AtkinsRéalis

HMP Garth and HMP Wymott, Moss Lane, Ulnes Walton, Leyland

Mace (on behalf of the Ministry of Justice)

February 2024

ADDENDUM TRANSPORT PROOF OF EVIDENCE

APPLICATION 21/01028/OUTMAJ

STEPHEN YEATES BSC (HONS) MSC CMILT

VOLUME 2 - APPENDICES

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Appendix A. DWG: GARTH_ATK_HGN_A581_DR_D_0016_P6

DO NOT SCALE

Millimetres 0 10 100

ULNES WALTON LANE

70m SSD approach visibility based on 30mph 85th percentile speed

50m approach visibility to traffic sign

Proposed new street lighting column. See below for extents

Proposed 'Dragons Teeth' road markings

3m 3m

Mini Roundabout Regulatory sign and yellow backing board to Diag. 611.1 600mm Dia. (TSRGD 2016)

Proposed road markings to Diag. 1003.3 (TSRGD 2016)

Proposed visibility to the right 9m x 53.4m (CD116 'Design of Mini Roundabouts' Fig. 5.21 & Table 5.21)
NB: Based on existing 85th percentile speed of 33.4mph and gap acceptance time of 3 secs.

6.0m

Proposed carriageway reprofiling to eliminate existing channel line through new roundabout and to create a raised table at the junction.
Extents are indicative only and subject to detail design and agreement with the Highway Authority.
Drainage requirements including additional or relocated road gullies to be confirmed at detail design stage.

`Proposed visibility to the right 9m x 46.4m (CD116 'Design of Mini Roundabouts' Fig. 5.21 & Table 5.21)
NB: Based on existing 85th percentile speed of 28.2mph and gap acceptance time of 3 secs.

Existing 'Barlow Trailers' access

Existing speed limit signs 40mph 30mph

40mph 30mph

A581

3.7m 3.75m 3.7m 3.6m

Private drive

Private drive

Private drive

Proposed road markings to Diag. 1040 (TSRGD 2016)

Proposed 'Dragons Teeth' road markings

50m approach visibility to traffic sign

Proposed road markings to Diag. 1040 (TSRGD 2016)

Proposed 'Dragons Teeth' road markings

50m approach visibility to traffic sign

Proposed road markings to Diag. 1003A & 1023A (TSRGD 2016)

Proposed widened footway to provide 0.8m Nearside lateral shift. New kerbs to be dropped where required in order to facilitate private driveway access.

GIVE WAY

Mini Roundabout Regulatory sign and Give Way sign on yellow backing board to Diags. 611.1 & 602 600mm (TSRGD 2016)

70m SSD approach visibility based on 30mph 85th percentile speed

General Arrangement Scale 1:250

ULNES WALTON LANE

New speed humps warning sign to Diag. 557.1 600mm Dia. (TSRGD 2016)

Humps for ½ mile

40 30 New speed limit signs and location to Diag. 670 600mm Dia. (TSRGD 2016)

40 30 New speed limit signs and location to Diag. 670 600mm Dia. (TSRGD 2016)

New speed humps warning sign to Diag. 557.1 600mm Dia. (TSRGD 2016)

Humps for ½ mile

New street lighting columns @ approx. 34m spacing

60m 60m 60m

The Rose and Crown

HEAD

A581

A581

Everglade Nurseries

Proposed new speed cushions @ minimum 60m centres

Proposed road markings to Diag. 1003.4 (TSRGD 2016)
Note: central circle to be domed to 75mm at the centre of the circle.

Proposed new speed cushions @ minimum 60m centres

General Arrangement Scale (NTS)

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

Working adjacent to live traffic. Utility considerations

MAINTENANCE/CLEANING

NONE

DECOMMISSIONING/DEMOLITION

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Notes:

1. Layout is preliminary design "for information" only and subject to approval from Highway Authority.
2. Layout is based on Topographical Survey base.
3. All proposed road markings and temporary signage to be in accordance with the "Traffic Signs Regulations and General Directions 2016".
4. Design based on the provisions of CD 116 'The Geometric Design of Roundabouts' (DMRB)

Key:

- Proposed carriageway widening
- Proposed footway widening
- Proposed raised table junction
- Proposed speed cushion
- Proposed new street lighting column
- Existing Highway Boundary
- Forward Visibility
- Visibility to road signs
- Visibility to right on approach
- Proposed site boundary
- Existing vehicular access point

Rev.	Date	Description	By	Chk'd	App'd
P5	24.10.23	PROPOSED SITE BOUNDARIES ADJUSTED	AE	PDE	
P4	11.10.23	PROPOSED TRAFFIC CALMING ADDED	AE	PDE	
P3	09.02.23	REDESIGN AND TRAFFIC CALMING ADDED	AE	PDE	
P2	31.01.23	RAISED TABLE AND DRAGONS TEETH ADDED	AE	PDE	
P1	09.02.23	DRAWING CREATED	AE	PDE	

Drawing Status: FOR INFORMATION

Suitability: S2

ATKINS
The AXIS
10, Holliday Street
Birmingham
West Midlands
B1 1TF
Tel: +44 (0121) 483 5000
Fax: +44 (0121) 483 5252
www.atkinsglobal.com

Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 PROPOSED MINI ROUNDABOUT

Scale	Designed	Drawn	Checked	Authorised
As Shown	JR	JR	PDE	
Original Size	Date	Date	Date	Date
A1	19/09/23	20/09/23	20/09/23	

Drawing Number
HA PIN: GARTH - ATK - HGN -
Location: A581 - Type: DR - Role: D - Number: 0016

Project Ref. No.: 5200124

Revision: P6

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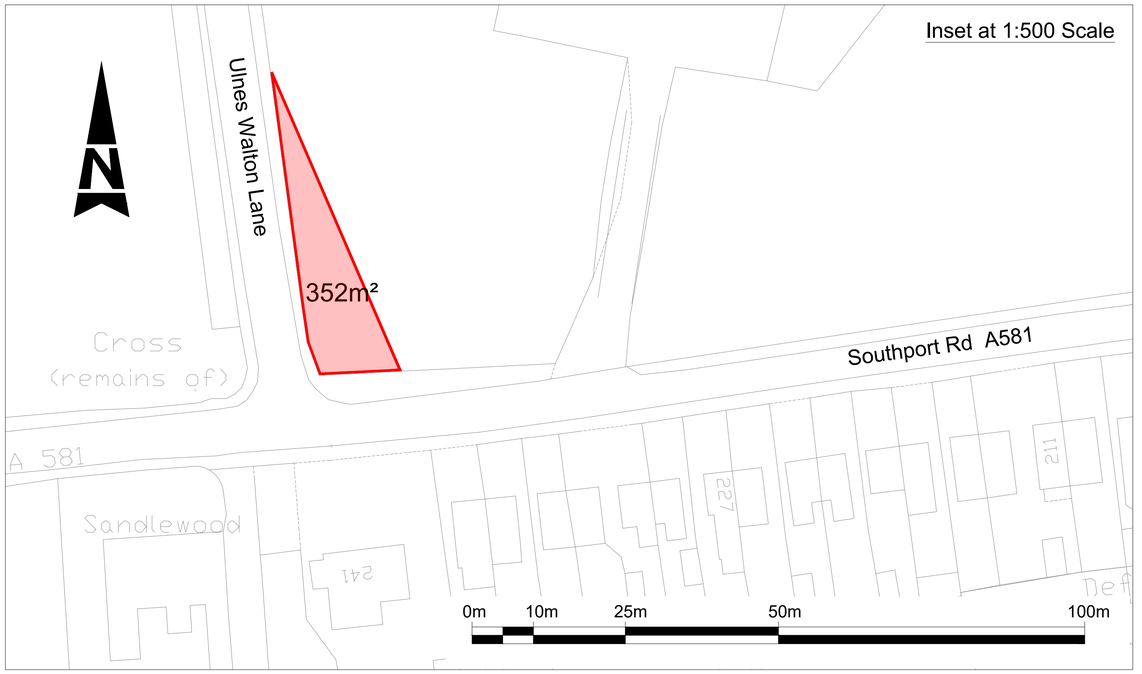
Appendix B. DWG: GARTH_ATK_HGN_A581_DR_D_0021_P2

Millimetres 0 10 100



Notes:

1. Layout is based on Topographical and Ordnance Survey base.

Key:

Land to the East of Ulnes Walton Lane

Rev.	Date	Description	By	Chk'd	App'd
P2	04:01:24	SCALE CHANGED. SCALE BAR ADDED	AE	PDE	SY
P1	25.10.23	DRAWING CREATED	AE	PDE	

Drawing Status: FOR INFORMATION

Suitability: S2

AtkinsRéalis
2, Chamberlain Square
Birmingham
B3 3AX

Tel: +44 (0121) 483 5000
Fax: +44 (0121) 483 5252
www.atkinsglobal.com

Client: MINISTRY OF JUSTICE

Project Title: A581/ULNES WALTON LANE JUNCTION

Drawing Title: LAND TO THE EAST OF ULNES WALTON LANE

Scale	Designed	Drawn	Checked	Authorised
1:2500; 1:500	AE	AE	PDE	SY
Original Size	**Date**	**Date**	**Date**	**Date**
A1	25/10/23	25/10/23	25/10/23	04/01/24

Drawing Number: HA PIN GARTH - ATK - HGN - A581 - DR - D - 0021 (Location - Originator - Volume - Type - Role - Number)

Project Ref. No.: 5200124

Revision: P2

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Appendix C. DWG: GARTH_ATK_HGN_A581_DR_D_0020_P2

Millimetres 0 10 100

Notes:

1. Layout is based on Topographical and Ordnance Survey base.

Key:

Land to the West of Ulnes Walton Lane

Rev.	Date	Description	By	Chk'd	App'd
P2	04:01:24	SCALE CHANGED. SCALE BAR ADDED	AE	PDE	SY
P1	25.10.23	DRAWING CREATED	AE	PDE	

Drawing Status: FOR INFORMATION

Suitability: S2

AtkinsRéalis
2, Chamberlain Square
Birmingham
B3 3AX
Tel: +44 (0121) 483 5000
Fax: +44 (0121) 483 5252
www.atkinsglobal.com

Client: MINISTRY OF JUSTICE

Project Title: A581/ULNES WALTON LANE JUNCTION

Drawing Title: LAND TO THE WEST OF ULNES WALTON LANE

Scale	Designed	Drawn	Checked	Authorised
1:2500; 1:500	AE	AE	PDE	SY
Original Size	**Date**	**Date**	**Date**	**Date**
A1	25/10/23	25/10/23	25/10/23	04/01/24

Drawing Number: HA PIN GARTH - ATK - HGN - A581 - DR - D - 0020 (Location - Originator - Volume - Type - Role - Number)

Project Ref. No.: 5200124

Revision: P2

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Appendix D. Oxfordshire County Council's Technical Specification

OXFORDSHIRE COUNTY COUNCIL

TECHNICAL DESIGN INFORMATION SHEET

STANDARD DETAILS

- All kerbing, edging, channel blocks and gullies are to be laid on and backed up with ST2. ST4 with dowel bars at 450mm centres is to be used where there is commercial use or a bus service. Kerbing concrete to be laid within 45mins of delivery to site.
- All kerbing and channel blocks to be laid on a minimum of 350mm wide haunch. Edging to be laid on a minimum of 250mm wide haunch.
- Minimum 150mm thick layer of Type 1 is to be laid 150mm beyond and below the bedding and haunch.
- All kerb faces (except detailed below) are to have a 125mm upstand.
    - All kerbs at vehicle crossovers are to have a maximum 25mm upstand.
    - All kerbs at pedestrian crossings to have a 0-6mm upstand.
    - All channel blocks are to be laid flush.
    - All kerbs (other than pedestrian access and vehicular access) on shared surfaces are to have a 50mm upstand.
- Roadside Footway or footways subjected to vehicular traffic construction to be a minimum of 20mm surface course, 60mm binder course, 150mm compacted lean mix and 75mm Type 1.
- Isolated footway construction to be a minimum of 20mm surface course, 60mm binder course and 150mm GSB Type 1.
- Carriageway Capping and subbase to be in line with OCC Foundation CBR Table. Ground stabilisation is required for CBRs of 2.5% or lower.
- Surface PSV at junctions, roundabouts and pedestrian crossings to conform with HD 28/15 and IAN 156. Please note, OCC no longer accepts Anti-skid surface dressing.
- Tactile paving – See DETR ‘Guidance on the use of Tactile Paving Surfaces’
- Ramps are to be constructed out of Macadam. When blockwork is proposed on the table top a flush 10x5”/ 225x125mm CS1 channel at the top of the ramp is required.
- Controlled or uncontrolled pedestrian refuses island crossings are to conform with LTN 2/95.
- Yellow road markings are to be colour No.353 Deep Cream yellow.

DRAINAGE DETAILS

- Side hinged gullies only (with hinge facing oncoming traffic).
- Frames and gulley grating to be D400 standard.
- OCC adopted surface water manholes in the highway should be of the catchpit type with a 300mm sump.
- Gulley connectors to have a maximum 12m pipe length.
- Gulley surround to be ST2 concrete.
- Gulley spacing to be as per DMRB.

- Pipes must have concrete cover if within 1200mm of surface level in carriageway or within 900mm of surface level in footway or verge.
- Services and foul sewers need to be adopted by a statutory authority/utility company for OCC to entertain adoption of the street.
- Surface water sewers either need to be adopted by a statutory authority/utility company or by OCC if the road is going to considered for highway adoption.
- OCC can only entertain adoption of ~~a~~ surface water sewer and drainage features that take solely highway surface water (i.e. swale, soakaway, permeable paving or piped system), this is OCCs preference. If the system takes combined highway and private water, OCC cannot adopt the surface water sewer and drainage feature but has a vested interest in the system and its maintenance. Drainage easements maybe required.

HIGHWAY DESIGN

- MfS, MfS2 and DMRB along with Oxfordshire Residential/cycling/walking Design Guides are to be used.
- Maximum carriageway longitudinal gradient is 1:20 (where there isn't a roadside footway/ shared surface RAT could consider gradient up to 1:15 avoiding junctions).
- Minimum carriageway longitudinal gradient is based on the road surface type. 1 in 80 Blockwork, 1 in 100 Asphalt and 1 in 120 where a concrete channel is provided.
- Maximum footway crossfall gradient to be 1:40.
- Minimum width of a two-way carriageway is 4.8m – residential.
- Service corridors are to be 2m in width and to be impermeable when inside the highway corridor. Where service cross permeable carriageway, corridor needs to be impermeable and distinguishable from the surface. Service corridors are also acceptable in grass verges.
- Bus routes minimum width is 6.75m.
- Shared surfaces width is to be a minimum of 6m.
- In the absence of a footway directly adjacent to carriageway/ shared surface, an 800mm maintenance margin is required.
- Tracking is required to evidence a refuse vehicle can enter, turn and exit entirely in the carriageway/ surface area when proposed for adoption. Tracking will need to work with parked cars that are 2.0x5.0m.
- Where Street Lighting cannot be situated in footways, a 1.5m margin is required.
- Footways to be 2m in width.
- Parking bays adjacent to the carriageway will require a 1m adopted hardstanding behind them with a dropped kerb at both ends.
- Parallel visitor parking bays directly adjacent to adopted carriageway can be offered for adoption. Echelon, perpendicular or allocated parking bays cannot and must be positioned outside of the adoptable highway.
- Adoptable areas are confirmed at the technical audit stage and should not be inferred from planning drawings.
- Brass/stainless steel studs (DDA and DETR compliant) on hard surfacing and marker blocks on verges are required to delineate highway extent.
- Vision splays for junctions adjoining existing roads to be determined from speed survey results and are required for adoption.

STREET LIGHTING

- Street lighting cables to be within proposed highway.
- Private networks are to be avoided where possible. Where they cannot be avoided and are acceptable to OCC, additional commuted sums will be secured.
- There should be no trees within 10m longitudinally of a streetlighting column.
- It is understood that trees are needed to create certain spaces, where there is likely to be conflict between trees and lighting, OCC recommend early engagement with Street Lighting Team to ascertain what is adoptable. Street lighting will take priority over trees for highway safety, but spacing acceptability could be dependent on species of tree.

CONSULTATIONS

- Controlled crossings, including zebra crossings, require a consultation and incur a cost.
- Speed calming and bus stops also require consultations. And incur a cost.
- TROs incur a cost, must be implemented within 2 years and OCC must be made aware 28 days prior to implementation.

ROUNDABOUTS/ GHOSTED ISLAND JUNCTIONS

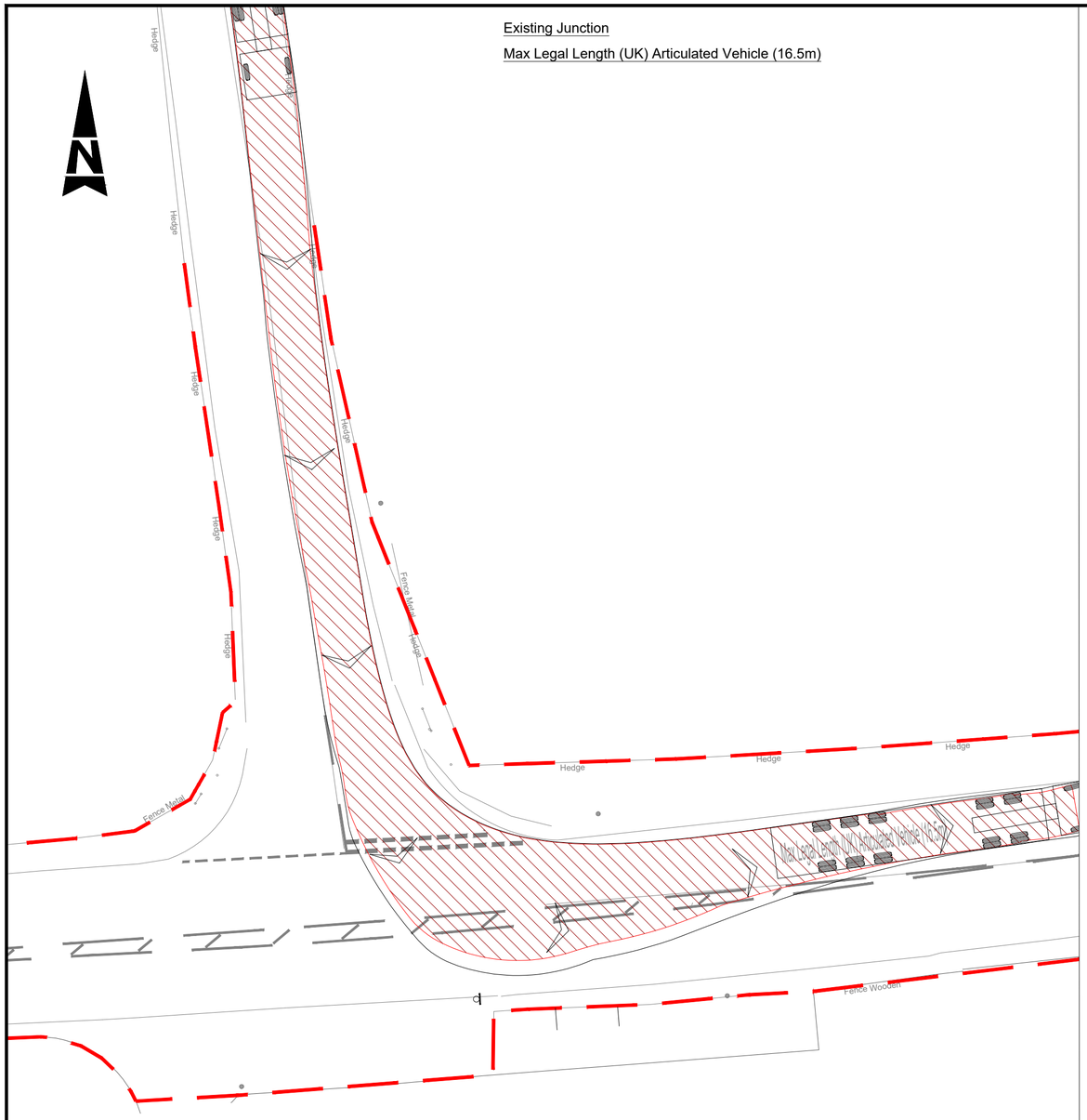
- To be designed in accordance with the DMRB.
- Departure from standards to be detailed and fully justified on OCCs departure form.
- All roundabout designs to include details of:
    - Inscribed Circle Diameter Entry Path Curvature on each arm.
    - Entry Angle (s)
    - Entry Width
    - Approach Half Width
    - Entry Kerb Radius
    - Exit Kerb Radius
    - Effective Flare Length
    - Visibility (s)
- All ghosted islands junction designs to include details of:
    - Design speed limit
    - SSD
    - Turning length (a)
    - Deceleration length (b)
    - Through Lane width (c)
    - Turning lane width (d)
    - Direct taper length (e)
    - Central island taper length (paragraph 7.30)

