Promotion of Colthrop Village Site - Transport

Colthrop Village,
Thatcham

Prepared for

Colthrop Village Consortium

by

Stuart Michael Associates Limited

September 2016

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1.0 INTRODUCTION

1.1 This transport and highways review has been prepared by Stuart Michael Associates (SMA), on behalf of the Colthrop Village Consortium. This review is intended to support the promotion of the Colthrop Village site for inclusion in the West Berkshire Local Plan, through the provision of evidence that the site is deliverable in terms of an acceptable transport and highways strategy.

1.2 The development being promoted comprises a mixed use scheme of residential, commercial and amenity land uses on a site located to the south of the railway line and the Kennet and Avon canal, Thatcham. The development proposals also include significant infrastructure improvements through the promotion of a new bridge spanning the railway line.

1.3 Considerable technical work has been completed by the consortium to provide West Berkshire Council with sufficient evidence to support the promotion of the site. This includes producing a potential masterplan layout and testing the likely traffic impact of this development option using West Berkshire's own traffic model.

1.4 This report summarises the potential development scheme and its associated traffic generation, considers a highway strategy and how this can be delivered, sets out discussions with key stakeholders Network Rail and summarises the findings of the tests run using the West Berkshire Traffic Model (WBTM).

2.0 DEVELOPMENT OVERVIEW

Preliminary Scheme

2.1 The Colthrop Village Consortium have developed a preliminary development scheme in order to demonstrate the type and scale of development possible at the site. The scheme masterplan is attached as **Appendix A**.

2.2 This preliminary scheme includes:

- A marina;
- 5,304sqm of commercial land use;
- 4,094sqm of retail land use;
- 294sqm of leisure land uses;
- Land for a new school;
- A 15,007sqm hotel;
- Some 840 dwellings (mix of flats and houses)

2.3 The land use mix is intended to provide a community feel, providing office space, leisure uses and small shops / cafes on site, as well as residential units. The local shops / cafes and leisure uses would serve the employees and residents limiting the need to travel off site for day to day needs. Land will also be provided for a school which will serve the future residents of the site.

2.4 This mixture of land uses therefore promotes a sustainable community, where day to day retail, leisure and education can be served onsite and so reducing the need to travel.

Vehicle Trip Generation

2.5 A vehicle trip generation for the scheme has been estimated using the industry accepted TRICS database. This database provides a range of surveyed sites from which peak hour trip rates can be derived. These can then be used to calculate an estimated vehicular trip generation for the scheme.

2.6 The TRICS output for the trip rates derived for the commercial, hotel and residential elements of the site are contained in **Appendix B**. **Table 1** sets out the estimated vehicle trips associated with these land uses.

Table 1 - Summary of estimated peak hour trip generation

Land use	AM Peak Hour			PM Peak Hour		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Commercial	88	7	95	5	85	90
Hotel	37	93	130	70	32	102
Flats	37	102	139	92	47	139
Houses	55	142	198	137	81	218
Total	217	344	561	304	244	548

2.7 It should also be acknowledged that there may be further internalised trips as residents may also work at the shops, commercial and hotel land uses on site, thus reducing the number of origin trips from the residential and destination trips to the commercial and hotel land uses set out in **Table 1**. However to be robust these land uses set out in **Table 1** have been assessed as if each were a standalone development.

2.8 This assessment indicates that as a worst case the proposals could generate some 561 two way trips in the AM peak and 548 in the PM peak periods.

3.0 ACCESS STRATEGY

3.1 The development proposals promote an access strategy that provides access from Chamberhouse Mill Lane, diverting the existing road that accesses the railway crossing through the site to a new bridge over the railway line connecting to Pipers Lane. A new roundabout would then be provided at the junction of Pipers Lane and Pipers Way, along with improvements and widening to Pipers Lane to provide footways connecting the site to the existing infrastructure on Chamberhouse Mill Lane and the northern section of Pipers Lane. Pedestrian access from the bridge to Pipers Lane, providing access to the railway station would also be provided. This is shown in **Drawing 5010-010**

3.2 The existing level crossing could then be closed and the existing carriageway either side stopped up to allow access to the two station car parks, but not a through route. The level crossing at Thatcham station has been subject to several operational and management studies (**Appendix C**) as it is known to be a constraint on the network, with the crossing being down up to 50% during peak hours. This leads to considerable congestion and queueing. A study into the provision of a bridge at the location of the existing level crossing has shown that there is inadequate land to provide a bridge of sufficient breadth and height, particularly as the railway line is due to be electrified by 2020.

3.3 The delivery of a bridge is therefore a major infrastructure improvement that will being significant benefit to the local area whilst also providing access onto the network for the development. Delivery of such a significant piece of infrastructure will require support from West Berkshire Council and Network Rail.

3.4 **Drawing 5010-010** provides a preliminary design that shows that, with the purchase of third party land on Pipers Way, a suitable bridge and carriageway design can be achieved which can safely connect to the existing highway network. The Consortium have already had preliminary discussion with the land owners involved.

3.5 SMA and the Consortium have also had preliminary discussions with Network Rail, who would be supportive of the scheme. Network Rail have confirmed they own land between the between the site and railway line (adjacent to the water tower) which would be needed for support footings for the bridge and in principle would be happy to provide this land and access to/over the railway line

for construction of the bridge, given that the bridge will provide significant benefit by removing the existing level crossing.

3.6 Network Rail currently receive funding on a 5 year programme specifically for closing / replacing level crossings. It is the Government's intention to close all level crossings over time. This programme currently assesses and prioritises level crossing closures by a number of factors including safety. At this time Network Rail have no funding available for closing the level crossing at Thatcham as, although its acknowledged to cause significant congestion, it does not rate highly in the assessment programme and has a good safety record. However, Network Rail, whilst not guaranteeing any funding, have acknowledged there may be funding programmes to which they could apply if a definite / approved scheme came forward.

3.7 Other infrastructure funding sources may also be available, such as via the LEP. A recent development site in Kings Road, Newbury received such funding in order to provide a link road through the site.

3.8 A secondary access will be provided to the east connecting to Colthrop Lane via the existing level crossing. This route provides an alternative access for emergency vehicles in to the site. However, routes within the site would be designed such that the natural desire lines encourage traffic to the western access points of the site whilst the level crossing at Colthrop will also act as a constraint making this route less desirable.

3.9 A network of pedestrian and cycle routes will be provided through the site providing easy, lit routes for users connecting to the commercial / retail centre, school bus stops and to the wider infrastructure on Pipers Way, Chamberhouse Mill Lane and Colthrop Lane / Gables Way. This is shown on the Masterplan attached as **Appendix A**.

3.10 SMA have therefore demonstrated that, in design terms, a suitable access strategy design can be provided to meet standards and provide safe connection to the existing highway network. Discussions have taken place with land owners and key stakeholders that indicate that third party land issues can be overcome, making this access strategy option deliverable.

4.0 PROMOTION OF SUSTAINABLE TRAVEL

4.1 The development will also promote a comprehensive access strategy, the details of which are contained in Section 3. This will include the promotion of pedestrian and cycle routes throughout the site that connection to the surrounding area via the three access points, including the new bridge connecting to Pipers Way.

4.2 The centre of the site is within 600m (8 minutes walk) of the employment units on Pipers Lane and 1.3km (4 minutes cycle) from the range of employment sites on Pipes Way. There are also a range of employment sites located on Gables Way, some 1.2km from the centre of the site. These are all within reasonable walking or cycling distance of the site.

4.3 Connections to Thatcham railway station will also be provided. The western end of the development site is located some 400m from Thatcham Railway station, with the eastern end less than a kilometre from the station. The railway station is therefore within easy walking distance of the site, approximately 5 – 12 minutes walk from each extreme of the site. This station provides frequent services to Reading, London Paddington, Newbury and a range of local stations.

4.4 Thatcham town centre is some 2.2km from the centre of the site, or less than 7 minutes cycle. The site will also provide a range of local stores within its boundary that will meet the day to day needs of future residents and employees, thus reducing the need to travel off site.

4.5 The development will also promote a high quality, frequent bus service through the site, connecting the site to the town centre and the wider bus network. Bus stops will be provided through the site, ensuring that residents are all located within 400m walk of a stop, as well as in the retail / commercial centre. This service will also provide new bus stops located close to the train station or on Pipers Lane, providing an alternative mode of travel to the rail station for future residents or access to the site by future employees.

4.6 A Travel Plan will be provided as part of any development scheme. This will work to promote sustainable travel and reduce single occupancy car trips. Within the Travel Plan there will be a range of targets and measures to encourage modal shift, these may include a car sharing scheme for employees and bus and cycle vouchers for future employees / residents.

4.7 Travel Plans have been shown to deliver up to 10-15% modal shift from the use of the private car. This alongside the easy access to the train station, employment, facilities and services provided on site or within reasonable walking and cycling distances of the site as well as the provision of a high quality bus service provides the opportunity to significantly reduce the number of car trips generated by the development as estimated in **Table 1** and provide a sustainable and accessible development.

5.0 WEST BERKSHIRE TRAFFIC MODEL

5.1 West Berkshire Council (WBC) have a SATURN traffic model (WBTM) which was produced to help inform the Local Plan of strategic traffic impacts of allocated development sites. West Berkshire also allow third parties, such as developers, to commission data runs from the model in order to assess the impacts of individual sites.

5.2 The Colthrop Village Consortium have commissioned WBC to provide traffic model data for the Colthrop Village development. It should be noted that this commission provided access to model data only and not advice or scheme approval from the Council.

5.3 SMA provided WBC with trip generation data (**Table 1**) and two access strategy options for testing. The first is the preferred site access strategy as set out in Section 3 and shown on **Drawing 5010-010**.

5.4 The second option considers an alternative where access to the development is provided via a new bridge at Colthrop Lane, resulting in the closure of the existing level crossing at Colthrop Lane and the level crossing at Thatcham Station remaining as is. The purpose of the second access option is intended to demonstrate that alternative access to deliver development is possible and to understand the impact of this access option on the network. A possible access design is provided in **Appendix D**.

5.5 In order to inform the WBTM, traffic surveys were undertaken at the Pipers Way / Pipers Lane junction and just north of the Colthrop Lane Level Crossing. These were provided to WBC's consultants to be included in the model.

5.6 The WBTM was run using the future year of 2026, as was set by WBC in its original modelling work. A reference case was provided to show the predicted trips on the network in 2026 before any development access options were added. This provides a base from which to compare any impact of the development scenarios. The reference case data along with all the model outputs are provided in **Appendix E**.

5.7 The model was then run using the reference case traffic flows but introducing the new road infrastructure shown in **Drawing 5010 – 010** (Scenario 1). The purpose of this test was to understand the impact of removing the constraint at Thatcham Level crossing and whether this would significantly alter the traffic

patterns on the network. The development trips were then added to the network including the Scenario 1 infrastructure improvements as a separate model run to show the impact of these trips on the network. A summary of the flows for each of the three model runs for Scenario 1 are set out in **Tables 2 and 3**.

5.8 It should be noted that the SATURN model is able to redistribute trips on the network based on demand and delays. Therefore adding new infrastructure will result in a change in traffic patterns and redistribution of trips on the network. Adding development trips will also result in a redistribution of trips as it models driver behaviour to choose the easiest, least congested routes.

Table 2 – AM Peak Scenario 1 - 2026 with New Bridge and Thatcham Crossing Closed

Location	Station Road (west of Swan Rbt)		Pipers Way (north of Pipers Lane)		Thatcham Level Crossing / bridge		Chamberhouse Mill Lane (south of Level crossing)		Gables Way (north of Level crossing)	
	Northbound	Southbound	Eastbound	Westbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
2026 Reference case	274	400	477	636	525	741	525	741	157	88
Scenario 1 - 2026 with new Bridge and closure of Thatcham Level Crossing	293	389	755	617	745	731	771	731	157	88
Difference between Reference Case and Scenario 1	*19*	*-11*	*278*	*-19*	*220*	*-10*	*246*	*-10*	*0*	*0*
Scenario 1 - 2026 with new Bridge and closure of Thatcham Level Crossing Plus Development trips	368	441	786	633	864	808	767	762	274	138
Difference between Scenario 1 and Scenario 1+ Development	*75*	*52*	*31*	*16*	*119*	*77*	*-4*	*31*	*117*	*50*

Table 3 - PM Peak Scenario 1 2026 with New Bridge and Thatcham Crossing Closed

Location	Station Road (west of Swan Rbt)		Pipers Way (north of Pipers Lane)		Thatcham Level Crossing / bridge		Chamberhouse Mill Lane (south of Level crossing)		Gables Way (north of Level crossing)	
	Northbound	Southbound	Eastbound	Westbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
2026 Reference case	254	359	473	596	524	705	524	705	244	86
Scenario 1 - 2026 with new Bridge and closure of Thatcham Level Crossing	323	323	703	607	745	694	756	694	244	87
Difference between Reference Case and Scenario 1	*69*	*-36*	*230*	*11*	*221*	*-11*	*232*	*-11*	*0*	*1*
Scenario 1 - 2026 with new Bridge and closure of Thatcham Level Crossing Plus Development trips	352	361	741	664	745	705	775	705	311	154
Difference between Scenario 1 and Scenario 1+ Development	*29*	*38*	*38*	*57*	*0*	*11*	*19*	*11*	*67*	*67*

5.9 From **Tables 2 and 3** it can be seen that providing the new highway infrastructure, including a new bridge in replacement of Thatcham level crossing has little impact on traffic flows on Station Road and Gables Way nor the westbound / southbound trips on Pipers Way and Chamberhouse Mill Lane. There is, however, an increase in flows of some 220+ trips travelling northbound from the south up Chamberhouse Mill Lane over the new bridge and onto Piper Way in both peak hours. This indicates that removing the constraint of the level crossing increases flows from the south but has little impact on the flows to the north.

5.10 This suggests that providing a bridge does not attract significant additional flows through Thatcham, in particular those strategic trips using the route as a by-pass for Newbury and is instead releasing supressed demand from the south of Newbury and the surrounding local area due to the reduction in delays as a result of removing the existing level crossing from the model.

5.11 After adding the development trips, it can be seen that an additional 190+ trips are added to the new bridge in the AM peak and over 100 to Gables Way, but the impact on the rest of the study area is minimal as trips disperse across the network. In the PM peak the increase in trips as a result of develop trips is low in comparison to the model data for the network with the new infrastructure alone added.

5.12 **Tables 4 and 5** provide the equivalent data for the Scenario 2 access option, which provides an alternative bridge option at Colthrop rather than Thatcham level crossing.

5.13 The model results for access Scenario 2 shows that if a new bridge was provided at Colthrop along with a new road connection through to Chamberhouse Mill Lane, then an overall benefit would be seen on the network around Pipers Way, Thatcham level crossing and small increases in trips on Station Road, before the development is added to the network. Unsurprisingly this would result in an increase in traffic flows on Gables Way and northbound on Chamberhouse Mill Lane.

