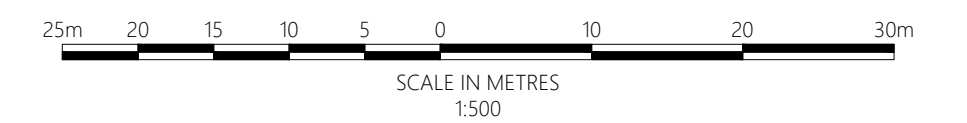
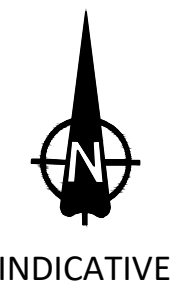
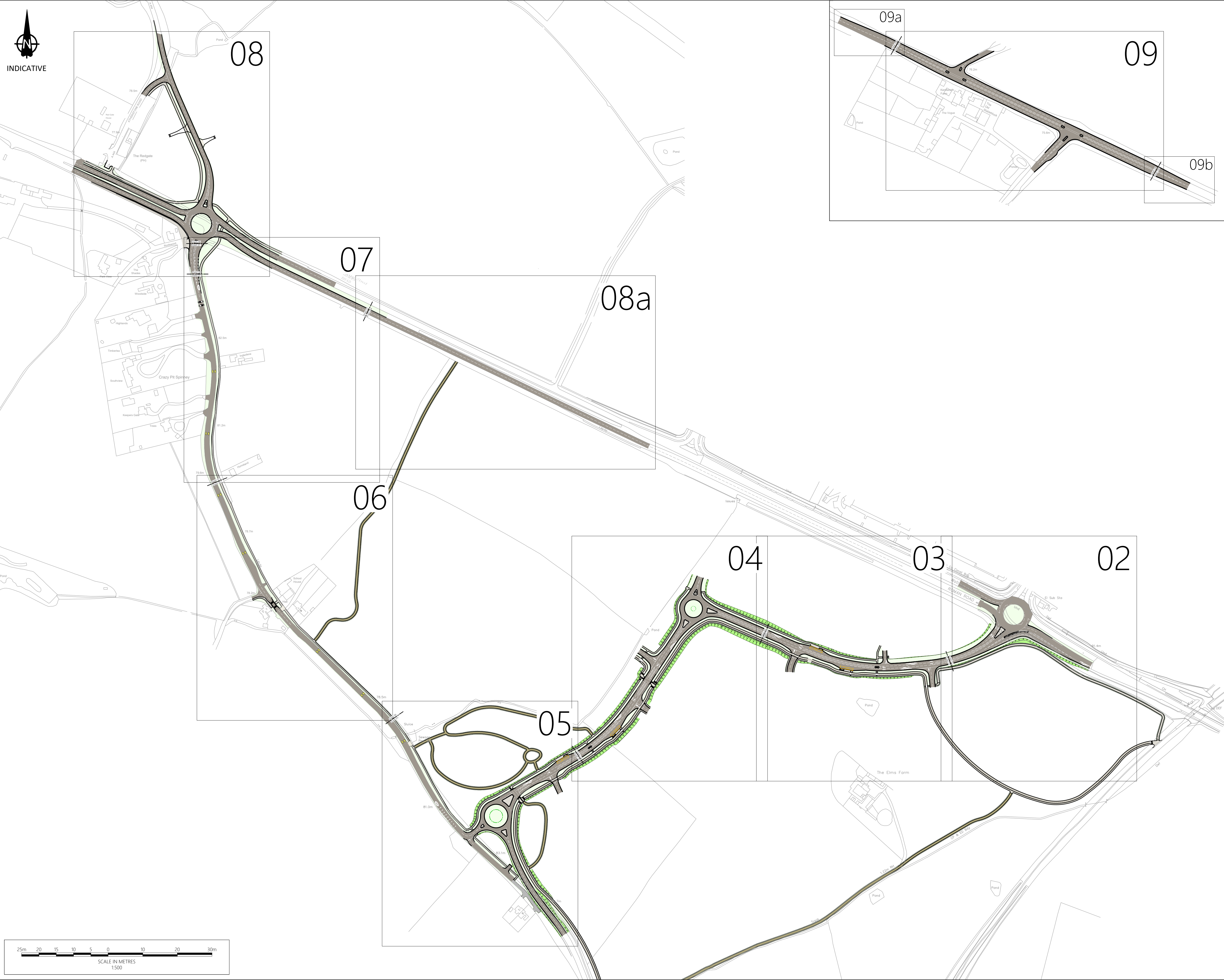


Appendix 3



Notes

- Do not scale from this drawing. All dimensions shown are in metres unless noted otherwise.
- This drawing has been based upon Ordnance Survey information produced by others and Milestone Transport Planning cannot be held responsible for any discrepancies which may arise because of it.

Key

- Carriageway
- Footway
- Cycleway
- Verge
- Landscaping

Ordnance Survey Licence number: 100057360

Drawing Revisions

Rev:	Drn:	Date:	Details:	Chk:
-	DC	20/07/2022	First issue	MS
A	ZM	27/07/2022	Revised layout	MS
B	ZM	02/08/2022	Revised layout	MS

Client

ERI MTP Ltd

Project

MIRA Technology Park South Site

Title

Proposed Mitigation Works
Overall Layout

MILESTONE
TRANSPORT PLANNING

Abbey House, 282 Farnborough Rd, Farnborough, Hants GU14 7NA
Tel: 01483 397888
Gateshead IBC, Mulgrave Terrace, Gateshead, NE8 1AN
Tel: 0191 338 7220
web: www.milestonetp.co.uk

Drawing Number:

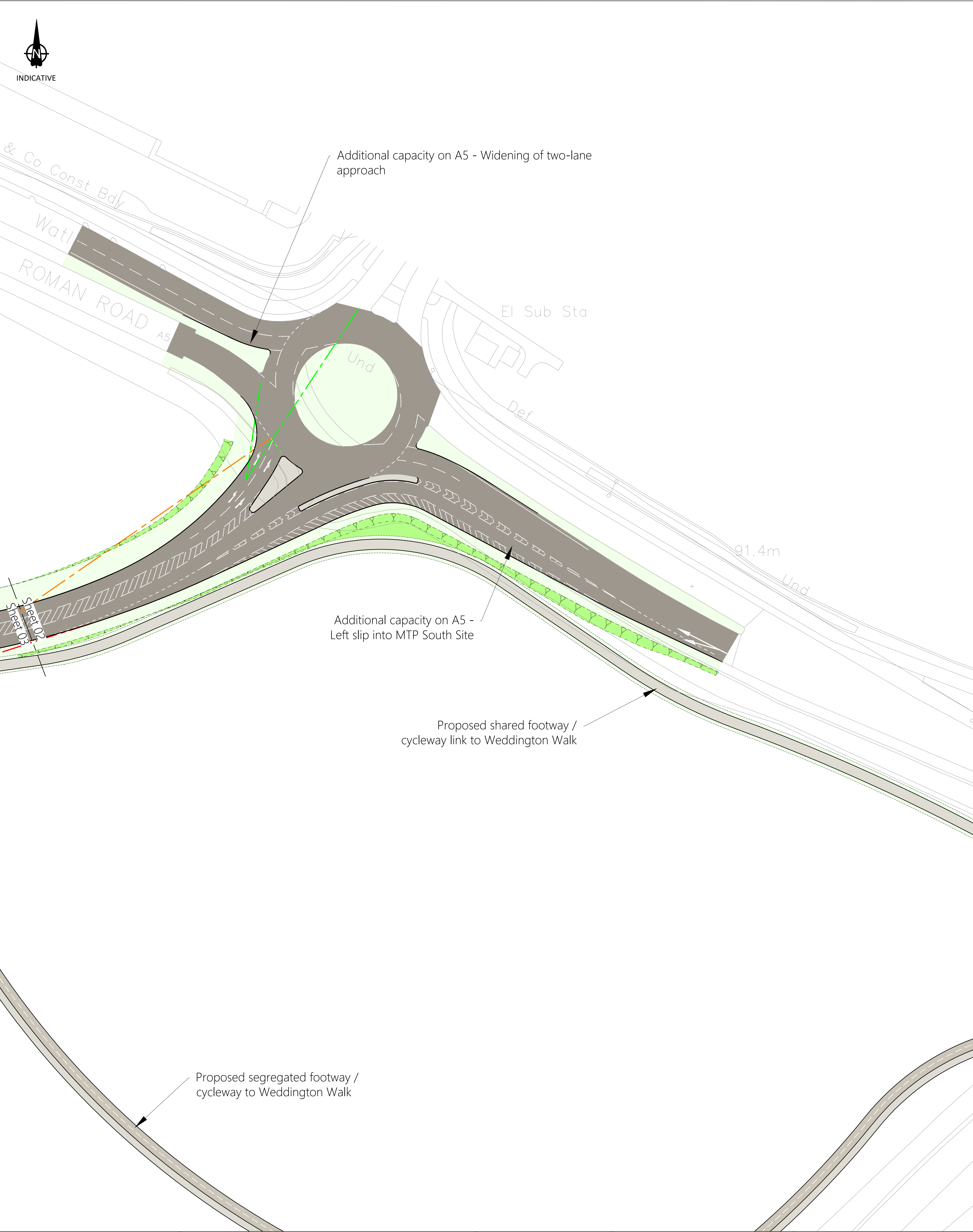
17059/GA/01

Scale:

1:2,500 @ A1

Revision:

B

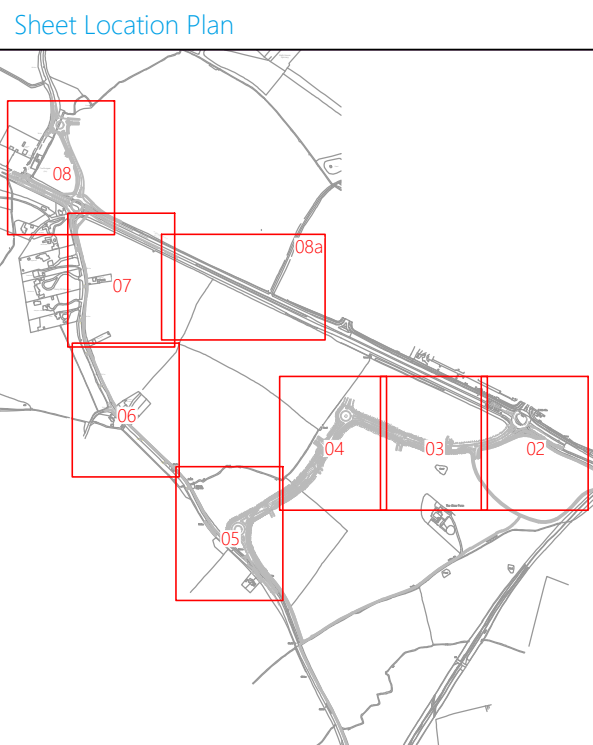


Notes

1. Do not scale from this drawing. All dimensions shown are in metres unless noted otherwise.
2. This drawing has been based upon topographical survey information produced by others and Milestone Transport Planning cannot be held responsible for any discrepancies which may arise because of it.
3. All Earthworks slopes are at 1:3 gradient unless specified otherwise.