Appendix E. DWG: GARTH_ATK_SPA_A581_DR_D_0008_P1 A

Millimetres 0 10 100

Existing Junction

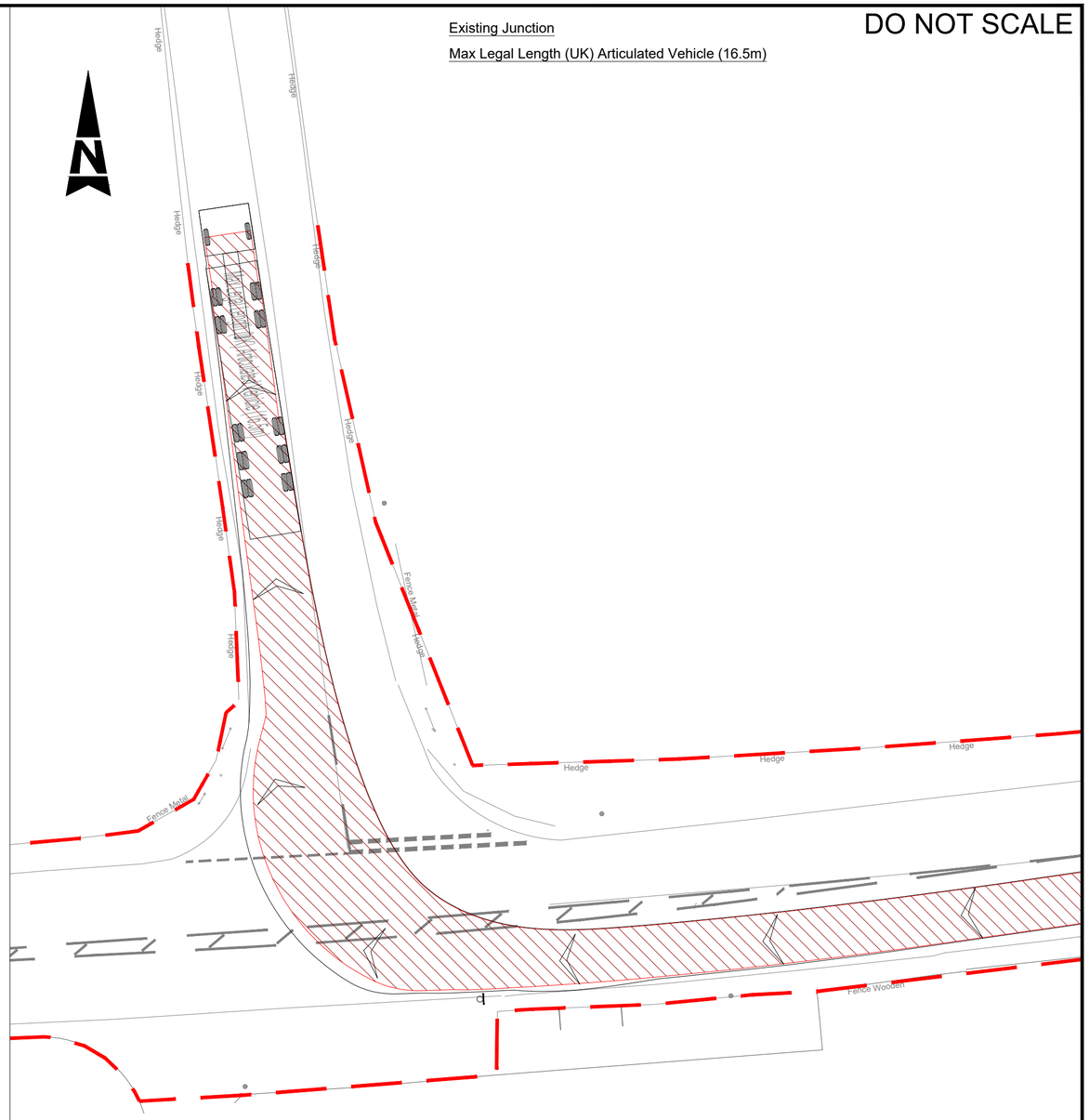
Max Legal Length (UK) Articulated Vehicle (16.5m)



DO NOT SCALE

Existing Junction

Max Legal Length (UK) Articulated Vehicle (16.5m)



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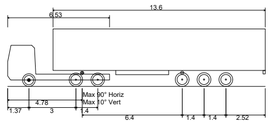


Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

NONE

MAINTENANCE/CLEANING

NONE

DECOMMISSIONING/DEMOLITION

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd

Drawing Status: WORK IN PROGRESS

Suitability: S0

ATKINS
The Axis
10 Holliday Street
Birmingham
West Midlands
B1 1TF
Tel: +44 (0)1214 835000
Fax: +44 (0)1214 835252
www.atkinsglobal.com

Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 JUNCTION

SWEPT PATH ANALYSIS

Scale	Designed	Drawn	Checked	Authorised
1:250				
Original Size	**Date**	**Date**	**Date**	**Date**
A2				

Drawing Number: HA PIN GARTH - ATK - SPA - A581 - DR - D - 0008 (Location - Originator - Volume - Type - Role - Number)

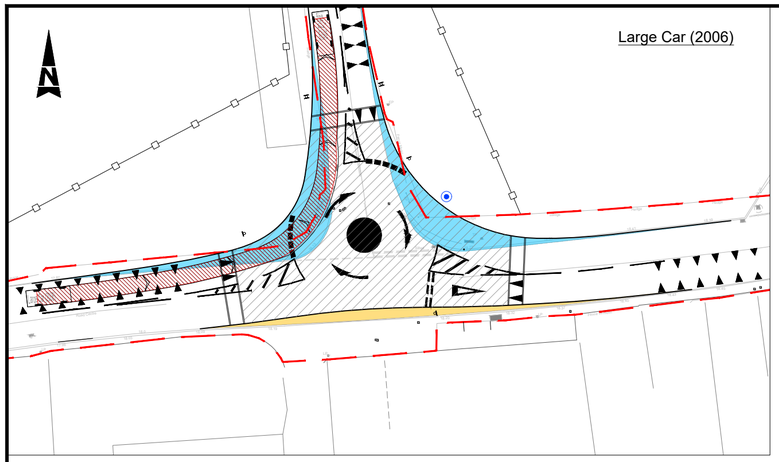
Project Ref. No.: 5200124

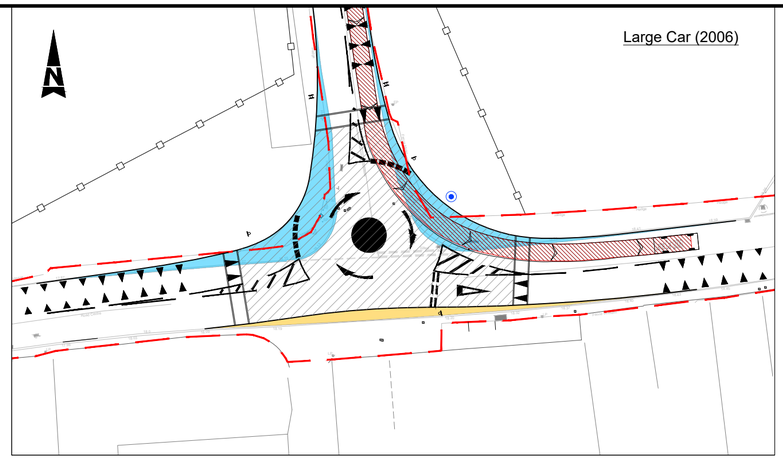
Revision: P1

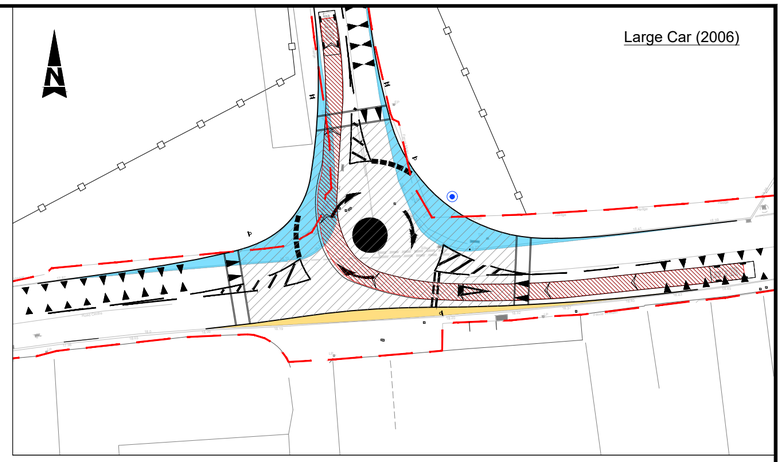
P:\GBCFA\TP\KU\Projects\Public Realm & Design\Birmingham support\HMP Garth\CAD\DR\GARTH_ATK_SPA_A581_DR_D_0008_P1.dwg

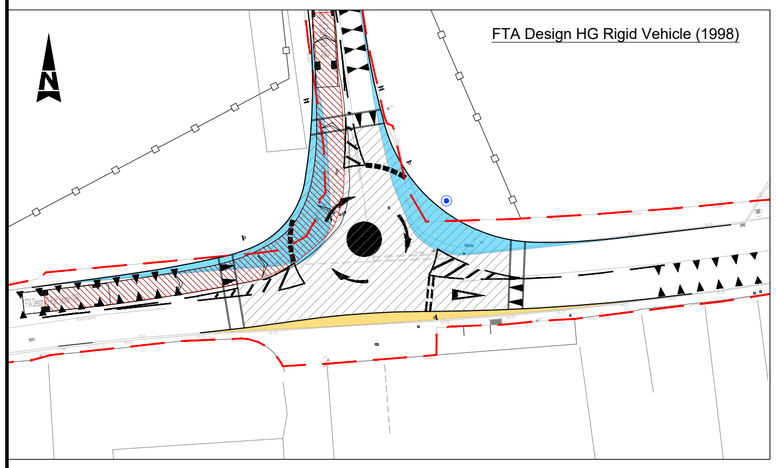
Appendix F. DWG: GARTH_ATK_SPA_A581_DR_D_0016_P5

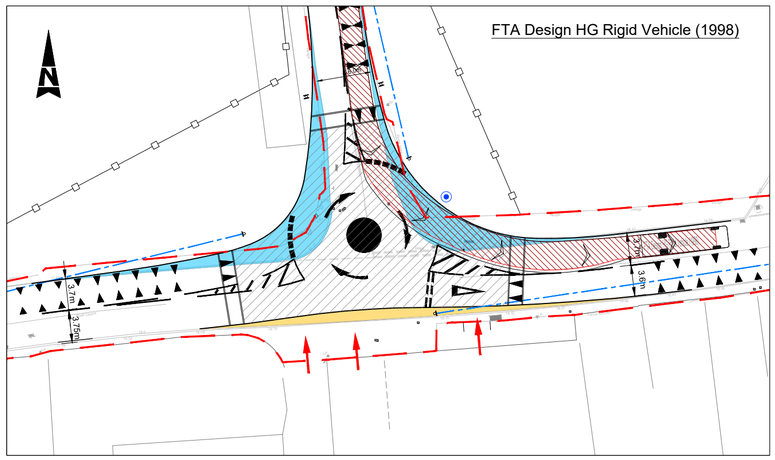
Millimetres 0 10 100

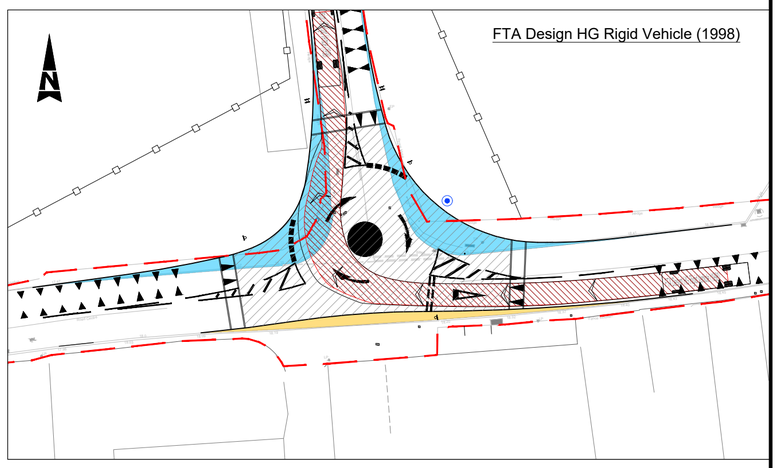


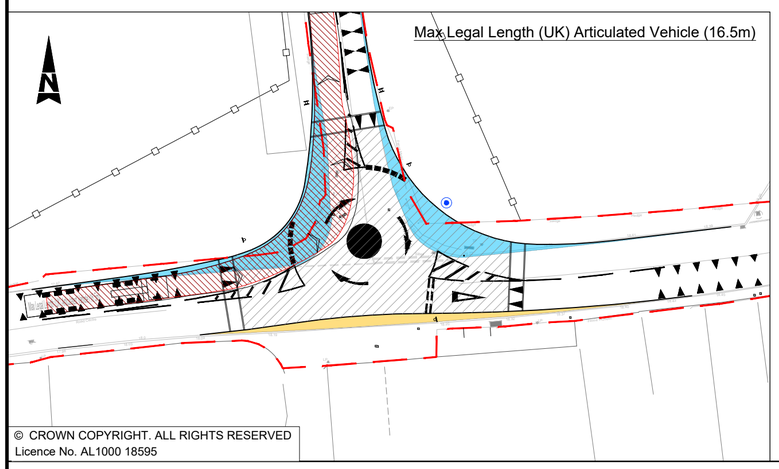


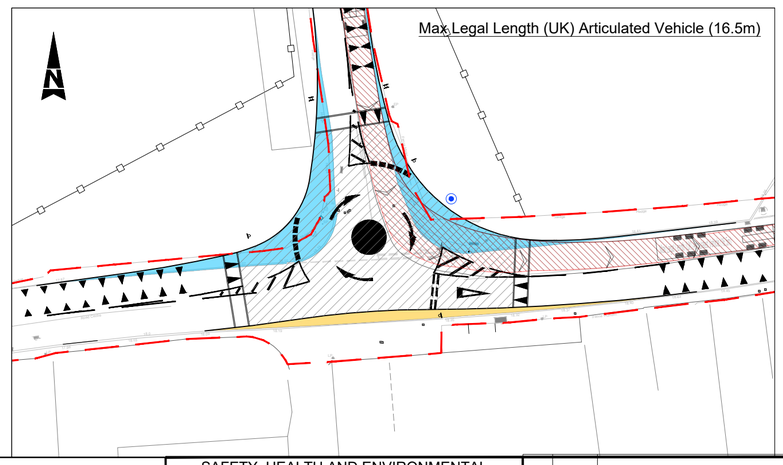


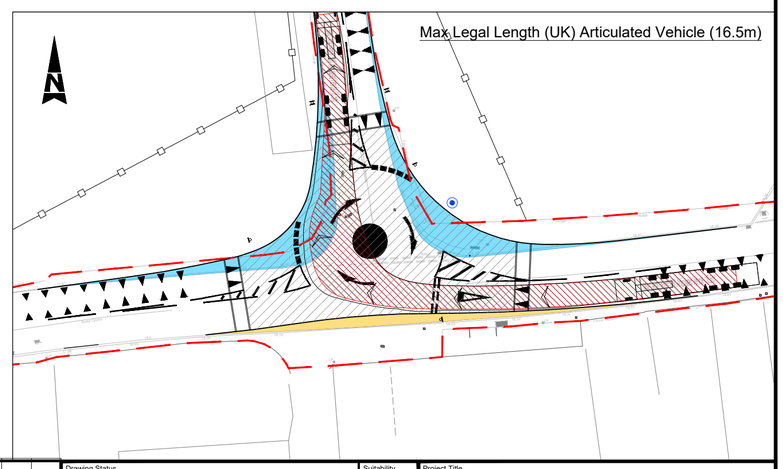












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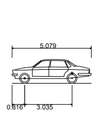
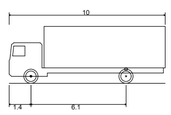


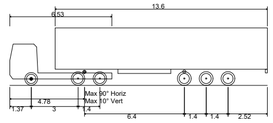
Large Car (2006)

Overall Length	5.079m
Overall Width	1.872m
Overall Body Height	1.525m
Min Body Ground Clearance	0.310m
Max Track Width	1.831m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	5.900m



FTA Design HG Rigid Vehicle (1998)

Overall Length	10.000m
Overall Width	2.500m
Overall Body Height	3.645m
Min Body Ground Clearance	0.440m
Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	11.000m



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

NONE

MAINTENANCE/CLEANING

NONE

DECOMMISSIONING/DEMOLITION

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd
P5	24.10.23	PROPOSED SITE BOUNDARIES ADJUSTED	AE	PDE	
P4	11:10:23	PROPOSED TRAFFIC CALMING ADDED	AE	PDE	
P3	25.09.23	DRAWING CREATED	AE	PDE	

Drawing Status: FIT FOR INFORMATION
Suitability: S2

ATKINS
The Axis
10 Holliday Street
Birmingham
West Midlands
B1 1TF
Tel: +44 (0)1214 835000
Fax: +44 (0)1214 835252
www.atkinsglobal.com

Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

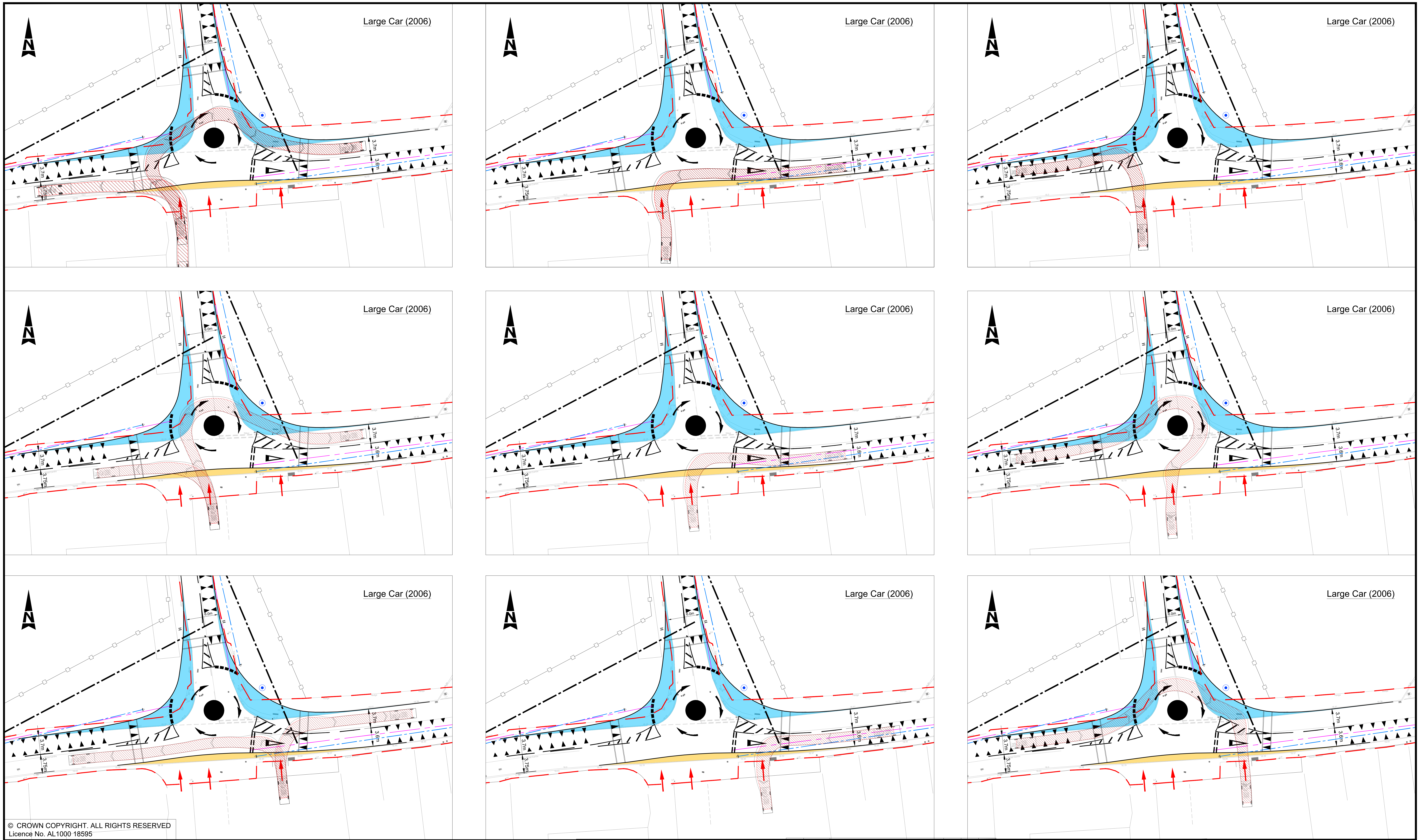
Drawing Title: PROPOSED MITIGATION WORKS
ULNES WALTON LANE / A581
PROPOSED MINI ROUNDABOUT
SWEPT PATH ANALYSIS

Scale	Designed	Drawn	Checked	Authorised
1:500	JR	JR	PDE	
Original Size	**Date**	**Date**	**Date**	**Date**
A2	19.09.23	20.09.23	20.01.23	

Drawing Number: HA P/N GARTH - ATK - SPA - A581 - DR - D - 00016
(Location | Originator | Volume | Type | Role | Number)

Project Ref. No.: 5200124
Revision: P5

Appendix G. DWG: GARTH_ATK_SPA_A581_DR_D_0016_P5 A



Key:

Large Car (2006)

Overall Length	5.079m
Overall Width	1.872m
Overall Body Height	1.525m
Min Body Ground Clearance	0.310m
Max Track Width	1.831m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	5.900m

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION
NONE

MAINTENANCE/CLEANING
NONE

DECOMMISSIONING/DEMOLITION
NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd
P1	25.01.23	DRAWING CREATED	AE	PDE	

Drawing Status: FIT FOR INFORMATION
Suitability: S2

ATKINS

The Axis
10 Holliday Street
Birmingham
West Midlands
B1 1TF
Tel: +44 (0)1214 835000
Fax: +44 (0)1214 835252
www.atkinsglobal.com

Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 PROPOSED MINI ROUNDABOUT SWEPT ATH ANALYSIS

Scale	Designed	Drawn	Checked	Authorised
1:500	AE	AE	PDE	
Original Size: A2	Date: 25.01.23	Date: 25.01.23	Date: 25.01.23	Date

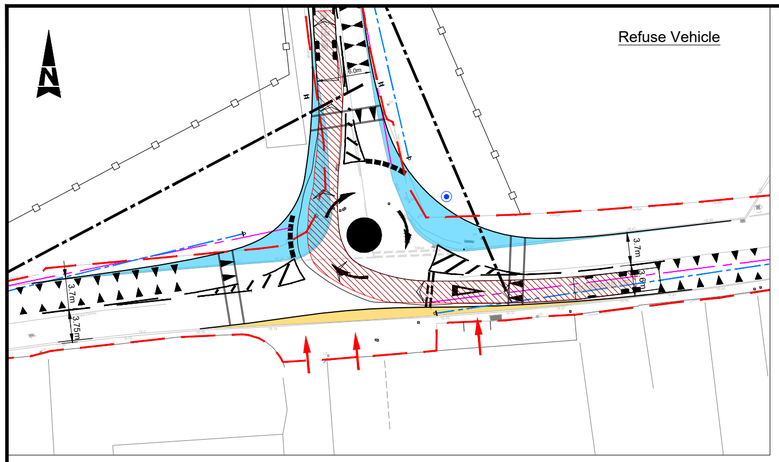
Drawing Number: GARTH - ATK - SPA - A581 - DR - D - 0016
Project Ref. No.: 5200124
Revision: P5

P:\GBCFA\TP\KU\Projects\Public Realm & Design\Birmingham support\HMP Garth\CAD\DR\GARTH_ATK_SPA_A581_DR_D_0016_P5.dwg

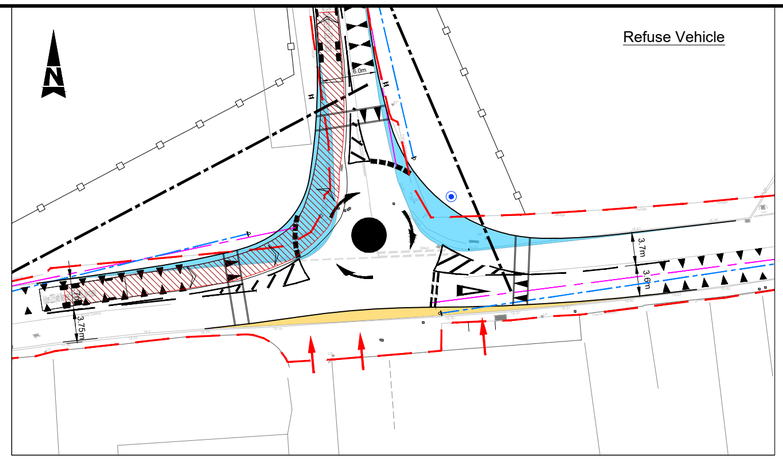
Appendix H. DWG: GARTH_ATK_SPA_A581_DR_D_0016_P5 B

Millimetres 0 10 100

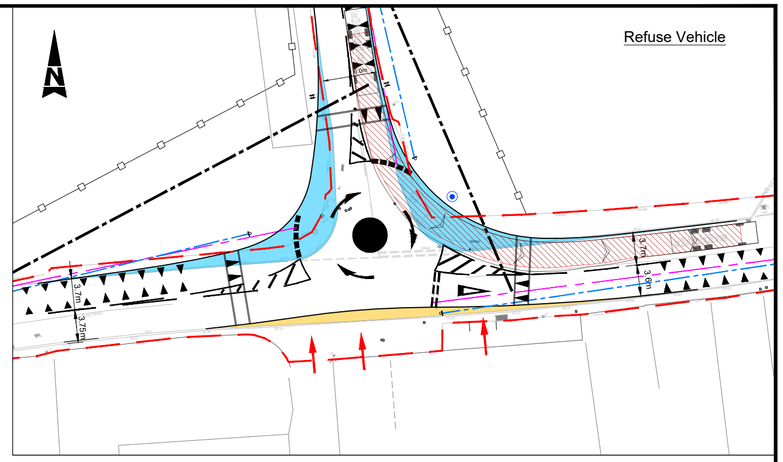
Refuse Vehicle



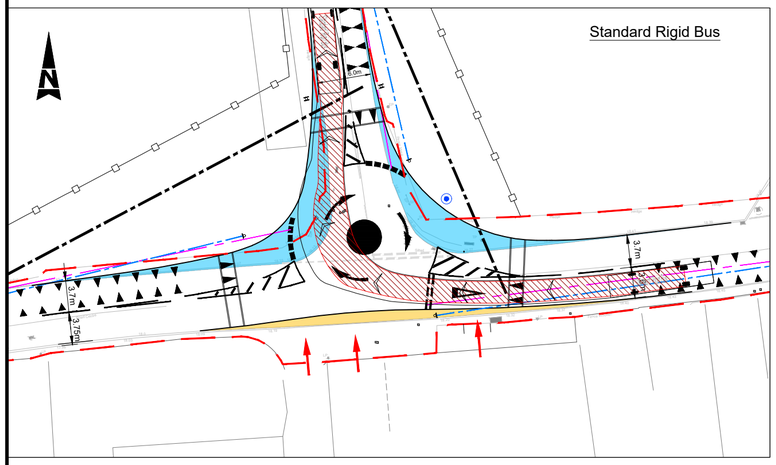
Refuse Vehicle



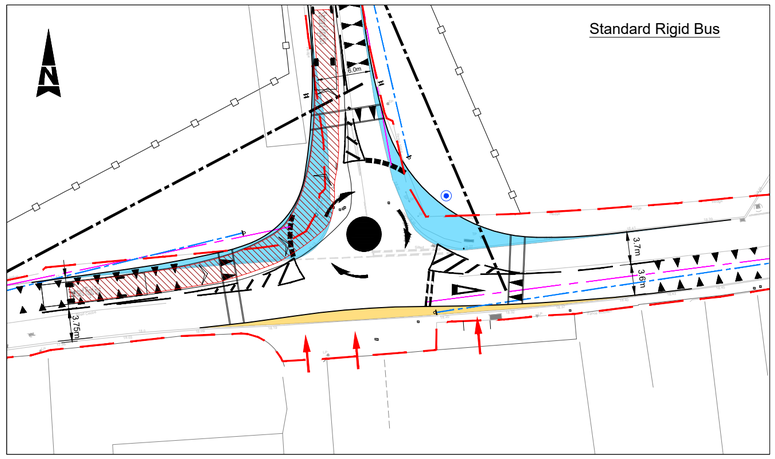
Refuse Vehicle



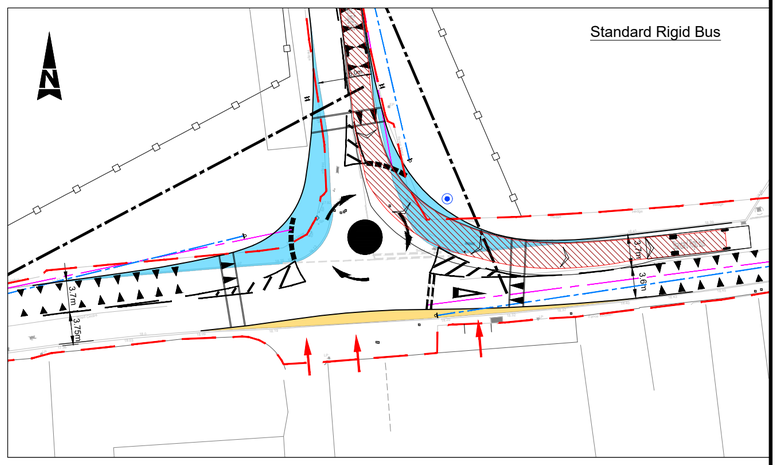
Standard Rigid Bus



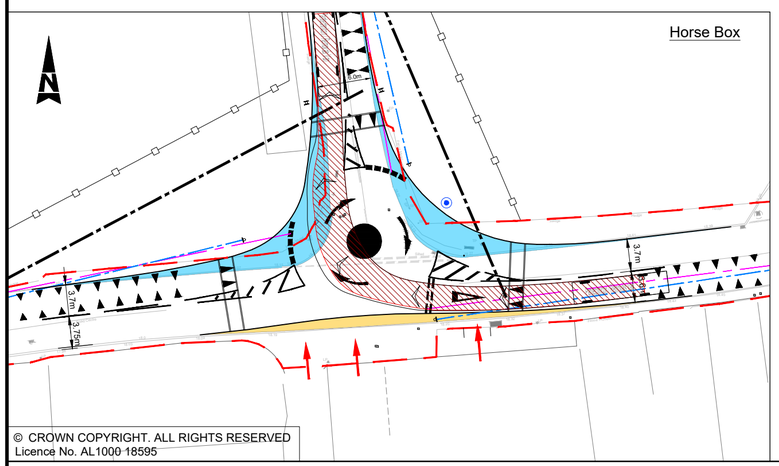
Standard Rigid Bus



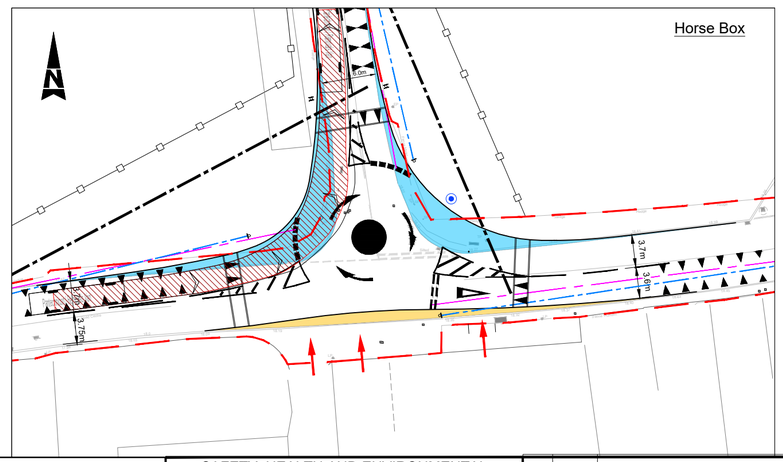
Standard Rigid Bus



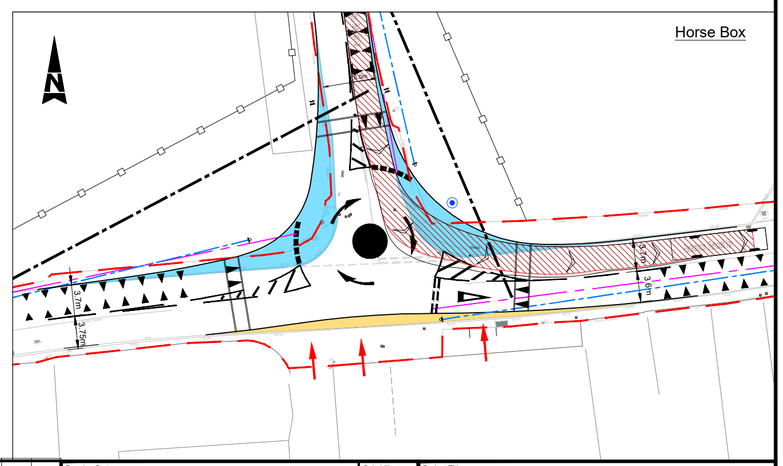
Horse Box



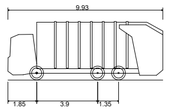
Horse Box



Horse Box

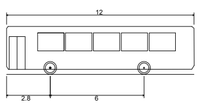


Key:



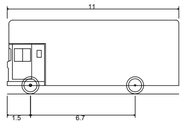
Vulture 2225 (with Mercedes Econic 2628LL 6x4 chassis)

Overall Length	9.930m
Overall Width	2.490m
Overall Body Height	3.749m
Min Body Ground Clearance	0.302m
Track Width	2.490m
Lock to lock time	4.00s
Wall to Wall Turning Radius	9.100m



'Standard' Rigid Bus

Overall Length	12.000m
Overall Width	2.550m
Overall Body Height	3.069m
Min Body Ground Clearance	0.309m
Track Width	2.350m
Lock to lock time	4.00s
Wall to Wall Turning Radius	10.771m



Pantechnicon / Removals Van / Horse Box

Overall Length	11.000m
Overall Width	2.500m
Overall Body Height	4.730m
Min Body Ground Clearance	0.541m
Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	12.200m

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

NONE

MAINTENANCE/CLEANING

NONE

DECOMMISSIONING/DEMOLITION

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd
P1	25.01.23	DRAWING CREATED	AE	PDE	

Drawing Status: FIT FOR INFORMATION

Suitability: S2

ATKINS
The Axis
10 Holliday Street
Birmingham
West Midlands
B1 1TF
Tel: +44 (0)1214 835000
Fax: +44 (0)1214 835252
www.atkinsglobal.com

Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: PROPOSED MITIGATION WORKS
ULNES WALTON LANE / A581
PROPOSED MINI ROUNDABOUT
SWEPT ATH ANALYSIS

Scale	Designed	Drawn	Checked	Authorised
1:500	AE	AE	PDE	
Original Size: A2	Date: 25.01.23	Date: 25.01.23	Date: 25.01.23	Date

Drawing Number: HA P/N GARTH - ATK - SPA - A581 - DR - D - 0016
Location | Originator | Volume | Type | Role | Number

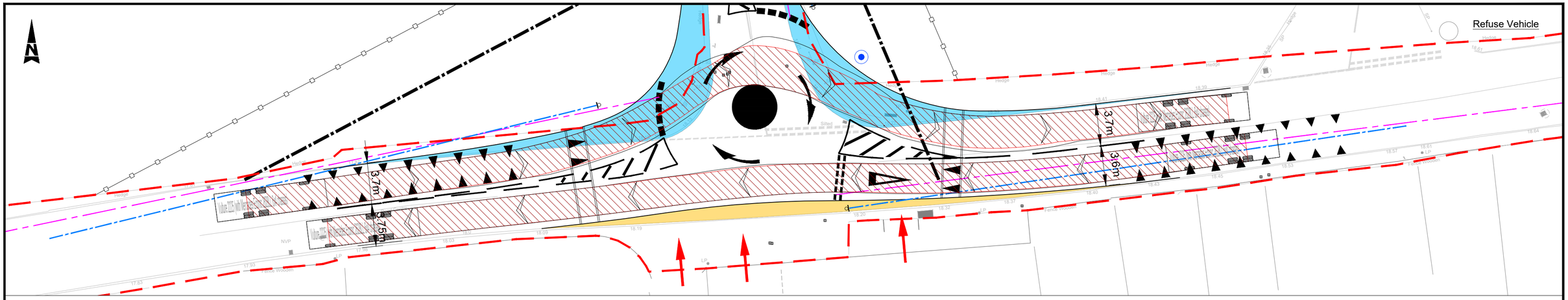
Project Ref. No.: 5200124

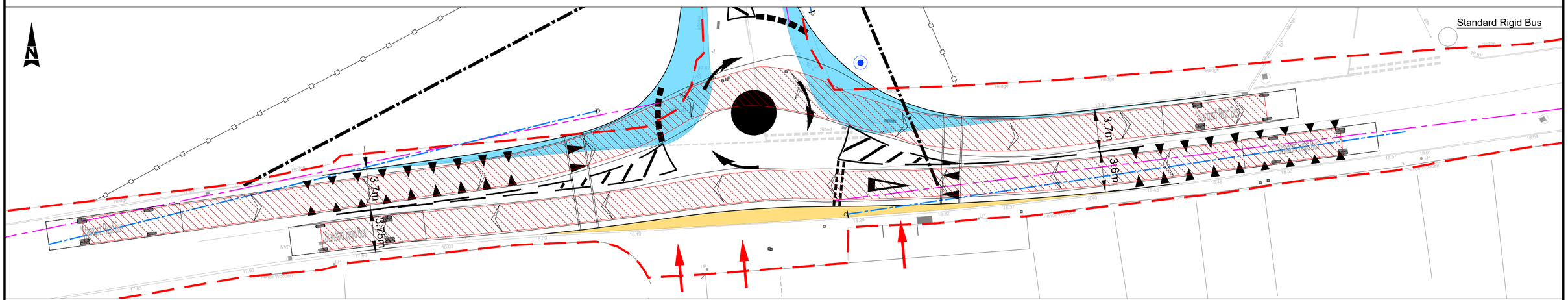
Revision: P5

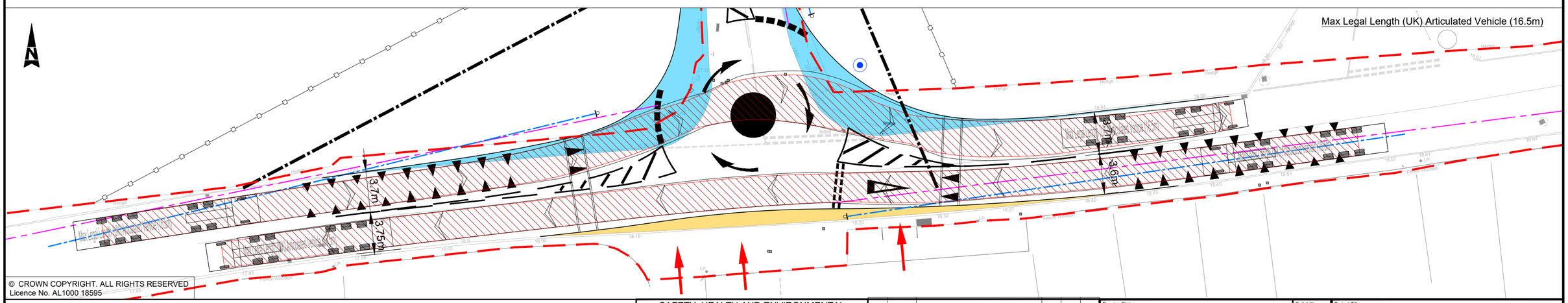
P:\GBCFA\TP\KU\Projects\Public Realm & Design\Birmingham support\HMP Garth\CAD\DR\GARTH_ATK_SPA_A581_DR_D_0016_P5.dwg

