

Darlington Local Plan

STRATEGIC TRANSPORT MODELLING

Report

16/06/2015





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Report Record

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Local Plan Proposals

DEVELOPMENT QUANTUMS

Tables 1 and 2 below provide the residential and employment forecasts from the proposed Darlington Local Plan through to 2030 compared to those within the Department for Transport (DfT) TEMPRO program.

TEMPRO has been provided as for business case purposes, guidance states that future year forecasts should be capped to TEMPRO growth.

In exceptional circumstances this guidance can be varied but this would require explanation and agreement of funding parties concern which introduces risk and potential for delay.

Table 1 Residential Development Quantum

Source	2020	2025	2030
Darlington Local Plan	2915	5287	5717
TEMPRO v6.2	2052	3292	4417
Difference	863	1995	1300

Source: DBC, TEMPRO – Base Year 2014

As can be seen, the residential numbers are lower based on the 2014 TEMPRO base year. It is also clear that the local plan is being developed at a faster build out rate than assumed in TEMPRO.

Table 2 Employment Development (Jobs)

Source	2020	2025	2030
Darlington Local Plan	6467	10491	13424
TEMPRO v6.2	610	1034	1237
Difference	5857	9457	12187

Source: DBC, TEMPRO, Jobs to Floorspace ratios from Employment Densities Guide 2010

The TEMPRO forecasts suggest little growth in employment in Darlington. The adoption of these forecasts within the TVU Regional Transport Model is accomplished through the phasing of developments beyond 2030.

It should also be noted that although the number of jobs increases in TEMPRO, the number of workers is forecast to decline due to demographic factors.

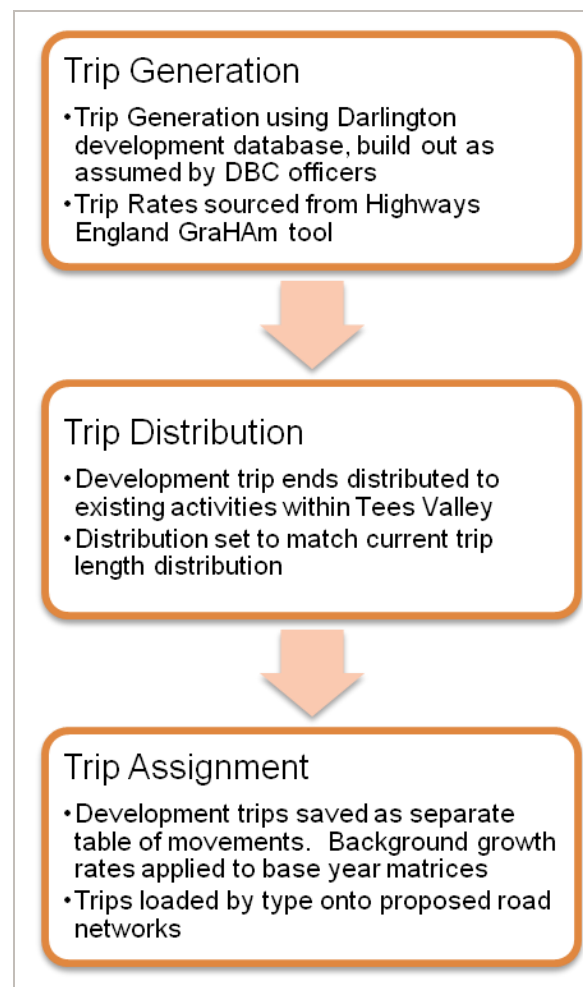
In addition, the TEMPRO forecast implies a growth of 2.5% in jobs by 2030, whereas the Darlington Local Plan implies around 27.5% growth in jobs,

SENSITIVITY TEST APPROACH

As a result of the differing employment numbers a revised forecasting process has been adopted called the Sensitivity tests in this report.

The approach is outlined in the figure to the right and is based on a standard transport assessment approach but applied to the entire local plan.

Figure 1 Sensitivity Approach



DEVELOPMENT TRIPS

The application of Highways England GraHAM trip rates to the Darlington Local Plan aspirations results in the following total number of additional vehicle trips per forecast year..

Table 3 Total Vehicle Trip Generation

Source	2020	2025	2030
Morning Peak	2405	4404	5504
% growth	8%	14%	18%
Evening Peak	2337	4290	5261
% growth	6%	12%	14%

Source: DBC, Percentage based on 2010 Darlington base trips

BACKGROUND GROWTH

The background growth rates calculated from the TEMPRO alternative planning assumption tool are as outlined below:

- Morning Peak
 - Forecast year 2020 – 1.008
 - Forecast year 2025 – 1.023
 - Forecast year 2030 – 1.037
- Evening Peak
 - Forecast year 2020 – 1.009
 - Forecast year 2025 – 1.026
 - Forecast year 2030 – 1.042

OUTCOMES ASSESSED

A variety of outcomes have been assessed as part of this commission. These include:

- Total road vehicle flows,
- congestion indices such as volume over link capacity;
- Development trip flows;
- Car journey times;
- Public Transport Journey Times;
- Flow difference plots

OUTCOMES REPORTED IN THIS NOTE

The outcomes reported in this note are the development trip flows and the volume over link capacity ratios for the sensitivity analysis.

These provide the key outcomes related to where future problems manifest and identify the requirements for potential mitigations.

DO MINIMUM

The do minimum represents the results through loading the forecast growth in trips onto the prevailing road network. Changes are assumed in terms of the cost of travel, i.e. fuel charges and the relative weightings of time and distance. These changes are in accordance with WebTAG guidance.

