
Addendum to Transport Statement

In support of
expansion of
Moorlands Primary
School, Reading

Prepared by:



CONTROL SHEET

Issued by: Hampshire Services

Economy, Transport and Environment
Hampshire County Council
Second Floor, Ell Court West,
The Castle,
Winchester,
SO23 8UD

Tel: 01962 847149

Client: Reading Borough Council

Project: Proposed expansion of Moorlands Primary School, Reading

Title: Addendum to Transport Statement

Status: Final for planning

Date: 26.6.2018

Doc ref: HF16570665

Document Production Record

Issue	Purpose/Status	Prepared by	Checked	Approved	Date
01	Draft for client comment / approval	NW	DM	DM	26.6.2018
02					

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1 Introduction

- 1.1.1 This document provides an addendum to a transport statement in support of the expansion of Moorlands Primary School, Reading, submitted to Reading Borough Council in January 2018 (180171).
- 1.1.2 In response to the transport statement, Reading Borough Council raised a number of questions and points requiring clarification including a request for junction assessments at either end of Church End Lane to assess the impact of increased school traffic on the ratio/flow capacities at these locations.
- 1.1.3 This report sets out the responses to the points raised by Reading Borough Council (RBC) and should be read in conjunction with the appended Memo issued by RBC to the applicant on 14th May 2018.

2 Trip rates

- 2.1.1 RBC accepted the trip rates but has requested clarification on the trip rate methodology, specifically with regard to school catchment.
- 2.1.2 The trip rate used within the Transport Statement assumed that all children within the catchment would have to attend Moorlands Primary School as more detailed data was not available. This can be considered very robust as, in reality, due to parental choice, they will be able to attend other schools closer to their homes. RBC has instead suggested using the overall travel percentage by car currently experienced at the School to form the trip rate. This would result in a lower number of children arriving by car than previously presented:

Table 1: Revised modal split

Modal split - extrapolated from School's existing modal split		
Mode	%	Number
Walk	45%	95
Car	38%	79
Bus	8%	16
Cycle or Scoot	4%	8
Park & Stride	6%	13

Table 2: Comparison of revised modal split with modal split presented within the original Transport Statement

Comparison of numbers - original vs addendum			
Mode	Original TS	Addendum	Difference
Walk	55	95	40
Car	93	79	-14
Bus	34	16	-18
Cycle or Scoot	5	8	3
Park and Stride	23	13	-10

- 2.1.3 The Transport Statement suggested that 93 new pupils will arrive by “car alone” with a further 23 arriving by “park and stride”. With an amended modal split which assumes parental choice this reduces to 79 arriving by “car alone” and 13 by “park and stride”; a total of 92 cars compared with the previously presented 116.

2.2 Bulge classes

- 2.2.1 RBC also raised a point of clarification over the calculation of trips to be removed from the modal split due to “bulge classes.”
- 2.2.2 It should be remembered that there are currently 14 children on roll over the School’s capacity as part of bulge classes. These children will have completed their final year and left the school by the time the new classrooms open in September 2019. Of these 14 children, using the existing modal split, it is expected that 38% (5) children travel by car alone, and a further 6% (1) travel by park and stride – a total of 6 children (see Table 3). Therefore 6 of the car trips from the new intake, will essentially replace 6 of the existing trips associated with the school, and will not therefore be additional over the current situation. Removing these 6 car trips from the new modal split (as above) results in a net increase of 86 (a reduction from 92) cars over the existing situation; 74 by “car alone” and 12 by “park and stride.”