Appendix I. DWG: GARTH_ATK_SPA_A581_DR_D_0016_P5 C

Millimetres 0 10 100







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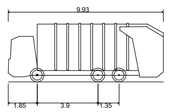
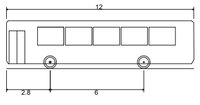


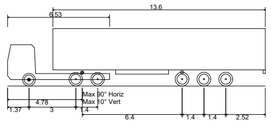
Vulture 2225 (with Mercedes Econic 2628LL 6x4 chassis)

Overall Length	9.930m
Overall Width	2.490m
Overall Body Height	3.749m
Min Body Ground Clearance	0.302m
Track Width	2.490m
Lock to lock time	4.00s
Wall to Wall Turning Radius	9.100m



'Standard' Rigid Bus

Overall Length	12.000m
Overall Width	2.550m
Overall Body Height	3.069m
Min Body Ground Clearance	0.309m
Track Width	2.350m
Lock to lock time	4.00s
Wall to Wall Turning Radius	10.771m



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

NONE

MAINTENANCE/CLEANING

NONE

DECOMMISSIONING/DEMOLITION

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Rev.	Date	Description	By	Chk'd	App'd
P1	25.01.23	DRAWING CREATED	AE	PDE	

Drawing Status: FIT FOR INFORMATION

Suitability: S2

ATKINS
The Axis
10 Holliday Street
Birmingham
West Midlands
B1 1TF
Tel: +44 (0)1214 835000
Fax: +44 (0)1214 835252
www.atkinsglobal.com

Client: MINISTRY OF JUSTICE

Project Title: HMP GARTH

Drawing Title: PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 PROPOSED MINI ROUNDABOUT SWEPT ATH ANALYSIS

Scale	Designed	Drawn	Checked	Authorised
1:500	AE	AE	PDE	
Original Size: A2	Date: 25.01.23	Date: 25.01.23	Date: 25.01.23	Date

Drawing Number: HA P/N GARTH - ATK - SPA - A581 - DR - D - 0016 (Location | Originator | Volume | Type | Role | Number)

Project Ref. No.: 5200124

Revision: P5

P:\GBCFA\TP\KU\Projects\Public Realm & Design\Birmingham support\HMP Garth\CAD\DR\GARTH_ATK_SPA_A581_DR_D_0016_P5.dwg

Appendix J. Junctions 10 Outputs (Operational Phase)

Junctions 10

ARCADY 10 - Roundabout Module

Filename: A581_Ulnes Walton Lane_Mini-Rbt_v2.j10
Path: P:\GBBMA\HandT\CS\Projects\5200124-MACE_Prisons_ROGE6351\06_Reports\15_Garth Wymott SoS\18_A581 Technical Addendum\5_Models
Report generation date: 20/12/2023 10:54:50

»2025 Opening Year with Development, AM
»2025 Opening Year with Development, PM
»2026 with Development, AM
»2026 with Development, PM
»2027 Base + Construction, AM Construction
»2027 Base + Construction, AM
»2027 Base + Construction, PM

Summary of junction performance

	AM					PM					AM Construction				
	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
	2025 Opening Year with Development														
1 - A581 Southport Road (W)	D5	6.0	39.03	0.87	27.60	D6	1.1	8.63	0.51	15.28					
2 - Ulnes Walton Lane		0.3	8.17	0.21			2.3	18.99	0.70						
3 - A581 Southport Road (E)		4.6	22.05	0.83			3.2	17.30	0.76						
	2026 with Development														
1 - A581 Southport Road (W)	D7	6.5	41.80	0.88	29.08	D8	1.1	8.71	0.51	15.64					
2 - Ulnes Walton Lane		0.3	8.23	0.21			2.3	19.42	0.70						
3 - A581 Southport Road (E)		4.8	22.75	0.83			3.3	17.81	0.77						
	2027 Base + Construction														
1 - A581 Southport Road (W)	D13	4.7	30.87	0.83	23.07	D14	1.1	8.90	0.52	19.09	D12	0.8	8.67	0.44	7.35
2 - Ulnes Walton Lane		0.3	8.48	0.21			3.6	27.61	0.79			0.1	5.56	0.07	
3 - A581 Southport Road (E)		4.0	19.44	0.80			3.7	19.74	0.79			0.7	6.41	0.40	

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

File summary

File Description

Title	Albatross
Location	A581 Southport Road / Ulnes Walton Lane
Site number	
Date	20/12/2023
Version	
Status	Proposed
Identifier	DC
Client	
Jobnumber	5200124
Enumerator	WSATKINS\CART5172
Description	GARTH_ATK_HGN_A581_DR_D_0016_P5

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75						0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓
D7	2026 with Development	AM	ONE HOUR	06:45	08:15	15	✓
D8	2026 with Development	PM	ONE HOUR	16:45	18:15	15	✓
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2025 Opening Year with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	27.60	D

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		27.60	D

Arms

Arms

Arm	Name	Description
1	A581 Southport Road (W)	
2	Ulnes Walton Lane	
3	A581 Southport Road (E)	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1 - A581 Southport Road (W)	3.70	3.70	4.00	12.0	12.40	9.50	0.0	
2 - Ulnes Walton Lane	3.00	3.00	3.75	6.7	12.80	10.70	0.0	
3 - A581 Southport Road (E)	3.60	3.40	4.20	2.9	14.40	13.80	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A581 Southport Road (W)	0.629	956
2 - Ulnes Walton Lane	0.614	882
3 - A581 Southport Road (E)	0.635	962

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	538	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	112	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	714	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	102	436
	2 - Ulnes Walton Lane	16	0	96
	3 - A581 Southport Road (E)	316	398	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	4	0	6
	3 - A581 Southport Road (E)	7	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.87	39.03	6.0	E	494	741
2 - Ulnes Walton Lane	0.21	8.17	0.3	A	103	154
3 - A581 Southport Road (E)	0.83	22.05	4.6	C	655	983

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	405	101	297	769	0.527	401	248	0.0	1.1	10.044	B
2 - Ulnes Walton Lane	84	21	325	683	0.123	84	373	0.0	0.1	6.341	A
3 - A581 Southport Road (E)	538	134	12	954	0.563	532	396	0.0	1.3	8.680	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	484	121	356	732	0.661	480	297	1.1	1.9	14.711	B
2 - Ulnes Walton Lane	101	25	389	643	0.156	100	447	0.1	0.2	7.008	A
3 - A581 Southport Road (E)	642	160	14	953	0.674	639	475	1.3	2.0	11.688	B

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	592	148	433	683	0.867	579	361	1.9	5.3	32.254	D
2 - Ulnes Walton Lane	123	31	469	595	0.207	123	543	0.2	0.3	8.066	A
3 - A581 Southport Road (E)	786	197	18	951	0.827	777	574	2.0	4.4	20.258	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	592	148	438	680	0.871	590	365	5.3	6.0	39.028	E
2 - Ulnes Walton Lane	123	31	478	589	0.209	123	549	0.3	0.3	8.171	A
3 - A581 Southport Road (E)	786	197	18	951	0.827	785	584	4.4	4.6	22.046	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	484	121	363	727	0.665	499	303	6.0	2.2	17.391	C
2 - Ulnes Walton Lane	101	25	404	634	0.159	101	458	0.3	0.2	7.140	A
3 - A581 Southport Road (E)	642	160	14	953	0.674	651	491	4.6	2.2	12.664	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	405	101	302	766	0.529	409	251	2.2	1.2	10.599	B
2 - Ulnes Walton Lane	84	21	331	679	0.124	85	379	0.2	0.2	6.405	A
3 - A581 Southport Road (E)	538	134	12	954	0.563	541	404	2.2	1.4	9.040	A

2025 Opening Year with Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	15.28	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		15.28	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	410	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	399	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	614	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	34	376
	2 - Ulnes Walton Lane	105	0	294
	3 - A581 Southport Road (E)	514	100	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	0
	3 - A581 Southport Road (E)	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.51	8.63	1.1	A	376	564
2 - Ulnes Walton Lane	0.70	18.99	2.3	C	366	549
3 - A581 Southport Road (E)	0.76	17.30	3.2	C	563	845

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	309	77	75	909	0.340	307	462	0.0	0.5	6.217	A
2 - Ulnes Walton Lane	300	75	281	710	0.423	297	100	0.0	0.7	8.694	A
3 - A581 Southport Road (E)	462	116	78	912	0.507	458	500	0.0	1.0	8.091	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	369	92	90	899	0.410	368	554	0.5	0.7	7.056	A
2 - Ulnes Walton Lane	359	90	337	675	0.531	357	120	0.7	1.1	11.287	B
3 - A581 Southport Road (E)	552	138	94	902	0.612	550	601	1.0	1.6	10.450	B

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	451	113	109	887	0.509	450	675	0.7	1.1	8.568	A
2 - Ulnes Walton Lane	439	110	413	629	0.698	435	146	1.1	2.2	18.200	C
3 - A581 Southport Road (E)	676	169	114	889	0.760	670	733	1.6	3.0	16.475	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	451	113	110	886	0.509	451	681	1.1	1.1	8.631	A
2 - Ulnes Walton Lane	439	110	414	628	0.699	439	147	2.2	2.3	18.993	C
3 - A581 Southport Road (E)	676	169	116	889	0.761	676	737	3.0	3.2	17.303	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	369	92	91	898	0.410	370	563	1.1	0.7	7.123	A
2 - Ulnes Walton Lane	359	90	339	674	0.532	363	122	2.3	1.2	11.755	B
3 - A581 Southport Road (E)	552	138	96	901	0.612	558	607	3.2	1.7	10.970	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	309	77	76	908	0.340	309	468	0.7	0.5	6.281	A
2 - Ulnes Walton Lane	300	75	284	708	0.424	302	101	1.2	0.8	8.923	A
3 - A581 Southport Road (E)	462	116	79	912	0.507	465	506	1.7	1.1	8.341	A

2026 with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	29.08	D

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		29.08	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2026 with Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	543	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	113	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	719	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	103	440
	2 - Ulnes Walton Lane	16	0	97
	3 - A581 Southport Road (E)	318	401	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	4	0	6
	3 - A581 Southport Road (E)	7	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.88	41.80	6.5	E	498	747
2 - Ulnes Walton Lane	0.21	8.23	0.3	A	104	156
3 - A581 Southport Road (E)	0.83	22.75	4.8	C	660	990

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	409	102	299	768	0.533	404	249	0.0	1.2	10.180	B
2 - Ulnes Walton Lane	85	21	328	681	0.125	84	376	0.0	0.1	6.368	A
3 - A581 Southport Road (E)	541	135	12	954	0.567	536	400	0.0	1.3	8.754	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	488	122	359	730	0.669	485	299	1.2	2.0	15.055	C
2 - Ulnes Walton Lane	102	25	393	641	0.158	101	451	0.1	0.2	7.047	A
3 - A581 Southport Road (E)	646	162	14	953	0.678	643	480	1.3	2.1	11.847	B

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	598	149	436	681	0.877	583	363	2.0	5.7	33.888	D
2 - Ulnes Walton Lane	124	31	472	592	0.210	124	547	0.2	0.3	8.121	A
3 - A581 Southport Road (E)	792	198	18	951	0.832	782	579	2.1	4.5	20.794	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	598	149	441	678	0.881	595	367	5.7	6.5	41.802	E
2 - Ulnes Walton Lane	124	31	482	587	0.212	124	554	0.3	0.3	8.234	A
3 - A581 Southport Road (E)	792	198	18	951	0.833	791	589	4.5	4.8	22.751	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	488	122	366	725	0.673	505	305	6.5	2.3	18.149	C
2 - Ulnes Walton Lane	102	25	409	631	0.161	102	462	0.3	0.2	7.193	A
3 - A581 Southport Road (E)	646	162	14	953	0.678	656	497	4.8	2.3	12.900	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	409	102	304	765	0.535	413	253	2.3	1.2	10.771	B
2 - Ulnes Walton Lane	85	21	335	677	0.126	85	382	0.2	0.2	6.432	A
3 - A581 Southport Road (E)	541	135	12	954	0.567	545	408	2.3	1.4	9.126	A

2026 with Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	15.64	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		15.64	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2026 with Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	413	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	401	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	619	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	34	379
	2 - Ulnes Walton Lane	106	0	295
	3 - A581 Southport Road (E)	518	101	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	0
	3 - A581 Southport Road (E)	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.51	8.71	1.1	A	379	568
2 - Ulnes Walton Lane	0.70	19.42	2.3	C	368	552
3 - A581 Southport Road (E)	0.77	17.81	3.3	C	568	852

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	311	78	75	908	0.342	309	465	0.0	0.5	6.242	A
2 - Ulnes Walton Lane	302	75	283	708	0.426	299	101	0.0	0.7	8.754	A
3 - A581 Southport Road (E)	466	117	79	912	0.511	462	503	0.0	1.1	8.164	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	371	93	90	899	0.413	371	559	0.5	0.7	7.099	A
2 - Ulnes Walton Lane	360	90	340	674	0.535	359	121	0.7	1.1	11.409	B
3 - A581 Southport Road (E)	556	139	95	902	0.617	554	604	1.1	1.6	10.597	B

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	455	114	110	886	0.513	453	681	0.7	1.1	8.645	A
2 - Ulnes Walton Lane	442	110	416	627	0.704	437	148	1.1	2.2	18.568	C
3 - A581 Southport Road (E)	682	170	116	889	0.767	675	738	1.6	3.1	16.898	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	455	114	111	886	0.513	455	687	1.1	1.1	8.709	A
2 - Ulnes Walton Lane	442	110	417	626	0.705	441	149	2.2	2.3	19.418	C
3 - A581 Southport Road (E)	682	170	117	888	0.767	681	742	3.1	3.3	17.807	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	371	93	92	898	0.414	373	567	1.1	0.7	7.171	A
2 - Ulnes Walton Lane	360	90	342	672	0.536	365	122	2.3	1.2	11.903	B
3 - A581 Southport Road (E)	556	139	96	901	0.618	563	610	3.3	1.7	11.159	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	311	78	76	908	0.343	312	472	0.7	0.5	6.310	A
2 - Ulnes Walton Lane	302	75	286	707	0.427	304	102	1.2	0.8	8.991	A
3 - A581 Southport Road (E)	466	117	80	911	0.511	468	509	1.7	1.1	8.422	A

2027 Base + Construction, AM Construction

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 93% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	7.35	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		7.35	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	310	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	46	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	347	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	117	193
	2 - Ulnes Walton Lane	10	0	36
	3 - A581 Southport Road (E)	86	261	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	2	6
	2 - Ulnes Walton Lane	6	0	9
	3 - A581 Southport Road (E)	9	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.44	8.67	0.8	A	284	427
2 - Ulnes Walton Lane	0.07	5.56	0.1	A	42	63
3 - A581 Southport Road (E)	0.40	6.41	0.7	A	318	478

Main Results for each time segment

05:45 - 06:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	233	58	195	833	0.280	232	72	0.0	0.4	6.241	A
2 - Ulnes Walton Lane	35	9	144	794	0.044	34	283	0.0	0.0	5.134	A
3 - A581 Southport Road (E)	261	65	7	957	0.273	260	171	0.0	0.4	5.256	A

06:00 - 06:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	279	70	234	808	0.345	278	86	0.4	0.5	7.086	A
2 - Ulnes Walton Lane	41	10	173	776	0.053	41	339	0.0	0.1	5.307	A
3 - A581 Southport Road (E)	312	78	9	956	0.326	312	205	0.4	0.5	5.695	A

06:15 - 06:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	341	85	287	775	0.440	340	106	0.5	0.8	8.623	A
2 - Ulnes Walton Lane	51	13	212	752	0.067	51	415	0.1	0.1	5.557	A
3 - A581 Southport Road (E)	382	96	11	955	0.400	381	251	0.5	0.7	6.397	A

06:30 - 06:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	341	85	287	775	0.440	341	106	0.8	0.8	8.670	A
2 - Ulnes Walton Lane	51	13	212	752	0.067	51	416	0.1	0.1	5.560	A
3 - A581 Southport Road (E)	382	96	11	955	0.400	382	252	0.7	0.7	6.412	A

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	279	70	235	808	0.345	280	86	0.8	0.6	7.137	A
2 - Ulnes Walton Lane	41	10	174	776	0.053	41	341	0.1	0.1	5.312	A
3 - A581 Southport Road (E)	312	78	9	956	0.326	313	207	0.7	0.5	5.717	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	233	58	197	832	0.281	234	72	0.6	0.4	6.297	A
2 - Ulnes Walton Lane	35	9	146	793	0.044	35	285	0.1	0.0	5.144	A
3 - A581 Southport Road (E)	261	65	8	957	0.273	262	173	0.5	0.4	5.288	A

2027 Base + Construction, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	23.07	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		23.07	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	527	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	109	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	694	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	85	442
	2 - Ulnes Walton Lane	12	0	97
	3 - A581 Southport Road (E)	320	374	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	5	0	10
	3 - A581 Southport Road (E)	7	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.83	30.87	4.7	D	484	725
2 - Ulnes Walton Lane	0.21	8.48	0.3	A	100	150
3 - A581 Southport Road (E)	0.80	19.44	4.0	C	637	955

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	397	99	279	780	0.509	393	248	0.0	1.1	9.569	A
2 - Ulnes Walton Lane	82	21	329	680	0.121	81	342	0.0	0.1	6.571	A
3 - A581 Southport Road (E)	522	131	9	956	0.546	518	402	0.0	1.2	8.416	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	474	118	335	745	0.636	471	297	1.1	1.7	13.539	B
2 - Ulnes Walton Lane	98	24	395	640	0.153	98	411	0.1	0.2	7.265	A
3 - A581 Southport Road (E)	624	156	11	955	0.653	621	482	1.2	1.9	11.083	B

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	580	145	408	699	0.830	570	362	1.7	4.3	27.034	D
2 - Ulnes Walton Lane	120	30	478	589	0.204	120	500	0.2	0.3	8.388	A
3 - A581 Southport Road (E)	764	191	13	954	0.801	756	584	1.9	3.8	18.223	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	580	145	411	697	0.833	579	365	4.3	4.7	30.870	D
2 - Ulnes Walton Lane	120	30	485	584	0.205	120	505	0.3	0.3	8.482	A
3 - A581 Southport Road (E)	764	191	13	954	0.801	763	592	3.8	4.0	19.438	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	474	118	340	742	0.639	485	302	4.7	1.9	15.190	C
2 - Ulnes Walton Lane	98	24	407	633	0.155	98	419	0.3	0.2	7.374	A
3 - A581 Southport Road (E)	624	156	11	955	0.653	632	494	4.0	2.0	11.802	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	397	99	283	778	0.510	400	251	1.9	1.1	10.015	B
2 - Ulnes Walton Lane	82	21	335	676	0.121	82	348	0.2	0.2	6.633	A
3 - A581 Southport Road (E)	522	131	9	956	0.546	525	409	2.0	1.3	8.721	A

