

Our Ref.: – 07/20/21/JD/FTR

Your Ref.: -

Emma Lundberg,  
Programme Officer,  
Mercury House,  
Station Road,  
Richmond  
North Yorkshire  
DL10 4JX

12/12/13

Dear Ms Lundberg,

**RICHMONDSHIRE CORE STRATEGY EXAMINATION  
REPRESENTATIONS ON BEHALF OF MR. G. SIMPSON OF PALLETT HILL  
SAND AND GRAVEL CO. LTD**

Thankyou for sending the email regarding the revised date for the above examination. Please find attached representations on behalf of Mr. G. M. Simpson in relation to the Matters and Issues identified by the Inspector for Examination.

Yours sincerely

Jill Davis BA, MRTPI  
Cc Mr G. M. Simpson  
Vikki Lamb

## **MATTER 2 – STRATEGY**

### **ISSUE 1**

“What are the strategic, cross-boundary issues of relevance to the Plan?  
How does the strategy address them?”

### **A1(M) UPGRADE**

The Core Strategy consultation period ended in September 2012. In December 2012 the Chancellor of the Exchequer delivered his autumn statement to Parliament announcing the decision to proceed with the upgrading of the A1 between Barton and Leeming to motorway standard.

The A1(M) scheme remains substantially as approved at the 2006 Public Inquiry with upgrading from Junction 51 at Leeming throughout Richmondshire District to Junction 56 at Barton, a new junction at Catterick Central with a new road link westwards from the roundabout towards Richmond and an improved junction at Scotch Corner.

The Highways Agency have revised their previous proposals in agreement with North Yorkshire County Council to also incorporate two new local access roads:-

- a) from Leeming northwards on the west side of the new motorway before crossing on a new bridge south of Low Street then running on the east side of the motorway towards Catterick, and
- b) a second new local access road starting at Scotch Corner and heading northwards on the west side of the new motorway, before crossing over on a new bridge south of Kneeton Hall and connecting with the existing Kneeton Lane on the east side of the motorway, providing a connection to the existing Junction 56 (Barton).

### **CORE STRATEGY**

The Plan at the beginning of the Submission Core Strategy Document shows the A1 as existing through Richmondshire and Section 2.17 describes the SRN in the District without the upgrading. Section 2.18 says that the A1 upgrade was cancelled and acknowledges that the scheme would have substantially improved access to the District.

The A1(M) upgrade scheme is a key and fundamental part of the transport infrastructure of the District and it is difficult to see how the Core Strategy can be sound without including the scheme and assessing how it changes accessibility and influences opportunities for development, preferred

locations and strategies for growth. This clearly is an unacceptable situation for the public and stakeholders in Richmondshire.

## **DEVELOPMENT TARGET REVIEW**

Paragraph 2.8 of the Development Target Review refers to the re-instatement of the A1 upgrade and says that it renews prospects for more effective connections between the plan area and the strategic road network (SRN) and improving prospects for local growth, particularly around Catterick Garrison.

## **HIGHWAYS AGENCY RESPONSE ON CORE STRATEGY**

The letter dated 14<sup>th</sup> September 2012 which accompanies the response to the consultation by the Highways Agency (Ref 0340) also refers to the impact of the cancellation of the A1 upgrade. The HA response in relation to all policies but specifically Policy CP4 may now need to be reconsidered in the light of the proposed upgrade. The fourth paragraph on page 4 of the letter also refers to Table 6 of the Plan and its reference to the A1 upgrading which HA confirm as cancelled.

## **SUBMISSION CORE STRATEGY**

However there is nothing in the Plan which is to be considered at the EIP about the upgrading, or its impact on the Plan and the Council's objectives. As well as improvements to Scotch Corner Junction and the Local Access Roads, the upgrading which will include a new junction (Catterick Central Junction (CCJ)) and the link to Catterick Road from the A1(M) which should have a significant impact on the strategic choices for growth for Richmondshire District.

## **IMPACT OF THE UPGRADING SCHEME AND NEW JUNCTION FOR DEVELOPMENT IN RICHMONDSHIRE**

Pallett Hill Sand and Gravel Co. Ltd. own land on the south east quadrant of the new junction at Catterick Central and have reached agreement with the Highways Agency for a new 7.3 m wide access to this land direct from the proposed new eastern roundabout.

Before the last proposal to upgrade the A1(M) was cancelled, this site at Pallett Hill Farm was the Council's preferred site in the then Local Plan for a Motorway Service Area (MSA). The proposal was the subject of Environmental and Traffic Assessments and a public consultation exercised.

The application was withdrawn when the upgrading programme was cancelled.

The acknowledged improved accessibility from the junction should also be a factor in influencing which areas might be most favoured for new development.

The Core Storey, the subject of the proposed examination is already out of date by the omission of the A1 (M) upgrading and this must cast doubt on the soundness of the plan. This situation disadvantages stakeholders whose land may be affected by or where the upgrading and new junction present development opportunities as there has been no consultation stage on the plan with the A1 upgrading in place.

## **STRATEGIC OPPORTUNITIES FOR DEVELOPMENT**

### **RICHMONDSHIRE STRATEGIC HOUSING AND EMPLOYMENT LAND AVAILABILITY ASSESSMENT (SHELAA)**

The site to the east of the new Catterick Central Junction at Pallett Hill Farm is included in current Richmondshire District Council Strategic Housing and Employment Land Availability Assessment (SHELAA) for commercial development.

### **LAND TO THE EAST OF THE PROPOSED CATTERICK CENTRAL JUNCTION AT PALLETT HILL FARM, CATTERICK VILLAGE**

#### **PROPOSALS**

The site at Pallett Hill Farm has been discussed informally with the District Council and the access from the roundabout at Catterick Central with Highways Agency. Both the LPA and the HA have also had a copy of a Technical Note prepared by Aecom on behalf of Pallett Hill Sand and Gravel Co. Ltd. which assesses the potential access from Catterick Central Junction to this site and concludes that the proposed roundabouts would be able to continue to operate at a suitable level following the development of a 100 bed hotel with restaurant and bar facilities, given a variety of alternative trip distribution assumptions. The Note also says that analysis of flows indicates that assuming the merge/diverge arrangements are designed in line with the standard design arrangements identified in TD22/06 given the projected base peak hour flows, the additional development traffic would not be sufficient to trigger a change in the required merge/diverge arrangements.

Potential uses which we have put forward informally to officers at the District Council include the following:-

## **“RICHMOND GATEWAY”**

- Motorway Service Area (MSA) serving the Strategic Road Network (SRN), (if site at Barton Lorry Park not to be developed)
- MSA with Lodge (Use Class C1) serving SRN and tourists
- MSA including retail facilities serving the travelling public
- Hotel/motel serving the SRN
- Hotel/motel serving the SRN, tourists, and local need for the Racecourse and Garrison
- Hotel/motel with associated restaurant/public house (A3 or A4)
- Hotel/restaurant with access to recreational facilities at lakeside (and lakeside camping lodges)
- Storage and distribution with access to SRN (B2, B8)
- Business Park
- General Industrial (B2)
- Offices and Light Industry (B1)
- Sui Generis sales park for cars/caravans/mobile homes,/campers and outdoor facilities
- Others used to be determined

With so few new roads being constructed on the strategic road network, there are fewer and fewer opportunities such as that presented by the new junction, to seize the opportunity to create a flagship development at this new entrance to the District created by the Catterick Central Junction.

At the time of the consultation on the Core Strategy the potential of this and other sites which may be released by the A1 upgrading scheme were not considered as there was no potential access to the SRN..