SCENARIO 1

Scenario 1 involves the introduction of the following schemes to the Do Minimum network:

- Darlington Eastern Growth Zone Link Road, (Morton Park – A1150);
- Edward Pease Way – Newton Lane;

SCENARIO 2

Scenario 2 involves the introduction of the following schemes to the Scenario 1 network:

- Faverdale Link (Rotary Way – Burtree Lane)
- Burtree Link (Burtree Lane – North Road);

DEVELOPMENT TRIP PLOTS

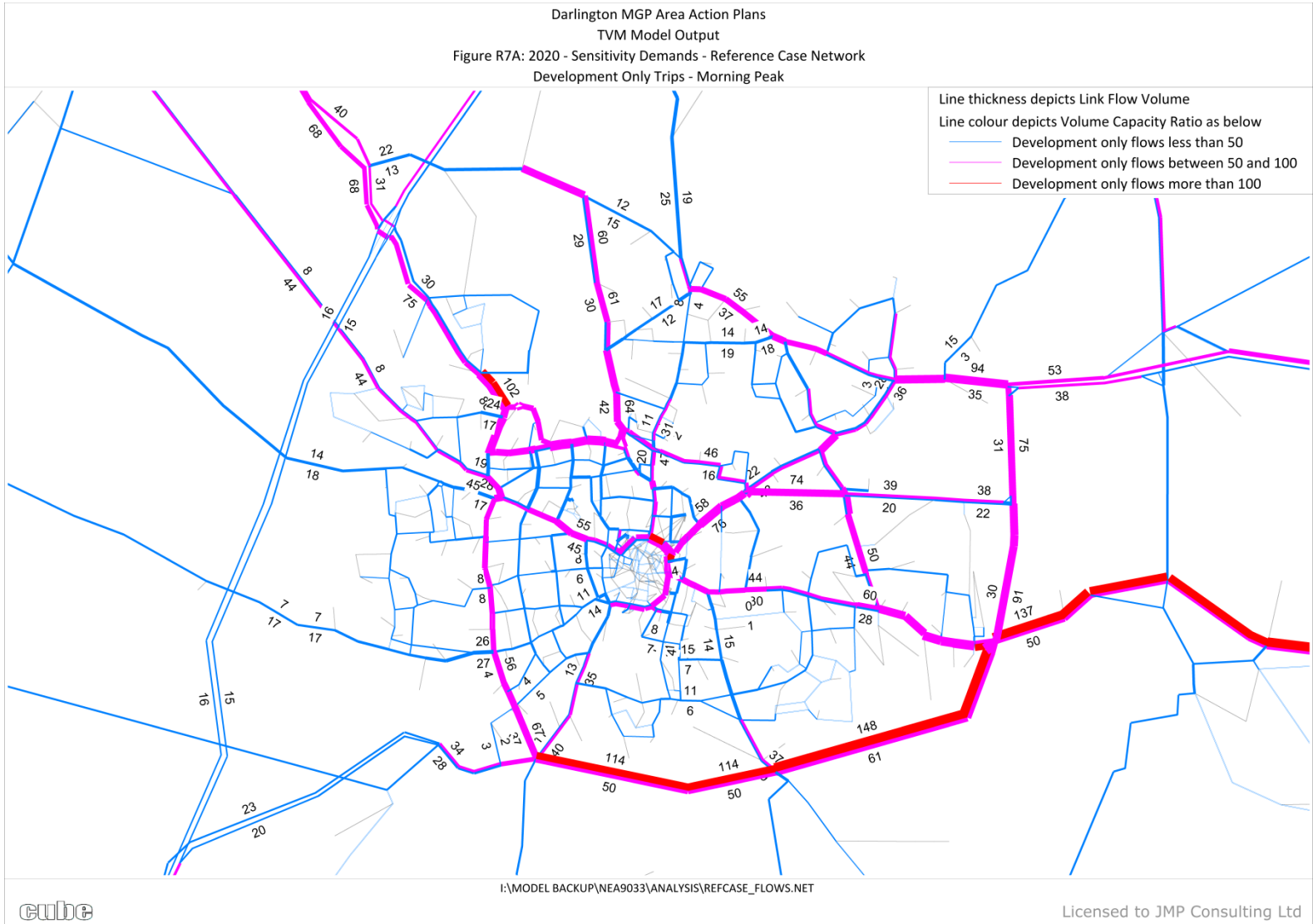
The following three plots illustrate the development trips for the morning peak of 2020, 2025 and 2030 respectively.

As can be seen, the largest levels of development trips are on the A66 corridor, specifically to access the south east sector of Darlington and the Durham / Tees Valley airport development

BASE YEAR OUTCOMES

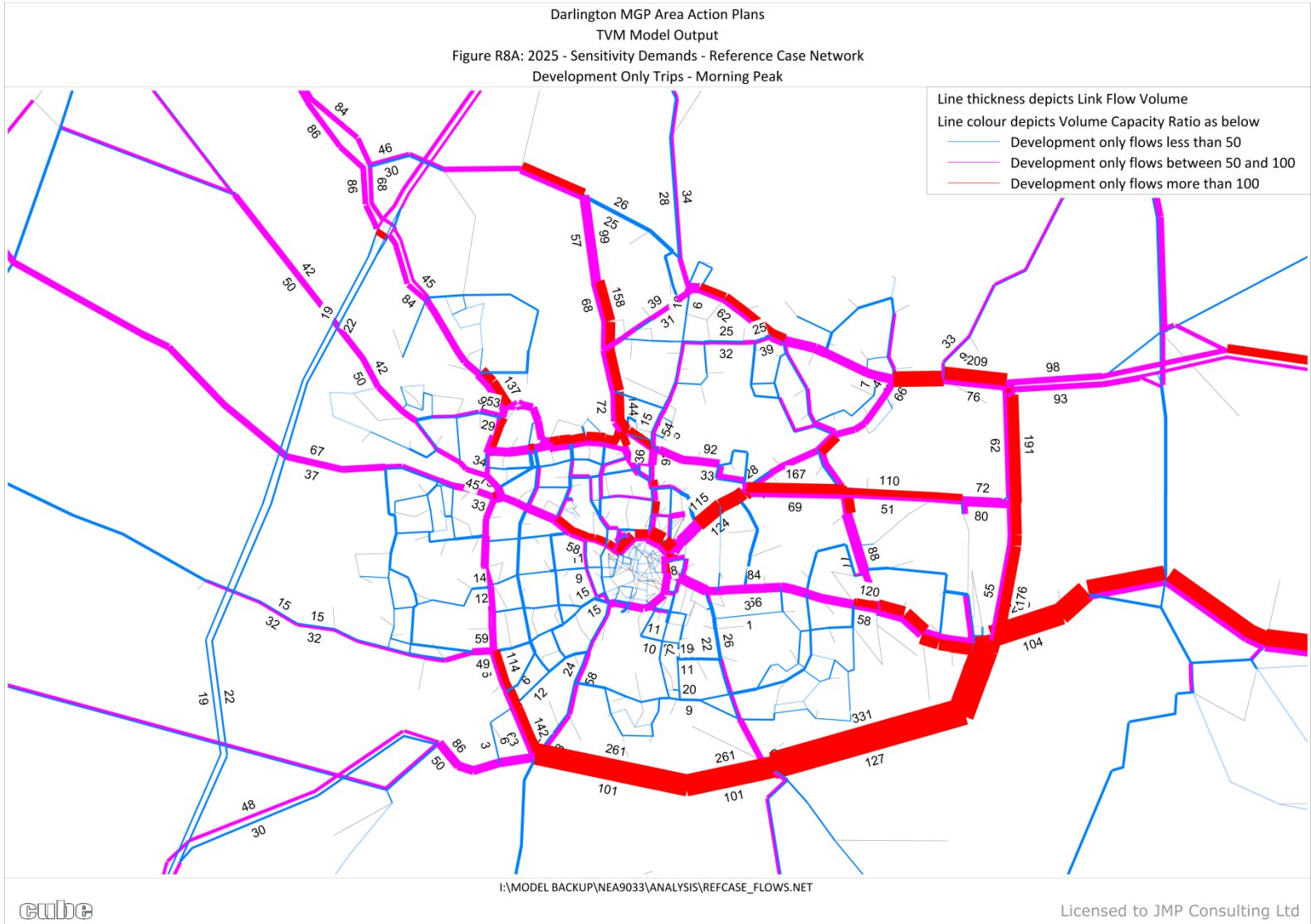
Figure 5 presents the volume over capacity analysis for the 2010 forecast in the TVU model. This has been used as a reference point for changes in road conditions.

