnitude Cost Estimates**

## Order of Magnitude Cost Estimate Report

Document no: B2432000

Medway Council

Kent Model Custodianship Medway Local Plan – Main Road Hoo & Sans  
Pareil Roundabouts  
6 August 2026



## Order of Magnitude Cost Estimate Report

**Client name:** Medway Council  
**Project name:** Kent Model Custodianship Medway Local Plan  
**Client reference:** N/A  
**Document no:** B2432000  
**Revision no:** P01  
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**Project no:** B2432000  
**Project manager:** Jessica Denny  
**Prepared by:** Lee Melvin / Taahir Mannan  
**File name:** B2432000 Kent Model Custodianship – Medway Local Plan Order of Magnitude Cost Estimate Report P01

## Document history and status

| Version | Date     | Description | Author              | Checked | Reviewed | Approved |
|---------|----------|-------------|---------------------|---------|----------|----------|
| P01     | 06/08/26 | For issue   | L Melvin / T Mannan | C Shaw  | M Clark  | J Denny  |
|         |          |             |                     |         |          |          |

## Distribution of copies

| Version | Issue approved | Date issued | Issued to | Comments |
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### Jacobs U.K. Limited

2nd Floor, Cottons Centre  
Cottons Lane  
London SE1 2QG  
United Kingdom

T +44 (0)203 980 2000  
[www.jacobs.com](http://www.jacobs.com)

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## Appendices

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| <b>Appendix B.</b> | <b>Cost Estimate</b>                  |

# 1. Project Summary

This Order of Magnitude Cost Estimate Report (Rev P01) provides an estimate for the two interim highway improvement schemes at Main Road Hoo and Sans Pareil Roundabouts in Medway. The Regulation 19 analysis determined that these junctions are over capacity and require mitigation within the first five years of the Local Plan period. The principal scope of works for Sans Pareil consists of the signalisation of the existing roundabout, whereas the principal scope of works for Main Road Hoo consists of the widening of both Southern and Western arms of the roundabout.

The Four Elms roundabout junction was also identified as requiring an interim mitigation scheme in Year 5 of the plan period, however, an existing interim mitigation scheme designed by Stantec was assessed to provide sufficient capacity in this location. Costings for this junction mitigation scheme has not been included within this report, and it is considered that Stantec may have the available costs for this mitigation scheme.

A summary of the costs for the two interim designs designed by Jacobs at Main Road Hoo and Sans Pareil are as follows, however this report should be read in full to understand the basis of the costs, assumptions and exclusions, with no excerpts to be representative of the findings:

Table 1-1. Cost Summary

| Summary                                  |                                                      | Main Road Hoo<br>Roundabout<br>Total<br>£ | Sans Pareil<br>Roundabout<br>Total<br>£ | Total<br>£       |
|------------------------------------------|------------------------------------------------------|-------------------------------------------|-----------------------------------------|------------------|
| <b>Highway Works</b>                     |                                                      |                                           |                                         |                  |
| 01                                       | Preliminaries                                        | 489,000                                   | 212,000                                 | 701,000          |
| 02                                       | Roadworks                                            | 978,000                                   | 425,000                                 | 1,403,000        |
| 03                                       | Structures (Bridges, Viaducts, etc)                  | N/A                                       | N/A                                     | N/A              |
| 04                                       | Structures (Retaining walls, culverts, subways, etc) | N/A                                       | N/A                                     | N/A              |
| 05                                       | Miscellaneous Works                                  | Excluded                                  | Excluded                                | Excluded         |
| 06                                       | Accommodation Works                                  | Excluded                                  | Excluded                                | Excluded         |
| 07                                       | Facilitating Works                                   | Excluded                                  | Excluded                                | Excluded         |
|                                          | <b>Sub-Total (A)</b>                                 | <b>1,467,000</b>                          | <b>637,000</b>                          | <b>2,104,000</b> |
| <b>Statutory Undertakers Works</b>       |                                                      |                                           |                                         |                  |
| 08                                       | Statutory Undertakers Works                          | 293,000                                   | 50,000                                  | 343,000          |
|                                          | <b>Sub-Total (B)</b>                                 | <b>1,760,000</b>                          | <b>687,000</b>                          | <b>2,447,000</b> |
| <b>Project / Design Team Fees</b>        |                                                      |                                           |                                         |                  |
| 09                                       | Project / Design Team Fees                           | 293,000                                   | 127,000                                 | 420,000          |
| <b>Other Development / Project Costs</b> |                                                      |                                           |                                         |                  |
| 10                                       | Other Development / Project Costs                    | Excluded                                  | Excluded                                | Excluded         |
|                                          | <b>Sub-Total (C)</b>                                 | <b>2,053,000</b>                          | <b>814,000</b>                          | <b>2,867,000</b> |
| <b>Inflation</b>                         |                                                      |                                           |                                         |                  |
| 11                                       | Inflation                                            | Excluded                                  | Excluded                                | Excluded         |
|                                          | <b>Sub-Total (D)</b>                                 | <b>2,053,000</b>                          | <b>814,000</b>                          | <b>2,867,000</b> |
| <b>Risk</b>                              |                                                      |                                           |                                         |                  |
| 12                                       | Risk                                                 | 821,000                                   | 326,000                                 | 1,147,000        |
|                                          | <b>Total (Excl. VAT)</b>                             | <b>2,874,000</b>                          | <b>1,140,000</b>                        | <b>4,014,000</b> |

Note: Costs rounded to the nearest thousand pounds. Base date of this estimate is 2Q2026 and has an expected accuracy level of -30% to +50%. Details of the estimate have been included in Appendix B of this report.

## 2. Methodology

The methodology detailed below has been used to prepare this cost estimate.

Figure 2-1. Methodology



**Scope:** The scope of works to be included in this estimate has been agreed with Medway Council (through the Kent County Council Modelling Custodianship) via Jacobs PM & designers and is defined by the design information included in Appendix A of this report. Section 3 of this report details those elements of the works that are included within each section of the estimate, as well as any assumptions and exclusions that have been made.

**Quantification:** Section 4 of this report details the methods used to quantify the various elements of the scope of works and identifies any industry Standard Methods of Measurement or Work Breakdown Structures that have been used.

**Basis of Cost Estimate:** The base date of the estimate, location factors, pricing methods and expected accuracy ranges are included in Section 5 of this report.

**Check, Review & Approve:** A line by line check of the estimate is carried out by an experienced surveyor prior to final high level review by an estimating manager and prior to approval by the Project Manager. This process is undertaken in accordance with Jacobs UK Ltd Business Management System – Work Instruction WI-3100.

### **3. Scope**

This cost estimate has been based upon the design information listed in Appendix A of this report.

