

|                 |                                |                          |
|-----------------|--------------------------------|--------------------------|
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| <b>Ref:</b>     |                                | <b>cc:</b>               |
| <b>Subject:</b> | M20 Junction Assessment Review |                          |

## 1. Introduction

Highways England commissioned Atkins to undertake review of the M20, Junction 5 to 8 junction models. The models were developed by Mott MacDonald to evaluate the impact of the Maidstone Borough Local Plan on the capacity of the M20 Junctions 5 through 8.

The purpose of this assessment was to attempt to address Highways England's objection to the emerging Maidstone Borough Local Plan. Mott's explored 2 potential approaches: modelling approach and 1<sup>st</sup> principles approach; model data did not validate with the most recent Junction 6 and 7 survey data – resolved on 1<sup>st</sup> principles approach.

Atkins has undertaken a high level model review based on Mott Macdonald's M20 Junction Assessment report. The key findings from Atkins' review are as follows:

- Mott MacDonald should supply sufficient information on TEMPRO growth factor's source data, methodology, and its application (including, where required, step-by-step tables showing growth factor calculations) to be validated fully.
- Atkins TEMPRO growth calculation shows the final growth factors are higher than the one used in the junction modelling (See Annex A for Atkins growth calculations).
- It is unclear how geometric measurements have been obtained for all the junctions without 'as-built' drawings.
- No base model validation information provided.
- There is no evidence provided to support the lane allocation applied in the model.
- M20 Junction 5 - the inscribed diameter seems to be entered incorrectly for the M20 slip roads.
- M20 Junction 5 - free flow left turn from Coldharbour Lane South to M20 East is not been modelled correctly as queue blocks access to the lane.
- The forecast model predicts on-slip queues extent back to mainline flows for the M20 Junctions 5, 6 and 7.
- In most cases the assessed junctions are forecast to operate over capacity during both peak hours.
- The mitigation models are forecast to operate better than the Scenario 1 (consented development) and Scenario 2 (all development). However, the mitigation models have been modelled with inaccurate parameters. For e.g. M20 Junction 5 LinSig model needs to confirm what give-way parameters have been used in the model and how they have been obtained. The circulatory link lengths need to be entered with actual queue stacking capacity rather than long lanes.
- The M25 Junction 6 (with mitigation) model forecast to operate over capacity and some of the approaches are predicted to increase RFC compared with Scenario 1 and Scenario 2.
- The M25 Junction 7 (with mitigation) LinSig modelled queue for circulatory are likely to extend the available stacking and this should be modelled accurately.
- The M25 Junction 8 (with mitigation) LinSig modelled is based on inappropriate allocation of green time, e.g. most of the green time is allocated to approach and very little green time for the circulatory, therefore right turning traffic from the M20 will get most of the disbenefits due to proposed signal timings.
- Based on the above issues it is not possible to evaluate whether the proposed mitigation measures result in nil-detriment to the SRN or otherwise.

## 2. Junction assessment

### 2.1. Traffic growth

Mott's interrogates Maidstone, Tonbridge, Malling and Swale Local Plans – housing and employment numbers. Local Plan numbers reviewed and categorised as follows: completed / build, committed / approved, non-committed.

Development that has already been completed has been removed, with the other categories split into two Scenarios: Scenario 1 (committed), and Scenario 2 (non-committed) as outlined below.

- Scenario 1 - approved development & extant permissions, with completed developments assumed to be included in the 2016 baseline, i.e. all consented development, totalling 7574 units
- Scenario 2 - includes approved development, pending development, development in broad locations, extant permissions and windfall sites, i.e. both consented & non-consented development, totalling 15,700 units.

