

## **Appendix 11.4 AECOM Transportation: Road Safety Audit - Coolnabacky**

# ESB Site Access Timahoe – Stage 1/2 Road Safety Audit



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Capabilities on project:  
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# 1 Introduction

## 1.1 Overview

AECOM has been commissioned by ESBI to undertake a Road Safety Audit of proposed upgrades to an existing access road to serve a proposed substation as well as existing agricultural lands. The site is located in Coolnabacky, 2.3km north of Timahoe village on the R426. The existing access road has a wide mouth, in excess of 35m wide. A farm yard access is located just inside the mouth of the access road.

The scheme proposals include moving the junction south approximately 20m, to line up with another access road on the western side of the R426, reducing the width of the access road mouth, and realigning the existing access road over a distance of 100m. Access details for the existing farm yard are not shown, with a note indicating access arrangements to be agreed with ESBI. A copy of the information provided for the purpose of the audit has been included as Appendix A.

The Safety Audit Report indicates each of the problems identified, provides outline recommendations for solving the problems, presents the Audit Team Statement, and describes a schedule of documents reviewed. The members of the Audit Team were:

### **Audit Team Leader:**

Brian McMahon, BE, MSc, MIEI

Senior Engineer, AECOM

### **Audit Team Member:**

Johanne Browne, BA, BAI (HONS), CEng MIEI

Consultant, AECOM

The audit comprises of an examination of a preliminary design drawing provided to the Audit Team, as well as a feasibility report on recommended improvement measures, however these improvements have not been incorporated into the drawings. Such information supplied is outlined in Appendix A of this report. In addition, a site visit was undertaken on the 19<sup>th</sup> September 2012. On the day of the visit the weather was dry and bright. During the time of the site visit, there did not appear to be any circumstances that would suggest a deviation from normal traffic conditions.

This Stage 1/2 Road Safety Audit has been carried out based on the guidance provided by NRA Standard NRA HD 19/12.

On this basis, the team has examined and reported only on the road safety implications of the measures as presented and has not specifically examined or verified the compliance of the designs to any other criteria.

## 1.2 Road Safety Audit

This Safety Audit represents the response of an independent Audit Team on various aspects of the scheme. The recommendations contained therein are therefore the opinions of the Audit Team, and are intended as a guide to the designers on how the scheme as constructed can be improved to address issues of road safety.

The Safety Audit guidelines do not provide a facility for the Audit Team to classify individual problems according to their severity, and hence the level of priority to be attached to each. It is instead the task of the design team and/or their representative to take a view on the validity of each of the recommendations, and decide on an appropriate course of action.

The response of the Design Team to the Safety Audit should be prepared in the form of a Safety Audit Feedback Form, accepting the changes proposed by the Audit Team or providing an alternative solution to the problem. The Feedback Form is then returned to the Audit Team for review and verification. A template for a Safety Audit Feedback Form is included as Appendix B.

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## 2 Site Description

### 2.1 Overview

The scheme proposes to realign an existing access road junction, moving it south approximately 20m, lining up with an existing access road on the western side of the R426. The junction mouth will be reduced in width, to make a more formal access point, with the internal access road to be realigned over a distance of 100m.

The scheme is located approximately 3km north of Timahoe village on the R426, which continues north to Port Laoise. The road is lightly trafficked generally, with some farm machinery noted during the site visit.

<b>Location</b>	R426, Coolnabacky, Timahoe, Co Laois
<b>Classification</b>	Regional Road
<b>Speed Limit</b>	80kph
<b>Local Authority Area</b>	Laois County Council
<b>Type of Road</b>	Single Carriageway, Rural Environment

### 2.2 Site Observations

The site visit was undertaken between 2.30 and 3:30 on the 19<sup>th</sup> September 2012. The weather was dry and bright at the time of the visit, with dry road surfaces.

#### *Road Geometry*

- The R426 is approximately 5.5m wide in the vicinity of the proposed site access, and runs in a north south direction fronting the site.
- Visibility to the north (right) from the proposed access road is restricted due to a large tree. The road rises from the site access for a distance of 100m before it levels off and bends to the west.
- Visibility to the south (left) from the proposed access road is approximately 70m. The road is relatively level heading south, and bends slightly to the east.
- No road markings were visible on the road fronting the proposed access road.





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### *Vehicular Traffic*

- One-way vehicular flow during the period of the site visit was very low, details provided by the client suggest an annual average daily traffic flow of approximately 1350.
- The speed limit on the road is 80kph. Free-flow vehicle speeds during the site visit were estimated to be around 80kph.
- HGV activity was high during the site visit, usually farm machinery.