#### **3.1 Highway Works**

##### **3.1.1 Preliminaries**

The cost of Preliminaries includes Main Contractor's cost items such as:

- Project specific management and staff.
- Visiting management and staff.
- Support costs; staff travel, accommodation and subsistence.
- Site accommodation, offices, canteens, drying rooms, toilets and washrooms, laboratories, stores, compounds and the like.
- Temporary works, bases & foundations, connections to services, temporary site roads and paths, temporary drainage, haul roads, barriers and scaffolding.
- Traffic safety and management, temporary diversions for traffic, recovery vehicles, temporary CCTV and temporary speed camera systems.
- Furniture and equipment, IT systems, radio & telecommunications systems, sundries and consumables.
- Temporary water, gas, and electric supplies.
- Cleaning site accommodation and waste management.
- Security staff and equipment, hoardings, fences, gates and information boards.
- Safety and environmental protection, PPE, fire points, first aiders and traffic marshals.
- Contractor's surveys, inspection and monitoring, setting out, protection of the works, samples and testing.
- Mechanical plant, cranes, hoists, access plant, concrete plant, generators and compressors, and small tools.
- Site records, testing and commissioning, handover, post completion services.
- Insurances, bonds, guarantees and warranties.
- Procurement framework rebate fees.

##### **3.1.2 Roadworks**

The cost of the following Roadworks are included in this estimate where applicable:

- Roadworks General
  - Site Preparation, Fencing and Earthworks
- Main carriageway, Interchanges and Side Roads
  - Drainage and service ducts, Pavement and Kerbs, Footways, Cycle Track, Paved Area, Kerb Unit & Access Step Construction
- Signs, Motorway Communications and Lighting
  - Traffic Signs & Road Markings and Road Lighting Columns
- Landscape & Ecology

##### **3.1.3 Structures**

Structures are not considered relevant to this estimate.

##### **3.1.4 Miscellaneous Works**

Miscellaneous Works are not considered relevant to this estimate.

##### **3.1.5 Accommodation Works**

Accommodation Works (e.g. alterations to boundary fencing, accesses and driveways) are excluded from this estimate.

### **3.1.6 Facilitating Works**

Facilitating Works (e.g., contaminated ground, material removal, invasive plant growth removal, etc.) are excluded from this estimate as detailed in Section 3.9 below.

## **3.2 Statutory Undertakers Works**

The cost of the following Statutory Undertakers Works are included in this estimate:

- Temporary and permanent diversion works including diversion of statutory undertakers services (e.g. water, electricity, gas and communications).

## **3.3 Project / Design Team Fees**

The cost of the following Project / Design Team Fees are included in this estimate:

- Client's project team and design consultant's fees.

All other Project / Design Team Fees (e.g. Main Contractor's design costs) are excluded from this estimate as detailed in Section 3.9 below

## **3.4 Other Development / Project Costs**

Other Development / Project Costs are excluded from this estimate as detailed in Section 3.9 below.

## **3.5 Inflation**

Tender Inflation and Construction Inflation are excluded from this estimate as detailed in Section 3.9 below.

## **3.6 Risk**

### **3.6.1 Risk (Design, Construction & Client Risk)**

A percentage allowance has been included in this estimate for design development risks, construction risks, Client change risks and Client other risks as detailed in Section 4.6 below.

### **3.6.2 Optimism Bias**

Optimism Bias is excluded from this estimate as detailed in Section 3.9 below.

## **3.7 Value Added Tax (VAT)**

Value Added Tax (VAT) is excluded from this cost estimate as detailed in Section 3.9 below.

## **3.8 Assumptions**

The following assumptions have been made in the preparation of this cost estimate:

- Construction Works will generally be undertaken outside of normal working hours in the night.
- Main Contractor's access to the site is unrestricted.
- Existing site conditions, extent of works and level of specification are as set out in the information included in Appendix A.
- Allowance has been included for take up or down items that have been quantified based on the items affected by the proposed works as shown on the drawing and google maps.
- Allowances for earthworks have been included within other relevant measured items such as pavement items etc with earthworks quantities calculated from the proposed pavement and footway construction depths.
- All excavated material is assumed to be unacceptable material Class U1A.
- All excavated material is to be disposed off-site.

- An allowance has been included for re-grading the existing embankment along the A228 approach at Main Road Hoo Roundabout. This is based on building up the existing embankment by 0.5m over a width of 5m for the length of the proposed carriageway widening works.
- Allowances for drainage and service ducts has been included for relocation of gullies affected by the works, a new carrier drain servicing the relocated gullies and raising/lowering existing service covers at Main Road Hoo Roundabout.
- No drainage and service ducts works at San Pareil Roundabout.
- An additional allowance for 100m<sup>3</sup> attenuation system has been included at Main Road Hoo Roundabout.
- The road box construction allowed in this estimate is assumed to be 40mm surface course, 60mm binder course, 200mm base course & 300mm type 1 sub-base.
- Resurfacing has been included in Main Road Hoo Roundabout to all existing pavement areas with proposed road markings except Dunnock Drive.
- Resurfacing of existing carriageway has been included to San Pareil Roundabout to areas of proposed road markings except A228 Northbound.
- Regulating material has been included at a depth of 20mm to all areas of pavement resurfacing.
- No pavement tie-in works have been included at the Main Road Hoo Roundabout, as the adjacent carriageway is to be resurfaced, incorporating both binder course and surface course replacement.
- Traffic Island construction allowed in the estimate is 275mm thick (150mm thick sub-base, 100mm thick binder course and 25mm thick surface course).
- Tactile paving construction allowed in the estimate is 400mm thick (150mm thick subbase, 150mm thick base course, 35mm thick mortar bedding and 65mm thick paving slabs).
- All new kerbs are assumed to be precast concrete.
- Allowances have been included for proposed traffic signs based on area of proposed carriageway works.
- Allowances have been included for removal of road markings at San Pareil Roundabout based on minimum visit charges
- Allowances have been included for proposed road markings based on cost per m<sup>2</sup> of proposed carriageway area.
- An allowance for permanent bollards has been included to proposed traffic islands
- An allowance has been included at San Pareil Roundabout for the signalisation of the existing roundabout.
- An allowance has been included for new road lighting columns to replace existing road lighting columns affected by the proposed works at Main Road Hoo Roundabout.
- An allowance for verge reinstatement (1m width) to areas of verge affected by the proposed works has been at Main Road Hoo Roundabout
- An allowance for verge reinstatement (5m width) to regraded embankment at Main Road Hoo Roundabout.

### 3.9 Exclusions

The following items are excluded from this cost estimate:

- Accommodation Works
  - Accommodation Works (e.g. alterations to boundary fencing, accesses and driveways).
- Facilitating Works
  - Toxic/hazardous material removal including removal of toxic or hazardous parts of building fabric and hazardous materials or components from existing services installations.
  - Removal and/or treatment of contaminated ground material.
  - Unexploded ordnance removal / clearance.
  - Eradication of invasive plant growth.
  - Ground gas venting measures including gas proof membranes, perforated collection pipes, proprietary gas dispersal fin layers, radon sumps and vent pipes.
  - Soil stabilisation measures including cement or chemical grouting, electrochemical stabilisation, sand stowing, soil nailing, ground anchors, compacting, and freezing of groundwater and subsoil.
  - Site dewatering and pumping to lower the ground water level of the site, including forming well points, filling, drain tubes and ring mains, sumps, pumps and pumping, off-site disposal of water, running costs and attendance.
  - Extraordinary site investigation works including archaeological investigation, reptile/wildlife mitigation measures and other site investigation works.