Key

	Carriageway
	Footway
	Cycleway
	Verge
	Landscaping



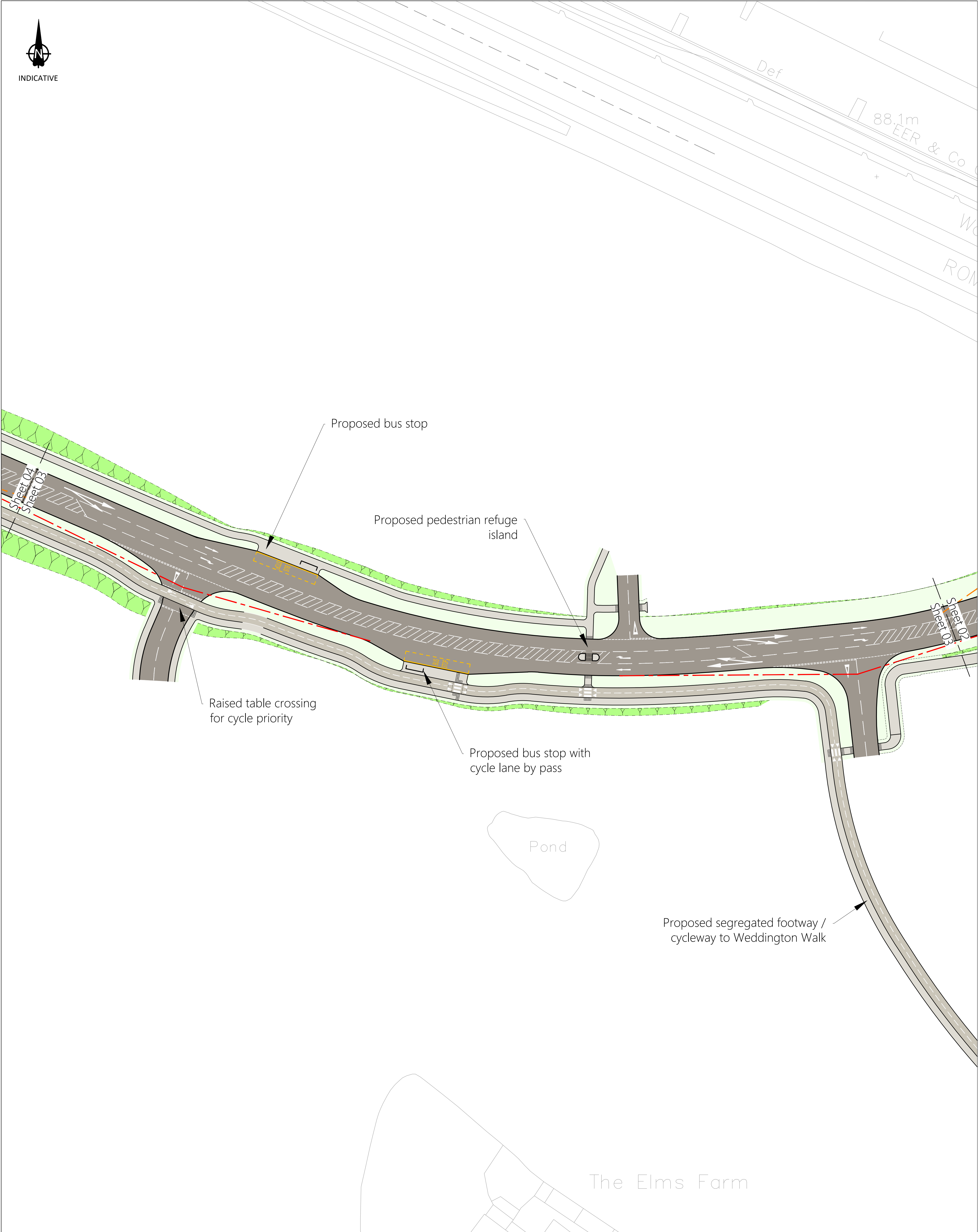
Drawing Revisions					Chk
Rev.	Dm:	Date:	Details		
	AM	14/07/2022	First issue		MS
A	DC	20/07/2022	Additional information provided		MS
B	ZM	02/08/2022	Amended layout		MS

Client	
ERI MTP Ltd	
Project	
MIRA Technology Park South Site	

Title	
Proposed A5 - A444 Link Road and Off-Site Mitigation	
Abbey House, 282 Farnborough Rd, Farnborough, Hants GU14 7NA Tel: 01483 397888 Gateshead IBC, Mulgrave Terrace, Gateshead, NE8 1AN Tel: 0191 338 7220 web: www.milestonetp.co.uk	
Drawing Number:	Scale:
17059/GA/02	1:500 @ A1
	Revision:
	B



INDICATIVE



Notes

- Do not scale from this drawing. All dimensions shown are in metres unless noted otherwise.
- This drawing has been based upon topographical survey information produced by others and Milestone Transport Planning cannot be held responsible for any discrepancies which may arise because of it.
- All Earthworks slopes are at 1:3 gradient unless specified otherwise.

Key

	Carriageway
	Footway
	Cycleway
	Verge
	Landscaping

Sheet Location Plan

Rev.	Drn.	Date:	Details	Chk.
-	AM	18/07/2022	First issue	MS
A	DC	20/07/2022	Additional information provided	MS
B	ZM	02/08/2022	Amended layout	MS

Client

ERI MTP Ltd

Project

MIRA Technology Park
South Site

Title

Proposed A5 - A444 Link Road and Off-Site Mitigation

MILESTONE
TRANSPORT PLANNING

Abbey House, 282 Farnborough Rd, Farnborough, Hants GU14 7NA
Tel: 01483 397888
Gateshead IBC, Mulgrave Terrace, Gateshead, NE8 1AN
Tel: 0191 338 7220
web: www.milestonetp.co.uk

Drawing Number:

17059/GA/03

Scale:

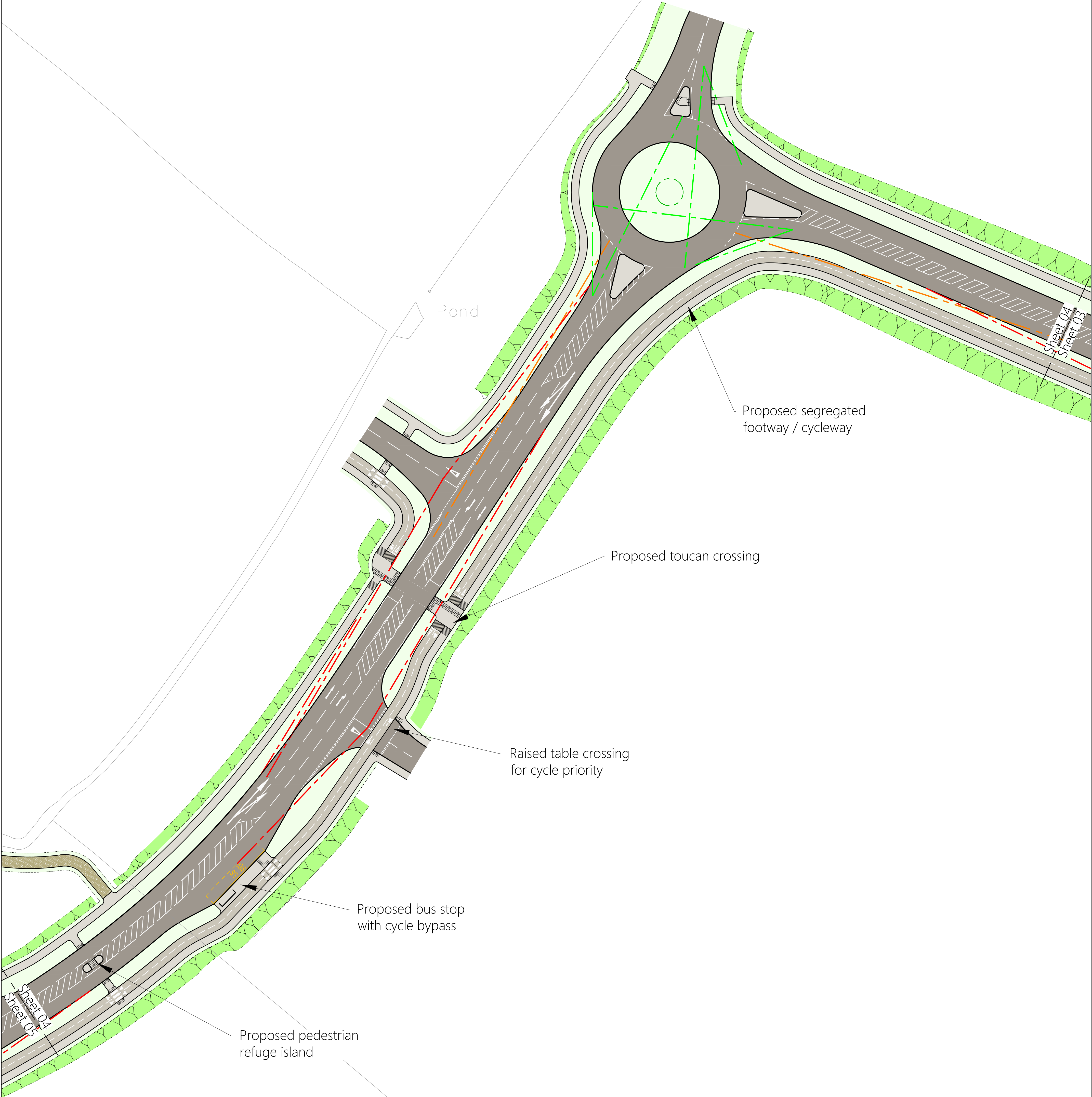
1:500 @ A1

Revision:

B



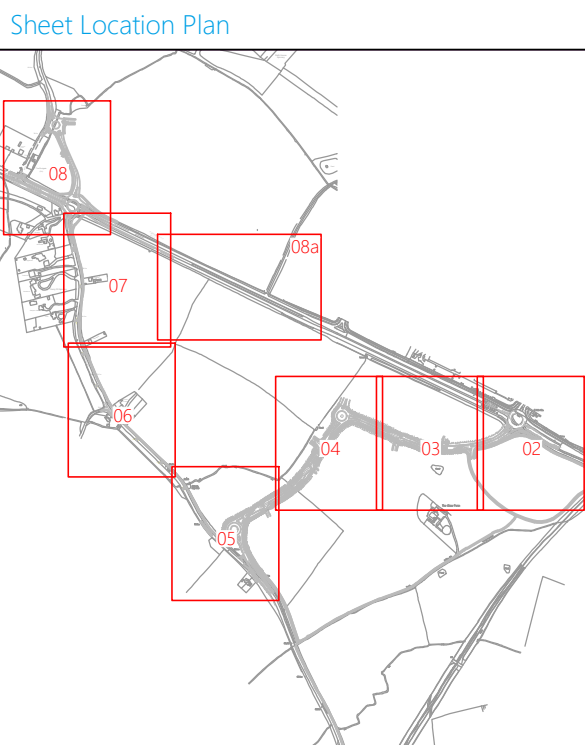
INDICATIVE



- Notes**
1. Do not scale from this drawing. All dimensions shown are in metres unless noted otherwise.
 2. This drawing has been based upon topographical survey information produced by others and Milestone Transport Planning cannot be held responsible for any discrepancies which may arise because of it.
 3. All Earthworks slopes are at 1:3 gradient unless specified otherwise.