5.14 Adding development trips would result in little additional traffic on Station Road, Pipes Way, Thatcham Level Crossing or Chamberhouse Mill Lane, with the majority of trips travelling along Gables Way and out onto the wider network.

Table 4 - AM Peak Scenario 2 2026 with New Bridge at Colthrop and Thatcham Crossing Open

Location	Station Road (west of Swan Rbt)		Pipers Way (north of Pipers Lane)		Thatcham Level Crossing		Chamberhouse Mill Lane (south of Level crossing)		Gables Way (north of Level crossing)	
	Northbound	Southbound	Eastbound	Westbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
2026 Reference case	274	400	477	636	525	741	525	741	157	88
Scenario 2 - 2026 with new Bridge at Colthrop and Thatcham Level Crossing open	353	405	332	289	388	382	864	714	597	383
Difference between Reference Case and Scenario 2	*79*	*5*	*-145*	*-347*	*-137*	*-359*	*339*	*-27*	*440*	*295*
Scenario 2 - 2026 with new Bridge at Colthrop and Thatcham Level Crossing open Plus Development trips	375	444	332	283	410	416	855	746	789	470
Difference between Scenario 2 and Scenario 2 + Development	*22*	*39*	*0*	*-6*	*22*	*34*	*-9*	*32*	*192*	*87*

Table 5 - PM Peak Scenario 2 2026 with New Bridge at Colthrop and Thatcham Crossing Open

Location	Station Road (west of Swan Rbt)		Pipers Way (north of Pipers Lane)		Thatcham Level Crossing		Chamberhouse Mill Lane (south of Level crossing)		Gables Way (north of Level crossing)	
	Northbound	Southbound	Eastbound	Westbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
2026 Reference case	254	359	473	596	524	705	524	705	244	86
Scenario 2 - 2026 with new Bridge at Colthrop and Thatcham Level Crossing open	412	347	344	201	443	248	832	695	578	477
Difference between Reference Case and Scenario 2	*158*	*-12*	*-129*	*-395*	*-81*	*-457*	*308*	*-10*	*334*	*391*
Scenario 2 - 2026 with new Bridge at Colthrop and Thatcham Level Crossing open Plus Development trips	420	400	338	206	448	309	842	734	717	608
Difference between Scenario 2 and Scenario 2 + Development	*8*	*53*	*-6*	*5*	*5*	*61*	*10*	*39*	*139*	*131*

5.15 Scenario 2 as an access option could therefore provide an alternative access strategy, along with appropriate improvements to local junctions that would serve the development, putting the majority of development related trips out onto Gables Way and the wider A4 network. This option could also provide some benefit to Thatcham level crossing and the local network as trips are diverted away over the new bridge.

5.16 Although the access option set out in Scenario 1 is the preferred option, it can be shown that development can be serviced via an alternative strategy and so is still deliverable if the preferred access strategy became unavailable.

5.17 In summary the WBTM results show that the infrastructure set out in Scenario 1, through the provision of a new bridge at Pipers Lane will provide a significant benefit to the network through the removal of the constraint caused by the level crossing but does not attract large volumes of strategic traffic attempting to by-pass Newbury town centre. The development traffic adds little impact across the network in comparison to the Scenario 1 infrastructure only option, therefore it is the existing traffic patterns that alter most.

5.18 Although not the preferred access strategy, the results of the WBTM for Scenario 2 show that this option provides an alternative access strategy for the development and could provide some benefit to the wider network. The purpose of this option is to show that development can be delivered by more than 1 access option.

6.0 SUMMARY AND CONCLUSION

6.1 This transport and highways review has been prepared by Stuart Michael Associates (SMA), on behalf of the Colthrop Village Consortium. This review is intended to support the promotion of the Colthrop Village site for inclusion in the West Berkshire Local Plan, through the provision of evidence that the site is deliverable in terms of an acceptable transport and highways strategy.

6.2 The development being promoted comprises a mixed use scheme of residential, commercial and amenity land uses on a site located to the south of the railway line and the Kennet and Avon canal, Thatcham. The development proposals also include significant infrastructure improvements through the promotion of a new bridge spanning the railway line.

6.3 Considerable technical work has been completed by the consortium to provide West Berkshire Council with sufficient evidence to support the promotion of the site. This includes producing a potential masterplan layout and testing the likely traffic impact of this development option using West Berkshire's own traffic model.

6.4 The land use mix is intended to provide a community feel, providing office space, leisure uses and small shops / cafes on site, as well as residential units. The local shops / cafes and leisure uses would serve the employees and residents limiting the need to travel off site for day to day needs. Land will also be provided for a school which will serve the future residents of the site. This mixture of land uses therefore promotes a sustainable community, where day to day retail, leisure and education can be served onsite and so reducing the need to travel.

6.5 The development proposals promote an access strategy that provides access from Chamberhouse Mill Lane, diverting the existing road that accesses the railway crossing through the site to a new bridge over the railway line connecting to Pipers Lane. A new roundabout would then be provided at the junction of Pipers Lane and Pipers Way, along with improvements and widening to Pipers Lane to provide footways connecting the site to the existing infrastructure on Chamberhouse Mill Lane and the northern section of Pipers Lane. Pedestrian access from the bridge to Pipers Lane, providing access to the railway station would also be provided. This is shown in **Drawing 5010-010**

6.6 The delivery of a bridge is therefore a major infrastructure improvement that will being significant benefit to the local area whilst also providing access onto the network for the development. Delivery of such a significant piece of infrastructure will require support from West Berkshire Council and Network Rail. The Consortium have already had preliminary discussion with the land owners involved as well as preliminary discussions with Network Rail, who would be supportive of the scheme.

6.7 A network of pedestrian and cycle routes will be provided through the site providing easy, lit routes for users connecting to the commercial / retail centre, school bus stops and to the wider infrastructure on Pipers Way, Chamberhouse Mill Lane and Colthrop Lane / Gables Way.

6.8 It has therefore been demonstrated that, in design terms, a suitable access strategy design can be provided to meet standards and provide safe connection to the existing highway network. Discussions have taken place with land owners and key stakeholders that indicate that third party land issues can be overcome, making this access strategy option deliverable.

6.9 A Travel Plan will be provided as part of the development proposals. Travel Plans have been shown to deliver up to 10-15% modal shift from the use of the private car. This alongside the easy access to the train station, employment, facilities and services provided on site or within reasonable walking and cycling distances of the site as well as the provision of a high quality bus service provides the opportunity to significantly reduce the number of car trips generated by the development and provide a sustainable and accessible development.

6.10 A review of the likely impact of the development proposals on the highway network has been completed using the West Berkshire traffic model (WBTM). This considered two scenario options:

Scenario 1 – the access strategy set out in **Drawing 5010-010** with a new bridge onto Pipers Way and the closure of Thatcham Level Crossing;

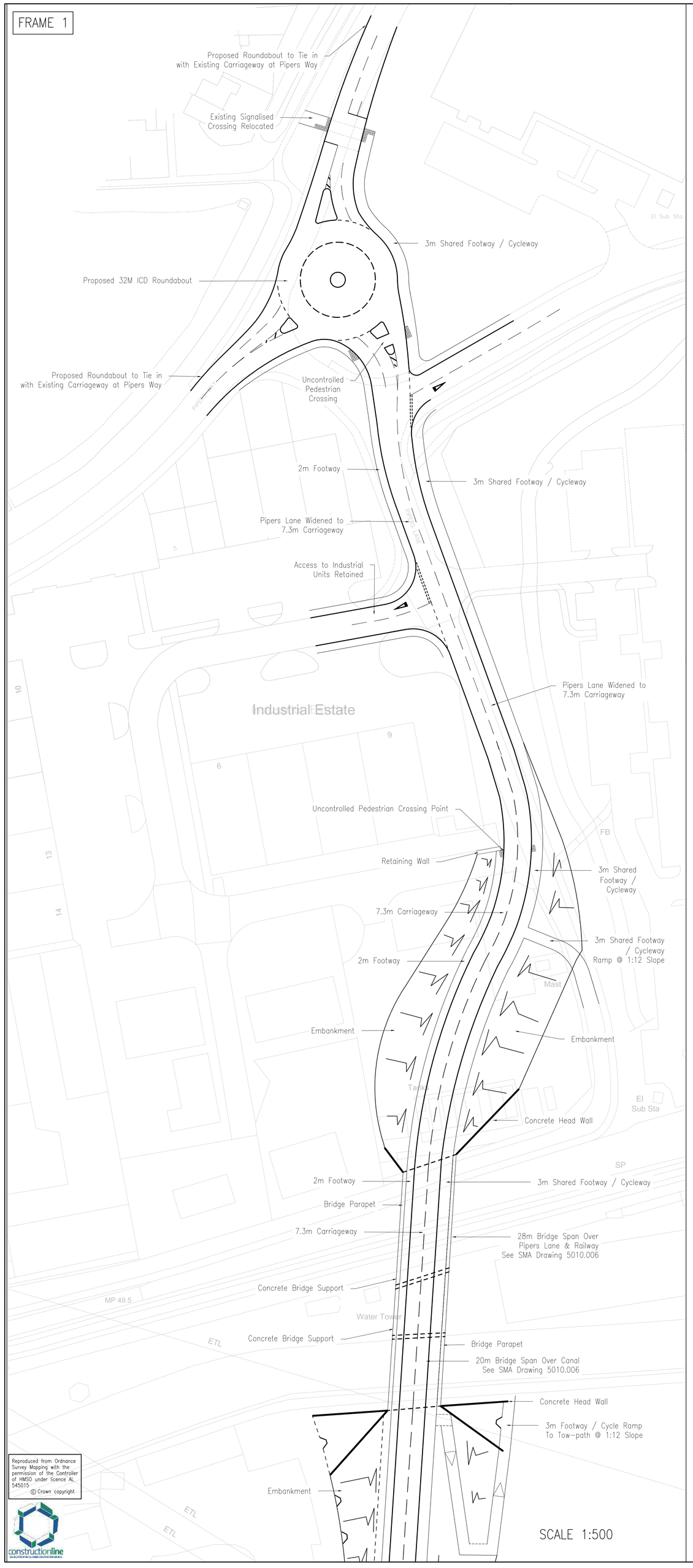
Scenario 2 - the access strategy set out in **Appendix D** with a new bridge onto Colthrop Lane and the Thatcham Level Crossing remaining open;

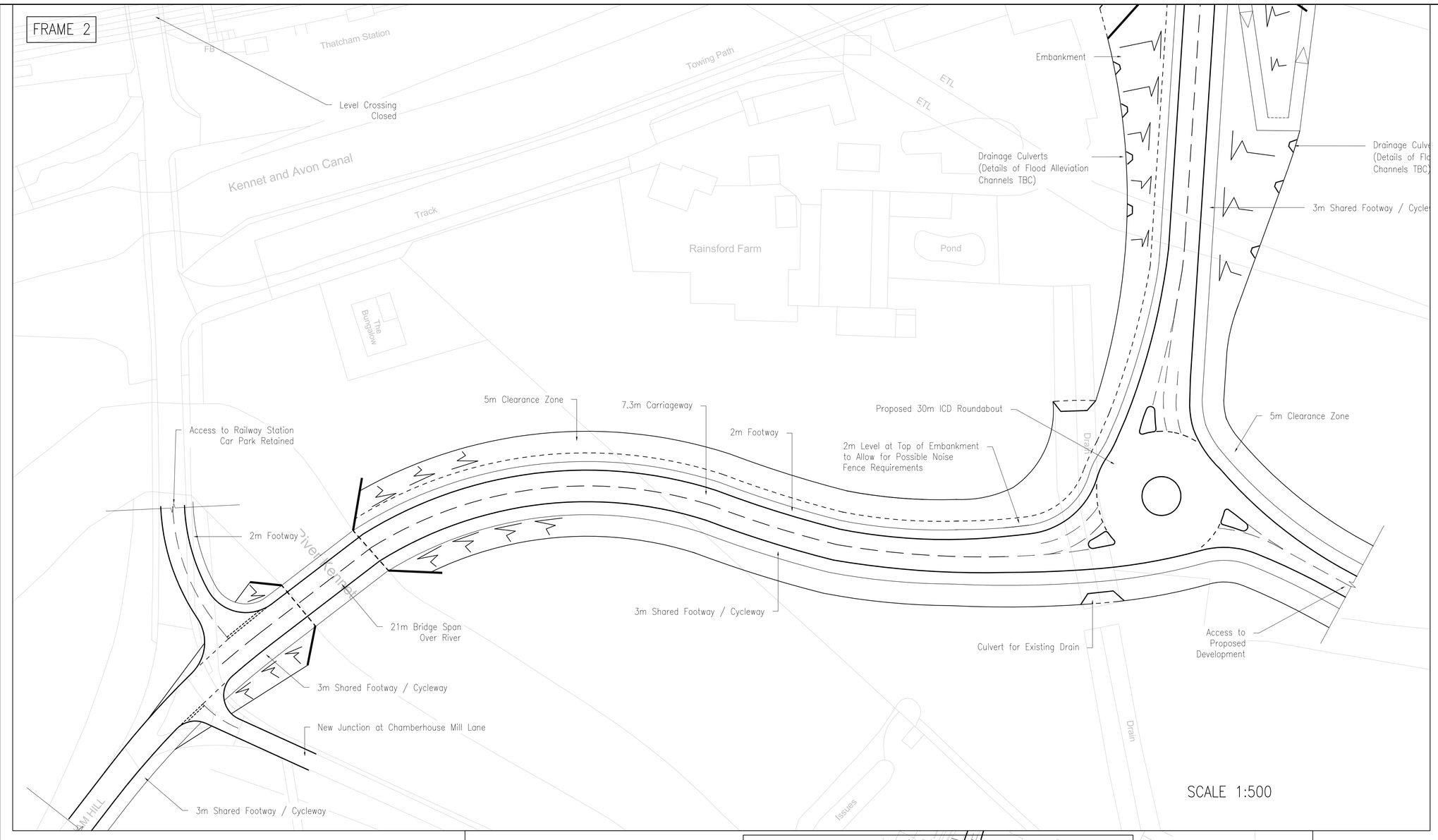
6.11 In summary the WBTM results show that the infrastructure set out in Scenario 1, through the provision of a new bridge at Pipers Lane will provide a significant benefit to the network through the removal of the constraint caused by the level crossing, but does not attract large volumes of strategic attempting to by-pass Newbury town centre. The development traffic adds little impact across the network in comparison to the Scenario 1 infrastructure only option, therefore it is the existing traffic patterns that alter most.