- Statutory Undertakers Works
  - Temporary and permanent diversion works including diversion of statutory undertakers services (e.g. water, electricity, gas and communications) with the exception of those works stated in the estimates.
- Project / Design Team Fees
  - Client's construction management and supervision costs.
  - Main Contractor's design fees.
  - Main Contractor's pre-construction fees including associated management and staff, specialist support services fees, temporary accommodation, services and facilities, charges, overheads and profit.
- Other Development / Project Costs
  - Compensation for permanent land take; statutory loss payments; possible disturbance claims; potential Part 1 claims and professional fees incurred by the claimants.
  - Client finance costs, costs in connection with funding of project.
  - Fees, planning fees, building control fees, oversailing fees, fees in connection with party wall awards, fees in connection with rights of light agreements, fees in connection with other agreements between the Client and neighbours to facilitate the project, other fees in connection with licences, permits and agreements.
  - Charges, rates on temporary accommodation, licences in connection with hoardings, scaffolding, gantries and the like and licences in connection with crossovers, parking permits, parking bay suspension and the like.
  - Planning contributions, direct financial contributions in connection with planning consent, and environmental improvement works.
  - Insurances other than Main Contractor's works insurance.
  - Decanting and relocation costs, temporary relocation costs, temporary accommodation, rents and other running costs.
  - Fixtures, fittings and equipment other than that included in design.
  - Marketing costs, public relations events, site based advertising and public relations literature.
- Inflation
  - Tender Inflation
  - Construction Inflation
- Risk
  - Department for Transport or His Majesty's Treasury provision for Optimism Bias.
- Taxation & Grants
  - Capital allowances.
  - Grants.
  - Value Added Tax (VAT).

## **4. Quantification**

All quantities and measurements contained within this report must not be relied upon for any other purpose other than the formulation of this cost estimate.

### **4.1 Highway Works**

The Highways Works element of this estimate have wherever possible been quantified in accordance with the Manual of Contract Documents for Highway Works, Volume 4, Bills of Quantities for Highway Works published by the Highways Agency (now National Highways). The work breakdown structure adopted is based on Table 1 included in Section 1, Chapter III of the Method of Measurement for Highways Works (MMHW). Where items of work cannot be quantified either a percentage or sum allowance has been included.

The detailed estimate is included in Appendix B which has been prepared using the RIB iTwo CostX Estimating Software. Quantities are either directly entered into take off sheets or measured electronically.

#### **4.1.1 Preliminaries**

An allowance of 50% on the cost of Roadworks has been included for Main Contractor's Preliminaries and Traffic Management.

#### **4.1.2 Roadworks**

Roadworks have been quantified and itemised in accordance with the relevant series of the MMHW and the cost estimated on a unit cost basis.

#### **4.1.3 Structures**

Excluded from this estimate.

#### **4.1.4 Miscellaneous Works**

Excluded from this estimate.

#### **4.1.5 Accommodation Works**

Excluded from this estimate.

#### **4.1.6 Facilitating Works**

Excluded from this estimate.

### **4.2 Statutory Undertaker Works**

The following allowances have been included for Statutory Undertakers Works:

- Main Road Hoo – An allowance of 20% on the costs of Highway Works.
- Sans Pareil Roundabout – An allowance of £50,000 for Statutory Undertakers Works associated with the traffic signals installation.

We recommend that a specialist consultant (such as Paige Solutions Ltd) be engaged to provide specialist cost advice for the proposed designs.

### **4.3 Project / Design Team Fees**

An allowance of 20% on the cost of Highway Works has been included for Client's project team and design consultant's fees.

## 4.4 Other Development / Project Costs

Excluded from this estimate.

## 4.5 Inflation

Excluded from this estimate.

## 4.6 Risk

### 4.6.1 Risk (Design, Construction & Client Risk)

Section 3.1.1 of "The Department for Transport Guidance, TAG Unit A1.2, Scheme Costs, dated May 2025" states that a Quantified Risk Assessment (QRA) is required for all transport projects with a cost greater than £7m and is encouraged for smaller schemes.

In the absence of a QRA an allowance of 40% on the cost of Highway Works has been included in this estimate for design development risks, construction risks, Client change risks and Client other risks.

**Table 4-1. Typical Risk Range**

| National Highways PCF Stage (or equivalent) | Estimate Type                  | Risk     |
|---------------------------------------------|--------------------------------|----------|
| 0 & 1: Strategy & Option Identification     | Order of Magnitude             | 40 - 60% |
| 1 & 2: Option Identification & Selection    | Options Estimate               | 25 - 40% |
| 3: Preliminary Design                       | Preliminary / Initial Estimate | 20 - 25% |
| 4: Statutory Procedures and Powers          | Developing Estimate            | 15 - 20% |
| 5: Construction Preparation                 | Final Estimate                 | 10 - 15% |
| 6: Construction                             | Cost to Complete Estimate      | 5 - 10%  |

### 4.6.2 Optimism Bias

Section 3.2.24 of "The Department for Transport Guidance, TAG Unit A1.2, Scheme Costs, dated May 2025" states that Optimism Bias uplift are only required for the economic case of a proposal, hence Optimism Bias has not been included within the cost estimate.

## 4.7 Value Added Tax (VAT)

Excluded from this estimate.

## 5. Basis of Cost Estimate

### 5.1 Base Date

The base date of the estimate is 2nd Quarter 2026 (2Q 2026).

### 5.2 Region

The works are located in the South East region of the United Kingdom of Great Britain and Northern Ireland.

Figure 5-1. Regional Map



### 5.3 Pricing

#### 5.3.1 General

The figures provided in this cost estimate report are not considered "Bankable". Information from this estimate cannot be used or relied upon by any third party.

The rates and prices used are:

- In pounds sterling.
- Reflective of construction projects of a similar size and nature.
- Inclusive of profit margins and contributions to head office overheads.
- Inclusive of all Plant, Labour and Materials.

#### 5.3.2 Percentage Allowances

Percentage allowances have been included for:

- Main Contractor's Preliminaries & Traffic Management.
- Client Project & Design Team Fees.
- Statutory Undertakers Works (Main Road Hoo Roundabout only).
- Risk.

### 5.3.3 Approximate Estimating Rates

The following elements have been priced using approximate estimating rates:

- Roadworks.
- Statutory Undertakers Works (San Pareil Roundabout only).

### 5.3.4 Unit Rates

The following elements have been priced using unit rates:

- Roadworks.

### 5.3.5 Resource Costs

Resource Costs have not been used in this estimate.

## 5.4 Programme

No programme has been provided.

## 5.5 Range of Accuracy

A cost estimate produced at this stage, based on the available information, will have an expected accuracy level of -30% to +50%.