Figure 2 2020 Sensitivity Demands



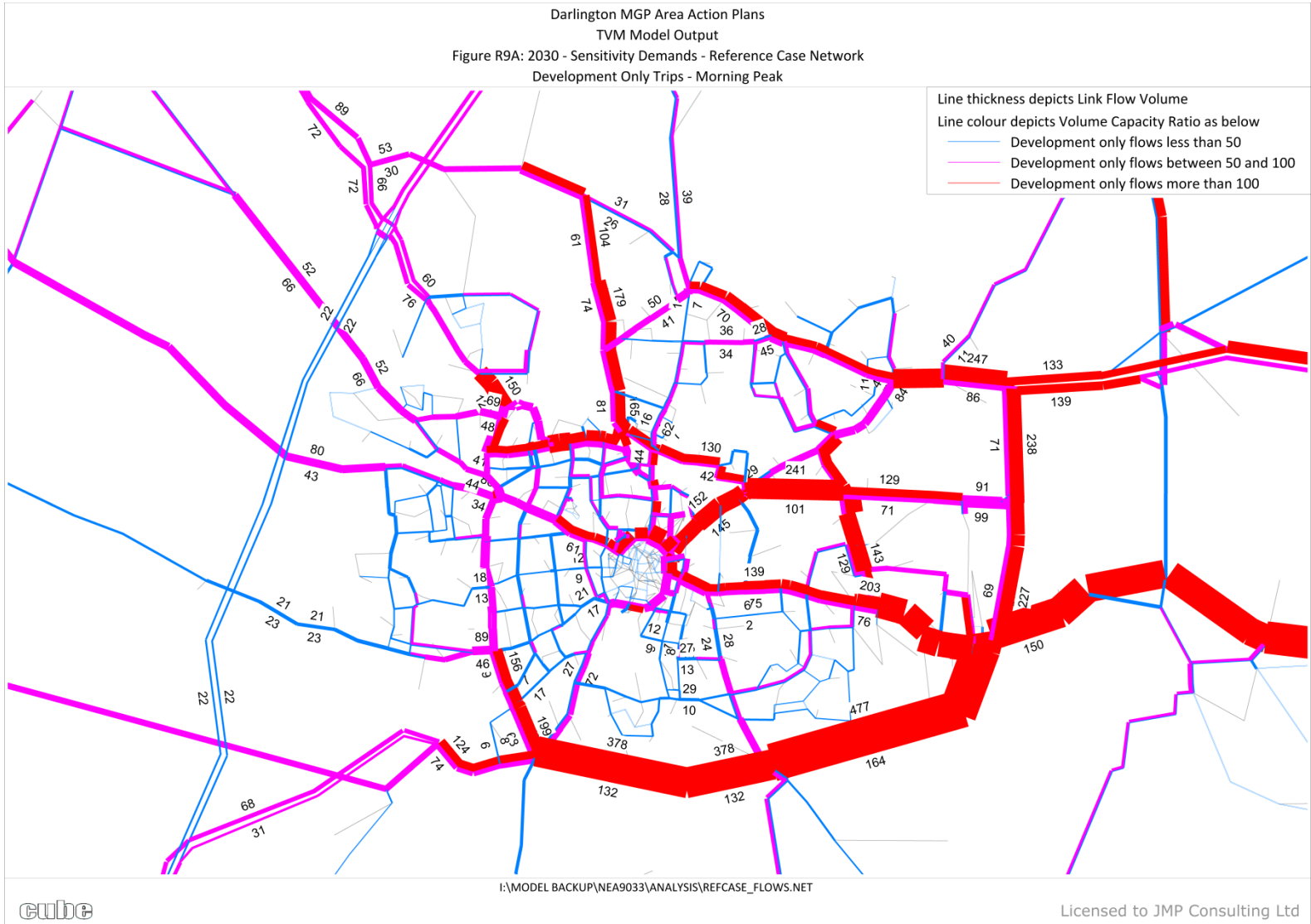
TVU Model

Figure 3 2025 Sensitivity Demands



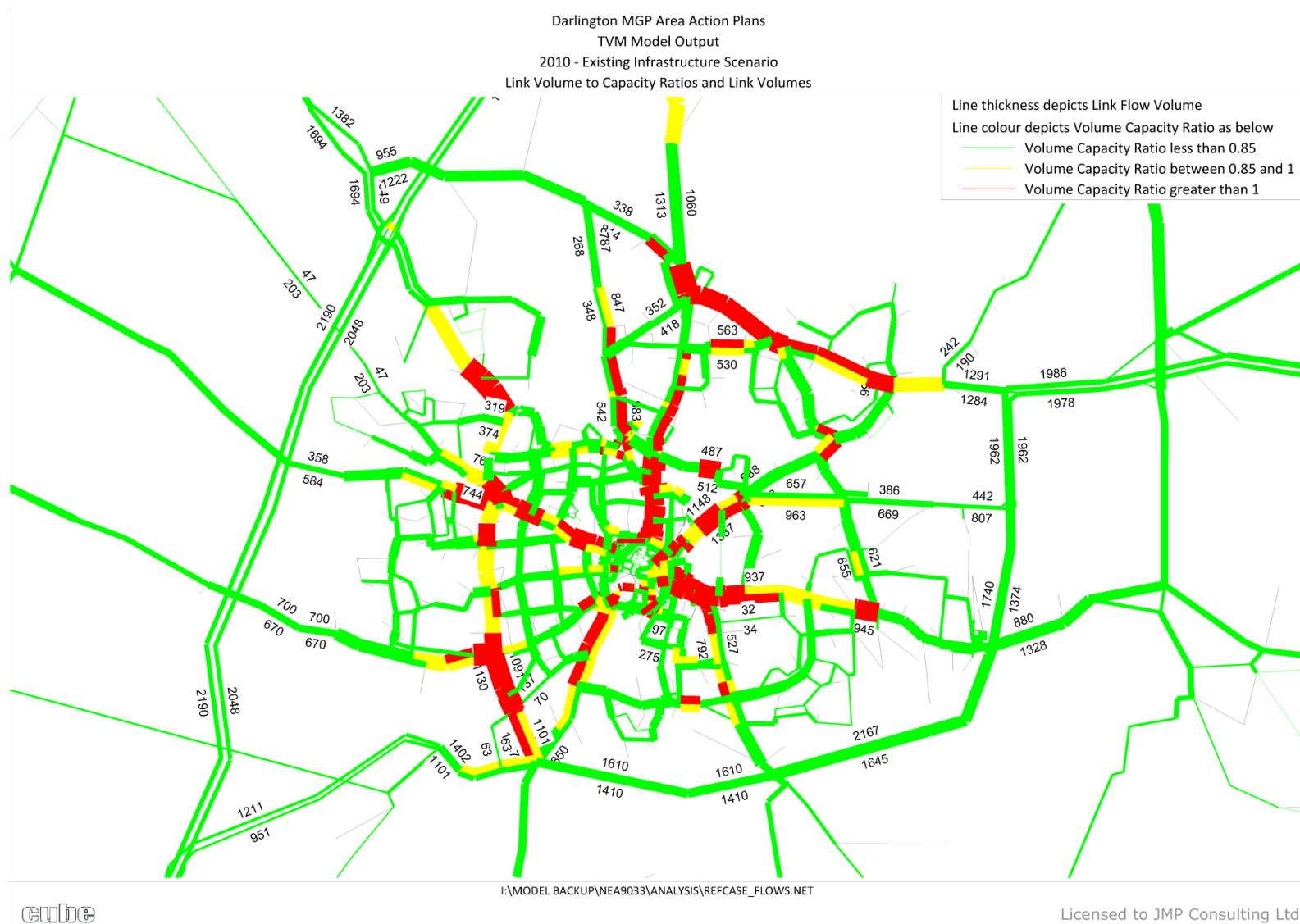
TVU Model

Figure 4 2030 Sensitivity Demands



TVM Model

Figure 5 2010 Base Line Assessment–Volume over Capacity Ratios



TVM Model

2020 Outcomes – Sensitivity Approach

KEY MESSAGES

The traffic model demonstrates that the existing road network, together with access arrangements for development sites and improvements to the network in the immediate vicinity of developments can accommodate growth through to 2020.

MORNING PEAK – DO MINIMUM

Congestion increases on the Burtree Lane corridor as trips from West Auckland Road corridor to the north west of the town make use of Burtree Lane and Whessoe Road. This includes some vehicles from the A1(M) corridor accessing the A66 at Little Burdon using Burtree Lane and the A1150 in place of the congested A66.

Congestion on the A66 corridor between Arena and Morton Palms junction increases due to a 20% increase in vehicle flow.

The remaining issues represent worsening conditions and existing and known congested locations such as the radials to the town centre and the A67 Carmel Road corridor

MORNING PEAK – SCENARIO 1

The introduction of the Eastern Road Link in 2020 provides access to developments and slight relief in road conditions to the east of the town.