Table 3: Bulge year amendment to align with newly agreed modal split

Bulge year amendment			
Children in bulge classes		14	
Mode	Modal split	Reduction	Amended Total
Car	38%	-5	74
Park & Stride	6%	-1	12
Total:		-6	86

2.3 Sibling data

- 2.3.1 RBC stated that they do not understand how the calculations relating to sibling data have been reached. This has identified an error in the original transport statement – the data was applied to existing pupils with siblings (approx. 28% of the total children at the School, so 118 pupils) where it should have been applied only to new pupils projected to have siblings within the school (28% of 210 new pupils, or 59 children with siblings). A description of the correct calculation is provided below:
- 2.3.2 Of 210 new pupils, with the bulge class children removed, 74 children are expected to arrive by car alone, and 12 by park and stride, a total of 86 children. 118 of 420 (28%) existing pupils have siblings at school, it is assumed that this percentage can also be applied to the new intake. 28% of 86 new children (24) arriving by “car” could therefore be expected to car share, the remaining 62 can be assumed to arrive by “car alone”. 24 car sharing children would arrive in a maximum of 12 cars. 62 “car alone” + 12 shared cars = 74 cars associated with new pupils. This figure of 74 additional cars associated with pupils has been used in the junction assessments set out below.

2.3.3 In its response document, RBC proposed its own table to undertake these calculations. However; these did not include the change in modal split relating to trip rate and bulge classes described above.

2.4 Caveats

2.4.1 RBC raised a question with regard to the caveats presented in the trip generation.

2.4.1.1 Before and after school clubs

Numbers associated with before and after school clubs are not known and are likely to vary, and therefore a reduction has not been presented or included in the calculations. The methodology used presents the most robust case possible, as actual impact can realistically be expected to be lower.

2.5 Trip rate summary

2.5.1 In conclusion the updated cumulative impact of new trips associated with pupils takes into account:

- A change in modal split, to use the school's existing modal split
- Updated figures related to bulge classes
- A reduction to take into account siblings travelling together in a car

2.5.2 This approach, which has been agreed with RBC, results in 74 cars associated with pupils. These 74 cars, alongside 18 associated with staff (as stated in the Transport Statement) are used to undertaken junction assessments below in Sections 5 and 6.

3 Travel Plan

3.1.1 The travel plan has now been approved and signed off by the school and has been provided to RBC's Education Department.

4 Discrepancy between sections 4.4.4 and 3.1.8

Paragraph 4.4.4 in the original Transport Statement is incorrect. The total figure of 238 was correct (220 one way trips associated with 110 pupil vehicles, and 18 one way trips associated with staff, in each peak). However, this is now superseded by the updated trip generation (see below).

5 Trip generation and distribution

- 5.1.1 Based on the above, it is now expected that up to 74 cars would be associated with new pupils. The Transport Statement also states that up to 18 of the new staff are expected to drive to school.
- 5.1.2 To assess the trip distribution, turning counts at both the Norcot Road junction at the northern end of Church End Lane; and the The Meadway junction, at the southern end were undertaken on 17th May 2018 from 7am to 7pm. These distributions have been extrapolated to include 74 x 2 way trips associated with pupils in both the school AM and PM peak, and 18 x 1 way trips in each peak by staff, as they are expected to remain on site during the day. Full details of this distribution are available in Appendix 1.

6 Junction Assessments

- 6.1.1 Further to submission of the Transport Statement, RBC has asked for assessments of capacity of the junctions at both ends of Church End Lane (Norcot Road and The Meadway).

Summaries of the two assessments are provided below:

6.2 Norcot Road Junction:

- 6.2.1 An assessment of this junction has been undertaken using the following inputs and tools:
- Turning count and queue length surveys undertaken on 17th May 2018 from 7am to 7pm (included as Appendix 2)
 - TEMPro 7.2 AF19 for background growth:
 - the School PM peak falls within the national inter-peak and not PM peak, therefore the inter-peak has been used to represent the School PM peak
 - A future year of 2025 was selected to match the year at which the expanded school would be full
 - The roads selected were “urban” and both “minor” and “principal” – the highest level of growth was selected from each time period for the assessment
 - Inclusion of background growth is considered robust as this junction assessment will include growth associated with the expansion of the school, which will be generated local housing growth already included in TEMPro – it should be acknowledged therefore that there is an element of double counting which may overestimate any impact on the junction.
 - Junctions 8 PICADY modelling software
 - Trip distribution as described in Section 5 and Appendix 1.