Key

	Carriageway
	Footway
	Cycleway
	Verge
	Landscaping
	Unbound Footpath



Drawing Revisions

Rev.	Drn.	Date:	Details	Chk.
-	AM	18/07/2022	First issue	MS
A	DC	20/07/2022	Additional information provided	MS
B	ZM	27/07/2022	Inclusion of recreational paths / PROW	MS
C	ZM	02/08/2022	Amended layout	MS

Client

ERI MTP Ltd

Project

MIRA Technology Park
South Site

Title

Proposed A5 - A444 Link
Road and Off-Site Mitigation

MILESTONE
TRANSPORT PLANNING

Abbey House, 282 Farnborough Rd, Farnborough, Hants GU14 7NA
Tel: 01483 397888
Gateshead IBC, Mulgrave Terrace, Gateshead, NE8 1AN
Tel: 0191 338 7220
web: www.milestonetp.co.uk

Drawing Number:

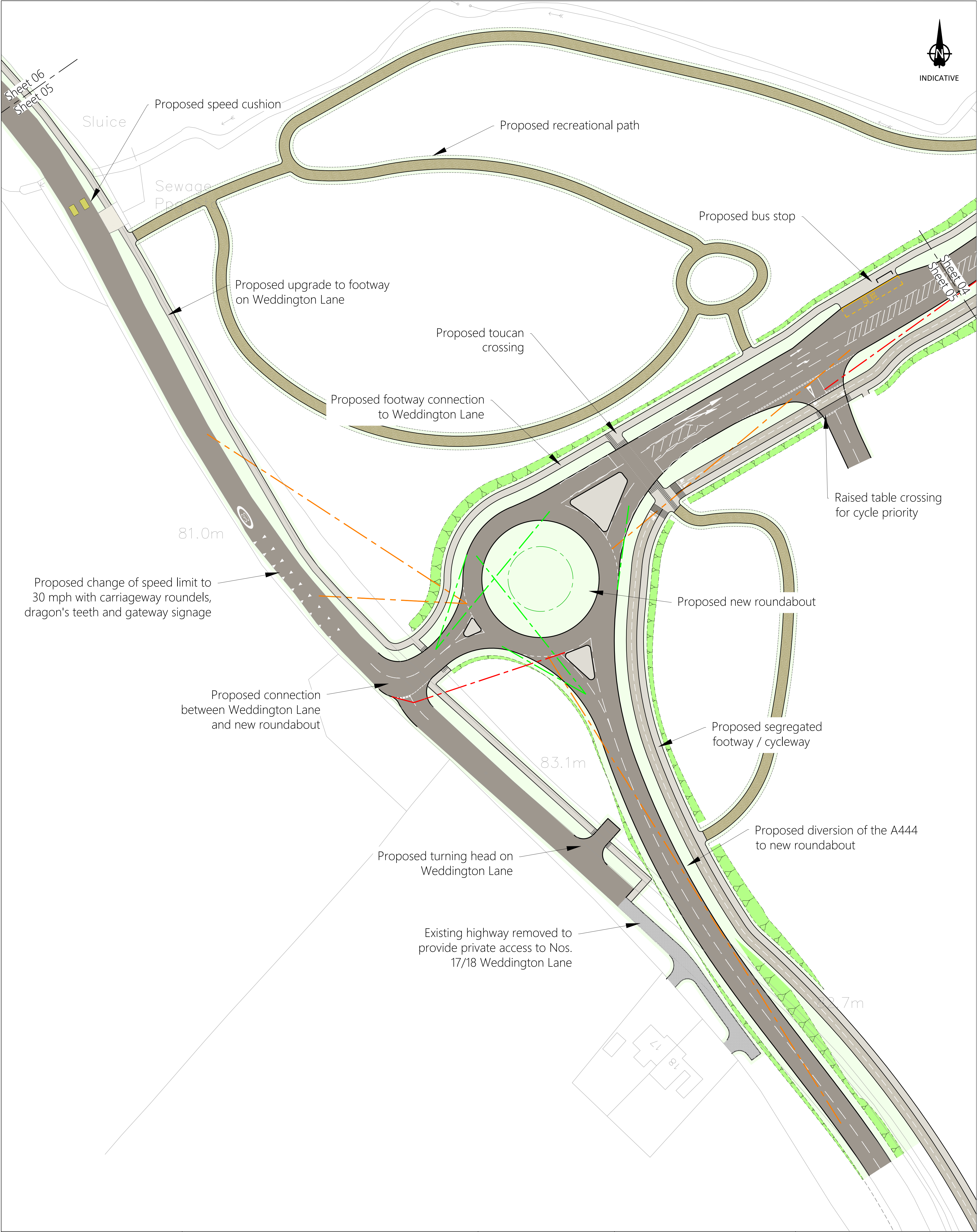
17059/GA/04

Scale:

1:500 @ A1

Revision:

C

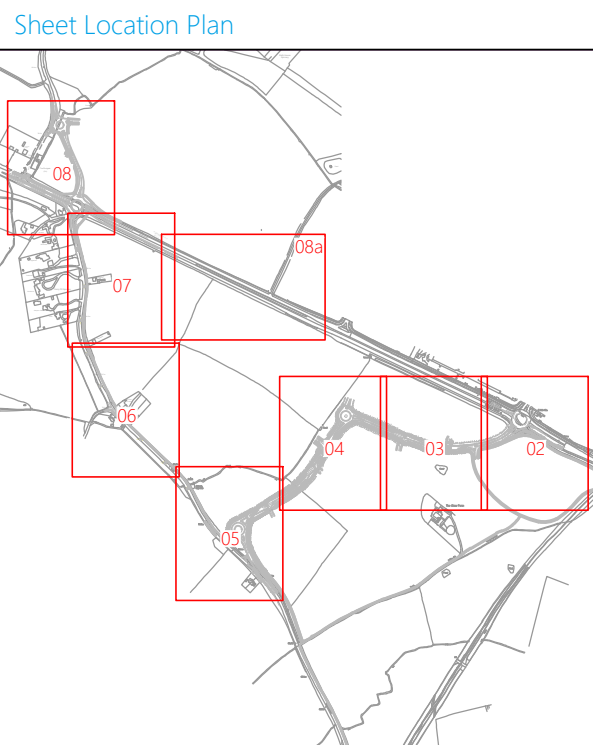


INDICATIVE

Notes

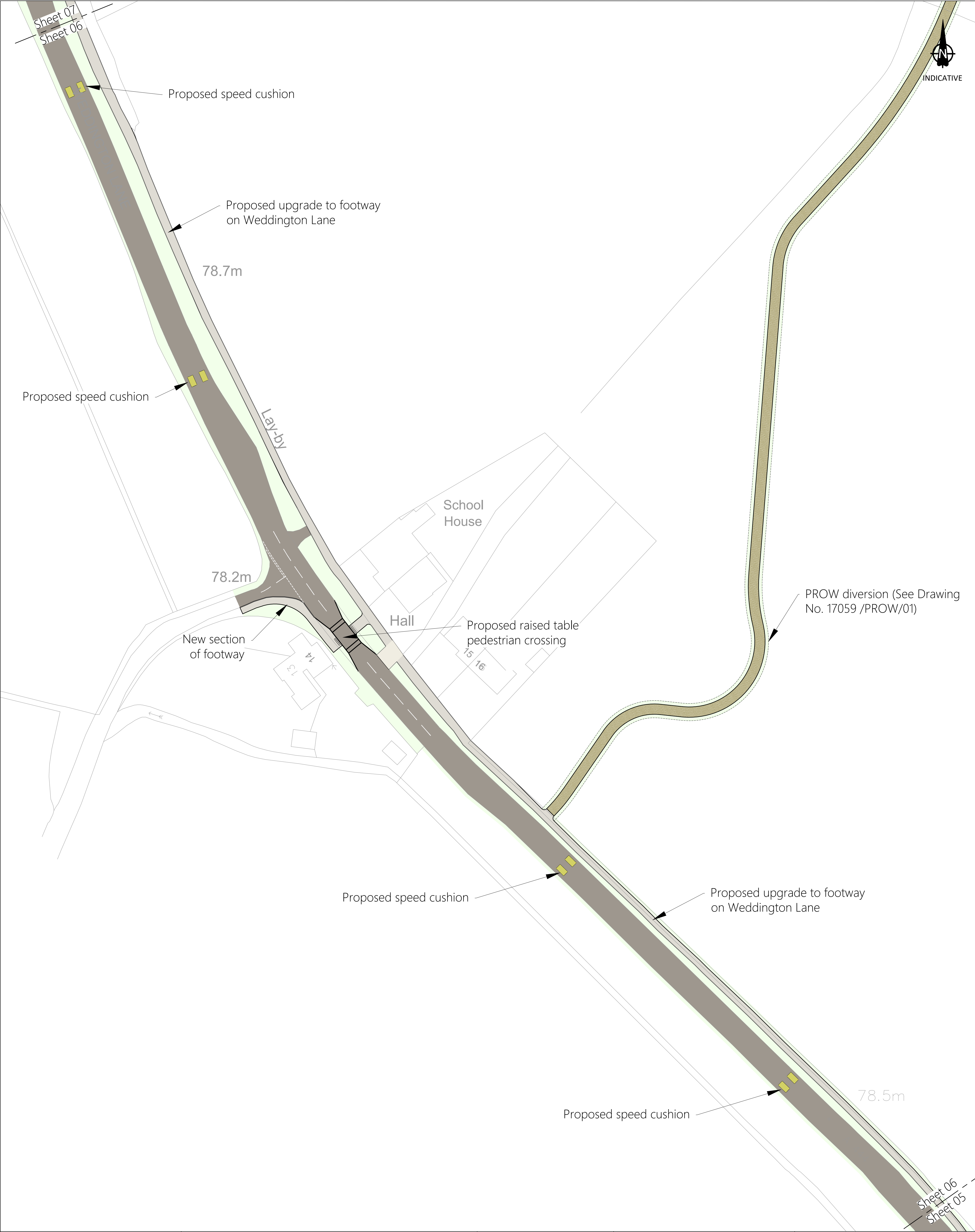
1. Do not scale from this drawing. All dimensions shown are in metres unless noted otherwise.
2. This drawing has been based upon topographical survey information produced by others and Milestone Transport Planning cannot be held responsible for any discrepancies which may arise because of it.
3. All Earthworks slopes are at 1:3 gradient unless specified otherwise.