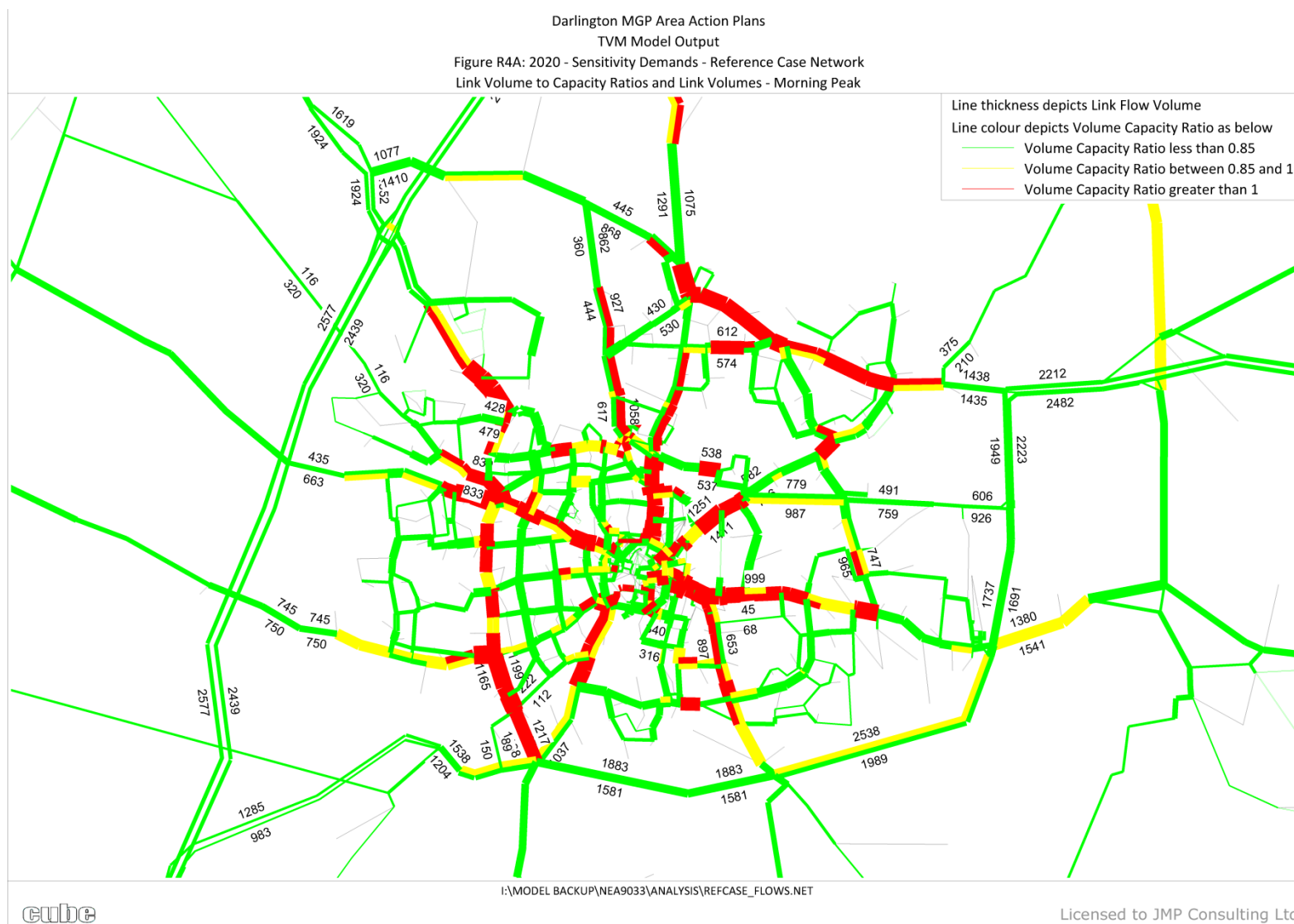
The TRIPS model potentially overstates the local impact of the scheme due to limitations in the junction modelling, but the overall results presented here are in accordance with emerging work undertaken by Highways England on the measure.

The introduction of the West Park link reduces congestion on West Auckland Road by balancing traffic flows in the west of the town. More detailed analysis has been undertaken using the council's Aimsun model on this corridor.

MORNING PEAK – SCENARIO 2

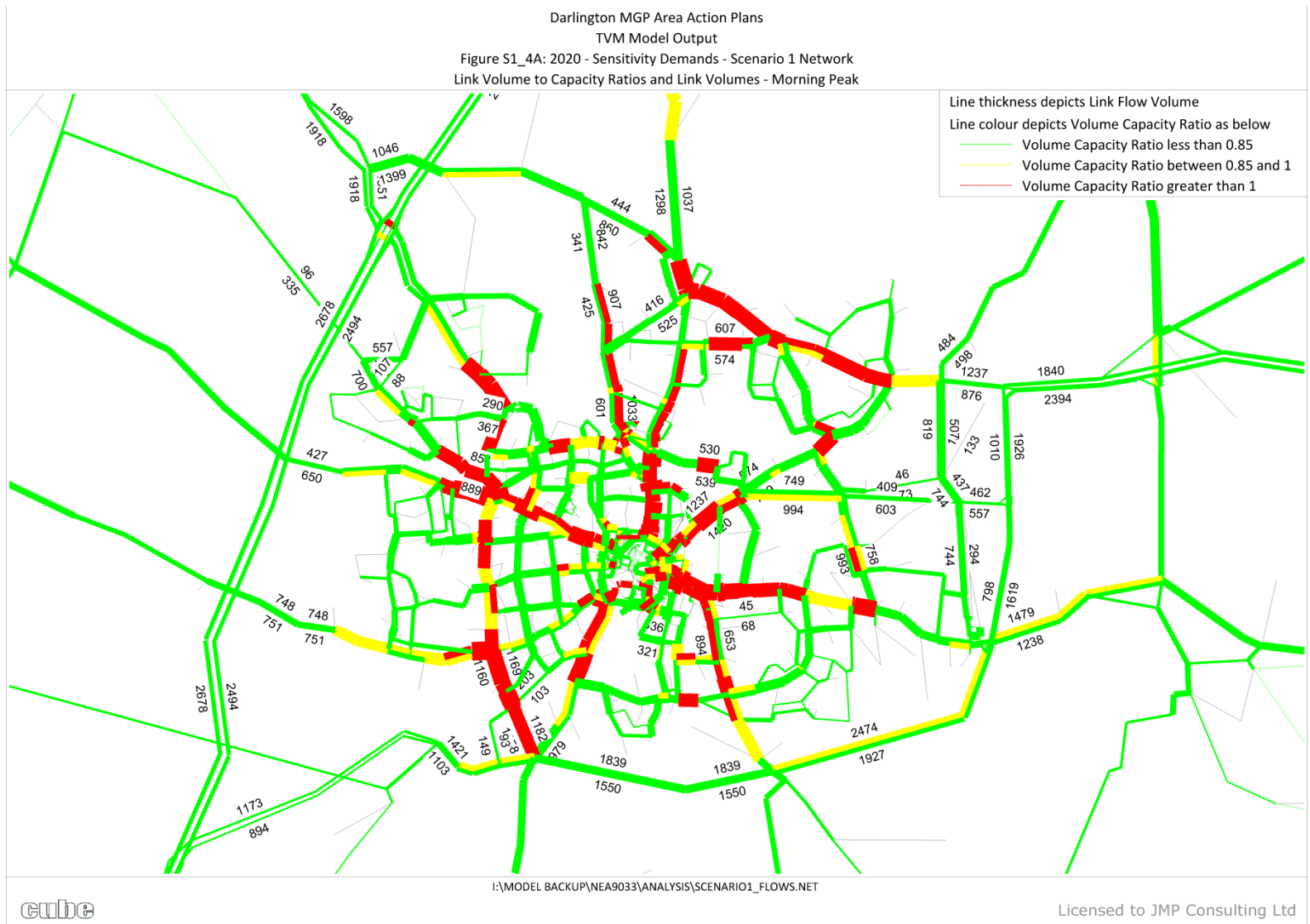
The opening of the Faverdale Link and Burtree Link have localised improvements to congestion on the Burtree Lane corridor.