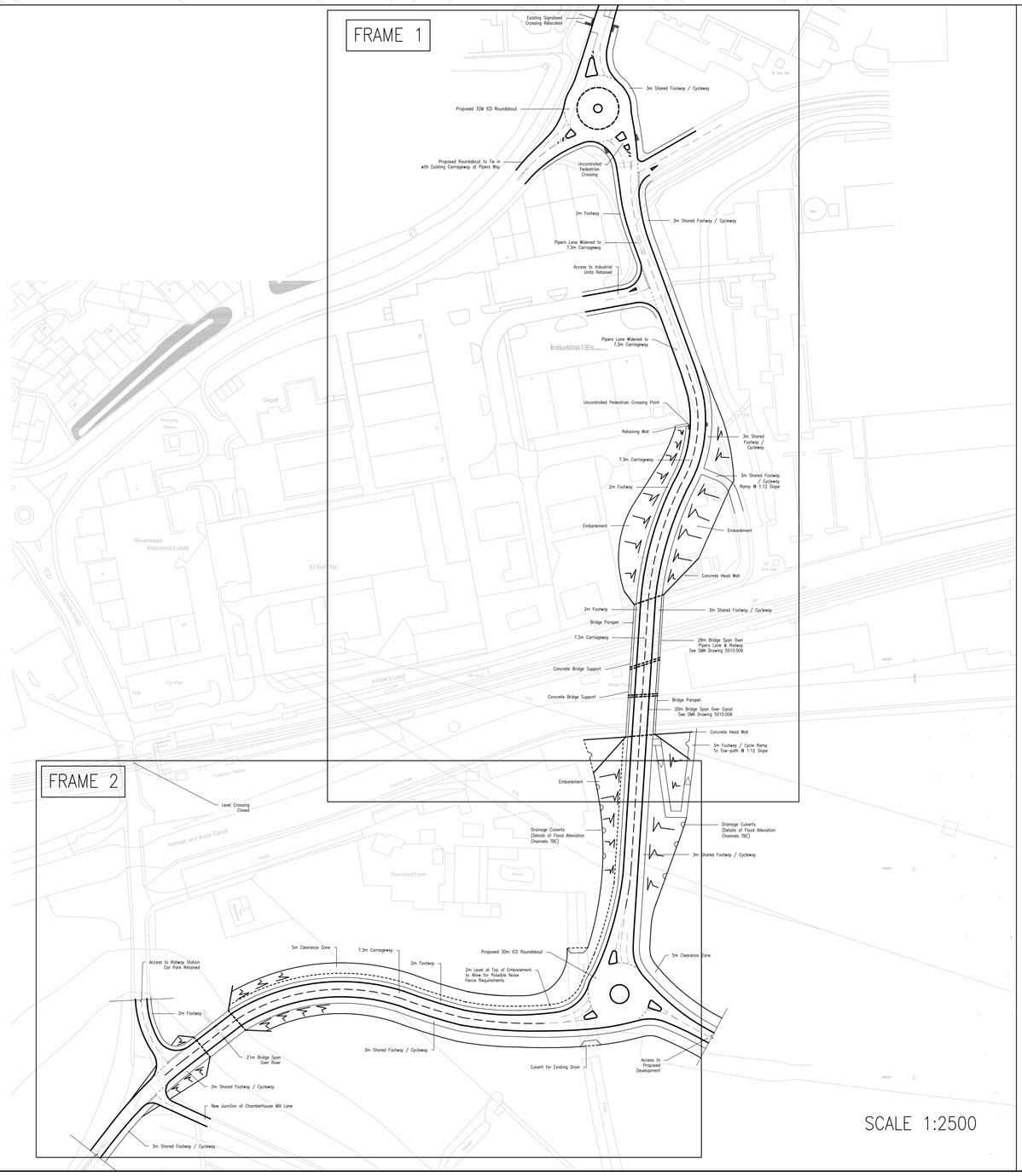
6.12 Although not the preferred access strategy, the results of the WBTM for Scenario 2 show that this option provides an alternative access strategy for the development and could provide some benefit to the wider network. The purpose of this option is to show that development can be delivered by more than 1 access option.

6.13 The proposed development can therefore be shown to have a deliverable transport and highways strategy that would bring significant benefit to the surrounding network.

DRAWINGS







NOTE:

1. THIS DRAWING IS TO BE TREATED AS INDICATIVE AND IS FOR DISCUSSION PURPOSES ONLY. HIGHWAY BOUNDARY HAS BEEN OBTAINED FROM WILTSHIRE COUNTY COUNCIL AND TRANSPOSED AS ACCURATELY AS POSSIBLE.

2. GIVEN THE PRELIMINARY NATURE OF OUR INVESTIGATIONS AND THE LIMITATIONS OF OUR BRIEF WE HAVE NOT FULLY SOUGHT TO OBTAIN NOR BECOME AWARE OF ANY SIGNIFICANT INFORMATION RELATED TO HAZARDS THAT MIGHT AFFECT THE CONSTRUCTION OR MAINTENANCE OF THIS PROJECT.

3. ANY DESIGNERS WHO PROGRESS THESE PROPOSALS OR DESIGN FURTHER WILL NEED TO RECONSIDER THE PROPOSALS BASED UPON THE INFORMATION WHICH SUBSEQUENTLY BECOMES AVAILABLE INCLUDING POTENTIAL SITE HAZARDS

THIS DRAWING IS TO BE TREATED AS INDICATIVE AND IS FOR DISCUSSION PURPOSES ONLY.

Rev.	Description	Drn	Chk.	Date
	REVISIONS			

Preliminary Issue		Submitted for S104	
Planning Issue		Issued for Tender	
Submitted for S38		Issued for Construction	
Submitted for S278		As Built	
DRAWING STATUS			

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JOB TITLE
COLTHROP VILLAGE, THATCHAM

DRAWING TITLE
PROPOSED RAILWAY BRIDGE
PIPERS LANE &
PIPERS WAY ROUNDABOUT
.

DATE	DRAWN	CHECKED	ISSUE CHECKED
MAY '16	COR	SGA	
DRAWING No	REV	STAGE	
5010.010		SEE FRAME@ A0	

APPENDIX A

PRELIMINARY for discussion purposes only

Thorney Farm Development
Colthrop Village, Colthrop
Draft Master Plan

Project TCVC
Dwg Number PL-100
Scale 1:1000 @ A0
Date JULY 15
Checked by MG

APPENDIX B

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
Calculation Factor: 1 DWELLS
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00	3	168	0.095	3	168	0.29	3	168	0.385
08:00-09:00	3	168	0.149	3	168	0.385	3	168	0.534
09:00-10:00	3	168	0.151	3	168	0.167	3	168	0.318
10:00-11:00	3	168	0.145	3	168	0.204	3	168	0.349
11:00-12:00	3	168	0.145	3	168	0.143	3	168	0.288
12:00-13:00	3	168	0.188	3	168	0.171	3	168	0.359
13:00-14:00	3	168	0.188	3	168	0.161	3	168	0.349
14:00-15:00	3	168	0.169	3	168	0.177	3	168	0.346
15:00-16:00	3	168	0.337	3	168	0.232	3	168	0.569
16:00-17:00	3	168	0.3	3	168	0.194	3	168	0.494
17:00-18:00	3	168	0.371	3	168	0.218	3	168	0.589
18:00-19:00	3	168	0.218	3	168	0.173	3	168	0.391
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			2.456			2.515			4.971

Assumptions
Private Houses
Weekday only
South east and south west only
100-500 unit size

TRICS 7.3.1
Trip Rate Param Number of dwellings

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
Calculation Factor: 1 DWELLS
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00	4	106	0.024	4	106	0.142	4	106	0.166
08:00-09:00	4	106	0.078	4	106	0.216	4	106	0.294
09:00-10:00	4	106	0.064	4	106	0.116	4	106	0.18
10:00-11:00	4	106	0.085	4	106	0.104	4	106	0.189
11:00-12:00	4	106	0.073	4	106	0.088	4	106	0.161
12:00-13:00	4	106	0.097	4	106	0.107	4	106	0.204
13:00-14:00	4	106	0.126	4	106	0.114	4	106	0.24
14:00-15:00	4	106	0.1	4	106	0.107	4	106	0.207
15:00-16:00	4	106	0.121	4	106	0.083	4	106	0.204
16:00-17:00	4	106	0.137	4	106	0.095	4	106	0.232
17:00-18:00	4	106	0.194	4	106	0.1	4	106	0.294
18:00-19:00	4	106	0.194	4	106	0.1	4	106	0.294
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			1.293			1.372			2.665

Assumptions
Private Flats
Weekday only
South east and south west only
50-150 unit size (largest was 142)

Calculation Factor: 100 sqm
Count Type: VEHICLES

			ARRIVALS			DEPARTURES			TOTALS
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00	7	3988	0.165	7	3988	0.433	7	3988	0.598
08:00-09:00	7	3988	0.247	7	3988	0.616	7	3988	0.863
09:00-10:00	7	3988	0.337	7	3988	0.322	7	3988	0.659
10:00-11:00	7	3988	0.233	7	3988	0.176	7	3988	0.409
11:00-12:00	7	3988	0.125	7	3988	0.219	7	3988	0.344
12:00-13:00	7	3988	0.233	7	3988	0.193	7	3988	0.426
13:00-14:00	7	3988	0.258	7	3988	0.279	7	3988	0.537
14:00-15:00	7	3988	0.158	7	3988	0.15	7	3988	0.308
15:00-16:00	7	3988	0.251	7	3988	0.38	7	3988	0.631
16:00-17:00	7	3988	0.358	7	3988	0.276	7	3988	0.634
17:00-18:00	7	3988	0.466	7	3988	0.211	7	3988	0.677
18:00-19:00	7	3988	0.462	7	3988	0.262	7	3988	0.724
19:00-20:00	7	3988	0.451	7	3988	0.294	7	3988	0.745
20:00-21:00	7	3988	0.233	7	3988	0.161	7	3988	0.394
21:00-22:00	7	3988	0.143	7	3988	0.161	7	3988	0.304
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			4.12			4.133			8.253

Assumptions
Hotels
Weekday only
South east and south west only
2000-9850 gfa (largest)

TRICS 7.3.1
Trip Rate Param Gross floor area

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00	7	4376	0.708	7	4376	0.055	7	4376	0.763
08:00-09:00	7	4376	1.658	7	4376	0.137	7	4376	1.795
09:00-10:00	7	4376	1.365	7	4376	0.307	7	4376	1.672
10:00-11:00	7	4376	0.385	7	4376	0.304	7	4376	0.689
11:00-12:00	7	4376	0.277	7	4376	0.271	7	4376	0.548
12:00-13:00	7	4376	0.356	7	4376	0.493	7	4376	0.849
13:00-14:00	7	4376	0.496	7	4376	0.369	7	4376	0.865
14:00-15:00	7	4376	0.313	7	4376	0.372	7	4376	0.685
15:00-16:00	7	4376	0.261	7	4376	0.594	7	4376	0.855
16:00-17:00	7	4376	0.166	7	4376	1.107	7	4376	1.273
17:00-18:00	7	4376	0.095	7	4376	1.596	7	4376	1.691
18:00-19:00	7	4376	0.052	7	4376	0.516	7	4376	0.568
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			6.132			6.121			12.253

Assumptions
B1 OFFICE
Weekday only
South east and south west only
2000-7000 gfa (largest)

APPENDIX C

Traffic Analysis Report

Thatcham
Level Crossing

Prepared for
West Berkshire Council

by

Stuart Michael
Associates Limited

July 2012

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1.0 INTRODUCTION

1.1 This Transport Analysis Report has been prepared by Stuart Michael Associates, consulting engineers, on behalf of West Berkshire Council. This report reviews the traffic conditions at, and operation of, Thatcham Level Crossing and provides an analysis of options which might help to reduce queue lengths and driver delays.

Assessment Methodology

1.2 Research undertaken in connection with this assessment has included:

- Site visits to view the level crossing, traffic and queuing conditions
- Surveys of the level crossing operation, train movements, vehicle movements and traffic queue lengths.
- Surveys of junctions on the local highway network.
- Drive-time surveys of routes from potential signage locations to Thatcham Level Crossing
- Meetings with West Berkshire Council and Network Rail.

Report Outline

1.3 The stages undertaken as part of this study are documented within the following report sections:

- Section 2.0 provides details of the recorded crossing operation and traffic conditions.
- Section 3.0 considers alternative crossing arrangements.
- Section 4.0 describes options to reduce traffic demand at the level crossing
- Section 5.0 provides a summary and the conclusions to the drawn from the assessment.

2.0 CROSSING OPERATION & TRAFFIC CONDITIONS

Traffic and Crossing Surveys

2.1 Traffic and level crossing surveys were undertaken by an independent survey company in January 2012. Surveys were undertaken on two mid-week (neutral) days, as follows:

- 24-hour Manual Classified Count at Thatcham Level Crossing and the adjacent junctions undertaken by video survey, including:
    - Accesses on both sides of the road south of the level crossing;
    - Vehicles passing over the level crossing in each direction;
    - Egress from station car park to the north of the crossing;
    - Access to industrial estate (inc. Royal Mail Depot) and Swan public house
- Minute-by-minute details of crossing operation during peak hours 0800-1000 and 1600-1800, including:
    - Start of wig-way signal
    - Barrier-down and barrier-up
    - Trains passing crossing – time at which trains pass crossing in both eastbound and westbound directions
    - Details of trains where carriages are stationary across the crossing.
- Peak hours (0800-1000 and 1600-1800) Manual Classified Count at roundabout junction of Pipers Way / Station Road / Swan PH Access / Crown Yard Industrial Estate Access.
- Peak hours (0800-1000 and 1600-1800) Queue Length Survey for the following routes.
    - Pipers Way southbound towards crossing
    - Station Road southbound towards crossing
    - Crookham Hill northbound towards crossing
- Saturation flow survey of vehicles passing over the level crossing in both northbound and southbound direction during peak hours
- Peak hours Manual Classified Count at roundabout junction of Pipers Way with the A4.

2.2 In addition to the surveys described above, journey time surveys were undertaken by Stuart Michael Associates to assess the potential effectiveness of electronic signage advising drivers of alternative routes (section 4.0 refers).

Summary Figures

Recorded Barrier Operation

Average Barrier Down Time	04m 00s	
Longest Barrier Down Time	08m 41s	10th January from 08:58
Shortest Barrier Down Time	01m 21s	11th January from 09:42
Average Total Barrier Down Time during 0800-1000 (2 hours)	53m 13s	44% of the time
Average Total Barrier Down Time during 1600-1800 (2 hours)	46m 52s	39% of the time
Average Total Barrier Down Time during AM peak hour 0800-0900	30m 55s	51% of the time
Average Total Barrier Down Time during PM peak hour 1700-1800	21m 08s	35% of the time

2.3 The average barrier down time figures recorded in this study are higher than those predicted within the 2004 Cross-Kennet study during the AM peak hour but lower than those predicted within the 2004 Cross-Kennet study during the PM peak hour. The 2004 Cross-Kennet study predicted that barriers would be closed for 43% of the time during the AM peak hour and 56% of the time during the PM peak hour (section 6.2.5 paragraph 2 of the 2004 Cross-Kennet study).