*Photo 1: R426 looking south towards site access*



*Photo 2: R426 looking north towards site access*

### *Pedestrians and Cyclists*

- No pedestrian or cycle facilities are provided in the vicinity of the site, with no pedestrian or cycle activity noted during the site visit.

### *Street Lighting*

No street lighting is provided in the vicinity of the proposed scheme.

### *Accidents*

- The Road Safety Authority database of personal injury accidents was interrogated to establish if there are any existing safety issues in the vicinity of the development that are not evident from the site visit. The period of accident data examined is from 2005-2009.
- The records indicate that there were no accidents in the vicinity of the proposed works.

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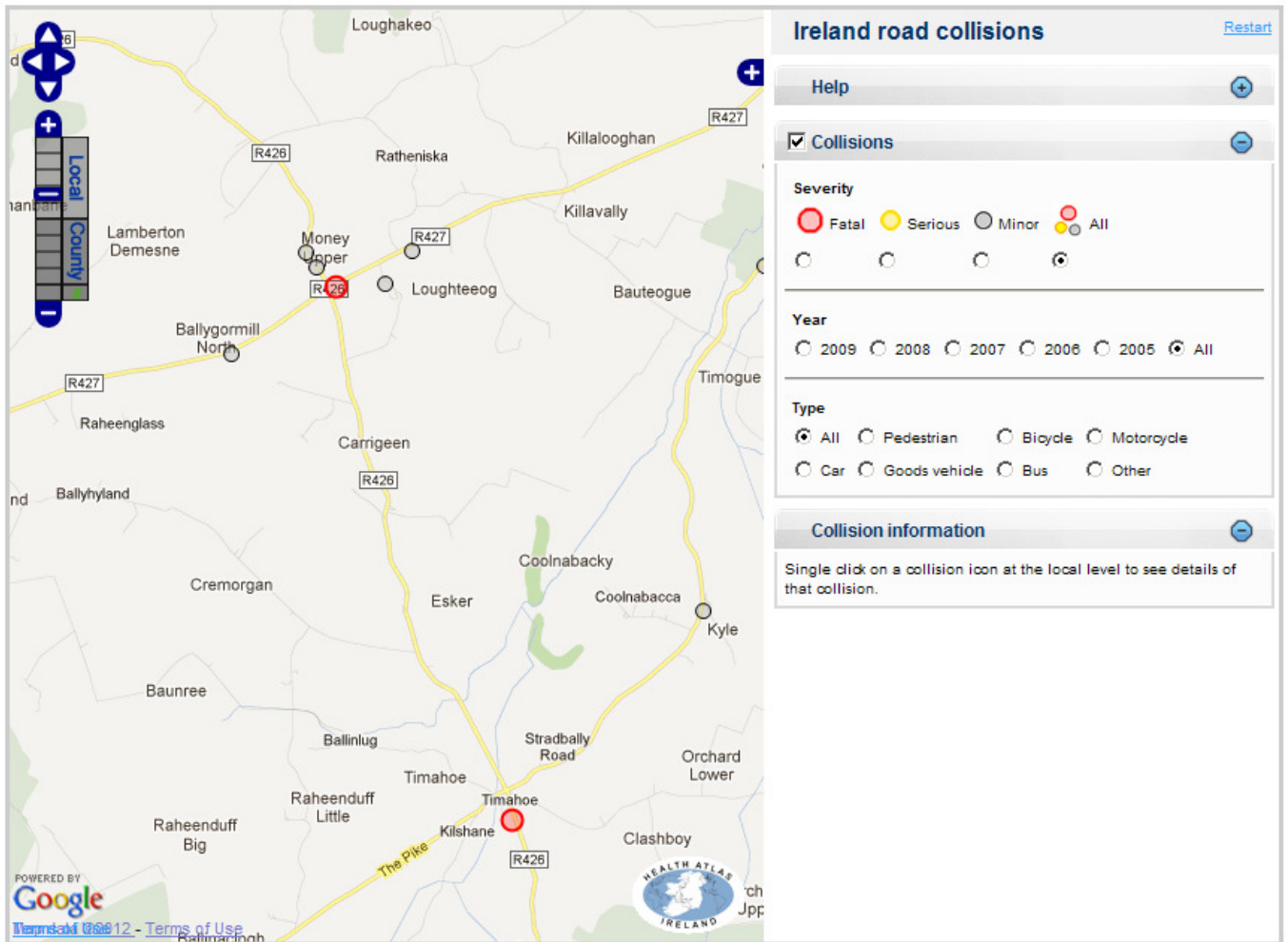


Figure-2: RSA Accident Records (2005-2009) in vicinity of proposed scheme (www.RSA.ie)



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## 3 Departure from Standards

### 3.1 General

No departures from standards have been notified to the audit team.