Figure 6 2020 Sensitivity Demands – Do Minimum – Volume over Capacity Ratios



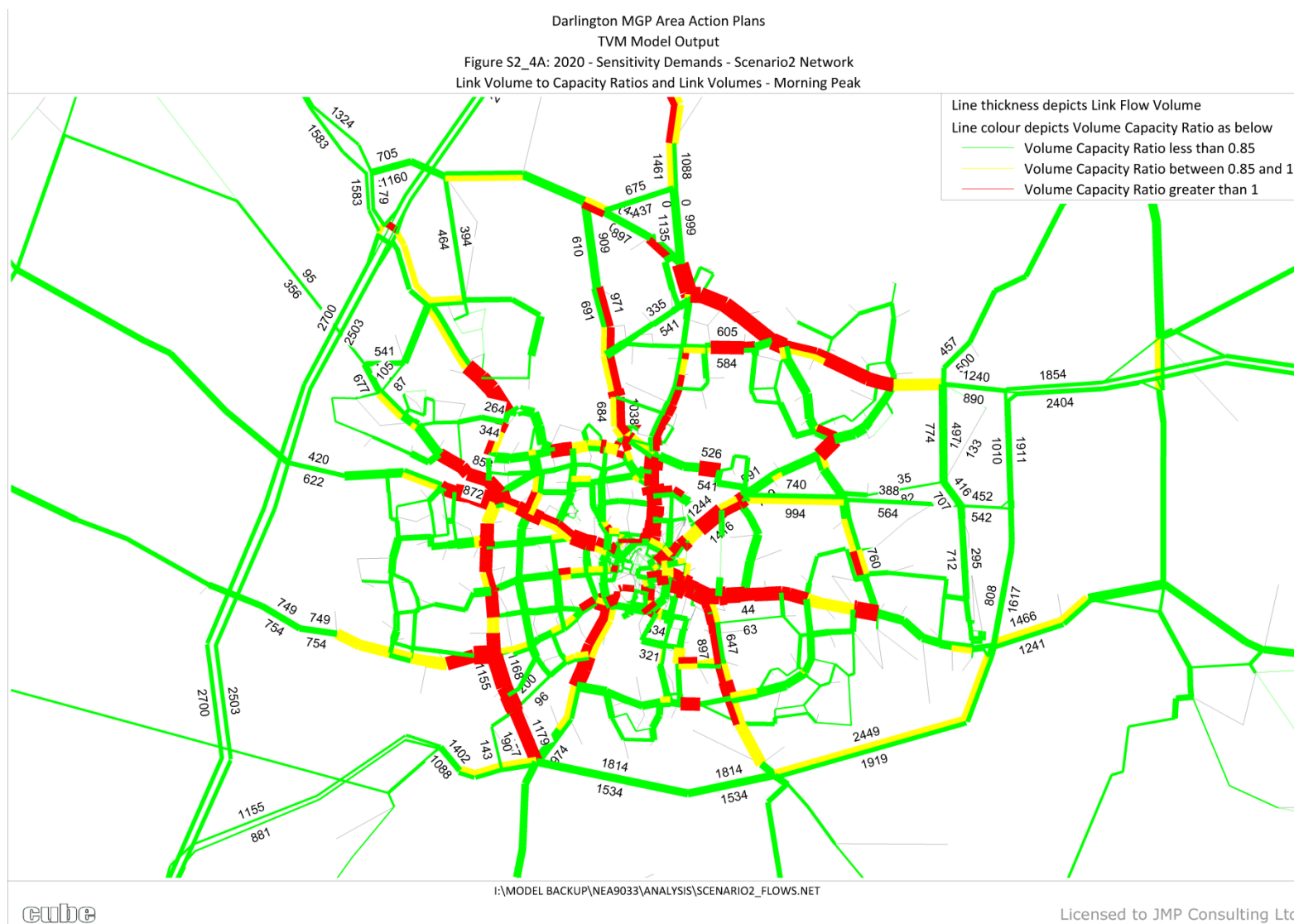
TVU Model

Figure 7 2020 Sensitivity Demands – Scenario 1 – Volume over Capacity Ratios



TVM Model

Figure 8 2020 Sensitivity Demands – Scenario 2 – Volume over Capacity Ratios



TVU Model

2025 Outcomes – Sensitivity Approach

KEY MESSAGES

The traffic model indicates that, with the forecast traffic growth, levels of congestion increase across the road network at peak times. The introduction of additional road capacity and route choices (scenario 1 & 2 improvements) provides some relief on key routes including the A68 (A1M – Cockerton) and A66 (Morton Palms – A1150). Should traffic growth occur as predicted, to avoid increased congestion further traffic mitigation measures will need to be considered beyond the period of the emerging Local Plan (up to 2026) to enable full delivery of any additional developments.

MORNING PEAK – DO MINIMUM

There is a broad deterioration in road conditions, with this being illustrated through extensions of the sections exhibiting volume over capacity ratio's of one.

The A67 East approach to the A66 at Morton Palms worsens but this is a function of the modelling seeking to balance flows from A66 Stockton corridor.

These issues are likely to manifest in additional queues at Little Burdon roundabout.

MORNING PEAK – SCENARIO 1

The introduction of the Eastern Link Road reduces the issues on the A66 corridor

The introduction of the Western Link provides some relief to West Auckland Road, but also increases the length of congested conditions towards the A1(M) junction. It is understood that the option of significantly reducing queue lengths through introducing a local left turn lane at the 168/Rotary Way junction has been identified within the Councils AIMSUN micro-simulation traffic model for this area.

