



## **Supplementary Environmental Information**

*A160 Killingholme Humber Port Access, Stage 1 Road Safety Audit*

*Designer's Response*

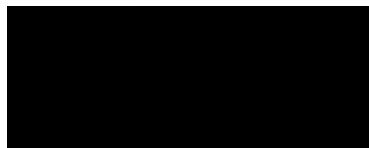
*Supplementary Report EX 15.4*

March 2010  
Revision: 0  
AECOM

# A160 Killingholme Humber Port Access, Stage 1 Road Safety Audit Designer's Response

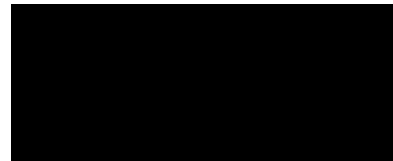


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A160 Killingholme Humber Port Access, Stage 1 Road Safety Audit – Designer's Response

Rev No	Comments	Date

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## Introduction

This report results from a Stage 1 Road Safety Audit carried out on the proposed improvement of five junctions between the A160 and the A180 (T) and the Humber Port. The proposed development is a port related storage facility located at Killingholme, on the Humber Estuary, in North Lincolnshire. As part of a Transport Assessment a number of junctions were identified as requiring measures to address the impact of development generated trips. The Stage 1 Road Safety Audit covered the five junctions which have been identified for improvement including;

- A180 (T) / A160 – Merge Improvement / Westbound Entry Slip Road Widening;
- A160 / A1077 Ulceby Road – Localised junction widening to major road to provide right-turn reservoir;
- A160 / Habrough Road / Top Road Roundabout - Widening of the A160 carriageway, on the approach to and exit from the roundabout, on the western arm;
- A160 Humber Road / Eastfield Road – Carriageway widening to Eastfield Road (north of A160) to provide dedicated left-turn lane into Humber Road; and
- A160 Humber Road / Rosper Road – Installation of traffic signals on a three arm priority junction.

This report introduces the designer's response to problems identified and solutions recommended by the original Safety Audit Teams Stage 1 Safety Audit report.

In all cases, the problem number as allocated in the Audit Teams original report has been retained to facilitate cross referencing.

The general format of the Audit Teams original report has been retained in this document and the Designers Response has been inserted immediately following the Audit Teams recommendation.

The audit was carried out by Mr Stuart Kay and Robert Major of AECOM.

The auditors had no involvement in the scheme design and a site visit was undertaken on Friday 5th March 2010. Weather conditions during the site visit were cold / sunny with a dry highway surface. .

## Items Resulting from the Stage 1 Road Safety Audit and Designer's Response

### GENERAL:

No problems

### THE ALIGNMENT:

**Problem: 1**

*Location:* Westbound entry slip road to the A180 (T) from the A160.

*Drawing:* 52409/P/004

*Summary:* Proposed kerb alignment not consistent with vehicle movement.

*Description:*

The proposed kerb alignment does not consist of transition curves between straight lengths of kerb to reflect the actual movement / path of vehicles on the carriageway. This may result in highway users over-correcting their movement while travelling along the carriageway and coming into conflict with traffic on the main carriageway.

### Recommendation:

Provide suitable transition curves to the kerb alignment at this location.

### Designer's Reponse

The designer agrees with this recommendation and the layout has been amended to take into account the suggested changes and is shown in Drawing Number 52409/P/004 Rev A.

### THE JUNCTIONS:

**Problem: 2**

*Location:* Proposed central reserve on A160 at junction with Ulceby Road A1077.

*Drawing:* 52409-P-011

*Summary:* Inadequate right-turn facility from Ulceby Road to A160.

Capabilities on project:  
Transportation

*Description:*

The proposed right-turn facility is inadequate in terms of its length and the angle at which vehicles are required to stop in relation to the main carriageway. The length of the reservoir is not of sufficient length to fully accommodate a Heavy Goods Articulated vehicle. This may result in the rear of a long vehicle protruding into the main carriageway while the driver waits to complete the right-turn manoeuvre. This may potentially result in conflict between right-turning vehicles and traffic on the main carriageway. Also the acute angle at which a driver, in a vehicle within the right-turn facility, views the main carriageway may result in this being restricted and potentially lead to drivers emerging from the right-turn reservoir and coming into conflict with vehicles on the main carriageway.

**Recommendation:**

Amend the design of the central reserve right-turn reservoir to accommodate large vehicles wholly within it and allow a clear view of approaching traffic on the main carriageway.

**Designer's Reponse**

The designer agrees with this recommendation and the preliminary layout has been amended to take into account the suggested changes and is shown in Drawing Number 52409-P-011 Rev A.

**Problem: 3**

*Location:* Proposed central reserve on A160 at junction with Ulceby Road A1077.

*Drawing:* 52409-P-011

*Summary:* Inadequate right-turn facility from A160 into Ulceby Road.

*Description:*

The right-turn reservoir is of insufficient length to accommodate two long vehicles wholly within it and the entry taper / deceleration lane is too short to allow a motorist to safely reduce the vehicle's speed.