## **STRATEGIC IMPORTANCE OF A1(M) AND ACCESS TO SRN**

The A1 upgrading will undoubtedly be of strategic importance to the whole of the District in terms of increasing accessibility to the Strategic Road Network and the new Junction will increase accessibility to the District and to Central Richmond and its growth potential as set out in the Central Richmond Spatial Strategy.

## **CORE STRATEGY/ALLOCATIONS DPD**

The proposed upgrading will increase accessibility to Richmondshire and could influence growth strategies. The upgrading should be considered insofar as it affects all potential land uses and the strategic objectives of the Plan and omission of this would impact on the soundness of the plan.

We are informed by the Council that there is no current programme for an allocations DPD for Richmondshire. This makes it more imperative that the Core Strategy examines in full the impact and implications of the A1 (M) upgrading.

The site east of the Catterick Central Junction is of strategic importance to the District and should be identified as a potential location for commercial/employment development.

The Plan should also look at the implications of the upgrading scheme in terms of traffic reassignment off the SRN.

These representations therefore seek that the Plan is amended to evaluate the constraints, opportunities and implications of the A1 (M) upgrading scheme for the District including potential growth at Catterick Village.

Without this process the Core Strategy as submitted is out of date and not relevant to current strategic developments taking place in the District. This is a cross boundary issue as the upgrade scheme commences at Leeming in Hambleton District and the increase in accessibility to the SRN has implications for the District which go beyond the District boundary.

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Your Ref.: -

Emma Lundberg,  
Programme Officer,  
Mercury House,  
Station Road,  
Richmond  
North Yorkshire  
DL10 4JX

09 January 2014

Dear Ms Lundberg,

**RICHMONDSHIRE CORE STRATEGY EXAMINATION  
A1(M) UPGRADE**

I refer to my letter of 12<sup>th</sup> December 2013 enclosing representations on behalf of Mr. G. M. Simpson on Matter 2 of the Inspector's Note and the Core Strategy.

I enclose a Technical Note prepared by Aecom Ltd. for the site which is an initial access study which considers the potential implications of the A1 improvements proposals near Catterick on future development at Pallett Hill Farm, Catterick.

Please can you provide the Inspector with this document which supports my case on behalf of Mr G. Simpson of Pallett Hill Farm, Catterick sent to you in December. I have copied this letter with enclosure to the District Council

Yours sincerely

Jill Davis BA, MRTPI  
Cc Mr G. Simpson  
V. Lamb  
Richmondshire District Council  
R. Thompson





Project:	<b>Palsett Hill, Catterick</b>	Job No:	<b>60302537</b>
Subject:	<b>Initial Access Review</b>		
Prepared by:	<b>David Kemp</b>	Date:	<b>24 June 2013</b>
Checked by:	<b>Alex Keene</b>	Date:	<b>28 June 2013</b>
Approved by:	<b>Nick Anderson</b>	Date:	<b>28 June 2013</b>

## 1.0 Introduction

AECOM have been commissioned by the Palsett Hill Sand and Gravel Company to undertake an initial access study to consider the potential implications of the A1 improvement proposals near Catterick on future development at Palsett Hill. For the purposes of the study, it is envisaged that the site could be developed as a hotel with additional restaurant and bar facilities.

The Highways Agency (HA) published Draft Supplementary Orders on the 23<sup>rd</sup> May 2013 for the construction of a new twelve mile section of the A1 between Leeming and Barton in Yorkshire. This new dual carriageway will be built to motorway standards and will replace the existing A1, which will become a local access road. As part of this application the HA are proposing the creation of a new grade separated junction (Catterick Central Interchange) at Palsett Hill, to the north west of Catterick. This junction will take the form of a dumbbell style roundabout and will link the new A1(M) to the existing A1 and Catterick to the east and the A6136 Catterick Road towards Richmond to the north west.

Initial discussions between agents working for the land owner and the HA have taken place (HA letter dated 24 June 2013 and referenced A1L2B/B/01/034 provided in **Appendix A**). During these discussions, the Highways Agency has indicated that a 7.3m wide site access and farm track can be accommodated within the junction proposals.

The proposals to upgrade the A1 between Dishforth and Barton were subject to a Public Inquiry in 2006. Following the cancellation of the scheme in 2010, it was reinstated in December 2012 as part of the Government's spending review. In 2006 consultants were commissioned to consider the capacity of the then proposed interchange and whether it would be able to accommodate future development at Palsett Hill. The assessment considered a mixed development quantum including a 100 bed hotel, 17,000sqm of B1 office space and 71,200sqm of commercial warehousing, against highway network flows for 2010 and 2015. It concluded that

*"a significant development opportunity exists on land owned by Palsett Hill Sand and Gravel Co. Ltd that would benefit from the creation of the Catterick Central Junction as part of the A1 upgrading to motorway standard, without having any adverse impact on the ultimate operation of the junction as currently proposed by HA."*

A review of this report notes that the western roundabout would be approaching theoretical capacity in the 2025 (then design year) base and base + development cases, while no details are provided to the actual level of traffic flows assessed, the nature of the access for the proposed development or the implications of the development on the merge / diverge from the A1(M).

In light of the current order, AECOM have been commissioned to undertake an initial access study to confirm whether a 7.3m wide access can be accommodated off the proposed eastern roundabout and that the proposed junction and merge / diverge arrangements would be able to accommodate the potential future development at Palsett Hill.

This assessment has been based upon information provided by the AECOM office in Newcastle, who are the contractor's designers for these proposals. Information provided includes:

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 63-77 Victoria Street  
 St Albans  
 AL1 3ER  
 United Kingdom

- An AutoCAD file identifying the proposed extent of land required for the junction;
- Turning flow diagrams for the AM Peak, Inter Peak and PM Peak for 2017 (year of A1(M) opening) and 2032 (design year).

The turning flows identified are from the latest version of the relevant traffic model and are still subject to HA approval and sign-off.

## 2.0 Proposed Junction Arrangement

The current Highways Agency proposals for the Catterick Central Interchange indicate that the junction would be constructed as a dumbbell arrangement with a separate priority roundabout situated on either side of the A1(M).

The western roundabout will provide on and off slip roads onto the northbound carriageway of the A1(M) and a local access road to link with the existing A6136 Catterick Road which connects Catterick in the east with Colburn and Richmond in the west and north. The eastern roundabout will provide on and off slip roads to the southbound carriageway of the A1(M) and a connection to the existing A1. The two roundabouts will be linked by a two-lane overbridge spanning the A1(M) carriageway

An AutoCAD file identifying the proposed extent of land required for the junction has been provided by the contractor's designers on behalf of the HA. This included allowances for an access route into the Pallett Hill site and a smaller track intended for access to farm land off this access route.

At the time of this assessment however, the junction layout had not undergone a finalised detailed design process and it therefore excluded certain detailed geometric information, including entry and exit radii as well as details relating to the merge / diverge arrangements.

For the purposes of this assessment, an indicative dumbbell roundabout arrangement has been developed based on the information provided and in line with the national design standards identified within the Design Manual for Roads and Bridges (DMRB). The assumed junction layout, including the DMRB geometric assumptions, is shown in **Figure 1**. This is broadly comparable to the indicative junction layouts included within the Draft Supplementary Order, which are understood to have been based on the design work associated with previous schemes.

Based on the assumptions above, the design indicates that it would be possible to provide a 7.3m arm off the eastern roundabout to provide a vehicular access (both entry and egress) for future development on the Pallett Hill site. The exact details of the access road alignment would need to be considered in more detail (including any ancillary farm access off this route), as the development is progressed in the future.

