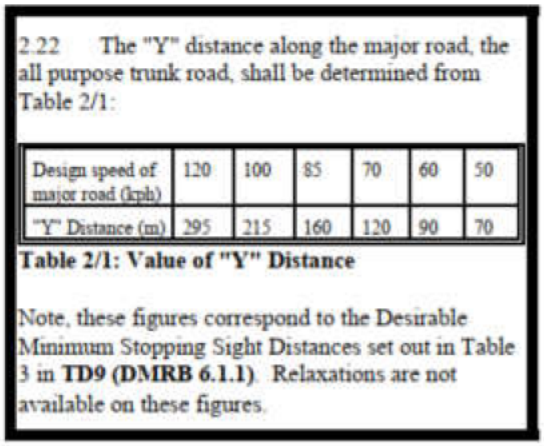
Departure Reference:	N021	**Departure Type:**	General
Document File Name:	133735_RW-EWR-XX-XX-RP-CH-000167	**Local Highway Authority:**	Oxfordshire County Council

Departure Title:	Reduced visibility standard at the junction with the highway network at permanent field access A2_PA_15 (Bicester Road)
Departure Location:	
Supporting Information:	**General Arrangement Drawing Number** 133735_2A-EWR-OXD-A2_PA_15-DR-CH-010001 **Visibility Splay Drawing Numbers** 133735_2A-EWR-OXD-A2_PA_15-DR-CH-010007
Consultations:	Oxfordshire County Council

DEPARTURE DETAILS

Relevant Standards:	DMRB, Volume 6, Section 2, Part 6, TD 41/95 DMRB, Volume 6, Section 2, Part 6, TD 9/93
Clause/Paragraphs:	TD 41/95, Paragraph 2.22

	
Departure Description:	Visibility from minor arm along major road is sub-standard.
Associated Departures:	None
Reason for Departure:	The junction listed above does not appear to provide the required visibility distance 'y' from the junction along the major road, for the respective posted speed limit.

2.22 The "Y" distance along the major road, the all purpose trunk road, shall be determined from Table 2/1:

Design speed of major road (kph)	120	100	85	70	60	50
"Y" Distance (m)	295	215	160	120	90	70

Table 2/1: Value of "Y" Distance

Note, these figures correspond to the Desirable Minimum Stopping Sight Distances set out in Table 3 in **TD9 (DMRB 6.1.1)**. Relaxations are not available on these figures.

DESIGN DETAILS

Design Year Traffic Flow (AADT):	Unknown
Design Speed:	The design speed of the major road is calculated using advise in TD 9/93, Paragraph 1.7. **Extracts from TD 9/93** 1.7 Existing Rural Road Improvements: (including short diversions or bypasses up to about 2 km in length) Design Speed shall be derived in a similar manner to Paragraph 1.6 above, with Ac measured over a minimum length of 2 km incorporating the improvement, provided there are no discontinuities such as roundabouts. The strategy for the contiguous sections of road, however, must be considered when determining Ac and the cross-sectional design. It might be unnecessary to provide a full Standard cross-section for a minor re-alignment within a low Standard route, unless it represented a stage of a realistic improvement strategy.

Selection of Design Speed

1.6 New Rural Roads: Design Speed shall be derived from Figure 1, which shows the variation in speeds for a given Lc against Ac. The Design Speeds are arranged in bands, ie. 120, 100, 85, etc., within which suffixes A and B indicate the higher and lower categories of each band. An initial alignment to a trial Design Speed should be drawn

up, and Ac measured for each section of the route demonstrating significant changes thereof, over a minimum length of 2 km. The Design Speed calculated from the ensuing Ac and Lc should be checked against the initial choice to identify locations where elements of the initial trial alignment may be relaxed to achieve cost or environmental savings, or conversely where design should be upgraded, according to the calculated Design Speed. If any changes to road geometry result, then the Design Speed should be recalculated to check that it has not changed.

Paragraph 1.3 identifies how Alignment Constraint, Ac is calculated for a single carriageway;

Ac = 12 – VISI/60 + 2B/45

Where

B = Bendiness in degrees/km

And VISI is established from Annex A, paragraph 3;

3. For existing roads, an empirical relationship has been derived which provides estimates of VISI given in bendiness and verge width (applicable up to VISI = 720m) i.e.

$$\text{Log}_{10}\,\text{VISI} = 2.46 + \text{VW}/25 - \text{B}/400$$

where:

VW = Average verge width (averaged for both sides of the road)

B = Bendiness (Degree per km - minimum Length of about 2 km)

This relationship is valid for existing roads, but on long straight roads, or where sight distance is available outside the highway boundary, significant underestimates of VISI will result.