Recorded Queue Lengths

2.4 Whilst the queues are related to both barrier down-time and traffic flow, the longest queue lengths tended to form at the times of peak traffic flow. On Crookham Hill, queues sometimes continue to build after the barrier has lifted as vehicles are arriving at the back of the queue before vehicles in front of them have begun discharging.

Max Queue on Crookham Hill	540m	10th January at 17:26:19 (7 mins after barrier down)
Max Queue on Station Road	295m	11th January at 08:13:20 (7 mins after barrier down)
Max Queue on Piper's Way (including common section of Station Road of 100m length)	250m and	11th January at 08:13:20 (7 mins after barrier down) 11th January at 16:07:06 (6 mins after barrier down)

Traffic Flows

2.5 There is a tidal pattern, with predominant traffic flow southbound over the crossing during 0800-1000 and northbound over the crossing 1600-1800. The average flows over the crossing are shown below:

0800-1000 (2 hours)	Northbound	678
	Southbound	810
1600-1800 (2 hours)	Northbound	954
	Southbound	734

2.6 Traffic turning movements over the level crossing and at adjacent junctions are shown on Figure 2.1.

Saturation Flows

2.7 Saturation flow was used to measure of the number of vehicles which can pass over the level crossing under free-flow conditions (barrier up with no obstructing vehicles). The average saturation flows recorded were 1292 northbound and 1427 southbound. These values are reasonable for a location such as this but slightly lower than would be expected at a stop-line for a signalised junction, particularly for northbound traffic. Obviously these saturation flow figures can only be achieved when the barrier is open and vehicles travelling over the crossing are unobstructed.

Right Turning Vehicles

2.8 Evidence suggests that right-turners into the industrial area, incorporating the Royal Mail depot, sometimes cause additional queuing for southbound traffic after the barriers are lifted. This effect results in additional frustration to southbound drivers, who have been waiting for the barriers to lift, and then find themselves prevented from proceeding over the crossing.

2.9 This problem results from a combination of right turning vehicles having no segregation from southbound through-traffic and high northbound flows, following the opening of the level crossing barriers, which prevent vehicles from right-turning into the industrial area.

2.10 The traffic turning movements in Figure 2.1 show the following number and proportion of right-turning vehicles as a proportion of the southbound flow in this location during each peak hour.

Date		AM Peak Hour 0800-0900	PM Peak Hour 1700-1800
10th January	Flow Southbound	521	366
	Right-turners	19	8
	Proportion	3.6%	2.2%
11th January	Flow Southbound	509	322
	Right-turners	26	7
	Proportion	5.1%	2.2%

2.11 The proportion of right-turning vehicles is higher during the AM peak than during the PM peak. However, due to the tidal nature of the flows, it is likely that there are fewer gaps in the northbound traffic in which to turn during the PM peak hour than the AM peak hour.

2.12 West Berkshire Council is investigating whether there is space and funding to provide a right-turn lane into the industrial area in order to segregate ahead and right-turning flows. This would improve traffic flow (particularly southbound) as a dedicated lane would prevent right-turning vehicles from blocking the southbound flow when the barriers are open.

Discussion with Network Rail

2.13 A meeting with Network Rail was held on 24th April 2012. The operation of the crossing and the resulting impact on traffic was discussed along with the future plans for electrification and signalling on the line.

2.14 Network rail described the operation of the existing system. The crossing is activated by the controller at Colthrop via CCTV, based upon the train describer, when the train reaches specific striking points. Control is due to pass to the new Thames Valley Signalling Centre at Didcot in the near future.

2.15 In discussion, it was noted that during the PM peak hour some trains overhang the crossing once they have entered the station. This results in the barriers remaining down and increases queuing for vehicles. In a subsequent email response, Network Rail indicated that they were in discussion with First Great Western, which manages the station, to create a new stopping point for FGW HST trains at Thatcham in order to reduce the incidence of this. This change will not be immediate, but should improve conditions during the PM peak hour in time.

2.16 The electrification programme to Newbury is scheduled for an in-service date of 2017. This will initially use the existing signalling arrangements. The “ECTS” signalling system is scheduled for an in-service date of 2022. Any improvements will only be realised post electrification and overhaul of the signalling system (after 2017 and 2002 respectively). However, there is an opportunity for West Berkshire Council to maintain communication with Network Rail in relation to the electrification and signalling programmes in order to pursue any possible efficiency improvements in partnership with Network Rail as these programmes are designed and implemented.

3.0 ALTERNATIVE CROSSING ARRANGEMENTS

3.1 Previous studies, including the Cross-Kennet Traffic Study in 2004, have considered options for replacing Thatcham Level Crossing with a bridge. A bridge would have significant benefits in terms of reduced driver delay and improvements to road safety.

3.2 Network rail have an aspiration for no level crossings on their network. In this regard, network rail would be prepared to contribute towards a scheme which removes a level crossing, if that crossing hasn't been renewed in the last few years. However, any Network Rail contribution would be directly related to their saving on the maintenance costs of the level crossing and would be a fraction of the overall cost of a structure

On Existing Crossing Alignment

3.3 The existing alignment of the level crossing is in close proximity to accesses east and west of the road on both north and south sides of the level crossing. There are also existing bridges over the canal and river directly adjacent to the southern side of the level crossing.

3.4 A bridge at the location of the level crossing would require significant ramps on both north and south approaches in order to provide the required height above the railway line (including additional height required for electrification) and allow a single-span structure over the railway, canal and river. There is insufficient highway land to provide the required ramps without preventing access/egress to the existing industrial area incorporating the Royal Mail depot, the car parks to both north and south of the station and Piper's Lane.

3.5 The vertical alignment of the bridge was previously considered in the Cross-Kennet study. This noted that the existing roundabout junction of Station Road / Piper's Way would need to be raised by 2.5m in order to meet the ramp gradients and levels required over the railway. The electrification of the line, scheduled to be in-service by 2017, would increase the required height of any structure above the railway. This would, in turn, increase the amount by which the roundabout would need to be raised. It is highly questionable whether the vertical alignment necessary could be implemented in practice.

Alternative Alignment

3.6 Alternatively, a bridge could be considered away from the current line of the level crossing. However, there are no other locations in the vicinity of the railway where West Berkshire Council (WBC) has control of highway or other land on both sides of the railway of sufficient extent to provide a bridge. Therefore WBC would need to consider the cost of land acquisition in addition to construction costs.

3.7 In addition, there are environmental constraints on land to the south of the railway including sensitive ecological areas and an adjacent SSSI. The effect of the visual impact of new bridge structures would also need to be considered, for example views from the Kennet Valley and Greenham Common.

3.8 Away from the existing level crossing the canal and river separate. Any route to access a bridge over the railway (and canal) would also require a new bridge over the river to be constructed to permit access to a bridge from the south.

3.9 Any bridge would require a connection to the existing road network in Thatcham. Without significant removal of existing property, the only locations close to the level crossing where existing roads run adjacent to the railway are at Piper's Lane and Colthrop. Both of these routes are constrained in width and the land directly to the south of the railway in both locations is currently used for industrial purposes.

3.10 The 2004 Cross-Kennet Traffic Study estimated the cost of a bridge at the location of the present level crossing to be £20 million. There are now additional costs to consider as a result of electrification and/or the cost of acquiring land and carrying out the necessary environmental impact assessment and mitigation to site a bridge in an alternative location. Accordingly, the £20 million figure within the 2004 Cross-Kennet Traffic Study is considered to be a low estimate and the cost of implementing a bridge could exceed this figure.

Conclusion to Consideration of Alternative Crossing Arrangements

3.11 Overall, whilst a bridge would have significant benefits in terms of reduced driver delay, it is considered that the cost and environmental impact of implementing a bridge crossing is likely to significantly outweigh the benefits at this time.

4.0 OPTIONS TO REDUCE TRAFFIC DEMAND

Advanced Electronic Signage

4.1 As part of the brief for this project it was requested by West Berkshire Council that the option of advanced electronic signage to warn drivers when the queues are likely as a result of the barriers being down and to advise them of alternative routes be considered. Accordingly, this section of the report considers this option.

4.2 Variable Message Signs (VMS) can be placed on the road network as part of an Urban Traffic Management and Control (UTMC) system. A number of traffic signal junctions within West Berkshire are already connected to the Reading UTMC system and are controlled by a control centre in Reading. Within Reading, there are a number of "Travel Information" signs connected to the UTMC as shown in Photo 1.

Photo 1 - Travel Information Sign on the A4 in Reading

4.3 Electronic signs could display messages such as: "Delay at Thatcham level crossing use alternative route". The alternative route would then need to be signed using either similar electronic signage or permanent route signs. The traffic signs regulations allow supplementary text such as "alternative route" and "avoiding level crossing" to be placed on permanent directional signs (signs 2131 and 2132). Map-type directional signs can show a warning or prohibition sign on one route (such as a level crossing) and the text "avoiding…" on the alternative route.

Cost

4.4 The cost of a VMS sign and wireless connection is estimated at circa £25,000. However, the cost of installing a connection to Network Rail's equipment (wig-wag signals) is likely to introduce additional costs in terms of technical approval from Network Rail that the system doesn't compromise the operation of the wig-wags. If West Berkshire Council decide to proceed down this route then a more detailed dialog between the VMS sign manufacturer and Network Rail should be opened to establish the level of cost and complexity invoved.

Operation and Timing

4.5 In order for any electronic signage related to Thatcham level crossing to be effective, it would need to be placed in locations that give drivers adequate warning of the crossing status and allow them to make a choice.

4.6 The time between each sign displaying a message and the time for which the message is relevant needs to be considered. There seems little point in warning approaching drivers of a queue which will have dissipated before they reach it.

4.7 The amount of time available to warn drivers when the level crossing barriers will be going down would be determined by the level of cooperation which can be sought from Network Rail. If Network Rail will allow a "feed" from their train tracking and timing system then this could be used to give advanced warning to motorists before the barriers go down.

4.8 If a "feed" from Network Rail's systems cannot be established then a simpler system, triggered by the "wig-wag" signals on the Thatcham level crossing, could be used. However, the "wig-wags" are illuminated around 19 seconds before barrier down and therefore the amount of time to warn drivers approaching the station from longer distances is limited. For eastbound trains, using the "wig-wag" signals at Colthrop level crossing as a trigger may extend the amount of warning time available.

4.9 Real-time timetable information for Thatcham station could also be utilised to improve the warnings. However, this is only effective for stopping services, as through trains and goods trains do not appear on the electronic timetable.

Alternative Routes

4.10 There are two crossing points over the railway to the east of Thatcham:
(1) Brimpton Road passes over the railway via a bridge. The route avoiding Thatcham level crossing would utilise Crookham Common Road and Brimpton Road. The junction of Brimpton Road and Crookham Common Road currently has short give-way sections within the junction and West Berkshire Council may wish to consider whether the junction needs to be amended.
(2) Station Road, Woolhampton (past Midgham station) passes over the railway via a level crossing. There is also a similar type of crossing with single-way working over the canal. It is therefore considered that this route does not present a viable alternative, as drivers would still be required to wait at a level-crossing for trains to pass and could also be delayed as a result of the canal crossing.

4.11 To the west of Thatcham, there are two public crossing points in Newbury:
(3) The A339 passes over the railway between the St Johns (Burger King) and Bear Lane (Sainsburys) roundabouts. The road is a dual-carriageway. However, the area is congested at peak times with delays approaching the Bear Lane junction. In addition, traffic heading north-east would be required to make a complex right-turn at the Robin Hood gyratory in order to continue along the A4 eastbound. Whilst this route may seem a viable alternative, in practice the additional journey time experienced is likely to prevent this being a convenient alternative.
(4) Boundary Road is already traffic-calmed to reduce rat-running. The bridge over the railway has one-way working and restricted operation. Hambridge Road, to the north of the bridge, can become congested at peak times. Accessing the bridge would require traffic to detour via Greenham Road and Racecourse Road. For these reasons, this route is not considered a viable alternative.

4.12 In summary, the most convenient alternative route, particularly for eastbound journeys, is likely to be via Crookham Common Road and Brimpton Road (route 1 above). Electronic signage to encourage drivers to use this route will be examined in the paragraphs which follow.

Potential Locations for Message Signs

4.13 Signs would need to be located in order that drivers are in a position to make a choice about their route. Placing signs in locations where drivers have already committed to their route may be more frustrating than beneficial.

4.14 Accordingly, a number of potential sign locations have been examined. The typical time taken to drive between the sign and Thatcham level crossing has been recorded in free-flow conditions. Each potential sign location is shown at Figure 4.1 and the time to reach the level crossing from this sign is shown at Table 1.

4.15 Unless it is possible to receive sufficient information from Network Rail's systems, it will not be possible to determine how long the barriers will be down. Accordingly, if the electronic signs were to operate at all times, there would a proportion of barrier-downs for which the signs encourage drivers to use the alternative route when the barriers would have raised again before the drivers would have reached the level-crossing using the normal route. The following calculations therefore assume a feed from the wig-wag signals at the crossing.

4.16 From the driving times in Table 1, the number of barrier-downs for which this form of signage would be effective has been calculated. The results are shown in Table 2. The proportions in Table 2 assume that the signs are triggered by the wig-ways at Thatcham level crossing only; if the wig-wags at Colthrop or Midgham could be utilised for westbound trains then the proportions of "ineffective" sign activations could be reduced.

4.17 It should be noted that the driving times are calculated to the crossing itself. As the queues build-up, some drivers passing the signs may encounter the back of the queue before they reach the crossing and therefore the diversion signs may be effective for a greater proportion of the barrier-downs than Table 2 indicates.

Table 1- Potential electronic sign locations

Potential Sign Location	For Traffic Direction	Recorded driving time from sign to Thatcham level-crossing
(1) Thornford Road approaching Crookham Common Road	Northbound	2.2km / 2 mins. 20 secs.
(2) A4 approaching Brimpton Road	South-west bound	3.3km / 4 mins.
(3) A4 London Road approaching The Moors	South-east bound	1.6km / 2 mins. 35 secs. via The Moors and Station Road
(4) A4 London Road approaching Stoney Lane	South-east bound	1.4km / 2 mins. 15 secs. via Stoney Lane and Station Road
(5) A4 London Road approaching Pipers Way	South-east bound	1.3 km / 1 mins. 15 secs. via Pipers Way
(6) Station Road close to junction with Urquhart Road	South-east bound	290m / 0 mins. 25 secs. via Station Road

Table 2- Potential electronic sign locations

Potential Sign Location	Proportion of barrier-downs where signage would be ineffective as barriers lift before drivers reach crossing
(1) Thornford Road approaching Crookham Common Road	18.0%
(2) A4 approaching Brimpton Road	62.0%
(3) A4 London Road approaching The Moors	20.0%
(4) A4 London Road approaching Stoney Lane	16.0%
(5) A4 London Road approaching Pipers Way	0.0%
(6) Station Road close to junction with Urquhart Road	0.0%

4.18 Table 2 indicates that electronic signs located on the A4 approaching Pipers Way and on Station Road close to Urquhart Road would alert drivers before the barriers were lifted for all barrier-downs. A sign located on Thornford Road would alert drivers before the barriers were lifted for all but 18.0% of barrier-downs; bearing in mind the length of queues experienced on the northbound approach to the crossing, it is likely that this figure is pessimistic as drivers would reach the back of the queue had they not used the alternative route.