Key	
	Carriageway
	Footway
	Cycleway
	Verge
	Landscaping
	Unbound Footpath



Drawing Revisions					Chk
Rev.	Drm.	Date:	Details		
	AM	14/07/2022	First issue		MS
A	BM	20/07/2022	Additional information provided		MS
B	ZM	27/07/2022	Inclusion of recreational paths / PROW		MS
C	ZM	02/08/2022	Amended layout		MS
Client					
ERI MTP Ltd					
Project					
MIRA Technology Park South Site					

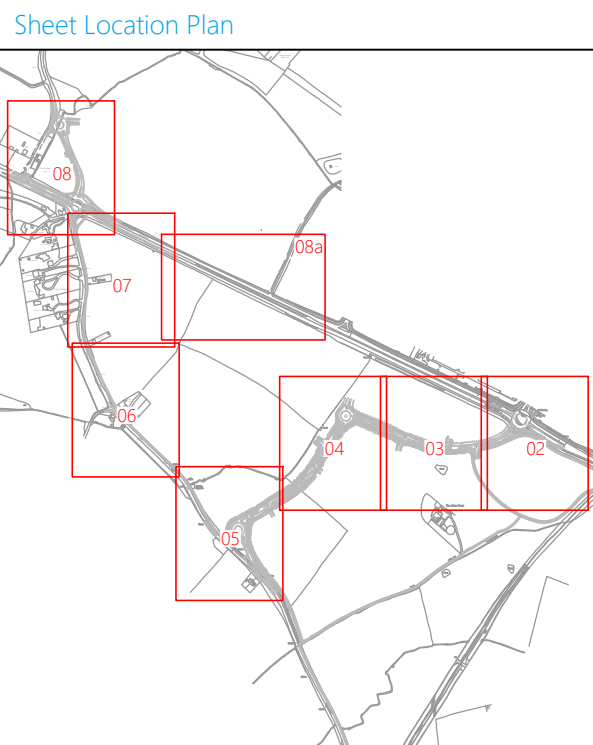
Title	
Proposed A5 - A444 Link Road and Off-Site Mitigation	
Abbey House, 282 Farnborough Rd, Farnborough, Hants GU14 7NA Tel: 01483 397888 Gateshead IBC, Mulgrave Terrace, Gateshead, NE8 1AN Tel: 0191 338 7220 web: www.milestonetp.co.uk	
Drawing Number:	Scale:
17059/GA/05	1:500 @ A1
Revision:	C



Notes

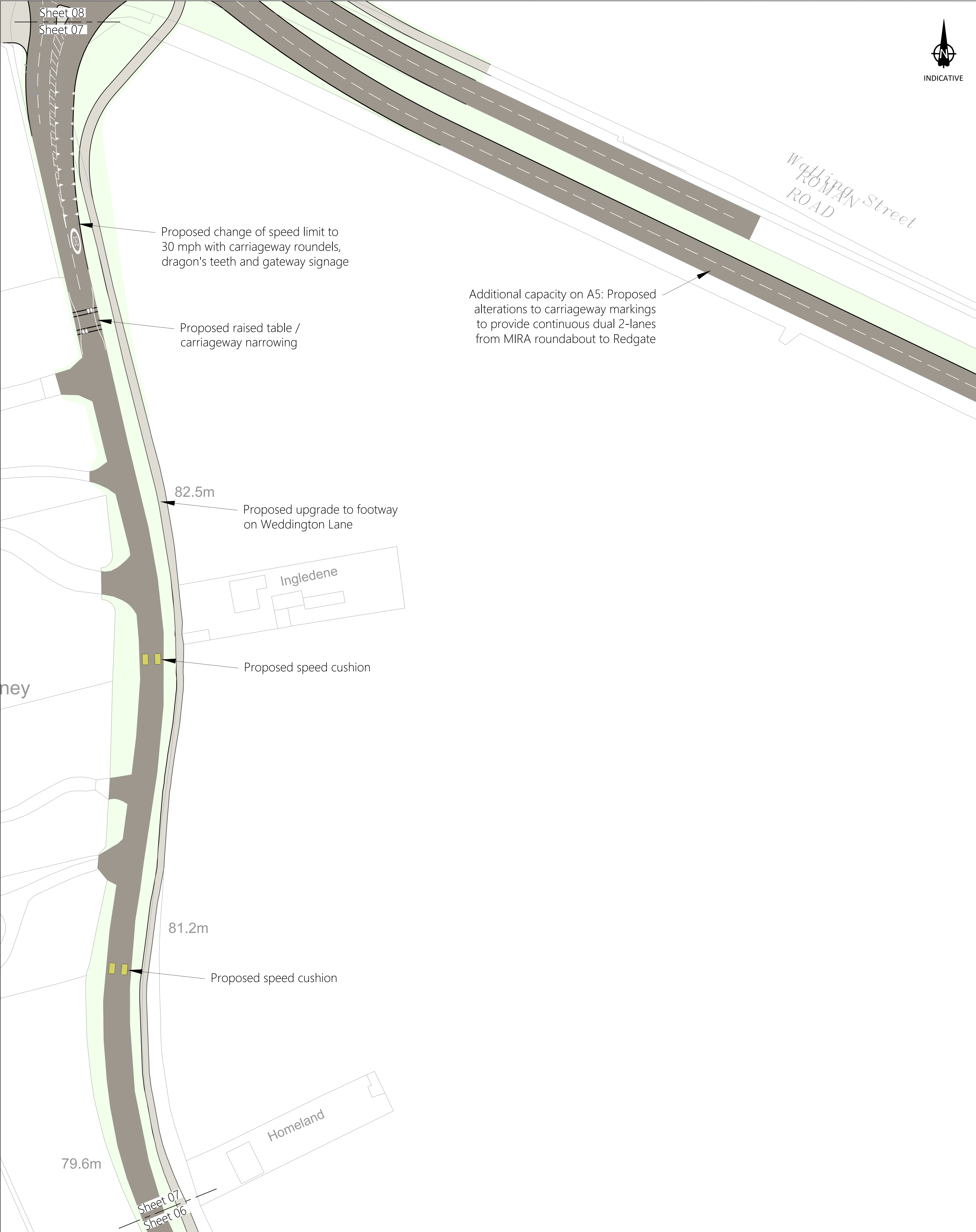
1. Do not scale from this drawing. All dimensions shown are in metres unless noted otherwise.
2. This drawing has been based upon topographical survey information produced by others and Milestone Transport Planning cannot be held responsible for any discrepancies which may arise because of it.
3. All Earthworks slopes are at 1:3 gradient unless specified otherwise.

Key	
	Carriageway
	Footway
	Cycleway
	Verge
	Landscaping
	Unbound Footpath



Drawing Revisions					Chk
Rev.	Dm:	Date:	Details		
	AM	14/07/2022	First issue		MS
A	BM	20/07/2022	Additional information provided		MS
B	ZM	27/07/2022	Inclusion of recreational paths / PROW		MS
C	ZM	02/08/2022	Amended layout		MS
Client					
ERI MTP Ltd					
Project					
MIRA Technology Park South Site					

Title	
Proposed A5 - A444 Link Road and Off-Site Mitigation	
Abbey House, 282 Farnborough Rd, Farnborough, Hants GU14 7NA Tel: 01483 397888 Gateshead IBC, Mulgrave Terrace, Gateshead, NE8 1AN Tel: 0191 338 7220 web: www.milestonetp.co.uk	
Drawing Number:	Scale:
17059/GA/06	1:500 @ A1
	Revision:
	C



Notes

- Do not scale from this drawing. All dimensions shown are in metres unless noted otherwise.
- This drawing has been based upon topographical survey information produced by others and Milestone Transport Planning cannot be held responsible for any discrepancies which may arise because of it.
- All Earthworks slopes are at 1:3 gradient unless specified otherwise.

Key

	Carriageway
	Footway
	Cycleway
	Verge
	Landscaping

Sheet Location Plan

Drawing Revisions

Rev.	Drn.	Date	Details	Chk.
-	AM	18/07/2022	First issue	MS
A	DC	20/07/2022	Additional information provided	MS
B	ZM	02/08/2022	Amended layout	MS

Client

ERI MTP Ltd

Project

MIRA Technology Park South Site

Title

Proposed A5 - A444 Link Road and Off-Site Mitigation

MILESTONE
TRANSPORT PLANNING

Abbey House, 282 Farnborough Rd, Farnborough, Hants GU14 7NA
Tel: 01483 397888
Gateshead IBC, Mulgrave Terrace, Gateshead, NE8 1AN
Tel: 0191 338 7220
web: www.milestonetp.co.uk

Drawing Number:

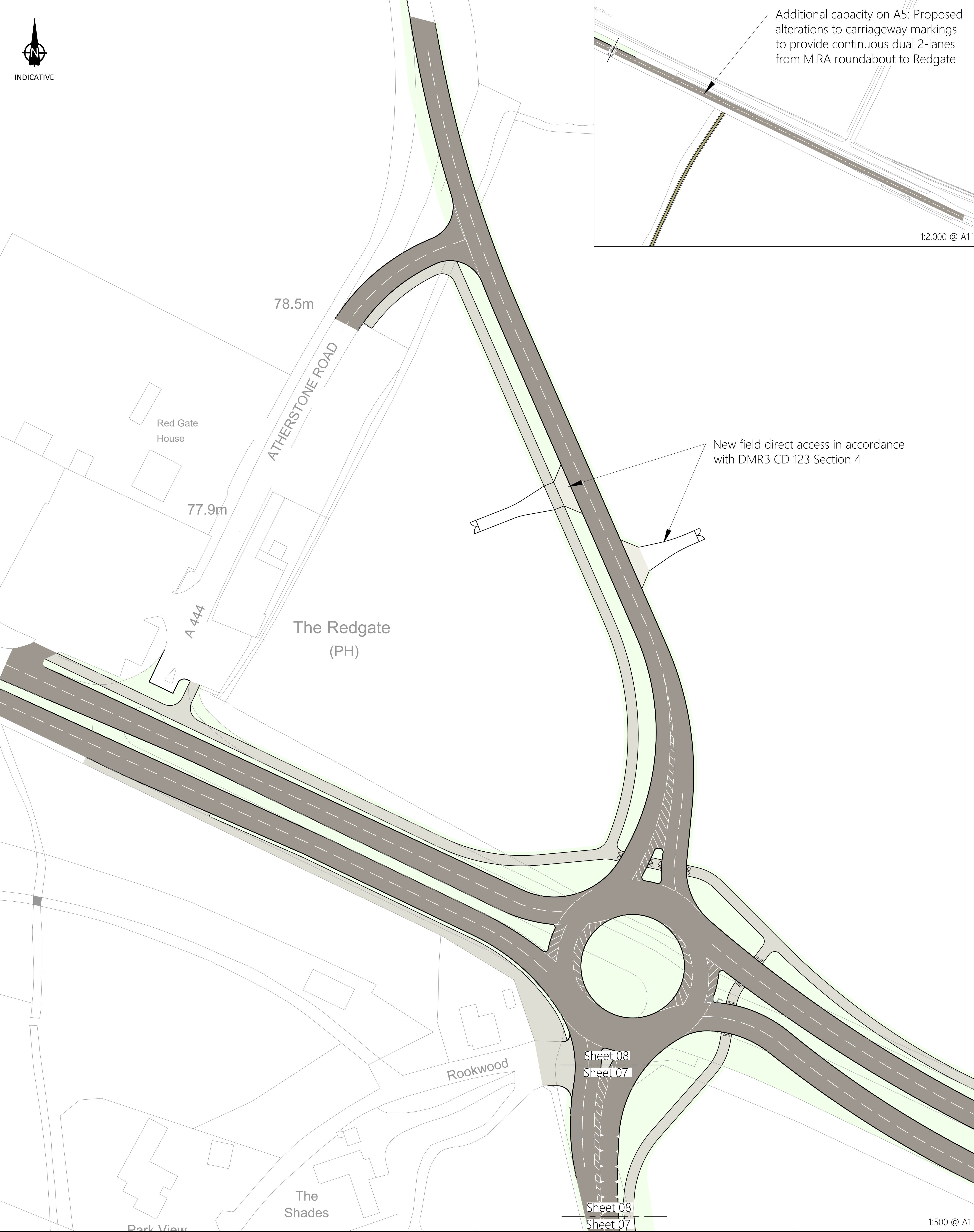
17059/GA/07

Scale:

