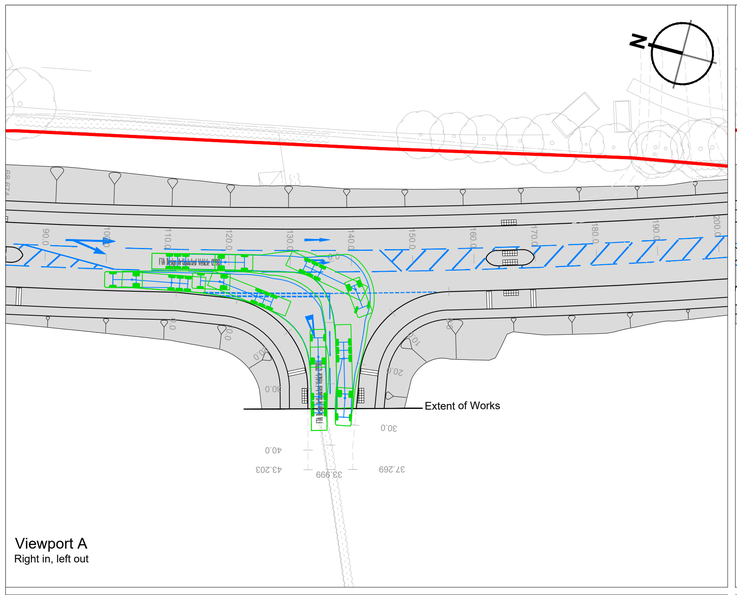
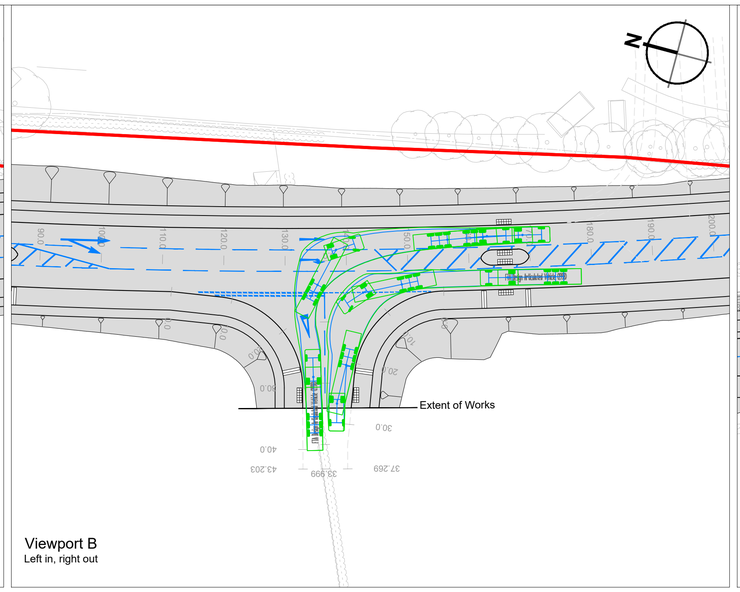
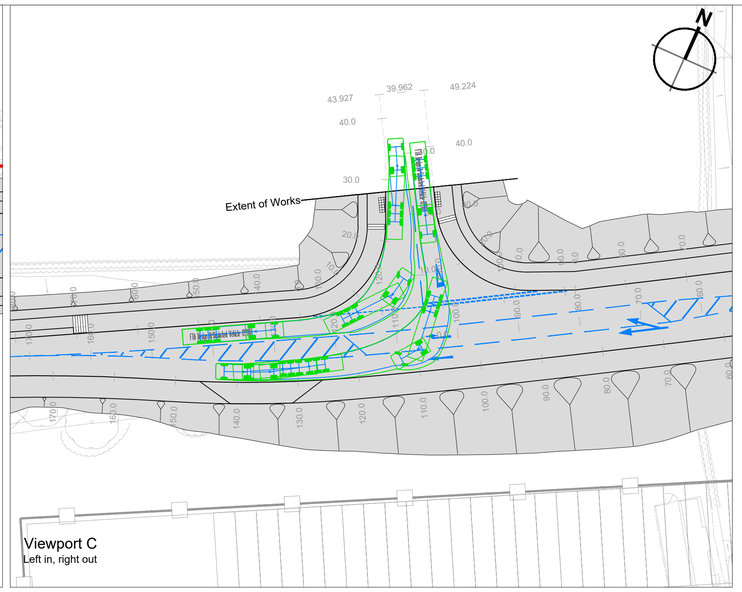


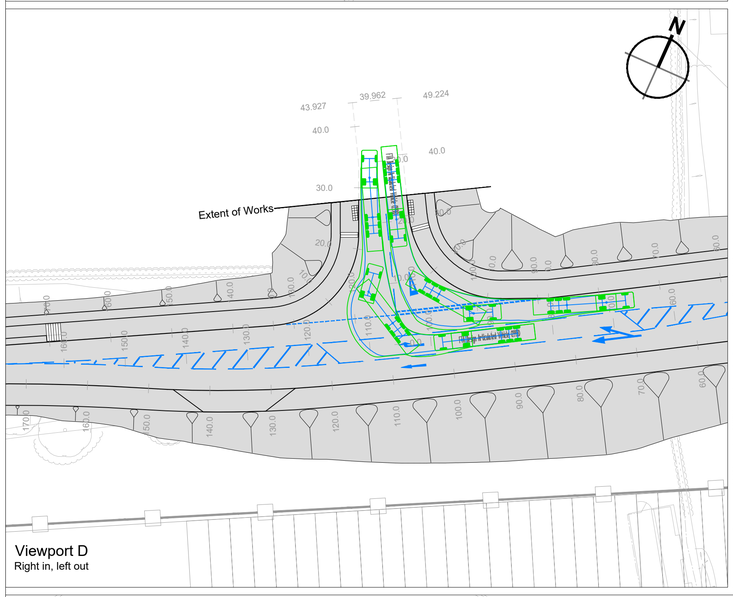
Viewport A
Right in, left out



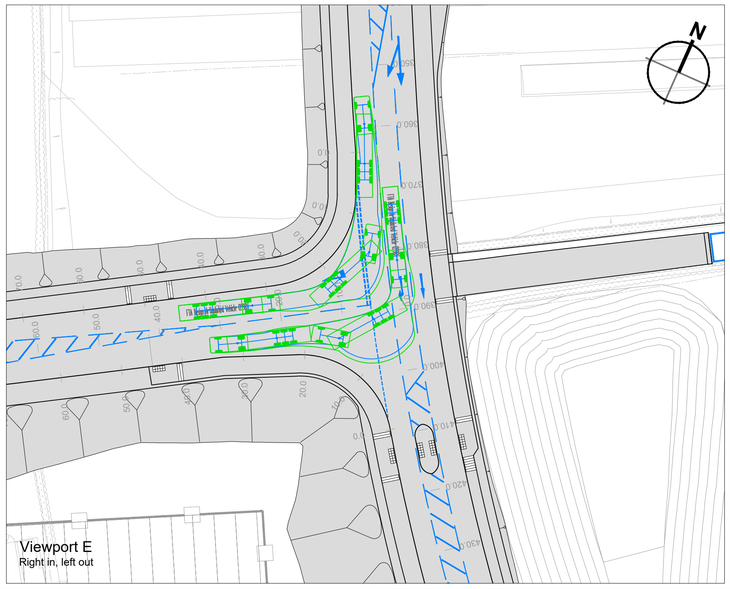
Viewport B
Left in, right out



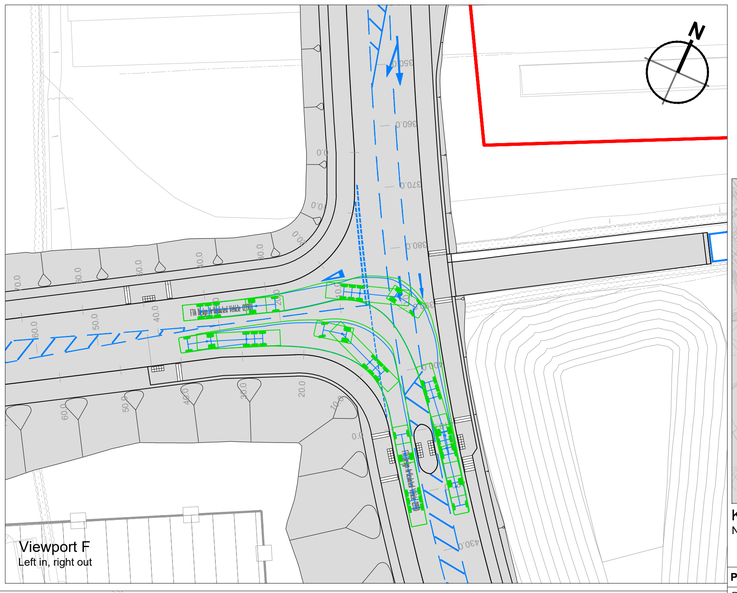
Viewport C
Left in, right out



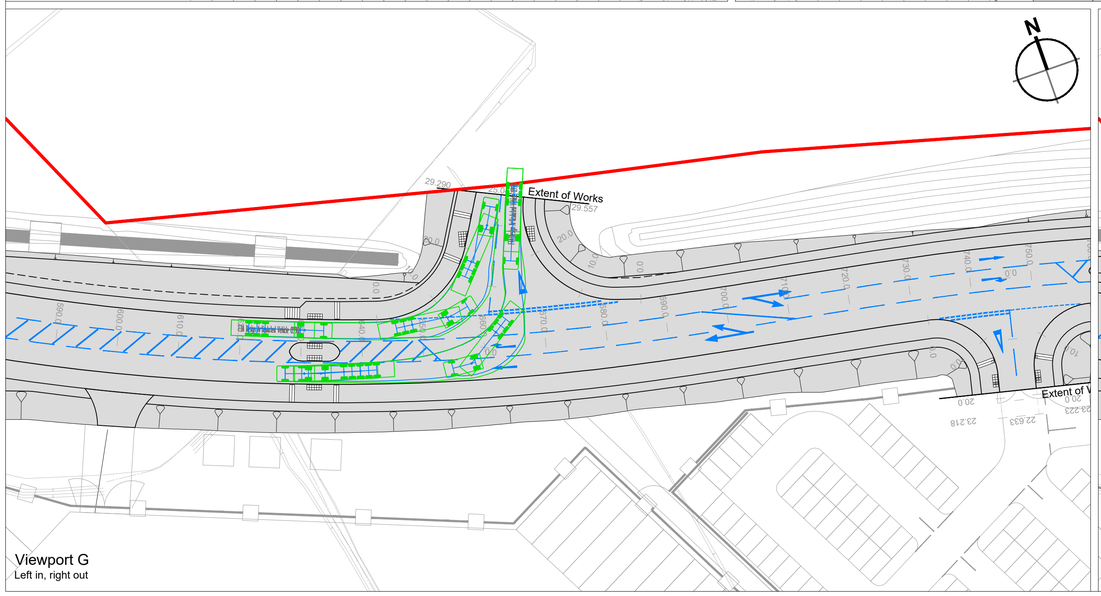
Viewport D
Right in, left out



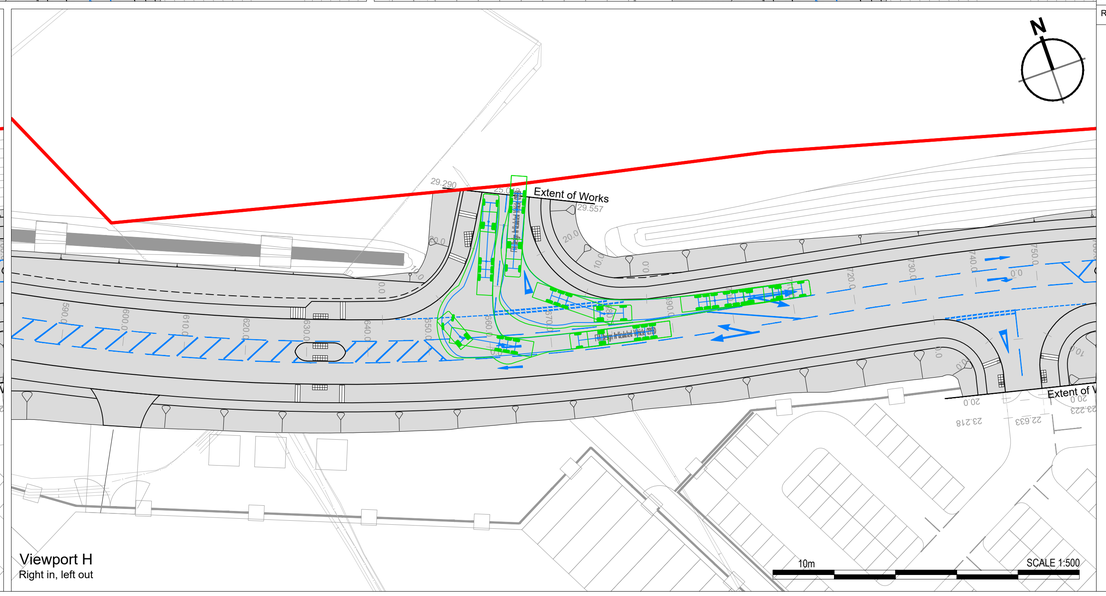
Viewport E
Right in, left out



Viewport F
Left in, right out



Viewport G
Left in, right out



Viewport H
Right in, left out

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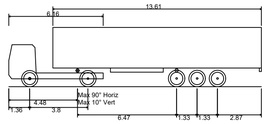
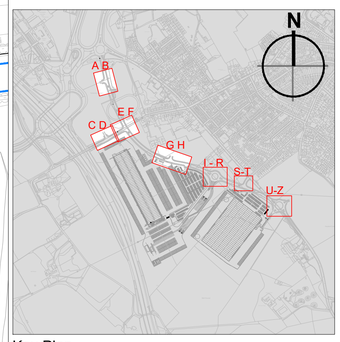
3. This drawing should be read in conjunction with all other relevant drawings and specifications.
4. Masterplan taken from PHP drawing 4400-001 Rev P25, received 15/06/2020.
5. All works to be carried out in accordance with the Specification for Highway Works, the South Yorkshire Residential Design Guide and the requirements of Barnsley Metropolitan Borough Council.
6. Refer to drawing HOYLA-RPS-SI-XX-DR-CR-011 for setting out information.
7. All information shown on this drawing is subject to Technical Approval from BMBC.