4.19 A sign on the A4 approaching Stoney Lane would alert drivers before the barriers were lifted for all but 16.0% of barrier-downs. The use of Stoney Lane as a route to the station should be studied further before a sign here is considered in more detail, as local knowledge suggests that traffic calming past Kennet School is successful in discouraging drivers from using Stoney Lane as a through-route.

4.20 A sign on the A4 approaching The Moors would alert drivers before the barriers were lifted for all but 20.0% of barrier-downs. The use of The Moors as a route to the station should be studied further before a sign here is considered in more detail. Local knowledge suggests that, despite traffic calming and a 20 mph speed limit, this is a popular route to the station and therefore a sign here should be considered. However, there is limited space within the highway limits to site a sign in this vicinity.

4.21 A sign on the A4 approaching Brimpton Road would alert drivers before the barriers were lifted for only 38% of barrier-downs. The benefit of an electronic sign in this location would appear to be of limited benefit, as it would be ineffective for a greater proportion of barrier-downs than it would be effective. In addition, drivers approaching from the east along the A4 have already had the opportunity to cross at Midgham or Brimpton without electronic signs encouraging them to do so. A permanent sign with text such as “avoiding level crossing” may be more appropriate here. It is recognised that a proportion of drivers travelling between the A4 and Thornford Road may already be aware of the route via Brimpton avoiding the level crossing.

Length of Diversion

4.22 For each of the sign locations identified in Table 1 the length of the alternative route in comparison to the length of the route normally taken has been measured. The end-points used for the route comparisons were as follows:

- North-east bound journeys: east of the A4 / Brimpton Road junction (sign location 2).
- North-west bound journeys: west of the A4 / The Moors junction (sign location 3) assuming that a driver’s normal route is via Station Road and The Moors (rather than via Pipers Way).
- South bound journeys: Thornford Road south of the junction with Crookham Common Road (sign location 1).

4.23 The predicted increase in fuel cost has been calculated for a single journey using the diversion route rather than the existing route via Thatcham Level Crossing.

From Sign Location	Travel Direction	Length of usual route	Length of alternative route	Difference	Extra fuel cost for journey*
(1) Thornford Road approaching Crookham Common Road	Northeast bound	5.6km	6.0km	+0.4km	4 pence
	Northwest bound	3.8km	9.4km	+5.6km	51 pence
(2) A4 approaching Brimpton Road	South bound	5.6km	6.0km	+0.4km	4 pence
(3) A4 London Road approaching The Moors	South bound	3.8km	9.3km	+5.5km	50 pence
(4) A4 London Road approaching Stoney Lane	South bound	3.5km	8.9km	+5.4km	49 pence
(5) A4 London Road approaching Pipers Way	South bound	3.4km	8.0km	+4.6km	42 pence
(6) Station Road close to junction with Urquhart Road	South bound	2.4km	9.1km	+6.7km	61 pence

4.24 If drivers were to divert via Common Road and Brimpton Road for northeast bound journeys from the Thornford Road approach and south bound journeys from the Brimpton approach result in a relatively short diversion which is unlikely to be noticeable to drivers in practice. However, to use the diversion via via Common Road and Brimpton Road for other journeys results in a significant distance (and therefore fuel cost) increase and as a result may be unattractive for drivers.

Conclusion to Consideration of Advanced Electronic Signage

4.25 Taking into account the effectiveness of advanced electronic signage to provide beneficial advice to drivers (paragraphs 4.13 to 4.21 refer) and the potential length of the diversion (paragraphs 4.22 to 4.24 refer) it is recommended that the following advance signage could considered further:

- A permanent (non-electronic) sign on the A4 westbound approach to Brimpton Road with text such as “route avoiding level crossing” (subject to consultation with Brimpton Parish Council and Local Ward Members)
- An electronically activated sign on the Thornford Road Approach to Crookham Common Road worded to encourage diversion for northeast bound journeys (subject to a feed from the wig-wag signals or Network Rail’s systems if possible).

* Assuming an average petrol consumption of 45 miles per gallon and the petrol price from at the closest petrol station (Texaco, A4 Thatcham) on 9th May 2012 which was 143.9p per litre.

Car Sharing and Smarter Choices

4.26 It was noted in paragraph 2.4 that the longest queue lengths tended to form at the times of peak traffic flow.

4.27 Signage or measures to encourage travellers to switch to car sharing or more sustainable modes or travel could be targeted at travellers who use the level crossing at peak times. This approach would be compatible with West Berkshire Council's Smarter Choices strategy within the Local Transport Plan.

4.28 Other local authorities already use signage such as "reduce the queues, travel in twos" (Portsmouth City Council) on the approach to congested areas. The Berkshire "shareacar" and LiftShare.org websites allow drivers to find others making similar journeys and could be promoted to drivers using the level crossing.

4.29 However, it is recognised that regular users of the level crossing may be travelling to fairly dispersed destinations and at this location 'car sharing' and other alternative modes could be limited.

5.0 SUMMARY AND CONCLUSIONS

5.1 This Transport Analysis Report has been prepared by Stuart Michael Associates, consulting engineers, on behalf of West Berkshire Council. This report reviews conditions at Thatcham Level Crossing and provides an analysis of options which might help to reduce queue lengths and driver delays.

5.2 Traffic and level crossing surveys were undertaken by an independent survey company in January 2012 on two mid-week (neutral) days in order to record the operation of the level crossing and the traffic conditions in the vicinity.

5.3 During peak periods, the barriers were recorded as being down on average for between 35% and 51% of the time available. This results in maximum recorded queues of 540m on Crookham Hill, 295m on Station Road and 250m on Piper's Way (including 100m common section of Station Road).

5.4 Evidence suggests that right-turners into the industrial area, incorporating the Royal Mail depot, cause additional queuing and frustration for southbound traffic after the barriers are lifted. West Berkshire Council is investigating whether there is space and funding to provide a right-turn lane into the industrial area in order to segregate ahead and right-turning flows. This would improve traffic flow (particularly southbound) as a dedicated lane would prevent right-turning vehicles from blocking the southbound flow when the barriers are open.

5.5 A meeting with Network Rail was held on 24th April 2012. The operation of the crossing and the resulting impact on traffic was discussed along with the future plans for electrification and signalling on the line.

5.6 Network Rail are investigating measures that could be taken to prevent trains overhanging the level crossing which would reduce the time the barrier is down. This would involve creating a new stopping point on the platform for High Speed Trains. Thatcham station is managed by First Great Western and Network Rail is in discussion with them about this change.

5.7 The electrification programme to Newbury is scheduled for an in-service date of 2017. This will initially use the existing signalling arrangements. The "ECTS" signalling system is scheduled for an in-service date of 2022. Any improvements will only be realised post electrification and overhaul of the signalling system (after 2017 and 2002 respectively). However, there is an opportunity for West Berkshire Council to maintain communication with Network Rail in relation to the electrification and signalling programmes in order to

pursue any possible efficiency improvements in partnership with Network Rail as these programmes are designed and implemented.

5.8 Previous studies, including the Cross-Kennet Traffic Study in 2004, have considered options for replacing Thatcham Level Crossing with a bridge. A bridge would have significant benefits in terms of reduced driver delay and improvements to road safety. Network rail have an aspiration for no level crossings on their network. In this regard, network rail would be prepared to contribute towards a scheme which removes a level crossing, if that crossing hasn't been renewed in the last few years. However, any Network Rail contribution would be directly related to their saving on the maintenance costs of the level crossing and would be a fraction of the overall cost of a structure

5.9 The results of previous studies have been examined, along with the additional requirements placed upon a bridge as a result of rail electrification. Overall, it is concluded that, whilst a bridge would have significant benefits in terms of reduced driver delay, it is considered that the cost and environmental impact of implementing a bridge crossing is likely to significantly outweigh the benefits at this time.

5.10 As part of the brief for this project it was requested by West Berkshire Council that the option of advanced electronic signage to warn drivers when the queues are likely as a result of the barriers being down and to advise them of alternative routes be considered. Accordingly, this has been considered. Taking into account the effectiveness of advanced electronic signage to provide beneficial advice to drivers and the potential length of a diversion it is recommended that the following advance signage be considered further:

- A permanent (non-electronic) sign on the A4 westbound approach to Brimpton Road with text such as "route avoiding level crossing".
- An electronically activated sign on the Thornford Road Approach to Crookham Common Road worded to encourage diversion for north-east bound journeys.

5.11 The cost of a permanent sign on the A4 westbound approach to Brimpton is estimated be circa £200 for the post, post foundation and sign. The cost of a Variable Message Sign (VMS) and wireless connection is estimated at circa £25,000. However, the cost of installing a connection to Network Rail's equipment (wig wag signals) is likely to introduce additional costs in terms of technical approval from Network Rail that the system doesn't compromise the

operation of the wig-wags. This would need to be quantified further with Network Rail.

5.12 Other measures to reduce the queues at Thatcham Level Crossing could include signage or measures to encourage travellers to switch to car sharing or more sustainable modes or travel targeted at travellers who use the level crossing at peak times. This approach would be compatible with West Berkshire Council's Smarter Choices strategy within the Local Transport Plan. Other local authorities already use signage such as "reduce the queues, travel in twos" (Portsmouth City Council) on the approach to congested areas. The Berkshire "shareacar" and LiftShare.org websites allow drivers to find others making similar journeys and could be promoted to drivers using the level crossing. However, it is recognised that regular users of the level crossing may be travelling to fairly dispersed destinations and at this location 'car sharing' and other alternative modes could be limited.

APPENDIX D

NOTE:

1. THIS DRAWING IS TO BE TREATED AS INDICATIVE AND IS FOR DISCUSSION PURPOSES ONLY. HIGHWAY BOUNDARY HAS BEEN OBTAINED FROM WILTSHIRE COUNTY COUNCIL AND TRANSPOSED AS ACCURATELY AS POSSIBLE.

2. GIVEN THE PRELIMINARY NATURE OF OUR INVESTIGATIONS AND THE LIMITATIONS OF OUR BRIEF WE HAVE NOT FULLY SOUGHT TO OBTAIN NOR BECOME AWARE OF ANY SIGNIFICANT INFORMATION RELATED TO HAZARDS THAT MIGHT AFFECT THE CONSTRUCTION OR MAINTENANCE OF THIS PROJECT.

3. ANY DESIGNERS WHO PROGRESS THESE PROPOSALS OR DESIGN FURTHER WILL NEED TO RECONSIDER THE PROPOSALS BASED UPON THE INFORMATION WHICH SUBSEQUENTLY BECOMES AVAILABLE INCLUDING POTENTIAL SITE HAZARDS

Proposed Bridge to Tie In With Existing Carriageway at Colthrop Lane
Embankment
2m Footway
Embankment
3m Shared Footway / Cycleway
Concrete Head Wall
Existing Level Crossing and Foot Bridge Closed
Bridge Parapet
34.50m Bridge Span Over Colthrop Lane & Railway
Concrete Head Wall
Embankment
7.3m Carriageway
Embankment
Concrete Head Wall
Bridge Parapet
14.32m Bridge Span Over Canal
Embankment
Embankment
3m Shared Footway / Cycleway
Embankment
7.3m Carriageway
Culvert for Existing Drain
3m Shared Footway / Cycleway
Embankment
2m Level at Top of Embankment to Allow for Possible Noise Fence Requirements
Access to Railway Station Car Park Retained. Level Crossing Closed
Embankment
Bridge Parapet
Proposed 35m ICD Roundabout
21.69m Bridge Span Over River
2m Footway
Embankment
Embankment
2m Footway
2m Footway
3m Shared Footway / Cycleway
7.3m Carriageway
2m Footway
3m Shared Footway / Cycleway
7.3m Carriageway
2m Footway
THIS DRAWING IS TO BE TREATED AS INDICATIVE AND IS FOR DISCUSSION PURPOSES ONLY.

Rev	Description	Drn	Chk	Date
	REVISIONS			

Preliminary Issue		Submitted for S104	
Planning Issue		Issued for Tender	
Submitted for S38		Issued for Construction	
Submitted for S278		As Built	
DRAWING STATUS			

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JOB TITLE
COLTHROP VILLAGE, THATCHAM

DRAWING TITLE
COLTHROP LANE
PROPOSED RAILWAY CROSSING
.
.

DATE	DRAWN	CHECKED	TITLE CHECKED
MAY 16	COR	SGA	

DRAWING No	REV	SCALE	@ A0
5010.009		1:1250	

APPENDIX E

Colthrop Village Development

TECHNICAL NOTE: DEVELOPMENT ASSESSMENT

QM

Job Number	Date	Author	Checked	Authorised
70016257-005	8 August 2016	N Murkutla	C Drennan	C Drennan

INTRODUCTION

This technical note has been prepared by WSP | Parsons Brinckerhoff to support Stuart Michael Associates (SMA) in assessing the impact of development near Colthrop village using the West Berkshire Transport Model (WBTM). Three access options have been tested for this purpose.

The current WBTM base year model is 2013 and forecast years of 2019 and 2026. The modelling on access options and development trips refer to 2019 and 2026 reference case models. The modelling and outputs were completed for AM peak (08:00-09:00) and PM peak (17:00-18:00).

The WBTM is a highway only model and no assessment of any potential public transport improvements are undertaken explicitly using the model

The information contained within this report only considers the results of the traffic modelling assessment. It can be used to inform considerations of potential highway impacts and requirement for mitigations associated with the development. However the analysis is not exhaustive and no comment is made on the impact of the development proposals as that is for the developer's consultant to undertake as part of any future potential planning process

DEVELOPMENT

Figure 1 shows the Colthrop development site location.

