

**Road Safety Audit**  
**Stage 2**  
**for**  
**Access Proposals**  
**at**  
**Kilmurray Concrete**  
**R400, Derryarkin, Rhode, Co Offaly**

**Date:** December 2021

**Report produced for:** Kilmurray Concrete

**Report produced by:** Road Safety Matters Ltd

**Reference:** RSM/MOB/140921/KILMURRAY RSA 2

Road Safety Matters Ltd  
Urlingford Rd, Johnstown  
Kilkenny, Ireland E41 W721  
Tel +353 (0)56 883 8428  
[mobrien@roadsafetymatters.net](mailto:mobrien@roadsafetymatters.net)  
[www.roadsafetymatters.net](http://www.roadsafetymatters.net)

Company Registration No 657952 VAT No IE 3649269UH

# DOCUMENT CONTROL SHEET

<b>Client</b>	Kilmurray Concrete
<b>Project Title</b>	Access Proposals at Kilmurray Concrete, Derrryarkin, Co Offaly
<b>Document Title</b>	Stage 2 Road Safety Audit
<b>Document Ref.</b>	RSM/MOB/140921/KILMURRAY RSA 2
<b>Status</b>	Final

## Record of Issue

Rev	Originator	Team Member	Date	Distribution
DRAFT 1	M O' B	AJS	7/12/21	Laura Gaffney, TOBIN Consulting Engineers
FINAL	M O' B	AJS	13/12/21	Laura Gaffney, TOBIN Consulting Engineers

## BACKGROUND INFORMATION

The report which follows is the detailed design Stage 2 Road Safety Audit (RSA) for modifications to the access to the Kilmurray Concrete Sand & Gravel Pit off the R400 Regional Road in Derryarkin, Co Offaly, based on the information supplied to the RSA Team as detailed below. The proposals involve reconfiguration of the existing access junction to the quarry site off the R400, and all associated ancillary works.

**Table 1: Information Supplied**

Item	Supplied	Comment
A Plans / Drawings	Y	Drg No 10884-2000 Rev A: General Arrangement R400 Site Access
		Drg No 10884-2001 Rev A: Longitudinal Section R400
		Drg No 10884-2002 Rev A: Typical Cross Sections R400 and Access Road
		Drg No 10884-2003 Rev A: Visibility Splay Horizontal & Vertical R400
		Drg No 10884-2004 Rev A: Pavement and Kerbs
		Drg No 10884-2005 Rev A: Road Markings and Signs
		Drg No 10884-2006 Rev A: Swept Path Analysis Max. Legal Articulated Vehicle
		Drg No 10884-2007 Rev A: Swept Path Analysis Rigid Truck
B Traffic Volume Information	N	
C Speed Count Data	N	
D Collision Data	N	
E Departures from Standards	N	
F Audit Brief	Y	RSA 2 Detailed Design Road Safety Audit
G Other Data / Documents	Y	210621 Offaly County Council - Further Information Request PL221247
		Copy of previous RSA, 2013

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## 1. INTRODUCTION

- 1.1 This report results from a Stage 2 Detailed Design Road Safety Audit (RSA) on the proposed access/egress reconfiguration for an existing access junction to the Kilmurray Concrete Sand & Gravel Pit, located off the R400 at a location approximately 4km southeast of the M6 motorway in Derryarkin Co Offlay, carried out at the request of Kilmurray Concrete Ltd. This Audit examines the road safety implications associated with reconfiguration of the priority-controlled crossroads junction on the R400, which is a single carriageway Regional Road between Rhode and Rochfortbridge. The site location is shown in Figure 1, with the proposed configuration illustrated in figure 2. The scope of this Stage 2 RSA is confined to the access junction and immediate tie-ins, and does not include a full Audit of the internal layout of the Kilmurray Concrete development site, or the existing layout on the R400, which includes a crossroads intersection with the L10091 opposite the Quarry site access.