## 3.0 Base Junction Capacity Assessments

To identify how the proposed Catterick Central Interchange would operate without any development on the Pallett Hill site, roundabout capacity assessments have been undertaken using the industry standard software, ARCADY 7.

Given the relative turning movements, it has been decided to focus on the operation of the junction in the AM Peak (0800 – 0900) and PM Peak (1700 – 1800), in both 2017 and 2032. The modelling has assumed a synthesised peak based on the hourly flows in order to provide a robust assessment of the junction operation.

The capacity assessment results for the western roundabout are shown in **Table 1** whilst the results for the eastern roundabout (assuming no site access) are shown in **Table 2**. For all junction testing in this report, the results quoted reflect the maximum RFC and queue identified during the modelled period.

**Table 1: Catterick Central Interchange Western Roundabout – Base Capacity Results**

Arm	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
A1(M) Northbound On-Slip	Exit Only				Exit Only			
Link Bridge	0.30	0	0.30	0	0.44	1	0.53	1
A1(M) Northbound Off-Slip	0.26	0	0.31	0	0.35	1	0.60	1
Local Access Road	0.52	1	0.37	1	0.83	5	0.52	1

**Table 2: Catterick Central Interchange Eastern Roundabout – Base Capacity Results**

Arm	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
A1(M) Southbound Off-Slip	0.41	1	0.39	1	0.66	2	0.64	2
Local Access Road (A1)	0.19	0	0.21	0	0.33	0	0.45	1
A1(M) Southbound On-Slip	Exit Only				Exit Only			
Link Bridge	0.24	0	0.17	0	0.36	1	0.19	0

The results of the junction modelling shown in **Tables 1** and **2** indicate that the junction would operate within capacity with minimal queuing when the interchange is opened in 2017 and during its design year of 2032.

It should be noted that the local access road at the western roundabout, which leads to the A6136 Catterick Road, would be operating with an RFC of 0.83 (83% capacity) during the 2032 PM Peak hour. Although this is approaching the general standard design threshold of 85%, this is lower than the original assessment which identified base levels of capacity at 90% without the inclusion of development traffic for the then design year of 2025.

#### 4.0 Development Proposals

##### 4.1. Introduction

It is understood that the site could potentially be developed as a 100 bed hotel with restaurant and bar facilities. This would cater for local based trips (e.g. for a meal or a special event) and for potential tourist demand associated with the nearby Catterick Garrison and Catterick Racecourse. In addition to this, although not a specific motorway service area facility, it could also attract pass-by trips from the A1(M).

As identified above, it is considered that a 7.3m single carriageway access road to the development could be provided based on DMRB standards as a fifth arm on the eastern roundabout.

##### 4.2. Trip Generation

To calculate the potential trip generation that a 100 bed hotel with restaurant / bar facilities would produce, trip rates for similar sites have been obtained from the industry standard TRICS database. Sites were selected from the "pub / restaurant + hotel" sub-category within TRICS. This is defined as "Combined public house and restaurant site with accommodation available for the public" with surveys selected for sites with at least 40 bedrooms based on the number of bedrooms, in an edge of town location within Great Britain and restricted to weekday surveys undertaken since 2003.

**Technical Note 01**

The TRICS surveys identified that the PM Peak hour for the selected sites was between 18:00 and 19:00. This is an hour later than the network peak hour which is 17:00 to 18:00. To provide a robust assessment, it was therefore decided to use the TRICS peak hour for the trip rates in conjunction with the network peak hours. The average trip rates per bedroom extracted from the TRICS database for the peak hours are summarised in **Table 3**.

**Table 3: Proposed Site Trip Rates (per bedroom)**

Peak Hour	Average Trip Rates (Trips per bedroom)		
	Arrival	Departure	Two-way
AM Peak (08:00 to 09:00)	0.174	0.341	0.515
PM Peak (18:00 to 19:00)	0.659	0.504	1.163

These trip rates are significantly higher than the hotel trip rates used for the 2006 assessment.

The trip rates identified in **Table 3** have been used to calculate the number of potential vehicular trips associated with a 100 bedroom hotel. These vehicular trips are shown in **Table 4** in conjunction with the vehicular flows utilised within the original assessment.

**Table 4: Proposed Site Vehicular Flows**

Peak Hour	Original 2006 Assessment		Revised 2013 Assessment	
	Arrival	Departure	Arrival	Departure
AM Peak	237	72	17	34
PM Peak	71	235	66	50

The number of vehicle flows identified within **Table 4**, indicates that there would be a significant decrease in the number of vehicles accessing the site when compared to the original assessment. This is due to the reduced scale of the development proposals.

**4.3. Trip Assignment and Distribution**

To provide an indication as to how the junction could operate following the prospective development, the 2013 Assessment vehicular flows identified in **Table 4** have been assigned to the local highway network

As previously discussed, the identified land use would potentially attract a mixture of trip types be it tourist related, pass-by trips or local trips arriving at the restaurant for a meal or special event. Four alternative tests have been identified to reflect different potential distribution patterns which could result from the hotel and restaurant being situated at the junction. These sensitivity tests are described below:

- Option A – This test is based on the predicted distribution at the junction. It uses the same turning proportions as the base traffic flows provided by the HA traffic model.
- Option B – This option assumes a local distribution with the flows being focused on the local access roads at the junction. To provide a robust assessment, this test has been split into two options.
  - Option B1 represents 75% of the development traffic arriving and departing from the existing A1. This traffic would utilise the local access road at the eastern roundabout whilst the remaining 25% of development traffic would utilise the local access road at the western roundabout. This traffic would be arriving and departing via the A6136 Catterick Road.

- Option B2 mirrors B1 with 75% of the development traffic arriving and departing from the local road link to the A6136 Catterick Road and the remaining 25% of development traffic utilising the existing A1.
- Option C – This represents a worst case test, in line with that identified within the 2006 report. This option ensures that the number of conflicts between the base traffic and the development traffic are maximised. It is assumed that all development traffic arrives and departs from the A1(M) northbound carriageway. Therefore 100% of inbound traffic arrives from the A1(M) northbound off-slip and has to traverse both roundabouts to reach the site. Likewise all outbound traffic has to use both roundabouts to reach the A1(M) northbound on-slip.

**5.0 Junction Capacity Assessments**

**5.1 Introduction**

To identify whether the Catterick Central Interchange would continue to operate within capacity following the development of the Pallett Hill site, the flows have been assigned onto the highway network for each of the four tests identified within **Section 4** of this technical note and input into ARCADY. This section of the report summarises the capacity assessments for each distribution scenario.

**5.2 Flow Assignment Option A**

The operation of the dumbbell junction has initially been assessed based on a distribution of development flows according to the turning count proportions extracted from the HA traffic model. The results of these capacity assessments are shown in **Tables 5 and 6**.