1:500 @ A1

Revision:

B



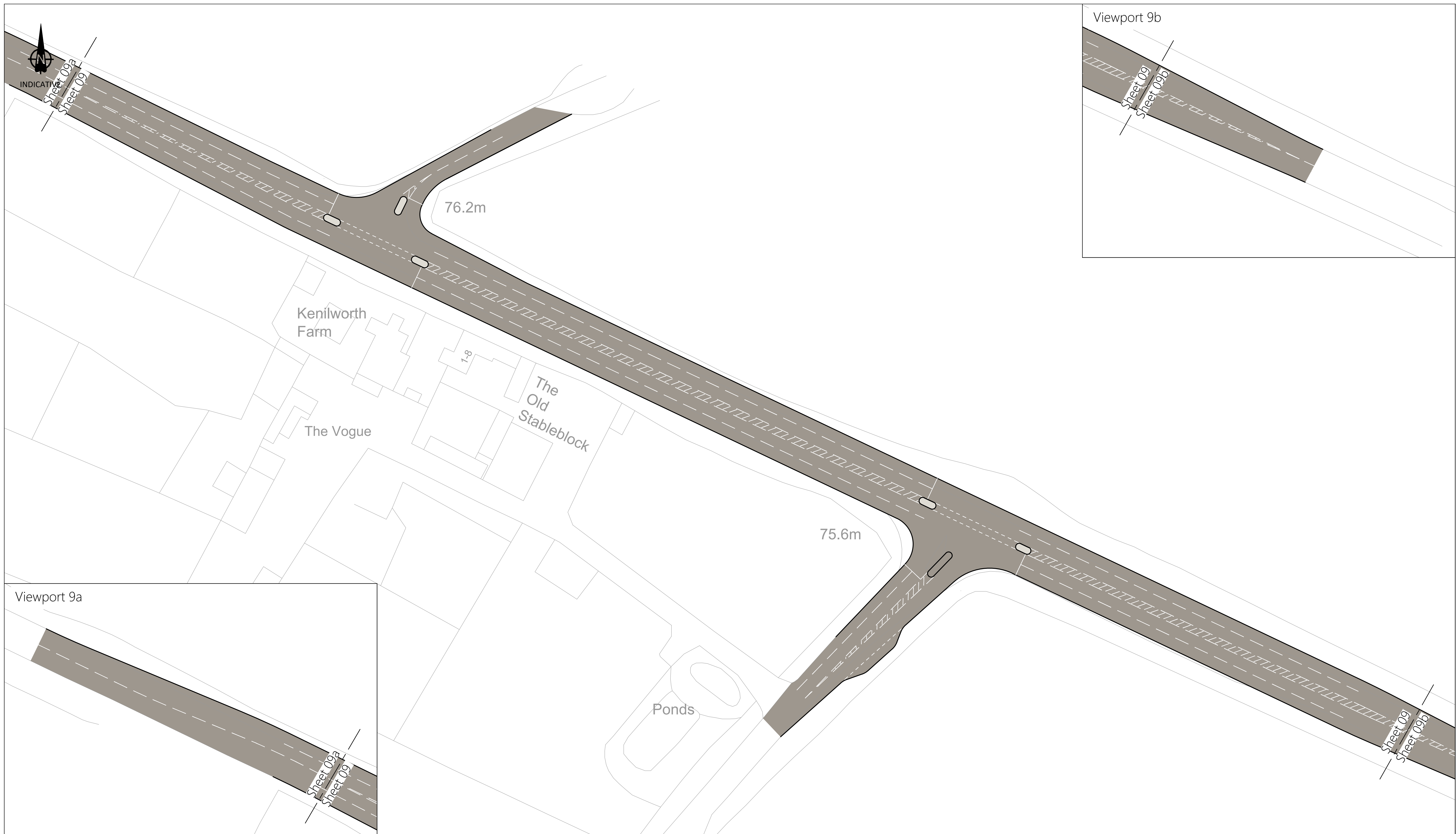
Notes

- Do not scale from this drawing. All dimensions shown are in metres unless noted otherwise.
- This drawing has been based upon topographical survey information produced by others and Milestone Transport Planning cannot be held responsible for any discrepancies which may arise because of it.
- All Earthworks slopes are at 1:3 gradient unless specified otherwise.

Key

	Carriageway
	Footway
	Cycleway
	Verge
	Landscaping

Sheet Location Plan



Notes

1. Do not scale from this drawing. All dimensions shown are in metres unless noted otherwise.
2. This drawing has been based upon Ordnance Survey information produced by others and Milestone Transport Planning cannot be held responsible for any discrepancies which may arise because of it.

Ordnance Survey Licence number: 100057360

Key

	Carriageway
	Footway

Drawing Revisions				Title	
Rev:	Drn:	Date:	Details	Chk:	A5 Watling Street / Drayton Lane and Woodford Lane Signals Mitigation
-	ZM	27/07/2022	First issue	MS	
Client				 Abbey House, 282 Farnborough Rd, Farnborough, Hants GU14 7NA Tel: 01483 397888 Gateshead IBC, Mulgrave Terrace, Gateshead, NE8 1AN Tel: 0191 338 7220 web: www.milestonetp.co.uk	
ERI MTP Ltd					
Project				Drawing Number:	
MIRA Technology Park South Site				17059/GA/09	
				Scale:	
				1:500 @ A1	
				Revision:	
				-	

Appendix 4

Calculation Reference: AUDIT-740101-220110-0111

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
 Category : C - INDUSTRIAL UNIT
 TOTAL VEHICLES

Selected regions and areas:

03	SOUTH WEST	
	DV DEVON	1 days
05	EAST MIDLANDS	
	NR NORTHAMPTONSHIRE	1 days
08	NORTH WEST	
	CH CHESHIRE	1 days

Primary Filtering selection:

Parameter: Gross floor area
 Actual Range: 11500 to 20000 (units: sqm)
 Range Selected by User: 10000 to 67459 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/00 to 24/09/19

Selected survey days:

Tuesday	1 days
Thursday	2 days

Selected survey types:

Manual count	3 days
Directional ATC Count	0 days

Selected Locations:

Edge of Town	3
--------------	---

Selected Location Sub Categories:

Industrial Zone	3
-----------------	---

Secondary Filtering selection:

Use Class:

Not Known	3 days
-----------	--------

Filter by Site Operations Breakdown:

All Surveys Included

Population within 500m Range:

All Surveys Included

Population within 1 mile:

1,001 to 5,000	2 days
5,001 to 10,000	1 days

Population within 5 miles:

50,001 to 75,000	1 days
125,001 to 250,000	2 days

Car ownership within 5 miles:

1.1 to 1.5	3 days
------------	--------

Travel Plan:

No	3 days
----	--------

PTAL Rating:

No PTAL Present	3 days
-----------------	--------

LIST OF SITES relevant to selection parameters

- | | | | |
|---|-------------------------|-------------------|---------------------|
| 1 | CH-02-C-01 | BAKERY | CHESHIRE |
| | GADBROOK PARK | | |
| | NORTHWICH | | |
| | HIGH SHURLACH | | |
| | Edge of Town | | |
| | Industrial Zone | | |
| | Total Gross floor area: | 15000 sqm | |
| | Survey date: | THURSDAY 21/06/07 | Survey Type: MANUAL |
| 2 | DV-02-C-01 | TUBE MANUFACTURE | DEVON |
| | PLYMBRIDGE ROAD | | |
| | PLYMOUTH | | |
| | ESTOVER | | |
| | Edge of Town | | |
| | Industrial Zone | | |
| | Total Gross floor area: | 20000 sqm | |
| | Survey date: | TUESDAY 17/07/12 | Survey Type: MANUAL |
| 3 | NR-02-C-01 | PAPER COMPANY | NORTHAMPTONSHIRE |
| | RHOSILI ROAD | | |
| | NORTHAMPTON | | |
| | BRACKMILLS | | |
| | Edge of Town | | |
| | Industrial Zone | | |
| | Total Gross floor area: | 11500 sqm | |
| | Survey date: | THURSDAY 27/11/08 | Survey Type: MANUAL |

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
CW-02-C-02	x
DS-02-C-01	Not enough B2 Use
NF-02-C-01	x
TV-02-C-01	No B2 Use
WS-02-C-02	No B2 Use
WS-02-C-03	Too high office content

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT

TOTAL VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	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	3	15500	0.239	3	15500	0.142	3	15500	0.381
08:00 - 09:00	3	15500	0.277	3	15500	0.077	3	15500	0.354
09:00 - 10:00	3	15500	0.168	3	15500	0.103	3	15500	0.271
10:00 - 11:00	3	15500	0.090	3	15500	0.075	3	15500	0.165
11:00 - 12:00	3	15500	0.080	3	15500	0.071	3	15500	0.151
12:00 - 13:00	3	15500	0.097	3	15500	0.135	3	15500	0.232
13:00 - 14:00	3	15500	0.284	3	15500	0.148	3	15500	0.432
14:00 - 15:00	3	15500	0.151	3	15500	0.295	3	15500	0.446
15:00 - 16:00	3	15500	0.088	3	15500	0.168	3	15500	0.256
16:00 - 17:00	3	15500	0.062	3	15500	0.254	3	15500	0.316
17:00 - 18:00	3	15500	0.034	3	15500	0.187	3	15500	0.221
18:00 - 19:00	3	15500	0.112	3	15500	0.153	3	15500	0.265
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.682			1.808			3.490

Parameter summary

Trip rate parameter range selected: 11500 - 20000 (units: sqm)
 Survey date range: 01/01/00 - 24/09/19
 Number of weekdays (Monday-Friday): 3
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 1
 Surveys manually removed from selection: 6

TRIP RATE for Land Use 02 - EMPLOYMENT/C - INDUSTRIAL UNIT
 OGVS
 Calculation factor: 100 sqm
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	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	3	15500	0.011	3	15500	0.026	3	15500	0.037
08:00 - 09:00	3	15500	0.032	3	15500	0.030	3	15500	0.062
09:00 - 10:00	3	15500	0.058	3	15500	0.024	3	15500	0.082
10:00 - 11:00	3	15500	0.045	3	15500	0.026	3	15500	0.071
11:00 - 12:00	3	15500	0.028	3	15500	0.009	3	15500	0.037
12:00 - 13:00	3	15500	0.030	3	15500	0.009	3	15500	0.039
13:00 - 14:00	3	15500	0.034	3	15500	0.019	3	15500	0.053
14:00 - 15:00	3	15500	0.039	3	15500	0.006	3	15500	0.045
15:00 - 16:00	3	15500	0.019	3	15500	0.004	3	15500	0.023
16:00 - 17:00	3	15500	0.013	3	15500	0.013	3	15500	0.026
17:00 - 18:00	3	15500	0.011	3	15500	0.004	3	15500	0.015
18:00 - 19:00	3	15500	0.011	3	15500	0.017	3	15500	0.028
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.331			0.187			0.518

Appendix 5

MIRA Testing Nuneaton - Results Spreadsheet Overview

VM200395.TN002

Introduction

1. Vectos Microsim (VM) has been commissioned by Milestone TP to undertake an assessment of proposed expansion of to the MIRA proposals using Warwickshire County Council's Nuneaton and Bedworth Wide Area Paramics model.
2. The model runs have now been completed, and the results have been extracted from the relevant scenarios and included within a bespoke results spreadsheet, which has been issued alongside this note (*VM200395.Sp004 - Impact Results.xlsx*).