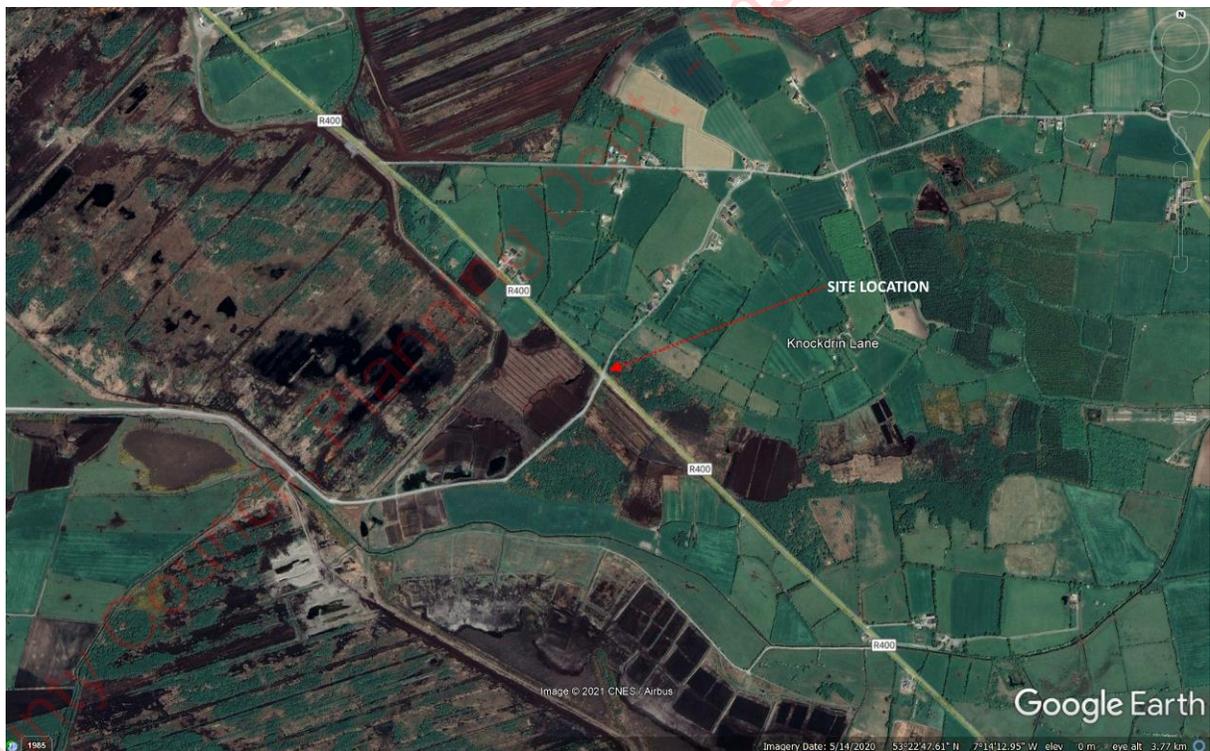
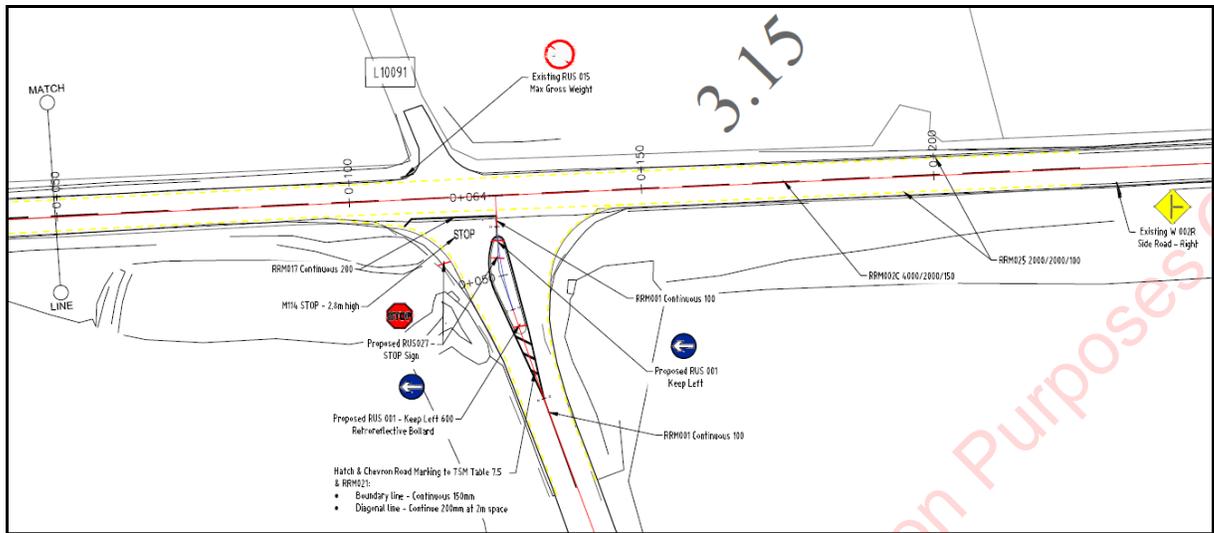


