

# Technical Memorandum

08 December 2023

<b>To</b>	ABP	<b>Contact No.</b>	N/A
<b>Copy to</b>	DFDS	<b>Email</b>	N/A
<b>From</b>	GHD	<b>Project No.</b>	12578580
<b>Project Name</b>	DFDS Traffic Impact Study - Immingham		
<b>Subject</b>	ISH5 Action Point 28 and 29		

## 1. Introduction

Following the recent Issue Specific Hearing 5 (ISH5) associated with the Immingham Eastern Ro-Ro Terminal (IERRT) project, the Inspectors identified a number of actions for ABP (the Applicant) or Interested Parties to respond to (EV10-016). Action points 28 and 29 as published on the PINS website relate to onshore elements of the application and requests that DFDS 'submit a junction sensitivity note identifying what mitigation would potentially be needed at A1173/Kiln Lane roundabout; A1173/SHIP roundabout; A160/Manby Road roundabout; Habrough Road roundabout; and A160/A180 roundabout' as well as make available applicable drawings of mitigations for the identified junctions where appropriate.

This Technical Memorandum provides the necessary information to respond to the request of the Examining Authority.

The Applicant and their consultants are not to rely on, or utilise, the following information. The purpose of this information is to present a high-level review of the types of mitigation measures that DFDS would expect to see implemented based upon the outcomes of the corrected modelling assessments for the 15% West Gate / 85% East gate assignment. It is the responsibility of the Applicant and their consultants to design the necessary mitigations of the junctions.

Appropriate mitigations for the A160 corridor would need to be discussed with National Highways in the context of the outcomes of the sensitivity test, which should be presented using the Port of Immingham profile for the AM peak hour in accordance with the trip generation methodology outlined within the original TA [AS-008]. Any changes to the methodology and assumptions outlined within the TA, do need to be disclosed and agreed with NH, NLC, and NELC.

## 2. Mitigation Requirements

DFDS comments on Deadline 5 Submission (REP6-038) identified the need for mitigations to be considered for the IERRT project. We note that the Applicant's latest presentation of RFC's included within REP6-038 applies the Stenaline end user profile to the AM peak hour where junctions exceed their practical capacity of RFC 0.85 to suppress the potential impact of the IERRT.

This approach is not accepted by DFDS and there is no evidence that this revised approach has been discussed with and accepted by NH, NLC, and NELC. Notwithstanding the fact that the use of the Stena

profile still shows that mitigation is required, it should therefore be afforded no weight until evidence of these agreements have been provided.

In addition, as part of the design input changes for the port capacity assessment (refer to response to Action Point 22 (EV10-016)), the Applicant has requested that the modelling consider several scenarios of vessel arrival and departure patterns to, in the Applicants words, 'reflect the most efficient operation of the terminal'. These modifications to the vessel arrival and departure schedules means that the potential demand onto the road network is not set. An optimised arrival profile for the Transport Assessment may not align to the terminal capacity needs and the two need to be assessed in combination. It is DFDS view that the Applicant should consider the worst case for the arrival and departure profile for the Transport Assessment if a flexible vessel arrival and departure schedule is to be considered, further reinforcing the point that the assessment should maintain the use of the Port of Immingham Profile as per the current approach within the Transport Assessment.

For completeness, the RFC's for each junction using the correct Port of Immingham profile detailed within the Applicant's Issue Specific Hearing 3 Action Points for Deadline 5 – Appendix 2 – DTA Report 23325-27 Annex D [REP5-028], and commented on by DFDS in REP6-038, is reproduced below.

**Table 1 The Applicant's modelling results summary from DTA Report 23325-27 Annex D [REP5-028]**

Junction	Sc.1: 2032		Sc.2: 2032 + Committed		Sc.3: 2032 + Committed + ABP 85/15%	
	AM	PM	AM	PM	AM	PM
A1173 / Kings Rd roundabout	0.53	0.42	0.59	0.62	0.70	0.53
A1173 / Kiln Ln roundabout	0.71	0.50	0.86	0.58	0.96	0.65
A1173 / SHIIP roundabout	0.57	0.59	0.78	0.72	0.86	0.79
A180 / A1173 roundabout	0.31	0.45	0.44	0.57	0.55	0.62
A180 / A160 roundabout	0.72	0.52	0.89	0.64	0.91	0.65
A160 / Habrough Rd roundabout	0.80	0.78	0.94	0.92	0.95	0.93
A160 / Manby Rd roundabout	0.54	0.76	0.59	0.86	0.61	0.88

Based upon the outcome of the corrected modelling, mitigation measures should be considered in any location where the IERRT development is either:

- a) adding additional traffic flows to junctions operating at or over its practical capacity of RFC 0.85; or
- b) the IERRT development traffic flows push approaches to a junction above its practical capacity of RFC 0.85.