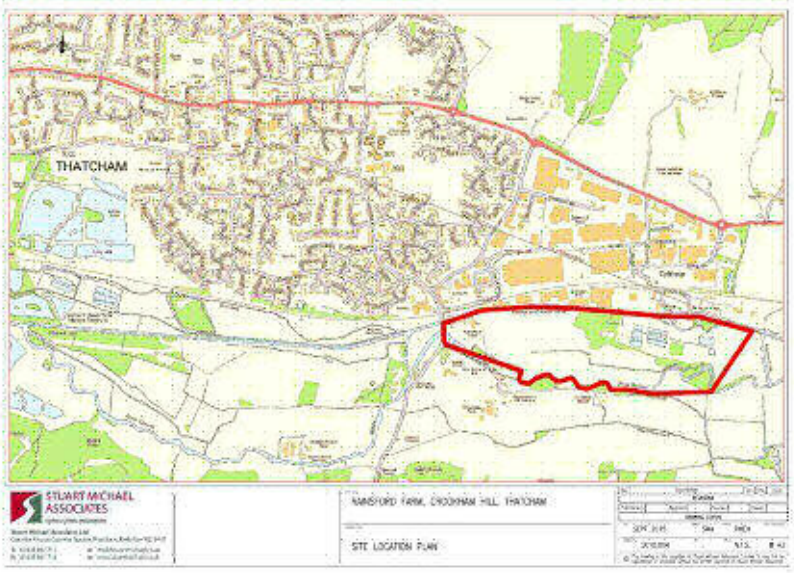

Figure 1: Colthrop Village Site location

Table 1 shows the proposed development and the trip generation estimates.

Table 1: Trip Generation Estimate

LAND USE	SIZE/NUMBER	AM PEAK			PM PEAK		
		Arrivals	Departures	Total	Arrivals	Departures	Total
Commercial	5304sqm	88	7	95	5	85	90
Retail	4094sqm	Assumed to be internal					
Leisure	294sqm	Assumed to be internal					
Education	2610sqm	Assumed to be internal					
Hotel	15,057sqm	37	93	130	70	32	102
Flats	472	37	102	139	92	47	139
Houses	370	55	142	198	137	81	218
Overall total	**2026**	**217**	**344**	**561**	**304**	**244**	**548**
50% Phasing	**2019**	**109**	**172**		**152**	**122**	**274**

ACCESS OPTIONS

The existing 2019 and 2026 RC networks were modified to include Pipers Lane as shown in figure 2. No other changes were made to these networks.

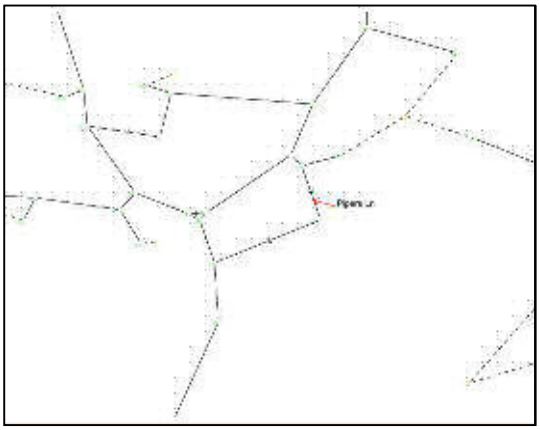

Figure 2: Addition of Pipers Lane

Reference case matrices with committed developments were assigned to the network to obtain forecast reference case scenario.

The access options tested for the development are as follows:

Access Option 1 consists of the following changes to the network as shown in figure 3:

- → Closure of the existing level crossing at Thatcham.
- → A replacement bridge is provided linking Chamberhouse Mill Lane and Pipers Lane

- New roundabout junctions are provided at the junction of Pipers Way / Pipers Lane and within the site connecting to Chamberhouse Mill Lane
- A secondary access is provided via Colthrop Lane.

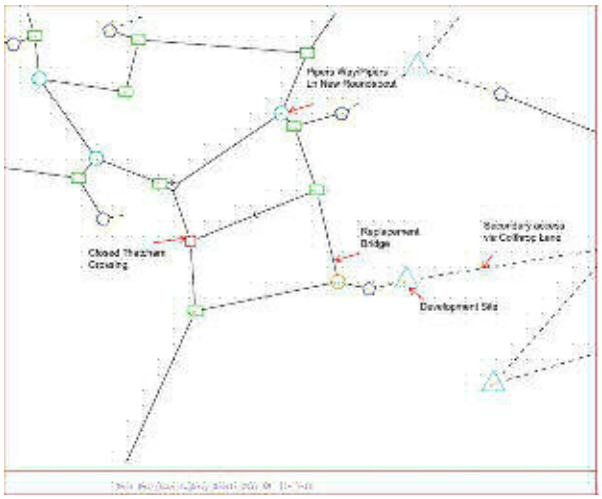

Figure 3: Access Option1

Access option 2 consists of following changes to the network as shown in figure 4:

- Closure of existing level crossing at Colthrop Lane
- Replacement bridge connecting Colthrop Lane with a new development road which is then connected to Chamberhouse Mill Lane
- The level crossing at Thatcham is left open.

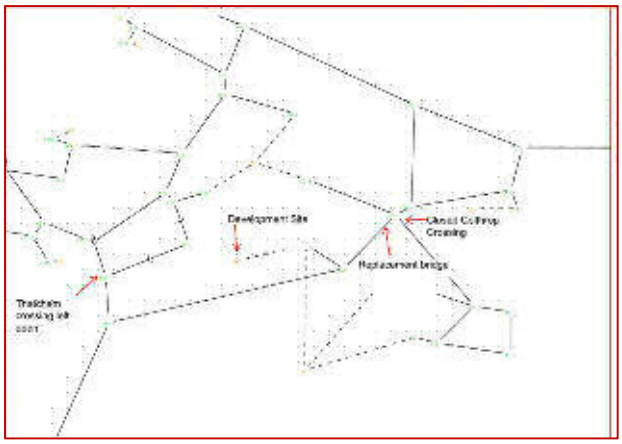

Figure 4: Access Option 2

[redacted]