FTA Design Articulated Vehicle (1998)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.550m



Key Plan
Not to Scale

Rev	Description	By	Ckd	Date
P01	First Issue	AB	LAM	28.08.20

Sherwood House, Sherwood Avenue,
Newark, Nottinghamshire, NG24 1QQ
T:01636 605 700 E: rpsnewark@rpsgroup.com

Client

Project Hoyland

Title Link Road
Swept Path Analysis
(Sheet 1)

RPS Project Number	Scale @ A1	Date Created
NK020040	1:500	28.08.20
Task Team Manager	**Information Author**	**Task Information Manager**
SG	AB	LAM

Status
S2 (Suitable for Information)

Document Number	Revision
HOYLA-RPS-SI-XX-DR-CR-0890	P01

Project Code - Originator - Zone - Level - Type - Role - Drawing Number

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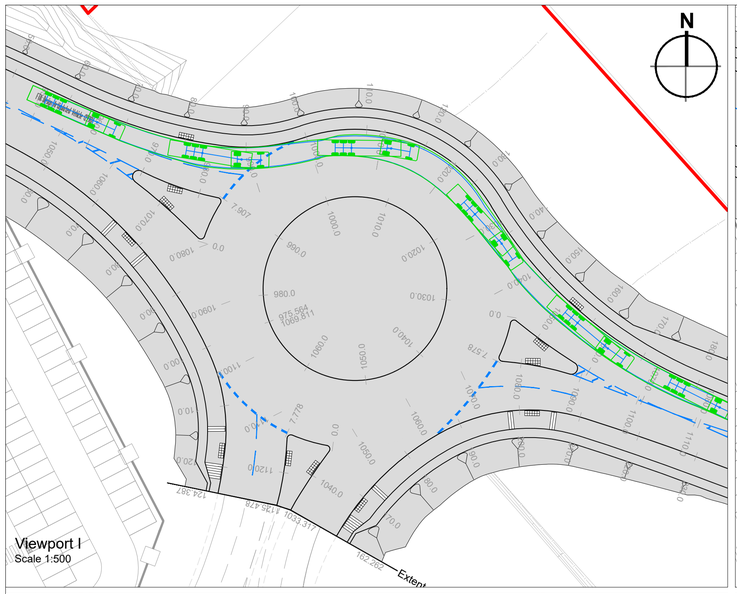

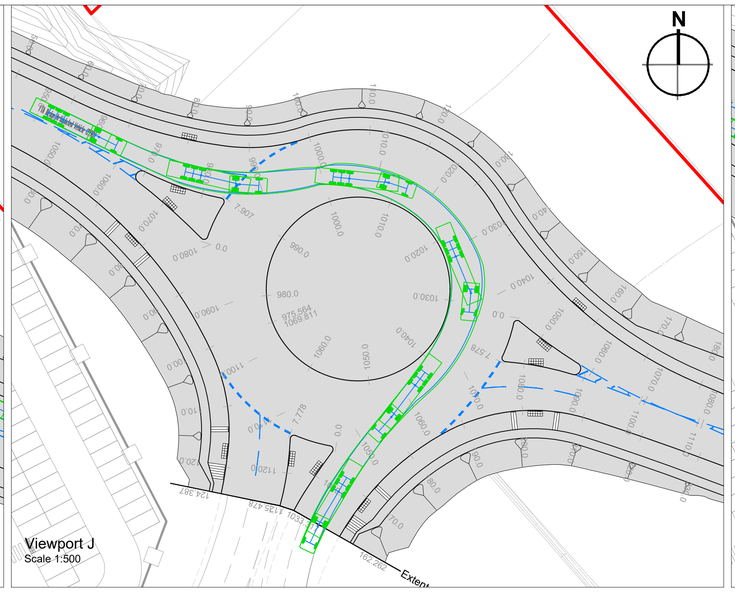

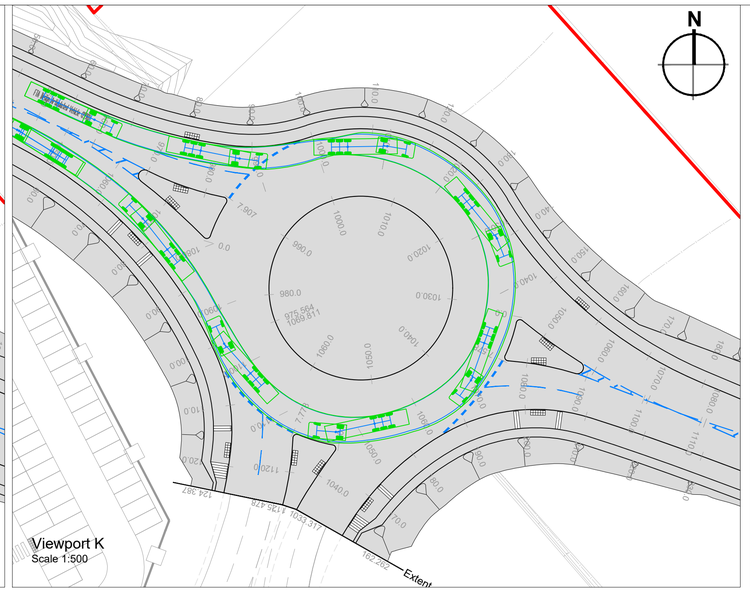

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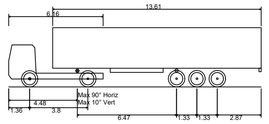

FTA Design Articulated Vehicle (1998)

Overall Length	16.480m
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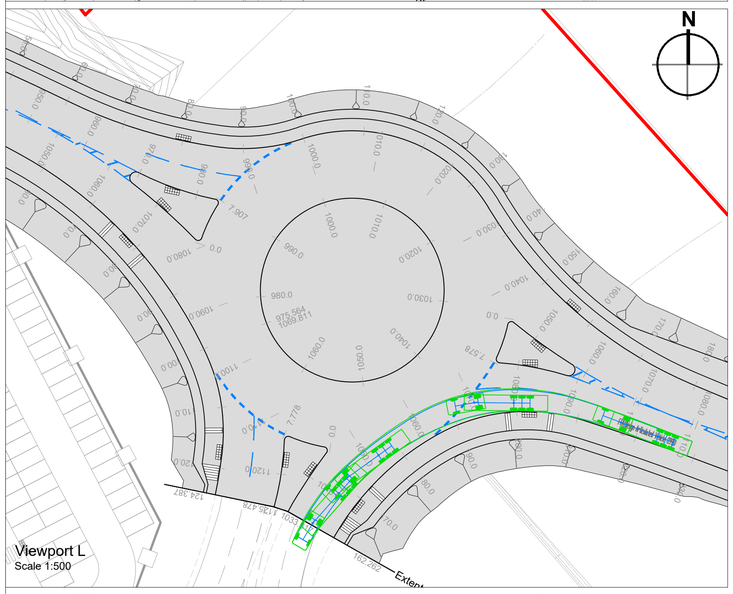
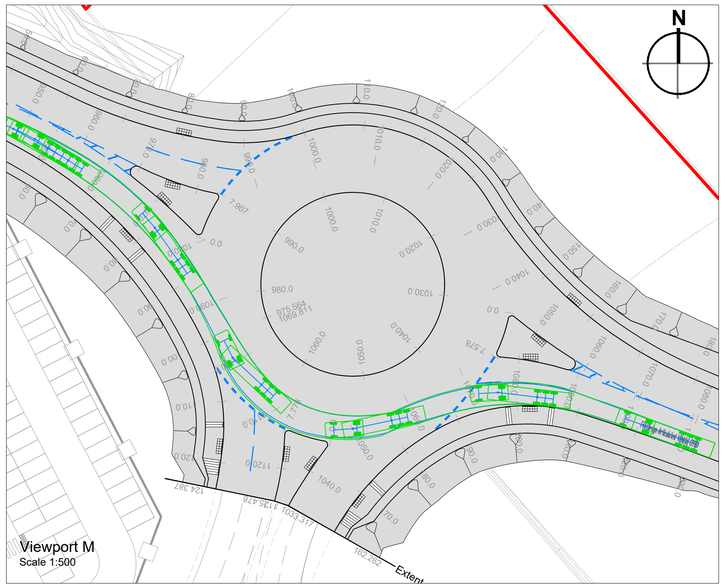
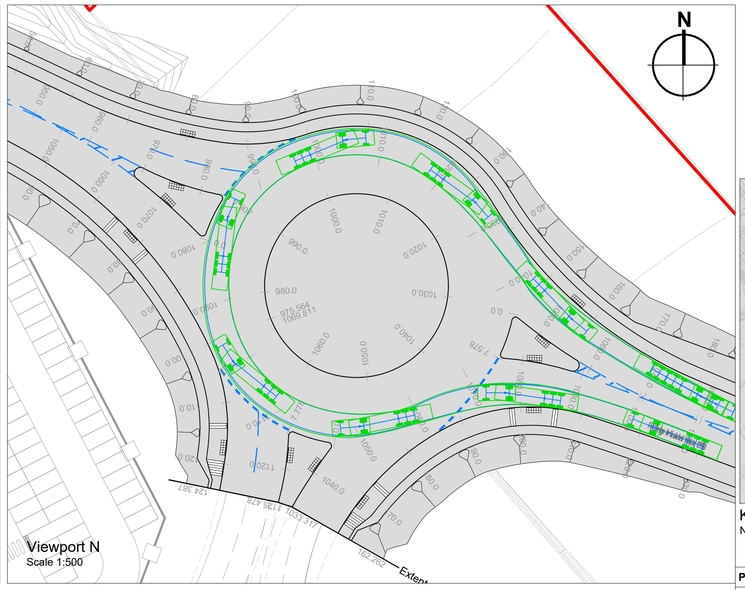
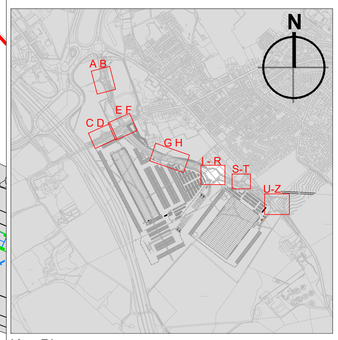
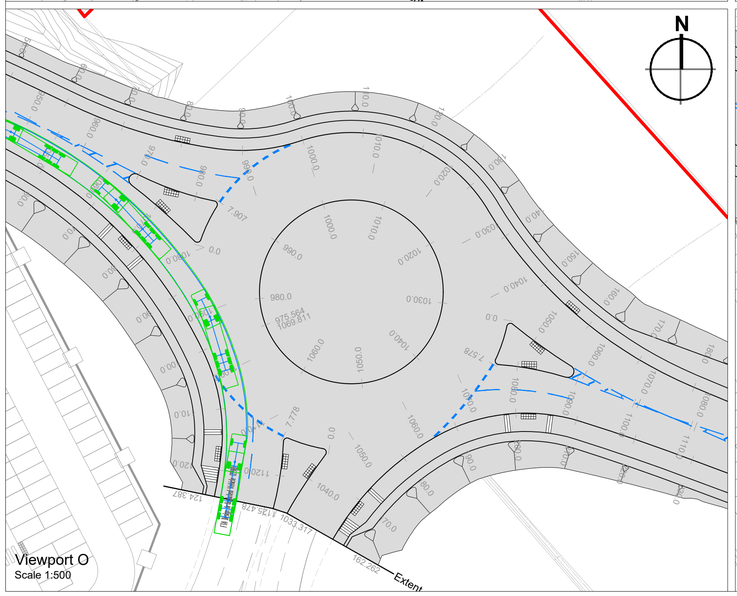


