


Departure Reference:	N017	Departure Type:	General
Document File Name:	133735_RW-EWR-XX-XX-RP-CH-000149	Local Highway Authority:	Oxfordshire County Council

Departure Title:	Reduced visibility standard along the major road at Compound Access A2 (Station Road)
Departure Location:	
Supporting Information:	<p>General Arrangement Drawings Number Compound A2 - 133735_2A-EWR-OXD-CC_A2-DR-CH-002001</p> <p>Visibility Splay Drawings Number Compound A2 - 133735_2A-EWR-OXD-CC_A2-DR-CH-002012</p>
Consultations:	Oxfordshire County Council

DEPARTURE DETAILS

Relevant Standards:	DMRB, Volume 6, Section 2, Part 6, TD 42/95 DMRB, Volume 6, Section 2, Part 6, TD 9/93
Clause/Paragraphs:	TD 42/95, 7.6c

Volume 6 Section 2
Part 6 TD 42/95

c. The distance back along the minor road from which the full visibility is measured is known as the 'x' distance. It is measured back along the centreline of the minor road from the continuation of the line of the nearside edge of the running carriageway of the major road. The 'x' distance shall be desirably 9m (but see para 7.8). From this point an approaching driver shall be able to see clearly points to the left and right on the nearer edge of the major road running carriageway at a distance given in Table 7/1, measured from its intersection with the centreline

Design Speed of Major Road (kph)	'y' Distance (m)
50	70
60	90
70	120
85	160
100	215
120	295

Table 7/1: 'y' Visibility Distances from the Minor Road (Relaxations not available - para 7.6c)

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

DESIGN DETAILS

Design Year Traffic Flow (AADT):	Unknown
Design Speed:	<p>The design speed of the major road is calculated using advise in TD 9/93, Paragraph 1.7.</p> <p>Extracts from TD 9/93</p> <p>1.7 <u>Existing Rural Road Improvements:</u> (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.</p>

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	There is no research data available for 4 lane Single Carriageway roads between 12 and 14.6m width (S4). In the limited circumstances for their use described in this document, Design Speed should be estimated assuming a normal D2AP with a Layout Constraint of 15 - 13 kph						
0.5m Verge	33	30									

Table 1 Layout Constraint Lc kph

Design speed is then established using Figure 1

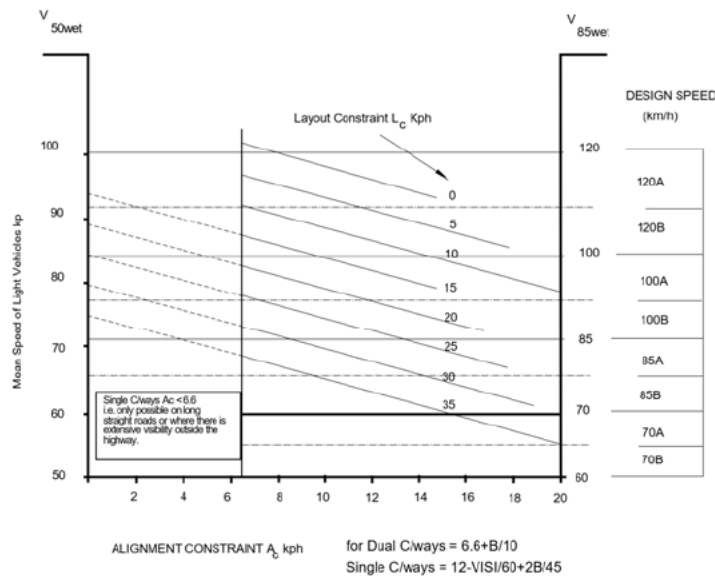


Figure 1 Selection of Design Speed (Rural Roads)

The design road speeds are calculated as follows;

Location	VW	B	Log10 VISI	VISI	Ac	Lc	Design speed kph
Comp.A2	0.5	90	2.26	180	13	30	85

JUSTIFICATION

TD 42/95, Paragraph 7.8 states:

7.8 In difficult circumstances, the 'x' distance may be taken as a Relaxation from 9.0m to 4.5m for lightly trafficked simple junctions, and in exceptionally difficult circumstances, to 2.4m back from the nearer edge of the major road running carriageway. The 'x' distance, from which full 'y' distance visibility is provided, shall not be more than 9m, as this induces high minor road approach speeds into the junction, and leads to excessive land take.