Paragraph 1.4 identifies how the Layout Constraint Lc is established

1.4 Layout Constraint Lc: This measures the degree of constraint imparted by the road cross section, verge width, and frequency of junctions and accesses. Table 1 shows the values of Lc relative to cross section features and density of access, expressed as the total number of junctions,laybys and commercial accesses per km, summed for both sides of the road, where:

L = Low Access numbering 2 to 5 per km

M = Medium Access numbering 6 to 8 per km

H = High Access numbering 9 to 12 per km

Road Type	S2				WS2		D2AP		D3AP	D2M	D3M
Carriageway Width (Ex. Metre Strips)	6m		7.3m		10m		Dual 7.3m		Dual 11m	Dual 7.3m & Hard Shoulder	Dual 11m & Hard Shoulder
Degree of Access and Junctions	H	M	M	L	M	L	M	L	L	L	L
Standard Verge Width	29	26	23	21	19	17	10	9	6	4	0
1.5m Verge	31	28	25	23							
0.5m Verge	33	30									

There is no research data available for 4 lane Single Carriageway roads between 12 and 14.6m width (S4). In the limited cirumstances for their use descibed in this document, Design Speed should be estimated asuming a normal D2AP with a Layout Constraint of 15 - 13 kph

Table 1 Layout Constraint Lc kph

Design speed is then established using Figure 1

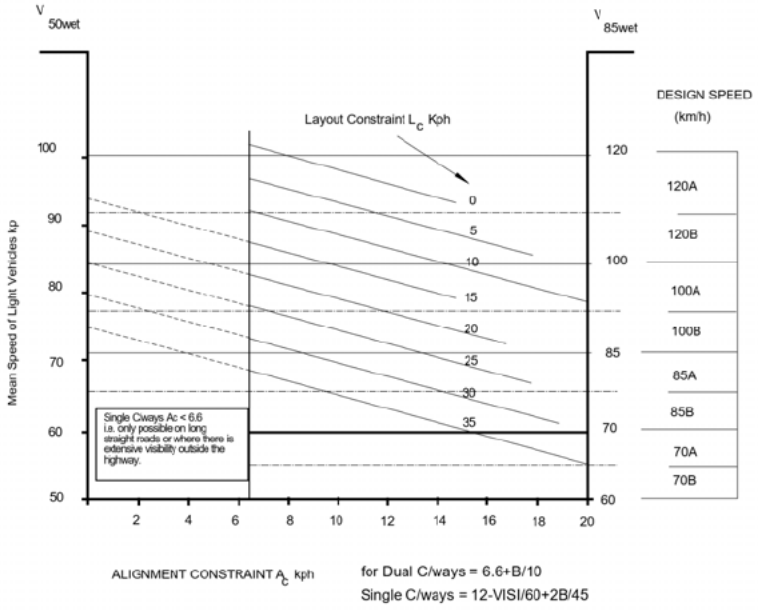


Figure 1 Selection of Design Speed (Rural Roads)

The design road speed is calculated as follows;

Location	VW	B	Log10 VISI	VISI	Ac	Lc	Design speed kph
A2_PA_15	0.8	117	2.20	158	15	30	85

JUSTIFICATION

Safety:	TD 41/95, Paragraph 2.21 states:

2.21 Normally, an "X" distance of 4.5m shall be provided for a direct access where use in the design year is forecast not to exceed 500 AADT. The choice of set back distance is related to the forecast traffic using the access. For lightly used accesses, for example those serving a single dwelling or a small cul-de-sac of a half a dozen dwellings, the set back "X" may be reduced to 2.4m. The 2.4m set back relates to normally only one vehicle wishing to join the trunk road at one time. The 4.5m covers the situation where two light vehicles may want to accept the same gap in the trunk road traffic. Where in the case of lightly used accesses the site conditions are particularly difficult, then the set back "X" may be reduced to 2.0m as a Relaxation. Any further reduction would be a Departure from Standard under para 1.15.

All accesses have been designed with an 'x' distance of 2.4m, in line with TD41/95 Paragraph 2.21 which is deemed appropriate due to the low volumes of traffic that is anticipated to use the accesses.