2027 Base + Construction, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	19.09	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		19.09	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	417	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	450	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	629	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	35	382
	2 - Ulnes Walton Lane	119	0	331
	3 - A581 Southport Road (E)	521	108	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	1
	3 - A581 Southport Road (E)	3	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.52	8.90	1.1	A	383	574
2 - Ulnes Walton Lane	0.79	27.61	3.6	D	413	619
3 - A581 Southport Road (E)	0.79	19.74	3.7	C	577	866

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	314	78	81	905	0.347	312	477	0.0	0.5	6.309	A
2 - Ulnes Walton Lane	339	85	286	707	0.479	335	107	0.0	0.9	9.684	A
3 - A581 Southport Road (E)	474	118	89	906	0.523	469	532	0.0	1.1	8.449	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	375	94	97	895	0.419	374	573	0.5	0.7	7.202	A
2 - Ulnes Walton Lane	405	101	343	672	0.602	402	128	0.9	1.5	13.363	B
3 - A581 Southport Road (E)	565	141	106	895	0.632	563	639	1.1	1.7	11.154	B

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	459	115	118	882	0.521	458	697	0.7	1.1	8.827	A
2 - Ulnes Walton Lane	495	124	419	625	0.793	488	156	1.5	3.4	25.141	D
3 - A581 Southport Road (E)	693	173	129	880	0.787	685	778	1.7	3.5	18.472	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	459	115	119	881	0.521	459	704	1.1	1.1	8.901	A
2 - Ulnes Walton Lane	495	124	421	624	0.794	495	157	3.4	3.6	27.611	D
3 - A581 Southport Road (E)	693	173	131	879	0.788	692	784	3.5	3.7	19.738	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	375	94	98	894	0.419	376	583	1.1	0.8	7.277	A
2 - Ulnes Walton Lane	405	101	345	671	0.603	413	130	3.6	1.6	14.497	B
3 - A581 Southport Road (E)	565	141	109	893	0.633	573	648	3.7	1.8	11.889	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	314	78	82	904	0.347	315	485	0.8	0.6	6.380	A
2 - Ulnes Walton Lane	339	85	288	705	0.480	341	108	1.6	1.0	10.055	B
3 - A581 Southport Road (E)	474	118	90	905	0.523	476	539	1.8	1.2	8.751	A

Appendix K. Junctions 10 Outputs (Construction Phase)

Junctions 10

ARCADY 10 - Roundabout Module

Filename: A581_Ulnes Walton Lane_Mini-Rbt_v2.j10
Path: P:\GBBMA\HandT\CS\Projects\5200124-MACE_Prisons_ROGE6351\06_Reports\15_Garth Wymott SoS\18_A581 Technical Addendum\5_Models
Report generation date: 20/12/2023 10:54:50

»2025 Opening Year with Development, AM
»2025 Opening Year with Development, PM
»2026 with Development, AM
»2026 with Development, PM
»2027 Base + Construction, AM Construction
»2027 Base + Construction, AM
»2027 Base + Construction, PM

Summary of junction performance

	AM					PM					AM Construction				
	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Set ID	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
	2025 Opening Year with Development														
1 - A581 Southport Road (W)	D5	6.0	39.03	0.87	27.60	D6	1.1	8.63	0.51	15.28					
2 - Ulnes Walton Lane		0.3	8.17	0.21			2.3	18.99	0.70						
3 - A581 Southport Road (E)		4.6	22.05	0.83			3.2	17.30	0.76						
	2026 with Development														
1 - A581 Southport Road (W)	D7	6.5	41.80	0.88	29.08	D8	1.1	8.71	0.51	15.64					
2 - Ulnes Walton Lane		0.3	8.23	0.21			2.3	19.42	0.70						
3 - A581 Southport Road (E)		4.8	22.75	0.83			3.3	17.81	0.77						
	2027 Base + Construction														
1 - A581 Southport Road (W)	D13	4.7	30.87	0.83	23.07	D14	1.1	8.90	0.52	19.09	D12	0.8	8.67	0.44	7.35
2 - Ulnes Walton Lane		0.3	8.48	0.21			3.6	27.61	0.79			0.1	5.56	0.07	
3 - A581 Southport Road (E)		4.0	19.44	0.80			3.7	19.74	0.79			0.7	6.41	0.40	

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

File summary

File Description

Title	Albatross
Location	A581 Southport Road / Ulnes Walton Lane
Site number	
Date	20/12/2023
Version	
Status	Proposed
Identifier	DC
Client	
Jobnumber	5200124
Enumerator	WSATKINS\CART5172
Description	GARTH_ATK_HGN_A581_DR_D_0016_P5

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
JUNCTIONS 9	5.75						0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓
D7	2026 with Development	AM	ONE HOUR	06:45	08:15	15	✓
D8	2026 with Development	PM	ONE HOUR	16:45	18:15	15	✓
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2025 Opening Year with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	27.60	D

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		27.60	D

Arms

Arms

Arm	Name	Description
1	A581 Southport Road (W)	
2	Ulnes Walton Lane	
3	A581 Southport Road (E)	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1 - A581 Southport Road (W)	3.70	3.70	4.00	12.0	12.40	9.50	0.0	
2 - Ulnes Walton Lane	3.00	3.00	3.75	6.7	12.80	10.70	0.0	
3 - A581 Southport Road (E)	3.60	3.40	4.20	2.9	14.40	13.80	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - A581 Southport Road (W)	0.629	956
2 - Ulnes Walton Lane	0.614	882
3 - A581 Southport Road (E)	0.635	962

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 Opening Year with Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	538	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	112	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	714	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	102	436
	2 - Ulnes Walton Lane	16	0	96
	3 - A581 Southport Road (E)	316	398	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	4	0	6
	3 - A581 Southport Road (E)	7	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.87	39.03	6.0	E	494	741
2 - Ulnes Walton Lane	0.21	8.17	0.3	A	103	154
3 - A581 Southport Road (E)	0.83	22.05	4.6	C	655	983

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	405	101	297	769	0.527	401	248	0.0	1.1	10.044	B
2 - Ulnes Walton Lane	84	21	325	683	0.123	84	373	0.0	0.1	6.341	A
3 - A581 Southport Road (E)	538	134	12	954	0.563	532	396	0.0	1.3	8.680	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	484	121	356	732	0.661	480	297	1.1	1.9	14.711	B
2 - Ulnes Walton Lane	101	25	389	643	0.156	100	447	0.1	0.2	7.008	A
3 - A581 Southport Road (E)	642	160	14	953	0.674	639	475	1.3	2.0	11.688	B

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	592	148	433	683	0.867	579	361	1.9	5.3	32.254	D
2 - Ulnes Walton Lane	123	31	469	595	0.207	123	543	0.2	0.3	8.066	A
3 - A581 Southport Road (E)	786	197	18	951	0.827	777	574	2.0	4.4	20.258	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	592	148	438	680	0.871	590	365	5.3	6.0	39.028	E
2 - Ulnes Walton Lane	123	31	478	589	0.209	123	549	0.3	0.3	8.171	A
3 - A581 Southport Road (E)	786	197	18	951	0.827	785	584	4.4	4.6	22.046	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	484	121	363	727	0.665	499	303	6.0	2.2	17.391	C
2 - Ulnes Walton Lane	101	25	404	634	0.159	101	458	0.3	0.2	7.140	A
3 - A581 Southport Road (E)	642	160	14	953	0.674	651	491	4.6	2.2	12.664	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	405	101	302	766	0.529	409	251	2.2	1.2	10.599	B
2 - Ulnes Walton Lane	84	21	331	679	0.124	85	379	0.2	0.2	6.405	A
3 - A581 Southport Road (E)	538	134	12	954	0.563	541	404	2.2	1.4	9.040	A

2025 Opening Year with Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	15.28	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		15.28	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 Opening Year with Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	410	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	399	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	614	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	34	376
	2 - Ulnes Walton Lane	105	0	294
	3 - A581 Southport Road (E)	514	100	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	0
	3 - A581 Southport Road (E)	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.51	8.63	1.1	A	376	564
2 - Ulnes Walton Lane	0.70	18.99	2.3	C	366	549
3 - A581 Southport Road (E)	0.76	17.30	3.2	C	563	845

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	309	77	75	909	0.340	307	462	0.0	0.5	6.217	A
2 - Ulnes Walton Lane	300	75	281	710	0.423	297	100	0.0	0.7	8.694	A
3 - A581 Southport Road (E)	462	116	78	912	0.507	458	500	0.0	1.0	8.091	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	369	92	90	899	0.410	368	554	0.5	0.7	7.056	A
2 - Ulnes Walton Lane	359	90	337	675	0.531	357	120	0.7	1.1	11.287	B
3 - A581 Southport Road (E)	552	138	94	902	0.612	550	601	1.0	1.6	10.450	B

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	451	113	109	887	0.509	450	675	0.7	1.1	8.568	A
2 - Ulnes Walton Lane	439	110	413	629	0.698	435	146	1.1	2.2	18.200	C
3 - A581 Southport Road (E)	676	169	114	889	0.760	670	733	1.6	3.0	16.475	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	451	113	110	886	0.509	451	681	1.1	1.1	8.631	A
2 - Ulnes Walton Lane	439	110	414	628	0.699	439	147	2.2	2.3	18.993	C
3 - A581 Southport Road (E)	676	169	116	889	0.761	676	737	3.0	3.2	17.303	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	369	92	91	898	0.410	370	563	1.1	0.7	7.123	A
2 - Ulnes Walton Lane	359	90	339	674	0.532	363	122	2.3	1.2	11.755	B
3 - A581 Southport Road (E)	552	138	96	901	0.612	558	607	3.2	1.7	10.970	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	309	77	76	908	0.340	309	468	0.7	0.5	6.281	A
2 - Ulnes Walton Lane	300	75	284	708	0.424	302	101	1.2	0.8	8.923	A
3 - A581 Southport Road (E)	462	116	79	912	0.507	465	506	1.7	1.1	8.341	A

2026 with Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	29.08	D

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		29.08	D

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2026 with Development	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	543	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	113	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	719	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	103	440
	2 - Ulnes Walton Lane	16	0	97
	3 - A581 Southport Road (E)	318	401	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	4	0	6
	3 - A581 Southport Road (E)	7	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.88	41.80	6.5	E	498	747
2 - Ulnes Walton Lane	0.21	8.23	0.3	A	104	156
3 - A581 Southport Road (E)	0.83	22.75	4.8	C	660	990

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	409	102	299	768	0.533	404	249	0.0	1.2	10.180	B
2 - Ulnes Walton Lane	85	21	328	681	0.125	84	376	0.0	0.1	6.368	A
3 - A581 Southport Road (E)	541	135	12	954	0.567	536	400	0.0	1.3	8.754	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	488	122	359	730	0.669	485	299	1.2	2.0	15.055	C
2 - Ulnes Walton Lane	102	25	393	641	0.158	101	451	0.1	0.2	7.047	A
3 - A581 Southport Road (E)	646	162	14	953	0.678	643	480	1.3	2.1	11.847	B

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	598	149	436	681	0.877	583	363	2.0	5.7	33.888	D
2 - Ulnes Walton Lane	124	31	472	592	0.210	124	547	0.2	0.3	8.121	A
3 - A581 Southport Road (E)	792	198	18	951	0.832	782	579	2.1	4.5	20.794	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	598	149	441	678	0.881	595	367	5.7	6.5	41.802	E
2 - Ulnes Walton Lane	124	31	482	587	0.212	124	554	0.3	0.3	8.234	A
3 - A581 Southport Road (E)	792	198	18	951	0.833	791	589	4.5	4.8	22.751	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	488	122	366	725	0.673	505	305	6.5	2.3	18.149	C
2 - Ulnes Walton Lane	102	25	409	631	0.161	102	462	0.3	0.2	7.193	A
3 - A581 Southport Road (E)	646	162	14	953	0.678	656	497	4.8	2.3	12.900	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	409	102	304	765	0.535	413	253	2.3	1.2	10.771	B
2 - Ulnes Walton Lane	85	21	335	677	0.126	85	382	0.2	0.2	6.432	A
3 - A581 Southport Road (E)	541	135	12	954	0.567	545	408	2.3	1.4	9.126	A

2026 with Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	15.64	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		15.64	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2026 with Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	413	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	401	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	619	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	34	379
	2 - Ulnes Walton Lane	106	0	295
	3 - A581 Southport Road (E)	518	101	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	0
	3 - A581 Southport Road (E)	3	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.51	8.71	1.1	A	379	568
2 - Ulnes Walton Lane	0.70	19.42	2.3	C	368	552
3 - A581 Southport Road (E)	0.77	17.81	3.3	C	568	852

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	311	78	75	908	0.342	309	465	0.0	0.5	6.242	A
2 - Ulnes Walton Lane	302	75	283	708	0.426	299	101	0.0	0.7	8.754	A
3 - A581 Southport Road (E)	466	117	79	912	0.511	462	503	0.0	1.1	8.164	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	371	93	90	899	0.413	371	559	0.5	0.7	7.099	A
2 - Ulnes Walton Lane	360	90	340	674	0.535	359	121	0.7	1.1	11.409	B
3 - A581 Southport Road (E)	556	139	95	902	0.617	554	604	1.1	1.6	10.597	B

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	455	114	110	886	0.513	453	681	0.7	1.1	8.645	A
2 - Ulnes Walton Lane	442	110	416	627	0.704	437	148	1.1	2.2	18.568	C
3 - A581 Southport Road (E)	682	170	116	889	0.767	675	738	1.6	3.1	16.898	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	455	114	111	886	0.513	455	687	1.1	1.1	8.709	A
2 - Ulnes Walton Lane	442	110	417	626	0.705	441	149	2.2	2.3	19.418	C
3 - A581 Southport Road (E)	682	170	117	888	0.767	681	742	3.1	3.3	17.807	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	371	93	92	898	0.414	373	567	1.1	0.7	7.171	A
2 - Ulnes Walton Lane	360	90	342	672	0.536	365	122	2.3	1.2	11.903	B
3 - A581 Southport Road (E)	556	139	96	901	0.618	563	610	3.3	1.7	11.159	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	311	78	76	908	0.343	312	472	0.7	0.5	6.310	A
2 - Ulnes Walton Lane	302	75	286	707	0.427	304	102	1.2	0.8	8.991	A
3 - A581 Southport Road (E)	466	117	80	911	0.511	468	509	1.7	1.1	8.422	A

2027 Base + Construction, AM Construction

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 93% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	7.35	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		7.35	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2027 Base + Construction	AM Construction	ONE HOUR	05:45	07:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	310	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	46	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	347	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	117	193
	2 - Ulnes Walton Lane	10	0	36
	3 - A581 Southport Road (E)	86	261	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	2	6
	2 - Ulnes Walton Lane	6	0	9
	3 - A581 Southport Road (E)	9	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.44	8.67	0.8	A	284	427
2 - Ulnes Walton Lane	0.07	5.56	0.1	A	42	63
3 - A581 Southport Road (E)	0.40	6.41	0.7	A	318	478

Main Results for each time segment

05:45 - 06:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	233	58	195	833	0.280	232	72	0.0	0.4	6.241	A
2 - Ulnes Walton Lane	35	9	144	794	0.044	34	283	0.0	0.0	5.134	A
3 - A581 Southport Road (E)	261	65	7	957	0.273	260	171	0.0	0.4	5.256	A

06:00 - 06:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	279	70	234	808	0.345	278	86	0.4	0.5	7.086	A
2 - Ulnes Walton Lane	41	10	173	776	0.053	41	339	0.0	0.1	5.307	A
3 - A581 Southport Road (E)	312	78	9	956	0.326	312	205	0.4	0.5	5.695	A

06:15 - 06:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	341	85	287	775	0.440	340	106	0.5	0.8	8.623	A
2 - Ulnes Walton Lane	51	13	212	752	0.067	51	415	0.1	0.1	5.557	A
3 - A581 Southport Road (E)	382	96	11	955	0.400	381	251	0.5	0.7	6.397	A

06:30 - 06:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	341	85	287	775	0.440	341	106	0.8	0.8	8.670	A
2 - Ulnes Walton Lane	51	13	212	752	0.067	51	416	0.1	0.1	5.560	A
3 - A581 Southport Road (E)	382	96	11	955	0.400	382	252	0.7	0.7	6.412	A

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	279	70	235	808	0.345	280	86	0.8	0.6	7.137	A
2 - Ulnes Walton Lane	41	10	174	776	0.053	41	341	0.1	0.1	5.312	A
3 - A581 Southport Road (E)	312	78	9	956	0.326	313	207	0.7	0.5	5.717	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	233	58	197	832	0.281	234	72	0.6	0.4	6.297	A
2 - Ulnes Walton Lane	35	9	146	793	0.044	35	285	0.1	0.0	5.144	A
3 - A581 Southport Road (E)	261	65	8	957	0.273	262	173	0.5	0.4	5.288	A

2027 Base + Construction, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 91% of the total flow for the roundabout for one or more time segments]

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	23.07	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		23.07	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D13	2027 Base + Construction	AM	ONE HOUR	06:45	08:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	527	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	109	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	694	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	85	442
	2 - Ulnes Walton Lane	12	0	97
	3 - A581 Southport Road (E)	320	374	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	0	5
	2 - Ulnes Walton Lane	5	0	10
	3 - A581 Southport Road (E)	7	1	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.83	30.87	4.7	D	484	725
2 - Ulnes Walton Lane	0.21	8.48	0.3	A	100	150
3 - A581 Southport Road (E)	0.80	19.44	4.0	C	637	955

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	397	99	279	780	0.509	393	248	0.0	1.1	9.569	A
2 - Ulnes Walton Lane	82	21	329	680	0.121	81	342	0.0	0.1	6.571	A
3 - A581 Southport Road (E)	522	131	9	956	0.546	518	402	0.0	1.2	8.416	A

07:00 - 07:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	474	118	335	745	0.636	471	297	1.1	1.7	13.539	B
2 - Ulnes Walton Lane	98	24	395	640	0.153	98	411	0.1	0.2	7.265	A
3 - A581 Southport Road (E)	624	156	11	955	0.653	621	482	1.2	1.9	11.083	B

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	580	145	408	699	0.830	570	362	1.7	4.3	27.034	D
2 - Ulnes Walton Lane	120	30	478	589	0.204	120	500	0.2	0.3	8.388	A
3 - A581 Southport Road (E)	764	191	13	954	0.801	756	584	1.9	3.8	18.223	C

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	580	145	411	697	0.833	579	365	4.3	4.7	30.870	D
2 - Ulnes Walton Lane	120	30	485	584	0.205	120	505	0.3	0.3	8.482	A
3 - A581 Southport Road (E)	764	191	13	954	0.801	763	592	3.8	4.0	19.438	C

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	474	118	340	742	0.639	485	302	4.7	1.9	15.190	C
2 - Ulnes Walton Lane	98	24	407	633	0.155	98	419	0.3	0.2	7.374	A
3 - A581 Southport Road (E)	624	156	11	955	0.653	632	494	4.0	2.0	11.802	B

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	397	99	283	778	0.510	400	251	1.9	1.1	10.015	B
2 - Ulnes Walton Lane	82	21	335	676	0.121	82	348	0.2	0.2	6.633	A
3 - A581 Southport Road (E)	522	131	9	956	0.546	525	409	2.0	1.3	8.721	A