**Table 5: Catterick Central Interchange Western Roundabout –Base + Development Capacity Results – Flow Assignment Option A**

Arm	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
A1(M) Northbound On-Slip	Exit Only				Exit Only			
Link Bridge	0.31	0	0.31	0	0.45	1	0.55	1
A1(M) Northbound Off-Slip	0.27	0	0.33	0	0.36	1	0.63	2
Local Access Road	0.52	1	0.39	1	0.84	5	0.54	1

**Table 6: Catterick Central Interchange Eastern Roundabout –Base + Development Capacity Results – Flow Assignment Option A**

Arm	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
A1(M) Southbound Off-Slip	0.42	1	0.41	1	0.67	2	0.66	2
Site Access	0.04	0	0.05	0	0.05	0	0.07	0
Local Access Road (A1)	0.20	0	0.22	0	0.34	1	0.47	1
A1(M) Southbound On-Slip	Exit Only				Exit Only			
Link Bridge	0.25	0	0.18	0	0.37	1	0.21	0

## Technical Note 01

The junction capacity results shown in **Tables 5** and **6** indicate that both the eastern and western roundabouts, would continue to operate within capacity with minimal queuing in both 2017 and 2032. When compared to the base modelling results shown in **Tables 1** and **2**, the results indicate that there would be minimal change in the level of operation at the interchange.

### 5.3. Flow Assignment Option B1

Flow assignment Option B1 assumes a local distribution with 75% of flows arriving at the eastern roundabout from the old A1 and the remaining 25% arriving at the western roundabout from the A6136 Catterick Road to the northwest. These flows have been input into the junction modelling and the results of the capacity assessments are shown in **Tables 7** and **8**.

**Table 7: Catterick Central Interchange Western Roundabout – Base + Development Capacity Results – Flow Assignment Option B1**

Arm	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
A1(M) Northbound On-Slip	Exit Only				Exit Only			
Link Bridge	0.30	0	0.30	0	0.44	1	0.53	1
A1(M) Northbound Off-Slip	0.26	0	0.31	0	0.35	1	0.60	2
Local Access Road	0.52	1	0.38	1	0.83	5	0.53	1

**Table 8: Catterick Central Interchange Eastern Roundabout – Base + Development Capacity Results – Flow Assignment Option B1**

Arm	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
A1(M) Southbound Off-Slip	0.41	1	0.39	1	0.66	2	0.65	2
Site Access	0.04	0	0.05	0	0.06	0	0.07	0
Local Access Road (A1)	0.21	0	0.25	0	0.35	1	0.50	1
A1(M) Southbound On-Slip	Exit Only				Exit Only			
Link Bridge	0.25	0	0.18	0	0.37	1	0.20	0

The junction capacity results shown in **Tables 7** and **8** indicate that the junction would continue to operate within capacity with minimal queuing. When compared to the base modelling results shown in **Tables 1** and **2**, the results indicate that there would be a minimal change in the level of operation at the interchange.

### 5.4. Flow Assignment Option B2

As with flow assignment Option B1, assignment Option B2 assumes a local distribution. In this scenario, 75% of the flows would arrive at the western roundabout from the A6136 Catterick Road to the northwest whilst the remaining 25% would access the eastern roundabout via the local access road from the old A1. These flows have been input into the junction modelling and the results of the capacity assessments are shown in **Tables 9** and **10**.

**Table 9: Catterick Central Interchange Western Roundabout – Base + Development Capacity Results – Flow Assignment Option B2**

Arm	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
A1(M) Northbound On-Slip	Exit Only				Exit Only			
Link Bridge	0.31	0	0.32	0	0.45	1	0.55	1
A1(M) Northbound Off-Slip	0.27	0	0.32	0	0.36	1	0.61	2
Local Access Road	0.52	1	0.40	1	0.84	5	0.55	1

**Table 10: Catterick Central Interchange Eastern Roundabout – Base + Development Capacity Results – Flow Assignment Option B2**

Arm	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
A1(M) Southbound Off-Slip	0.41	1	0.39	1	0.66	2	0.65	2
Site Access	0.04	0	0.05	0	0.06	0	0.07	0
Local Access Road (A1)	0.20	0	0.23	0	0.34	1	0.48	1
A1(M) Southbound On-Slip	Exit Only				Exit Only			
Link Bridge	0.25	0	0.19	0	0.37	1	0.22	0

The junction capacity results shown in **Tables 9** and **10** indicate that both of the roundabouts would continue to operate within capacity up to and beyond 2032 with minimal queuing. When compared to the base modelling results shown in **Tables 1** and **2**, the results indicate that there would be a minimal change in the level of operation at the interchange.

5.5. *Flow Assignment Option C*

The fourth sensitivity test is based on a worst case distribution where 100% of the development flows are concentrated on a single arm. For this assignment all of the inbound traffic has been assigned to the A1(M) northbound off-slip whilst all outbound traffic will utilise the A1(M) northbound on-slip. This assignment ensures that every arm will experience the greatest number of conflicts available as a result of the proposed trip generation.

The capacity assessment results are shown in **Tables 11** and **12**.

**Table 11: Catterick Central Interchange Western Roundabout – Base + Development Capacity Results – Flow Assignment Option C**

Arm	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
A1(M) Northbound On-Slip	Exit Only				Exit Only			
Link Bridge	0.31	0	0.32	0	0.45	1	0.56	1
A1(M) Northbound Off-Slip	0.28	0	0.37	1	0.37	1	0.69	2
Local Access Road	0.52	1	0.39	1	0.84	5	0.54	1

**Table 12: Catterick Central Interchange Eastern Roundabout – Base + Development Capacity Results – Flow Assignment Option C**

Arm	2017				2032			
	AM Peak		PM Peak		AM Peak		PM Peak	
	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
A1(M) Southbound Off-Slip	0.41	1	0.39	1	0.66	2	0.65	2
Site Access	0.04	0	0.05	0	0.05	0	0.07	0
Local Access Road (A1)	0.20	0	0.21	0	0.33	1	0.46	1
A1(M) Southbound On-Slip	Exit Only				Exit Only			
Link Bridge	0.25	0	0.20	0	0.37	1	0.23	0

The junction capacity results shown in **Tables 11** and **12** indicate that the proposed A1(M) junction would continue to operate within capacity with minimal queuing following the development of the adjacent land into a hotel and restaurant. When compared to the base modelling results shown in **Tables 1** and **2**, the results indicate that there would be a minimal change in the level of capacity at the interchange.

Analysis of the different distribution patterns indicates that there would be a maximum increase of 5% in the RFC on any single arm as a result of the development proposals.

**6.0 Merge / Diverge Analysis**

In addition to the assessment of the operation of the two roundabouts, consideration has also been given to the implications of the merge / diverge arrangements between the proposed A1(M) carriageway and the Catterick Central Interchange.

The information provided did not include details as to the type of merge / diverge arrangements proposed. Given this, the assessment carried out has identified what type of merge / diverge arrangement would be expected to be provided, given the base 2032 mainline and slip road traffic flows against the guidance provided in TD22/06 "Layout of Grade Separated Junctions." Consideration has then been given as to the whether it is likely that the identified arrangement would need to be altered in order to accommodate additional traffic generated by the prospective development of the Pallett Hill Site.

The base traffic flows, adjusted to take account of the proportion of HGV's but assuming an uphill gradient of less than 2% on both the mainline and on-slips, has been plotted on the relevant graphs provided in TD22/06 (Figures 2/3 MW and 2/5 MW). These are provided in **Appendix B**. Given the mainline and slip road flows, it is anticipated that either merge arrangement A (Taper Merge) or D (2 Lane Urban Merge) would be provided for both the northbound and southbound on-slip merges. For the diverge, arrangement A (Taper Diverge) would be expected to be provided.

The development proposals would not be expected to add any additional traffic to the mainline flows used as part of this assessment but would potentially affect the merge / diverge flows. It is possible that as a result of pass-by trips attracted to the development, the mainline flow could fall. However it has been assumed that the mainline flows would remain constant for this assessment. A review of the diagrams identifies that it is the northbound merge (i.e. the A1(M) northbound on-slip from the western roundabout) which would be the most sensitive to change, particularly in the AM peak.