2.22 The "Y" distance along the major road, the all purpose trunk road, shall be determined from Table 2/1:

Design speed of major road (kph)	120	100	85	70	60	50
"Y" Distance (m)	295	215	160	120	90	70

Table 2/1: Value of "Y" Distance

Note, these figures correspond to the Desirable Minimum Stopping Sight Distances set out in Table 3 in **TD9 (DMRB 6.1.1)**. Relaxations are not available on these figures.

The 'y' distances for design and relevant posted speed at each location are;

Location	Design Speed (kph)	Posted Speed (mph/kph)	Design Speed 'y' Distance (m)	Temporary or Permanent
A2_PA_15	85	60/96	160	Permanent

The 'x' and 'y' distances specified and achieved at each location are;

Other Access Ref:	Distance ('y')			'x' Distance Achieved (m)
	Specified (m)	Achieved (m)		
		Existing Location	Proposed Location	
A2_PA_15 Left	160	25	123	2.4
A2_PA_15 Right	160	46	152	2.4

	Visibility has been maximised as far as reasonably practicable. The constraints are beyond the control of EWR Alliance and it is not possible to amend the constraints or move the access location, due to the requirements of maintenance and construction of EWR2. A2_PA_15 is a permanent farm access which replaces an existing field access that is currently located on the inside of a bend further south. The visibility of the proposed location is restricted to the left due to the highway boundary which is out of the control of the EWR2 Alliance. Visibility to the right is restricted due to the railway overbridge abutment on the Bicester Road and the current road geometry.
Congestion/Delay:	n/a
Environment/ Sustainability:	It is not proposed to provide the full 'y' distance, as this would involve heavy vegetation clearance, including several mature trees.
Accessibility:	n/a
Maintenance:	Any vegetation trimming required to provide the 'y' distances, will be maintained during the course of the works, with this carried out at the appropriate time of year.
Economic (whole life cost):	n/a

MITIGATION

Risk Assessment Classification:	n/a
Other Options Considered:	Upgrading the access at its existing location 315m south.
Mitigation:	The access has been located in the position which provides the optimum visibility in both directions.

CONCLUDING COMMENTS

The design speed calculated along Launton Road is 85kph, this is lower than the posted speed of 60mph/96kph and requires an 'y' distance of 160m to be provided.

A2_PA_15 is a permanent access that is sited at a location to maximise the 'y' distance in each direction and provides sight visibility that is very close to the requirement for the design speed of the road. However, it still does not meet the full requirement due to the existing road geometry.

In its current location the existing field access is located approximately 315m to the south on the inside of a bend with visibility which is substantially lower than what will be achieved in the proposed location.

ALLIANCE ASSURANCE

	Name	Signed	Date
Originator	**Andrew Kirk**	[redacted]	**09/06/2020**
Reviewer	**Lisa Taylor**		**09/06/2020**
Authorised	**Gareth Johnston**		**09/06/2020**

LOCAL HIGHWAY AUTHORITY RESPONSE

For completion by Local Highway Authority Representative

Category		Tick
1	Approved	
2	Approved with comments*	
3	Rejected with comments*	

Name	Position	Signed	Date

*comments are to be provided on the form provided. Responses will be provided back to the LHA on these forms and close out monitored. Link to template: 133735_RW-EWR-XX-XX-CM-CH-000002

Note: Where comments impact upon a design decision or have multidiscipline impacts, they will be entered into BIMCollab the projects online issues management system.

Revision & Version
B01.01

Drawing Number
133735_2A-EWR-OXD-A2_PA_15-DR-CH-010001

SCALE 1:250
@ A1 SHEET SIZE

KEY:

- HIGHWAY BOUNDARY
- EXISTING ROAD EDGE
- PROPOSED ROAD EDGE
- NEW PAVEMENT
- GRASS VERGE
- PROPOSED EARTHWORKS
- PROPOSED GATE
- PROPOSED POST & WIRE FENCE

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

THE WORKS ARE TO BE UNDERTAKEN BY A COMPETENT DELIVERY TEAM, AND THEREFORE ONLY EXCEPTIONAL RISKS RELATING TO THE WORKS ASSOCIATED WITH THIS DRAWING ARE IDENTIFIED BELOW. FOR FURTHER DETAILS AND PROPOSED SAFETY MEASURES REFER "EWR PHASE 2 HAZARD LOG WORKING COPY" EB DOC. REF: 133735-NWR-RSA-SSD-000001.

ID	HAZARD DESCRIPTION
NONE	NONE

⚠ INDICATES PROJECT RISKS (EWR2-DRIS- .....)

