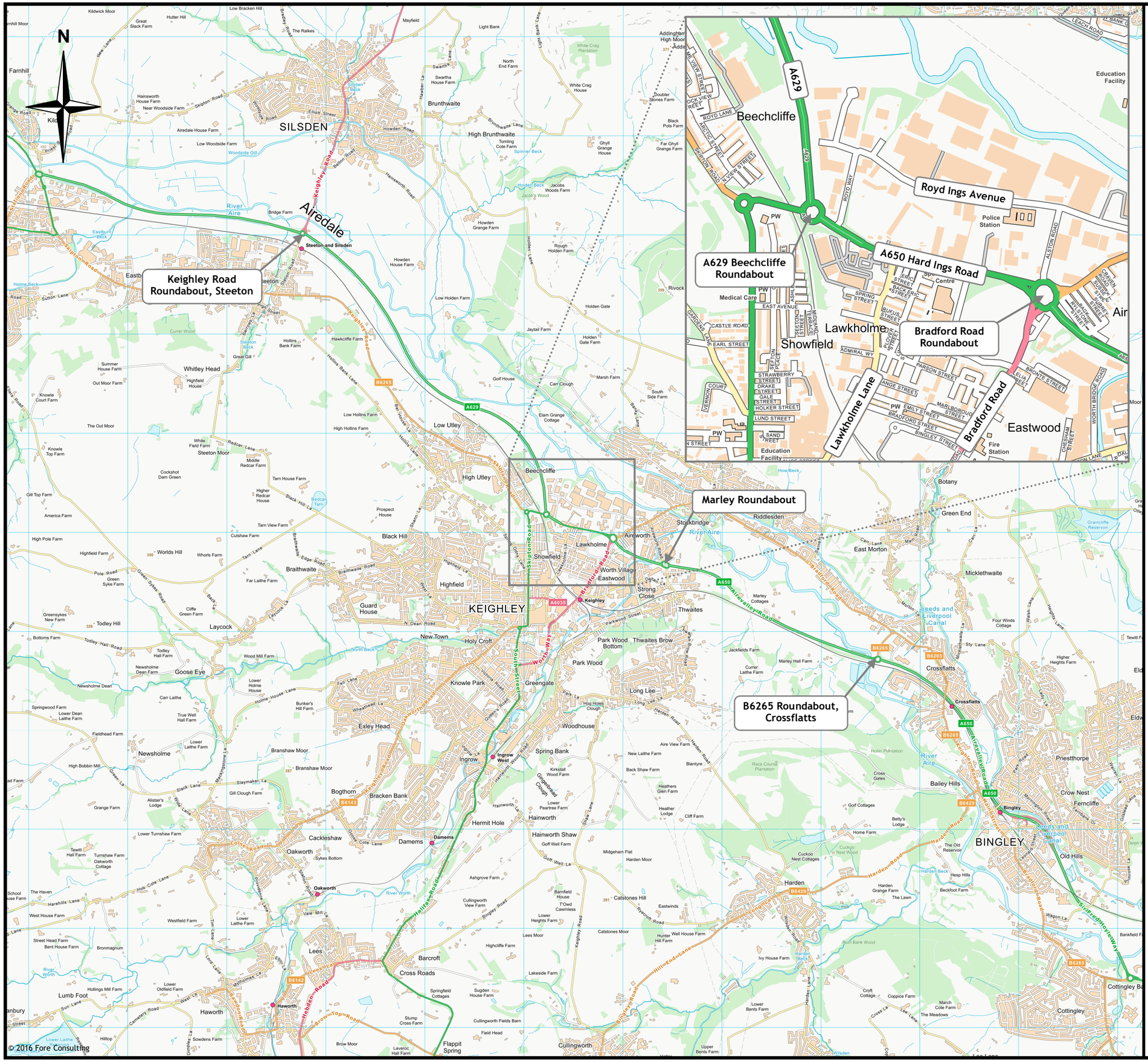
Figures



Key:

Fore Consulting Limited
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Client:
City of Bradford Metropolitan District Council