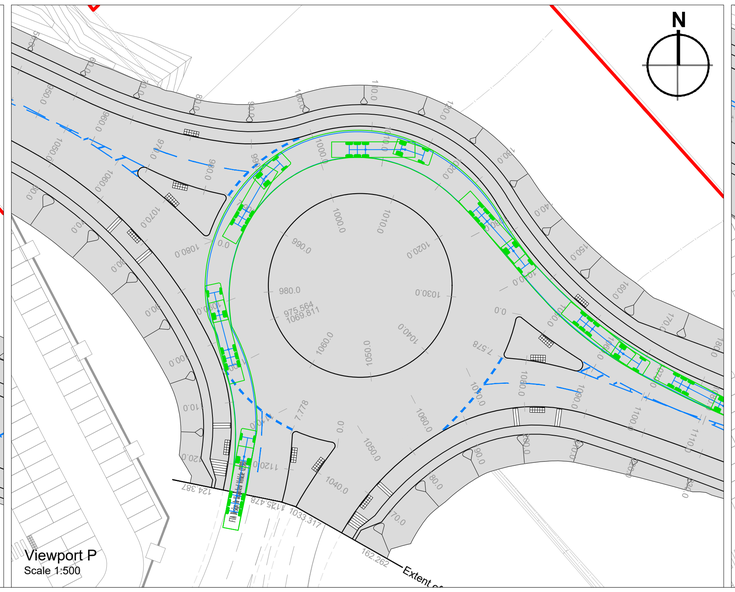


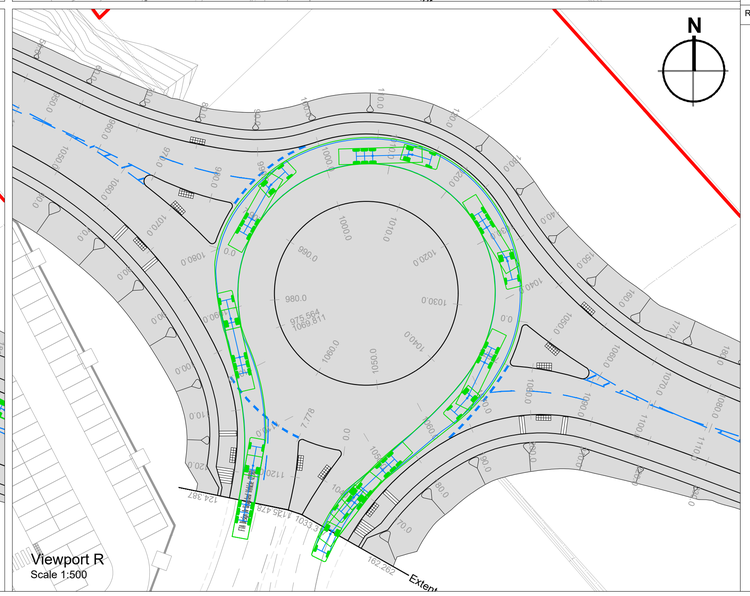




Key Plan
Not to Scale







Rev	Description	By	Ckd	Date
P01	First Issue	AB	LAM	28.08.20

Sherwood House, Sherwood Avenue,
Newark, Nottinghamshire, NG24 1QQ
T:01636 605 700 E: rpsnewark@rpsgroup.com

Client

Project Hoyland

Title Link Road
Swept Path Analysis
(Sheet 2)

RPS Project Number	Scale @ A1	Date Created
NK020040	1:500	28.08.20
Task Team Manager	**Information Author**	**Task Information Manager**
SG	AB	LAM

Status
S2 (Suitable for Information)

Document Number	Revision
HOYLA-RPS-SI-XX-DR-CR-0891	P01

Project Code - Originator - Zone - Level - Type - Role - Drawing Number

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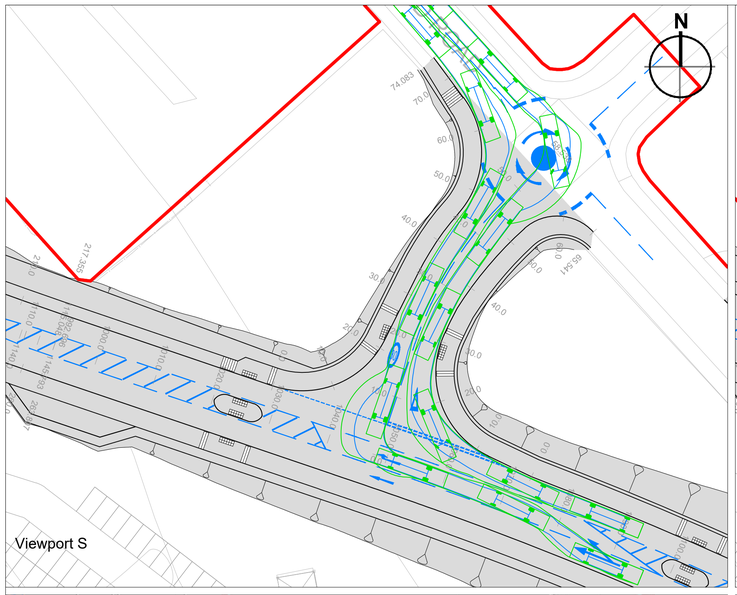
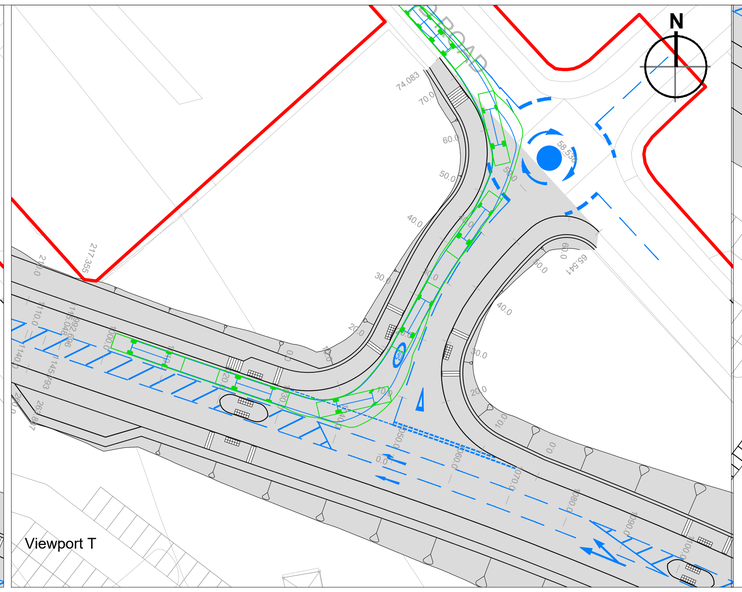
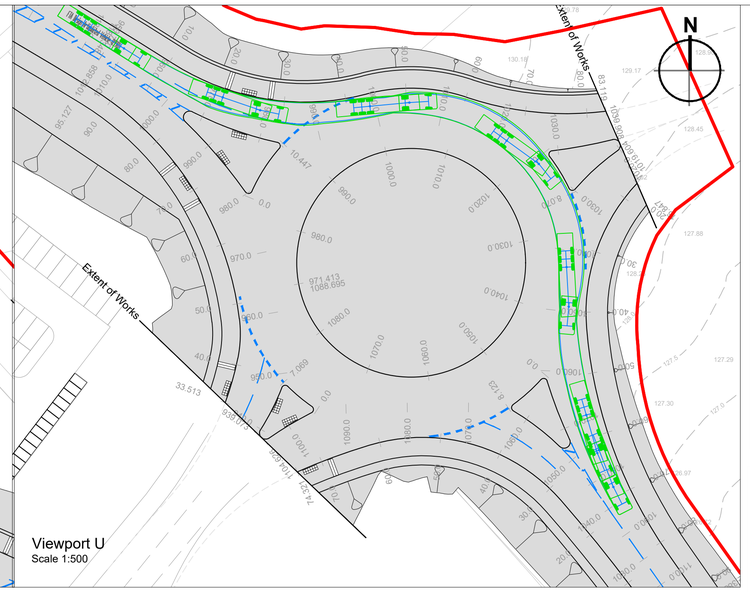