Figure 1: Site Location Plan



**Figure 2: Proposed Site Access Junction**

1.2 The RSA was carried out during December 2021 and included a site visit by the Audit Team on Tuesday 14<sup>th</sup> September 2021 during daylight hours. The weather at the time of the site visit was dull and dry, and the surface of the road was dry. Traffic conditions were light and the posted speed limit at the site was 80km/hr on the R400. There were no reduced speed limits posted on either of the minor roads on the northern and southern side of the junction, i.e. the L10091 or the access into the Kilmurray Quarry.

1.3 The Audit Team Membership was as follows;

- Team Leader: Miriam O'Brien – BE (Civil) FIHE MIEI MCIHT SoRSA CoC
- Team Member: Anthony Sumner – HNC Civil Eng, AEng MIEI MCIHT

1.4 The Audit took place at the offices of Road Safety Matters Ltd following the site visit by the Audit Team. The Audit was undertaken in accordance with the Design Team's Audit Brief, and comprised an examination of the plans provided by the Design Team, as listed in Background Information, Table 1.

1.5 The terms of reference of the Audit are as described in TII GE-STY-01024 December 2017. The team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the design to any other criteria.

1.6 Section 2 of this report contains issues raised by the Stage 2 RSA together with recommendations to be considered. Section 3 contains the Auditor Team Statement. Most issues raised in Section 2 can be cross-referenced with the scheme drawing (**Appendix C**) and photographs taken on the site visit which are included within **Appendix B**, or within the body of the report where necessary.