**Recommendation:**

Amend the design of the central reserve right-turn reservoir to accommodate two large vehicles wholly within it and extend the entry taper / deceleration lane to accommodate the safe deceleration of a vehicle entering the right-turn reservoir.

**Designer's Reponse**

The designer agrees with this recommendation and the layout has been amended to take into account the suggested changes and is shown in Drawing Number 52409-P-011 Rev A.

Capabilities on project:  
Transportation

**Problem: 4**

*Location:* A160 at Ulceby Road junction

*Drawing:* 52409-P-011

*Summary:* Inadequate provision for vehicles leaving and entering the A160

*Description:*

Within the proposed design of the junction there does not appear to be any provision for vehicles to decelerate off or accelerate onto the A160. This may potentially lead to rear-shunt type accidents due to the differential speed of vehicles particularly the relatively high proportion of HGV's in the traffic's composition.

**Recommendation:**

Amend the design of the junction to accommodate acceleration and deceleration lanes onto and off the A160.

**Designer's Reponse**

The designer agrees with this recommendation and the layout has been amended to take into account the suggested changes and is shown in Drawing Number 52409-P-011 Rev A. Although the provision has only been amended to be consistent with the current provision.

**Problem: 5**

*Location:* The proposed kerblines adjacent to the left-turn from Ulceby Road to the A160.

*Drawing:* 52409-P-011

*Summary:* Inadequate kerb radius for left-turn manoeuvre.

*Description:*

It was observed during the site visit that large vehicles were overrunning the verge to carry out the left-turn manoeuvre. It would appear from the proposed design that this occurrence will be exacerbated by the reduction in the kerb radius at this location and the introduction of a kerbed central island on the A160. This may potentially lead to vehicles being unable to complete the left-turn at the junction and consequently coming into conflict with vehicles on the main carriageway.

**Recommendation:**

Amend the design of the kerblines to safely allow vehicles to expedite the left-turn.



Capabilities on project:  
Transportation

### **Designer's Reponse**

The designer agrees with this recommendation and the layout has been amended to take into account the suggested changes and is shown in Drawing Number 52409-P-011 Rev A.

**Problem: 7**

*Location:* Eastfield Road northside of A160

*Drawing:* 52409-P-002 Rev A

*Summary:* Poor delineation of carriageway space.

*Description:*

The drawing indicates that the carriageway on the approach to the stop-line, used by vehicles either travelling into Eastfield Road southside or turning right into the A160, to the traffic signals is to be divided into two traffic lanes each of approximately 3metres in width with both of which signed for right-turning traffic. This lane width is too narrow to safely accommodate two large vehicles at the stop-line and in particularly allow them to simultaneously turn-right in a safe manner. This may potentially lead to vehicle to vehicle conflict in the form of side impact shunt-type incidents.

**Recommendation:**

Remove lane marking to create one approach to stop-line.

### **Designer's Reponse**

The designer disagrees with this recommendation. The two traffic lanes in question are 3.65 metres wide, which is deemed reasonable for two large vehicles to turn right in a safe manner. Autotrack swept path analysis has been undertaken and is shown in Drawing Number 52409-P-012.

**Problem: 8**

*Location:* Eastfield Road, northside of A160, east side verge

*Drawing:* 52409-P-002 Rev A

*Summary:* Protection of embankment in the highway verge.

Capabilities on project:  
Transportation

*Description:*

There is a watercourse in the highway verge approximately 2metres below the level of the adjacent carriageway. This may lead to errant vehicles, which leave the carriageway, entering the watercourse and creating a potential danger to motorists. Widening of Eastfield Road brings the carriageway closer to the watercourse.

**Recommendation:**

Provide a vehicle restraint in this highway verge, of sufficient length to help to prevent vehicles entering the watercourse

**Designer's Reponse**

The designer agrees with this recommendation and will be considered further through the detailed design process.

**NON-MOTORISED USER PROVISION:**

**Problem:** 9

*Location:* The eastbound approach and westbound exit of the western arm of the A160 at it's junction with Habrough Road.

*Drawing:* 52409-P-003

*Summary:* Inadequate provision for NMU's.

*Description:*

There is an existing NMU crossing of the A160, immediately west of the roundabout, linked to a shared highway. It would appear from the drawing that provision has not been made to assist NMU's cross the carriageway or provide warning to motorists of the potential hazard. This may potentially result in conflict between vehicles and NMU's at this location