6.2.2 Within the surveys and assessment, the arms of the junction are referred to as follows:

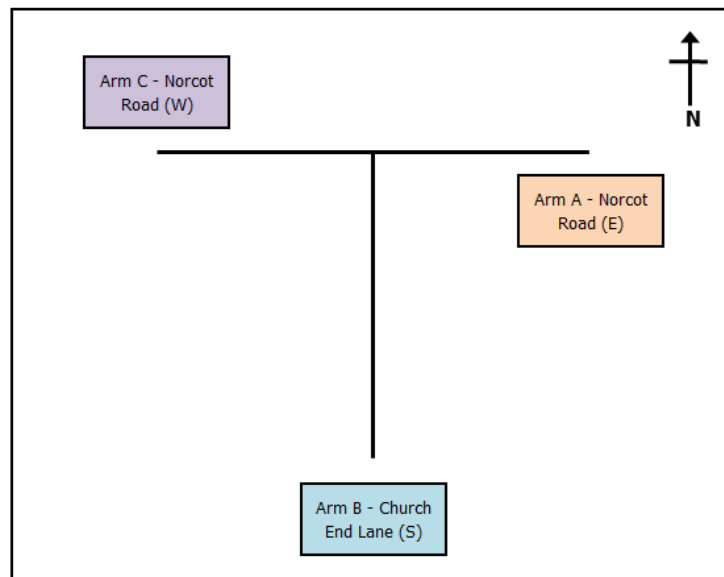


Figure 1: Norcot Junction

6.2.3 Full details of the PICADY assessment are included in Appendix 3. Results of AM and PM assessments of each junction are presented below for two scenarios; a base year of 2025 with background growth only, and the same base year including background growth and new school trips.

Table 4: AM assessment of Norcot Road junction

Original 2025 Base (am)				2025 Base + school (am)			
Movement	RFC	QUEUE	MAX DELAY		RFC	QUEUE	MAX DELAY
B-C	0.16	0.18	12.05		0.21	0.27	15.98
B-A	0.62	1.59	22.71		0.72	2.39	30.96
C-AB	0.21	0.5	5.79		0.25	0.61	6.14
Junction Network Delay (s)	15.88				20.87		

6.2.4 Table 4 shows that the Ratio to Flow Capacity (RFC), Queue Length, and Delays at the junction will increase in the morning peak with School trips, but remain within 85% of the theoretical capacity of the junction.

Table 5: PM assessment of Norcot Road junction

Original 2025 Base (pm)				2025 Base + school (pm)			
Movement	RFC	QUEUE	MAX DELAY		RFC	QUEUE	MAX DELAY
B-C	0.18	0.22	13.59		0.31	0.44	24.41
B-A	0.68	2.02	26.03		0.81	3.84	43.44
C-AB	0.13	0.27	5.5		0.15	0.32	5.68
Junction Network Delay (s)	20.18				33.24		

6.2.5 Table 5 shows that the Ratio to Flow Capacity (RFC), Queue Length, and Delays at the junction will also increase in the afternoon with School trips, but remain within 85% of the theoretical capacity of the junction. The PM queue length from arm B (Church End Lane) to A (Norcot Road East) increases to 43.44 seconds. This may be an overestimation given that there is a pedestrian crossing to the east of the junction (on Norcot Road) which would introduce gaps in westbound traffic, and therefore support right turns. Moreover, PICADY requires the sight line to be taken from a 10m setback from the give way line. From this point, the sight line to the east is significantly reduced from the sight line at the give way line. If taken at the give way line, the delay would be expected to be reduced.

6.2.6 As a result of this analysis it is concluded that the increase in trips associated with the school expansion will have minimal impact on the operation of this junction and will continue to operate well within 85% of its theoretical capacity.

6.3 The Meadway Junction

6.3.1 An assessment of this junction has been undertaken using the following inputs and tools:

- Turning count, queue length, signal timing, and pedestrian surveys undertaken on 17th May 2018 from 7am to 7pm (included as Appendices 4 to 7)
- Signals data provided by RBC
- TEMPro 7.2 AF19 for background growth:
 - the School PM peak falls within the national Interpeak and not PM peak, therefore the Interpeak has been used to represent the School PM peak
 - A future year of 2025 was selected to match the year at which the expanded school would be full
 - The roads selected were “urban” and both “minor” and “principal” – the highest level of growth was selected from each time period for the assessment
 - Inclusion of background growth is considered robust as this junction assessment will include growth associated with the expansion of the school, which will be generated local housing growth already included in TEMPro – it

should be acknowledged therefore that there is an element of double counting which may overestimate any impact on the junction.