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## 2. ISSUES RAISED BY THE STAGE 2 ROAD SAFETY AUDIT

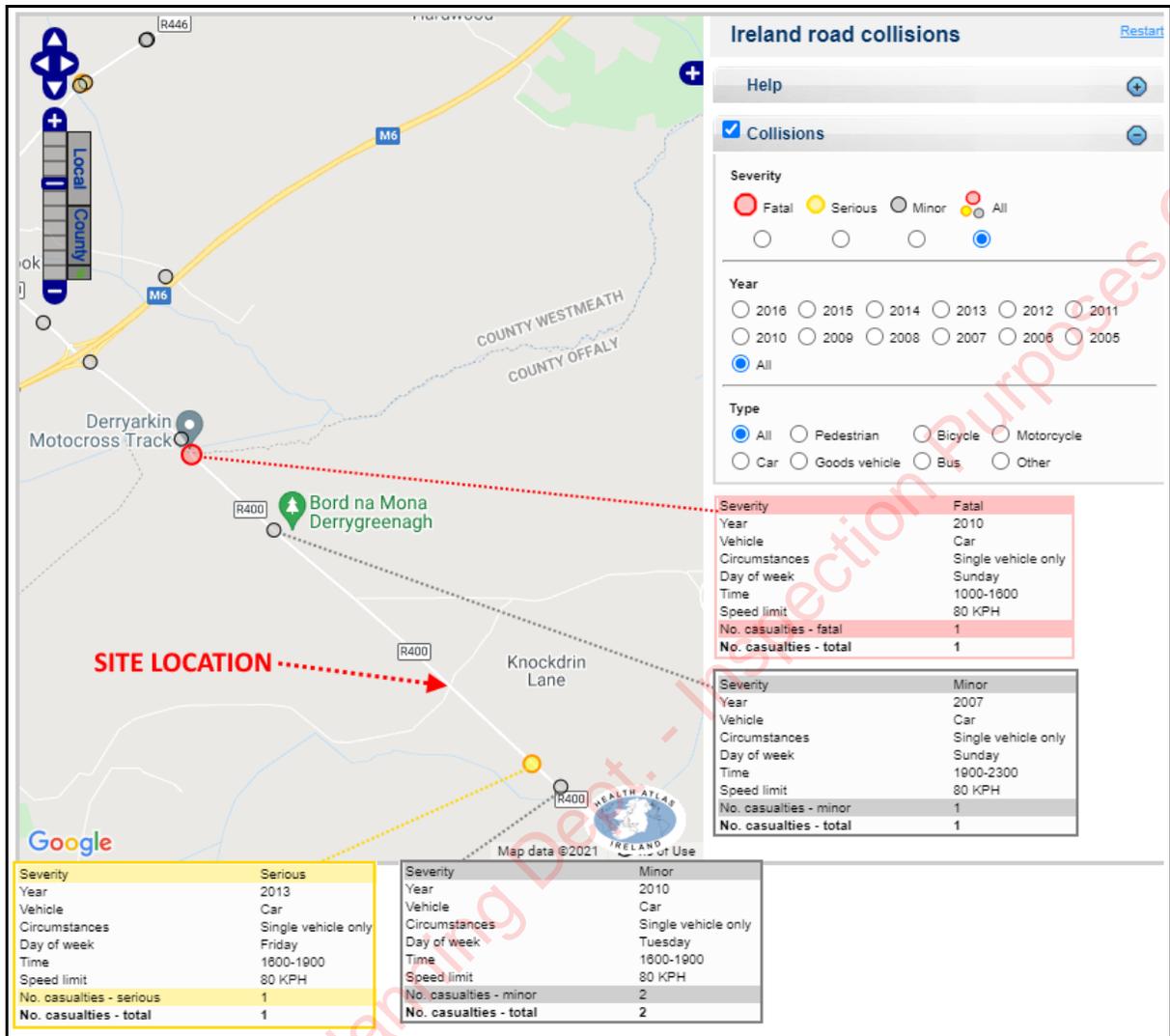
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### 2.1 GENERAL

2.1.1 The designers have not advised of any departures from standard. It was noted that the proposals for the minor road access into the Kilmurray Quarry site include provision of a channelising island, and the junction is configured as a crossroads, which is a departure from standard for a rural single carriageway road. The proposed design does not include any amendments to the minor road on the northern side of the junction, where substandard conditions were noted, which includes a narrow cross section which is insufficiently wide for safe two-way use, with visibility splay obstructions to the left and right. The existing substandard layout will increase the overall level of risk at this intersection.

2.1.2 No information was provided on any existing collision statistics in the vicinity of the site. A review of the Road Safety Authority online collision database indicates that there were no collisions recorded in the immediate vicinity of the access junction to the Kilmurray Quarry on the R400 between 2005 and 2016 inclusive. There were a number of collisions recorded further north and south on the link, including one serious collision and one collision resulting in a fatality, as shown in Figure 3. All of these collisions were single vehicle collisions, which can be indicative of inappropriate speeds and loss of control.