Table 5-1. Range of Accuracy

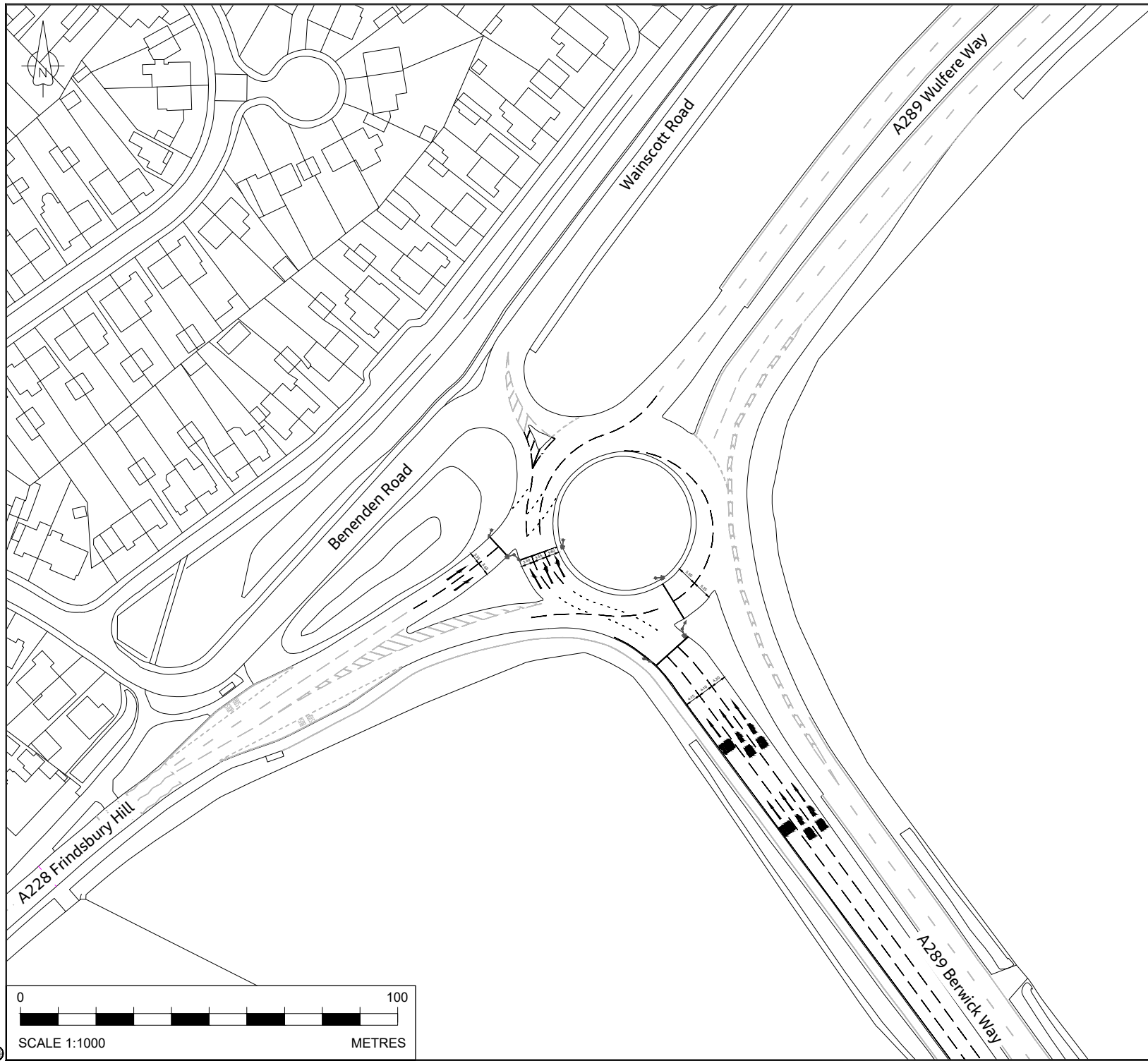
| Estimate Class        | Level of Project Definition | End Usage                                               | Methodology                                                       | Expected Accuracy Range |
|-----------------------|-----------------------------|---------------------------------------------------------|-------------------------------------------------------------------|-------------------------|
| Order of Magnitude    | 0% to 2%                    | Concept                                                 | Percentage Allowances / Approximate Estimating Rates              | -30% to +50%            |
| Options               | 1% to 15%                   | Study or Feasibility                                    | Percentage Allowances / Approximate Estimating Rates              | -20% to +30%            |
| Preliminary / Initial | 10% to 40%                  | Design Development, Budget Authorisation or Feasibility | Percentage Allowances / Approximate Estimating Rates / Unit Rates | -15% to +20%            |
| Developing            | 30% to 75%                  | Control or Bid / Tender                                 | Unit Rates / Resource Costs                                       | -10% to +15%            |
| Final                 | 65% to 100%                 | Check Estimate or Bid / Tender                          | Unit Rates / Resource Costs                                       | -5% to +10%             |

## Appendix A. Register of Design Information

| Document No.                    | Rev | Document Title                                                | Status |
|---------------------------------|-----|---------------------------------------------------------------|--------|
| B2432000-JAC-KCC-DR-GA-MH-0001  | P01 | Main Hoo Road Roundabout Mitigations Sheet 1 of 1             | DRAFT  |
| B2432000-JAC-KCC-DR-GA-SPR-0001 | P01 | Sans Pareil Roundabout Concept Mitigation Design Sheet 1 of 1 | DRAFT  |



U:\GBL\ONT\VS01\_europe.jacobs.com\Projects\UNIP\Projects\BESPD016 Kent Countywide Model\KCC Model Custodian Framework\Cal-off Tasks\Tonbridge & Malling and Sewerage LP119 Mitigation\Sans Pareil Roundabout 3 Lane Spiral.dwg - 23.06.2026 13:21:46 - 01 - WITOWISUJ



#### NOTES

1. Drawing to be printed in colour.
2. Layouts to be agreed with relevant land owners / stakeholder.
3. Do not scale from this drawing.
4. All dimensions in metres unless otherwise noted
5. Existing infrastructure such as drainage, street lighting, traffic signs and signal ducts are subject to alteration as required.
6. All road markings and signs are as per the traffic signs regulations and general directions 2016 (tsrgd) and traffic signs manual.
7. The feasibility of this design solution is subject to further work to be conducted during the next design stage.
8. The contractor to be responsible for establishing the position and status of all statutory utility apparatus prior to commencing of excavation works.
9. This plan is based on Ordnance Survey Mapping provided by Kent County Council. © Crown copyright and database rights 0100019238

#### KEY

- Proposed White Road Markings
- Proposed Kerbs
- Proposed Signal Heads
- Existing Road Markings

**DRAFT**  
FOR DISCUSSION ONLY

| Rev | Rev Date  | Purpose of revision | Orig | Check'd | Rev'd | Apprv'd |
|-----|-----------|---------------------|------|---------|-------|---------|
| 001 | June 2024 | First issue         | JM   | SL      | RY    | MT      |