Atkins used a similar TEMPRO version in order to verify the final growth factors that were considered in the assessment. However, Atkins analysis is showing higher growth factors, however, Mott's have not provided calculations on how the final growth factors were derived. The other key concerns are:

- Appended survey data, which is in any case only for one of the four junctions, is high-level only (e.g. 24 hr vehicle count, mean speed, 85<sup>th</sup> percentile speed. This is not disaggregated by hour, vehicle type or classification). Therefore it's not clear which exact peak hour has been evaluated
- Vehicle flows for the M20 Junction 5 represents a 2006 base year. This is not a standard practice to use 10 year old data due to travel pattern changes over the time and most recent observed data should be used in the assessment
- No data provided to validate the TEMPRO 6.2 growth factors for the 2006 traffic survey flows up to 2011 (prior to using the TEMPRO 7 growth factors from 2011 flows up to 2031). The report merely states comparison to TRADS data. However no empirical proof provided.
- There is discrepancies in application of TEMPRO 7 growth factors, and reductions (to remove future growth) and additions (Scenario 1 and Scenario 2 development). Detail calculations are required to verify how the final growth factors were derived.

Mott MacDonald should supply sufficient information on their source data, methodology, and its application (including, where required, step-by-step tables showing growth factor calculations) for their assumptions to be validated fully.

### 2.2. Junction modelling

The junction modelling and assumptions were reviewed from the report. Key observations on junction modelling are presented as follows.

- The base models (all four junctions) - as there is no 'as built' drawings available therefore it's not clear how geometric data has been derived for input into the model.
- The base models (all four junctions) – how the base models were validated against observed condition is not provided. Without knowing the strength and weakness of the base model the forecast models and future year's junction assessment will be ambiguous.

#### 2.2.1. M20 Junction 5 model review

- Most of the geometry inputs are matching closely with Google's aerial mapping. The demand inputs in model for each scenarios are also matching with provided flow figures in the report, except for 2031 'with consented development' scenario flows from M20 East to Coldharbour Lane South which has 802pcu entered compared with 882 in Figure 23.
- There is a dedicated 'left turn' lane for traffic travelling from Coldharbour Lane South to M20 East. The model flows were omitted into demand inputs, which is acceptable as long as ahead and right turning

traffic doesn't block the left turning traffic. The model outputs presented for base PM peak and all other future (2031) year scenarios shows the modelled queue blocks the left turning traffic. Therefore in order to assess accurate impact of the performance of the roundabout it is recommended to include the left turning traffic.

- Inscribed diameter inputs for the M20 East and West approaches appears to have been entered incorrectly, as maximum diameter of roundabout is approximately 194m whereas it is entered as 234m in the model.
- There is no evidence provided to support the lane allocation considered in the model.
- The reasoning for using different intercept and slope between 2016 and 2031 scenarios in the model is not clear.

## 2.2.1.1. Results

- 2016 Base: Operating above practical and theoretical capacity during both AM & PM Peaks, substantial queues and delays
- 2031 Base: junction further exceeding practical and theoretical capacity during the AM & PM Peaks
- 2031 Scenario 1: junction further exceeding practical and theoretical capacity during the AM & PM Peaks
- 2031 Scenario 2: junction further exceeding practical and theoretical capacity during the AM & PM Peaks
- The queue outputs from the model is presented in following table. The queue lengths which block either mainline traffic or downstream junction are highlighted in red.

### 1. Comparison of Queue Length (m) for each Scenario

| Movement               | Junction 5 (Queue (m)) |                 |                            |                      |           |                 |                            |                      |
|------------------------|------------------------|-----------------|----------------------------|----------------------|-----------|-----------------|----------------------------|----------------------|
|                        | AM                     |                 |                            |                      | PM        |                 |                            |                      |
|                        | Base 2016              | Do Nothing 2031 | Consented Development 2031 | All Development 2031 | Base 2016 | Do Nothing 2031 | Consented Development 2031 | All Development 2031 |
| Coldharbour Lane South | 12                     | 17              | 17                         | 23                   | 385       | 857             | 1006                       | 1311                 |
| M20 West               | 196                    | 529             | 644                        | 857                  | 713       | 1064            | 713                        | 1282                 |
| Coldharbour Lane North | 0                      | 0               | 0                          | 0                    | 6         | 6               | 6                          | 6                    |
| M20 East               | 1070                   | 1846            | 2013                       | 2432                 | 40        | 63              | 75                         | 115                  |