AM PEAK – 2026 FORECAST YEAR

AM peak – 2026 Reference Case

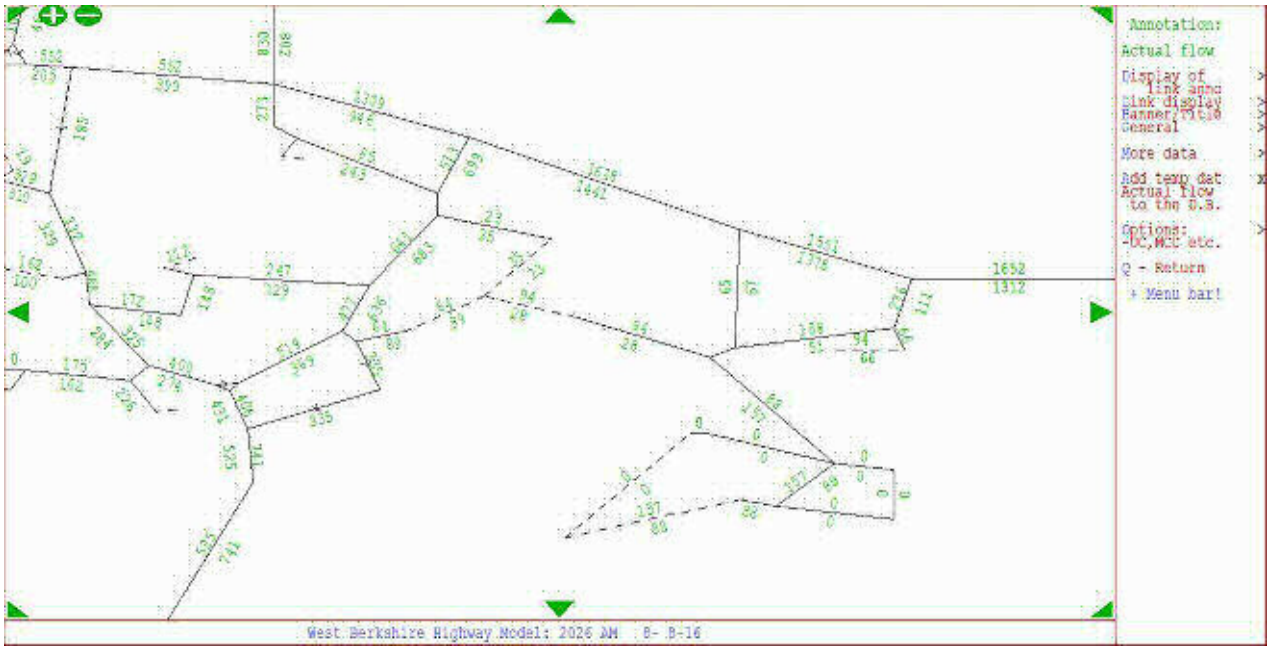

Figure 6: 2026 AM peak – Reference Case

AM peak – 2026 Access option 1

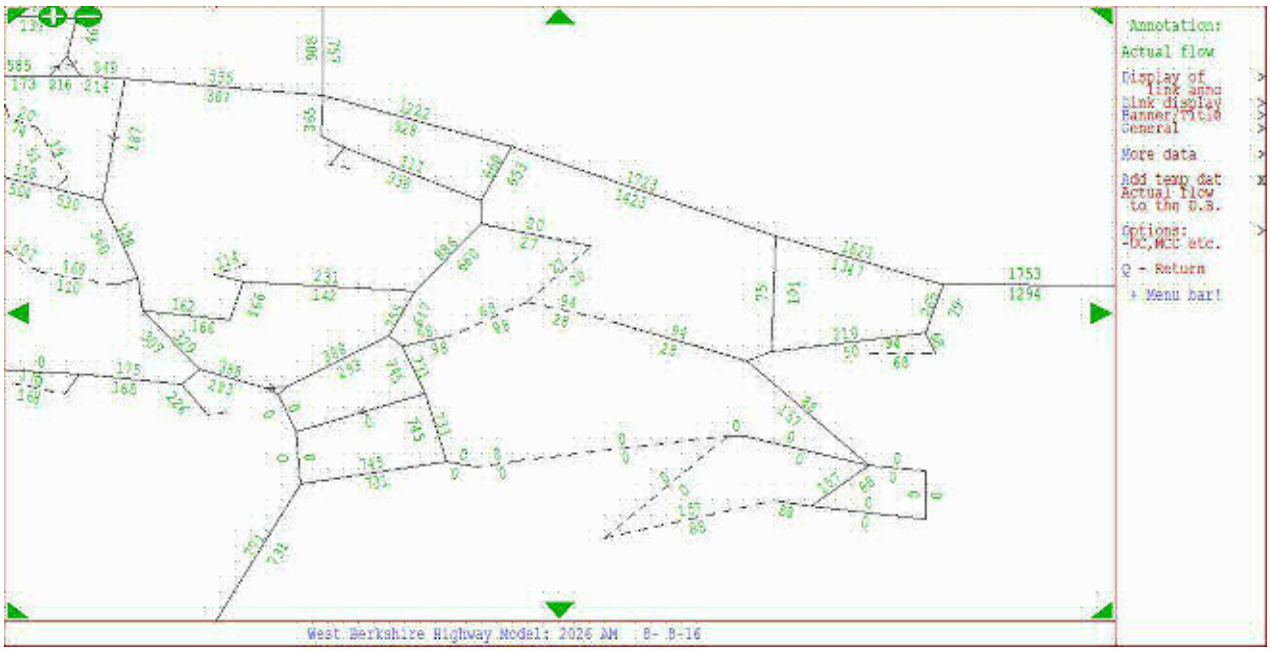

Figure 7: 2026 AM peak – Access option 1 with no development

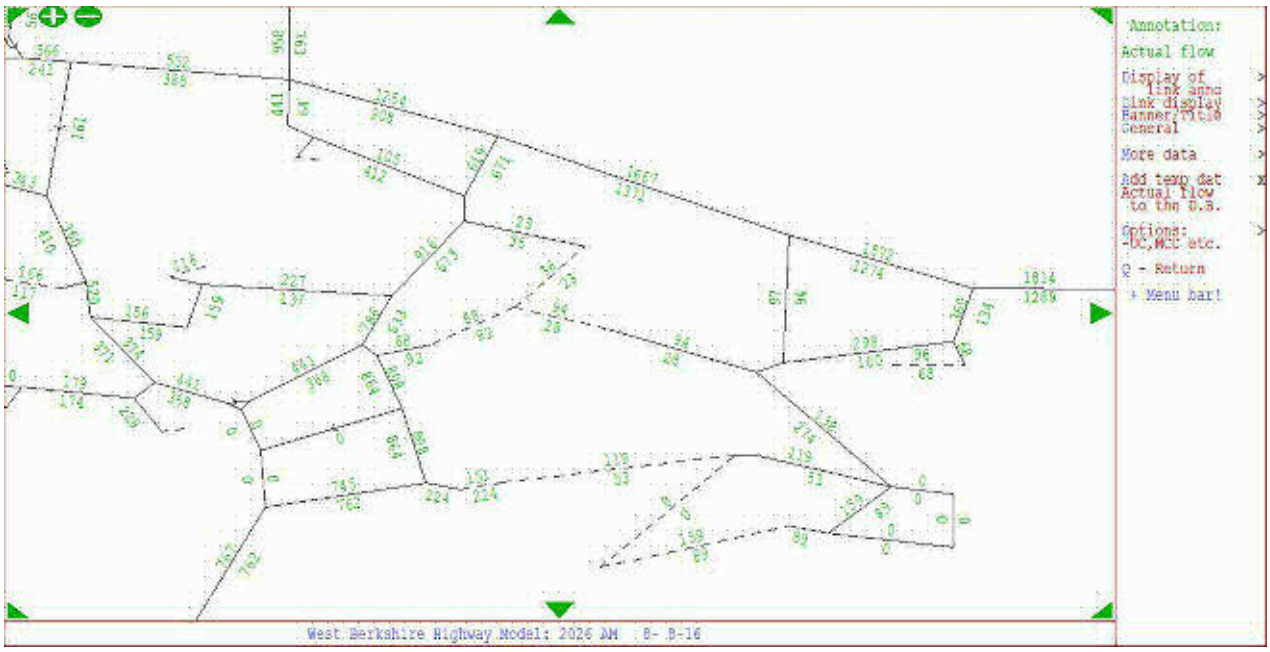

Figure 8: 2026 AM peak – Access option 1 with development

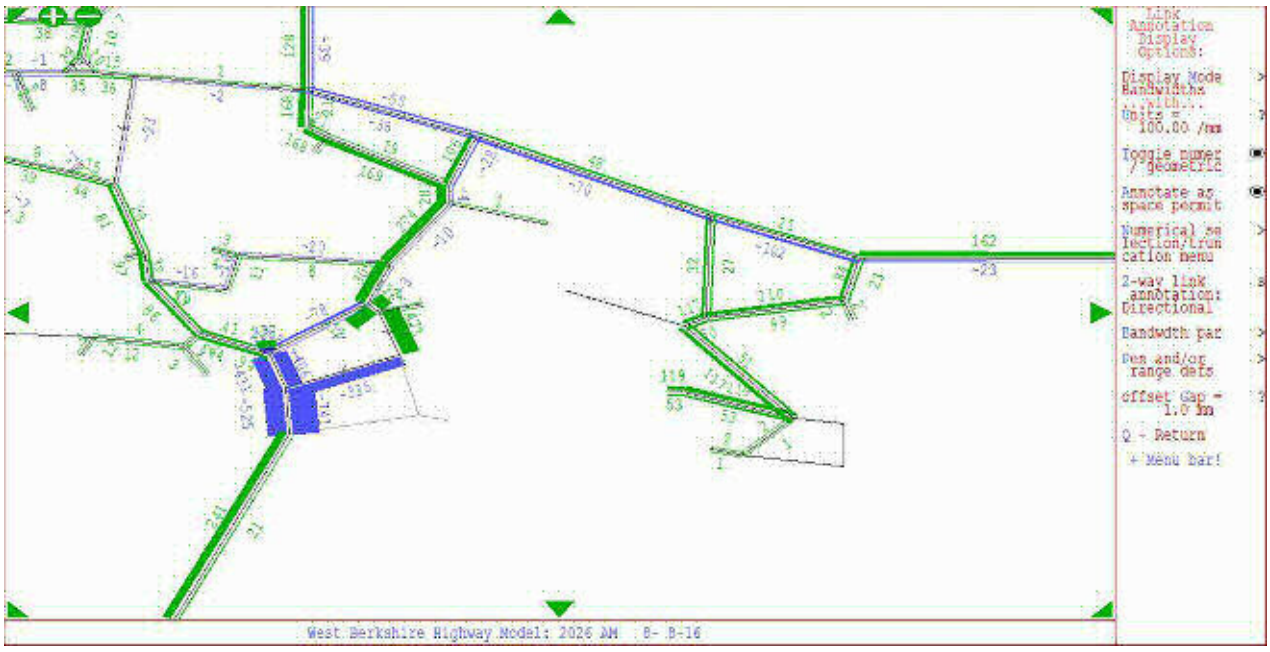

Figure 9: 2026 AM peak – Access option 1 with development minus reference case

AM peak – 2026 Access option 2

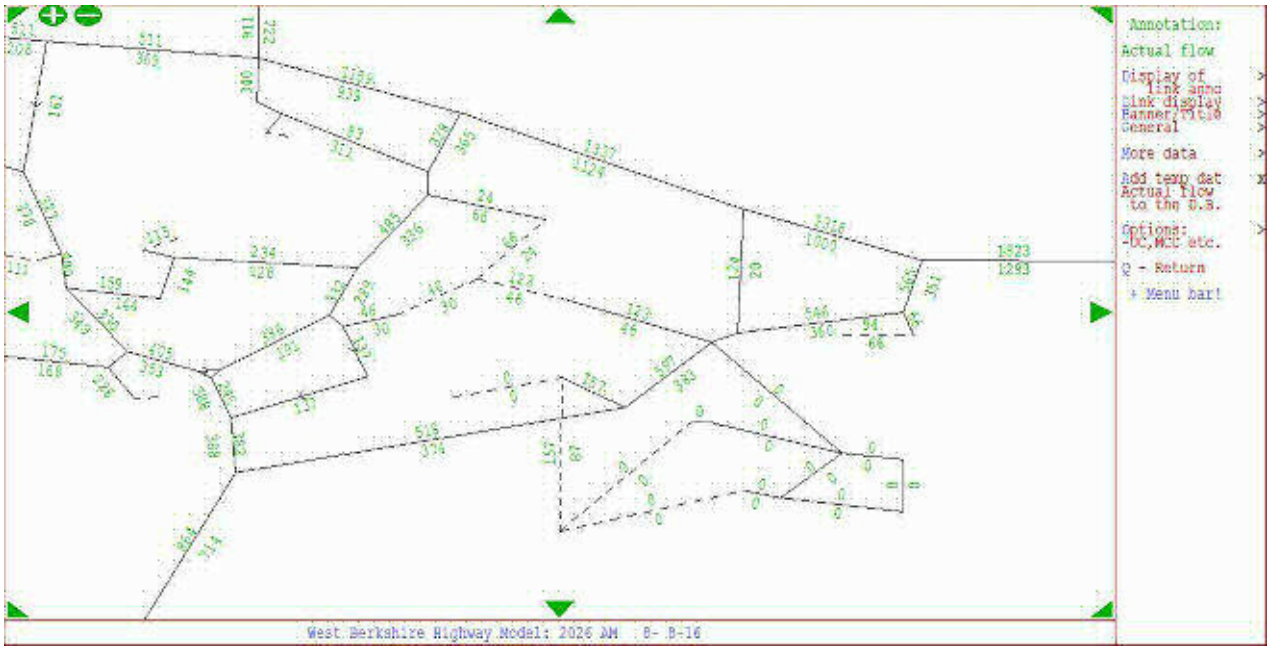

Figure 10: 2026 AM peak – Access option 2 with no development

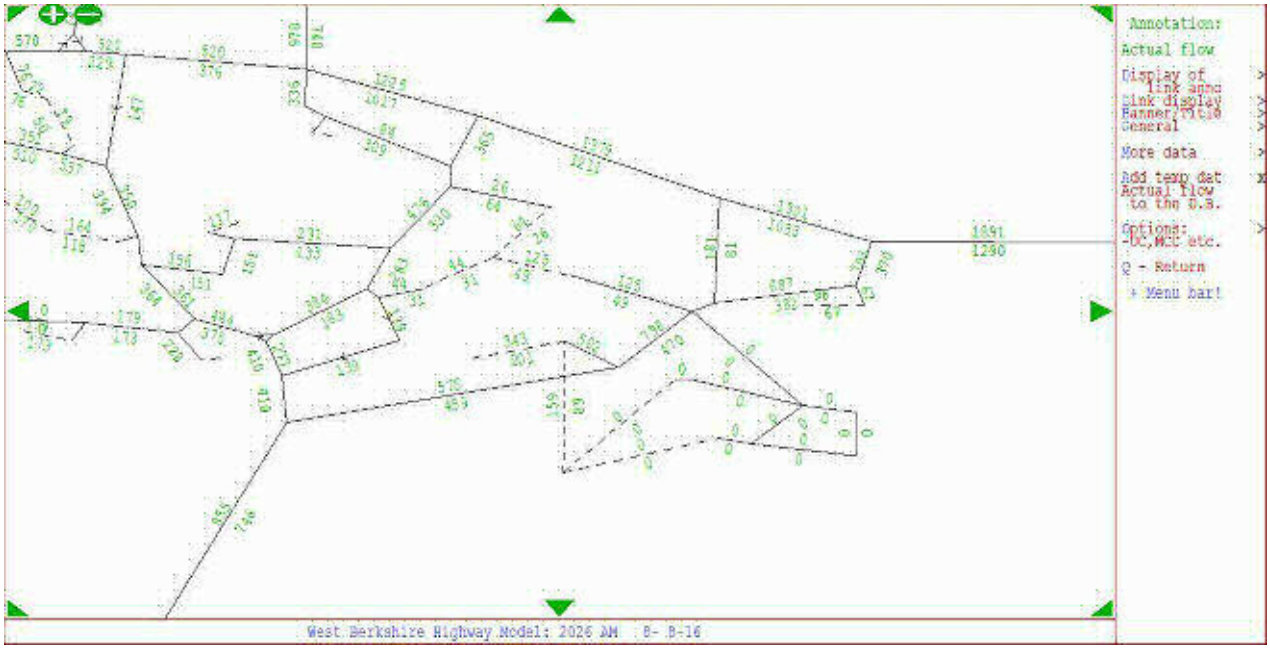

Figure 11: 2026 AM peak – Access option 2 with development

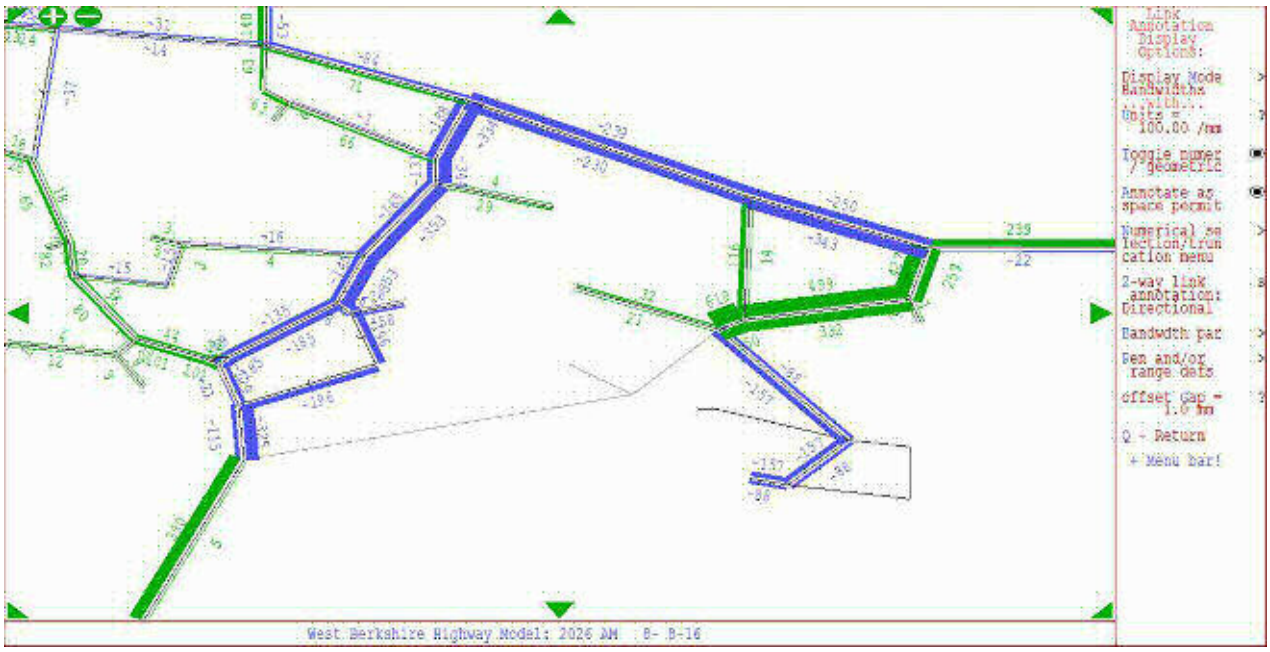

Figure 12: 2026 AM peak – Access option 2 with development minus reference case

PM PEAK – 2026 FORECAST YEAR