⚠ INDICATES H&S RISKS (EWR2-HAZ- .....)

NETWORK RAIL (EAST WEST RAIL WESTERN SECTION PHASE 2)

NOTES:

1. THIS DRAWING IS NOT TO BE SCALED.
2. ALL DIMENSIONS ARE IN METRES (m) UNLESS SHOWN OTHERWISE.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE HIGHWAY DESIGN PACKAGE OF DRAWINGS AND DOCUMENTS.
4. WHEREVER REQUIRED, ROAD MARKINGS ARE TO BE LAID IN ACCORDANCE WITH 'THE TRAFFIC SIGN REGULATIONS AND GENERAL DIRECTIONS 2016' & 'TRAFFIC SIGNS MANUAL CHAPTER 5 (2003).
5. WHERE A FENCE IS PROPOSED IT SHALL TIE-IN THE EXISTING HEDGEROW OR BOUNDARY TREATMENT TO PROVIDE A SECURE BOUNDARY.

Rev	Date	Description of Revisions	Dsnd	Chkd	Appr
B01	13/01/20	FOR INFORMATION	N.T.	G.J.	S.A.

Status: SHARED - for Information
Suitability: S2

EWR Alliance
Connecting People

Project
East West Rail
(Western Section)
Phase 2

Drawing Title
OTHER ACCESS A2_PA_15
GENERAL ARRANGEMENT

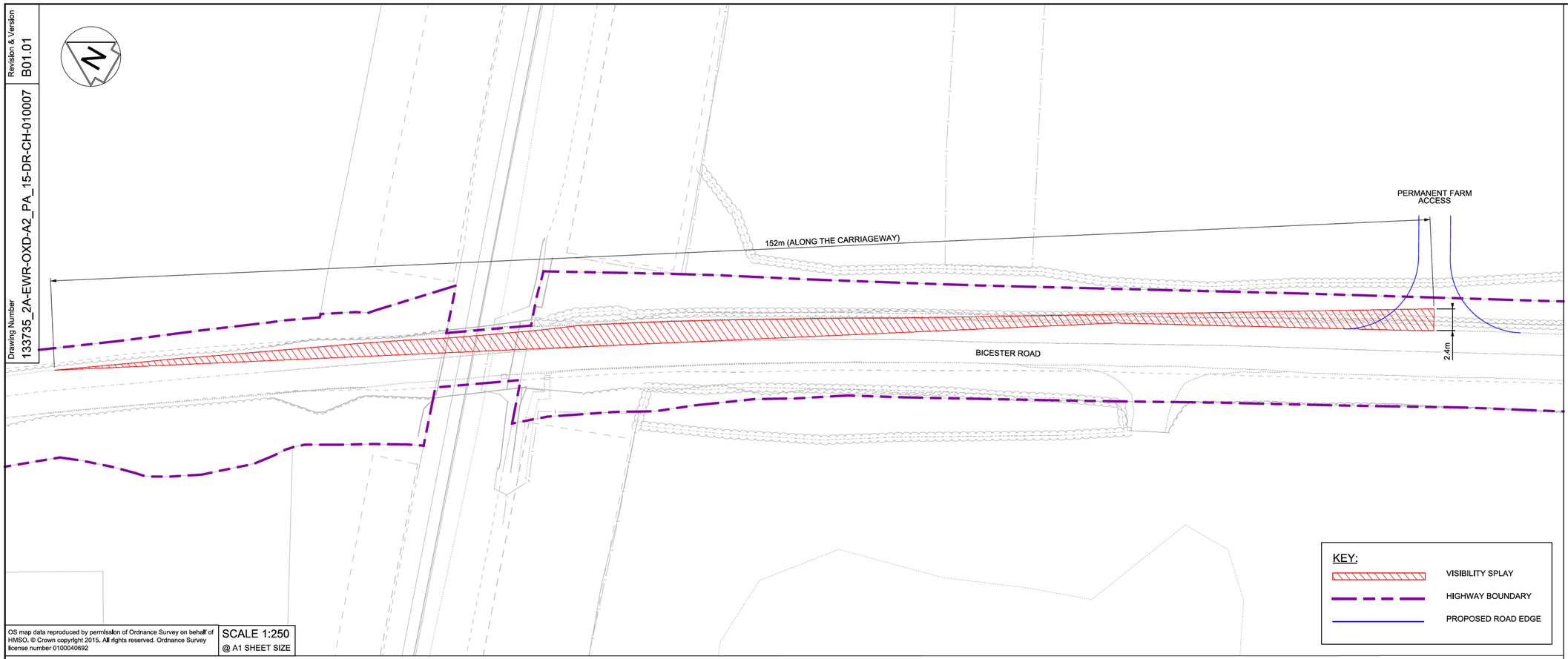
Designed	Nagoth Thomas Ravi Kumar	Signed	N. T. R. Kumar	Date	10/01/20
Drawn	Ravikumar KN	Signed	R. KN	Date	17/12/19
Checked	Gareth Johnston	Signed	G. Johnston	Date	10/01/20
Approved	Stephen Abe	Signed	S. Abe	Date	10/01/20