\*Queue extends back to the mainline or to the nearest junction

## 2.2.2. M20 Junction 6 model review

- Inscribed diameter (ICD) for north roundabout should be approximately 87m whereas this is entered as 91m in the model.
- Similarly ICD for the south roundabout should be approximately 98m whereas this is entered as 102m in the model (see Figure 1 for example)
- The entry width measurement for the M20 off-slip is approximately 7m whereas this is entered as 8.14m.
- Lane allocation used in the model needs justification as this does not match with the existing road markings, e.g. at South roundabout – A229 Chatham Road (off-slip) northbound has only one lane for M20 London whereas in model this is entered as two lanes.

### 2.2.2.1. Results

- 2016 Base: Operating above practical and theoretical capacity during both AM & PM Peaks
- 2031 Base: junction further exceeding practical and theoretical capacity during the AM & PM Peaks

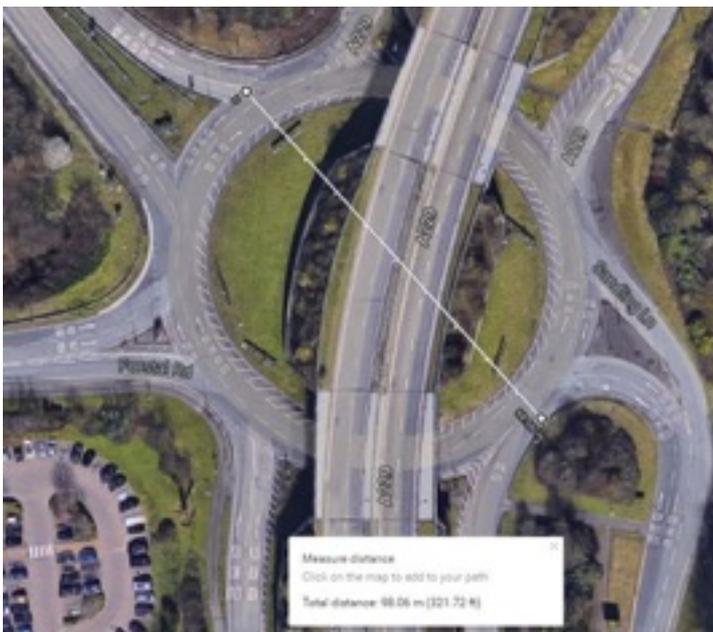
- 2031 Scenario 1: junction further exceeding practical and theoretical capacity during the AM & PM Peaks
- 2031 Scenario 2: junction further exceeding practical and theoretical capacity during the AM & PM Peaks
- The queue outputs from model is presented in following table. The queue lengths which is block either mainline traffic or downstream junction are highlighted in red.

## 2. Comparison of Queue Length (m) for each Scenario

| Movement      | Junction 6 Running Horse Roundabout (Queue (m)) |                 |                            |                      |           |                 |                            |                      |
|---------------|---|-----------------|----------------------------|----------------------|-----------|-----------------|----------------------------|----------------------|
|               | AM  |                 |                            |                      | PM        |                 |                            |                      |
|               | Base 2016                                       | Do Nothing 2031 | Consented Development 2031 | All Development 2031 | Base 2016 | Do Nothing 2031 | Consented Development 2031 | All Development 2031 |
| M20           | 535   | 932             | 1064                       | 1288                 | 713       | 1489            | 1639                       | 1949                 |
| A229          | 293   | 673             | 736                        | 811                  | 29        | 40              | 46                         | 58                   |
| Sandling Lane | 17  | 23              | 23                         | 29                   | 6         | 6               | 12                         | 12                   |
| Chatham Road  | 17  | 17              | 17                         | 23                   | 12        | 17              | 17                         | 17                   |
| Forstal Road  | 247   | 495             | 564                        | 690                  | 178       | 426             | 500                        | 661                  |