2027 Base + Construction, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A581 / Ulnes Walton Lane mini-rbt	Mini-roundabout		1, 2, 3	19.09	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		19.09	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D14	2027 Base + Construction	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - A581 Southport Road (W)		ONE HOUR	✓	417	100.000
2 - Ulnes Walton Lane		ONE HOUR	✓	450	100.000
3 - A581 Southport Road (E)		ONE HOUR	✓	629	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	35	382
	2 - Ulnes Walton Lane	119	0	331
	3 - A581 Southport Road (E)	521	108	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - A581 Southport Road (W)	2 - Ulnes Walton Lane	3 - A581 Southport Road (E)
From	1 - A581 Southport Road (W)	0	8	4
	2 - Ulnes Walton Lane	1	0	1
	3 - A581 Southport Road (E)	3	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - A581 Southport Road (W)	0.52	8.90	1.1	A	383	574
2 - Ulnes Walton Lane	0.79	27.61	3.6	D	413	619
3 - A581 Southport Road (E)	0.79	19.74	3.7	C	577	866

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	314	78	81	905	0.347	312	477	0.0	0.5	6.309	A
2 - Ulnes Walton Lane	339	85	286	707	0.479	335	107	0.0	0.9	9.684	A
3 - A581 Southport Road (E)	474	118	89	906	0.523	469	532	0.0	1.1	8.449	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	375	94	97	895	0.419	374	573	0.5	0.7	7.202	A
2 - Ulnes Walton Lane	405	101	343	672	0.602	402	128	0.9	1.5	13.363	B
3 - A581 Southport Road (E)	565	141	106	895	0.632	563	639	1.1	1.7	11.154	B

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	459	115	118	882	0.521	458	697	0.7	1.1	8.827	A
2 - Ulnes Walton Lane	495	124	419	625	0.793	488	156	1.5	3.4	25.141	D
3 - A581 Southport Road (E)	693	173	129	880	0.787	685	778	1.7	3.5	18.472	C

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	459	115	119	881	0.521	459	704	1.1	1.1	8.901	A
2 - Ulnes Walton Lane	495	124	421	624	0.794	495	157	3.4	3.6	27.611	D
3 - A581 Southport Road (E)	693	173	131	879	0.788	692	784	3.5	3.7	19.738	C

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	375	94	98	894	0.419	376	583	1.1	0.8	7.277	A
2 - Ulnes Walton Lane	405	101	345	671	0.603	413	130	3.6	1.6	14.497	B
3 - A581 Southport Road (E)	565	141	109	893	0.633	573	648	3.7	1.8	11.889	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - A581 Southport Road (W)	314	78	82	904	0.347	315	485	0.8	0.6	6.380	A
2 - Ulnes Walton Lane	339	85	288	705	0.480	341	108	1.6	1.0	10.055	B
3 - A581 Southport Road (E)	474	118	90	905	0.523	476	539	1.8	1.2	8.751	A

Appendix L. LCC Joint Statement

Joint Statement between Lancashire County Council and the Ministry of Justice

Land adjacent to HMP Garth and HMP Wymott, Ulnes Walton, Leyland

Appeal ref. APP/D2320/W/22/3295556

February 2024

Introduction

This Statement is made between the Local Highway Authority, Lancashire County Council (LCC) and the Ministry of Justice (MoJ) in support of the following development:

> *"Hybrid planning application seeking: Outline planning permission (with all matters reserved except for means of access, parking and landscaping) for a new prison (up to 74,531.71 sqm GEA) (Class C2A) within a secure perimeter fence following demolition of existing buildings and structures and together with associated engineering works; Outline planning permission for a replacement boiler house (with all matters reserved except for access); and Full planning permission for a replacement bowling green and club house (Class F2(c)) on land adjacent to HMP Garth and HMP Wymott, Leyland"*

It is supplementary to the February 2023 joint statement, submitted as Appendix A to the Appellant's additional highways evidence in March 2023 (CD/M3a) and comments upon the alternative scheme for the A581/Ulnes Walton Lane junction.

The MoJ has recently engaged with LCC to discuss the proposals and amendments to the highway's mitigation works as presented on Drawing Number GARTH_ATK_NGN_A581-DR-D0016_P5.

A581/ Ulnes Walton Lane Mitigation

LCC have reviewed the alternative junction design and swept path analysis submitted by the Appellant, and have considered how the additional land now exchanged upon by the MoJ has impacted the proposals.

LCC welcome the additional land being brought into the scheme. LCC are pleased that the scheme is in line with the requirements set out within Manual for Streets (MfS) Table 7.1 and CD 116 'Design of Mini Roundabouts' Figure 5.21 and Table 5.21, and that no visibility departures are now required for the scheme.

LCC support the increase in size of the ICD (Inscribed Circle Diameter) and how this further improves the swept path for larger vehicles, such that all vehicles tested can safely navigate the alternative junction design.

LCC note the contents of the RSA and that this would be followed up with a detailed design making further improvements and a Stage 2 RSA in due course.

LCC can confirm that the alternative highways design could be delivered under a s278 agreement.

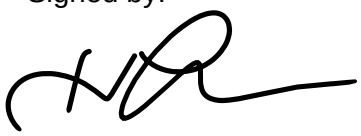
LCC remains of the opinion that the delivery of the proposed mini-roundabout will not prejudice the delivery of the wider A581 Corridor Improvement Scheme and other changes / improvements in the area.

Conclusion

LCC fully supports the Appellant's position that the revised highways proposals satisfactorily responds to the SoS' outstanding concerns regarding the A581/ Ulnes Walton Lane junction, and demonstrates that the proposed development will not have an unacceptable adverse impact on highway safety in accordance with paragraph 115 of the NPPF and Policy BNE1 of the Chorley Local Plan.

In summary, LCC can confirm that, in its capacity as Local Highway Authority, it continues to have no objection to the proposed development.

Signed by:



Hayley Thornton 26th February 2024

……

On behalf of the Ministry of Justice

And:

Neil J Stevens 26th February 2024

……

On behalf of Lancashire County Council

Appendix M. VIA East Midlands Ltd Stage 1 RSA

A581 Southport Road / Ulnes Walton Lane, Ulnes Walton – mini-roundabout

Road Safety Audit
Stage 1 - Completion of Preliminary Design

SA2616B

1. Project Details

Report title:	A581 Southport Road / Ulnes Walton Lane, Ulnes Walton – mini-roundabout
Audit Stage:	Stage 1 Road Safety Audit
Report date:	5th January 2024
Document reference:	SA2616B
Prepared by:	Via East Midlands Ltd (Safer Highways)
Prepared for:	HSP Consulting Ltd
Client project reference:	HMP Garth

2. Introduction

2.1 This report results from a Stage 1 Road Safety Audit carried out on a proposed mini-roundabout at the junction of the A581 Southport Road with Ulnes Walton Lane just west of Ulnes Walton in Lancashire.

2.2 The Road Safety Audit has been carried out following a request received from Mark Blackburn of HSP Consulting on 2nd January 2023.

2.3 The Road Safety Audit Team membership approved by Kendrick Hourd, Head of Safer Highways at Via East Midlands, consisted of:

Simon Taylor - Audit Team Leader, Via East Midlands
Daniel Carter - Audit Team Member, Via East Midlands

2.4 The Audit Team Leader and Audit Team Member personally hold a Certificate of Competency in Road Safety Audit in accordance with the requirements of the European Directive on Road Infrastructure Safety Management 2008/96/EC.

2.5 The Road Safety Audit comprised an examination of the following documents provided:

- 231211_GW2 A581_RSA Brief – "TECHNICAL NOTE Stage 1 Road Safety Audit Brief"
- 608623-0000-ATK-GHX0000-XX-RP-X-0001 – "Garth Wymott 2 Transport Assessment"
- GARTH_ATK_HGN_A581_DR_D_0016_P5 – "PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 PROPOSED MINI ROUNDABOUT"
- GARTH_ATK_SPA_A581_DR_D_0016_P5 – "PROPOSED MITIGATION WORKS ULNES WALTON LANE / A581 PROPOSED MINI ROUNDABOUT SWEPT PATH ANALYSIS"

2.6 The Road Safety Audit took place at private locations away from Trent Bridge House, the Via East Midlands Ltd offices in West Bridgford, Nottingham between 3rd and 5th January 2024. The Audit Team visited the site of the proposed mini-roundabout on 4th January 2024 at 12:30pm. During the site visit the weather was overcast and the road surface was slightly damp. Traffic was reasonable busy but flowing freely.

2.7 Site visits were undertaken in accordance with Via Highways Risk Assessment VRA-047 "Site Visits for Crash Site Investigations and Road Safety Audits".

2.8 The audit has been carried out in accordance with DMRB GG 119. The audit has been carried out with the sole purpose of identifying features of the scheme which could, in our view, lead to road safety problems. The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

2.9 Road Safety Audit is only concerned with road safety matters. It does not consider structural safety nor health and safety issues connected with construction, maintenance and operation.

2.10 All comments and recommendations are referenced to the design drawings and the locations are indicated on a plan within this report.

2.11 The recommendations made in this report should not be regarded as direct instructions to amend the scheme. However, the Designer should consider the recommendations and obtain agreement with the Client as necessary, with a view to amending the scheme to address the road safety problems identified.

3. Items raised in previous road safety audit(s)

3.1 A proposal involving an alternative mini-roundabout design at this location was the subject of a previous Road Safety Audit, reference SA2616A in February 2023. It is considered the current proposal is a revised scheme and the previous Road Safety Audit is no longer relevant to the latest proposal.

4. Items raised at this Stage 1 Audit

4.1 Problem

Location: A581 / Ulnes Walton Lane.

Summary: Collisions in junction when drivers misinterpret the road layout.

The proposed mini-roundabout will be relatively inconspicuous on this route, because the design is reliant on relatively minor changes to kerb-lines, together with a single sign and road markings on each approach. Drivers on the A581 are likely to be drawn to view the road beyond the junction which has straight kerb-lines extending for some considerable distance. The junction will be less conspicuous at night, in poor weather, or when the surface is wet (which can render road markings to be almost invisible). On the eastbound approach the proposed layout could encourage drivers to pass the central “spot” of the junction on the incorrect side.

The conditions described above are likely to result in drivers occasionally misinterpreting the road layout and their requirement to give-way to other road users. This could result in collisions between vehicles and injuries to their occupants.

Recommendation

The proposed traffic calming measures are fundamental to keeping drivers at low speeds which will reduce the potential for injuries of high severity, except when vulnerable two-wheelers are involved.

It is recommended that splitter islands are incorporated into the design within the proposed hatched areas. These would add definition to the road layout and junction form, especially if they can accommodate additional signing. However, consideration will need to be given to turning movements including from private driveways. Warning signs on each approach might also be appropriate, and/or direction signs could be converted to “map-type” to include the roundabout symbol.

4.2 Problem

Location: A581 approaches to mini-roundabout

Summary: A range of potential issues, dependent on the detailed design of traffic calming.

Both A581 approaches to the proposed mini-roundabout are to be 'traffic calmed' through the use of speed cushions. The results obtained may be difficult to predict accurately on this reasonably busy road, which will retain a partially rural appearance, unlike the urban residential environment in which these features are typically used. Success may depend on the detailed design, especially the type, size, and layout of cushion features.

If the individual cushions themselves are not severe enough (for example too narrow, or too low, or with excessively rounded corners), the required speed reduction will not be obtained. This will lead to an increase in the number and severity of injury accidents at the mini-roundabout. Insufficiently slowed drivers or riders may unexpectedly encounter the up-ramps at the speed table, which may cause them to lose control – this would be especially problematic for motorcyclists, who are least likely to be slowed by the cushions, and most likely to be seriously injured if they lose control on the ramp.

If the cushions are more severe, the majority of drivers will slow - however many will also seek to reduce the slowing effect by adjusting their position on the road. This can result in traffic travelling along the road centre line to take a path in between the cushions, in order to experience a reduced vertical deflection. This can lead to head-on conflict with opposing traffic taking the corresponding line in the other direction. Again motorcyclists would be at particular risk of injury. The layout shown in the design appears to show the cushions in the centre of the existing running lanes, which can lead to this type of problem.

To overcome this, the cushions need to be sited close enough together to avoid a 'least resistance' path between them. However when the road is busy, opposing vehicles may frequently cross the features in opposite directions at the same time. If the cushions are too close together, this can lead to side-to-side, or grazing, impacts, or sudden braking and shunt accidents. Obviously, larger vehicles would be most likely to be involved, and may also be least likely to be slowed sufficiently by the cushions, due to their broader wheelbase.

Depending on the road width, avoiding an excessive gap in the centre can result in an inviting gap between the cushion and the kerb, so that drivers veer to the nearside to avoid having to straddle the feature with both wheels. This may lead to a vehicle clipping the kerb or mounting the footway/verge, resulting in a possible conflict with pedestrians, a shunt as a following driver is brought to a sudden halt, or even a loss of control of the vehicle. Sudden veering to the nearside may also risk a collision with a following cyclist or motorcyclist. Any of these incidents may lead to road users being injured.

To reduce the gap at the nearside, some form of narrow build out is sometimes employed. On this type of road, a build-out would have to be very gradually developed to avoid being struck by traffic. Also, cyclists may have difficulty weaving out into the path of following vehicles. Alternatively, an additional cushion in the centre may be considered. However, a cushion of the same width and severity should be used, otherwise drivers will again travel

along the centre of the road in opposing directions to avoid the more severe types. This may be difficult to achieve with the fixed road width available.

Finally, there are existing bus stops adjacent to two of the proposed locations for speed cushions. It is important that buses are able to straddle speed cushions with minimal deflection, otherwise passengers may be injured inside the vehicle – especially those who are standing, which is likely when boarding/alighting.

Recommendation

It is recommended that extreme care is taken in the detailed design of the cushion features. They should also be made as visible as possible, and the street lighting assessed to ensure they remain prominent at night. Forward visibility to the first encountered feature in each direction is particularly important and should be assessed in relation to the measured road speeds.

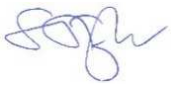
Alternative forms of 'traffic calming' such as plateaux may be explored, although these will result in increased noise nuisance for nearby residents and may be unpopular with drivers of HGVs buses and other large vehicles. They are also unpopular and sometimes hazardous for riders of two wheeled vehicles. We would not recommend horizontal deflection features, such as chicanes, as these can lead to chronic queues, and unpredictable speed reduction effects. They are also prone to conflict, as some drivers attempt to force opposing drivers to give way by driving aggressively through the feature.

The detailed design of the speed cushions (and their locations) should be reviewed and amended to suit the bus stops on this route.

5. Audit Team Statement

We certify that this Road Safety Audit has been carried out in accordance with DMRB GG 119.

Road Safety Audit Team Leader

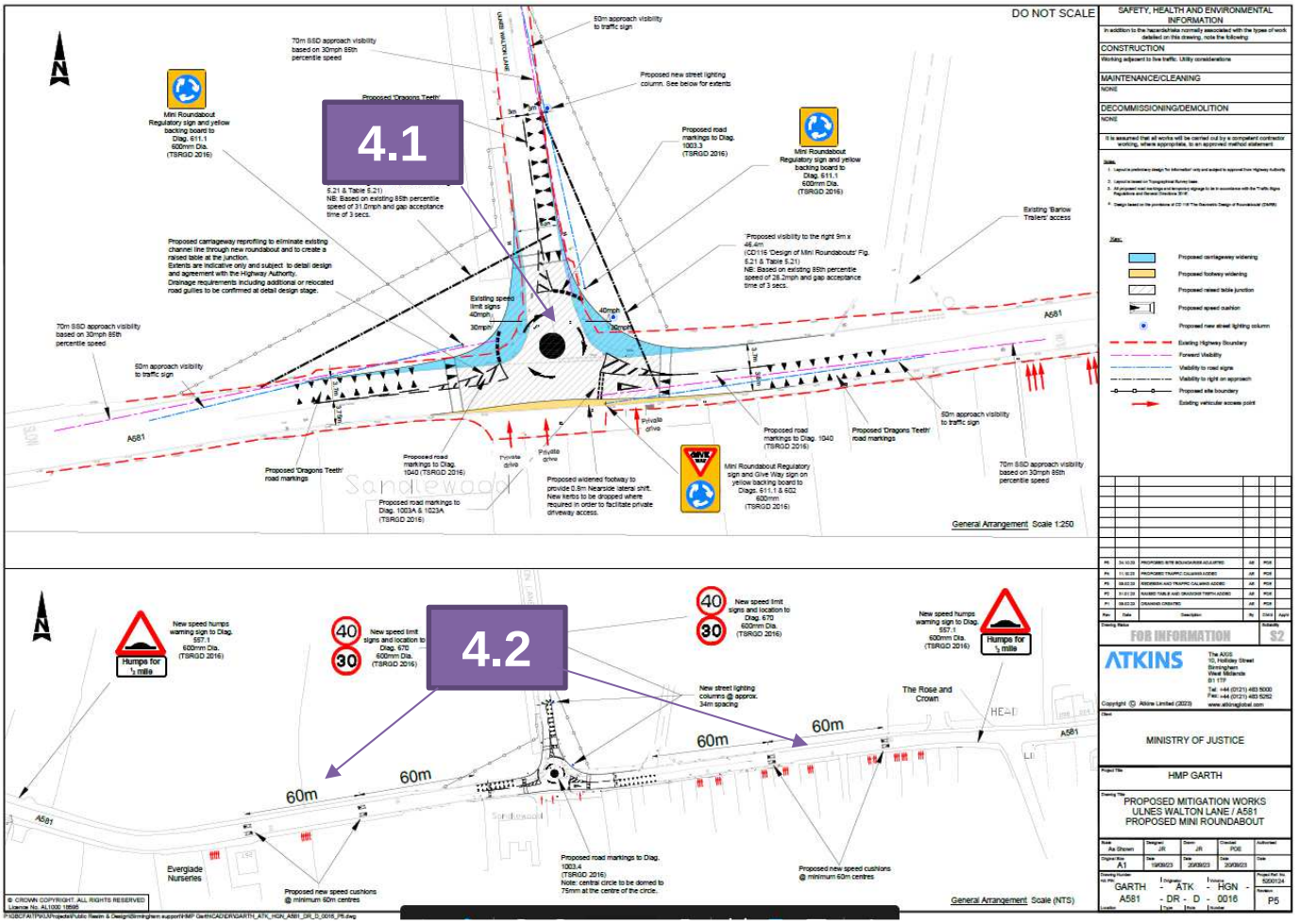


Simon Taylor (Senior Casualty Reduction Manager)
Via East Midlands Ltd
Bilsthorpe Business Park
Eakring Road
Bilsthorpe
Nottinghamshire
NG22 8ST

Road Safety Audit Team Member

Daniel Carter (Crash Site Investigator & Safety Auditor)
Via East Midlands Ltd
Bilsthorpe Business Park
Eakring Road
Bilsthorpe
Nottinghamshire
NG22 8ST

Appendix - Reference Locations



Appendix N. Preliminary Ecological Appraisal

CGO Ecology Ltd 31 Walkford Road Christchurch Dorset BH23 5QD UK

Preliminary Ecological Appraisal of land adjacent to the junction of Ulnes Walton Lane and the A581 Southport Road, Unless Walton, in relation to a proposed new prison at HMP Garth & HMP Wymott, Leyland, Lancashire, for the Ministry of Justice New Prisons Programme

CGO Ecology Ltd

Christchurch

26th February 2024

Author:
Dr Chris Gleed-Owen MCIEEM, Director & Principal Ecologist

Volume code: GHX0000

Project: Garth Wymott 2

Document number: 608623-0000-CGO-GHX0000-XX-RP-X-0018

Issue number: P02

Suitability code: S3 Suitable for Review & Comment

Date of issue: 26/02/2024

Classification: Official

For client:
Mace Ltd
155 Moorgate
London
EC2M 6XB

(+44) 01202 798126
enquiries@cgoecology.com
www.cgoecology.com

Registered Company in England and Wales, number 6532052
Registered office: Suite 8 Bourne Gate, 25 Bourne Valley Road, Poole, Dorset, BH12 1DY, UK

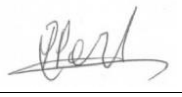
Project: Garth Wymott junction of Ulnes Walton Lane & A581 Southport Road

Deliverable: Preliminary Ecological Appraisal

Our reference: ALRZ JUWL PEA

Version: 2

Date: 26th February 2024

Author:	Dr Chris Gleed-Owen BSc (Hons) PhD MCIEEM	
Checked by:	Rebecca Perl BA MA	
Approved by:	Dr Chris Gleed-Owen BSc (Hons) PhD MCIEEM	

Issued to: Mace Ltd. Anticipated circulation includes Mace internal use, Ministry of Justice, appointed contractors and consultancies, Chorley Council, Natural England, and other relevant stakeholders.