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## 4 Items Resulting from Stage 1/2 Road Safety Audit


### 4.1 Overview

This Safety Audit has reported on issues relating to proposed access road upgrades to facilitate an ESBI substation. Currently the road provides access to agricultural lands and a disused quarry. This road will be realigned as part of the works, with the junction with the R426 moved south. This is classified as a Stage 1/2 Road Safety Audit, as defined within the NRA Road Safety Audit Guidelines. While this is sufficient to provide a general overview of the key issues to be taken into account, it is not intended to provide a final schedule of safety issues associated with the scheme. Such would require a further review of the designs at Stage 3 (Construction).


The following details were not provided and therefore could not be commented upon:

- Full details of Signing and Lining;
- Longitudinal and Cross Sections;
- Vehicle Swept Paths;
- Drainage;
- Services; and
- Lighting.

### 4.2 Road Geometry


<b>4.2.1 Problem</b>		
<i>Location:</i>	Proposed Access Road	
<i>Drawing:</i>	60241205-001	
<i>Summary:</i>	Visibility to the south	
<i>Description:</i>		
<p>Visibility to the south (left), from an approximate 3m setback for drivers exiting the site access road is restricted due to the alignment of the R426 road and trees/vegetation. This may lead to vehicles encroaching into the carriageway to achieve adequate visibility resulting in side-impact collisions and/or head on collisions as a result of vehicles on the R426 swerving to avoid exiting vehicles.</p>		
<b>Recommendation:</b>		
<p>Provide adequate visibility for vehicles exiting the access road. This should take account of the speeds on the R426. Guidance is available in the Design Manual for Roads and Bridges.</p>		

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<b>4.2.2 Problem</b>		
<i>Location:</i>	Proposed Site Access Road	
<i>Drawing:</i>	60241205-001	
<i>Summary:</i>	Visibility to north	
<i>Description:</i>		
<p>Visibility to the north (right) from an approximate 3m setback for drivers exiting from the access road is restricted due to a single large tree located along the R426. This may lead to vehicles encroaching into the carriageway to achieve adequate visibility resulting in side-impact collisions and/or head on collisions as a result of vehicles on the R426 swerving to avoid exiting vehicles.</p>		
<b>Recommendation:</b>		
<p>Provide adequate visibility for vehicles exiting the substation access. This should take account of the speeds on the R426. Guidance is available in the Design Manual for Roads and Bridges. This could be achieved by removing the large tree.</p>		

<b>4.2.3 Problem</b>		<p style="text-align: center;">No Photo</p>
<i>Location:</i>	Proposed Site Access	
<i>Drawing:</i>	60241205-001	
<i>Summary:</i>	Turning Movements	
<i>Description:</i>		
<p>It is expected that large vehicles will access the site on occasion. The proposed access mouth has been tightened, with a safety barrier provided on either side. No autotracks have been provided to show that these large vehicles are capable of making this movement. Failure to provide adequate space for these vehicles to make the turning movement may increase the risk of collision with vehicles already on the R426.</p>		
<b>Recommendation:</b>		
<p>Ensure all turning radii are designed to allow appropriate HGV movements. This should be reviewed prior to construction.</p>		

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<b>4.2.4 Problem</b>		
<i>Location:</i>	Existing Farm Yard Access	
<i>Drawing:</i>	60241205-001	
<i>Summary:</i>	No details provided	
<i>Description:</i>		
<p>Access is currently provided to a farm yard, located on the existing access road, approximately 10m from the R426 road edge. The proposed scheme plans to realign the access road, by moving it approximately 20m south. No details have been provided regarding arrangements for the farm access.</p> <p>Failure to provide an appropriate access arrangement for vehicles entering and existing the farm yard may bring these vehicles into conflict with vehicles on the access road/R426, thus increase the risk of collision.</p>		
<b>Recommendation:</b>		
Details of the access arrangements for the farm yard should be provided prior to construction.		