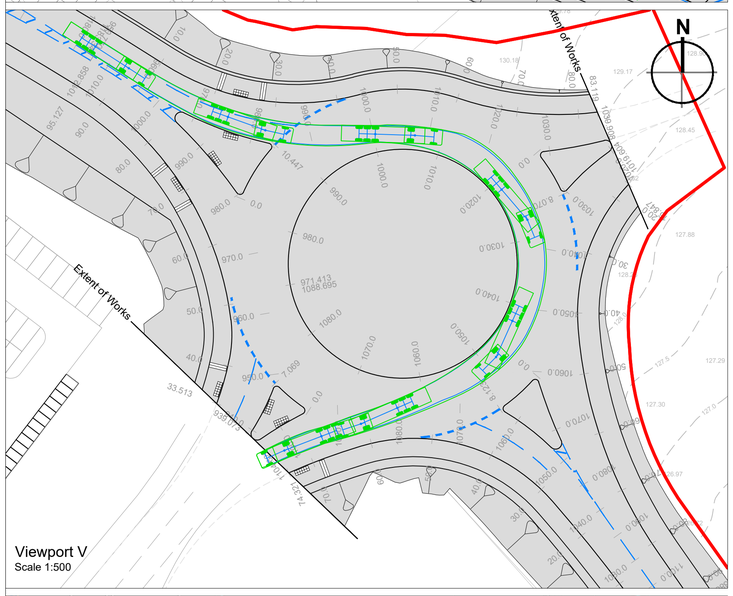
Viewport S



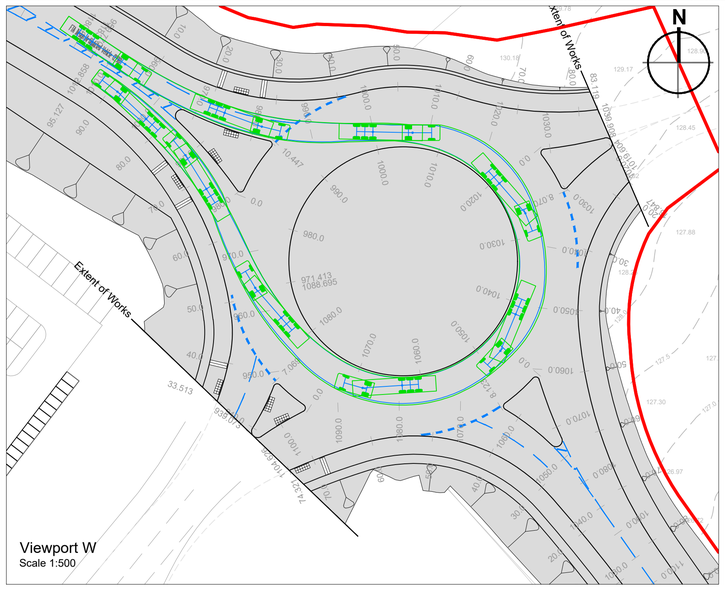
Viewport T



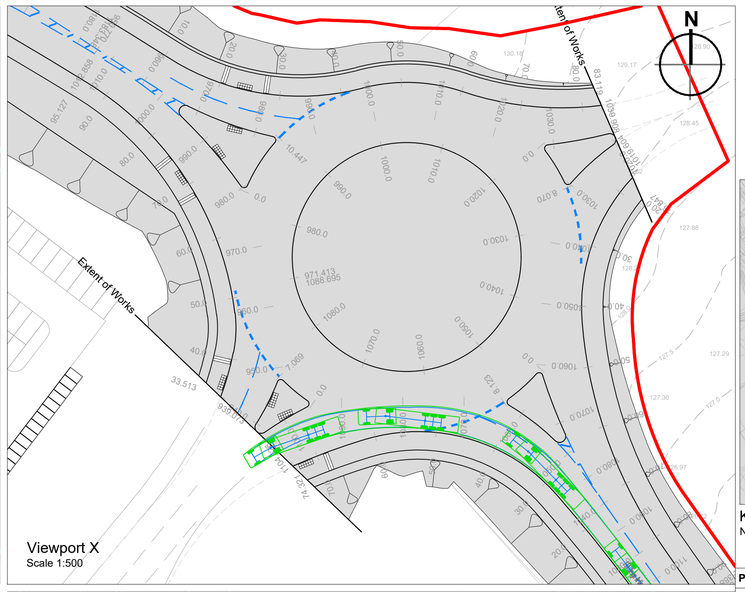
Viewport U
Scale 1:500



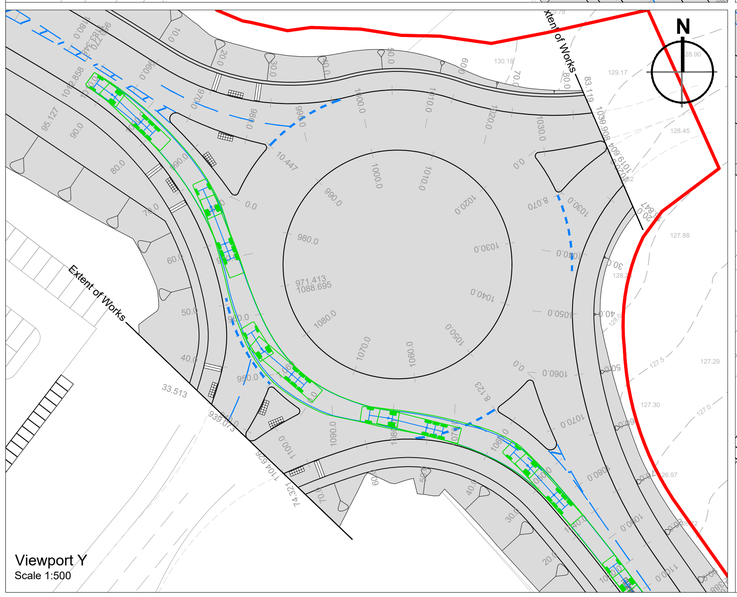
Viewport V
Scale 1:500



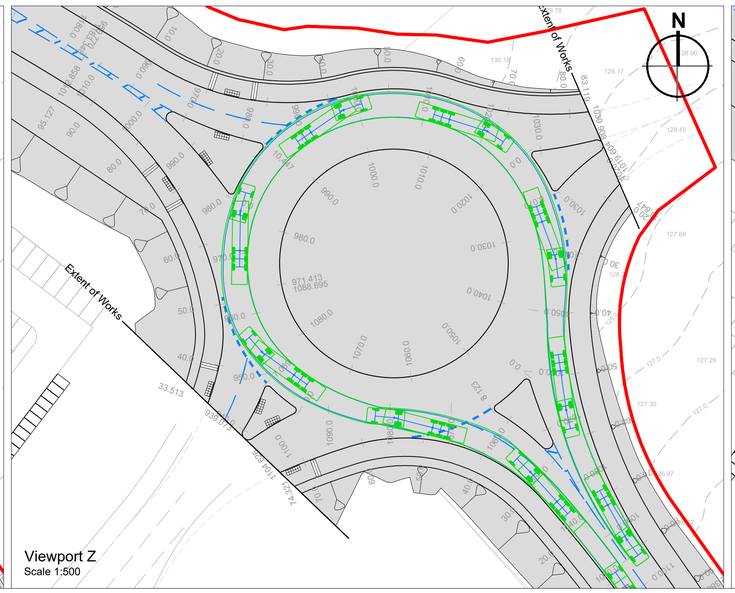
Viewport W
Scale 1:500



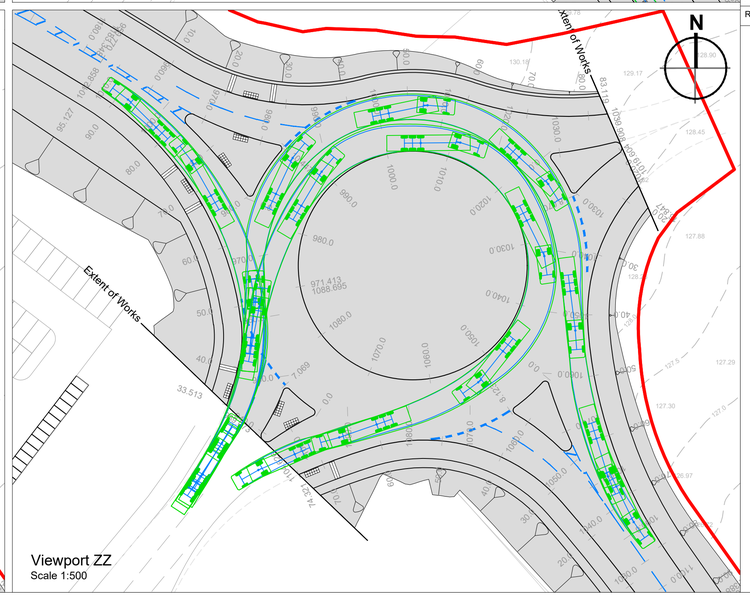
Viewport X
Scale 1:500



Viewport Y
Scale 1:500



Viewport Z
Scale 1:500



Viewport ZZ
Scale 1:500

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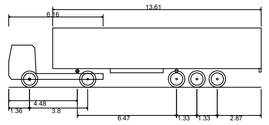
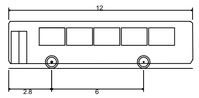


FTA Design Articulated Vehicle (1998)

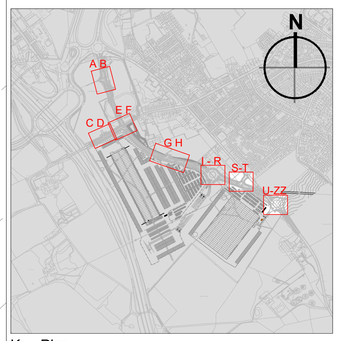
Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.550m



'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

(Viewports S & T)



Key Plan
Not to Scale

Rev	Description	By	Ckd	Date
P01	First Issue	AB	LAM	28.08.20

MAKING COMPLEX EASY

Sherwood House, Sherwood Avenue,
Newark, Nottinghamshire, NG24 1QQ
T:01636 605 700 E: rpsnewark@rpsgroup.com

Client
newlands developments

Project
Hoyland

Title
Link Road
Swept Path Analysis
(Sheet 3)

RPS Project Number	Scale @ A1	Date Created
NK020040	1:500	28.08.20
Task Team Manager	**Information Author**	**Task Information Manager**
SG	AB	LAM

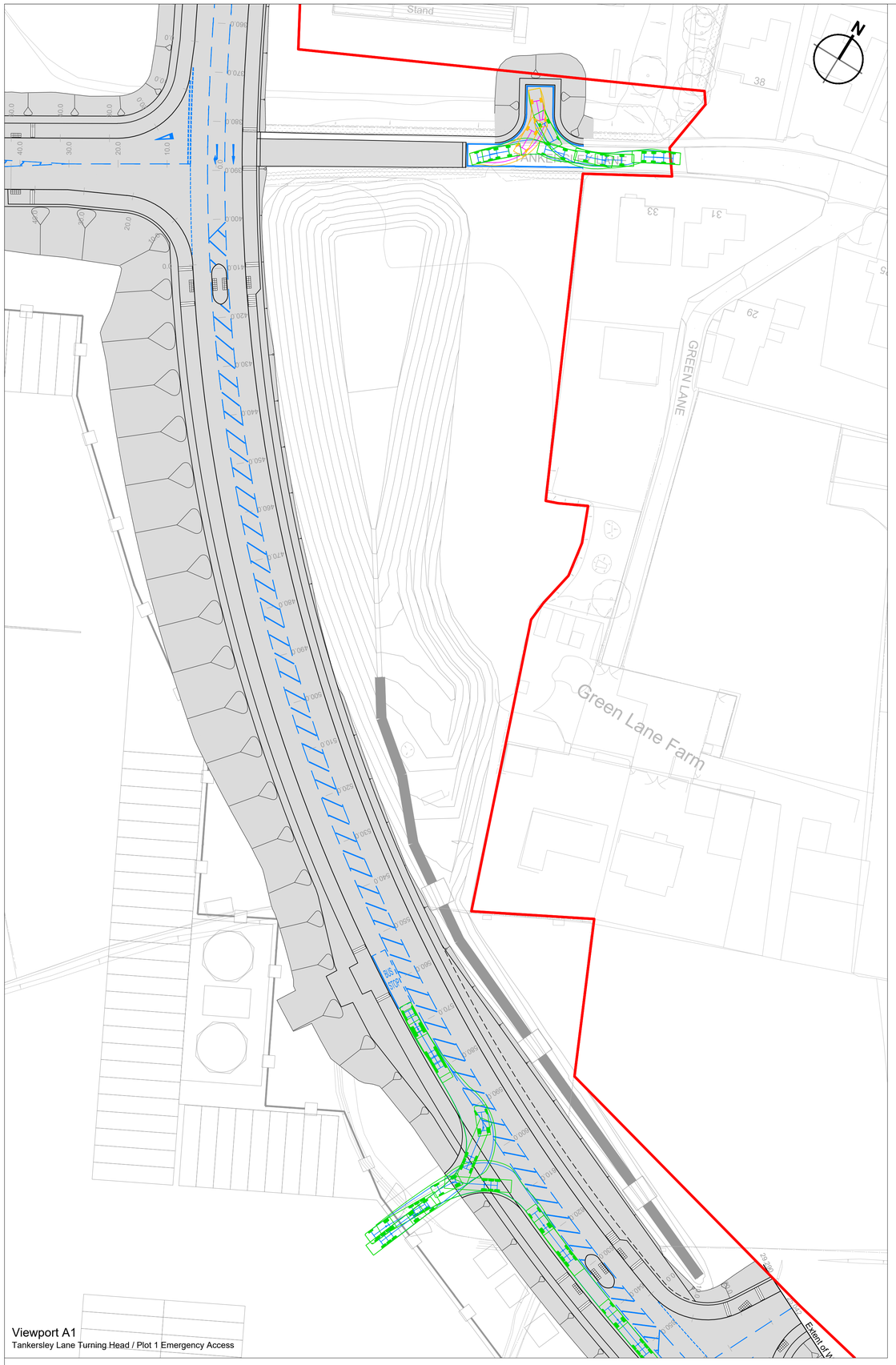
Status
S2 (Suitable for Information)

Document Number
HOYLA-RPS-SI-XX-DR-CR-0892

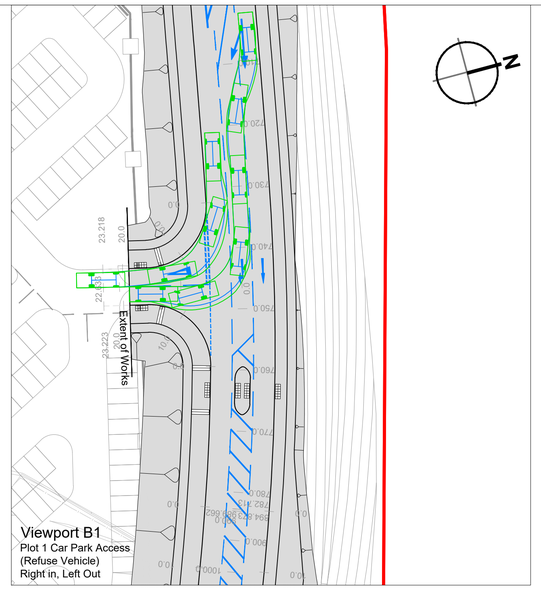
Revision
P01

Project Code - Originator - Zone - Level - Type - Role - Drawing Number

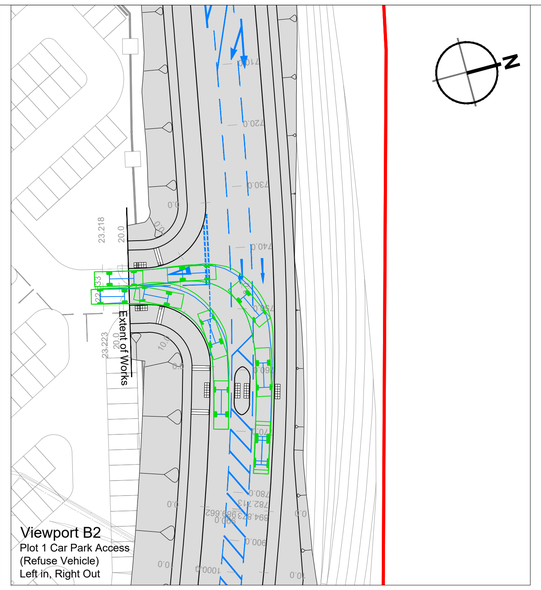
rpsgroup.com



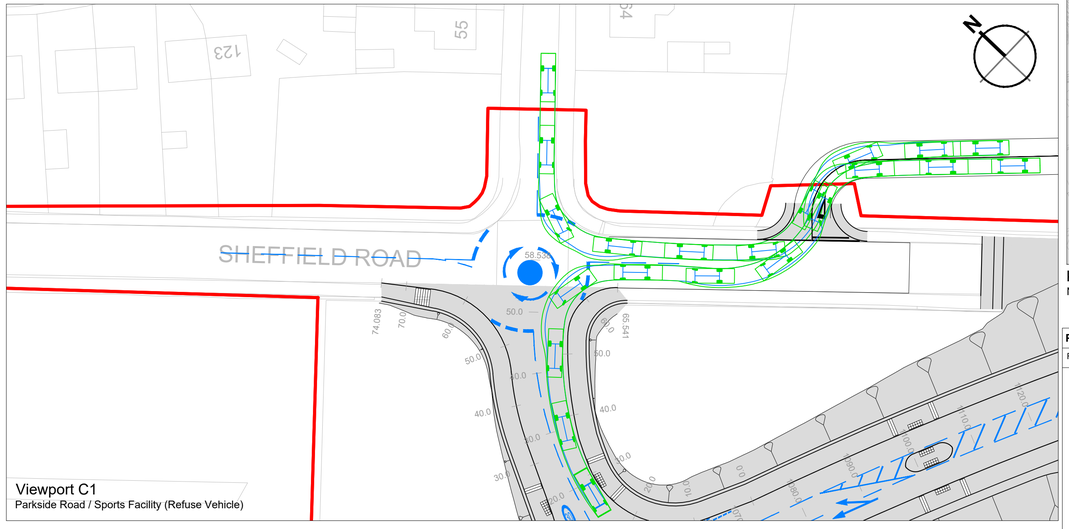
Viewport A1
Tankersley Lane Turning Head / Plot 1 Emergency Access



Viewport B1
Plot 1 Car Park Access
(Refuse Vehicle)
Right in, Left Out



Viewport B2
Plot 1 Car Park Access
(Refuse Vehicle)
Left in, Right Out



Viewport C1
Parkside Road / Sports Facility (Refuse Vehicle)

Viewport H
Right in, left out

10m SCALE 1:500

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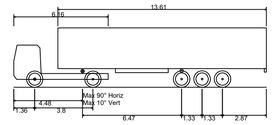
6. All information shown on this drawing is subject to Technical Approval from BMBC.