PM peak – 2026 Reference Case

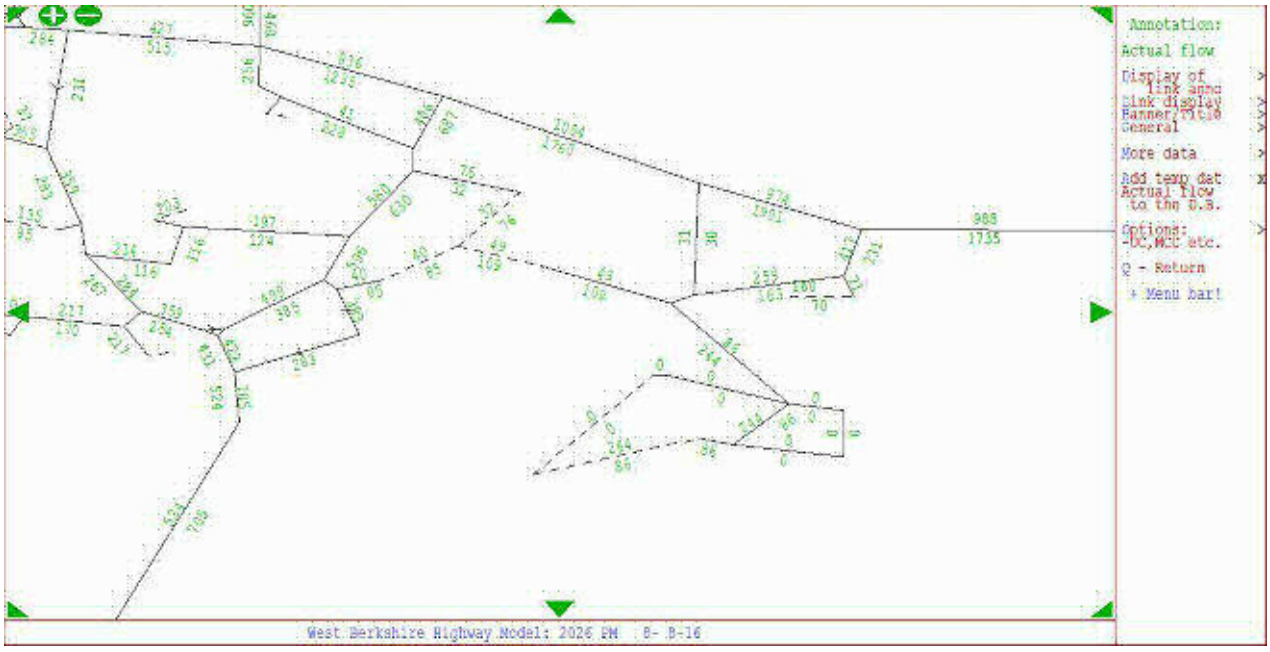

Figure 18: 2026 PM peak – Reference Case

PM peak – 2026 Access option 1

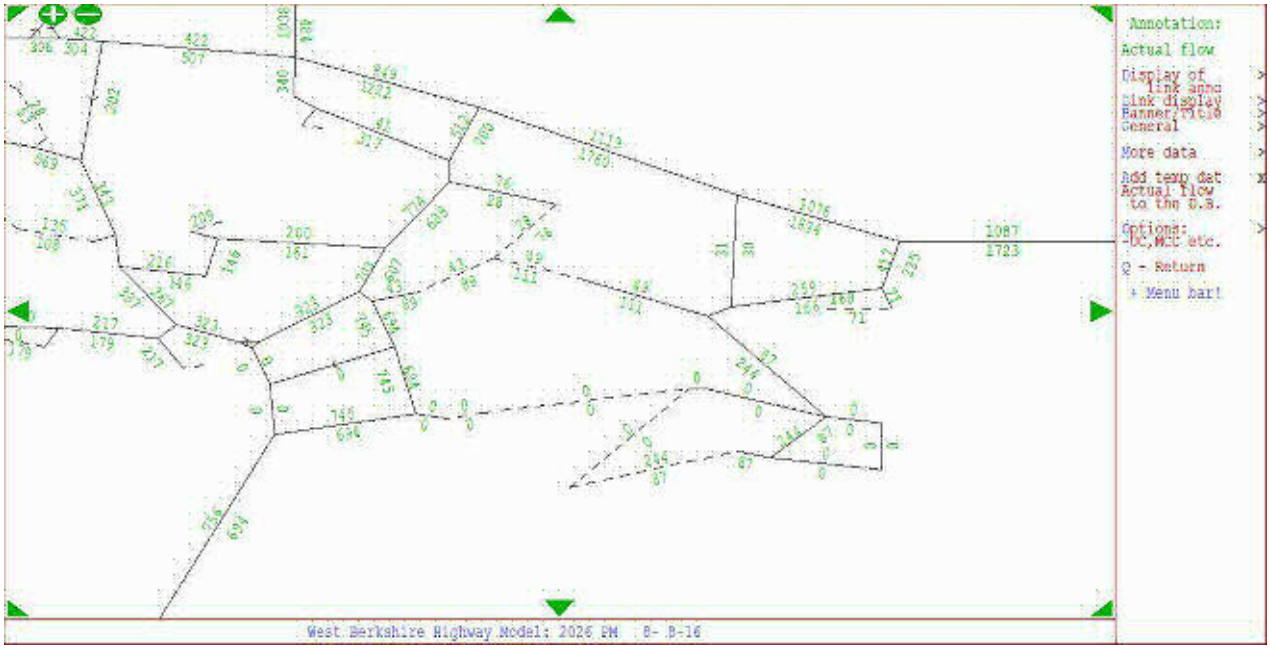

Figure 19: 2026 PM peak – Access option 1 with no development

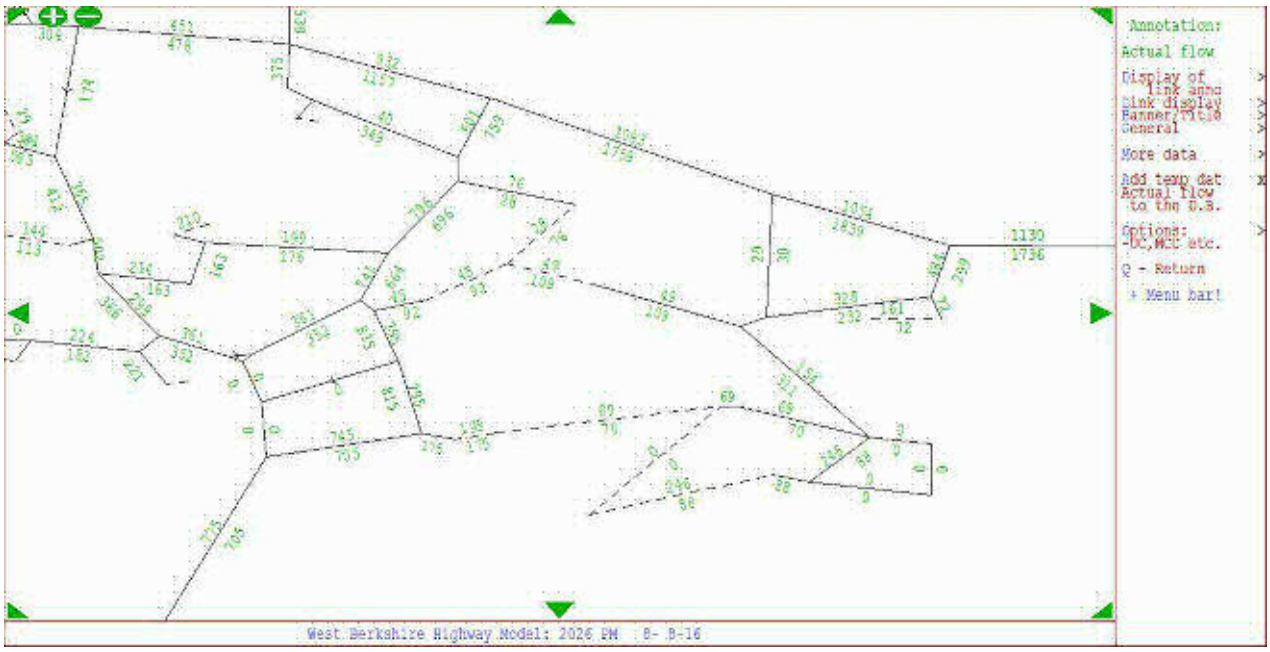

Figure 20: 2026 PM peak – Access option 1 with development

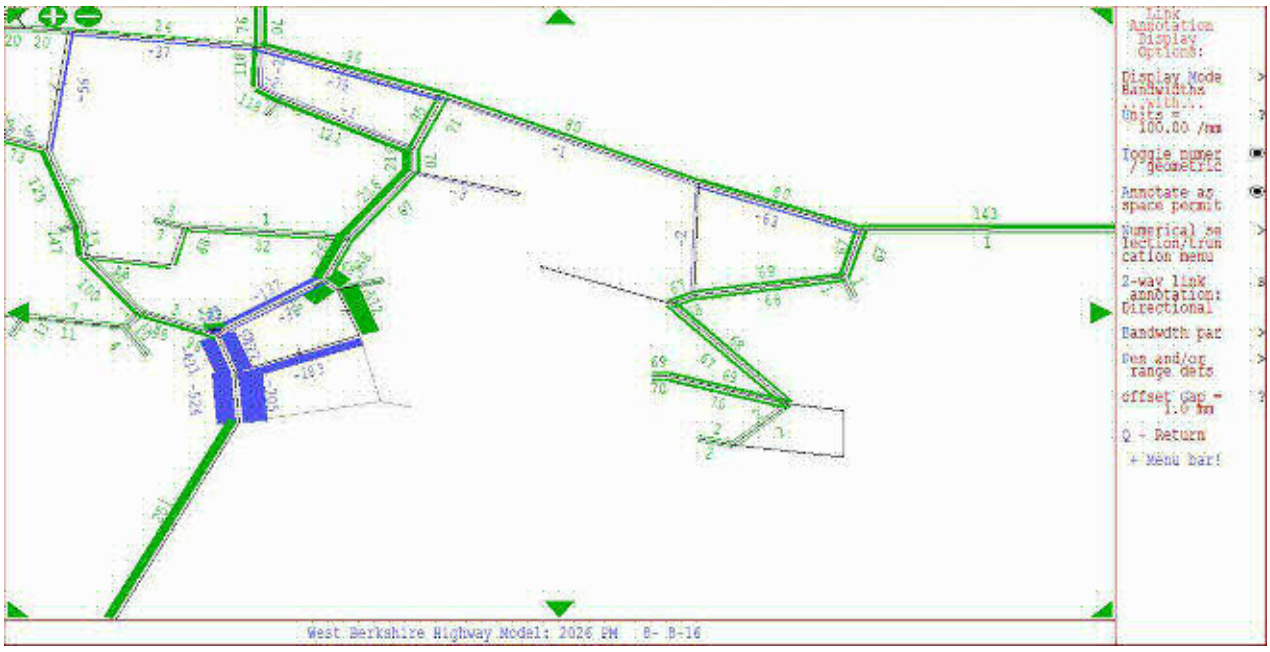

Figure 21: 2026 PM peak – Access option 1 with development minus reference case

PM peak – 2026 Access option 2

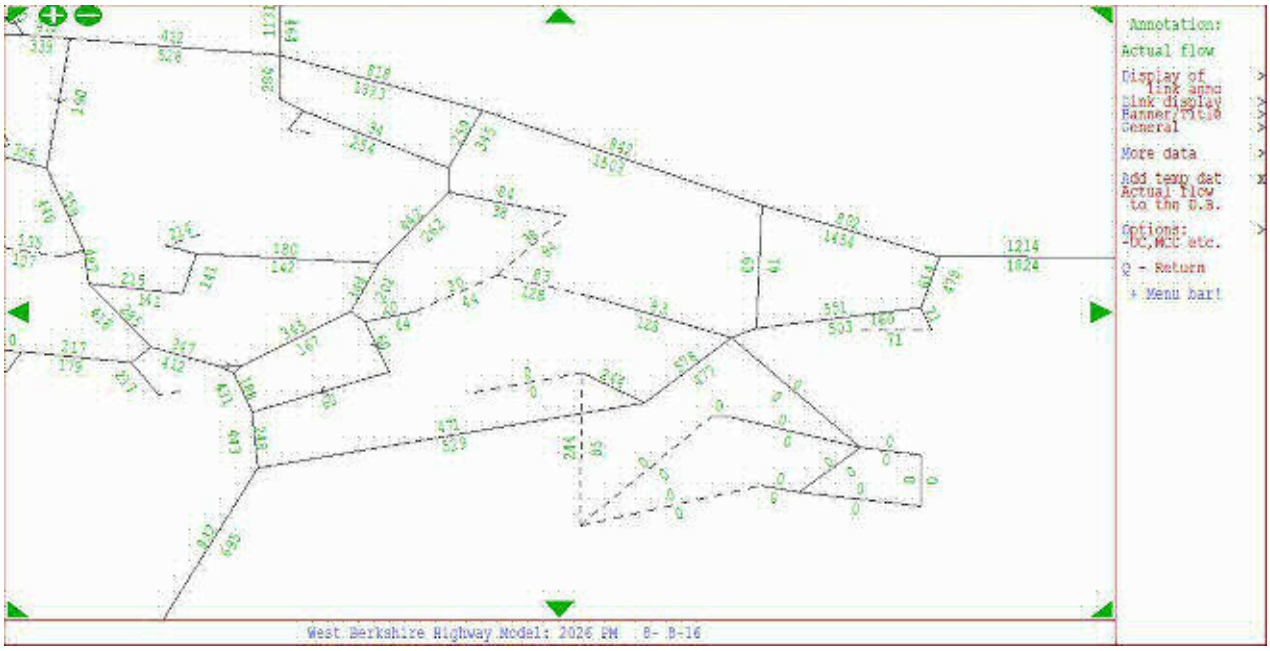

Figure 22: 2026 PM peak – Access option 2 with no development

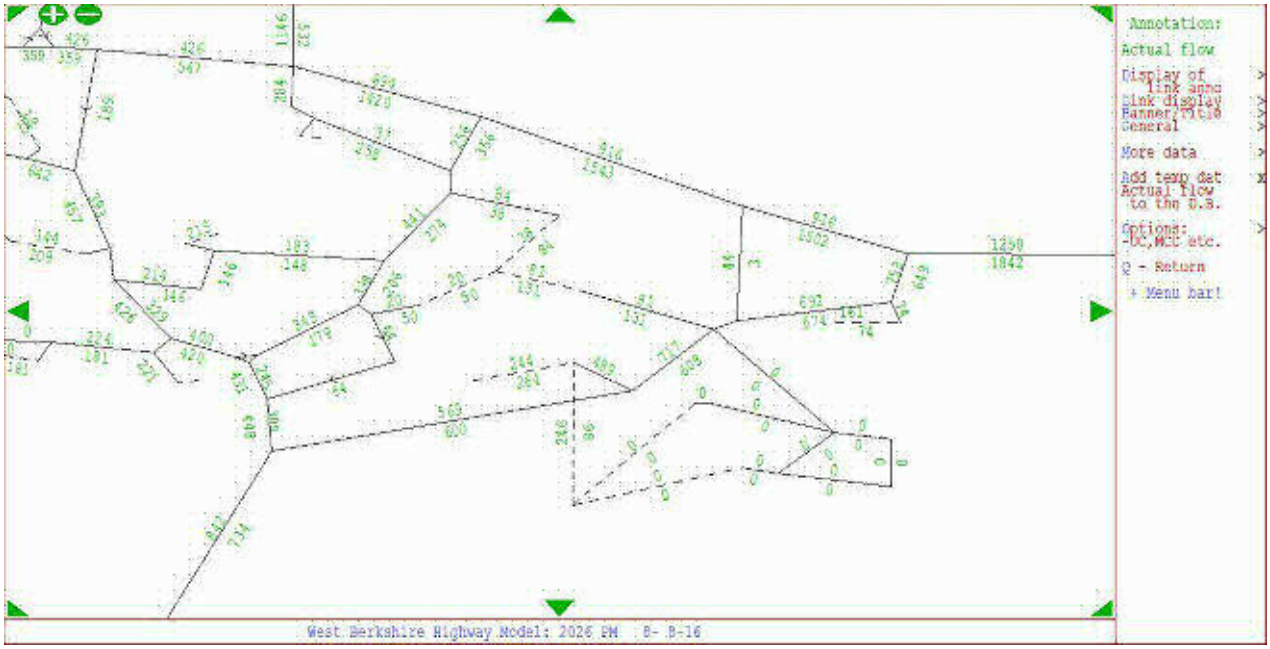

Figure 23: 2026 PM peak – Access option 2 with development

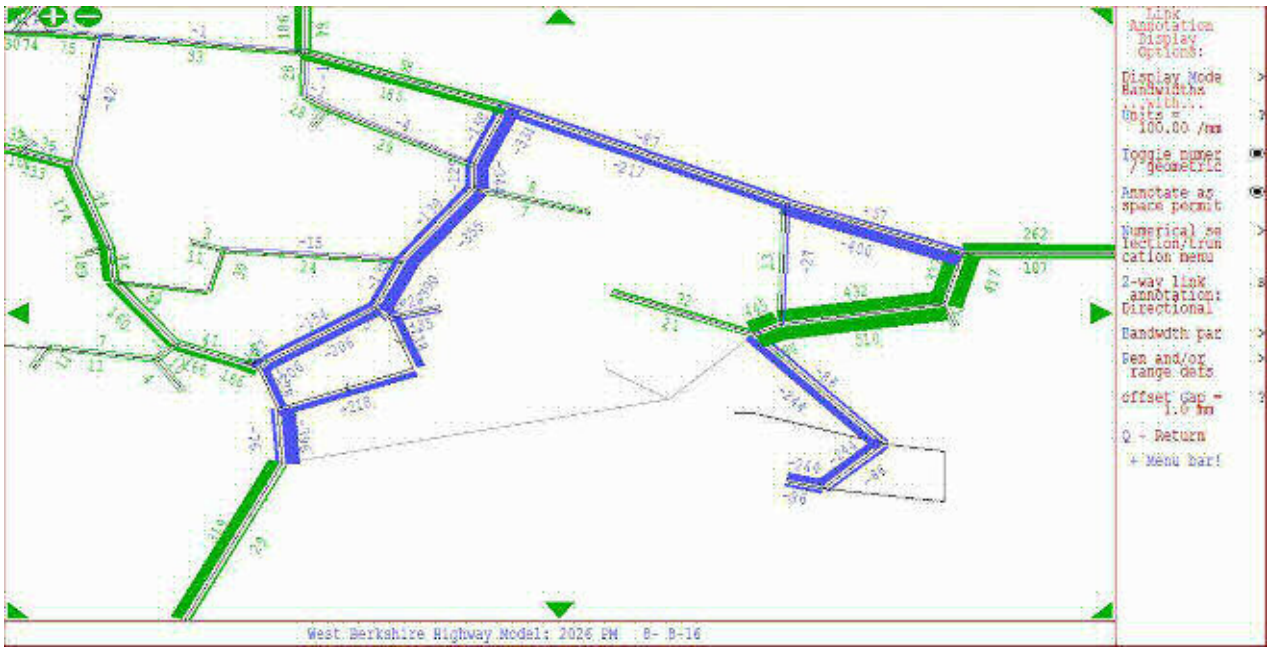

Figure 24: 2026 PM peak – Access option 2 with development minus reference case

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