Project:
A650 Hard Ings Road Improvement, Keighley

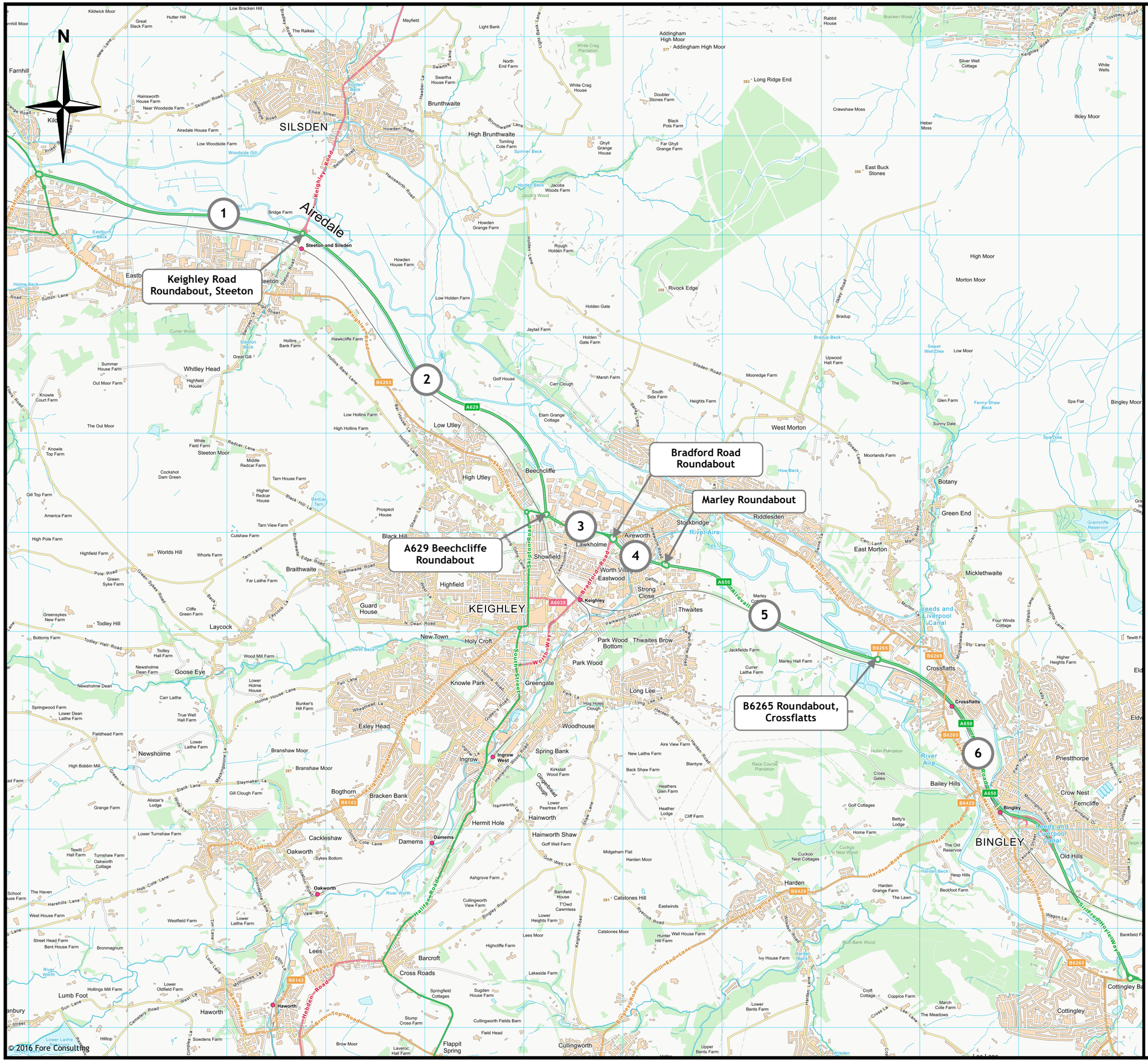
Figure Title:
Location Plan

Scale:
Not to Scale

Figure Status:
Issue

Job Number:
3616

Figure Number:
Figure 1



Key:

1. A629 approximately 0.8km west of Keighley Road Roundabout
2. A629 approximately 1.9km north of A629 Beechcliffe Roundabout
3. A650 Hard Ings Road
4. A650 Aire Valley Road approximately 0.3km east of Bradford Road roundabout
5. A650 Aire Valley Road approximately 1.2km east of Marley Roundabout
6. A650 Aire Valley Road approximately 1.2km east of B6265 Roundabout

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Client:
City of Bradford Metropolitan District Council

Project:
A650 Hard Ings Road Improvement, Keighley

Figure Title:
DfT Traffic Count Locations

Scale:
Not to Scale

Figure Status:
Issue

Job Number:
3616

Figure Number:
Figure 2

Appendix A

Review of Microsimulation Modelling

City of Bradford Metropolitan Council
Hard Ings Road Aimsun Model

Model Validation Report Review

1 December 2017
Version 1.0
Issue

1 Introduction

This technical note has been prepared in order to summarise and provide comment upon the A650 Hard Ings Road Model Validation Report (MVR) produced by City of Bradford Metropolitan District Council and dated 18 March 2015. The model has been built to investigate various transport schemes to improve Hard Ings Road.