It would however require an increase in merging traffic flow of approximately 230 vehicles in order for an alternative merge arrangement to be required. The trip generation of the proposed development identifies a maximum of 60 outbound trips in an hour (PM peak) and even in the event that all trips were to leave the site to head north on the A1(M), the resultant traffic on the slip road would not exceed the threshold identified in Figure 2/3 MW.



## 7.0 Summary and Conclusions

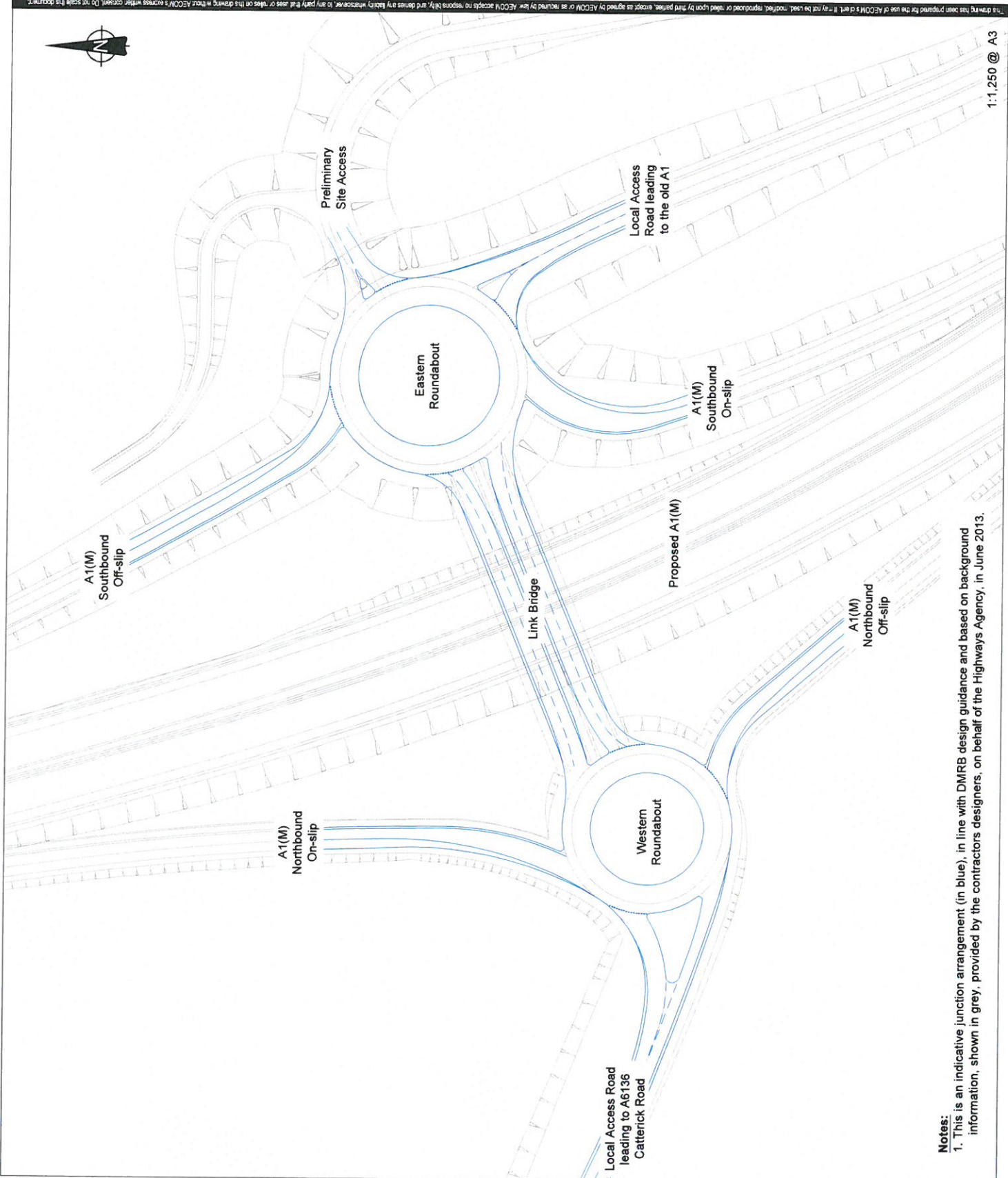
The Highways Agency published Draft Supplementary Orders on the 23<sup>rd</sup> May 2013 for the construction of a new twelve mile section of the A1 between Leeming and Barton in Yorkshire. This new dual carriageway will be built to motorway standards and will replace the existing A1, which will become a local access road. As part of these proposals a new grade separated dumbbell roundabout will be constructed at Pallett Hill near Catterick. AECOM have been commissioned to undertake an initial access study to confirm whether a 7.3m wide access can be accommodated off the proposed eastern roundabout and that the proposed junction and merge / diverge arrangements would be able to accommodate the potential future development at Pallett Hill.

Based on the information available and provided by the contractor's designers on behalf of the Highways Agency, it is considered that a suitable 7.3m arm to provide access to a new development on the Pallett Hill site could be accommodated on the eastern roundabout of the proposed Catterick Central Interchange.

Based on the trip rates obtained from the industry standard TRICS database, it has been identified that the proposed roundabouts would be able to continue to operate at a suitable level following the development of a 100 bed hotel with restaurant and bar facilities, given a variety of alternative trip distribution assumptions.

Analysis of the flows indicates that assuming the merge / diverge arrangements are designed in line with the standard design arrangements identified in TD22/06 given the projected base 2032 peak hour flows, the additional development traffic would not be sufficient to trigger a change in the required merge / diverge arrangements.

Figures



**Notes:**  
 1. This is an indicative junction arrangement (in blue), in line with DMRB design guidance and based on background information, shown in grey, provided by the contractors designers, on behalf of the Highways Agency, in June 2013.



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**ISSUE/REVISION**

IR	DATE	DESCRIPTION

**PROJECT NUMBER**  
 60302537

**SHEET TITLE**  
 Catterick Central Interchange -  
 Preliminary Junction  
 Arrangement with Site Access  
**SHEET NUMBER**

Figure 1

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Appendix A – HA letter A1L2B/B/01/034 (24 June 2013)

Our ref: A1L2B/B/01/034  
Your ref:

**Lister Haigh**  
**106 High Street**  
**Knaresborough**  
**North Yorkshire**  
**HG5 0HN**

**FAO Mrs V Lamb**

David Chalk  
Highways Agency  
A1D2L Site Office  
Leases Farm Quarry  
Leeming Bar  
North Yorkshire  
DL8 1DL

Direct Line: (01677) 458 660  
24 June 2013

Dear Vicki,

**A1 LEEMING TO BARTON IMPROVEMENTS**  
**MR G SIMPSON - PALLETT HILL**


We refer to your letter dated 28 May 2013, regarding access to land at Pallett Hill from the eastern roundabout of the proposed Catterick Central grade separated junction.

In your letter, you seek clarification of the width of the access and having discussed this with the JV and their designer, we confirm that the access from the roundabout would be 7.3m wide. The access to Pallett Hill, together with a farm access for Mr M Chapman to reach his field located to the north of Pallett Hill, was shown on the plans at the recent orders exhibitions. However, it should be noted that although the access will be provided as part of the works, it will not include any footway or dropped kerb provision as these aspects are not required as part of our proposals.

Please note that the access is also shown on the recently published draft orders, although in this instance, it is only a representation of the indicative layout that will be provided and is subject to detail design.