**Jacobs**  
Cottone Centre, Cottone Lane, London SE1 2DG  
Tel: +44(0)20 3980 2000  
www.jacobs.com

Client  
**Kent County Council**  
Kent group

Project  
Kent Model Custodianship  
Tonbridge and Malling Local Plan

Drawing title  
**Sans Pareil Roundabout  
Concept Mitigation Design**

Sheet 1 of 1

|                |             |              |
|----------------|-------------|--------------|
| Drawing status | DRAFT       | Suitability  |
| Scale          | 1:1000 @ A3 | DO NOT SCALE |
| Jacobs No.     | B2432000    |              |
| Client No.     |             | P01          |

Drawing number  
**B2432000-JAC-KCC-DR-GA-SPR-0001**

We warrant that the design and drawings are prepared in accordance with the requirements of the contract and that the design and drawings are the property of Jacobs. Jacobs accepts no liability for any loss or damage caused by the use of the design and drawings for any purpose other than that for which they were prepared. The drawing has been prepared on behalf of, and for the exclusive use of, Jacobs Client, and is subject to the terms and conditions of the contract between Jacobs and the Client. Jacobs accepts no liability for any loss or damage caused by the use of the design and drawings for any purpose other than that for which they were prepared.

## Appendix B. Cost Estimate

| Summary                                  |                                                      | Main Road Hoo<br>Roundabout<br>Total<br>£ | Sans Pareil<br>Roundabout<br>Total<br>£ | Total<br>£       |
|------------------------------------------|------------------------------------------------------|-------------------------------------------|-----------------------------------------|------------------|
| <b>Highway Works</b>                     |                                                      |                                           |                                         |                  |
| 01                                       | Preliminaries                                        | 488,769                                   | 212,442                                 | 701,211          |
| 02                                       | Roadworks                                            | 977,538                                   | 424,883                                 | 1,402,421        |
| 03                                       | Structures (Bridges, Viaducts, etc)                  | N/A                                       | N/A                                     | N/A              |
| 04                                       | Structures (Retaining walls, culverts, subways, etc) | N/A                                       | N/A                                     | N/A              |
| 05                                       | Miscellaneous Works                                  | Excluded                                  | Excluded                                | Excluded         |
| 06                                       | Accommodation Works                                  | Excluded                                  | Excluded                                | Excluded         |
| 07                                       | Facilitating Works                                   | Excluded                                  | Excluded                                | Excluded         |
|                                          | <b>Sub-Total (A)</b>                                 | <b>1,466,307</b>                          | <b>637,325</b>                          | <b>2,103,632</b> |
| <b>Statutory Undertakers Works</b>       |                                                      |                                           |                                         |                  |
| 08                                       | Statutory Undertakers Works                          | 293,261                                   | 50,000                                  | 343,261          |
|                                          | <b>Sub-Total (B)</b>                                 | <b>1,759,568</b>                          | <b>687,325</b>                          | <b>2,446,893</b> |
| <b>Project / Design Team Fees</b>        |                                                      |                                           |                                         |                  |
| 09                                       | Project / Design Team Fees                           | 293,261                                   | 127,465                                 | 420,726          |
| <b>Other Development / Project Costs</b> |                                                      |                                           |                                         |                  |
| 10                                       | Other Development / Project Costs                    | Excluded                                  | Excluded                                | Excluded         |
|                                          | <b>Sub-Total (C)</b>                                 | <b>2,052,829</b>                          | <b>814,790</b>                          | <b>2,867,619</b> |
| <b>Inflation</b>                         |                                                      |                                           |                                         |                  |
| 11                                       | Inflation                                            | Excluded                                  | Excluded                                | Excluded         |
|                                          | <b>Sub-Total (D)</b>                                 | <b>2,052,829</b>                          | <b>814,790</b>                          | <b>2,867,619</b> |
| <b>Risk</b>                              |                                                      |                                           |                                         |                  |
| 12                                       | Risk                                                 | 821,132                                   | 325,916                                 | 1,147,048        |
|                                          | <b>Total (Excl. VAT)</b>                             | <b>2,873,961</b>                          | <b>1,140,706</b>                        | <b>4,014,667</b> |

Note: Base date of this estimate is 2Q2026 and has an expected accuracy level of -30% to +50%.

Kent Model Custodianship Medway Local Plan  
Main Road Hoo Road Order of Magnitude Cost Estimate

| Ref                            | Description                                                                                                      | Quantity | Unit | Rate (£)   | Total (£)      |
|--------------------------------|------------------------------------------------------------------------------------------------------------------|----------|------|------------|----------------|
| <b>01 Preliminaries</b>        |                                                                                                                  |          |      |            |                |
| <b>01.01</b>                   | <b>Main Contractor Preliminaries</b>                                                                             |          |      |            |                |
| 01                             | Allowance for Main Contractor's preliminaries & traffic management                                               | 50       | %    | 977,538.00 | 488,769        |
|                                | <b>01 Preliminaries Subtotal</b>                                                                                 |          |      |            | <b>488,769</b> |
| <b>02 Roadworks</b>            |                                                                                                                  |          |      |            |                |
| <b>02.01</b>                   | <b>Roadworks General</b>                                                                                         |          |      |            |                |
| <u>02.01 - GC 109</u>          | <u>GC 109/MMHW Site preparation and clearance</u>                                                                |          |      |            |                |
|                                | <u>Site clearance</u>                                                                                            |          |      |            |                |
| 01                             | General site clearance                                                                                           | 0.789    | ha   | 15,000.00  | 11,835         |
|                                | <u>Take up or down and set aside for re-use or remove to store or tip off site</u>                               |          |      |            |                |
| 02                             | Allowance for take up or down items                                                                              | 1        | item | 25,000.00  | 25,000         |
|                                | <b>Site preparation and clearance Subtotal</b>                                                                   |          |      |            | <b>36,835</b>  |
| <u>02.01 - LC 127</u>          | <u>LC 127/MMHW Fencing</u>                                                                                       |          |      |            |                |
|                                | <u>Fencing, Gates and stiles</u>                                                                                 |          |      |            |                |
| 01                             | Allowance for re-erecting timber post and mesh fencing, 1 metres high                                            | 145      | m    | 50.00      | 7,250          |
|                                | <b>Fencing Subtotal</b>                                                                                          |          |      |            | <b>7,250</b>   |
| <u>02.01 - CC 601</u>          | <u>CC 601/MMHW Earthworks</u>                                                                                    |          |      |            |                |
|                                | <u>Excavation</u>                                                                                                |          |      |            |                |
|                                | <i>Earthworks associated with pavement and footway works are included within their respective measured items</i> |          |      |            |                |
| 01                             | Allowance for regrading embankment slope along A228 approach to roundabout                                       | 1        | item | 45,000.00  | 45,000         |
|                                | <b>Earthworks Subtotal</b>                                                                                       |          |      |            | <b>45,000</b>  |
| <b>02.02 to 02.04</b>          | <b>Main Carriageway / Interchanges / Side Roads</b>                                                              |          |      |            |                |
| <u>02.02 to 02.04 - CC 500</u> | <u>CC 500/MMHW Drainage</u>                                                                                      |          |      |            |                |
| 01                             | Allowance for drainage works (relocation of gullies, new carrier drains & raising/lowering service covers)       | 1        | item | 305,000.00 | 305,000        |
| 02                             | Allowance for attenuation storage system (100m3)                                                                 | 1        | item | 36,500.00  | 36,500         |