Version control:

Version	Date	Summary of changes
1	31/10/2023	n/a
2	26/02/2024	Updates to BNG and legislation wording.

Non-technical summary

Introduction

CGO Ecology Ltd was instructed by Mace Ltd (the Client), on behalf of the Ministry of Justice, to conduct a Preliminary Ecological Appraisal (PEA) of land adjacent to the junction of Ulnes Walton Lane and the A581 Southport Road, Ulnes Walton (Newtown), Lancashire (the Site). The proposal is for junction alterations as mitigation for a new prison adjacent to HMPs Garth and Wymott, Leyland, Lancashire. The Site comprises two wedge-shaped parcels; one to the west centred on map reference SD 51021 18772, the other to the east centred on SD 51052 18799. The Local Planning Authority is Chorley Council. The Site lies 1.5km south of the existing prisons, and 2km east of the village of Croston.

Methodology

Defra's MAGIC application was consulted on 31st October 2023 for protected sites and species within a 5km radius, and for general habitat and landscape information. A PEA was conducted by experienced and suitably-qualified ecologist Dr Chris Gleed-Owen MCIEEM on 16th October 2023. This mapped habitats, recorded species, and identified and impact-assessed the site's biodiversity interests.

Baseline ecological conditions

MAGIC shows 25 mitigation licences issued by Natural England within 5km: 16 for bats, nine for great crested newt. There are five other records of great crested newt (GCN) within 5km. There are no protected sites within 5km, and no constraints. The Phase 1 habitats are: improved grassland, species-poor hedgerow, species-poor hedgerow with trees. The UK Habitat Classification equivalents are: modified grassland, other native hedgerow, other woodland broadleaved. The BNG categories are: modified grassland (poor condition), native hedgerow, native hedgerow with trees. A floral list of 29 species was recorded. Bat roost potential is negligible. Hedgehog could be present. Common birds could nest on Site. GCN is unlikely. Reptiles and other protected species are not anticipated. Common invertebrates are likely. No Invasive Non-Native Species (INNS) are present.

Impact assessment

The proposed works would result in the loss of species-poor hedgerow. Nesting birds and hedgehog could be impacted.

Mitigation and compensation recommendations

A voluntary provision of at least 10% Biodiversity Net Gain (BNG) will be applied using Biodiversity Metric 2.0 as it relates to an application submitted under that version. The loss of hedgerow must be offset by new hedgerow planting along the development edges. Hedge and tree removal must be conducted outside the March-August bird nesting season, or be preceded by a nest check giving the all-clear to proceed. At least three bird nestboxes must be installed in retained trees nearby to offset loss of breeding habitat.

Enhancement recommendations

Habitat enhancements achieving at least 10% BNG will be provided voluntarily. Three batboxes are recommended to be installed in retained trees nearby. as it relates to an application submitted under that version

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1. Introduction

1.1. Background, brief

CGO Ecology Ltd (CGO) was instructed by Mace Ltd (the Client), on behalf of the Ministry of Justice (MoJ), to conduct a Preliminary Ecological Appraisal (PEA) of land adjacent to the junction of Ulnes Walton Lane and the A581 Southport Road, Ulnes Walton (Newtown), Lancashire (the Site). The proposal is for work to modify the junction to provide mitigation for the proposed new prison on MoJ land adjacent to HMP Garth and HMP Wymott, Leyland, Lancashire. The Site comprises two wedge-shaped parcels to form a widened splay. The west parcel is 574m^2 in area, centred on map reference SD 51021 18772. The east parcel is 352m^2 in area, centred on SD 51052 18799. The Local Planning Authority is Chorley Council. The Site lies 1.5km south of the existing prisons, and 2km east of the village of Croston.

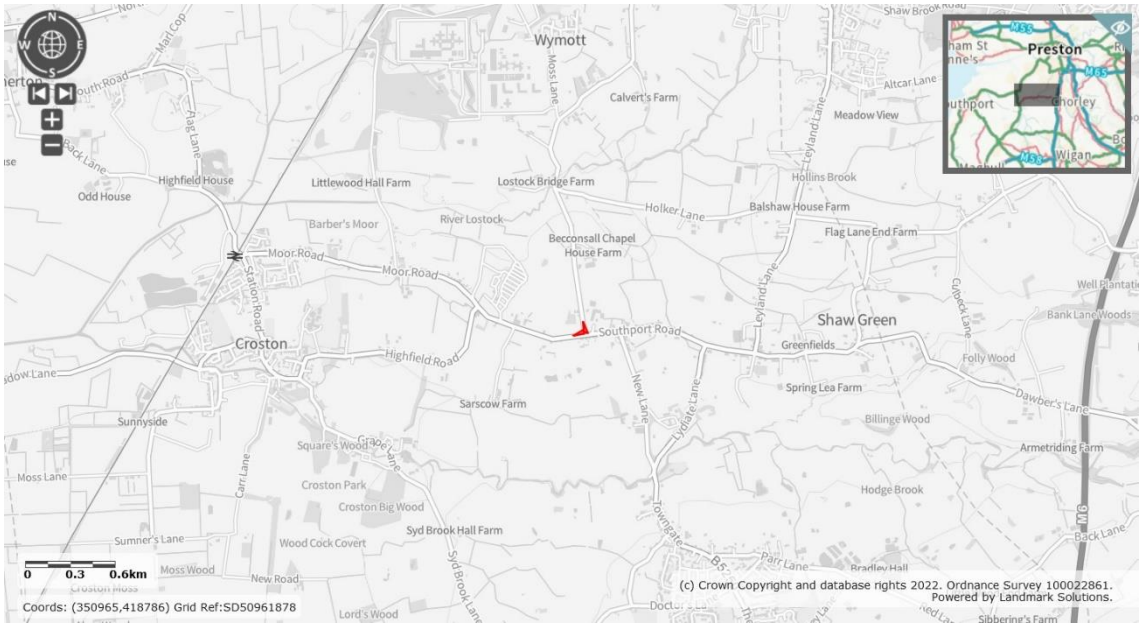

Figure 1 – Site location, from Defra MAGIC Application website.

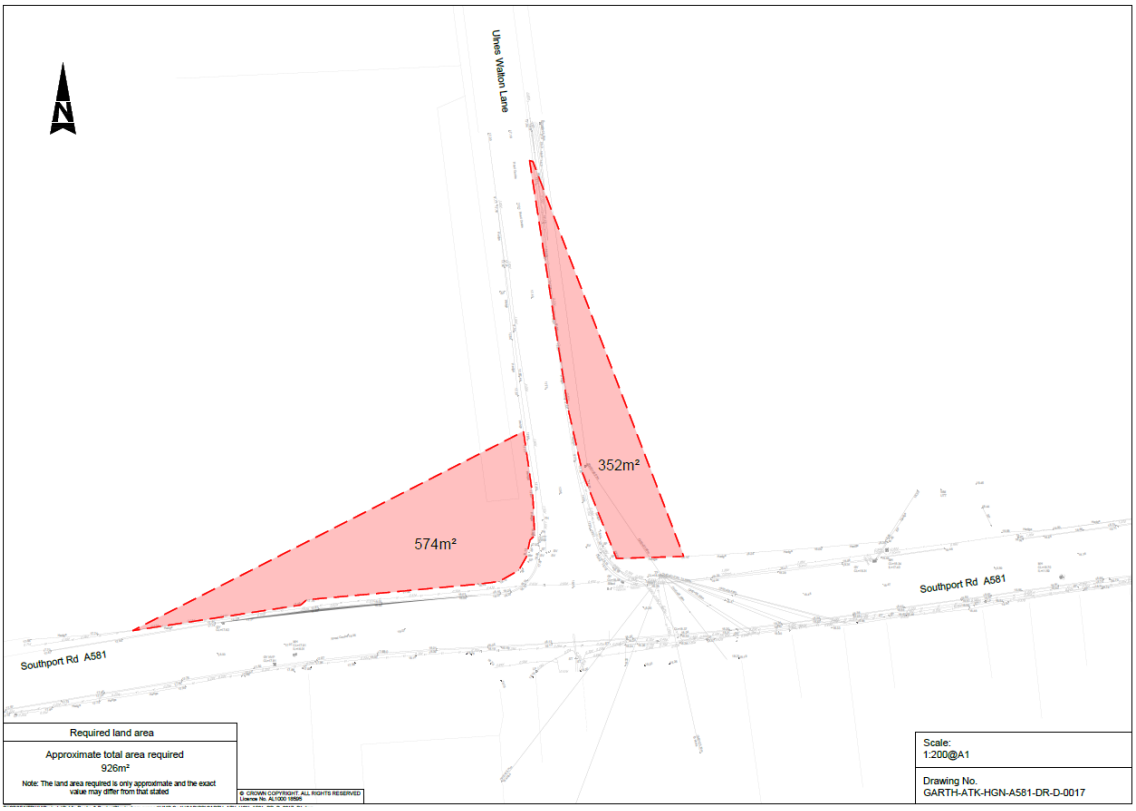

Figure 2 – Site plan provided by Mace.

1.2. Legislation and planning

Many species of wildlife and habitat types in Britain are protected by laws such as the:

- Wildlife and Countryside Act 1981 (as amended) (WCA);
- Protection of Badgers Act 1992;
- Conservation (Natural Habitats & c.) Regulations 2017 (as amended) (Habs Regs);
- NERC Act 2006 (esp. Section 41 'habitats and species of principal importance') (s41);
- Hedgerow Regulations 1997.

Works that may harm or disturb protected species, or damage their habitats, must be impact-assessed by an ecologist, and mitigated/compensated as necessary.

A PEA is the first stage, typically involving an Phase 1 Habitat Survey (cf. JNCC, 2010) and/or UK Habitat Classification (UKHab) survey (UKHab Ltd, 2023), with a walkover to assess all the site's biodiversity value. The PEA assesses potential impacts of the proposed development on protected and notable species, habitats, and protected sites.

This may be followed by 'phase 2' species surveys if necessary. In turn, a more detailed Ecological Impact Assessment (EcIA) may be required under The Town and Country Planning (Environmental Impact Assessment) Regulations 2017; although in many cases, LPAs accept a PEA as fit for purpose.

Buildings, structures, and trees may require a Preliminary Roost Assessment (PRA) for bats, either as part of a PEA, or as a separate survey. This may result in the need for further surveys of potential roosts and general bat activity.

Presence-absence surveys are sometimes also required for protected species such as badger (*Meles meles*), great crested newt (*Triturus cristatus,* GCN), and reptiles. Larger sites may require survey extended over several months for breeding birds, wintering birds, bat activity, and invertebrates.

Trees can be protected individually or as a group/area by a Tree Preservation Order (TPO) under the Town and Country Planning Act 1990 (as amended) and/or the Town and Country Planning (Tree Preservation) (England) Regulations 2012.

Where a development may have an impact on an internationally-protected site, Habitats Regulations Assessment (HRA) screening is necessary, and where required, by a full 'appropriate assessment' (AA) under the Habs Regs. The 'competent authority' responsible for this process is usually the LPA, but an ecological consultancy can provide these services on its behalf. A developer may choose to conduct a 'shadow' exercise in parallel.

LPAs also have a duty under the National Planning Policy Framework (NPPF) (DLUHC, 2023) to deliver Biodiversity Net Gain (BNG). In addition to habitat mitigation and compensation (offsetting), most developments must provide measurable 'net gain' (enhancement). The Environment Act 2021 introduced a requirement for at least 10% BNG, which became statutory on 19th January 2024 via The Environment Act 2021 (Commencement No. 8 and Transitional Provisions) Regulations 2024. These 'BNG Regs' make 10% BNG mandatory for all eligible 'major developments' from 12th February 2024 onwards; and for all eligible small sites (under 0.5ha in area) from 2nd April 2024.

BNG is calculated using Defra's 'Statutory Metric' and 'Statutory Small Sites Metric', which replace previous versions hosted by Natural England. The Metrics use a habitat list modified from UKHab, and condition sheets derived from agri-environment guidance. An ecologist enters baseline habitat data from a recent UKHab survey, and post-development data from the proposed landscaping plans.

Where LPAs required BNG before it became law, or developers voluntarily offered BNG, the Metric version which was current at the time of application was normally used.

In ambiguous cases where a site has changed recently, a notional baseline data of 30th January 2020 must be used, assessed by whatever means are available (e.g. online aerial imagery). This is to circumvent cynical site clearance by developers, but also to define eligible recent enhancements, and to enable 'habitat banking' by providers of off-site BNG units.

1.3. Surveyor

The PEA walkover was conducted by Dr Chris Gleed-Owen BSc (hons) PhD MCIEEM, Director & Principal Ecologist of CGO, and an ecological consultant since 2008 (16 years).

Habitat/plant survey competencies: Experienced surveyor of Phase 1 habitats, UKHab, National Vegetation Classification (NVC), flora (FISC level 4), trees (BS 5837:2012), and an accomplished BNG practitioner.

Vertebrate/invertebrate survey: Competent in the survey of mammals (bats, terrestrial, riparian, and marine), birds, amphibians (including GCN, natterjack), reptiles (including adder, sand lizard, smooth snake), fish, and a range of invertebrates (expert level in non-marine molluscs).

Survey licences: CL09 GCN, sand lizard (*Lacerta agilis*), smooth snake (*Coronella austriaca*), natterjack toad (*Epidalea calamita*), Roman snail (*Helix pomatia*).

Mitigation licences: smooth snake and/or sand lizard (6), and badger sett closure (4). Named ecologist on GCN District Level Licensing (DLL) scheme (2).

Other professional qualifications and training: Member of the Chartered Institute of Ecology and Environmental Management, First Aid at Work, Personal Track Safety /DCCR, CiTB/ROLO, Construction Skills Certification Scheme, Fire Marshal, Asbestos Awareness, CDM Awareness, COSHH, Manual Handling, Health & Safety Management, Working at Height, Ladder Safety, Communication, Performance Management, Project Management, Time Management, Negotiation.

The habitat maps and area extracts were produced by CGO GIS Officer Jack Parker.

2. Methodology

2.1. Desk study

Defra's MAGIC Application (https://magic.defra.gov.uk/MagicMap.aspx) was consulted for protected sites and species, general habitat, and landscape information within 5km, as appropriate for a rural site.

2.2. Walkover

The PEA involved a habitat survey using Phase 1 (JNCC, 2010) and UKHab (UKHab Ltd, 2023) methodologies, extended to include all biodiversity interests. The walkover was conducted on 16th October 2023, in cool dry weather (11-10ºC, 0% cloud cover, 6% relative humidity, light southeast breeze).

A floral list was recorded. All birds, mammals, and other vertebrates seen were recorded where possible, and a search was made for tracks, nests, burrows, droppings, and other evidence. Common invertebrates were recorded. Consideration was given to all protected and notable species and habitats, and whether additional survey would be needed for impact-assessment. Suitable mitigation responses and enhancement recommendations were conceived.

A bat PRA was conducted at the same time, following standard methodology (Collins, 2023), involving ground-level external inspection of trees, to look for Potential Roost Features (PRFs) and signs of bat use.

The habitats were digitised using QGIS, and areas extracted. Baseline habitat types, conditions, and other data were compiled for entry into the Biodiversity Metric 2.0, which is the version that was current at the time of the application.

This report aims to inform impact-assessment within the Zone of Influence (ZoI) of the proposals. It follows CIEEM (2017, 2018) reporting guidance.

2.3. Limitations

The season was suboptimal for botanical identification, but adequate for mapping habitats, and assessing the site's potential for protected and notable species.

3. Baseline ecological conditions

3.1. Desk study

The Defra MAGIC Application shows that there are no protected site designations within 5km, and the Site is not within a Nitrate Vulnerable Zone. 25 European Protected Species (EPS) mitigation licences have been issued within 5km. These were for bats (16) and GCN (9). The nearest bat EPS licences were issued for common pipistrelle (*Pipistrellus pipistrellus*) 1.4km north-northwest and 1.5km southwest. The nearest GCN licence was issued 2.7km northeast. There are five GCN presence records within 5km.

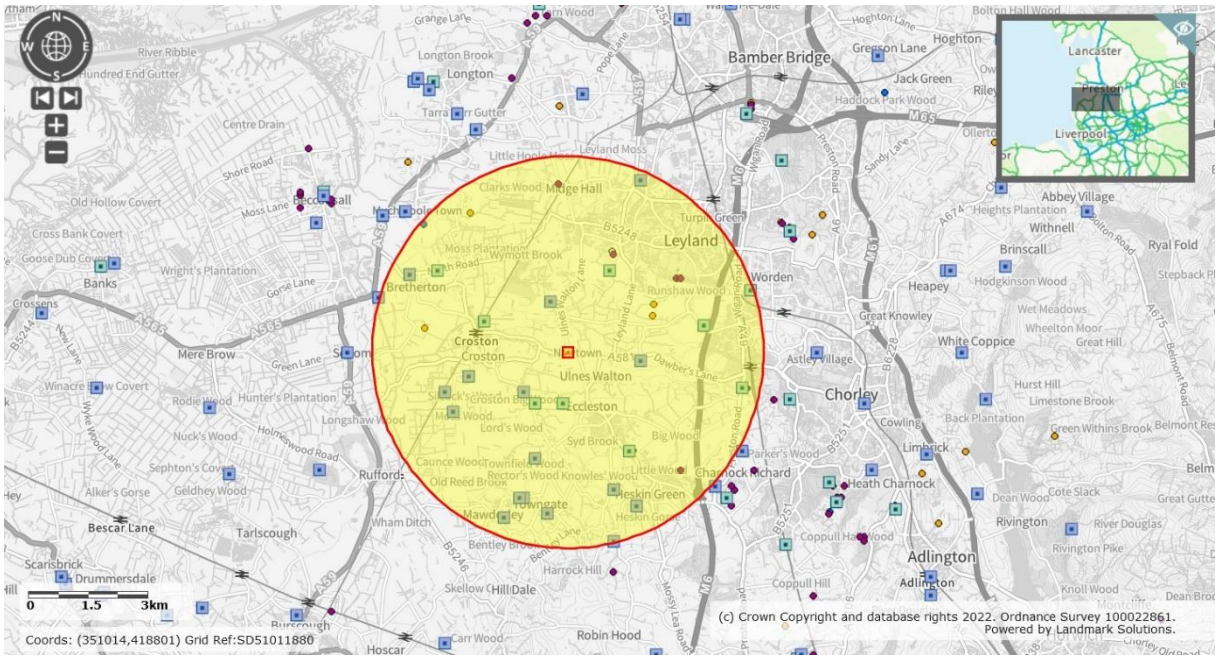

Figure 3 – Defra MAGIC Application map showing statutory site designations within 5km of the site.

3.2. Habitats

In terms of Phase 1 habitats (JNCC, 2010), the Site is predominantly: 'improved grassland', bounded by intact 'species-poor hedgerow' and 'species-poor hedgerow with trees'. The UKHab (2023) equivalents are: 'modified grassland', 'other native hedgerow', and 'other woodland, broadleaved' (as a polygon, as there is no linear equivalent in UKHab to the Phase 1 'hedgerow with trees' category).

The BNG equivalents are: 'modified grassland' (poor condition, fewer than eight species per square metre), 'native hedgerow', and 'native hedgerow with trees'. The Site's baseline value is 0.18 Habitat Units and 0.56 Hedgerow Units.

Figure 4 – Phase 1 habitat plan (JNCC, 2010).

Figure 5 – UKHab habitat plan (UKHab Ltd, 2023).

3.3. Flora, fungi

A floral list of 29 species was gathered, with 25 species in the west parcel, and 20 species in the east parcel.