Safety:

The junction circumstances are considered exceptionally difficult for the junctions that are serving EWR construction compounds in a rural area. The construction compound junctions are temporary and will be removed when construction of EWR is complete. Vehicles using these junctions will be under the management of the EWR contractor who will have greater control on driver behaviour than if it were a public access. An 'x' distance of 2.4m is considered for visibility from the compound access roads.

The two main contributing factors to limited sight visibility is the availability of land and the geometry of the existing highway. However, the proposed junction improvements aim to improve safety by; increasing junction radii, increasing road widths and creating passing places for vehicles all within the existing highway boundary.

TD 42/95, Paragraph 7.6, Table 7/1 provides distances ('y').

c. The distance back along the minor road from which the full visibility is measured is known as the 'x' distance. It is measured back along the centreline of the minor road from the continuation of the line of the nearside edge of the running carriageway of the major road. The 'x' distance shall be desirably 9m (but see para 7.8). From this point an approaching driver shall be able to see clearly points to the left and right on the nearer edge of the major road running carriageway at a distance given in Table 7/1, measured from its intersection with the centreline

of the minor road. This is called the 'y' distance and is defined in Fig 7/1. Relaxations are not available for this distance.

7.7 If the line of vision lies partially within the major road carriageway, it shall be made tangential to the nearer edge of the major road running carriageway, as shown in Fig 7/2.

Design Speed of Major Road (kph)	'y' Distance (m)
50	70
60	90
70	120
85	160
100	215
120	295

Table 7/1: 'y' Visibility Distances from the Minor Road (Relaxations not available - para 7.6c)

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)
A2	85	60/96	160

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

Location	'y' Distance			'x' Distance Achieved (m)
	Specified (m)	Achieved (m)		
		Existing	Proposed	
Comp. A2 Right	160	14	114	2.4
Comp. A2 Left	160	7	123	2.4

Visibility has been maximised as far as reasonably practicable without having an adverse impact on the mature vegetation. The constraints are beyond the control of EWR Alliance and it is not possible to amend the constraints or move the access locations, due to requirements for maintenance and construction of EWR. The A2 compound access is temporary and will be removed when construction of EWR is complete. Vehicles using the junction will be under

	the management of the EWR contractor who will have greater control on driver behaviour than if it were a public access.
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:	n/a
Mitigation:	To ensure the 'y' distances stated are achieved regular vegetation trimming will take place along the verge for the duration of the construction period. Station Road to the north of the compound access will be closed to allow the construction of the realigned section and associated overbridge.




CONCLUDING COMMENTS

The design speed calculated at this location is 85kph which is lower than the posted speed of 60mph/100kph.

The design for the A2 compound access widens an existing field access which currently has visibility that is substantially below the required 160m and as such the proposed works will improve this significantly.

It should also be noted that the section of Station Road to the north of the compound access will be closed shortly after the operation of A2 compound to allow the construction of the realigned section of Station Road and associated overbridge. Therefore, it is anticipated that the main of the vehicles in this area will be LGV construction traffic which will be under the control of EWR Alliance.

ALLIANCE ASSURANCE

	Name	Signed	Date
Originator	Andrew Kirk		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.



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. FOR DETAILS OF ROAD MARKINGS, REFER TO STANDARD CONSTRUCTION DETAIL TW5 ROAD MARKINGS FOR COMPOUND ACCESS DRAWING No. 133735_RW-EWR-XX-XX-DR-CH-000122.
6. FOR DETAILS OF TRAFFIC SIGNS, REFER TO SIGNAGE STRATEGY DRAWING FOR BUCKINGHAMSHIRE COUNTY COUNCIL DRAWING No. 133735_2A-EWR-OXD-XX-DR-CH-010250.
7. WHERE A FENCE IS PROPOSED IT SHALL TIE-IN TO THE EXISTING HEDGEROW OR BOUNDARY TREATMENT TO PROVIDE A SECURE BOUNDARY.
8. THE SURFACE RUNOFF FROM THE ACCESS TO COMPOUND WILL BE MANAGED BY THE COMPOUND DRAINAGE SYSTEM.