**Recommendation:**

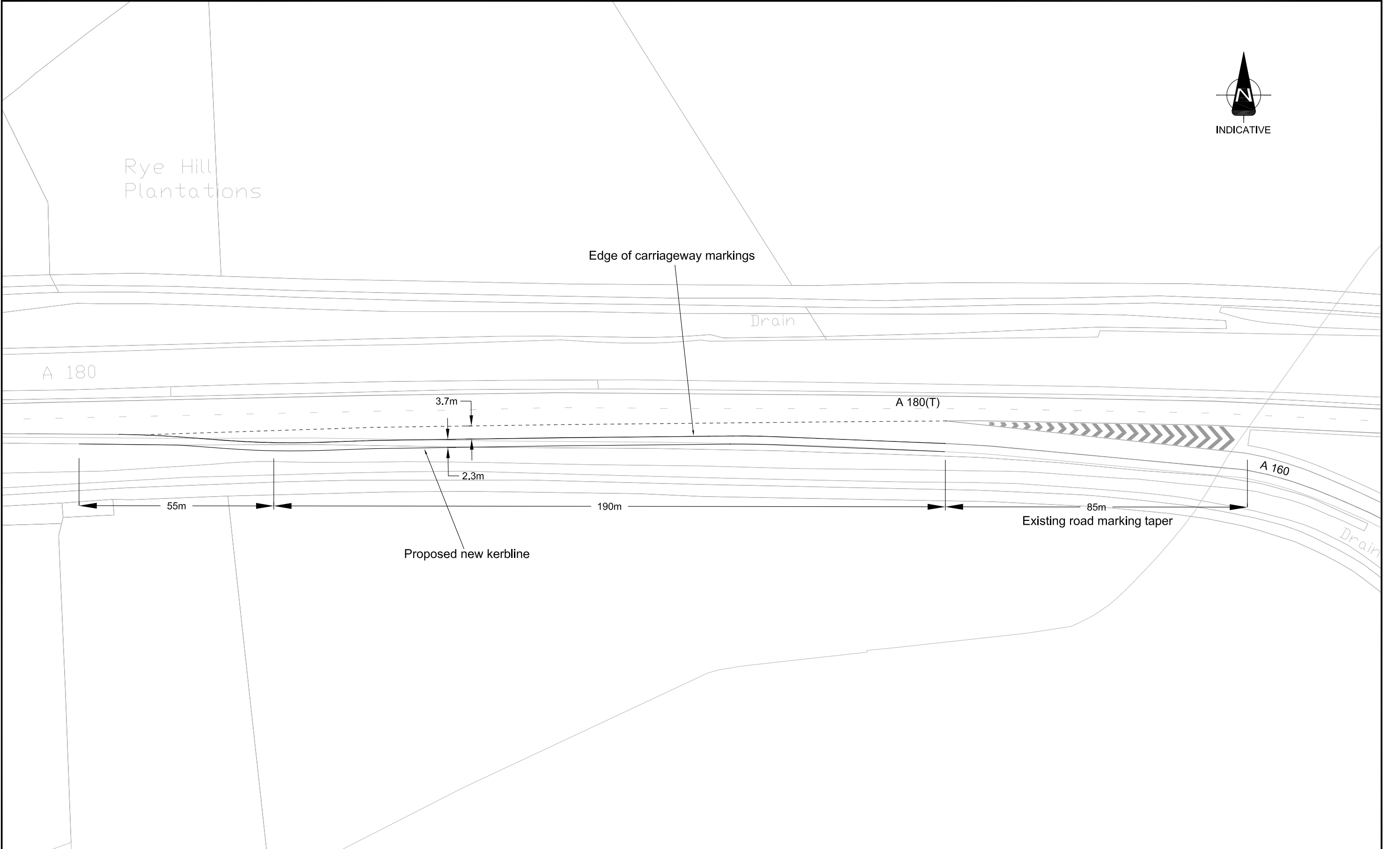
Provide dropped kerbs, buff coloured tactile paving; "Look Left" / "Look Right" road markings, as appropriate, to diagram number 1029 to each NMU crossing location: And erect hazard warning signs to diagrams numbered 562 "Other danger ahead" and 563 "Pedestrians crossing" on the westbound approach to the junction.

**Designer's Reponse**

The designer agrees with this recommendation and will be considered further through the detailed design process.


**ROAD SIGNS, CARRIAGEWAY MARKINGS AND STREET LIGHTING:**

No Comments



Client:  Able UK	Project:  M456 Humber Ports Facility	Title:  Proposed Junction Improvements A160 /A180(T)	<div><div><div><div></div><div>AECOM</div></div><div>St. Christopher House, George Cayley Drive, Clifton Moor, YORK, YO30 4XE</div><div>Tel: +44 (0) 1904 694400 Fax: +44 (0) 1904 694499 www.aecom.com</div></div></div>	Design: MIT	CAD: MIT		cm							
				Checked: MDC	Date: 20 Sept 2007									
				Approved: SP	Scale: 1:1000									
				Drawing No. 52409-P-004					Rev: A					
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Client:  Able UK	Project:  Humber Ports	Title:  Proposed Highway Improvements A160 - A1077 Ulceby Road Junction	<div><div></div><div>St. Christopher House, George Cayley Drive, Clifton Moor, YORK, YO30 4XE</div><div>Tel: +44 (0) 1904 694400 Fax: +44 (0) 1904 694499 www.aecom.com</div></div>	Design:	MIT	CAD:				MIT	cm							
				Checked:	MDC	Date:				July 2009								
				Approved:	KNH	Scale:				1:1000 @ A3								
				Drawing No. 52409-P-011								Rev: A						
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