2 Model Development

2.1 Extent of the Model

The model extent appears appropriate covering Hard Ings Road and two major roundabout junctions to the west (Hard Ings Road / A629 and Hard Ings Road / Skipton Road / B6265) and two to the east (Hard Ings Road / Airevalley Road / Bradford Road / Alston Road / A6035 and Airevalley Road / Wenning Street / / Aireworth Road / Marland Road). The model also includes Royd Ings Avenue which provides an alternative route to Hard Ings Road.

2.2 Aimsun Version

The model validation report refers to Aimsun version number 8.0.5 (R29862).

2.3 Modelled Year and Time Periods

The base year model is 2014 with peak periods during the weekday of 07:30 to 09:30 (AM Peak) and 16:30 to 18:30 (PM Peak) with a Saturday peak period of 12:00 to 14:00 are modelled and represent the peak traffic flow conditions on the network.

2.4 Vehicle Types

The vehicle types modelled are light vehicles (cars), light and heavy goods vehicles and buses. It would be normally be more realistic to model Light Goods Vehicles and Heavy Goods Vehicles as separate vehicle types.

2.5 Network Development

There is no information as to how the network has been developed, however Figure 1 shows an image from Google Maps being used to ensure accurate coding of a roundabout junction. This approach is considered appropriate.

2.6 Traffic Signal Coding

The Councils Urban Traffic Control (UTC) Unit has been used to provide traffic signal data for the model. This is considered appropriate. However, the pedestrian crossings on the exits arms of the Bradford Road roundabout have not been included.

2.7 Public Transport

The provision of bus stops and routes in the model appears accurate.

2.8 Traffic Demand

The traffic data collection appears appropriate, with turning count data collected for model calibration. It should be noted that data collected at Bradford Road Roundabout was from 2012 and appears not to have been factored up to 2014.

Matrix estimation has used the survey data with 30 minute matrices created in order to capture the changing levels of traffic demand of the two hour peak periods. The demand profiles for the AM and PM peak are shown and appear reasonable, although would better reflect the observed changes in traffic patterns if 15 minute matrices had been used. No Saturday demand profile has been presented.

3 Model Verification

The approach to model verification seems good, with coding and visual checks of the model operation being used to ensure the model accurately represents on site traffic conditions.

4 Model Calibration

The model calibration of several Aimsun parameters has been detailed.

Section characteristics in the model have generally been set to default values, with slight changes made on some turns and sections to replicated on site conditions. This is generally considered acceptable.

Vehicle characteristics in the model have been set to the default values which is acceptable.

Simulation step and reaction time was sensitivity checked in the calibration process, and remains at the default values which is acceptable.

Behavioural models were set to default values which is acceptable.

For the Route Choice Model the 'fixed travel time in free flow conditions' model was used which reflects the lack of route choice in the model. However O-D Routes based on survey data were used to reflect the small amount of route choice that was available in the model. This approach appears appropriate in order to replicate on site conditions.

4.1 Calibrated Traffic Flows

In order to calibrate traffic flows modelled traffic flows have been compared to observed traffic flows with the GEH statistics used to compare the two. A GEH statistic of less than 5 is considered acceptable, and overall an 85% pass rate is required for the overall model. This method is acceptable and in line with DMRB and WebTAG requirements.

The calibration results show that the GEH criteria is met for sections in the AM and PM peak periods. However the turn flows have not been presented. The Saturday peak period is also not included for either section or turn flows.

4.2 Regression Analysis

The analysis demonstrates that there is a near perfect correlation between the modelled and observed data for the AM and PM peak periods. Again the Saturday peak period results are not presented.

5 Model Validation

The report notes that the validation is based on an average of nine model runs, however in the model file there are only seven replications. Whilst it would be preferable to have around ten replications to more effectively reflect typical traffic variations between days, in this instance seven is acceptable.

5.1 Journey Time Validation

CJAMS (TrafficMaster) journey time data was collected between September 2013 and August 2014 on weekdays during school term and an average was taken covering the AM and PM peak hours. The routes cover Hard Ings Road and Airevalley Road, which is considered appropriate.

Using WebTAG guidelines the journey times extracted from the model achieve a 100% pass rate for the AM and PM peak periods compared to the CJAMS data. No Saturday validation is presented.

It is noted that on Hard Ings Road in the PM peak westbound directions modelled journey times are significantly (49 seconds) lower than observed, suggesting the model is underestimating congestion. In the eastbound direction the modelled journey time is considerably higher (41 seconds), indicating the model is overestimating congestion on this route.