**4.3 Signing & Lining**

<b>4.3.1 Problem</b>		No Photo
<i>Location:</i>	Northbound and Southbound Approaches to the Access	
<i>Drawing:</i>	60241205-001	
<i>Summary:</i>	Temporary Signs during Construction	
<i>Description:</i>		
<p>Due to the nature of the proposed development, large and oversized vehicles will be accessing the site, particularly during the construction phase. These vehicles may be slow moving and require additional time and manoeuvres to access the site. Inadequate levels of signage may lead drivers to overtake at inappropriate time or locations, thus increasing the risk of collision.</p>		
<b>Recommendation:</b>		
<p>It is recommended that adequate signage be provided, particularly at construction stage, with consideration given to appointing a flag man to aid larger vehicles into the site, while controlling traffic movements at times when larger vehicles are entering the site.</p>		

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<b>4.3.2 Problem</b>	
<i>Location:</i>	R426 fronting the site
<i>Drawing:</i>	60241205-001
<i>Summary:</i>	Road Markings
<i>Description:</i>	
Road markings are proposed on the R426 fronting the site, including “Slow” markings and edge of carriageway markings. It is not clear from the drawing if the lines marked beyond the “Slow” markings are lined bars, or raised rumble strips. Full details of the road markings are not included in the drawings.	
<b>Recommendation:</b>	
Proposed road markings should be provided in accordance with the Traffic Signs Manual.	

<b>4.3.3 Comment</b>	
<i>Location:</i>	R426 fronting the site
<i>Drawing:</i>	60241205-001
<i>Summary:</i>	Bend Ahead Sign
<i>Description:</i>	
A left hand “Bend Ahead” sign is proposed to the south of the proposed access junction. The proposed sign is located on a right turn bend. Consideration should be given to relocating the “Bend Ahead” sign to a location outside the right hand bend.	

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<b>4.3.4 Comment</b>		
<i>Location:</i>	R426 fronting the site	
<i>Drawing:</i>	60241205-001	
<i>Summary:</i>	"Tractor" Sign	
<i>Description:</i>		
<p>Signage has been proposed both on the northern and southern side of the access junction, indicating tractors in the area. The proposed development will not add more farm vehicles to the area, and the signage seems to be out of character for the area. The Audit team would question the requirement for these signs.</p>		

**4.4 Pedestrians & Cyclists**

<b>4.4.1</b>		No Photo
<i>Location:</i>	Site Access	
<i>Drawing:</i>		
<i>Summary:</i>	No Issues Relating to Cyclists and Pedestrians	
<i>Description:</i>		
<p>Due to the nature of the proposed development, and the lack of existing facilities to tie into, there are no comments on facilities for pedestrians or cyclists.</p>		

**4.5 Street Lighting**

<b>4.5.1 Comment</b>		No Photo
<i>Location:</i>	Site Access	
<i>Drawing:</i>		
<i>Summary:</i>	No Details Provided	
<i>Description:</i>		
<p>No details have been provided on the proposed public lighting for the scheme. Due to the nature of the development and the location of the site, street lighting may not be required.</p>		



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**4.6 Drainage & Maintenance**

<b>4.6.1 Comment</b>		
<i>Location:</i>	Site Access	
<i>Drawing:</i>		
<i>Summary:</i>	No Details Provided	
<i>Description:</i>		
No details of the proposed drainage network have been provided to the audit team.		

**4.7 Construction, Operation and Maintenance**

<b>4.7.1 Comment</b>		
<i>Location:</i>	Site Access	
<i>Drawing:</i>		
<i>Summary:</i>	Construction Stage	
<i>Description:</i>		
No details are provided. A Traffic Management Plan for the works should be prepared by the contractor and agreed with the Local Authority prior to the commencement of any works which involve any occupation of or infringement into the public highway.		

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## 5 Audit Team Statement

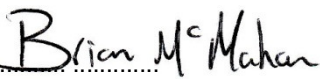
I certify that the site was visited and that this audit has been carried out in accordance with the National Roads Authority Road Safety Audit Guidelines NRA Standard NRA HD 19/12.

The Road Safety Audit has been carried out with the sole purpose of identifying any features of the design that could be removed or modified in order to improve the safety of the scheme.

No one on the audit team has been involved with scheme design.

### AUDIT TEAM LEADER: SENIOR ROAD SAFETY AUDITOR

Name: B McMahon ME, MSc, MIEI  
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Dublin 4.

Signed   
Date .....3/10/12.....

### AUDIT TEAM MEMBER: ROAD SAFETY AUDITOR

Name: J. Browne BA, BAI (HONS), MA, CEng MIEI  
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Organisation: AECOM  
Address: Grand Canal House,  
Upper Grand Canal Street,  
Dublin 4.