FTA Design Articulated Vehicle (1998)

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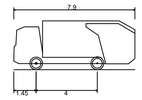
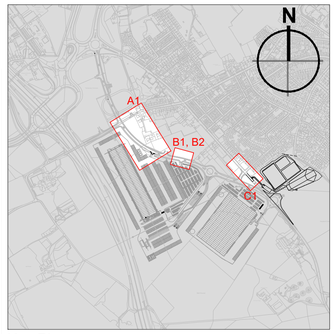
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.550m



DB32 Refuse Vehicle

Overall Length	7.900m
Overall Width	2.400m
Overall Body Height	3.183m
Min Body Ground Clearance	0.388m
Max Track Width	2.400m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	9.625m



Key Plan
Not to Scale

Rev	Description	By	Ckd	Date
P01	First Issue	AB	LAM	28.08.20

Sherwood House, Sherwood Avenue,
Newark, Nottinghamshire, NG24 1QQ
T:01636 605 700 E: rpsnewark@rpsgroup.com

Client

Project Hoyland

Title Link Road
Swept Path Analysis
(Sheet 4)

RPS Project Number	Scale @ A1	Date Created
NK020040	1:500	28.08.20
Task Team Manager	**Information Author**	**Task Information Manager**
SG	AB	LAM

Status
S2 (Suitable for Information)

Document Number HOYLA-RPS-SI-XX-DR-CR-0893
Revision P01

Project Code - Originator - Zone - Level - Type - Role - Drawing Number

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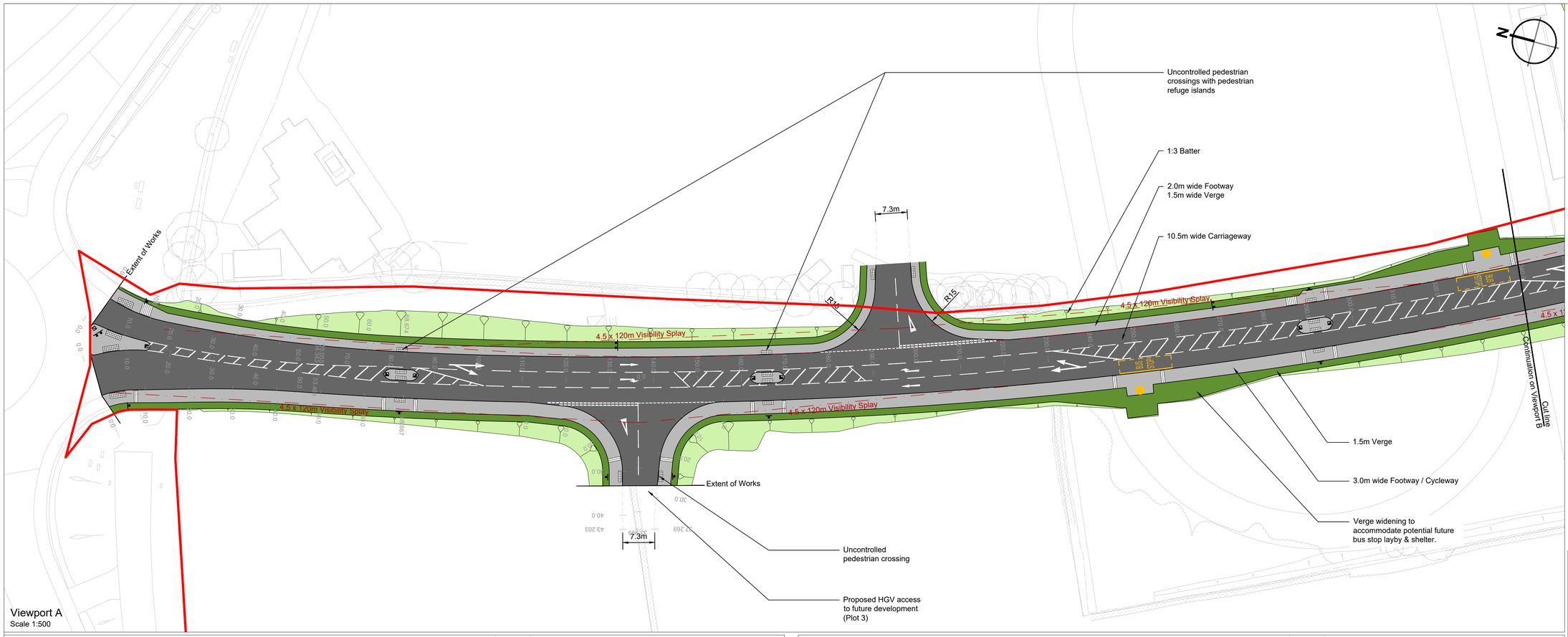

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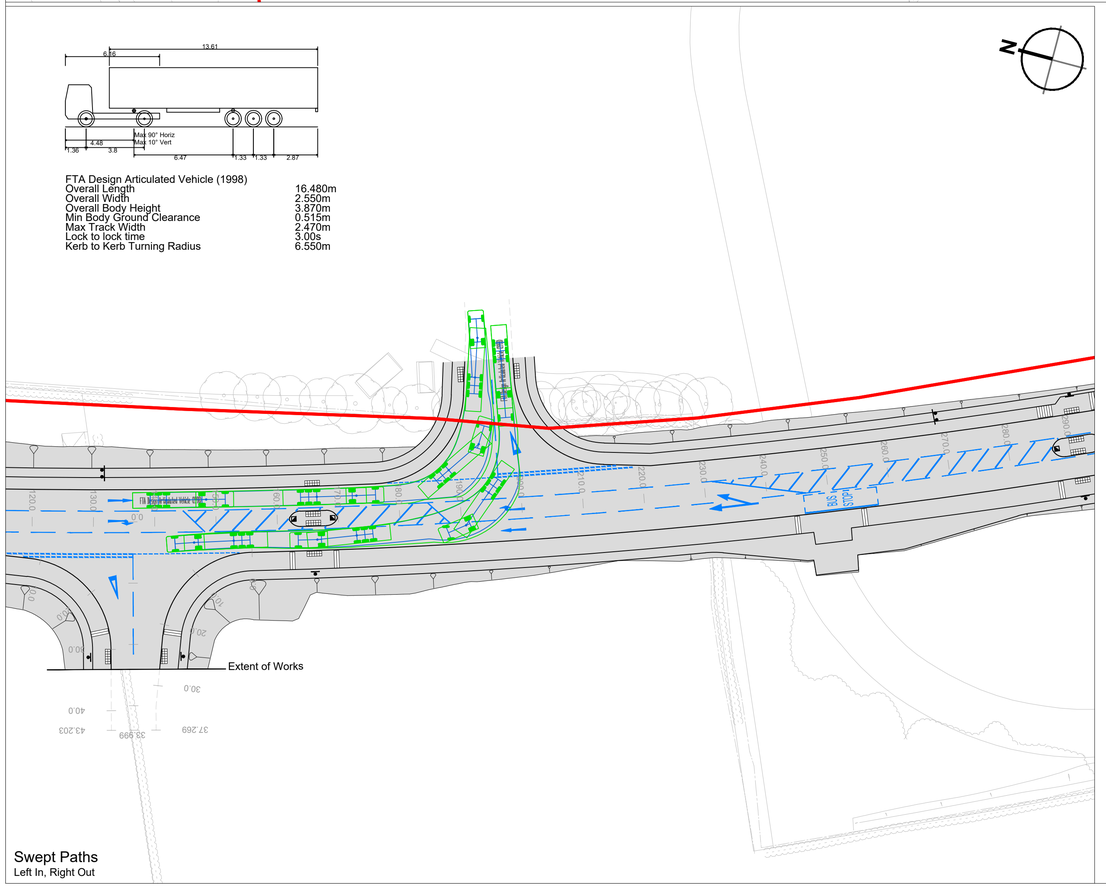
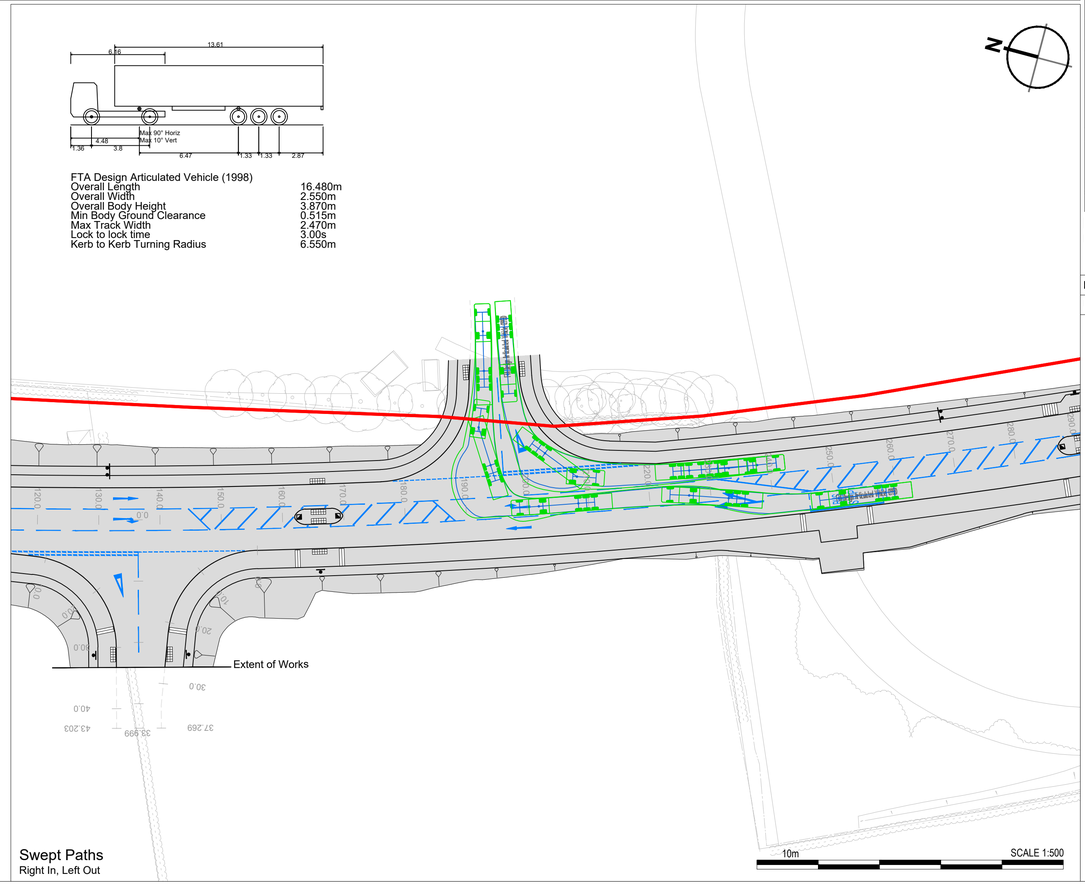


FTA Design Articulated Vehicle (1998)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	6.550m

Swept Paths
Left In, Right Out



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Right In, Left Out

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Notes

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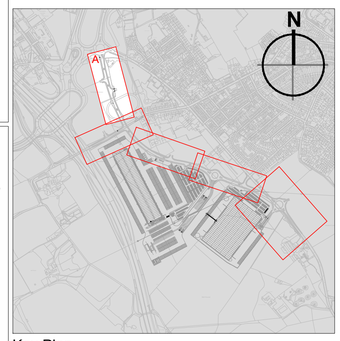
3. This drawing should be read in conjunction with all other relevant drawings and specifications.
4. Masterplan taken from PHP drawing 4400-001 Rev P25, received 15/06/2020.
5. All works to be carried out in accordance with the Specification for Highway Works, the South Yorkshire Residential Design Guide and the requirements of Barnsley Metropolitan Borough Council.
6. All information shown on this drawing is subject to Technical Approval from BMBC.