\*Queue extends back to the mainline or to the nearest junction

### 1. M20 Junction 6 (South roundabout) ICD measurement



## 2.2.3. M20 Junction 7 model review

- Inscribed diameter (ICD) for roundabout is seems to be entered correct according to Google satellite measurements.
- Approach road half width measurement for the M20 West off-slip is approximately 3.4m whereas this is entered as 4m.
- Approach road half width measurement for the A249 North approach is approximately 7.41m whereas this is entered as 10.50m

### 2.2.3.1. Results

- 2016 Base: Operating above practical and theoretical capacity during both AM & PM Peaks;
- 2031 Base: junction further exceeding practical and theoretical capacity during the AM & PM Peaks;
- 2031 Scenario 1: junction further exceeding practical and theoretical capacity during the AM & PM Peaks; and
- 2031 Scenario 2: junction further exceeding practical and theoretical capacity during the AM & PM Peaks.
- The queue outputs from model is presented in following table. The queue lengths which block either mainline traffic or downstream junction are highlighted in red.

### 3. Comparison of Queue Length (m) for each Scenario

| Movement   | Junction 7 (Queue (m)) |                 |                            |                      |           |                 |                            |                      |
|------------|------------------------|-----------------|----------------------------|----------------------|-----------|-----------------|----------------------------|----------------------|
|            | AM                     |                 |                            |                      | PM        |                 |                            |                      |
|            | Base 2016              | Do Nothing 2031 | Consented Development 2031 | All Development 2031 | Base 2016 | Do Nothing 2031 | Consented Development 2031 | All Development 2031 |
| A249 South | 29                     | 40              | 46                         | 52                   | 293       | 552             | 730                        | 851                  |
| M20 West   | 29                     | 58              | 115                        | 161                  | 431       | 776             | 1064                       | 1202                 |
| A249 North | 2409                   | 3404            | 4071                       | 4341                 | 541       | 868             | 1104                       | 1242                 |
| M20 East   | 23                     | 23              | 23                         | 23                   | 23        | 29              | 29                         | 29                   |

\*Queue extends back to the mainline or to the nearest junction

## 2.2.4. M20 Junction 8 model review

- There is no evidence provided to support the lane allocation considered in the model.
- Inscribed diameter for roundabout is seems to be entered correct according to Google satellite measurements.
- Approach road half width and entry width for the A20 Link Road South is approximately 7.3m and 8.25m compared to 7.8m and 8.5m respectively.
- The effective flare length for A20 Link Road South looks high compared to Google's satellite view.

### 2.2.4.1. Results

- 2016 Base: Operating above practical capacity during AM Peak
- 2031 Base: junction further exceeding practical capacity during the AM Peak
- 2031 Scenario 1: junction exceeding theoretical capacity in AM Peak and practical capacity in PM Peak
- 2031 Scenario 2: junction further exceeding theoretical capacity in AM Peak and practical capacity in PM Peak.
- The queue outputs from model is presented in following table. The queue lengths which is blocking either mainline traffic or downstream junction is highlighted in red colour.

## 4. Comparison of Queue Length (m) for each Scenario

| Movement              | Junction 8 (Queue (m)) |                 |                            |                      |           |                 |                            |                      |
|-----------------------|------------------------|-----------------|----------------------------|----------------------|-----------|-----------------|----------------------------|----------------------|
|                       | AM                     |                 |                            |                      | PM        |                 |                            |                      |
|                       | Base 2016              | Do Nothing 2031 | Consented Development 2031 | All Development 2031 | Base 2016 | Do Nothing 2031 | Consented Development 2031 | All Development 2031 |
| M20 West              | 11.5                   | 11.50           | 11.50                      | 11.50                | 11.50     | 17.25           | 17.25                      | 17.25                |
| Service Station North | 5.75                   | 5.75            | 5.75                       | 5.75                 | 5.75      | 5.75            | 5.75                       | 5.75                 |
| M20 East              | 11.50                  | 17.25           | 11.50                      | 17.25                | 5.75      | 11.50           | 11.50                      | 11.50                |
| A20 Link Road South   | 74.75                  | 230.00          | 253.00                     | 293.25               | 34.50     | 69.00           | 63.25                      | 80.50                |