Purpose of this Note

3. The purpose of this note is to provide an overview of the information that is presented within the accompanying spreadsheet.

Interpretation/Grading

4. At times, within the spreadsheets, grading has been adopted to allow the classification of results based on the relative changes. This is adopted within the JT Overview and Queue Overview tabs whereby a grade is assigned based on the difference observed between scenarios selected by the user.
5. The grading is provided for information purposes only. The scale adopted within the spreadsheets is adjustable and can be changed by the user at any time.
6. It should not be assumed that the grading adopted within the spreadsheet is representative of the opinion of Warwickshire County Council. VM would recommend that if there is an intention to report classification within a Transport Assessment or similar, that the criteria is discussed and agreed separately with Warwickshire County Council.
7. At no time should it be inferred that the results reported within this spreadsheet and/or the grading system applied is representative of the needs or expectations of WCC. Agreement on the parameters and acceptability thereof is a matter for Milestone and WCC.
8. The remainder of this Note sets out the measures which are presented within the accompanying results spreadsheet.

Number of runs.

9. All results are based on the average of 15 runs per time period, per scenario. The following time periods have been reported within the accompanying spreadsheet:
- AM: 07:00 – 10:00
 - PM: 16:00 – 19:00

Model Scenarios

10. The following scenarios have been reported within the results spreadsheets:
- 2031 NBWA Reference Case
 - 2031 NBWA Reference Case + Development
 - 2031 NBWA Local Plan (excl. MIRA South)
 - 2031 NBWA Local Plan + Development
11. The Reference Case models contain only permitted development and background growth. The Local Plan scenarios include allocated growth from the Nuneaton & Bedworth Borough Plan, growth from sites within North Warwickshire Borough's Plan that lie within the network extent, and an estimation of growth from Coventry City's Plan.
12. Note, the estimation of the MIRA South trips included within WCCs Local Plan model have been excluded from this scenario as the purpose of this assessment to assess the MIRA development with the refined assumptions provided by Milestone.

Network Statistics

13. This tab provides a high level overview of network performance across all modelled scenarios.
14. Network statistics are based on all of the completed trips within each modelled period, using the Paramics trips-all file which contains details of all completed trips.
15. The presented statistics are based on the average time taken for each trip and the average speed of these trips.
16. Details of the network statistics and how they are calculated are given below:

Network Mean Delay

17. Network Mean Delay gives the average journey time (seconds) it takes for a vehicle to complete its' assigned trip through the model.
18. This is calculated by averaging the journey times of all completed trips in each model run. These results are then averaged across all runs.

Network Mean Speed

19. Network Mean Speed is the average speed (kilometres per hour) of vehicles completing their trip during the modelled period.
20. The average journey length for each run is calculated from the trips-all files by averaging the length of all completed trips. This is then averaged across all runs and then divided by Network Mean Delay in order to give Network Mean Speed.

Total Completed Trips

21. Total Completed Trips (veh) is the number of trips that have completed during the simulation period. Higher levels are expected in the development scenarios due to the addition of the site. Significant drops in numbers compared to the Reference Case would indicate issues with congestion in the model.

Journey Time (JT) Overview

22. This tab provides a summary of the average journey time recorded on each of the assessed routes defined within the model. Comparisons of these values across scenarios therefore provides an indication of delay. The breakdown of these routes into the component sections is also provided to allow review of where on the route any additional delay may be being recorded.
23. Two scenarios can be compared across all time periods. The scenarios to be compared can be selected at the top of the tab, using the drop-down menus in the yellow cells.

Data Collection

24. Paramics reports the average time (in seconds) that it takes for vehicles to travel along the length of a route.
25. The average journey time is reported hourly for each route in each model run. These results are then averaged across all runs to provide the results presented in this tab.

Results

26. The journey time (seconds) for each route is presented for both the selected scenarios, broken down by hour.
27. The % Diff column gives the differences as a percentage change in journey time between the two scenarios selected.
28. The Criteria column gives a grading to routes where there is a notable change in delay between the two scenarios.
29. Four criteria are given as a generic assessment of the change in journey time from scenario 1 to scenario 2:
 - Criteria 1 – Journey time has decreased by more than 15%
 - Criteria 2 – Journey time has increased by between 15% and 25%

- Criteria 3 – Journey time has increased by between 25% and 50%
- Criteria 4 – Journey time has increased by more than 50%

30. These criteria are only an indicator of where notable changes in delay have occurred and should not be solely used to determine if a change in delay is acceptable or not. Agreement should be sought with WCC before any criteria are relied upon.
31. If required the criteria can be changed by altering the percentage values in the grey cells in the below table. The values of -999 and 999 should be kept fixed in order to ensure that extreme changes in delay are accurately categorised.

Journey Time by Route

32. This tab presents the journey time for one route for a selected time period and presents these times for all of the modelled scenarios in a single graph and table. Where a route is bi-directional the times for each direction is presented separately.
33. The route and time period can be selected in the yellow cells. The specific section along the route, or the times for the complete route, can also be selected in the drop down provided.

Data Collection

34. The data collection method mirrors that which is adopted for the Journey time overview tab. The only difference between the two tabs is that the route tab allows for specific comparisons and produces figure based on the selections.

Results

Journey times for each scenario are presented in tabular format with an accompanying histogram.

Queue Overview

35. The queue overview tab presents the average maximum queue length (in vehicle numbers) recorded on all assessed junction approaches in each modelled hour.
36. Two scenarios can be compared across all time periods. The scenarios to be compared can be selected at the top of the tab, using the drop-down menus in the yellow cells.

Data Collection

37. Paramics reports queue lengths based on queue routes that are coded into the model. These queue routes usually are propagated upstream from the assessed approach until another assessed junction is reached. For this reason, the queue lengths can be limited to the distance between the assessed junctions and the outputs may need to be reviewed with this in mind.
38. Queues are measured in number of vehicles and reflects the longest single lane queue (and not the sum across several lanes). The maximum for each hour is reported for each model run, which can occur at any point throughout the hour. The maximum queue for each hour is averaged across all runs to calculate the queue lengths presented in the results spreadsheet. Where approaches contain multiple lanes, the maximum queue length is based on the longest queue observed in any lane and is not the sum of the queues across the multiple lanes.
39. Subsequently, if it transpires that more detailed queue length information is required then VM would recommend that queueing data is assessed based on the 10-minute average maximum queue lengths which can be presented inclusive of confidence intervals to provide a greater level of detail pertaining to the likely length and profiling of the queues across the modelled periods.

Results

40. The average maximum queue length (vehicles) for each approach is presented for the selected scenarios, broken down by hour.
41. The Diff column shows the change in queue length from scenario 1 to scenario 2.
42. The Criteria column gives a grading to routes where there is a substantial change in delay between the two scenarios.
43. Four criteria are given as a generic assessment of the change in queue length from scenario 1 to scenario 2:
- Criteria 1 – Queue Length has decreased by more than 25 vehicles
 - Criteria 2 – Queue Length has increased by between 10 and 20 vehicles
 - Criteria 3 – Queue Length has increased by between 20 and 30 vehicles
 - Criteria 4 – Queue Length has increased by more than 30 vehicles
44. These criteria are only an indicator of where notable changes in queueing have occurred and should not be solely used to determine if a change in queue length is acceptable or not. Agreement should be sought with WCC before any criteria are relied upon.

45. If required the criteria can be changed by altering the values in the grey cells in the below table, the values of -999999 and 9999999 should be left to ensure that extreme changes in queue length are reported within the correct criteria.

Queues by Junction

46. This tab presents the maximum queue lengths (vehicles) for all approaches to the selected junction across all scenarios for a given time period. The volume arriving via each approach is also provided in a separate graph.
47. The junction and period can be toggled at the top of the tab using the drop-down menu in the yellow cells.

Data Collection

48. The method of queue data collection is consistent with that which is adopted for the collection of queue data presented within the Queue Overview tab.

Results

49. Maximum queue lengths are presented for each approach across all of the scenarios in a data table. These results are also presented as a bar chart to allow for easy comparison between scenarios and for presentation within reports.

Flow and Speed by Link

50. This tab presents the average flow (vehicles) and speed (mph) at a set of defined links across the model network representing notable locations across the network.
51. Results are presented for all scenarios for a given time period and link. The location, time period and data type (flow/speed) can be selected at the top of the worksheet using the drop-down menu within the yellow cells.
52. A figure is included within this tab referencing the location of all the assessed links.

Data Collection

53. Average link flows and speeds for each link are reported by Paramics for each hour of each model run. These results are then averaged across all model runs to provide the results given here.

Results

54. Flow/Speed results are presented for all scenarios. Results are presented for each direction on the link as well as two-way results. Two-way flow is the sum of both directions while two-way speed is the average of both directions.
55. These results are also presented in three histograms, one for each direction and one for the two-way results.

Appendix 6



MIRA testing – Model Assumptions Summary

VM200395.TN003

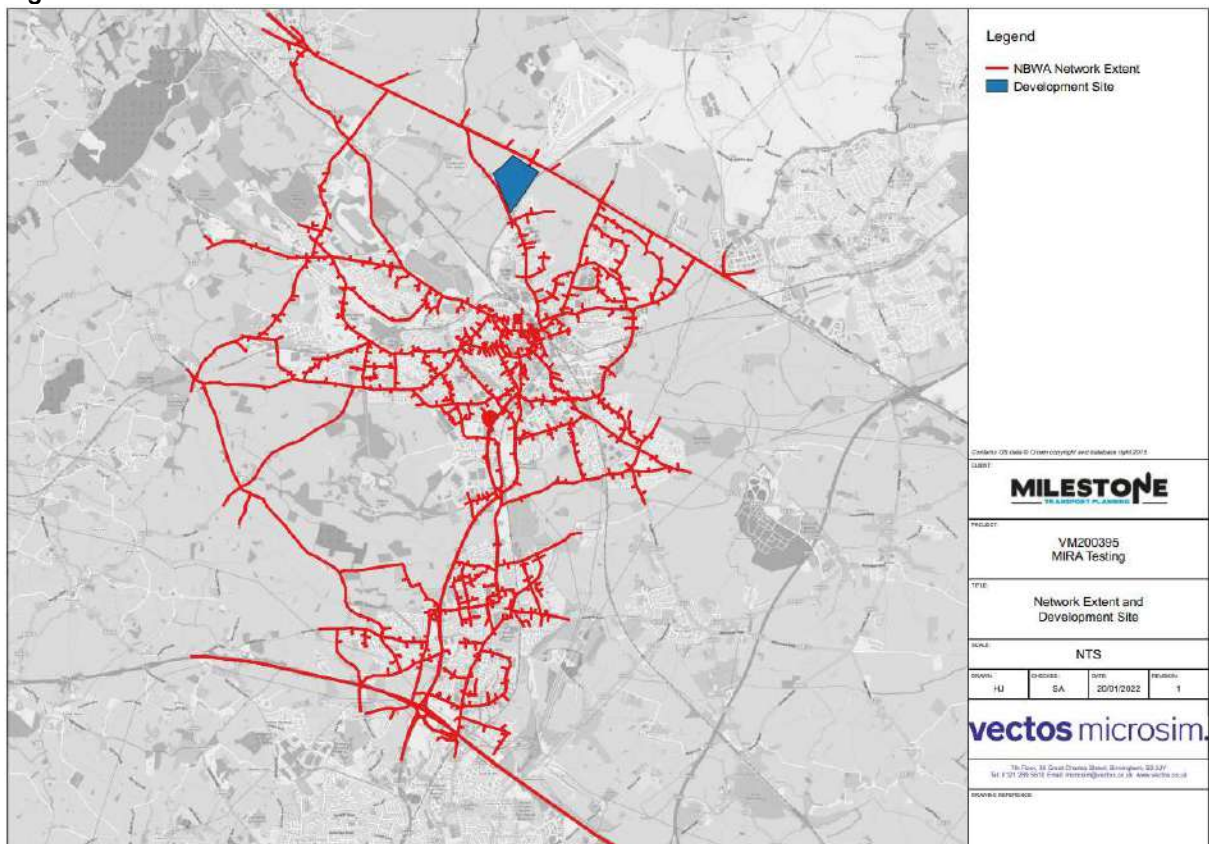
Introduction

1. This note sets out the assumptions pertaining to the inclusion of a proposed MIRA development expansion, within the Nuneaton and Bedworth Wide Area (NBWA) model.