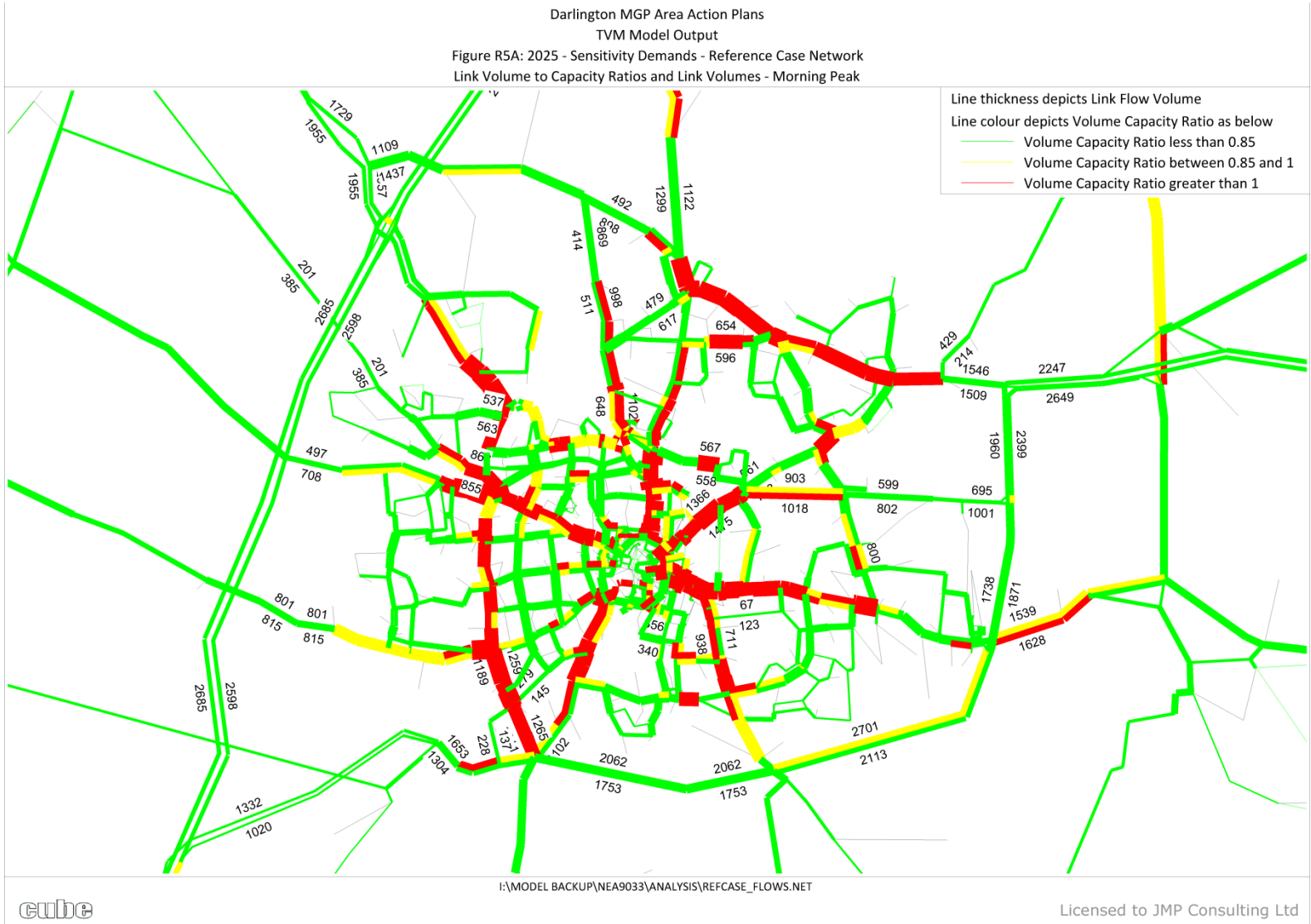
This is explained by conditions improving on the A66 at Blands Corner junction, indicating that some A1(M) to west Darlington trips previously using Blands Corner and the A67 Carmel Road corridor are now routed via the A1(M) and West Auckland Road

MORNING PEAK – SCENARIO 2

As for the 2020 assessment, the opening of the Faverdale and Burtree links have localised improvements to congestion on the Burtree Lane corridor.

In addition, modest relief is provided to the A1(M) J58 by providing an alternative route to access the West Auckland Road corridor.