\*Queue extends back to the mainline or to the nearest junction

## 2.3. Proposed Mitigation

There is mention of signalisation of Junctions 5 and 7, however it is not clear within Mott's report as to whether this is extant mitigation from consented development i.e. the Kent Medical Campus mitigation.

Motts' report states that extant mitigation will be considered, and that where there is no extant mitigation or it is insufficient to address predicted impact new mitigation will be proposed, however this is not differentiated within their mitigation section.

### 2.3.1. M20 Junction 5 proposed model review

The mitigation proposal for Junction 5 is to signalise the M20 West, M20 East and A20 approaches where there is currently congestion. No changes to the lane widths have been proposed. The proposed changes were modelled using LinSig and the highest DoS on each approach has been compared with the RFCs predicted for each approach in the non-signalised scenarios and is shown in Table 5. The only approach predicted to perform worse in the proposed model compared to the existing non-signalised layout is the M20 East in the PM peak hour. However it should be noted that a direct comparison between DoS and RFC may not be suitable. The key points associated with LinSig modelling are as follows:

- The queues on the circulatory lanes during the 2031 PM scenario appear to exceed the available stacking capacity and therefore should be treated with caution.
- If circulatory lane lengths were coded in the proposed model this could be used to identify if queues build up beyond the available storage space.
- Give-way parameters for the non-signalised approaches are not provided, however it would be recommended that the intercept and coefficients are obtained from ARCADY.

## 5. Comparison between RFC and DoS for each approach for each of the 2031 Scenarios

| Junction 5 2031 RFC/DoS comparisons |            |                       |                 |                              |            |                       |                 |                              |
|-------------------------------------|------------|-----------------------|-----------------|------------------------------|------------|-----------------------|-----------------|------------------------------|
| Movement                            | AM         |                       |                 |                              | PM         |                       |                 |                              |
|                                     | Do Nothing | Consented Development | All Development | All Development + Mitigation | Do Nothing | Consented Development | All Development | All Development + Mitigation |
| Coldharbour Lane South              | 0.66       | 0.68                  | 0.70            | 0.68                         | 1.01       | 1.00                  | 1.01            | 0.90                         |
| M20 West                            | 1.00       | 1.02                  | 1.01            | 0.89                         | 1.02       | 1.01                  | 1.02            | 0.87                         |
| Coldharbour Lane North              | 0.11       | 0.12                  | 0.11            | 0.06                         | 0.35       | 0.33                  | 0.33            | 0.25                         |
| M20 East                            | 1.02       | 1.01                  | 1.01            | 0.83                         | 0.88       | 0.91                  | 0.95            | 0.96                         |

### 2.3.2. M20 Junction 6 proposed model review

The proposed mitigation for the Cobtree roundabout at Junction 6 are for the circulatory lanes to be marked as two lanes except on the arm adjacent to the A229 South. The A229 South approach has been signalised and hatching removed to accommodate a 60m long flare.

The proposed signalised node has been modelled as demand dependent on the circulatory with the circulatory approach receiving only one second of green time per 40 second cycle. It is not fully clear how these assumptions were calculated. However a note in the model states that the “phase length and integreens for arm 6 have been adjusted to assume the stage comes up every 4 cycles”. The basis for these assumptions and the calculations used to obtain them should be provided in order to justify their application. Whilst there does not appear to be any guidance against prioritising the approach arm over the circulatory lanes, this is not typical practice at a roundabout junction. Table 6 shows a comparison between the DoS and RFCs for each scenario and indicates that the performance of all approaches except for the A229 North are predicted to improve.