6 Model Changes

Having regard to the issues identified above, a revised model has been produced in order to understand the effects of addressing these issues. The following changes were made to the AM and PM peak models:

- 2017 traffic survey data was used in the model, including the separation of vehicle types to cars, light goods vehicle (LGV), heavy goods vehicle (HGV) and bus categories.
- Demand matrices were inputted as 15 minute matrices to reflect changes in traffic levels and traffic patterns over the modelled periods.
- The model was calibrated and validated to the average of ten model replications for each modelled period, reflecting the variation in traffic conditions on different days. Traffic flows were calibrated and validated at both section and turn levels.
- Pedestrian signal crossings located on the exits from the Bradford Road Roundabout have been included.

7 Updated Model Results

Table 1 and 2 present the model results from the original model produced by CBDMC and the updated model. The results show that, although the actual values of the statistics change, there is no material change in the overall findings between the revised model and the original model. If anything, the revised modelling demonstrates that the scheme would provide greater benefits than predicted by CBMDC.

Table 1: AM Peak Model Results

Scenario	Delay (sec/km)	Travel Time (h)	Speed (km/h)	Vehicles Waiting to Enter
2026 Do Minimum	186	813	22	1029
2026 Do Something	93	574	30	95
Sensitivity 2026 Do Minimum	200	927	23	161
Sensitivity 2026 Do Something	95	538	28	0.8

Table 2: PM Peak Model Results

Scenario	Delay (sec/km)	Travel Time (h)	Speed (km/h)	Vehicles Waiting to Enter
2026 Do Minimum	214	830	21	1278
2026 Do Something	75	511	30	25
Sensitivity 2026 Do Minimum	222	976	19	1392
Sensitivity 2026 Do Something	96	585	26	150

8 Summary

Overall, some issues were identified with the original model prepared by CBMDC, as highlighted in this note. No calibration or validation has been presented for the Saturday peak hour and therefore it has not been considered. For the AM and PM peak periods the issues highlighted have been corrected and the model validated and calibrated. Revised outputs from this model have been prepared. Whilst the actual values of the statistics change, there is no material change in the overall findings between the revised model and the original model. It is considered that the initial modelling results prepared by CBMDC can be relied upon to determine the impacts of the proposed scheme.

Appendix B

Review of TRANSYT Modelling

Bradford Metropolitan District Council
Hard Ings Road CPO

Review of TRANSYT Models

6 December 2017
Version 1.0
Issue

1 Introduction

This technical note has been prepared to set out a technical review of TRANSYT models prepared for the purposes of appraising the proposed improvement scheme for the A650 Hard Ings Road, Keighley.

Two TRANSYT models have been prepared, covering the following junctions:

- A650 Hard Ings Road / Airevalley Road / A6035 Bradford Road / Alston Road roundabout ('Bradford Road roundabout').
- A629 / A650 Hard Ings Road roundabout ('A629 Beechcliffe roundabout').

2 Bradford Road Roundabout

From an initial review of the model, a number of issues were apparent, as follows:

- The westbound exit to the A650 Hard Ings Road is modelled as two lanes, with traffic assumed to use both lanes equally; given the merge on the exit from 2 lanes to 1 lane, this is considered unrealistic in practice.
- Flared approaches to the junction have been modelled as long lanes, with multiple traffic lanes modelled as one stream.
- Existing pedestrian crossings on exits from the roundabout have not been modelled. Although no evidence has been provided regarding the frequency that the crossings are demanded in practice, for the purposes of this review it is assumed that the crossings are not called sufficiently frequently to warrant including in the model.

A number of observations were also made, as follows:

- The modelled signal timings are optimised by TRANSYT.

- No observed data (for instance, queue lengths, saturation flows) has been provided to validate the modelled results. For the purposes of this review, it is assumed that the modelled junction operation has been validated satisfactorily.

- It is suggested that the TRANSYT Cell Transmission Model (CTM) would enable a more accurate assessment of interactions of queues on the circulating carriageway rather than the Platoon Dispersion Model (PDM) used. However, given that the circulating links are modelled to operate satisfactorily, for the purposes of this assessment use of CTM is not considered to be warranted.

The base models provided indicate that the junction currently operates with significant spare capacity during the peak hour. Notwithstanding this, the models have been amended to take account of the lane usage issues highlighted above, as follows:

- 80% of traffic towards the A650 Hard Ings Road exit is assumed to use the nearside lane, with the remaining 20% assumed to use the offside lane, to better reflect the likely tendency of drivers to predominantly use the nearside lane approaching the existing merge (rather than assuming lane usage is even, as would be more appropriate assuming merging is not required on leaving the junction).