Figure 9 2025 Sensitivity Demands – Do Minimum – Volume over Capacity Ratios



TVU Model

Figure 10 2025 Sensitivity Demands – Scenario 1 – Volume over Capacity Ratios

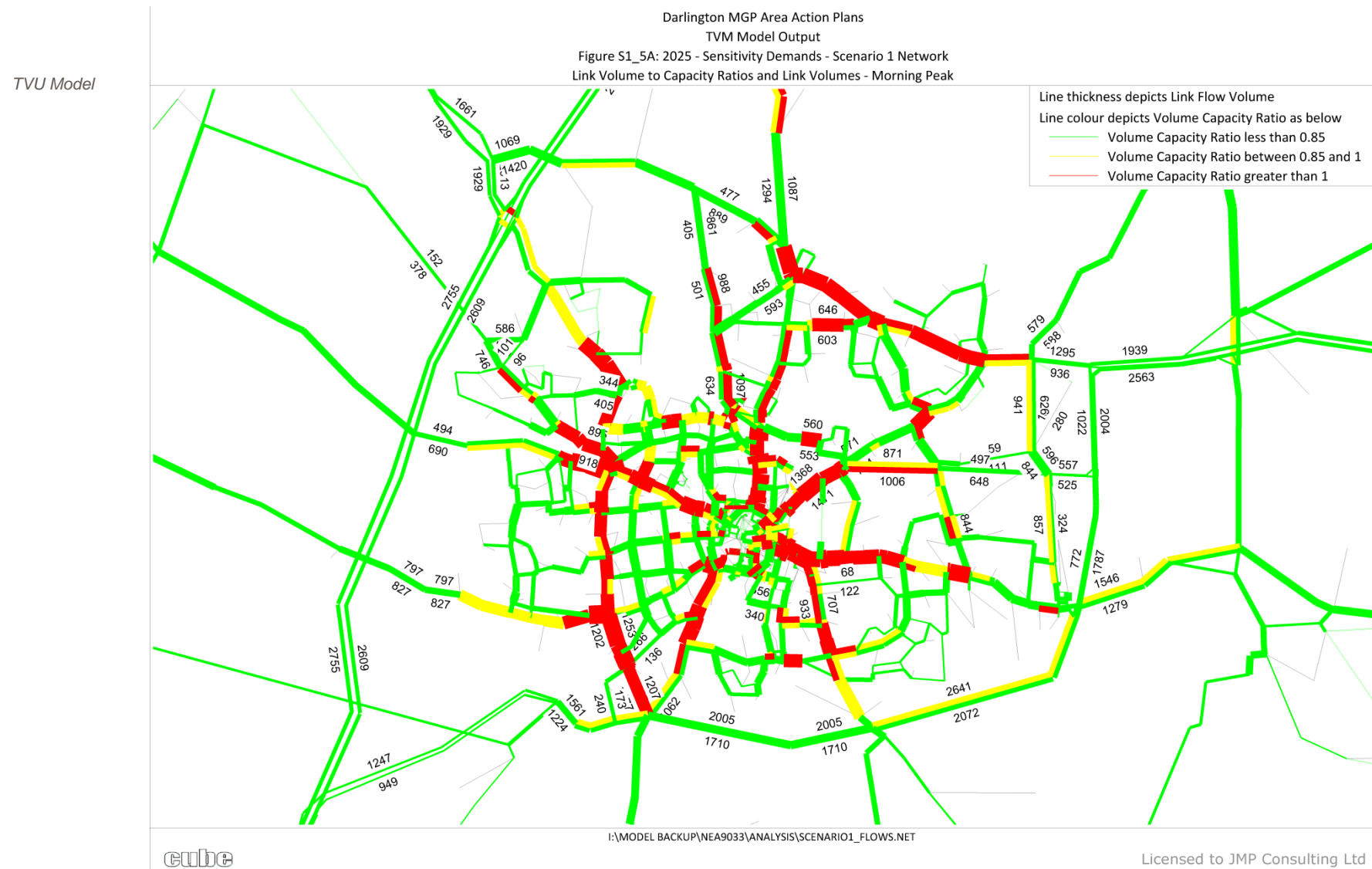
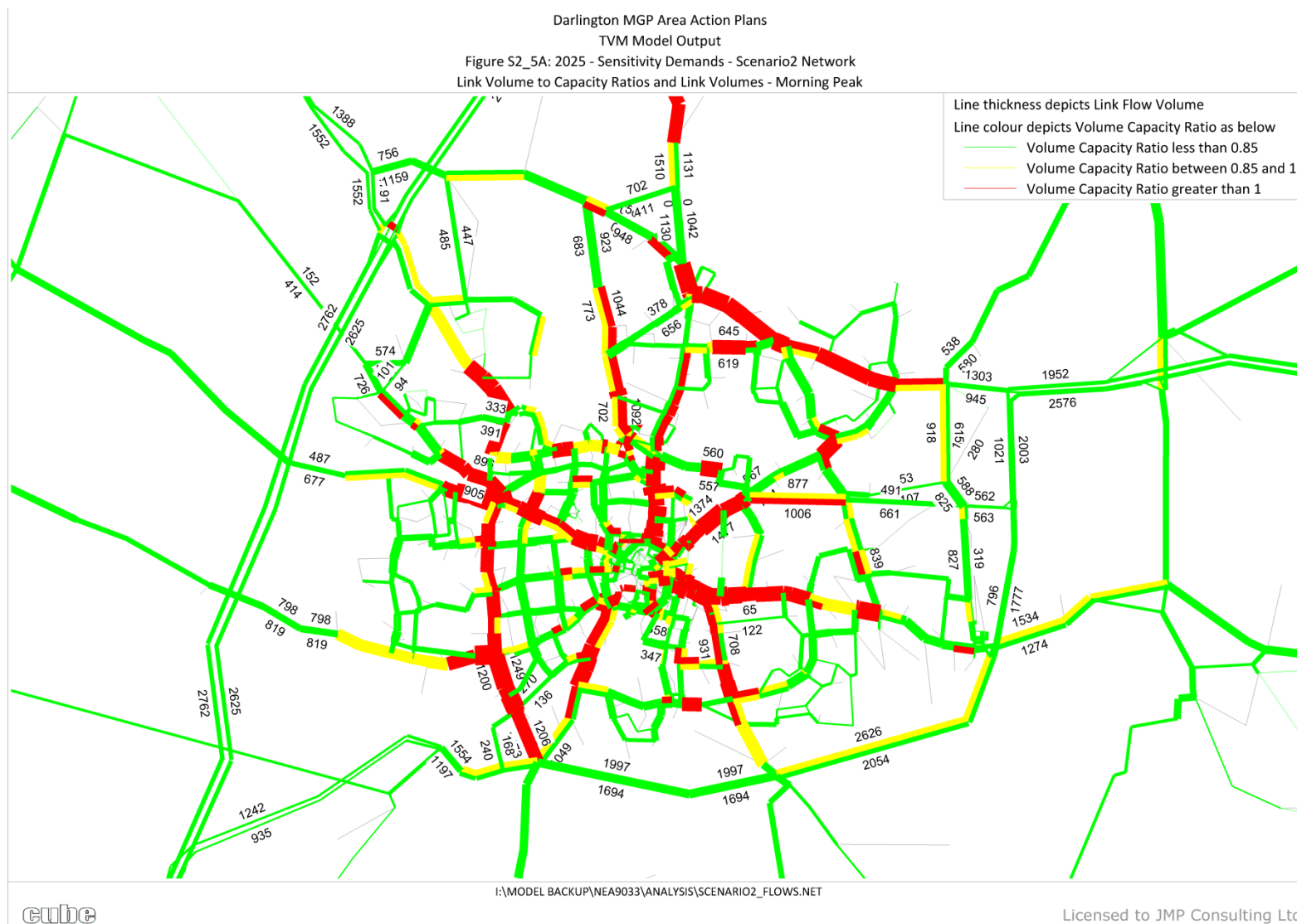


Figure 11 2025 Sensitivity Demands – Scenario 2 – Volume over Capacity Ratios



TVU Model