Such mitigations are likely to comprise a combination highway works to address localised capacity issues, financial contributions towards sustainable transport and future highway schemes, and management measures to control throughput and assignment of vehicles on the network. Each of these elements mitigations will need to be clearly set out for discussion and agreement with NH, NLC, and NELC in the context of impacts upon their respective network.

In the absence of further consideration of the need for highway mitigation from the Applicant, DFDS have produced a summary of the anticipated highway mitigation works at junctions along the primary access routes to the Port, being the A1173 corridor and the A160 corridor. Each are considered in turn.

## 2.1 A1173 Corridor

The Applicant has identified the A1173 corridor as being the primary access route to the IERRT development. Whilst the extent to which this is realistic is contested, it nonetheless needs to be able to serve as a safe, direct and efficient route to the port if it is to be able to fulfil the full extent of the role envisaged by the Applicant and accommodate at least 85% of IERRT traffic.

The assessments identify that two junctions on this route will operate with an RFC in excess of 0.85. These are considered in turn.

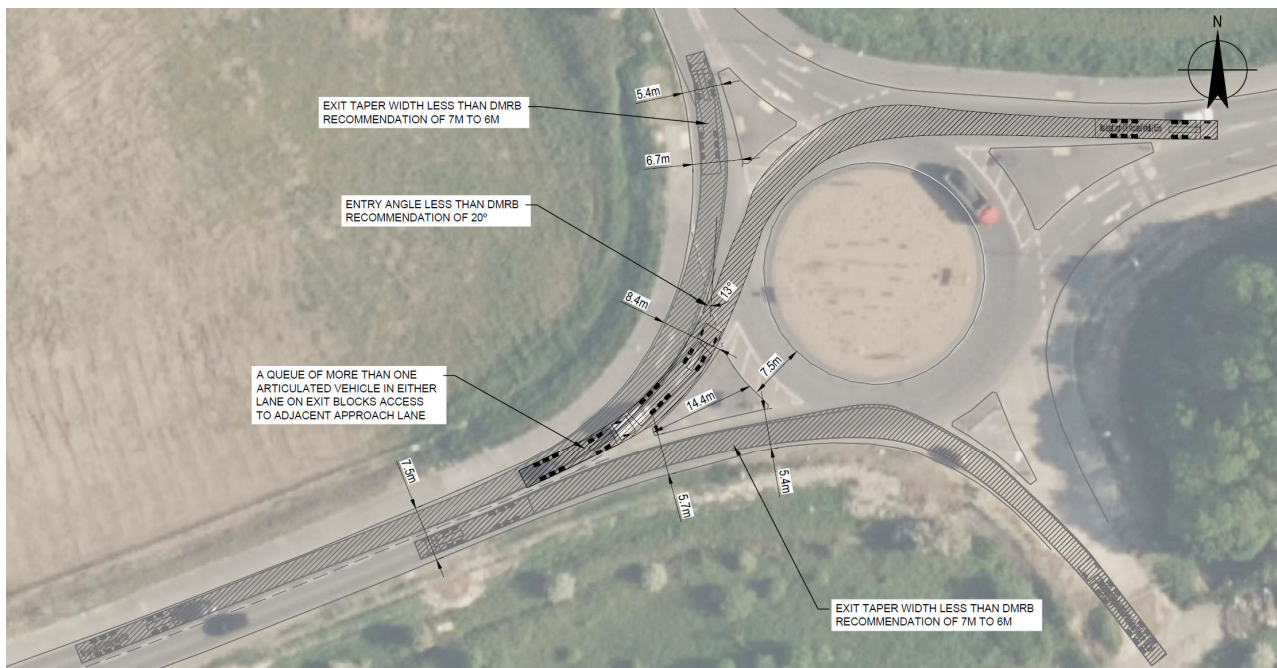
### 2.1.1 A1173 / Kiln Lane Roundabout

Table 1 (Table 4 of REP5-028) identifies that the A1173 West approach to the roundabout operates above its practical capacity during the AM peak hour (0.86 RFC), and the addition of the IERRT Development flows increase the RFC by 0.10 to 0.96 RFC. This results in an *increase* in delay of almost half a minute to some 41 seconds in total, and queuing of this approach *increasing* by 12.1 PCU equating to circa 5 articulated HGV's (based upon the PCU factor of 2.3 included in the Applicants assessment). The total queue would be 18.8 PCU.