Hopefully the above clarifies the position. However, in the meantime, if you require any further information or wish to discuss any aspects in more detail, please do not hesitate to make further contact.

Yours sincerely,

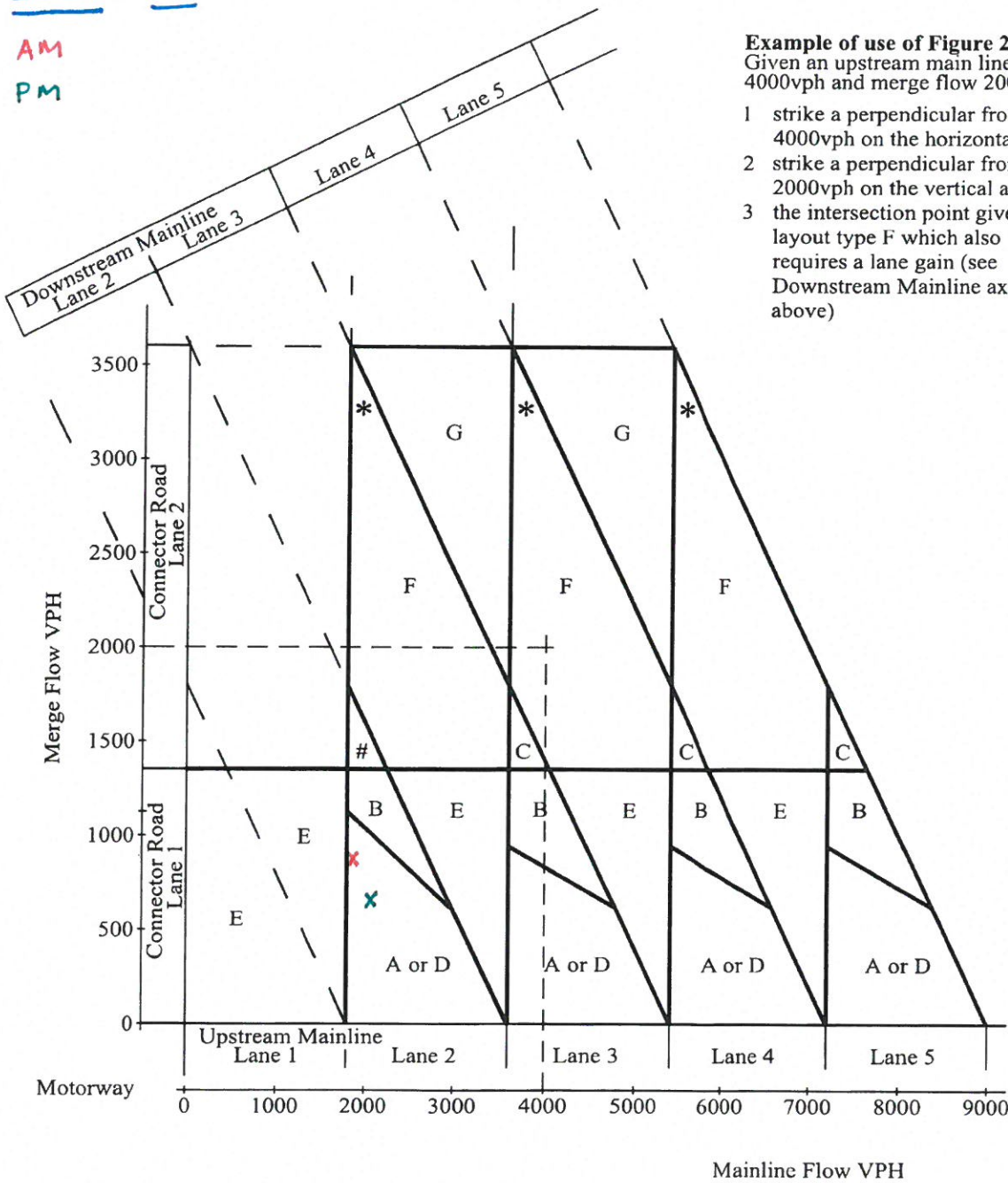


David Chalk  
Highways Agency  
MP North  
Email: [david.chalk@highways.gsi.gov.uk](mailto:david.chalk@highways.gsi.gov.uk)

Appendix B – Merge / Diverge Analysis

2032 NB

AM  
PM



**Example of use of Figure 2/3MW**  
Given an upstream main line flow 4000vph and merge flow 2000vph.

- 1 strike a perpendicular from 4000vph on the horizontal axis
- 2 strike a perpendicular from 2000vph on the vertical axis
- 3 the intersection point gives layout type F which also requires a lane gain (see Downstream Mainline axis above)

Notes:

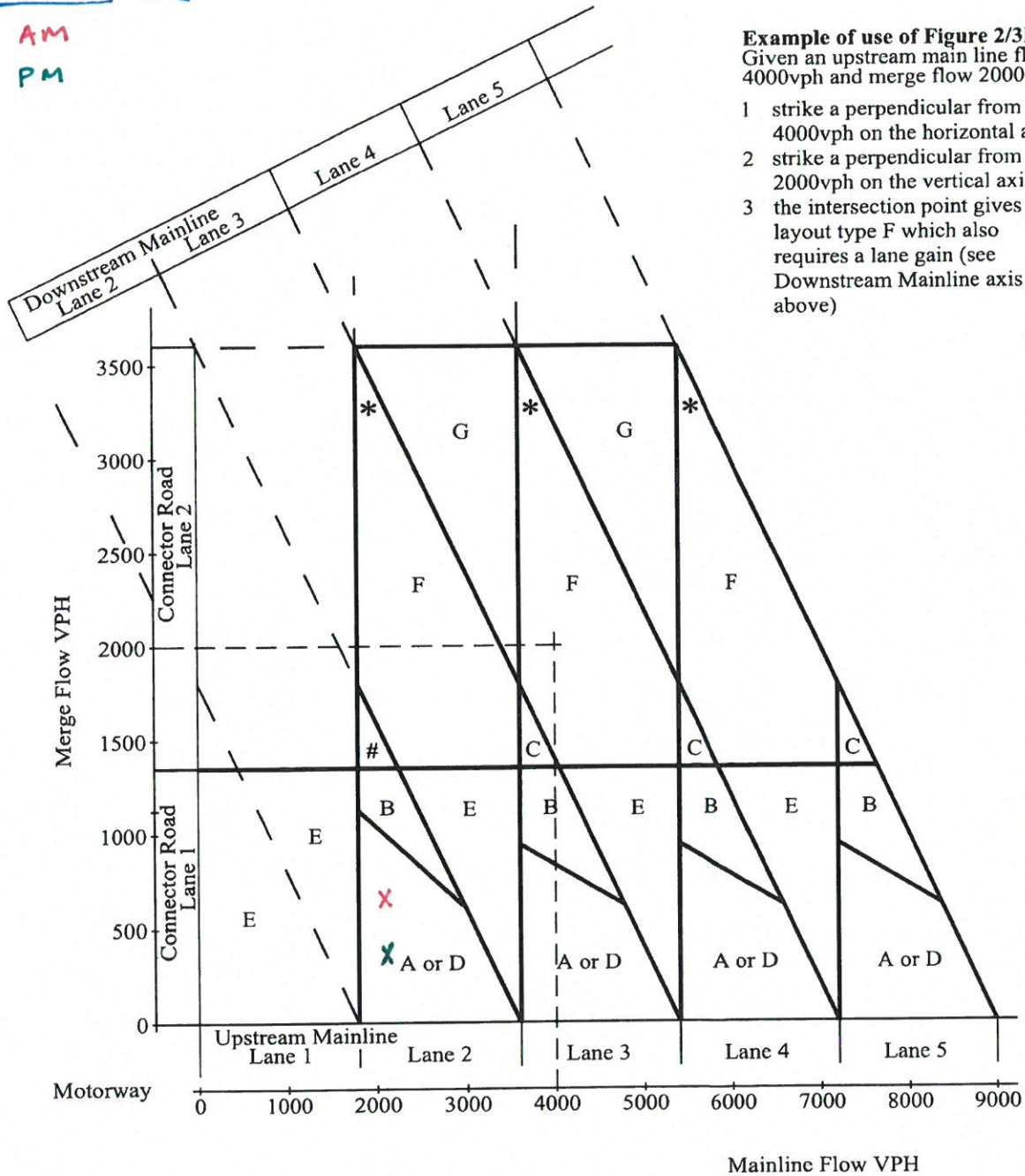
- \* If Layout F Option 2 is used consider extended Auxiliary Lane (see paragraph 4.23).
- # Area of uncertainty – In this area the choice will depend on the downstream provision. If there is a lane gain then use Layout E or F.