- Where modelled as a single stream, flared lanes on approaches have been split into separate streams, to allow the flare usage to be observed.

- No allowance is made to incorporate the operation of pedestrian crossings on the junction exits, as it is assumed that these run infrequently, and do not materially affect the operation of the wider junction (i.e. associated queues would discharge satisfactorily).

The changes mean that the junction operates closer to capacity (with the highest DoS at around 86% during the PM peak hour). However, all approaches and circulatory links are modelled operating within the normal practical capacity thresholds, and with modelled queuing on flared approaches accommodated satisfactorily. As such, notwithstanding the amendments made to the model received, the junction operation is considered to be satisfactory.

Impact of the Proposed Scheme

In addition, the impact of the proposed dualling scheme has been tested using the model. The scheme means drivers would no longer be required to merge into the nearside lane on Hard Ings Road when leaving the roundabout. The impact has therefore been tested by increasing the assumed proportion of traffic using the offside lane on Hard Ings Road when exiting the junction to 40% (compared to 20% as assumed for the existing layout, as highlighted above).

The highest DoS would be reduced to around 70% (compared to 86% under the existing layout) during the PM peak hour, with all approaches and circulating links operating satisfactorily in terms of DoS and queuing. On this basis, the modelling indicates that the impact of the Hard Ings Road scheme on the operation of the junction will be beneficial.

3 A629 Beechcliffe Roundabout

Models of the existing and proposed layout with introduction of signal controls have been provided. From an initial review of the model, the following observations are made:

- TRANSYT has been used to model the existing layout. Although priority-controlled junctions would typically be modelled using Junctions9 software, in this instance it is unlikely that lane usage on all approaches would be equal (given the layout of lanes for turning movements), and as such a Junctions9 model would need to be specifically adjusted to account for this behaviour. It appears that give-way parameters have been derived separately for use in the TRANSYT model. On the basis that these parameters correspond to the existing A629 Beechcliffe roundabout geometry and corresponding flows, it is considered that use of TRANSYT to model the existing layout is justified to adequately reflect the potential for uneven lane usage.

- Notwithstanding the above point, it is noted that grouped traffic streams have been used to model the movement from Hard Ings Road northbound to Skipton Road in the existing layout, and Hard Ings Road to Skipton Road and vice-versa in the proposed layout. Each of these movements assume the equal use of two lanes. Although drivers have a natural tendency to use the nearside lane in situations where two lanes are available, there is sufficient spare capacity modelled to accommodate uneven lane usage, and it is therefore not considered necessary to split the grouped traffic streams to make further specific allowance for this.

- No observed data (for instance, queue lengths, saturation flows) has been provided to validate the results of the base model. For the purposes of this review, it is assumed that the modelled junction operation has been validated satisfactorily.

- The models of the proposed layout assume that traffic signal timings are optimised. In practice, the precise signal timings would be a matter to be determined as part of the implementation of the scheme; however, the model demonstrates that a signal arrangement can be provided to satisfactorily accommodate the predicted flows.

Overall, it is considered the approach taken to model the junction is appropriate, and the modelled operation is satisfactory.

4 Summary

Notwithstanding that it has been considered necessary to address some concerns in the TRANSYT models presented, it is considered that the modelled operation of the junctions is generally satisfactory.

Appendix C

Extracts from the DfT's Value for Money Framework

Department for Transport

Value for Money Framework

Moving Britain Ahead

The Department for Transport has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the Department's website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard please contact the Department.

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Website www.gov.uk/dft

Category Definitions

Proposals with significant transport budget impacts

5.6 In **standard cases**, where Broad Transport Budget cost outlays exceed revenues or cost savings, the Department uses six value for money categories. The relevant categories are detailed in Box 5.1.

Box 5.1 Standard Categories

(Transport cost outlays exceed revenues or cost savings)

VfM Category	Implied by…*
Very High	BCR greater than or equal to 4
High	BCR between 2 and 4
Medium	BCR between 1.5 and 2
Low	BCR between 1 and 1.5
Poor	BCR between 0 and 1
Very Poor	BCR less than or equal to 0

**Relevant indicative monetised and/or non-monetised impacts must also be considered and may result in a final value for money category different to that which is implied solely by the BCR. This chapter provides guidance on how to select the final value for money category.*

5.7 Four additional categories have also been introduced to reflect special cases where the proposal will result in **cost savings** (see Box 5.2).