A review of the existing configuration of this junction has been undertaken which shows that the A1173 West Arm (eastbound approach) only has capacity to accommodate two articulated HGV's side by side without blocking the adjacent lane (see figure 1 below). It is notable that if an HGV is sat in the ahead lane (for which there is significant existing demand), this blocks access to the left turn which is the predominant movement at this junction for access to the IERRT development.

In addition to this the existing entry angle is very shallow which restricts visibility particularly from the nearside left turning lane and this would be exacerbated by left hand drive vehicles. The intensification of left turn movements through this junction may therefore have safety implications which have not been considered at all by the Applicant in the form of a review of the suitability of the design of the existing roundabout to accommodate additional IERRT traffic. The increase in traffic and exposure to risk of collisions attributable to the IERRT should therefore have been considered particularly in the context of the occupation of NELC's flagship South Humber Industrial Investment Programme (SHIIP).

Figure 1 Review of existing A1173 / Kiln Lane Roundabout



It is clear that the IERRT development does have a material impact at this sensitive junction and mitigation should be considered in consultation with NELC. To assist this process DFDS has presented a concept highway improvement scheme to address these issues whilst enhancing capacity. This is presented within drawing SK-U-00002 P2 in **Appendix A**.

Whilst this concept should be subject reviewed by the Applicant and a Road Safety Audit, the position of DFDS is that the Applicant should deliver these works prior to occupation of the IERRT.

## 2.1.2 A1173 / SHIIP Roundabout

Table 1 (Table 7 of REP5-028) identifies that the IERRT development flows push the A1173 West approach to the SHIIP roundabout above its practical capacity during the AM peak hour (0.86 RFC), equating to an increase in RFC of 0.08 relative to the future baseline (Sc.2: 2032 + Committed). This results in an *increase* in delay of 5 seconds, and additional queuing on this approach *increasing* by 2.8 PCU taking the total queue on this approach to 6.7 PCU.

We recognise this queue can be accommodated on the approach but note that all IERRT traffic will be loaded onto the nearside ahead lane. The implications of exceeding the practical capacity and at this junction which provides access to NELC flagship SHIIP development, should be discussed and agreed with NELC.

Appropriate mitigation could take the form of a contribution towards sustainable transport, at discretion of NELC.

## 2.2 A160 Corridor

The A160 corridor currently serves as the primary access route to the Port of Immingham and is likely to continue to serve as an important route to access the IERRT development. Given the strategic importance of this route for access to the Port of Immingham, it is imperative that the future operation of this corridor is properly understood and protected.

The corrected highway capacity assessments are based upon 15% of IERRT development traffic using the A160 corridor. Whilst DFDS do not agree that an assignment of 15% is appropriate, the Applicants assessment still identifies that three junctions on this route will operate above their practical capacity with an RFC in excess of 0.85. These are considered in turn within the remainder of this section.

It should be noted that the extent to which the A160 route will be utilised by IERRT traffic is contested and it is DFDS's view that the actual proportion of IERRT traffic utilising this route will be higher than 15% in reality, which will worsen the impacts currently identified.

We recognise that the Applicant has undertaken a sensitivity test which will consider 60% of IERRT traffic using the West Gate via the A160 which is a more likely scenario given the lack of measures to control assignment currently proposed within the Applicants application. This sensitivity test is currently subject to review and is subject to further comment.

### 2.2.1 A160 / Humber Road / Manby Road Roundabout

Table 1 (Table 10 of REP5-028) identifies that the Humber Road east approach to the roundabout operates above its practical capacity during the PM peak hour (0.86 RFC), and the addition of the IERRT development flows increase the RFC by 0.020 to 0.88 RFC.

Whilst the absolute increase in RFC performance is low for the current assignment assumptions (15%) in the assessment, this is known to be a sensitive location on the network and mitigation has previously been proposed but not yet implemented at this location by the consented Able Marine Energy Park DCO.

The current configuration of this approach means that it is difficult for two articulated HGV's to use both the nearside and off-side approach lanes simultaneously. This is illustrated in Figure 1 below which shows significant overrun onto the offside verge, cracked kerbs on the nearside kerb, and the wearing off of all road markings and centre lines. The intensification arm will generate the need for improvements.