See paragraph 2.29 and example above, for explanation of the usage of this diagram.

**Figure 2/3 MW Motorway Merging Diagram**

2032 SB

AM  
PM



**Example of use of Figure 2/3MW**  
Given an upstream main line flow 4000vph and merge flow 2000vph.

- 1 strike a perpendicular from 4000vph on the horizontal axis
- 2 strike a perpendicular from 2000vph on the vertical axis
- 3 the intersection point gives layout type F which also requires a lane gain (see Downstream Mainline axis above)

Notes:

- \* If Layout F Option 2 is used consider extended Auxiliary Lane (see paragraph 4.23).
- # Area of uncertainty – In this area the choice will depend on the downstream provision. If there is a lane gain then use Layout E or F.

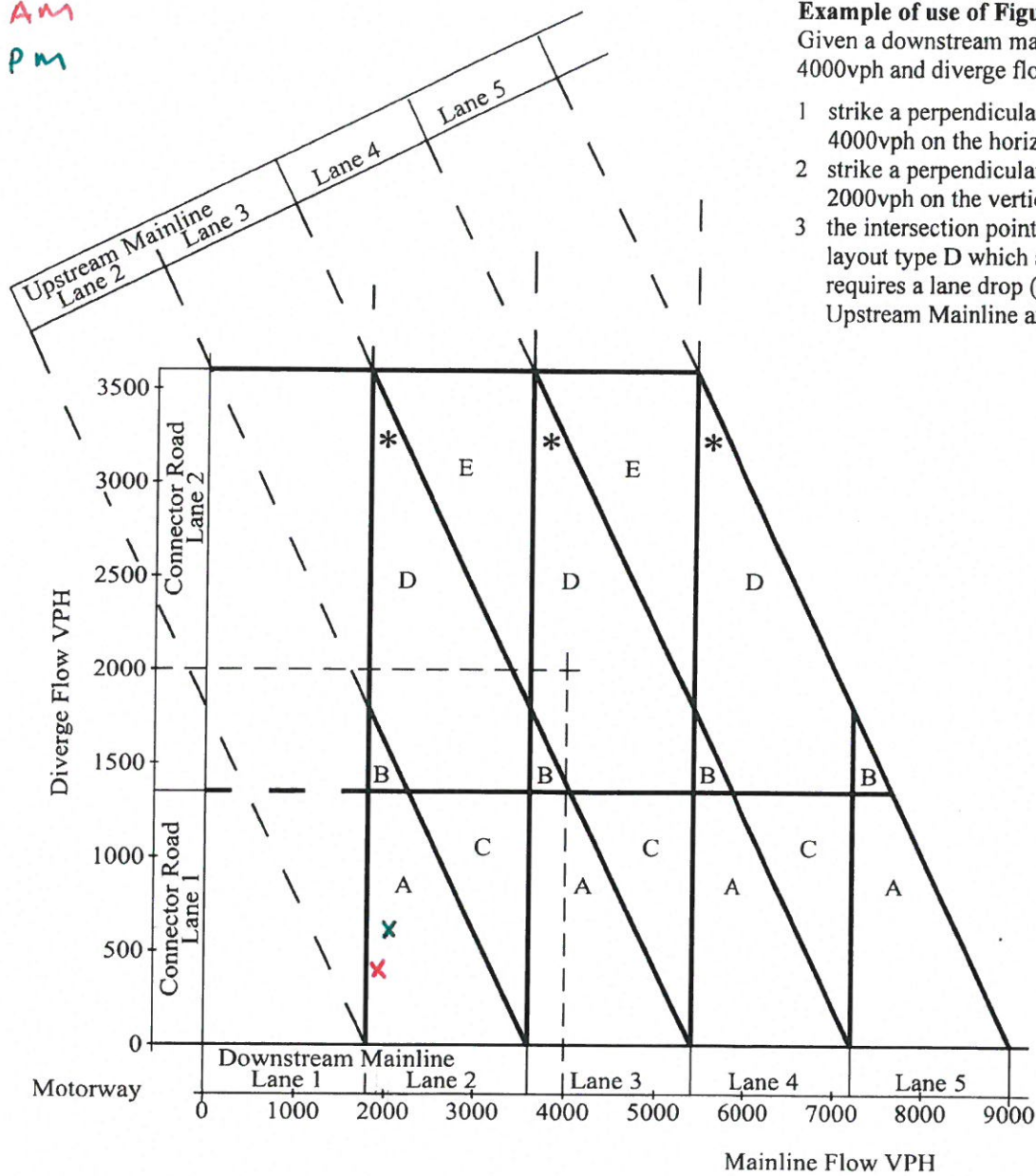
See paragraph 2.29 and example above, for explanation of the usage of this diagram.

**Figure 2/3 MW Motorway Merging Diagram**



2032 N8

AM  
PM



**Example of use of Figure 2/5MW**  
Given a downstream main line flow 4000vph and diverge flow 2000vph.

- 1 strike a perpendicular from 4000vph on the horizontal axis
- 2 strike a perpendicular from 2000vph on the vertical axis
- 3 the intersection point gives layout type D which also requires a lane drop (see Upstream Mainline axis above)