5.8 Proposals that could result in cost savings include reductions in service, projects being de-scoped, fare rises and tolling schemes.

Appendix D

Copy of Fibreline Limited letter to the Secretary of State for Transport dated 25 July 2017

City of BRADFORD
METROPOLITAN DISTRICT COUNCIL

Department of Place

Planning, Transportation and Highways Service
Highway Services
4th Floor
Britannia House
Broadway
BRADFORD
BD1 1HX

Tel: (01274) 435723
Email: carole.yeadon@bradford.gov.uk

Walker Morris
Kings Court
12 King Street
Leeds
LS1 2HL

For the attention of: Graham Whiteford

My Ref: PTH/HS/103197/GEN/CEY

Your Ref: GGW/RMS/FIB.26-1

25th July 2017

Dear Sirs,

The City of Bradford Metropolitan District Council (A650 Hard Ings Road Improvement Scheme, Keighley) Compulsory Purchase Order 2017
Fibreline Limited, Victoria Park Mills, Hard Ings Road, Keighley

We refer to your letter addressed to the Secretary of State, dated 25 May 2017, in connection with the above Compulsory Purchase Order (CPO) (the 'Order').

We note your client's objection to the Order and take on board the concerns raised in your letter. We respond to your client's individual concerns below.

Significant detrimental impact on the ability to operate from their business premises.
We have offered to undertake accommodation works to help mitigate the impact of the scheme on the Fibreline property, including the possibility of widening the entrance and providing a new ramp to a low level car park or a road level car park option, and the provision of a relocated pedestrian access. You have received our letter addressing your clients concerns regarding access to and from the premises during the construction phase and have responded with further queries. We will respond to this subsequent letter in the near future.

There are likely to be significant affects on the usability of the office premises due to :-
Loss of Light
The proposed scheme will not have a significant impact on daylight. The Technical Daylight Amenity Impact Assessment undertaken by Gray Scanlan Hill has demonstrated

through accepted practice technical analysis (scientific measurement) that the offices will continue to achieve adequate / good levels of daylight, measured against current Design Guidance and British Standards.

As part of the technical study, it was measured that the proposed scheme will result in the offices experiencing a small reduction in daylight amenity but not to an extent that would be noticed by the room occupants. Notwithstanding that reduction, daylight levels would continue to be adequate / good, measured against current Design Guidance and British Standards.

Increase in Noise and Vibration
The Council has carried out a noise and vibration assessment at Fibreline's property. The assessment concludes that there will be a small increase in both noise and vibration levels once the scheme is completed. However, these are expected to be at a low level and will be largely imperceptible. As such we do not believe the road widening scheme will result in a significant increase in noise and vibration levels.

Ground-borne vibration levels were also measured as a mix of vehicles passed 'Fibreline' at varying distances from the current carriageway alignment. This measurement exercise indicated that moving the carriageway 3 metres closer to the building was unlikely to lead to any significant change in the current vibration climate within the premises, with no vibration levels measured within the building being above the threshold of human perception, and all levels recorded being far below the level at which (even cosmetic) damage might be expected to a sound structure.

Safety
The proposed parapet will be designed to provide vehicle containment unlike the existing dry stone boundary wall, which provides little protection from an errant vehicle, an improvement to the safety of occupants to the building.

Security
In terms of security, we do not believe the gap between the building line and the proposed parapet wall to the retaining wall is close enough for a person to climb across without the aid of ladders/planks at a part of the building that is clearly visible from the road. However, we have previously advised that if this is a real concern, improved security measures could be considered as part of a compensation package.

Overbearing Impact and effect on the outlook for occupants of the offices
In planning terms, a building or structure is usually considered to have an overbearing impact if it would have such an oppressive impact on the occupiers of the affected building as to demonstrably harm the use of the building. The Technical Daylight Amenity Impact Assessment referred to above demonstrates that the construction of the retaining parapet wall adjacent to the Fibreline office windows will not result in a significant loss of light to the offices therefore the use of the building will not be compromised by loss of daylight.

In terms of outlook / aspect and openness, the existing view from the offices is not 'open'; it is dominated by the grassed embankment (which currently retains the difference in level between the offices and Hard Ings Road) and the stone boundary wall at the top of the embankment. The effect of the proposed road widening works will be to reduce the distance between the office windows and the adjacent embankment/wall, but the works will not result in a currently 'open' aspect being transformed into an enclosed aspect. Furthermore although the distance between the existing embankment/wall and the office will be reduced, some separation will be retained so that an unacceptable overshadowing affect will not occur.