Figure 2 Existing Humber Road approach to Manby Roundabout



The Humber Road approach is sensitive to additional traffic flows and we expect the forthcoming sensitivity test to show further increases in RFC's on this approach. Given the uncertainties of assignment and the lack of controls in the current application, mitigation on this approach is considered to be required to ensure that the operation of the primary access route to and from the Port of Immingham is protected.

Mitigation should therefore be considered in consultation with National Highways and North Lincolnshire Council, particularly given that the sensitivity test will assign additional traffic to this route. To assist this process DFDS has presented a concept highway improvement scheme to address the identified issues whilst enhancing capacity. This is presented within drawing SK-U-00001 in **Appendix A**.

Whilst this concept should be subject reviewed by the Applicant and a Road Safety Audit, the position of DFDS is that the Applicant should deliver these works prior to occupation of the IERRT.

## 2.2.2 A160 / Habrough Road Roundabout

Table 1 (Table 12 of REP5-028) indicates that the A160 East and A160 West approaches to this junction are operating significantly above their practical capacity in the 2032 Base + Committed scenario. In the AM peak, the A160 West approach operates with an RFC of 0.94, and in the PM peak the A160 East approach operates with an RFC of 0.92.

The addition of the IERRT development flows increases these RFC by 0.01, equating to circa 3 to 4 seconds of additional delay and additional queueing of 2 to 3 PCU. Notwithstanding this, the total delay at this junction is significantly greater than what was originally assessed within the Transport Assessment [AS-008] at approximately half a minute, with queues of between 15 and 18 PCU.

It is therefore clear that the A160 approaches are very sensitive to additional traffic flows, and we expect the forthcoming sensitivity test to show further significant increases in RFC's on these approaches in both peak hours. Given the uncertainties of assignment and the lack of controls in the current application, mitigation may be necessary to ensure that the operation of the primary access route to and from the Port of Immingham is protected.

The corrected highway capacity modelling and the outcomes of sensitivity testing should be discussed with National Highways to inform the need for mitigation at this junction, which could take the form of either highway works, financial contributions, management measures, or a combination thereof.

### 2.2.3 A160 / A180 Roundabout

Table 16 of REP5-028 indicates that the A180 East (westbound) off-slip approach to this junction operates above its practical capacity in the 2032 Base + Committed scenario in the AM peak hour with an RFC of 0.89. Whilst the IERRT does not add any traffic onto this off-slip, it does increase the circulatory traffic which conflicts with it, resulting in increased delay on this approach arm.

The addition of the IERRT development flows increases these RFC by 0.02, equating to circa 6.5 seconds. Notwithstanding this, the total delay on this approach is significantly greater than what was originally presented within the Transport Assessment [AS-008] and is now almost 1 minute. Again, we expect the forthcoming sensitivity test to show further increases in RFC on this approach.

The corrected highway capacity modelling and the outcomes of sensitivity testing should be discussed with National Highways to inform the need for mitigation at this junction. This could take the form of either changes to the configuration of lane markings through this junction, financial contributions, management measures, or a combination thereof.

### 2.2.4 Other Junctions

The Applicant should also undertake assessments for the A160 / Eastfield Rd signalised junction to determine the impact of the IERRT at this location and what, if any, mitigation is necessary.

## 3. Conclusion

Five junctions have been identified that may require some form of mitigation.