- LinSig modelling software
- Trip distribution as described in Section 5 and Appendix 1.

6.3.2 Within the surveys and assessment, the arms of the junction are referred to as follows:

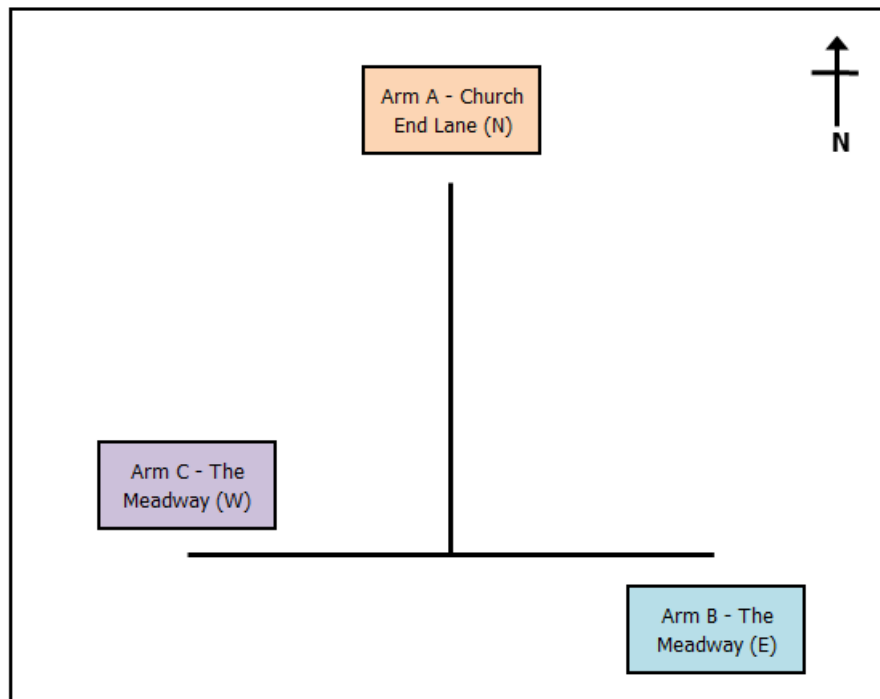


Figure 2: The Meadway junction

- 6.3.3 Full details of the LinSig assessment are included in Appendix 8. Results of AM and PM assessments of each junction are presented below for two scenarios; a future year of 2025 with background growth only, and a future year including background growth and new school trips.
- 6.3.4 From the signal times provided from the recent traffic survey, it could be seen that the pedestrian stage was demanded every third cycle in the AM peak and every fourth cycle in the PM peak. The modelled stage sequences reflect this with the method of control comprising of three stages in a seven stage, and nine stage sequence respectively.
- 6.3.5 A fourth stage providing a right turn indicative green arrow is available within the controller configuration. However it appears to be seldom demanded with right turning vehicles clearing the junction during the inter-green period. Therefore the early cut-off stage has not been included in the model.
- 6.3.6 Stage sequences are shown below in Figure 3Figure 4.