Model Extent and Scenarios Reported

2. The extent of the NBWA model and the proposed development location is illustrated within the following figure:

Figure 1: Model Network Extent and Site Location



3. The development site is located south of the A5 and to the east of the A5/Higham Lane junction. Two separate accesses to the site have been proposed, a southern arm of the existing MIRA access



roundabout to the north of the site and a new 3-arm roundabout located on the A444 Weddington Road to the south.

4. The development proposals will be included within the model, and the network reviewed to ensure an appropriate level of operation (i.e. no major issues likely to occur as a result of the development inclusion).
5. This assessment makes use of both the 2031 Reference Case and Local Plan models, resulting in the following scenarios being reported:
 - 2031 NBWA Reference Case
 - 2031 NBWA Reference Case + Development
 - 2031 NBWA Local Plan
 - 2031 NBWA Local Plan + Development
6. As the MIRA South development is already included within the Local Plan, the corresponding demands and site accesses were removed for this assessment. In the Local Plan + Development scenario the MIRA development has been included in line with the assumptions provided by the client.
7. These scenarios have been run to collect the relevant model outputs which will then be presented in a clear format for interpretation by the client team. The model results are extracted for the AM and PM time periods.

Model Assumptions

Distribution Assumptions (Methodology and Interpolation)

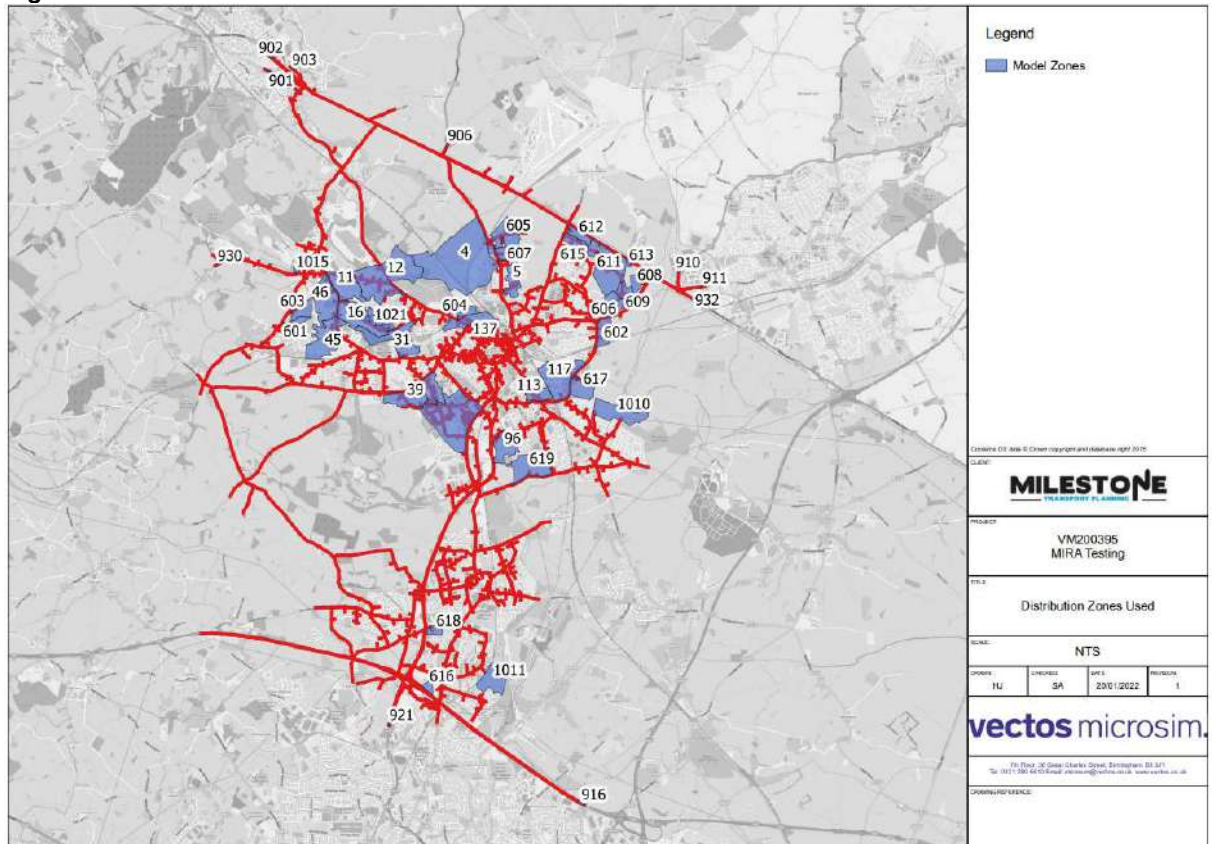
8. An initial distribution of development trips within the model area was derived using Mobile Network Data, provided by WCC, from the area that included the existing MIRA site. The MND used in this study was selected for motorised journeys on all mid-weekdays (Tuesday to Thursday) for AM and PM periods with a journey purpose of HBW.
9. It was noted by VM that there are a significant number of committed residential developments due to be delivered in Nuneaton. These sites are not considered within the MND. To counter this, and provide a more realistic distribution, several trips to/from “External” zones have been reassigned to the committed development zones within the model. The theory being the longer distance trips are more likely to be replaced by the newly available shorter trips in the future.
10. The share of trips allocated to the committed development zones was calculated using the proportion of dwellings proposed by the permitted development compared to the existing dwellings within the Nuneaton and Bedworth LSOAs that were assigned trips from MND. This provided a proxy ration of dwelling to MIRA trips based on residential areas in close vicinity to the new development. Applying this ratio to the committed development dwelling numbers provided an estimate of MIRA trips that would potentially travel to the proposed MIRA site. As noted, this relatively modest number was then removed from the longer distance trips based on their relative size.
11. Figure 3 presents the resulting distribution assigned to the model zones. The classification used during the methodology described above is outlined below:



- Zones 1-599: Existing Internal Zones
- Zones 601-619 and 1001-1022: Committed Development zones
- Zones 901-932: External Zones

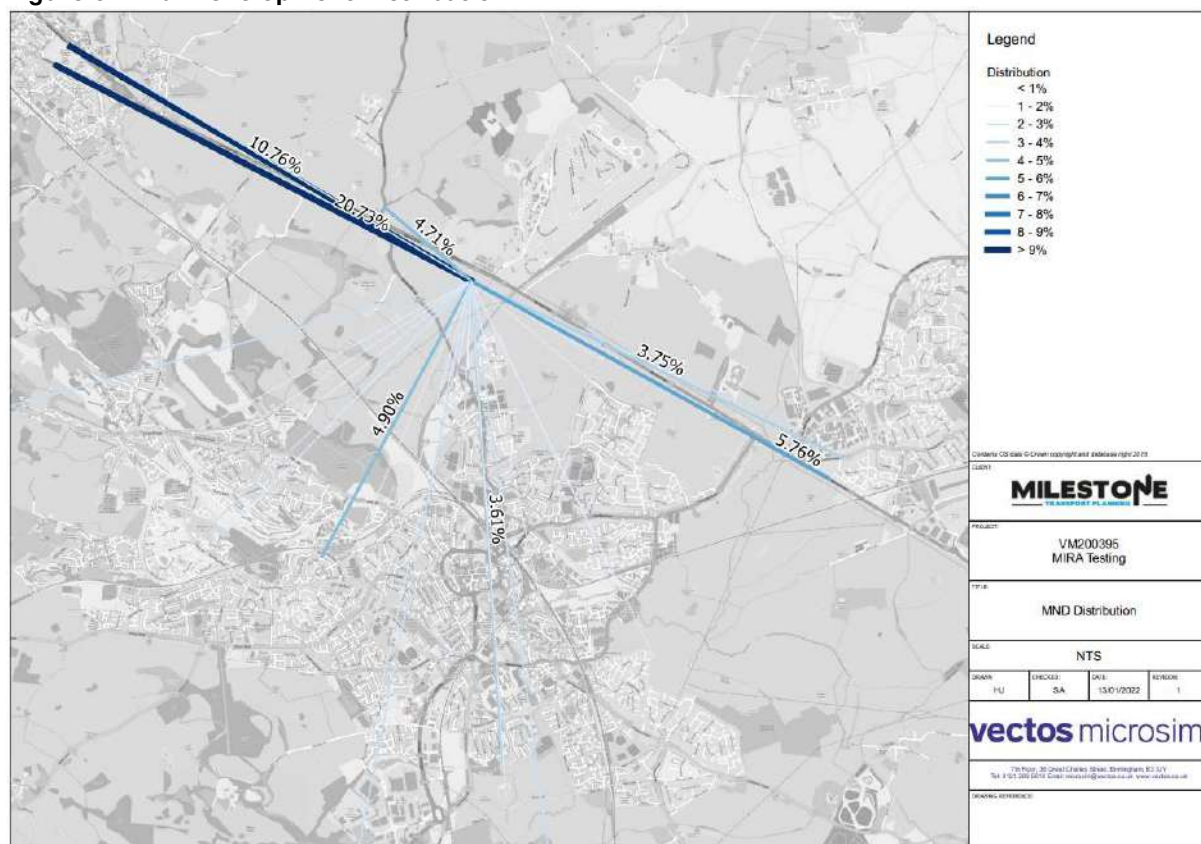
12. The site location was assigned a new zone, Zone 1023, within the model network, and trips to/from zone 1023 interact with the rest of the model network based on the alternate trip end. The resultant distribution table and plot is provided below.

Figure 2: Zones Used in Distribution



**Table 1: Distribution**

Zone	Location	Distribution
1-599	Nuneaton (Existing Residential)	28.07%
601-619,1010-1022	Nuneaton (Committed Residential)	15.10%
901	B4116 Witherly Road (Atherstone)	20.73%
902	A5 Atherstone Bypass (West)	10.76%
903	Carlyon Road (Atherstone)	2.26%
906	A444 (North)	4.71%
910	A47 (North)	2.39%
911	B4666 (Hinkley)	3.75%
916	M6 (South)	2.15%
921	A444 (South)	2.15%
930	B4114 Coleshill Road	2.15%
932	A5 (East)	5.76%



13. The trip generation totals for this site were provided by Milestone Transport Planning and combined with the aforementioned distribution to produce a new demand matrix for the development models.
14. The hourly trip generation totals are presented within Table 2 overleaf.