| Ref                            | Description                                                                                                                   | Quantity | Unit | Rate (£)  | Total (£)      |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------|------|-----------|----------------|
| <b>02 Roadworks</b>            |                                                                                                                               |          |      |           | (Continued)    |
|                                | <b>Drainage Subtotal</b>                                                                                                      |          |      |           | <b>341,500</b> |
| <u>02.02 to 02.04 - CC 202</u> | <u>CC 202/MMHW Flexible pavement construction</u>                                                                             |          |      |           |                |
|                                | <u>Flexible pavement construction</u>                                                                                         |          |      |           |                |
| 01                             | Allowance for proposed carriageway                                                                                            | 512      | m2   | 270.00    | 138,240        |
|                                | <b>Flexible pavement construction Subtotal</b>                                                                                |          |      |           | <b>138,240</b> |
| <u>02.02 to 02.04 - CC 205</u> | <u>CC 205/MMHW Maintenance of pavements with an asphalt surfacing</u>                                                         |          |      |           |                |
|                                | <u>Flexible pavement construction for maintenance (Resurfacing)</u>                                                           |          |      |           |                |
| 01                             | Allowance for proposed carriageway resurfacing                                                                                | 3,494    | m2   | 85.00     | 296,973        |
|                                | <b>Maintenance of pavements with an asphalt surfacing Subtotal</b>                                                            |          |      |           | <b>296,973</b> |
| <u>02.02 to 02.04 - CC 207</u> | <u>CC 207/MMHW Footway, cycle track, paved area, kerb unit and access step construction</u>                                   |          |      |           |                |
|                                | <u>Footways, cycle tracks and paved areas</u>                                                                                 |          |      |           |                |
| 01                             | Allowance for proposed tactile paving                                                                                         | 15       | m2   | 255.00    | 3,825          |
| 02                             | Allowance for proposed traffic islands                                                                                        | 54       | m2   | 100.00    | 5,400          |
|                                | <u>Kerb units, special kerb units, channels, edgings, combined kerb drainage systems, and linear drainage channel systems</u> |          |      |           |                |
| 03                             | Allowance for proposed kerbs                                                                                                  | 369      | m    | 95.00     | 35,055         |
| 04                             | Allowance for proposed edgings                                                                                                | 6        | m    | 35.00     | 210            |
|                                | <b>Footway, cycle track, paved area, kerb unit and access step construction Subtotal</b>                                      |          |      |           | <b>44,490</b>  |
| <b>02.05</b>                   | <b>Signs, Motorway Communications and Lighting</b>                                                                            |          |      |           |                |
| <u>02.05 - CC 120</u>          | <u>CC 120/MMHW Construction of permanent traffic signs, road markings and road studs</u>                                      |          |      |           |                |
|                                | <u>Permanent upright traffic signs</u>                                                                                        |          |      |           |                |
| 01                             | Allowance for traffic signs (Based on cost per m2 of carriageway area)                                                        | 1        | item | 10,000.00 | 10,000         |
|                                | <u>Permanent Road Markings</u>                                                                                                |          |      |           |                |
| 02                             | Allowance for proposed road markings (Based on cost per m2 of carriageway area)                                               | 1        | item | 4,500.00  | 4,500          |

Kent Model Custodianship Medway Local Plan  
Main Road Hoo Road Order of Magnitude Cost Estimate

| Ref                                                                                        | Description                                                                                                                                 | Quantity | Unit | Rate (£) | Total (£)       |
|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------|------|----------|-----------------|
| <b>02 Roadworks</b>                                                                        |                                                                                                                                             |          |      |          | (Continued)     |
| 03                                                                                         | <u>Permanent bollards</u>                                                                                                                   |          |      |          |                 |
|                                                                                            | Permanent bollard Flecta type                                                                                                               | 5        | no   | 950.00   | 4,750           |
|                                                                                            | <b>Construction of permanent traffic signs, road markings and road studs Subtotal</b>                                                       |          |      |          | <b>19,250</b>   |
| <u>02.05 - CC 481</u>                                                                      | <u>CC 481/MMHW Minor structures [Road Lighting]</u>                                                                                         |          |      |          |                 |
| 01                                                                                         | <u>Remove from store and re-erect road lighting columns and brackets, wall mountings, CCTV masts, cantilever masts and steel high masts</u> |          |      |          |                 |
|                                                                                            | Allowance for re-erection of road lighting columns including adapting existing associated electrical work and connections                   | 8        | no   | 5,500.00 | 44,000          |
|                                                                                            | <b>Minor structures [Road Lighting] Subtotal</b>                                                                                            |          |      |          | <b>44,000</b>   |
| <u>02.05.LC 120</u>                                                                        | <u>LC 120/MMHW Landscape and ecology</u>                                                                                                    |          |      |          |                 |
| 01                                                                                         | <u>Reinstatement of grass verge</u>                                                                                                         |          |      |          |                 |
|                                                                                            | Allowance for reinstatements of grass verge                                                                                                 | 1        | item | 4,000.00 | 4,000           |
|                                                                                            | <b>Landscaping and Ecology Subtotal</b>                                                                                                     |          |      |          | <b>4,000</b>    |
|                                                                                            | <b>02 Roadworks Subtotal</b>                                                                                                                |          |      |          | <b>977,538</b>  |
| <b>03 Structures (Bridges or Viaducts)</b>                                                 |                                                                                                                                             |          |      |          |                 |
|                                                                                            | None                                                                                                                                        |          |      |          |                 |
|                                                                                            | <b>03 Structures (Bridges or Viaducts) Subtotal</b>                                                                                         |          |      |          | <b>N/A</b>      |
| <b>04 Structures (Retaining Walls, Culverts, Subways, Gantries, Large Headwalls, etc.)</b> |                                                                                                                                             |          |      |          |                 |
|                                                                                            | None                                                                                                                                        |          |      |          |                 |
|                                                                                            | <b>04 Structures (Retaining Walls, Culverts, Subways, Gantries, Large Headwalls, etc.) Subtotal</b>                                         |          |      |          | <b>N/A</b>      |
| <b>05 Miscellaneous</b>                                                                    |                                                                                                                                             |          |      |          |                 |
|                                                                                            | None                                                                                                                                        |          |      |          |                 |
|                                                                                            | <b>05 Miscellaneous Subtotal</b>                                                                                                            |          |      |          | <b>Excluded</b> |
| <b>06 Accommodation Works</b>                                                              |                                                                                                                                             |          |      |          |                 |
|                                                                                            | None                                                                                                                                        |          |      |          |                 |
|                                                                                            | <b>06 Accommodation Works Subtotal</b>                                                                                                      |          |      |          | <b>Excluded</b> |
| <b>07 Facilitating Works</b>                                                               |                                                                                                                                             |          |      |          |                 |
|                                                                                            | None                                                                                                                                        |          |      |          |                 |
|                                                                                            | <b>07 Facilitating Works Subtotal</b>                                                                                                       |          |      |          | <b>Excluded</b> |
| <b>08 Statutory Undertakers Works</b>                                                      |                                                                                                                                             |          |      |          |                 |
| 08.01                                                                                      | Statutory Undertakers Works                                                                                                                 |          |      |          |                 |