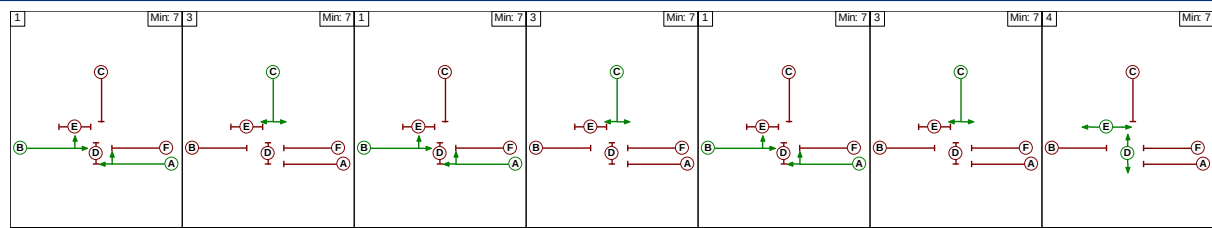


Figure 3: AM stage sequences

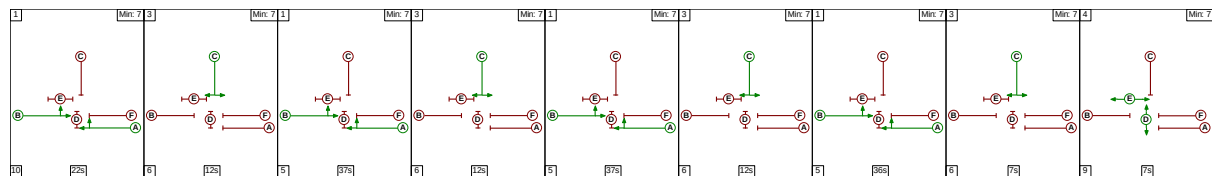


Figure 4: PM stage sequence

6.3.7 Given the junction runs a MOVA control strategy, the real-time operation of the traffic signals will be adaptive and optimising to the approaching traffic flows, it will therefore give an improvement on the modelled results.

Table 6: AM assessment of The Meadway junction

	2018			2025 Base			2025 Base + School		
	DoS (%)	MMQ	PRC (%)	DoS (%)	MMQ	PRC (%)	DoS (%)	MMQ	PRC (%)
Church End Lane	72.2	6.3	24.6	75.7	7.6	19	78.8	9	13.1
The Meadway westbound	47.4	7.9		53.5	9.3		57	9.9	
The Meadway eastbound	66.2	12.3		74.7	15.1		79.6	16.4	

Table 7: PM assessment of The Meadway junction

	2018			2025 Base			2025 Base + School		
	DoS (%)	MMQ	PRC (%)	DoS (%)	MMQ	PRC (%)	DoS (%)	MMQ	PRC (%)
Church End Lane	63.7	4.4	41.3	70	5.4	28.5	72.6	6.2	24
The Meadway westbound	56.2	11.9		63.8	14.7		67.2	15	
The Meadway eastbound	47.7	8.7		53.9	10.4		57.9	11.1	

6.3.8 The results (tables Table 6Table 7) show that the increase in traffic flows from the 2025 base to the 2025 base + school trips has an insignificant detrimental effect on the junction for both AM and PM peak periods. In both cases the Practical Reserve Capacity (PRC) shows the junction to be working well within capacity.

7 Contributions

The applicant has agreed to pay the contributions outlined by RBC in their response to the transport statement, namely:

- A contribution of £5,000 to enhance the parking restrictions along Church End Lane
- A contribution of £40,000 to improve the pedestrian crossing facilities which would facilitate the provision of a controlled zebra crossing and another at grade uncontrolled crossing

8 Parking

8.1 Car parking

8.1.1 On and off-site parking have been addressed with RBC prior to submission of this addendum.

8.2 Cycle storage

8.2.1 Current and projected modal splits for staff show no expectation for staff to cycle. If staff do want to cycle they are able to use the existing covered cycle shelter outside the main reception. Three site visits in May suggest that this facility is currently underused.



Figure 5: Site visit - 2nd May 2018 (12.45pm)



Figure 6: 10th May 2018 (09.32am)



Figure 7: 16th May 2018 (12.59pm)

8.3 Access

8.3.1 Access arrangement drawings requested by RBC are now attached as Appendix 9.

9 Summary and conclusion

- 9.1.1 The above document addresses the points raised by RBC in relation to submission of a transport statement in support of the proposed expansion of Moorlands Primary School, Reading. Junction assessments demonstrate that the projected new school trips will have very minimal impacts on the junctions at either end of Church End Lane. In conclusion there are no significant transport and highways issues that should prevent this application from being approved.