Key

- Planning Boundary
- Proposed Flexible Carriageway Construction
- Proposed Flexible Footway Construction
- Proposed Grassed Verge Construction
- Proposed Structural Landscaping.
- Proposed Reinforced Grass Maintenance Access
- Proposed Visibility Splays - 4.5m x 120m (bellmouths), 120m forward visibility to CD 109.
- Proposed Bus Stop
- Proposed Road Sign
- Proposed Flexible Bollard
- Proposed Fixed Bollard.
- Proposed Removable Bollard.
- 400mm x 400mm 'blister' tactile paving, buff in colour at uncontrolled crossing
- 400mm x 400mm 'ladder' tactile paving, buff in colour



Key Plan
Not to Scale

Rev	Description	By	Ckd	Date
P01	First Issue	LAM	ANT	28.08.20

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Client
newlands developments

Project Hoyland

Title Link Road
General Arrangement
Plot 4 Access

RPS Project Number	Scale @ A1	Date Created
NK020040	1:500	28.08.2020
Task Team Manager	**Information Author**	**Task Information Manager**
SG	LAM	ANT

Status
S2 (Suitable for Information)

Document Number HOYLA-RPS-SI-XX-DR-CR-0894
Revision P01
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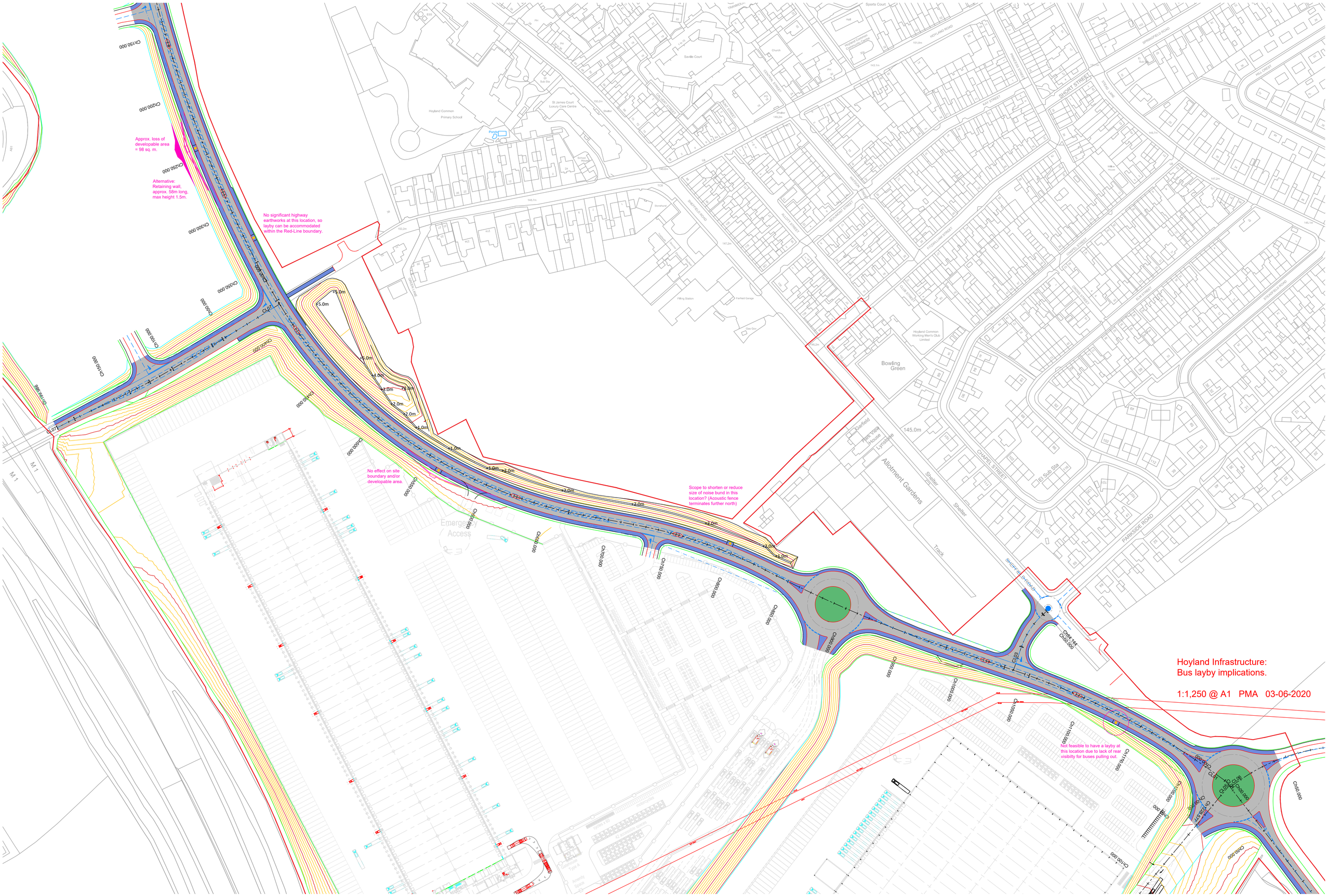
Approx. loss of developable area = 98 sq. m.
Alternative: Retaining wall, approx. 58m long, max height 1.5m.
No significant highway earthworks at this location, so layby can be accommodated within the Red-Line boundary.
No effect on site boundary and/or developable area.
Scope to shorten or reduce size of noise burd in this location? (Acoustic fence terminates further north)
Not feasible to have a layby at this location due to lack of rear visibilty for buses pulling out.
Hoyland Infrastructure:
Bus layby implications.
1:1,250 @ A1 PMA 03-06-2020
Hoyland Common Primary School
St James Court Luxury Care Centre
Saville Court
Bowling Green
Allotment Gardens
Emergency Access
Hoyland Common Working Men's Club Limited
Hoyland Community Centre
Sports Court
Filling Station
Fairfield Garage
Gas Gov.
Pond
Shelter
Track
Garfield
Park View House
Lynsdale
HOYLAND ROAD
SHORT STREET
SHEFFIELD ROAD
CHAPEL STREET
PARKSIDE ROAD
SPRINGFIELD ROAD
STAGE LANE
HILL CREST
SAY STREET
BRAMMAN STREET
FITZWILLIAM STREET
CLARE STREET
ALBERT STREET
CENTRAL STREET
PRINCESS STREET
CHARLES STREET
ALBERT MEWS
CHURCH STREET
TRANMOOR
FURBY LANE
M1
A61
Ch150.000
Ch200.000
Ch250.000
Ch300.000
Ch350.000
Ch400.000
Ch450.000
Ch500.000
Ch550.000
Ch600.000
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Ch1350.000
Ch1400.000
Ch1450.000
Ch1500.000
Ch1550.000
Ch1600.000
Ch1650.000
Ch1700.000
Ch1750.000
Ch1800.000
Ch1850.000
Ch1900.000
Ch1950.000
Ch2000.000
Ch2050.000
Ch2100.000

PROPOSED LINK ROAD DESIGN STATEMENT

Hoyland Common

NK020040
HOYLA-RPS-SI-XX-RP-CR-0001
P04
16 June 2020

rpsgroup.com

Quality Management

Version	Status	Authored by	Reviewed by	Approved by	Review date
P01	First Issue	L. Millis	S. Green	S. Green	01.05.2020
P02	Revised to suit developed proposals & for Client Review	L. Millis	S. Green	S. McLean	22.05.2020
P03	Issued for Planning	L. Millis	S. Green	S. Green	12.06.2020
P04	Plot 5 access added	L. Millis	S. Green	S. Green	16.06.2020

Approval for issue

[Name]	[Signature]	[Date]

File/Model Location

Document location:	N:\200\40\Reports\
Model / Appendices location:	N:\200\40\Reports\

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EXECUTIVE SUMMARY

RPS Group has been commissioned by Newlands Developments to provide Planning support for a proposed link road in Hoyland, near Barnsley, which will move through-traffic away from the existing residential area while also opening up areas of land for future development.

The proposed road comprises two main alignments, CL01 & CL04, totalling in excess of 1.4 km and separated by a new southern roundabout. Approximately 900m along alignment CL01 is a second roundabout that serves as a primary access to the Plot 1 Development site. These two roundabouts are not covered in detail within this report.

The link road geometry has been designed in accordance with DMRB CD 109 for a 70 kph design speed, as directed by BMBC.

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9 EDGE OF CARRIAGEWAY FEATURES 13
10 CONCLUSION 14

Appendices

Appendix A Scheme Masterplan
Appendix B RPS Drawings
Appendix C RPS Pavement Design Nomographs

1 BACKGROUND

1.1 This report has been prepared on behalf of Newlands Developments (hereafter referred to as the Applicant) to support their planning application for the development of Hoyland Common, Barnsley. It forms one of a suite of technical reports for a hybrid application including an outline application for the overall development masterplan and infrastructure works (adoptable link road and drainage) to service plots and detailed planning application for unit 1.

1.2 RPS Group has been commissioned by Newlands Developments to provide Planning support for a proposed link road in Hoyland, near Barnsley. The purpose of the new road is to open-up an area of undeveloped agricultural land for mixed use development, while providing a bypass around the south west of Hoyland Common to the A61 / A6195, moving traffic away from the built-up environment. A copy of the Masterplan is included in **Appendix A**.

1.3 The purpose of this report is to outline the link road design strategy and cross reference the standards that have dictated the horizontal & vertical alignment of the carriageway, as well as the pavement construction. The report does not cover the geometry of the Plot 1 access roundabout or the Southern roundabout, which are yet to be finalised

2 DESIGN CRITERIA

2.1 The following is a list of the design criteria that have informed the preferred general arrangement, as previously discussed with Barnsley Metropolitan Borough Council as Local Highway Authority (LHA).

- New road proposals to be in line with the Design Manual for Roads and Bridges (DMRB)
- Design Speed to be 40mph, 70kph (DMRB CD 109)
- Major / minor priority junction geometry to be in accordance with DMRB CD 123
- Junction spacing to be 125m from the existing & proposed roundabouts, otherwise to be as laid down by DMRB CD 123
- Departures from Standards due to crossfall not permitted; Maximum crossfall 5%
- Carriageway width to be 10.5m

3 HORIZONTAL GEOMETRY

3.1 The resulting road is just over 1.4km long over two alignments (CL01 & CL04), connecting the existing Cross Keys roundabout to the north west of Hoyland common to the south east of the town. Approximately 900m into CL01 it is proposed to construct a roundabout of 52m ICD to facilitate goods vehicle access into the Plot 1 development site, while at the junction between alignments CL01 & CL04 is situated the proposed Southern roundabout of 57m ICD.

3.2 A detailed breakdown of the link road horizontal geometry is as follows;

CL01

Start Chainage (m)	End Chainage (m)	Element	Remarks
0.000	10.791	Straight	
10.791	343.355	1020m LH Radius	Minimum 'R' 2.5% Cambered and without Transitions
343.355	377.355	Transition In	34m length, q = 0.6*
377.355	668.178	360m LH Radius	Desirable Minimum 'R' for 5% superelevation
668.178	702.178	Transition Out	34m length, q = 0.6*
702.178	736.178	Transition In	34m length, q = 0.6*
736.178	828.502	360m RH Radius	Desirable Minimum 'R' for 5% superelevation
828.502	984.842	1020m LH Radius	Minimum 'R' 2.5% Cambered and without Transitions. (NOTE the proposed Plot 1 access roundabout geometry lies within this region and over-rides the centreline geometry, hence lack of Transition from previous element.)
984.842	1032.951	Straight	
1032.951	1053.551	Transition In	20.6m length, q = 0.6*
1053.551	1228.577	594.114m RH Radius	(NOTE the southern roundabout geometry lies within this region and over-rides the centreline geometry)

CL04

Start Chainage (m)	End Chainage (m)	Element	Remarks
0.000	208.484	10,899.214m RH Radius	(NOTE the southern roundabout geometry lies within this region and over-rides the centreline geometry)

(Minimum 'R' information taken from DMRB CD 109 Table 2.10)

*In accordance with CD 109 Clause 4.14.