**Table 2: WCC Trip Generation**

	Period	Inbound	Outbound
Weekday	07:00 – 08:00	510	303
	08:00 – 09:00	591	164
	09:00 – 10:00	359	220
	16:00 – 17:00	132	542
	17:00 – 18:00	73	399
	18:00 – 19:00	239	327

15. The development demand assignment matrix is represented by Matrix Level 7 within the development models.

Development Access Assumptions

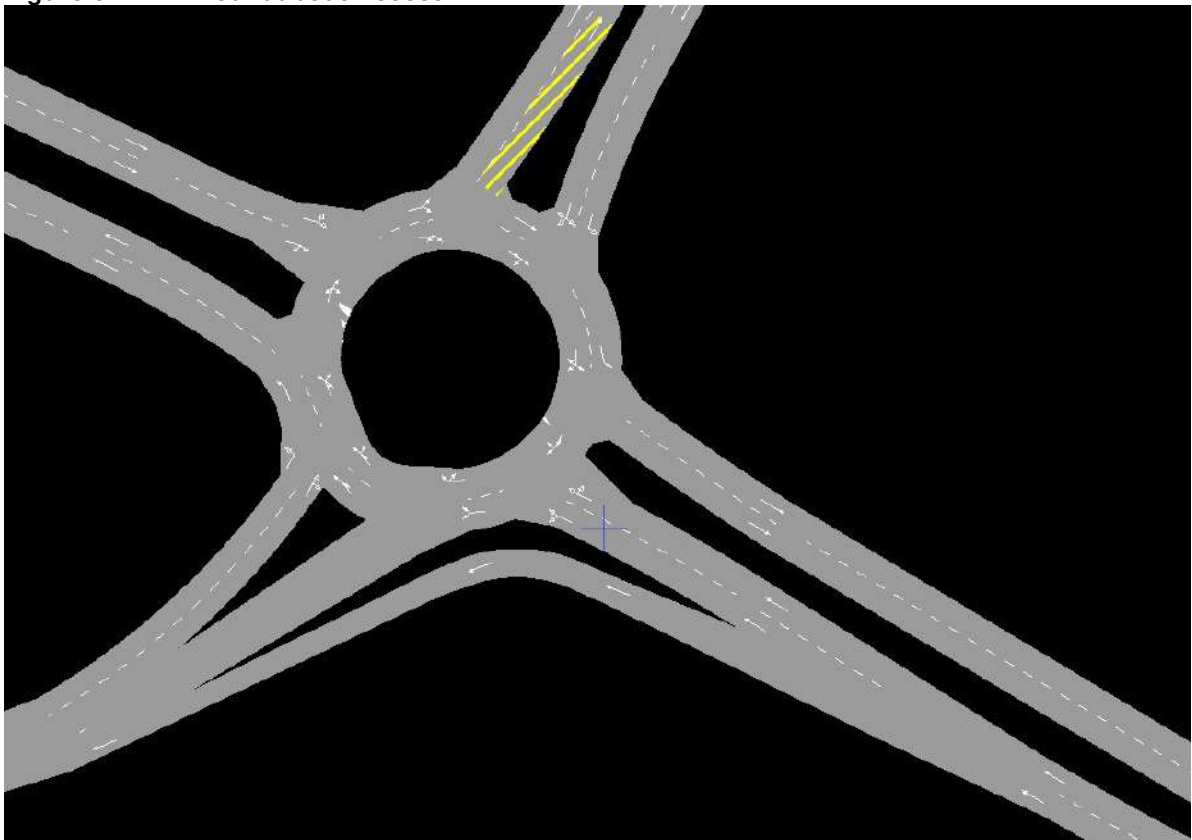
16. A site access strategy was provided by Milestone, proposing access from two separate locations within the existing road network, a fourth arm to the existing MIRA roundabout on the A5 and a new three arm roundabout on the A444 Weddington Road.
17. The two accesses are connected by a link road running through the site, containing several side road links into the development zone (Zone 1023). Standard priority assumptions and a visibility of 30m has been applied to approaches at these junctions.
18. The A5/A444 link road is illustrated in Figure 4 below.

Figure 4: A5/A444 Link Road



19. The north of the site can be accessed via the delivery of a fourth arm to the A5/MIRA Drive roundabout. A left turn slip into the site from the A5 East has been included.
20. This arm has been coded in both scenarios as seen in Figure 5 below.

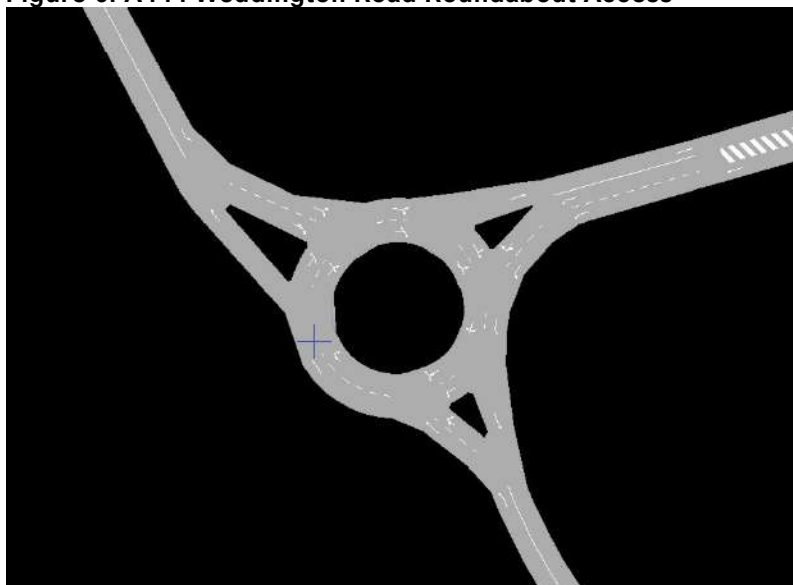
Figure 5: MIRA Roundabout Access



21. The southern access to the site is via a new 3-arm roundabout on the A444 Weddington Road. As above, standard roundabout assumptions have been applied with a visibility of 30m on all approaches.
22. This access has been coded into the model as shown in in Figure 6 below.



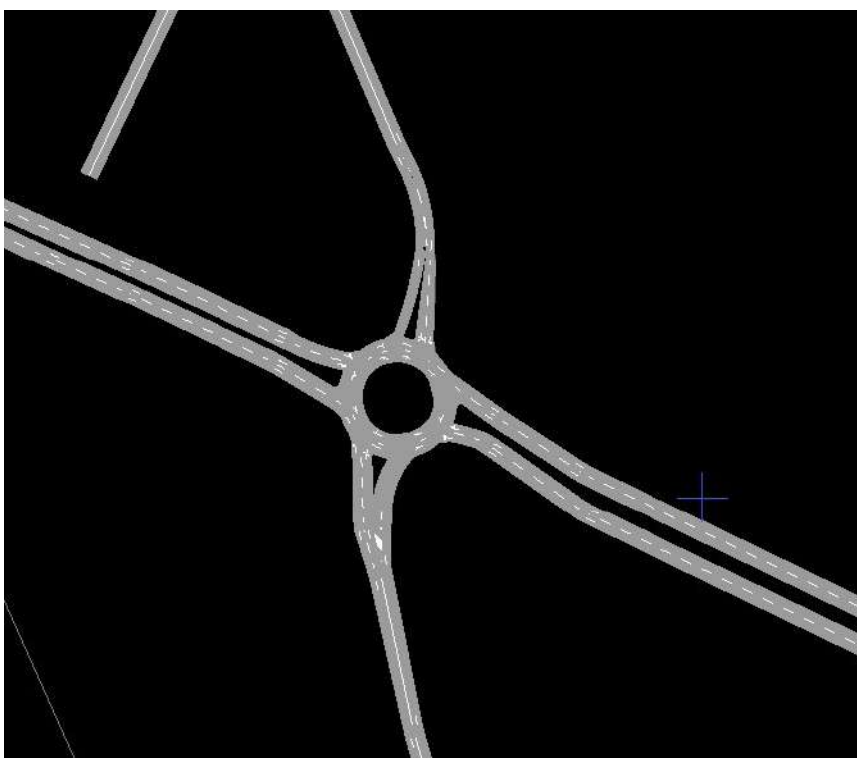
Figure 6: A444 Weddington Road Roundabout Access



Off-Site Highway Improvements

23. Traffic management measures (e.g., sign-posting and traffic calming) are proposed on the northern section of the A444, between the A5 and the new MIRA access on the A444. The intention is that traffic will be encouraged to use the new MIRA link road if travelling between the A5 and A444, and that MIRA traffic and HGVs will not use the A444 through Caldecote.
24. This has been reflected within the Development scenarios by closing this section to MIRA traffic and HGVs and reducing the speed limit on the northern sections of the A444 to 30mph.
25. Additionally, a scheme has been proposed at the current A5 Redgate junction, located at the northern end of the A444. This takes the form of a single traditional roundabout, as shown in Figure 7 below.

Figure 7: A5 / A444 Junction Proposals





Trip Total checks

26. Trip total checks have been completed to confirm that the magnitude of trips associated with the development broadly correlate with those predicted via the trip generation exercise.
27. A precise match is highly unlikely for the following reasons:
- The assignment matrices contain decimal trips which may not be released in every simulation.
 - The arrival totals are all released within the model hour but time taken to travel through the network may delay the arrival of some trips to the proceeding hour.
 - Congestion on the model network may impeded arrivals such that the totals cannot be fully released within the simulation period (i.e. trips are caught up elsewhere on their way to the development).

Table 5: 2031 Reference Trip Generation Checks

	Arrival		Departure		Total	
Period	Assigned	Realised	Assigned	Realised	Assigned	Realised
0700 - 0800	510	417	303	304	813	720
0800 - 0900	591	572	164	169	756	740
0900 - 1000	359	414	220	221	579	634
AM	1460	1403	687	694	2148	2097
1600 - 1700	132	114	542	542	675	656
1700 - 1800	73	87	399	404	472	491
1800 - 1900	239	222	327	332	566	554
PM	444	423	1268	1278	1712	1701



Table 6: 2031 Local Plan Trip Generation Checks

	Arrival		Departure		Total	
Period	Assigned	Realised	Assigned	Realised	Assigned	Realised
0700 - 0800	510	418	303	302	813	719
0800 - 0900	591	552	164	169	756	721
0900 - 1000	359	436	220	222	579	657
AM	1460	1406	687	693	2148	2099
1600 - 1700	132	113	542	543	675	656
1700 - 1800	73	84	399	405	472	489
1800 - 1900	239	204	327	331	566	535
PM	444	401	1268	1279	1712	1680

28. The information within the previous tables demonstrates that the number of trips associated with the development, observed through the modelling, are a close match to the number of trips predicted through the trip generation exercise in both scenarios.
29. A check of the demand matrices used in the model confirms that the inputs for the MIRA trips match the trip generation exactly in each hour modelled.