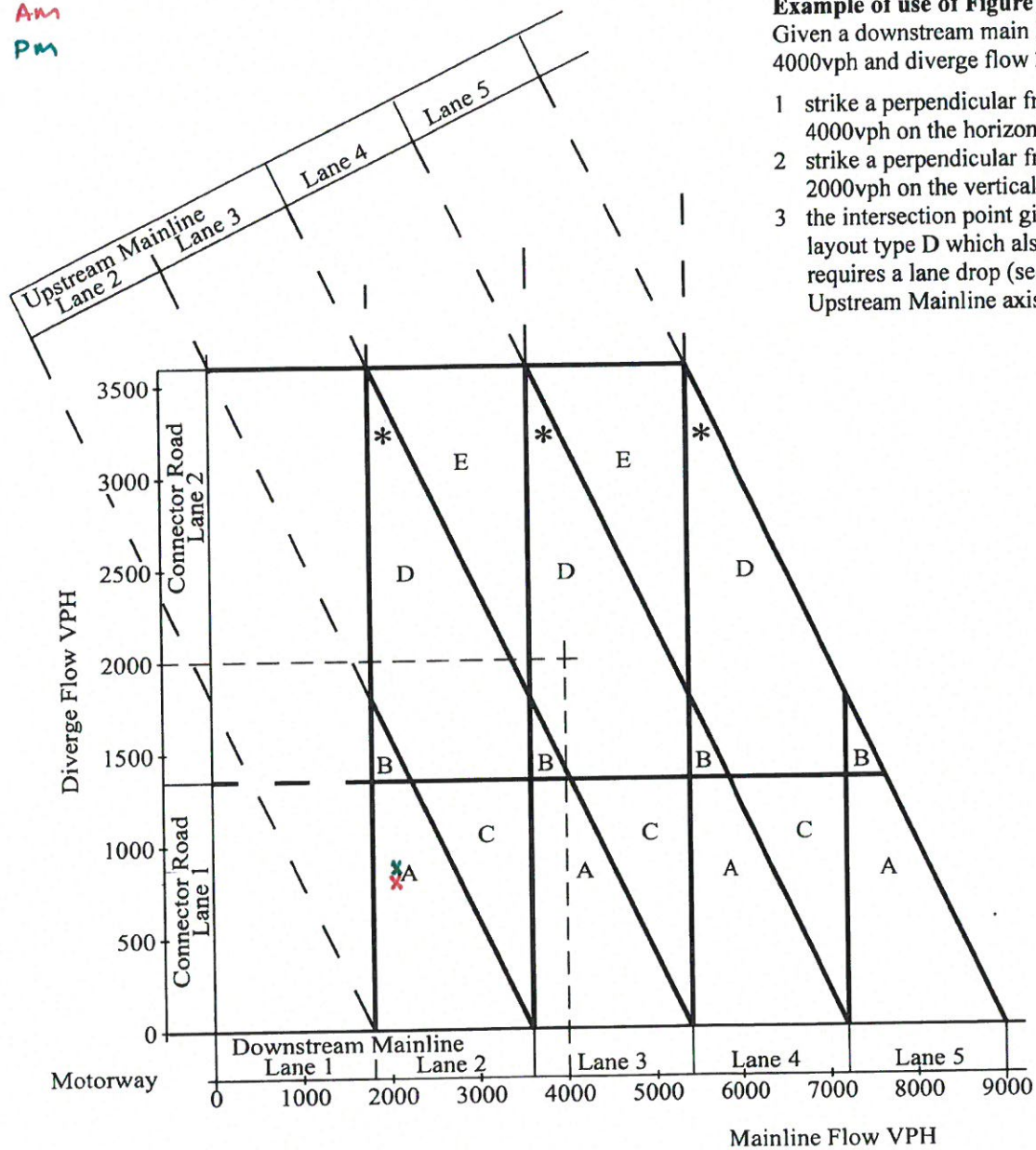
Notes:

- \* If Layout D Option 2 is used consider extended Auxiliary Lane (see paragraph 4.24).  
See paragraph 2.43 and the example above, for explanation of the usage of this diagram.

**Figure 2/5 MW Motorway Diverging Diagram**

2032 SB

AM  
PM



**Example of use of Figure 2/5MW**  
Given a downstream main line flow 4000vph and diverge flow 2000vph.

- 1 strike a perpendicular from 4000vph on the horizontal axis
- 2 strike a perpendicular from 2000vph on the vertical axis
- 3 the intersection point gives layout type D which also requires a lane drop (see Upstream Mainline axis above)

Notes:

- \* If Layout D Option 2 is used consider extended Auxiliary Lane (see paragraph 4.24).  
See paragraph 2.43 and the example above, for explanation of the usage of this diagram.

**Figure 2/5 MW Motorway Diverging Diagram**



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**ISSUE/REVISION**

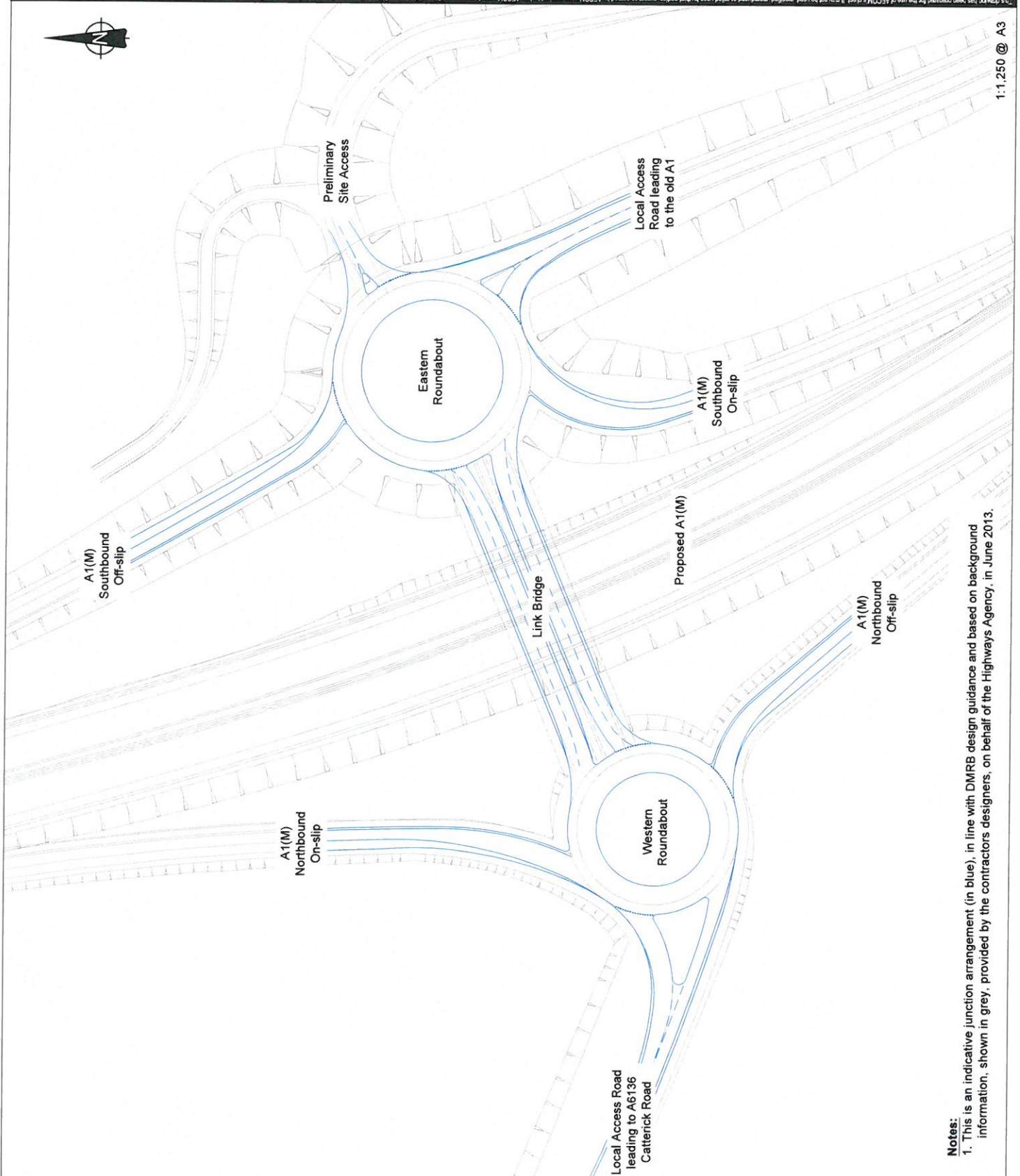
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