## 6. Comparison between RFC and DoS for each approach for each of the 2031 Scenarios

| Junction 6 Cobtree Roundabout 2031 RFC comparison |            |                       |                 |                              |            |                       |                 |                              |
|---|------------|-----------------------|-----------------|------------------------------|------------|-----------------------|-----------------|------------------------------|
| Movement  | AM         |                       |                 |                              | PM         |                       |                 |                              |
|   | Do Nothing | Consented Development | All Development | All Development + Mitigation | Do Nothing | Consented Development | All Development | All Development + Mitigation |
| A229 North  | 0.76       | 0.76                  | 0.79            | 0.81                         | 0.55       | 0.56                  | 0.58            | 0.61                         |
| M20 East  | -          | -                     | -               | -                            | -          | -                     | -               | -                            |
| A229 South  | 1.03       | 1.03                  | 1.03            | 0.86                         | 1.07       | 1.08                  | 1.10            | 0.90                         |
| M20 West  | 0.80       | 0.81                  | 0.83            | 0.42                         | 0.82       | 0.83                  | 0.86            | 0.45                         |

The proposed mitigation at the Running Horse roundabout at Junction 6 involves extending the M20 off-slip storage from 7 PCUs per lane to 22 PCUs per lane. The proposal also involves widening the A229 north from two lanes to three at the approach by removing existing hatching and changing the lane allocation to have a shared middle lane. This would enable two lanes to the A229 south and two lanes to the M20 west on-slip to be signed. Table 7 shows a comparison between the DoS and RFCs for each scenario and indicates that the performance of all approaches except for the M20 and A229 approaches are predicted to improve.

## 7. Comparison between RFC and DoS for each approach for each of the 2031 Scenarios

| Junction 6 Running Horse Roundabout 2031 RFC comparison |            |                       |                 |                              |            |                       |                 |                              |
|---|------------|-----------------------|-----------------|------------------------------|------------|-----------------------|-----------------|------------------------------|
| Movement  | AM         |                       |                 |                              | PM         |                       |                 |                              |
|   | Do Nothing | Consented Development | All Development | All Development + Mitigation | Do Nothing | Consented Development | All Development | All Development + Mitigation |
| M20   | 1          | 0.99                  | 0.99            | 1.01                         | 0.85       | 0.87                  | 0.88            | 1                            |
| A229  | 1.1        | 1.11                  | 1.13            | 1.01                         | 0.84       | 0.85                  | 0.87            | 0.88                         |
| Sandling Lane   | 0.73       | 0.73                  | 0.75            | 0.71                         | 0.36       | 0.37                  | 0.38            | 0.43                         |
| Chatham Road  | 0.66       | 0.69                  | 0.71            | 0.69                         | 0.52       | 0.54                  | 0.58            | 0.58                         |
| Forstal Road  | 1.01       | 1.01                  | 1               | 0.98                         | 0.81       | 0.81                  | 0.8             | 0.99                         |

### 2.3.3. M20 Junction 7 proposed model review

The proposed mitigation for Junction 7 involves converting the hatched sections of the circulatory carriageway to running lanes throughout the roundabout. The north, south and west approaches have been signalised and the free-flow links from south to west and west to north have been removed in order to accommodate two lane exits from the circulatory on the M20 West and A249 North. It should be noted that the modelled circulatory queues in the PM peak are predicted to extend quite far and may block back, particularly on the northern circulatory. Table 8 shows a comparison between the DoS and RFCs for each scenario and indicates that the performance of all approaches are predicted to improve.