Kent Model Custodianship Medway Local Plan  
Main Road Hoo Road Order of Magnitude Cost Estimate

| Ref                                         | Description                                                                | Quantity | Unit | Rate (£)     | Total (£)          |
|---------------------------------------------|----------------------------------------------------------------------------|----------|------|--------------|--------------------|
| <b>08 Statutory Undertakers Works</b>       |                                                                            |          |      |              | <i>(Continued)</i> |
| 01                                          | Allowance for Statutory Undertakers Works (% of Highway Works Total)       | 20       | %    | 1,466,307.00 | 293,261            |
|                                             | <b>08 Statutory Undertakers Works Subtotal</b>                             |          |      |              | <b>293,261</b>     |
| <b>09 Project / Design Team Fees</b>        |                                                                            |          |      |              |                    |
| <b>09.01</b>                                | <b>Client Project &amp; Design Team Fees</b>                               |          |      |              |                    |
| 01                                          | Allowance for Client project & design team fees (% of Highway Works Total) | 20       | %    | 1,466,307.00 | 293,261            |
|                                             | <b>09 Project / Design Team Fees Subtotal</b>                              |          |      |              | <b>293,261</b>     |
| <b>10 Other Development / Project Costs</b> |                                                                            |          |      |              |                    |
|                                             | None                                                                       |          |      |              |                    |
|                                             | <b>10 Other Development / Project Costs Subtotal</b>                       |          |      |              | <b>Excluded</b>    |
| <b>11 Inflation</b>                         |                                                                            |          |      |              |                    |
|                                             | None                                                                       |          |      |              |                    |
|                                             | <b>11 Inflation Subtotal</b>                                               |          |      |              | <b>Excluded</b>    |
| <b>12 Risk</b>                              |                                                                            |          |      |              |                    |
| <b>12.01</b>                                | <b>Risk (Design, Construction &amp; Employer Risk)</b>                     |          |      |              |                    |
| 01                                          | Allowance for Risk                                                         | 40       | %    | 2,052,829.00 | 821,132            |
| <b>12.02</b>                                | <b>Optimism Bias</b>                                                       |          |      |              |                    |
| 01                                          | Optimism Bias for Roadworks plus % add-on items                            |          | %    |              | Excluded           |
| 02                                          | Optimism Bias for Structures plus % add-on items                           |          | %    |              | Excluded           |
|                                             | <b>12 Risk Subtotal</b>                                                    |          |      |              | <b>821,132</b>     |
| <b>13 VAT</b>                               |                                                                            |          |      |              |                    |
| <b>13.01</b>                                | <b>VAT</b>                                                                 |          |      |              |                    |
| 01                                          | Allowance for VAT                                                          |          | %    |              | Excluded           |
|                                             | <b>13 VAT Subtotal</b>                                                     |          |      |              | <b>Excluded</b>    |
| <b>Main Road Hoo Roundabout Total</b>       |                                                                            |          |      |              | <b>2,873,961</b>   |

Kent Model Custodianship Medway Local Plan  
San Pareil Roundabout Order of Magnitude Cost Estimate

| Ref                            | Description                                                           | Quantity | Unit | Rate (£)   | Total (£)      |
|--------------------------------|-----------------------------------------------------------------------|----------|------|------------|----------------|
| <b>01 Preliminaries</b>        |                                                                       |          |      |            |                |
| <b>01.01</b>                   | <b>Main Contractor Preliminaries</b>                                  |          |      |            |                |
| 01                             | Allowance for Main Contractor's preliminaries & traffic management    | 50       | %    | 424,883.00 | 212,442        |
|                                | <b>01 Preliminaries Subtotal</b>                                      |          |      |            | <b>212,442</b> |
| <b>02 Roadworks</b>            |                                                                       |          |      |            |                |
| <b>02.01</b>                   | <b>Roadworks General</b>                                              |          |      |            |                |
| <u>02.01 - GC 109</u>          | <u>GC 109/MMHW Site preparation and clearance</u>                     |          |      |            |                |
|                                | <u>Site clearance</u>                                                 |          |      |            |                |
| 01                             | General site clearance                                                | 0.554    | ha   | 15,000.00  | 8,310          |
|                                | <b>Site preparation and clearance Subtotal</b>                        |          |      |            | <b>8,310</b>   |
| <u>02.01 - CC 601</u>          | <u>CC 601/MMHW Earthworks</u>                                         |          |      |            |                |
|                                | None                                                                  |          |      |            |                |
|                                | <b>Earthworks Subtotal</b>                                            |          |      |            | <b>N/A</b>     |
| <b>02.02 to 02.04</b>          | <b>Main Carriageway / Interchanges / Side Roads</b>                   |          |      |            |                |
| <u>02.02 to 02.04 - CC 500</u> | <u>CC 500/MMHW Drainage</u>                                           |          |      |            |                |
|                                | None                                                                  |          |      |            |                |
|                                | <b>Drainage Subtotal</b>                                              |          |      |            | <b>N/A</b>     |
| <u>02.02 to 02.04 - CC 202</u> | <u>CC 202/MMHW Flexible pavement construction</u>                     |          |      |            |                |
|                                | None                                                                  |          |      |            |                |
|                                | <b>Flexible pavement construction Subtotal</b>                        |          |      |            | <b>N/A</b>     |
| <u>02.02 to 02.04 - CC 205</u> | <u>CC 205/MMHW Maintenance of pavements with an asphalt surfacing</u> |          |      |            |                |
|                                | <u>Flexible pavement construction for maintenance (Resurfacing)</u>   |          |      |            |                |
| 01                             | Allowance for proposed carriageway resurfacing                        | 2,401    | m2   | 85.00      | 204,073        |
|                                | <b>Maintenance of pavements with an asphalt surfacing Subtotal</b>    |          |      |            | <b>204,073</b> |