Common name	Species	West	East
Alder	*Alnus glutinosa*	yes	
American willowherb	*Epilobium ciliatum*		yes
Ash	*Fraxinus excelsior*	yes	
Bramble	*Rubus fruticosus* agg.	yes	yes
Broad-leaved dock	*Rumex obtusifolius*	yes	yes
Bulbous buttercup	*Ranunculus bulbosus*	yes	yes
Cleavers/goosegrass	*Galium aparine*		yes
Common ivy	*Hedera helix*	yes	yes
Common nettle	*Urtica dioica*	yes	yes
Common sorrel	*Rumex acetosa subsp. acetosa*	yes	
Cow parsley	*Anthriscus sylvestris*	yes	yes
Creeping bent	*Agrostis stolonifera*	yes	yes
Creeping thistle	*Cirsium arvense*	yes	yes
Dandelion	*Taraxacum officinale* agg.	yes	yes
Elder	*Sambucus nigra*		yes
Elm	*Ulmus* sp	yes	
False oat-grass	*Arrhenatherum elatius*	yes	yes
Field horsetail	*Equisetum arvense*	yes	
Greater plantain	*Plantago major*	yes	
Ground-ivy	*Glechoma hederacea*		yes
Hawthorn	*Crataegus monogyna*	yes	
Hazel	*Corylus avellana*	yes	yes
Hedge bindweed	*Calystegia sepium*	yes	
Hogweed	*Heracleum sphondylium*	yes	yes
Perennial rye-grass	*Lolium perenne*	yes	yes
Ribwort plantain	*Plantago lanceolata*	yes	yes
Sycamore	*Acer pseudoplatanus*	yes	yes
White dead-nettle	*Lamium album*	yes	yes
Yarrow	*Achillea millefolium*	yes	

Table 2 – Floral list recorded during PEA walkover.

The hedgerows are hawthorn-dominated. The west parcel has hazel within the hedge, an alder tree in its south hedge (A581), and an elm on its east edge (Ulnes Walton Lane). The east parcel is solely hawthorn to the south (A581), and hawthorn with ash, elder, and sycamore on the west edge (Ulnes Walton Lane).

The grassland is short-sward grazed pasture dominated by perennial rye-grass, creeping bent, and probably other species which were not discernible at the time of survey. The road verges and hedge bottoms allowed the identification of additional grasses (e.g. false oat-grass) and common herbs, none of them notable. The ground is soft and seasonally-wet.

3.4. Bats

MAGIC showed 16 bat EPS mitigation licences have been issued within 5km. The most common species locally is common pipistrelle. This and other species could forage, commute, and/or roost on Site. However, no roost potential was identified in the trees on Site, and they are classified as 'negligible' following standard guidance (Collins, 2023). All bats and their roosts are strictly protected by the WCA and Habs Regs.

3.5. Other mammals

No mammals or evidence were recorded during the PEA walkover, but hedgehog (*Erinaceus europaeus*) could be present. Hedgehog receives *de facto* protection via s41 of the NERC Act 2006. No other protected mammals are likely to be present.

3.6. Birds

No birds were recorded on Site during the PEA walkover, but a range of common species are likely to forage here, and some could nest on Site. All nesting birds are protected by the WCA.

3.7. Amphibians

GCN is not likely in this location, although it is known to be present within 2km. There are no ponds in the immediate vicinity, and the nearest ponds to the south of the A581 are effectively isolated by the ecological barrier presented by the road.

3.8. Reptiles

Reptiles are known to be absent from the general area.

3.9. Fish

Fish are not present on site.

3.10. Invertebrates

No invertebrates were recorded during the PEA walkover, but a range of common species could be present. No s41 Priority Species are likely to be present.

3.11. Invasive species

No Invasive Non-Native Species (INNS) are present on Site.

4. Impact assessment

4.1. Protected sites

No impacts are anticipated on protected sites.

4.2. Habitats

The proposed redevelopment will replace the existing habitats with ‘hardstanding’ (Phase 1)/’developed land, sealed surface’ (UKHab). The application will not be subject to mandatory BNG.

4.3. Flora, fungi

No native plants of note were identified, and no significant botanical losses are anticipated.

4.4. Bats

No bat roosts will be affected. Foraging and commuting bats could be affected by the loss of existing trees and hedgerow (most likely to be low numbers of common pipistrelle).

4.5. Other mammals

Hedgehogs foraging and/or sheltering on site could be harmed or otherwise impacted by the development.

4.6. Birds

Low numbers of several common nesting bird species could be impacted. Low numbers of foraging birds could also be impacted by the loss of habitat.

4.7. Amphibians

No impacts are likely on amphibians.

4.8. Reptiles

No impacts are likely on reptiles.

4.9. Fish

No impacts are likely on fish.

4.10. Invertebrates

A range of common invertebrates could be impacted by loss of habitat.

4.11. Invasive species

All developments present a risk of spreading INNS if not properly mitigated through biosecurity. The choice of plants and shrubs for landscaping could pose an INNS risk. Construction vehicles and equipment could accidentally bring INNS plants onto site.

5. Mitigation, compensation, and enhancement recommendations

5.1. Protected sites

No mitigation, compensation, or enhancements are necessary.

5.2. Habitats

The proposal will not be subject to mandatory BNG, but will deliver a voluntary net gain of at least 10% in area-based and linear habitats, calculated using Biodiversity Metric 2.0.

The proposed redevelopment will replace the existing seminatural baseline habitats with ‘hardstanding’ (Phase 1)/’developed land, sealed surface’ (UKHab).

The loss of grassland must be offset by creation and/or enhancement of grassland. There is no scope for delivering this within the junction area, but it will be delivered within the application red line on MoJ land. The loss of hedgerow will be largely offset by planting of new hedgerow along the development boundary (adjoining retained grassland). If additional hedgerow planting is needed to achieve 10% BNG, this will be provided elsewhere within the red line boundary on MoJ land.

5.3. Flora, fungi

No mitigation, compensation, or enhancements are necessary for individual species.

5.4. Bats

A Precautionary Method of Works (PMW) must be in place during construction. This is to minimise the potential impacts from light and other construction activities on bats that may forage and/or commute over the Site.

Construction lighting must be avoided by working only in daylight hours, or by using directional lighting located well away from retained trees and hedgerows. Construction and operational impacts must be in line with standard industry guidance (ILP, 2023). No operational lighting is proposed.

General construction impacts are not likely to be significantly different to the normal recent history of the site, but the PMW should emphasise the need to prevent a significant increase in noise, dust, fumes etc over an extended period. Hence, works should be condensed into as short a phase as possible.

As an enhancement, at least three batboxes of appropriate type (e.g. Schwegler 2F) must be installed on retained trees. The locations must be advised by a suitably-qualified ecologist.

5.5. Other mammals

An Ecological Clerk of Works (ECoW) must be present during tree and hedgerow removal, to safeguard any hedgehogs sheltering on Site.

5.6. Birds

Tree and hedgerow removal must avoid the March-August bird nesting season. If such works must take place in the nesting season, a pre-commencement check by a suitably-experienced ecologist/ECoW must take place immediately prior to the work. If an active nest is present, work must stop immediately, a stand-off of at least 5m must be taped off, and work cannot recommence until all chicks have fledged.

As mitigation for the loss of nesting habitat, at least three nestboxes must be installed on retained trees. The locations must be advised by a suitably-qualified ecologist. Suitable types could be Schwegler 1B or similar.

5.7. Amphibians

No mitigation, compensation, or enhancements are proposed.

5.8. Reptiles

No mitigation, compensation, or enhancements are proposed.

5.9. Fish

No mitigation, compensation, or enhancements are proposed.

5.10. Invertebrates

No mitigation, compensation, or enhancements are proposed.

5.11. Invasive species

A Biosecurity Plan must be in place for the whole development process. Contractors must be briefed in biosecurity, and the risks of spreading INNS, via toolbox talks.

Contractors and suppliers must demonstrate awareness of the risks posed by INNS. Any vehicles, plant, or equipment coming from wet locations must operate a strict check-clean-dry policy before entering site. The same applies when leaving this Site and travelling to another. This is to prevent the accidental spread of invasive aquatic invertebrates and plants.

Biosecurity provisions must be included in toolbox talks for all Site operatives and visitors, and laminated identification posters for the most common Schedule 9 species must be posted prominently on fences and cabins.

6. References

CIEEM (2017) *Guidelines for Ecological Report Writing.* Chartered Institute of Ecology and Environmental Management, Winchester.

CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1 (Sept 2019).* Chartered Institute of Ecology and Environmental Management, Winchester.

Collins, J. (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 4th Edition. Bat Conservation Trust, London.

DLUHC (2023) *National Planning Policy Framework*. Department of Levelling Up, Housing & Communities, London.

ILP (2023) *Bats and Artificial Lighting at Night. Guidance Note 08/23.* Institution of Lighting Professionals, Rugby.

Joint Nature Conservation Committee (JNCC) (2010) *Handbook for Phase 1 habitat survey - A technique for environmental audit (revised 2016).* JNCC, Peterborough.

UKHab Ltd (2023) *UK Habitat Classification Version 2.0 (at http://www.ukhab.org)*

7. Photographs

Plate 1 – General view from south.

Plate 2 – South aspect of west parcel.

Plate 3 – South aspect of east parcel.

Plate 4 – Elm tree on east edge of west parcel.

Plate 5 – Improved grassland in west parcel.

Plate 6 – Improved grassland in east parcel.

Plate 7 – East parcel, viewed from north end.

Plate 8 – Hedgerow base of east parcel.

Appendix O. Landscape Assessment

Landscape and Visual Matters

Technical Note

Garth Wymott 2

On behalf of Ministry of Justice

Date: 20/02/2024 | Pegasus Ref: P21-0042

PINS Ref: APP/D2320/W/22/3295556 | LPA Ref: 21/01028/OUTMAJ

Author: **James W. Atkin BSc Hons Dip LM CMLI**

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1. Introduction

Qualifications and experience

1.1. My name is James Atkin. I hold the position of Senior Director (Environment) in the Birmingham Office of the Pegasus Group. The Company undertakes all aspects of town planning, urban and landscape design and environmental planning. I have a Bachelor of Science Degree in Landscape Design and Plant Science and a Diploma in Landscape Management, both from the University of Sheffield. I am also a Chartered Member of the Landscape Institute (2005).

1.2. I have over 23 years professional experience specialising in the application of landscape and visual assessment and the use of best practice guidance. I have authored landscape and visual impact appraisals, assessments and evidence, both in the UK and in the international context.

1.3. Prior to joining the Pegasus Group I have worked in multidisciplinary consultancies, including Wardell Armstrong LLP and Atkins, advising on landscape and visual matters across a range of sectors including power, highways, rail, housing, waste, land reclamation and restoration, mineral extraction, commercial developments and renewable energy.

1.4. Since joining Pegasus Group I have completed numerous detailed landscape and visual impact assessments for sites across the UK, including residential development and mixed-use development schemes, care home developments, solar installations and commercial development. As an inherent part of this work I apply an iterative process of landscape and visual appraisal and assessment to inform masterplanning principles which avoid or respond to landscape and visual constraints and opportunities.

Terms of reference

1.5. Pegasus Group were previously instructed by the Ministry of Justice (MoJ) to undertake a landscape and visual impact assessment (LVIA) in relation to the proposed development of land at HMP Garth and HMP Wymott, Lancashire.

1.6. Pegasus Group were also instructed to present evidence on landscape and visual matters in respect of the appeal following the refusal of the application by Chorley Council.

1.7. The proposed development subject of the application and subsequent appeal included:

1.8. **"Hybrid planning application seeking: Outline planning permission (with all matters reserved except for access, parking and landscaping) for a new prison (up to 74,531.71 sqm GEA) (Class C2A) within a secure perimeter fence following demolition of existing buildings and structures and together with associated engineering works; Outline planning permission for a replacement boiler house (with all matters reserved except for access); and Full planning permission for a replacement bowling green and club house (Class F2(c))."**

1.9. The appeal was recovered for determination by the Secretary of State on the 29th June 2022. As part of that process the Secretary of State decided to give the appellant and other parties the opportunity to provide further evidence on 'highways issues', and allow parties to

respond to any such evidence, before reaching a final decision (noting that subject to being satisfied on these matters, they are minded to allow the appeal and grant planning permission).

1.10. The highways issues referred to relate to off site highways works at the junction between Southport Road (the A581) and Ulness Walton Lane, a location remote from the application boundary of the appeal site. Since the appeal was adjourned, further work has been undertaken on the highways design of the junction, with an appropriate design solution subsequently proposed.

1.11. This technical note addresses the proposed junction design in respect of landscape and visual matters.

1.12. It is important to note that the submitted LVIA (and subsequent evidence) addressed the proposed development within the defined application boundary (i.e. the main prison development). The changes to the Southport Road and Ulness Walton Lane junction represent a highly localised and small-scale change in a discreet part of the landscape. In comparison to the main prison development any landscape change is not likely to be significant. However, that does not preclude the application of good design to ensure that the new junction can reflect local characteristics.

1.13. This is addressed further in the following sections.

2. Landscape and Visual Appraisal

Landscape and visual baseline

2.1. This section sets out a brief overview of the landscape and visual baseline of the existing junction between Southport Road and Ulness Walton Lane.

Landscape character

2.2. The current junction between Southport Road and Ulness Walton Lane comprises a T-junction, set on the western threshold of the hamlet of Ulness Walton. In the wider context there are numerous other similar junctions (albeit with some variations in scale and boundary treatments) including to the west with Highfield Road and to the east with New Lane.

2.3. The junction itself is characterised by grass verges on its northern side, with hedgerows and dilapidated cheshire railings; to the south is a footway along with various private driveways which give access to the adjacent residential dwellings fronting Southport Road. The route is lit at this point, with lighting columns present along the route as well as at the junction itself.

2.4. The approach to the junction from north, along Ulness Walton Lane, is characterised by well maintained agricultural hedgerows along the more open section of the route, transitioning to a mixed appearance of hedgerows and hedgerow trees, with some boundary walls and driveways that relate to various wayside dwellings.

2.5. Approaching the existing junction from the east, the highway corridor is characterised by the residential frontages on Ulness Walton on the southern side of the road (along with footways and lighting columns) and well-maintained agricultural hedgerows to the north. Signage, telegraph poles and lighting are also present along this section.

2.6. From the west the approach is characterised less by the suburban influences, as this section passes through a more open part of the agricultural landscape. Here the highway corridor is characterised by well maintained agricultural hedgerows, with a footway and grass verges to the south and north respectively; more frequent mature trees are present and the boundary walls/driveways of occasional wayside properties add variety.

2.7. Overall, the junction sits at a transitional point on the threshold to Ulness Walton and consequently is influenced by suburban influences of the additional driveways and properties which are present on is section of the A581.

Views and visual amenity

2.8. In respect of views and visual amenity, people travelling more generally through the landscape on roads are defined in the submitted LVIA methodology as medium sensitivity. Users of rights of way and residential views are determined to be high sensitivity, although with the latter there is no 'right to a view'.

2.9. For road users travelling along Southport Road or Ulness Walton Lane, and for residential views, the existing T-junction is an existing component of the view and changes will relate to the alternation of this, rather than a proposal for a new junction which would otherwise introduce a new element into the composition of any given view.

2.10. In respect of higher sensitivity views from the network of rights of way in the area, these routes are generally sufficiently physically separated from the junction that views of the new junction will not be available.

2.11. Such routes include the footpath to the north between Ulness Walton Lane and Holker Lane, to the east between Southport Road (east of Newtown) up to Holker Lane, to the west between Southport Road to Sarscow Farm and to the south close to Spent Brook.

2.12. In general terms views from such routes with access to the countryside, toward the junction location, are screened by intervening landform and vegetation, particularly that associated with the medium scale pattern of the fieldscape which is defined by dense hedgerows and frequent mature hedgerow trees.

Proposed junction design

2.13. As noted, the existing junction comprises a T-junction situated at the threshold of the western extent of Ulness Walton.

2.14. The original junction design proposed to alter this to a mini-roundabout, offset slightly from the main corridor of Southport Road, and generally within the existing highway boundary which accommodated the proposed visibility splays required for that design. As a consequence, the footway to the south would be slightly widened, and new signage and road markings also formed part of the proposal.

2.15. The new junction design also proposes a mini-roundabout, offset slightly further to the north from the main route of Southport Road. For this design, a greater distance is required for the visibility splays east and west and, as a consequence, existing highways boundary to the east and west of the junction of Ulness Walton Lane (comprising hedgerow, dilapidated cheshire railings and some hedgerow trees) would be removed. To the south, localised widening to the existing footway would be implemented. New lighting columns, signage and road markings also formed part of the proposal. It would be expected that the junction design included appropriate mitigation in terms of new hedgerow planting and railings to reinstate any losses.

Landscape and visual impacts

2.16. In respect of landscape and visual matters the greatest impact, albeit at a localised level, would be the loss of roadside hedgerows, some hedgerow trees and the dilapidated cheshire railings. The introduction of new highways infrastructure such as lighting, signage and footways would have a negligible impact given these are existing components of the landscape.

2.17. Considering landscape character, the change would be negligible and highly localised. Notwithstanding the change to the formation of the junction (T-junction to mini roundabout) this is not a new access point, but an existing junction on the threshold of the settlement of Ulness Walton.

2.18. As noted in the baseline, higher sensitivity receptors using the rights of way network in the surrounding landscape are not likely to have views due to existing screening. Visual impacts will be restricted to a short section of the highway and a small number of residential dwellings.

2.19. The introduction of a mini-roundabout, rather than the previous T-junction, would influence the character of the route slightly, but at the fringe of a small settlement this would not be an incongruent or unexpected component of the streetscape. Furthermore, where existing T-junctions are present along the route, there is a great deal of variety to these, subject to their width at the point of access, boundary treatments and context (i.e. where these access residential dwellings within the settlement, wayside dwellings or small agricultural/commercial sites).

2.20. Notwithstanding the very limited nature of potential landscape and visual impacts, it is possible to provide mitigation as part of the proposal, and this is considered in the following section.

Landscape and Visual Mitigation

2.21. In respect of the proposed, most recent, junction design, it is possible that the proposed removal of the highways boundary (both hedgerow and fence line) can be effectively reinstated, albeit on a slightly different alignment to that of the original highway boundary.

2.22. For the boundary treatments it would be possible to reinstate sections with new cheshire railings, these would reflect on the local landscape character.

2.23. Replacement hedgerow can be specified and implemented along the amended highways boundary. The design of this can include a planting mix of native species, appropriate to the character of the local area and including a suitable mix of species which contributes to ecological diversity. Implemented in a typical cost-effective form (albeit to a good specification), native species hedgerow planting can typically establish to form a dense continuous hedgerow (up to ca. 2m in height) within 3-5 years; if required, timescales can be accelerated by use of lager stock or 'instant hedge planting'. Additional diversity could be added through use of seed mixes to the hedgerow understorey, although this may be better implemented at later stages once the hedgerow as established.

2.24. Within the proposed hedgerow mix, it is possible to include for 'hedgerow trees' either through specific species selection as part of the mix or as larger, standard stock. The specification for the implementation and maintenance of these would need to ensure that they are allowed to grow above the general maintenance height of the hedgerow, and also that they do not impinge on the highways visibility splays in the future.

2.25. On balance, following mitigation, the residual impact in the local landscape would be the alternation of a T-junction to the mini roundabout, with the highways corridor and on the threshold of Ulness Walton.

3. Summary

3.1. Overall, the proposed revisions to the design of the junction would not result in a significant landscape and visual impact.

3.2. The nature of any changes between the previous and current designs are both based around a mini-roundabout and would be highly localised in the landscape context of Ulness Walton.

3.3. Where the proposed junction design results in the loss of landscape components (i.e. hedgerows and cheshire railings) it is both possible and practicable to reinstate these using standard approaches to landscape design and implementation.

3.4. Overall, both in respect of landscape character and visual amenity, and in relation to landscape mitigation, landscape and visual matters do not form a technical constraint to the proposed development.

PEGASUS GROUP

Expertly Done.

Steve Yeates
AtkinsRéalis UK Limited
Two Chamberlain Square
Paradise Circus
Birmingham
B3 3AX