In terms of the character of the proposed retaining wall, we have previously advised that landscaping could be provided to the rear of the wall. This could be either at a low level or within a raised bed. We have explained that facing treatments for the retaining wall could resemble the existing stone wall if desired. The parapet to the retaining wall could be either solid or a metal parapet (that can be seen through). However, noise attenuation and privacy will be improved with a solid wall.

Given the urban location of the Fibreline site and the usage of the affected rooms (offices), and having regard to the suggested accommodation works, it is not considered that the impact of the proposed road widening works would be such that the use of the offices would be demonstrably harmed. Therefore, given that it has also been demonstrated that the proposed road widening project would not unacceptably harm the usage of the offices through loss of light, the proposed works are not considered to have an unacceptably detrimental visual impact on Fibreline's offices.

Persistent noise disturbances over a sustained period during working hours could be detrimental to health, productivity and the company's ability to retain and hire staff.

The HSE advise that noise can be considered to be a problem in the workplace if it is intrusive or worse than intrusive for most of the working day and identifies noise exposure action values. Noise calculations supplied by the noise assessment (which is based on the forecast traffic increases taking into account the proposed new alignment of the carriageway) indicate that noise exposure levels will not exceed the lower exposure action value in accordance with the Noise Regulations.

The Scheme is not justified.

The Scheme has been accepted as a qualifying scheme and prioritised by West Yorkshire Combined Authority (WYCA) within the West Yorkshire Plus Transport Fund (WY+TF) programme. Initially, a 'long list' of over 120 projects were reduced into a 'medium list' of 60. The prioritised package included 33 projects, and the Hard Ings Road project was ranked at 14th across West Yorkshire.

The Scheme has been developed and received Development Approval (Gateway 1) of the WYCA Assurance Framework governance process in May 2014. In doing so it has demonstrated that the Scheme will provide an acceptable level of value for money, has a clear set of objectives and a realistic chance of successful implementation. The scheme

aims to support economic growth and improved quality of life through reducing congestion, improving pedestrian and cycling facilities and reducing air pollution.

We have not had access to detailed plans or traffic analysis of the previous Department for Transport (DfT) scheme and are therefore unable to comment on the Annual Average Daily Traffic (AADT) data in 1996. Different sources have been used to collect traffic data within the project area, such as Automatic Number Plate Recognition (ANPR), Automatic Traffic Count (ATC), and Classified Manual Turning Counts at all major junctions along Hard Ings Road. These traffic counts have been used to build a traffic matrix for the base year 2014 in our traffic Model.

The traffic data collected by the Department for Transport (DfT) at Hard Ings Road does not show a significant change in AADT between 2000 to 2014. DfT traffic data has been analysed on consecutive road sections either side of Hard Ings Road, i.e. the A650 Aire Valley Road and the A629. It is observed that for the period 2000 to 2014, AADT has increased by approximately 11% on routes either end of Hard Ings Road, compared with traffic flows on Hard Ings Road itself increasing by only 3%. The traffic growth after opening Bingley By-pass shows a significant increase along A629 and A650. The DfT traffic data indicates an increase in AADT of around 14% between the period 2005 to 2016. Recorded AADT's gradually increase at sites moving away from Hard Ings Road. This is due to the fact that Hard Ings Road is already running over capacity and cannot accommodate a significant increase in traffic flows since vehicles are unable to enter this section of road network and are held on the approaches in queues on the A629 / A650 Aire Valley Road.

The National Trip End Model (Tempro) has been used to determine the appropriate growth factors based on the Keighley area as agreed with the West Yorkshire Combined Authority (WYCA). A micro-simulation traffic model has been developed to represent traffic conditions at two different times of day for a base year 2014, namely AM Peak Hour (07:30-09:30) & PM Peak Hour (16:30-18:30). The 2014 base model has been calibrated and validated for AM and PM peak hours in line with DfT's WebTAG and Design Manual for Roads and Bridges (DMRB) guidance in terms of link flow/journey time validation.

No alternative options for retaining and improving the two lanes and improving the Beechcliffe and Bradford Road roundabouts have been considered.

The average two way traffic flows for the length of Hard Ings Road is 2771 vehicles per hour in the morning peak (08:00-09:00) and 2829 vehicles per hour in the evening peak (17:00-18:00). This is based on data acquired from an Automatic Traffic Count (ATC) located on Hard Ings Road and manual traffic counts undertaken to build the traffic model in 2014.

In accordance with the Design Manual for Roads and Bridges (DMRB) TA 79/99, the capacity of a two lane 9.0m wide UAP3 road type is 1530 vehicles per hour one-way. This equates to a capacity of 2550 vehicles per hour in two-way flows. Therefore, at present the capacity of the existing road layout is inadequate at peak hours.