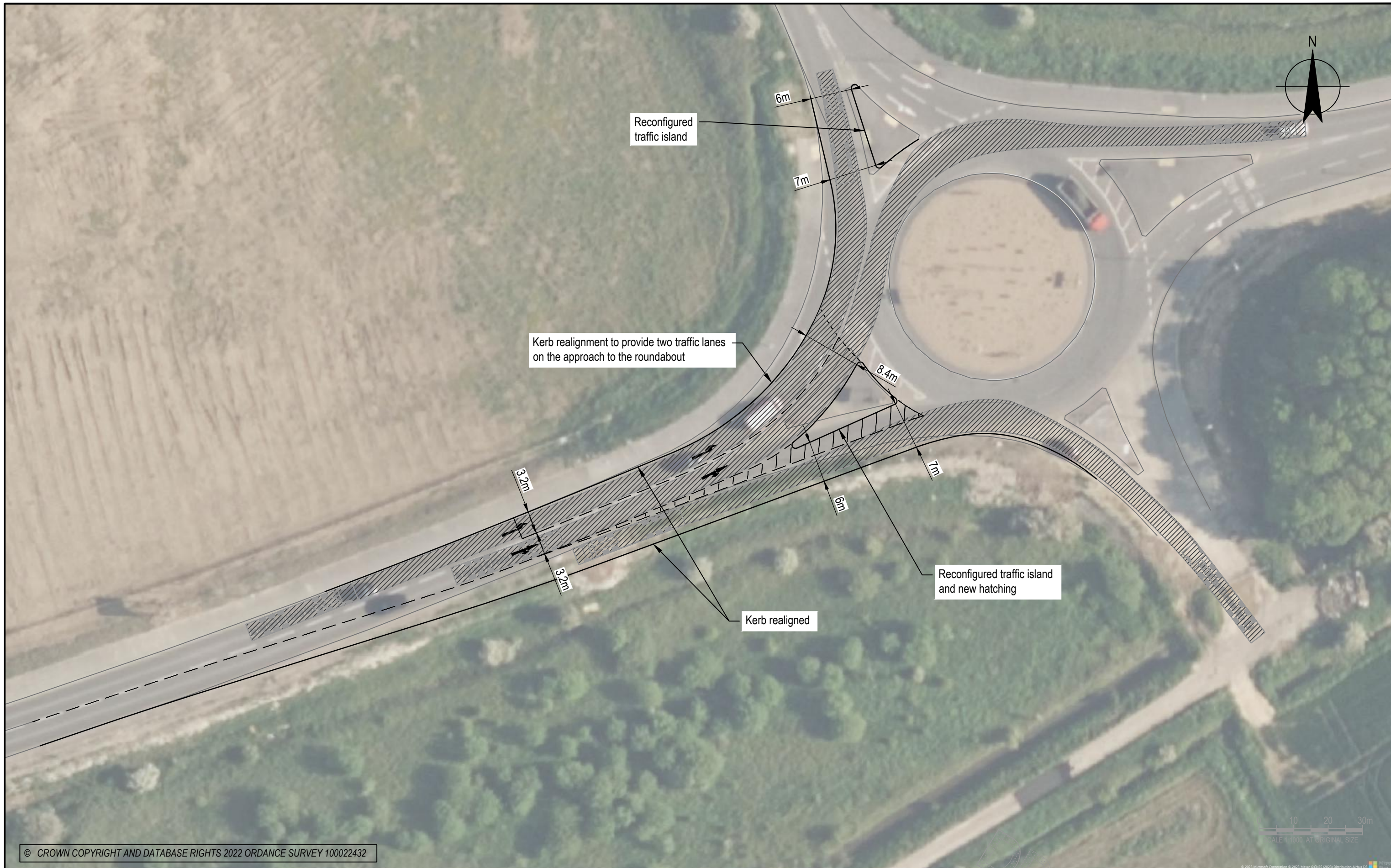
The principal location of highway works to address the impacts identified within the corrected highway capacity assessments [REP5-028] are focused on the A1173 / Kiln Lane roundabout and the Manby Roundabout. These improvement works are considered necessary for the reasons outlined within this document and should be delivered by the Applicant prior to the occupation of the IERRT development.

The requirements for mitigation at the other locations identified will need to be discussed further with respective highway authorities once the outcomes of sensitivity testing have been fully understood and agreed with IPs.

# **Appendix A**

## **Mitigation Drawings**





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**NOTES: DO NOT SCALE FROM THIS DRAWING**

1. EXISTING ROAD MARKINGS AND PROPOSED LAYOUT ARE SHOWN IN LIGHT GREY.
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3. IMPACT ON EXISTING UTILITIES TO BE ASSESSED AT A LATER DESIGN STAGE.
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Project No. 12578580

Client: IERRT  
 Project: DFDS SEAWAYS LTD

Drawing Title: CONCEPT IMPROVEMENT TO A1173 APPROACH AT KILN LANE ROUNDABOUT

Drawing No: 12578580-GHD-XX-XX-SK-U-00002

Size: A3  
 Rev: P2





Kerb realignment to widen carriageways to support use by two HGVs simultaneously

Pedestrian crossing to be upgraded with tactile paving and dropped kerbs

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 Project No. 12578580

Client: IERRT  
 Project: DFDS SEAWAYS LTD

Drawing Title: CONCEPT IMPROVEMENT TO HUMBER ROAD APPROACH AT MANBY ROUNDABOUT  
 Drawing No: 12578580-GHD-XX-XX-SK-U-00001

Size: A3  
 Rev: P1

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