## 8. Comparison between RFC and DoS for each approach for each of the 2031 Scenarios

| Junction 7 2031 RFC comparison |            |                       |                 |                              |            |                       |                 |                              |
|--------------------------------|------------|-----------------------|-----------------|------------------------------|------------|-----------------------|-----------------|------------------------------|
| Movement                       | AM         |                       |                 |                              | PM         |                       |                 |                              |
|                                | Do Nothing | Consented Development | All Development | All Development + Mitigation | Do Nothing | Consented Development | All Development | All Development + Mitigation |
| A249 South                     | 0.84       | 0.86                  | 0.88            | 0.86                         | 1.23       | 1.29                  | 1.33            | 0.85                         |
| M20 West                       | 0.90       | 0.97                  | 0.99            | 0.87                         | 1.01       | 1.02                  | 1.01            | 1.01                         |
| A249 North                     | 1.02       | 1.02                  | 1.02            | 0.89                         | 1.01       | 1.01                  | 1.01            | 0.87                         |
| M20 East                       | 0.72       | 0.74                  | 0.73            | 0.89                         | 0.76       | 0.77                  | 0.78            | 0.68                         |

## 2.3.4. M20 Junction 8 proposed model review

The proposed mitigation for Junction 8 involves converting the hatched sections of the circulatory carriageway to running lanes throughout the roundabout. The A20 link road approach where the current congestion occurs is proposed to be signalised. No changes to the lane widths have been proposed.

The proposed signalised node has been modelled as demand dependent on the circulatory, with the circulatory approach receiving very little green time. As with the proposal for Junction 5, the basis for these assumptions is not explained. The basis for these assumptions and the calculations used to obtain them should be provided in order to justify their application. Whilst there does not appear to be any guidance against prioritising the approach arm over the circulatory lanes this is not typical practice at a roundabout junction. The key observations made with regards to the proposed LinSig model are as follows:

- There are very heavy flows on the south approach and the proposal is to signalise this section of the roundabout. Mitigation is achieved by varying the cycle time at this node and prioritising green time to the south approach. Cycle times vary between 68 and 100 seconds with the south circulatory lanes getting minimal green time.
- Give-way parameters for the non-signalised approaches are not provided, however it would be recommended that the intercept and coefficients are obtained from ARCADY.

Table 9 shows a comparison between the DoS and RFCs for each scenario and indicates that the performance of all approaches are predicted to improve.

### 9. Comparison between RFC and DoS for each approach for each of the 2031 Scenarios

| Junction 8 2031 RFC comparison |            |                       |                 |                              |            |                       |                 |                              |
|--------------------------------|------------|-----------------------|-----------------|------------------------------|------------|-----------------------|-----------------|------------------------------|
| Movement                       | AM         |                       |                 |                              | PM         |                       |                 |                              |
|                                | Do Nothing | Consented Development | All Development | All Development + Mitigation | Do Nothing | Consented Development | All Development | All Development + Mitigation |
| M20 West                       | 0.58       | 0.58                  | 0.59            | 0.49                         | 0.67       | 0.67                  | 0.68            | 0.57                         |
| Service Station North          | 0.29       | 0.30                  | 0.30            | 0.19                         | 0.27       | 0.28                  | 0.29            | 0.18                         |
| M20 East                       | 0.63       | 0.63                  | 0.65            | 0.54                         | 0.60       | 0.60                  | 0.63            | 0.49                         |
| A20 Link Road South            | 1.02       | 1.02                  | 1.03            | 0.90                         | 0.92       | 0.91                  | 0.94            | 0.85                         |

## Annex A – Atkins TEMPRO Analysis

Mott's 2031 Base Flows obtained by removing future growth from TEMPRO 7 to create background growth – development numbers in Scenario 1 added to calculate growth factors for 2031 Scenario 1, and so on for Scenario 2.