The data supplied previously via Axis is data used for the noise assessment outside Fibreline's offices and applies to this section of the road only. The traffic flows are significantly higher on the section of Hard Ings Road between Lawkholme Lane and the A629 dual carriageway.

Using these predicted traffic flows, in accordance with the DMRB, the types of road and carriageway width were considered. This approach was chosen to quickly identify a scheme footprint and also to identify the extent to which land and property would be affected. This assessment identified four options which could provide for the predicted demand in 2026:-

- single 4 lane 14.6m wide carriageway,
- dual 6.75m wide carriageway (with sub options as the scheme was developed),
- dual 7.3m wide carriageway, and
- composite part dual 6.75m wide carriageway, part single 6.75m wide carriageway.

Initial options considered the feasibility of widening on each side of Hard Ings Road. It was however apparent that given the constraints of housing and the presence of Victoria Park, that potential for widening on the south side of the road was very limited without severe environmental impact. Accordingly, such options were not pursued. In order to protect residential properties adjacent to the south-western kerbline, avoid legal issues with respect to the restrictive covenant in place at Victoria Park and the re-location of the gas governor, options were restricted to widening on the north eastern side of the carriageway only.

Although a four lane single carriageway option throughout the length of Hard Ings Road has the least land take of all options, it was discounted due to road safety implications, since all turning movements for vehicles would be possible in the absence of a central reserve. Although traffic movement restrictions could be introduced, they are unlikely to be effectively enforced, and could therefore result in more turning conflicts, particularly at entrances/exits to the numerous business premises.

Dualling the full length of this section of Hard Ings Road with (with no right turns) was also given consideration but was discounted for several reasons. Firstly because there are many businesses located off Hard Ings Road who would be significantly affected in terms of access. Secondly, because this option has the greatest implications on land take, particularly adjacent to the Fibreline building. Thirdly because it would require a significant re-design of the Bradford Road roundabout. This would be necessary because the roundabout would have to deal with traffic being re-routed as the existing right turn from Lawkholme Lane would cease to be operational.

The proposed Scheme is a composite part dual 2 lane and part single 4 lane carriageway (from Coronation Business Centre to Bradford Road roundabout). This has benefits with respect to minimising land take, particularly in front of Fibreline's premises. The proposed Scheme has been developed with a signalised junction at Lawkholme Lane incorporating a Toucan crossing (to replace an existing pedestrian refuge). This retains the convenience

of a right turn from Hard Ings Road into Lawkholme Lane as the current situation, and avoids the unnecessary re-routing of this traffic to U-turn at the Bradford Road roundabout. The retention of a junction and conversion to traffic signal control at Lawkholme Lane maintains local accessibility, and avoids the unnecessary diversion of local traffic, increased journey lengths and additional traffic loading at the Bradford Road roundabout. There are also a significant number of right turning movements into the petrol filling station and the adjacent McDonalds restaurant from Hard Ings Road. Therefore, a right turn priority facility with a dedicated turning lane (to allow through traffic to proceed unobstructed) has been included within the scheme.

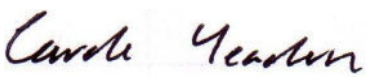
The capacity of Beechcliffe roundabout is improved in the Scheme by the remodelling of the roundabout to provide additional lanes on the roundabout itself, the implementation of traffic signals on all arms and an additional traffic lane on the approach to the roundabout from the A629. Two lanes have also been allocated for the exit into Hard Ings Road from the roundabout. This arrangement will increase the capacity of the junction and will operate effectively in the design year, 2026. At present the single lane provision on Hard Ings Road causes congestion to back up onto and through Beechcliffe Roundabout and beyond at peak times.

The two lanes allocated in each direction for the full length of Hard Ings Road will remove bottlenecks when vehicles merge into one lane, compared with the current one lane provision in both directions, and will provide for the predicted demand in 2026. Bradford Road roundabout is currently operating with spare capacity. However, in the current situation, vehicles exiting the Bradford Road roundabout onto Hard Ings Road westbound, merge into one lane adjacent to the ambulance station, causing congestion to back up on and through Bradford Road roundabout and beyond at peak hours. Modelling has demonstrated that with the re-timing of signals, this junction will operate acceptably in the 2026 design year.

We hope the above answers your client's concerns and we would be happy to meet if this would be helpful. We look forward to progressing discussions concerning compensation and hope that your client will feel able to remove their objection to the CPO in the near future.

Finally, please note that this response is without prejudice to current and future negotiations with the Council and its representatives.

Yours faithfully



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