3.3 A copy of the Design Parameters drawing HOYLA-RPS-SI-XX-DR-CR-0808 can be found in **Appendix B**.

4 VERTICAL GEOMETRY

4.1 The vertical alignment of the proposed link road is constrained by the road's proximity to the ownership boundaries as well as the steep gradient of Sheffield Road as existing.

4.2 A detailed breakdown of the link road vertical geometry is as follows;

CL01

Start Chainage (m)	End Chainage (m)	Element	Remarks
0.000	12.336	-	As existing
12.336	75.209	Sag Curve	K Value of 20 (Desirable Minimum = 20)
75.209	197.686	Crest Curve	K Value of 57.2 (Desirable Minimum = 30)
197.686	312.671	Tangent	0.500% Gradient
312.671	498.383	Crest Curve	K Value of 63.6 (Desirable Minimum = 30)
498.383	629.458	Sag Curve	K Value of 108.04 (Desirable Minimum = 20)
629.458	664.959	Tangent	-1.209% Gradient
664.959	701.503	Sag Curve	K Value of 20 (Desirable Minimum = 20)
701.503	780.057	Crest Curve	K Value of 30 (Desirable Minimum = 30)
780.057	926.007	Tangent	-2.000% Gradient (Proposed Plot 1 access roundabout)
926.007	980.576	Crest Curve	K Value of 30 (Desirable Minimum = 30)
980.576	1057.221	Tangent	-3.819% Gradient
1057.221	1090.725	Crest Curve	K Value of 30 (Desirable Minimum = 30)
1090.725	1131.544	Tangent	-4.936% Gradient
1131.544	1190.260	Sag Curve	K Value of 20 (Desirable Minimum = 20)
1190.260	1228.577	Tangent	-2.000% Gradient

CL04

Start Chainage (m)	End Chainage (m)	Element	Remarks
0.000	30.446	Tangent	-2.000% Gradient
30.446	137.766	Crest Curve	K Value of 30 (Desirable Minimum = 30)
137.766	208.484	Sag Curve	K Value of 23.201 (to suit existing – Des. Minimum = 20)

(Minimum K Value information taken from DMRB CD 109 Table 2.10)

4.3 A copy of the Longitudinal Sections drawing HOYLA-RPS-SI-SI-XX-DR-CR-0802 can be found in **Appendix B**.

5 PROPOSED JUNCTIONS

5.1 To the south of the Plot 1 access roundabout, it is proposed to incorporate one junction at CL01 chainage 1040.480m, which will provide a link to the section of Sheffield Road that is to be maintained north of the Southern roundabout. This connection has been designed to accommodate usage of buses due to the current presence of bus stop shelters on Sheffield Road and so incorporates 15m radii as well as 25m long 1:10 tapers at the junction with the new link road. At the other end of the 54m long link, it is proposed to install a mini roundabout junction with Sheffield Road and Parkside Road. The vertical geometry for this link is constrained by the level difference between Sheffield Road and the proposed link road; it will be necessary to introduce 5% superelevation on the proposed main road and continue this gradient up to Sheffield Road. This junction is to be situated some 125m to the south of the Plot 1 access roundabout, which satisfies the 120m SSD requirement of CD109.

5.2 To the north of the Plot 1 access roundabout, it is currently intended to provide two accesses to land on the west of the proposed link road and one to the east.

5.3 Firstly, it is proposed to provide a Plot 1 development site car park access at chainage 738.043m, 6m wide with 10m radii and no tapers. Based on current earthworks information, the 2.5% crossfall would continue from the channel of the link road, with a hog curve (K Value = 6.5, one step below minimum for 50kph) to tie-into on site levels. This junction is to be situated some 125m to the north of the Plot 1 access roundabout, which satisfies the 120m SSD requirement of CD109.

5.4 Secondly, it is proposed to provide a Plot 3 development site access at chainage 130m, envisaged to be suitable for heavy goods vehicles with 15m radii and 25m tapers at 1:10 in accordance with DMRB CD 123. Based on current earthworks information, the 5% crossfall would continue from the channel of the link road, with a hog curve (K Value = 6.5, one step below minimum for 50kph) followed by a sag curve (K Value = 9, desirable minimum for 50kph) to tie-into on site levels. This junction is to be situated some 125m to the south of the existing Cross Keys roundabout, which satisfies the 120m SSD requirement of CD 109.

5.5 The third junction is to provide access to Plot 3 at chainage 653.008m, has also been designed to accommodate HGV movements incorporating 15m radii and 25m tapers at 1:10 in accordance with CD 123. Based on current earthworks information, the 2.5% crossfall would continue from the channel of the link road, with a sag curve (K Value = 9, desirable minimum for 50kph) with a hog curve (K Value = 6.5, one step below minimum for 50kph) to tie-into on site levels. This junction is to be situated some 85m to the north of the Plot 1 car park access, which would provide sufficient space to incorporate two back-to-back ghost island right turn facilities in accordance with CD 123.

5.6 In addition to the above, it is proposed to connect the western stretch of Tankersley Lane to the proposed link road at chainage 380m. This junction is envisaged to be suitable for heavy goods vehicles with 15m radii and 25m tapers at 1:10 in accordance with DMRB CD 123. Based on existing level information, there would need to be a 2.5% instantaneous change in gradient at the give way line followed by a hog curve (K Value = 17, minimum for 60kph) to tie-into existing levels on Tankersley Lane.

5.7 Tankersley Lane is a national speed limit road, approximately 5.5m wide and provides a route from Hoyland Common in the east, across the M1, to the ITAB UK commercial / industrial development park in the west, via outdoor leisure amenity areas and agricultural land. In order to provide a new access to Plot 3 to the north of Tankersley Lane, it is proposed to widen the existing road to the south, to facilitate inclusion of a ghost island right turn lane (40m + 10m deceleration & turning, 5m direct taper for 60 kph), resuming the original channel lines just to the east of the existing bridge. The access itself will be sited at CL07 chainage 118m, envisaged to be suitable for HGV traffic and will comprise 15m radii with 25m long 1:10 tapers.

5.8 As part of these proposals, the current intention is to apply for a 'Prohibition to Motor Vehicles' Traffic Regulation Order (TRO) for a section of Tankersley Lane immediately to the east of the proposed link road and to provide a turning facility suitable for refuse vehicles towards the extent of the retained section of road. However, before these details can be finalised for this, confirmation will be required from the LHA regarding their requirements for Tankersley Lane.

5.9 All five junctions on to the main link road are to feature ghost island right turn lane facilities. In accordance with CD 123 and based on the 70 kph design speed, the ghost islands are to feature 40m long deceleration lanes, 10m turning length and 15m long direct tapers.

5.10 In addition to the formal junctions discussed above, it is proposed to include an emergency access to Plot 1 comprising a 6m wide road and 10m radii at CL01 chainage 593.284m.

5.11 A copy of the General Arrangement drawing HOYLA-RPS-SI-SI-XX-DR-CR-0810 can be found in **Appendix B**.

6 PAVEMENT DESIGN – TRAFFIC LOADING

6.1 Based on traffic modelling work carried out by Fore Consulting, it has been possible to estimate the traffic loading that the proposed link road is likely to be subjected to and so determine preliminary carriageway construction types. Analysis of the modelling information provided has led to the identification of 8 distinct regions of the proposed scheme with regards to commercial vehicle flows and with a consideration of economy of design, 8 different pavement types are proposed as identified on RPS drawing HOYLA-RPS-SI-XX-CR-0809, included within **Appendix B**.

6.2 From CD 224, the formula for Weighted Annual Traffic, T = **365 x AADF x G x W x 10^{-6}.**

6.3 From CD 224, the formula for Design Traffic = **T x Y x P**

6.4 Assumptions:

- Design Period, Y = 40 years
- Growth Factor, G = 1.45 ('all commercial vehicles')
- Wear Factor, W = 4.0 ('all commercial vehicles (70% OGV2)')
- Percentage of commercial vehicles in the heaviest loaded lane, P = 100%

6.5 **Pavement Type 1** (CL01 chainage 0.000 to 400.000m)

- Worst case AADF **1424 c/v** (taken from 2029 with DEV Tot HGV 24 hrs, provided by Fore Consulting)
- (from CD 224) Weighted Annual Traffic = 365 x 1424 x 1.45 x 4 x 10^{-6} = **3.015 msa**
- (from CD 224) Design Traffic = 3.015 x 40 x 1 = **120.6 msa**.

6.6 **Pavement Type 2** (CL01 chainage 400.000 to 915.000m)

- Worst case AADF **1306 c/v** (taken from 2029 with DEV Tot HGV 24 hrs, provided by Fore Consulting)
- (from CD 224) Weighted Annual Traffic = 365 x 1306 x 1.45 x 4 x 10^{-6} = **2.764 msa**
- (from CD 224) Design Traffic = 2.764 x 40 x 1 = **110.6 msa**.

6.7 **Pavement Type 3** (CL01 chainage 1020.000 to CL04 chainage 25.000m)

- Worst case AADF **363 c/v** (taken from 2029 with DEV Tot HGV 24 hrs, provided by Fore Consulting)
- (from CD 224) Weighted Annual Traffic = 365 x 363 x 1.45 x 4 x 10^{-6} = **0.768 msa**
- (from CD 224) Design Traffic = 0.768 x 40 x 1 = **30.74 msa**.

6.8 **Pavement Type 4** (CL01 chainage 915.000 to 1020.000m)

- Worst case AADF **284 c/v** (taken from 2029 with DEV Tot HGV 24 hrs, provided by Fore Consulting)
- (from CD 224) Weighted Annual Traffic = 365 x 284 x 1.45 x 4 x 10^{-6} = **0.601 msa**
- (from CD 224) Design Traffic = 3.015 x 40 x 1 = **24.04 msa**.

6.9 **Pavement Type 5** (CL04 chainage 25.000 to 188.809m)

- Worst case AADF **220 c/v** (taken from 2029 with DEV Tot HGV 24 hrs, provided by Fore Consulting)
- (from CD 224) Weighted Annual Traffic = 365 x 220 x 1.45 x 4 x 10^{-6} = **0.466 msa**
- (from CD 224) Design Traffic = 0.466 x 40 x 1 = **18.64 msa**.

6.10 **Pavement Type 6** (CL07 chainage 0.000 to 138.000m)

- Worst case AADF **143 c/v** (taken from 2029 with DEV Tot HGV 24 hrs, provided by Fore Consulting)
- (from CD 224) Weighted Annual Traffic = 365 x 143 x 1.45 x 4 x 10^{-6} = **0.303 msa**
- (from CD 224) Design Traffic = 0.303 x 40 x 1 = **12.12 msa**.

6.11 **Pavement Type 7** (CL07 chainage 138.000 to 199.986m)

- Worst case AADF **92 c/v** (taken from 2029 with DEV Tot HGV 24 hrs, provided by Fore Consulting)
- (from CD 224) Weighted Annual Traffic = 365 x 92 x 1.45 x 4 x 10^{-6} = **0.195 msa**
- (from CD 224) Design Traffic = 0.195 x 40 x 1 = **7.8 msa**.

6.12 **Pavement Type 8** (CL03 chainage 0.000 to 54.144m)

- Worst case AADF **29 c/v** (taken from 2029 with DEV Tot HGV 24 hrs, provided by Fore Consulting)
- (from CD 224) Weighted Annual Traffic = 365 x 29 x 1.45 x 4 x 10^{-6} = **0.061 msa**
- (from CD 224) Design Traffic = 0.061 x 40 x 1 = **2.46 msa**.

6.13 As tabulated below;

Traffic Loadings

Pavement Type	AADF (c/v)	Weighted Annual Traffic, T	Design Traffic
1	1424	3.015 msa	120.6 msa
2	1306	2.764 msa	110.6 msa
3	363	0.768 msa	30.74 msa
4	284	0.601 msa	24.04 msa
5	220	0.466 msa	18.64 msa
6	143	0.303 msa	12.12 msa
7	92	0.195 msa	7.8 msa
8	29	0.061 msa	2.46 msa

7 PAVEMENT DESIGN – FOUNDATION

7.1 Following liaison with Applied Geology, a CBR value of 3% has been taken as the existing sub-grade bearing figure. From CD 225 Clause 2.4;

- E (Subgrade surface modulus) = 17.6 x $3^{0.64}$ = **35.6 MPa**

7.2 From CD 226 Clause 2.5, Class 2 foundations can be used where the design traffic does not exceed 80 msa. Based on this, Pavement Types 3 to 8 inclusive can have Class 2 foundations. Pavement Types 1 & 2 would need to have Class 3 foundations based on the design figures estimated in 6.5 & 6.6 above.

7.3 From CD 225 Figure 3.18, a Class 2 subbase only design would require 360mm granular material to MCHW Clause 803. However, as CD 225 Clause 3.12 states 'where the short-term surface modulus is 50 MPa or lower, the foundation design shall consist of subbase and capping'. Therefore, the Class 2 subbase only design will only be applicable where it is confirmed that the short-term surface modulus is 50 MPa or greater.