### 10. TEMPRO 7 – 2011-2031 Growth

| Type         | Factor | Unit  | Future Year | Base Year | Future minus Base |
|--------------|--------|-------|-------------|-----------|-------------------|
| Total People | 1.1704 | 27629 | 189796      | 162167    | 27629             |
| HHs          | 1.2044 | 13926 | 82044       | 68118     | 13926             |
| Jobs         | 1.056  | 4987  | 94101       | 89114     | 4987              |
| Workers      | 1.06   | 5050  | 89231       | 84181     | 5050              |

### 11. Growth Factor Comparison: TEMPRO vs Mott Tonbridge & Malling (T&M) and Maidstone (M)

|    | TEMPRO 7 Check |        | Mott 2031 Background |        | Mott 2031 Scenario 1 |        |        |        | Mott 2031 Scenario 2 |        |        |        |
|----|----------------|--------|----------------------|--------|----------------------|--------|--------|--------|----------------------|--------|--------|--------|
|    | T&M J5         | M J6   | T&M                  | M J6   | T&M J5               | M J6   | M J7   | M J8   | T&M J5               | M J6   | M J7   | M J8   |
| AM | 1.2011         | 1.2159 | 1.0795               | 1.0841 | 1.9774               | 1.1004 | 1.1331 | 1.0916 | 1.1383               | 1.1317 | 1.1547 | 1.1087 |
| PM | 1.2069         | 1.2229 | 1.0784               | 1.0831 | 1.0979               | 1.1012 | 1.1312 | 1.0914 | 1.1414               | 1.135  | 1.1539 | 1.1092 |

Atkins have attempted to replicate their approach to removing the TEMPRO future growth, however the results – based on extracting 2016 from growth factor to end up with growth only, then subtracting this from the total growth factor – does not marry up with the factors that Mott are quoting.

Table 12 presents the TEMPRO 7 Growth Factor in the middle column, and the 'Growth Only' Factor – the TEMPRO 7 Factor minus the 2016 baseline.

### 12. Growth Only Calculation

| Type         | TEMPRO 7 Growth Factor | Growth Only (Growth Factor minus 2016 Base) |
|--------------|------------------------|---|
| Total People | 1.1704                 | 0.170400                                    |
| HHs          | 1.2044                 | 0.204400                                    |
| Jobs         | 1.056                  | 0.056000                                    |
| Workers      | 1.06                   | 0.060000                                    |

Table 13 takes the calculated 'Growth Only' factor from Table 12, and subtracts this from the TEMPRO 7 Growth Factor. As evidenced, this does not equate to Mott's 2031 Background Growth Factors (presented in Table 11).

### 13. TEMPRO 7 Factor minus Growth Only

| TEMPRO 7 Amendment (Factor minus Growth Only) |           |
|---|-----------|
| Tonbridge & Malling                           | Maidstone |
| 1.201100                                      | 1.0455    |
| 1.206900                                      | 1.052500  |

This is concerning, as their housing and employment forecasts are relatively closely aligned to those that can be extracted directly from TEMPRO 7, presented in Table 14 through Table 17.

### 14. Housing Forecast (2016-2031) Comparison

| TEMPRO 7 | Mott Scenario 1 | Mott Scenario 2 |
|----------|-----------------|-----------------|
| 13926    | 7574            | 15700           |

### 15. Housing Forecast (2016-2031) Difference

| Difference: TEMPRO 7 vs Mott |       |
|------------------------------|-------|
| Scenario 1                   | -6352 |
| Scenario 2                   | 1774  |

### 16. Employment Forecast (2016-2031) Comparison

| TEMPRO 7 | Mott Scenario 1 | Mott Scenario 2 |
|----------|-----------------|-----------------|
| 5050     | 4285            | 6757            |

### 17. Employment Forecast (2016-2031) Difference

| Difference: TEMPRO 7 vs Mott |      |
|------------------------------|------|
| Scenario 1                   | -765 |
| Scenario 2                   | 1707 |

Based on the data presented in Table 14 through Table 17 the Traffic Growth Factors for Mott's Scenario 2 should be comparable to the 'raw' TEMPRO 7 Growth Factors.