A2 COMPOUND ACCESS → FOR DETAILS OF A2_P_17 PASSING PLACE, REFER TO GENERAL ARRANGEMENT DRAWING No. 133735_2A-EWR-OXD-A2_P_17-DR-CH-010001

THE NEW PAVEMENT HATCHING SHOWN WITHIN THE EXISTING CARRIAGEWAY EXTENTS REQUIRES REPROFILING BY MILLING AND OVERLAYING

EXISTING HIGHWAY DITCH TO BE CULVERTED SEE CULVERT TABLE FOR REQUIREMENTS.

PIPE-1:

STATION ROAD

	PIPE-1	
	UPSTREAM	DOWNSTREAM
EASTINGS:	178527.247	178506.086
NORTHINGS:	141964.281	141939.233
EXISTING DITCH LEVELS:	66.456	65.649
PIPE INVERT:	65.738	65.588
HEADWALL:	TYPE 1	TYPE 1
PIPE TYPE:	FILTER PIPE	
MINIMUM COVER:	300mm	

NOTES:

1. PIPE PERFORATIONS ARE TO BE LAID FACING UPWARDS.
2. REFER TO STANDARD DETAIL DRAWING 133735_RW-EWR-XX-XX-DR-CH-000131 FOR PIPE SURROUND AND BEDDING TYPES.
3. THE EXISTING DITCH INVERT LEVELS ARE TAKEN FROM AVAILABLE TOPOGRAPHIC SURVEY INFORMATION, WHERE AVAILABLE. THE DELIVERY TEAM WILL NEED TO CONFIRM DITCH LEVELS BEFORE INSTALLING CULVERT. ANY DISCREPANCIES IN LEVEL WILL NEED TO BE DISCUSSED WITH THE DESIGNER.

CULVERT REQUIREMENTS

KEY:

	HIGHWAY BOUNDARY
	EXISTING ROAD EDGE
	PROPOSED ROAD EDGE
	PROPOSED WHITE ROAD MARKING
	PROPOSED YELLOW ROAD MARKING
	PROPOSED DRAINAGE CULVERT
	NEW PAVEMENT
	GRASS VERGE
	PROPOSED EARTHWORKS
	PROPOSED TRAFFIC SIGN
	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
EWR2-HAZ-02096	OVERHEAD HIGH-VOLTAGE LINE
EWR2-HAZ-02097	PRESENCE OF BURIED SERVICES/ UTILITIES

INDICATES PROJECT RISKS (EWR2-DRIS-)
 INDICATES H&S RISKS (EWR2-HAZ-)

Rev	Date	Description of Revisions	Drawn	Chkd	Appr	Status	Suitability
B01	18/11/19	FOR INFORMATION				N.T.	E.F.
						S.A.	

SHARED - for Information S2



Project
**East West Rail
(Western Section)
Phase 2**

Drawing Title
**ACCESS TO COMPOUND A2
GENERAL ARRANGEMENT**

Designed	Nagoth Thomas Ravi Kumar	Signed	N. T. R. Kumar	Date	12/11/19
Drawn	Ravikumar KN	Signed	R. KN	Date	21/01/19
Checked	Edward Findlay	Signed	E. Findlay	Date	12/11/19
Approved	Stephen Abe	Signed	S. Abe	Date	13/11/19

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-CC_A2-DR-CH-002001



NOTES:

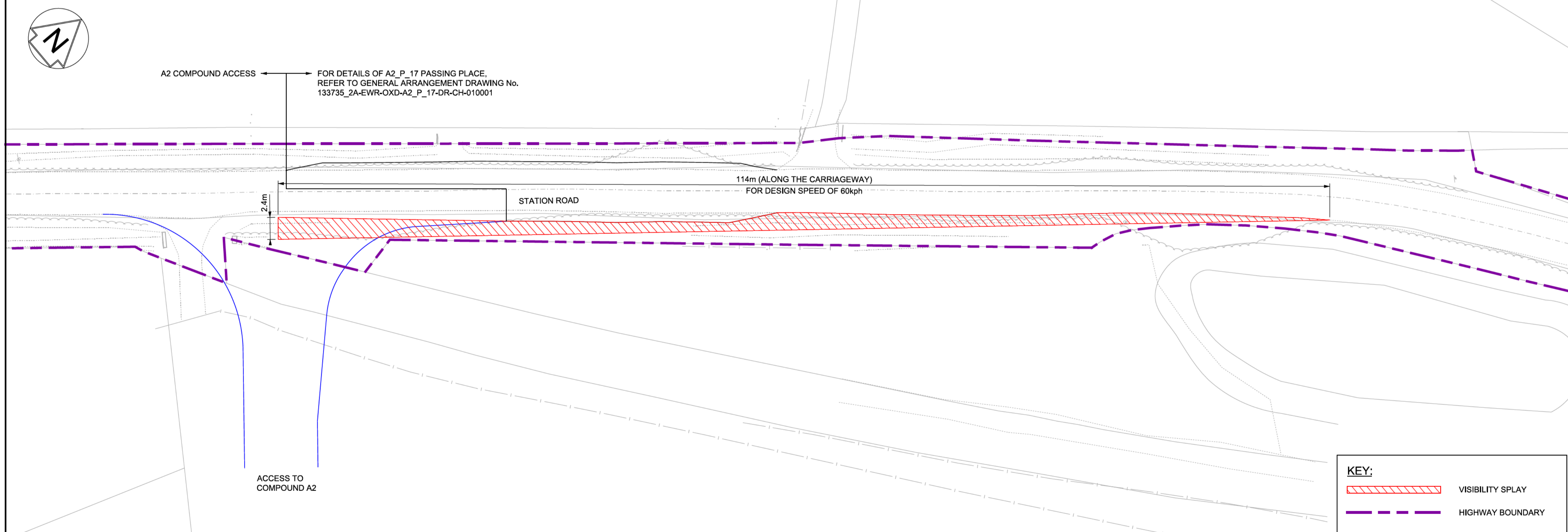
1. THIS DRAWING IS NOT TO BE SCALED.
2. ALL DIMENSIONS ARE IN METRES (m) UNLESS SHOWN OTHERWISE.
3. THE SITE TEAM NEEDS TO ASCERTAIN THE REQUIRED CLEARANCE BASED ON THE VISIBILITY SPLAY, INTERVISIBILITY ZONE AND OR WORKS REQUIRED FOR THIS SITE.

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SCALE 1:250
@ A1 SHEET SIZE

KEY:

	VISIBILITY SPLAY
	HIGHWAY BOUNDARY
	PROPOSED ROAD EDGE



KEY:

	VISIBILITY SPLAY
	HIGHWAY BOUNDARY
	PROPOSED ROAD EDGE

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SCALE 1:250
@ A1 SHEET SIZE

Rev	Date	Description of Revisions	Dend	Chkd	Appr	Suitability
B01	18/11/19	FOR INFORMATION	N.T.	E.F.	S.A.	
Status						S2



Project
**East West Rail
(Western Section)
Phase 2**

Drawing Title
**ACCESS TO COMPOUND A2
VISIBILITY SPLAY**

Designed	Nagoth Thomas Ravi Kumar	Signed	N. T. R. Kumar	Date	12/11/19
Drawn	Ravikumar KN	Signed	R. KN	Date	24/01/19
Checked	Edward Findlay	Signed	E. Findlay	Date	12/11/19
Approved	Stephen Abe	Signed	S. Abe	Date	13/11/19

Scale(s)	1:250	ELR - Project Chainage (Miles/Yards)	OXD -
Design Package Risk Classification	Normal		Sheet
Alternative Reference			Revision
Drawing Number	133735_2A-EWR-OXD-CC_A2-DR-CH-002012		B01