Scale(s): 1:250
ELR - Project Chainage (Miles Yards): OXD -
Design Package Risk Classification: Normal
Sheet: 1 of 1
Alternative Reference:
Revision: B01
Drawing Number: 133735_2A-EWR-OXD-A2_PA_15-DR-CH-010001

Sheet Size A1 594 x 841

Revision & Version
B01.01

Drawing Number
133735_2A-EWR-OXD-A2_PA_15-DR-CH-010007



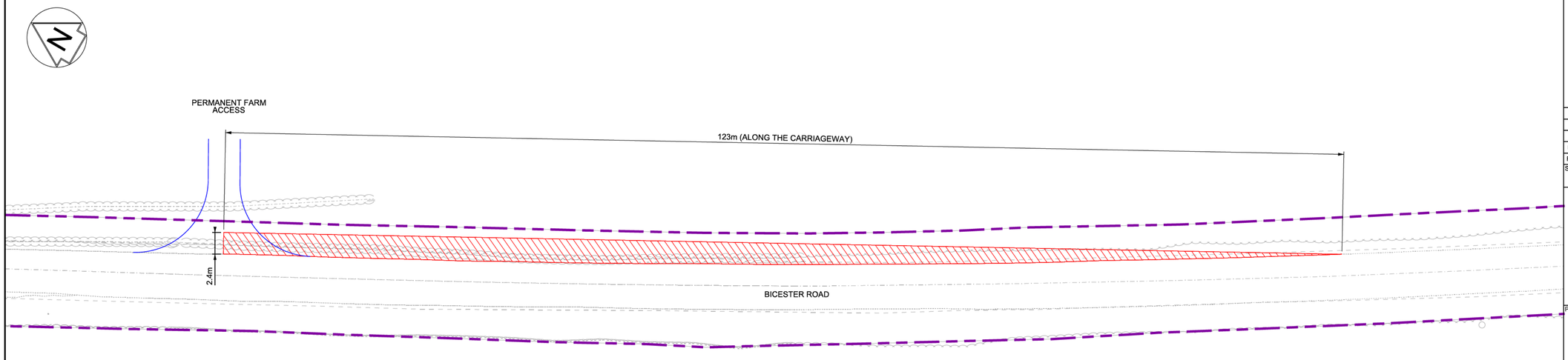
KEY:
- VISIBILITY SPLAY
- HIGHWAY BOUNDARY
- PROPOSED ROAD EDGE

SCALE 1:250
@ A1 SHEET SIZE

NETWORK RAIL (EAST WEST
RAIL WESTERN SECTION PHASE 2)

NOTES:

1. THIS DRAWING IS NOT TO BE SCALED.
2. ALL DIMENSIONS ARE IN METRES (m) UNLESS SHOWN OTHERWISE.
3. THE SITE TEAM NEEDS TO ASCERTAIN THE REQUIRED CLEARANCE BASED ON THE VISIBILITY SPLAY, INTERVISIBILITY ZONE AND OR WORKS REQUIRED FOR THIS SITE.



KEY:
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- HIGHWAY BOUNDARY
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SCALE 1:250
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Status: SHARED - for Information
Suitability: S2

EWR Alliance
Connecting People

Project
East West Rail
(Western Section)
Phase 2

Drawing Title
OTHER ACCESS A2_PA_15
VISIBILITY SPLAY

Designed	Nagoth Thomas Ravi Kumar	Signed N. T. R. Kumar	Date 10/01/20
Drawn	Ravikumar KN	Signed R. KN	Date 17/12/19
Checked	Gareth Johnston	Signed G. Johnston	Date 10/01/20
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ELR - Project Chainage (Miles Yards): OXD -
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Revision: B01
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Sheet Size A1 594 x 841