| Ref                            | Description                                                                                 | Quantity | Unit | Rate (£)   | Total (£)      |
|--------------------------------|---------------------------------------------------------------------------------------------|----------|------|------------|----------------|
| <b>02 Roadworks</b>            |                                                                                             |          |      |            | (Continued)    |
| <u>02.02 to 02.04 - CC 207</u> | <u>CC 207/MMHW Footway, cycle track, paved area, kerb unit and access step construction</u> |          |      |            |                |
|                                | None                                                                                        |          |      |            |                |
|                                | <b>Footway, cycle track, paved area, kerb unit and access step construction Subtotal</b>    |          |      |            | <b>N/A</b>     |
| <b>02.05</b>                   | <b>Signs, Motorway Communications and Lighting</b>                                          |          |      |            |                |
| <u>02.05 - CC 120</u>          | <u>CC 120/MMHW Construction of permanent traffic signs, road markings and road studs</u>    |          |      |            |                |
|                                | <u>Permanent upright traffic signs</u>                                                      |          |      |            |                |
| 01                             | Allowance for traffic signs (Based on cost per m2 of carriageway area)                      | 1        | item | 6,000.00   | 6,000          |
|                                | <u>Permanent Road Markings</u>                                                              |          |      |            |                |
| 02                             | Allowance for removal of road markings (Based on minimum visit charge)                      | 1        | item | 1,500.00   | 1,500          |
| 03                             | Allowance for proposed road markings (Based on cost per m2 of carriageway area)             | 1        | item | 5,000.00   | 5,000          |
|                                | <b>Construction of permanent traffic signs, road markings and road studs Subtotal</b>       |          |      |            | <b>12,500</b>  |
| <u>02.05 - CC 481</u>          | <u>CC 481/MMHW Minor structures [Road Lighting]</u>                                         |          |      |            |                |
|                                | None                                                                                        |          |      |            |                |
|                                | <b>Minor structures [Road Lighting] Subtotal</b>                                            |          |      |            | <b>N/A</b>     |
| <b>02.05 - TC 101</b>          | <b>TC 101/MMHW Traffic signalling systems</b>                                               |          |      |            |                |
|                                | <u>Traffic Signal Installations</u>                                                         |          |      |            |                |
| 01                             | Traffic signal installation at Sans Pareil Roundabout                                       | 1        | item | 200,000.00 | 200,000        |
|                                | <b>Traffic signalling systems Subtotal</b>                                                  |          |      |            | <b>200,000</b> |
| <b>02.06</b>                   | <b>Landscape and Ecology</b>                                                                |          |      |            |                |
| <u>02.06 - LC 120</u>          | <u>LC 120/MMHW Landscape and ecology</u>                                                    |          |      |            |                |
|                                | None                                                                                        |          |      |            |                |
|                                | <b>Landscaping and Ecology Subtotal</b>                                                     |          |      |            | <b>N/A</b>     |
|                                | <b>02 Roadworks Subtotal</b>                                                                |          |      |            | <b>424,883</b> |

| Ref                                                                                        | Description                                                                                         | Quantity | Unit | Rate (£)   | Total (£)       |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------|------|------------|-----------------|
| <b>03 Structures (Bridges or Viaducts)</b>                                                 |                                                                                                     |          |      |            |                 |
|                                                                                            | None                                                                                                |          |      |            |                 |
|                                                                                            | <b>03 Structures (Bridges or Viaducts) Subtotal</b>                                                 |          |      |            | <b>N/A</b>      |
| <b>04 Structures (Retaining Walls, Culverts, Subways, Gantries, Large Headwalls, etc.)</b> |                                                                                                     |          |      |            |                 |
|                                                                                            | None                                                                                                |          |      |            |                 |
|                                                                                            | <b>04 Structures (Retaining Walls, Culverts, Subways, Gantries, Large Headwalls, etc.) Subtotal</b> |          |      |            | <b>N/A</b>      |
| <b>05 Miscellaneous</b>                                                                    |                                                                                                     |          |      |            |                 |
|                                                                                            | None                                                                                                |          |      |            |                 |
|                                                                                            | <b>05 Miscellaneous Subtotal</b>                                                                    |          |      |            | <b>Excluded</b> |
| <b>06 Accommodation Works</b>                                                              |                                                                                                     |          |      |            |                 |
|                                                                                            | None                                                                                                |          |      |            |                 |
|                                                                                            | <b>06 Accommodation Works Subtotal</b>                                                              |          |      |            | <b>Excluded</b> |
| <b>07 Facilitating Works</b>                                                               |                                                                                                     |          |      |            |                 |
|                                                                                            | None                                                                                                |          |      |            |                 |
|                                                                                            | <b>07 Facilitating Works Subtotal</b>                                                               |          |      |            | <b>Excluded</b> |
| <b>08 Statutory Undertakers Works</b>                                                      |                                                                                                     |          |      |            |                 |
| <b>08.01</b>                                                                               | <b>Statutory Undertakers Works</b>                                                                  |          |      |            |                 |
| 01                                                                                         | Allowance for Statutory Undertakers Works                                                           | 1        | item | 50,000.00  | 50,000          |
|                                                                                            | <b>08 Statutory Undertakers Works Subtotal</b>                                                      |          |      |            | <b>50,000</b>   |
| <b>09 Project / Design Team Fees</b>                                                       |                                                                                                     |          |      |            |                 |
| <b>09.01</b>                                                                               | <b>Client Project &amp; Design Team Fees</b>                                                        |          |      |            |                 |
| 01                                                                                         | Allowance for Client project & design team fees (% of Highway Works Total)                          | 20       | %    | 637,325.00 | 127,465         |
|                                                                                            | <b>09 Project / Design Team Fees Subtotal</b>                                                       |          |      |            | <b>127,465</b>  |
| <b>10 Other Development / Project Costs</b>                                                |                                                                                                     |          |      |            |                 |
|                                                                                            | None                                                                                                |          |      |            |                 |
|                                                                                            | <b>10 Other Development / Project Costs Subtotal</b>                                                |          |      |            | <b>Excluded</b> |
| <b>11 Inflation</b>                                                                        |                                                                                                     |          |      |            |                 |
|                                                                                            | None                                                                                                |          |      |            |                 |
|                                                                                            | <b>11 Inflation Subtotal</b>                                                                        |          |      |            | <b>Excluded</b> |
| <b>12 Risk</b>                                                                             |                                                                                                     |          |      |            |                 |
| <b>12.01</b>                                                                               | <b>Risk (Design, Construction &amp; Employer Risk)</b>                                              |          |      |            |                 |
| 01                                                                                         | Allowance for Risk                                                                                  | 40       | %    | 814,790.00 | 325,916         |
| <b>12.02</b>                                                                               | <b>Optimism Bias</b>                                                                                |          |      |            |                 |
| 01                                                                                         | Optimism Bias for Roadworks plus % add-on items                                                     |          | %    |            | Excluded        |

| Ref                                 | Description                                      | Quantity | Unit | Rate (£) | Total (£)        |
|-------------------------------------|--------------------------------------------------|----------|------|----------|------------------|
| <b>12 Risk</b>                      |                                                  |          |      |          | (Continued)      |
| 02                                  | Optimism Bias for Structures plus % add-on items |          | %    |          | Excluded         |
|                                     | <b>12 Risk Subtotal</b>                          |          |      |          | <b>325,916</b>   |
| <b>13 VAT</b>                       |                                                  |          |      |          |                  |
| <b>13.01</b>                        | <b>VAT</b>                                       |          |      |          |                  |
| 01                                  | Allowance for VAT                                |          | %    |          | Excluded         |
|                                     | <b>13 VAT Subtotal</b>                           |          |      |          | <b>Excluded</b>  |
| <b>Sans Pareil Roundabout Total</b> |                                                  |          |      |          | <b>1,140,706</b> |