7.4 Provided the 50 MPa requirement is not met, then from CD 225 Figure 20 a Class 2 subbase on capping foundation design would require 230mm granular material to MCHW Clause 803 on 380mm granular material to MCHW Clause 613.

7.5 From CD 225 Figure 3.19, a Class 3 subbase only design would require 340mm Cement Bound Granular Material to MCHW Clause 821, minimum Rc Class C3/4. Should the 50 MPa requirement not be met, then from CD 225 Figure 3.25 a Class 3 subbase on capping foundation design would require 320mm CBGM to MCHW Clause 821 on 380mm granular material to MCHW Clause 613.

7.6 As tabulated below;

Foundation

Pavement Type	Class	Subbase only Design (>50 MPa)	Subbase (<50 MPa)	Capping (<50 MPa)
1	3	340mm CBGM A	320mm CBGM A	380mm 6F2
2	3	340mm CBGM A	320mm CBGM A	380mm 6F2
3	2	360mm Type 1	230mm Type 1	380mm 6F2
4	2	360mm Type 1	230mm Type 1	380mm 6F2
5	2	360mm Type 1	230mm Type 1	380mm 6F2
6	2	360mm Type 1	230mm Type 1	380mm 6F2
7	2	360mm Type 1	230mm Type 1	380mm 6F2
8	2	360mm Type 1	230mm Type 1	380mm 6F2

7.7 The Foundation Design nomographs from CD 225 are included in **Appendix C**.

8 PAVEMENT DESIGN – BITUMINOUS

8.1 Based on the Design Traffic figures estimated in Section 6 and the foundation classes ascertained in Section 7 above, the bituminous layer thicknesses of each Pavement Type have been taken from CD 226 Figure 2.20, as tabulated below;

Bituminous Design Thickness

Pavement Type	Design Traffic	Foundation Class	Asphalt Material (AC 40/60)
1	120.6 msa	3	320mm
2	110.6 msa	3	320mm
3	30.74 msa	2	310mm
4	24.04 msa	2	300mm
5	18.64 msa	2	290mm
6	12.12 msa	2	280mm
7	7.8 msa	2	260mm
8	2.46 msa	2	200mm

8.2 Based on the above, it is proposed to limit the variation in asphalt material thickness to the base layer and so the bituminous layers for the 8 pavements would be as follows;

Bituminous Design

Pavement Type	AC10 SMA 40/60 Surface Course (Cl 942)	AC20 40/60 Binder Course (Cl 906)	AC32 40/60 Base (Cl 906)
1	35mm	65mm	220mm
2	35mm	65mm	220mm
3	35mm	65mm	210mm
4	35mm	65mm	200mm
5	35mm	65mm	190mm
6	35mm	65mm	180mm
7	35mm	65mm	160mm
8	35mm	65mm	100mm

8.3 The Flexible Paving Thickness nomographs from CD 226 can be found in **Appendix C**.

9 EDGE OF CARRIAGEWAY FEATURES

9.1 As requested by BMBC and illustrated on drawing HOYLA-RPS-SI-XX-CR-0880, it is proposed to include a 3.0m wide unsegregated footway / cycleway on one side of the proposed link road. In accordance with DMRB CD 239, as there will be no separation from the carriageway the construction of this feature needs to allow for heavy vehicle over-run and so from Table 3.18C;

- 25mm AC6 Dense Surf 100/150 to Cl. 909 surface course
- 90mm AC32 Dense Base 100/150 to Cl. 906 base
- 320mm Type 1 Granular Subbase to Cl. 803.

9.2 Pedestrian & cycle connectivity to the development parcels is ensured through the use of uncontrolled crossings at regular intervals. Tactile paving is proposed to be installed at each crossing point in accordance with the DETR Guidance on the use of Tactile Paving Services.

9.3 The shared footway / cycleway and associated signage, etc., will be designed in accordance with Local Transport Note 1/12.

9.4 At the back of the footway / cycleway, there is to be a verge of 1.5m width before the earthworks batters. It is assumed that the back of this verge will form the limit of Adoption by BMBC.

9.5 On the opposing side of the road, it is proposed to include a minimum footway width of 2.0m as well as a 1.5m wide verge. To facilitate cycle connectivity to the proposed link road from Tankersley Lane (East), Development Plot 5, the original A6135 Sheffield Road and future Sports & Community facilities adjacent to the southern roundabout, sections of the 2.0m wide footway will be increased to 3.0m wide unsegregated footway / cycleway facilities.

9.6 As shown on drawing HOYLA-RPS-SI-XX-CR-0808 included within **Appendix B**, five bus stop positions have been incorporated within the design. In accordance with Stagecoach design guidance provided within 'Bus Services New Residential Developments', a maximum walking distance of 400m from both existing & proposed residential parcels has been considered when positioning the stops, as well as the potential impact on other vehicle movements due to reduced visibility. Each bus stop will feature as a minimum a flag incorporating an integral timetable case and approximately 7m length of raised 'Kassel' kerbing of 160mm upstand to facilitate access for the elderly / disabled.

9.7 It is also proposed to provide two maintenance lay-bys; one will be situated adjacent to Plot 2 at CL01 chainage 990.000m and the other is to be located on the South side of Tankersley Lane at chainage 130.000m. Both lay-bys are to be 10m long, 3.5m wide, and with 5m long tapers either end. These features are to be formed using a reinforced grass construction comprising 100mm thick blocks to Cl. 1109 on 50mm laying course to BS EN 12620 and 320mm Type 1 sub-base to Cl. 803. Please refer to the General Arrangement drawing HOYLA-RPS-SI-XX-CR-0810 included within **Appendix B**.

10 CONCLUSION

10.1 RPS have been commissioned to provide Planning support for a new link road in Hoyland, near Barnsley. Following preliminary liaison with Barnsley Metropolitan Borough Council the required design speed for the road has been confirmed as being 70kph, roughly equivalent to 40mph.

10.2 A proposed link road general arrangement has been prepared featuring horizontal & vertical geometry that meets the minimum standards laid down in the Design Manual for Roads and Bridges, particularly those set out in Table 2.10 in CD 109. Land ownership as well as level constraints have dictated a necessity to utilise sections of 5% superelevation to enable sufficiently compact horizontal curvature to be utilised.

10.3 Potential site access junctions have been indicated on the general arrangement which have been positioned in accordance with the requirements of the LHA, DMRB and the requirement to maintain a link to Tankersley Lane. It is envisaged that should the current alignment be developed further, that these junction locations can help inform the wider Masterplan for the area.

10.4 Traffic modelling work that has been carried out indicates that the proposed link road is likely to be subjected to differing traffic loadings along its route. These loads have been assessed and a series of pavement designs have been prepared in accordance with the standards set out in DMRB CD 225 & CD 226.

APPENDICES

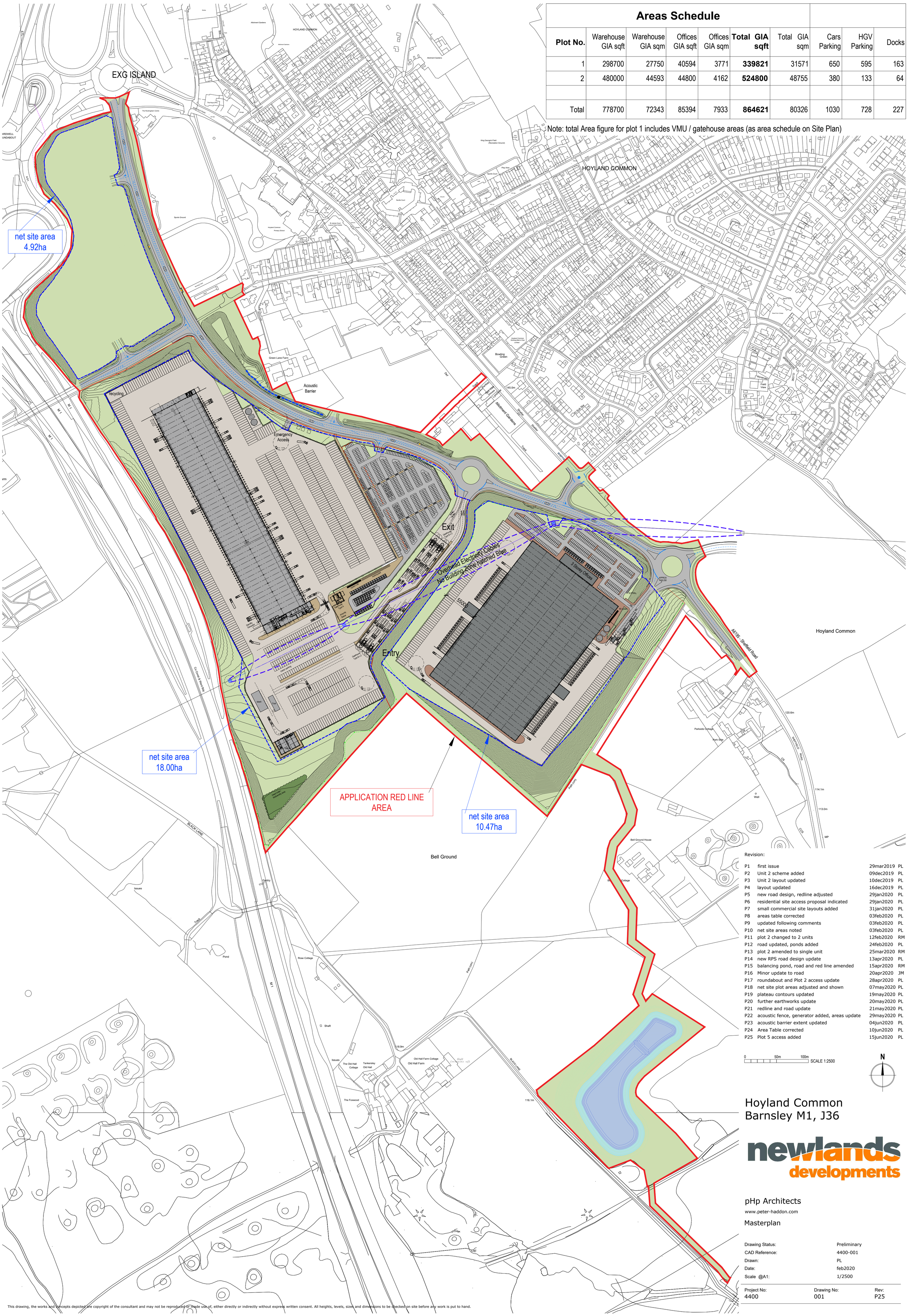
Appendix A

Scheme Masterplan

Areas Schedule

Plot No.	Warehouse GIA sqft	Warehouse GIA sqm	Offices GIA sqft	Offices GIA sqm	**Total GIA sqft**	Total GIA sqm	Cars Parking	HGV Parking	Docks
1	298700	27750	40594	3771	**339821**	31571	650	595	163
2	480000	44593	44800	4162	**524800**	48755	380	133	64
Total	778700	72343	85394	7933	**864621**	80326	1030	728	227

Note: total Area figure for plot 1 includes VMU / gatehouse areas (as area schedule on Site Plan)



Revision:

P1	first issue	29mar2019	PL
P2	Unit 2 scheme added	09dec2019	PL
P3	Unit 2 layout updated	10dec2019	PL
P4	layout updated	16dec2019	PL
P5	new road design, redline adjusted	29jan2020	PL
P6	residential site access proposal indicated	29jan2020	PL
P7	small commercial site layouts added	31jan2020	PL
P8	areas table corrected	03feb2020	PL
P9	updated following comments	03feb2020	PL
P10	net site areas noted	03feb2020	PL
P11	plot 2 changed to 2 units	12feb2020	RM
P12	road updated, ponds added	24feb2020	PL
P13	plot 2 amended to single unit	25mar2020	RM
P14	new RPS road design update	13apr2020	PL
P15	balancing pond, road and red line amended	15apr2020	RM
P16	Minor update to road	20apr2020	JM
P17	roundabout and Plot 2 access update	28apr2020	PL
P18	net site plot areas adjusted and shown	07may2020	PL
P19	plateau contours updated	19may2020	PL
P20	further earthworks update	20may2020	PL
P21	redline and road update	21may2020	PL
P22	acoustic fence, generator added, areas update	29may2020	PL
P23	acoustic barrier extent updated	04jun2020	PL
P24	Area Table corrected	10jun2020	PL
P25	Plot 5 access added	15jun2020	PL

0 50m 100m SCALE 1:2500

N

Hoyland Common
Barnsley M1, J36

newlands developments

pHp Architects

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Masterplan

Drawing Status:	Preliminary
CAD Reference:	4400-001
Drawn:	PL
Date:	feb2020
Scale @A1:	1/2500

Project No:	Drawing No:	Rev:
4400	001	P25

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