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## Appendix B – Safety Audit Feedback Form

**NOTE: THE TEXT BELOW REPRESENTS AN EXAMPLE OF A SAFETY ADUIT FEEDBACK FORM. THE SAFETY AUDIT FEEDBACK FORM SHOULD BE COMPLETED BY THE DESIGN TEAM IN RESPONSE TO THE ISSUES RAISED IN THIS AUDIT AND SUBMITTED TO THE OVERSEEING ORGANISATION AS A SUPPLEMENT TO THE SAFETY AUDIT REPORT.**


Scheme Name:			
Stage:			
Date Completed:			
Paragraph No. in Safety Audit Report	Problem Accepted (yes/no)	Recommendation accepted (yes/no)	Alternative measures (describe)
SAMPLE ONLY			

## Designer's Response to Stage 1/2 Road Safety Audit Report

<p><b>Scheme Name: ESB Substation Site Coolnabacky – Access Road/Junction on R426 north of Timahoe, Co Laois</b></p> <p><b>Stage: 1 /2 Road Safety Audit</b></p> <p><b>Date Completed:03.10.2012</b></p>			
Paragraph No. in Safety Audit Report	Problem Accepted (yes/no)	Recommendation accepted (yes/no)	Designer's Comments / Alternative measures (describe)
4.2.1	Yes	Yes/No	It is proposed to remove vegetation within the verge area to the south of the proposed access within the extents of the lands in the control of the applicant, to improve visibility. In terms of overall visibility requirements for the road type and vehicle speeds recorded/observed, the Design Team were advised by Laois County Council Roads Department that given the proposed access represents an improvement on the existing access, and that the likely trips generated by the proposed development during operation are marginal compared to current usage, the Authority would not see any significant safety issues arising from such a proposal.
4.2.2	Yes	Yes	It is proposed to remove the tree located immediately to the north of the existing access on the east side of the R426.
4.2.3	No	No	The proposed access has a 10m radius on both the north and south edge lines entering the road from the R426, in accordance with para.7.27 of NRA DMRB TD41-42/11. During normal operations only light vehicle/van access is expected to the proposed substation and typical existing farm access movements to and from the R426 would relate to a tractor and trailer unit, for which the 10m radius is suitable. In the unlikely event of a larger vehicle being required to access the substation for maintenance reasons, appropriate measures such as banksmen and temporary signage will be implemented on the R426 during movements to/from the site.
4.2.4	No	No	It is proposed that the existing access to the dwelling/yard will be retained, in accordance with the requirements of the landowner, but it will be separated from the proposed access road by an appropriate boundary treatment. Both the existing access and the proposed new access have good visibility of each other, and having regard for the low volumes generated, no conflict or interaction is expected.
4.3.1	Yes	Yes	Temporary signage and appropriate access control measures will be provided in accordance with the requirements of Chapter 8, Traffic Signs Manual, and will be subject to a detailed Construction Traffic Management Plan to be submitted for approval by Laois County Council prior to commencement of works on site.

Paragraph No. in Safety Audit Report	Problem Accepted (yes/no)	Recommendation accepted (yes/no)	Designer's Comments / Alternative measures (describe)
4.3.2	Yes	Yes	The proposed 'SLOW' markings are to be installed in accordance with M106 of the Traffic Signs Manual. It is noted that yellow bar markings of the type illustrated on the AECOM drawing issued to the RSA Team are not identified in the Traffic Signs Manual for this use in conjunction with the 'SLOW' marking, but the use of the bar markings (painted lines NOT rumble strips) have been commonly implemented at other locations along the R426 between Timahoe and Portlaoise. Further to the RSA comments, the AECOM drawings have been revised to omit the bar markings (see appended revised drawing 60241205-001.)
4.3.3	Yes	Yes	The proposed left turn bend sign position is relocated to the north of the existing access road beyond the right turn bend (see appended revised drawing 60241205-001).
4.3.4	Yes	Yes	The comments of the RSA Team are noted, and in response it is advised that Laois County Council requested consideration should be had for the 'Tractor' sign (W168 of the Traffic Signs Manual), due to the presence of turning agricultural traffic in the vicinity of the access. Further to the RSA comments, the AECOM drawings have been revised to omit these signs (see appended revised drawing 60241205-001).
4.4.1	Noted	N/A	Rural location – no provision required
4.5.1	Noted	N/A	Rural location – no provision required
4.6.1	Noted	Yes	Free draining road edges – designer to review with Area Engineer at detail design stage prior to construction
4.7.1	Noted	Yes	Construction Traffic Management Plan to be submitted to Laois County Council for approval prior to commencement of development works on site.

Reviewed by:   
 Stephen Reid \_\_\_\_\_  
 (Design Team Leader, AECOM)

Approved by:   
 Cormac O'Brien \_\_\_\_\_  
 (Project Director, AECOM)