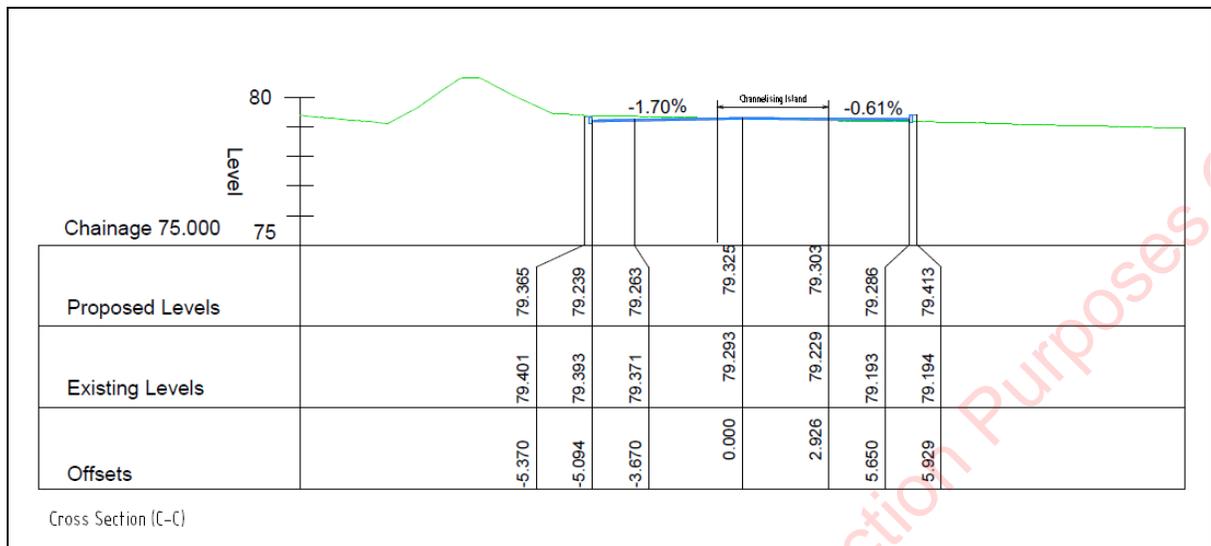
It should be noted that the RSA database is not a comprehensive record of collisions, and should be reviewed in conjunction with the Local Authority / Gardaí records for the site.



**Figure 3: Collision Plot for Road Network surrounding site**

**2.1.4 Problem – Drainage Generally**

There was no information provided relating to proposed drainage at the reconfigured access junction. The design proposals will involve kerb design and provision of a new channelising island at the access to the Quarry, which will impact on existing drainage on the southern side of the proposed junction. A relatively shallow crossfall is proposed on the entry to the minor arm, as shown in the cross section in figure 4, increasing the risk of ponding and standing water at this location. New kerbs will prevent current runoff into verges, and the provision for new drainage is not clear. Insufficient drainage can lead to an increase in the risk of conflict for all road users, including skidding and loss of control type collisions particularly during wet and icy conditions.



**Figure 4: New kerbs and shallow crossfall on cross section south of channelising Island**

### Recommendations

1. The access junction will need to be adequately drained to prevent build-up of surface water, with drainage to be designed to ensure no run-off onto the regional road adjacent, and with the junction to be reprofiled as necessary to achieve suitable crossfall to aid positive drainage adjacent to new kerb line.
2. Drainage proposals should be clarified in advance of construction, with any new gullies and drainage channels to be located outside the desire line for two-wheeled vehicles, and all finished gully levels to be flush with the surrounding carriageway.

#### 2.1.5 Problem – Overgrown Verges and Cross Section Generally

The alignment of the R400 is straight in the vicinity of the site access with good forward visibility and stopping sight distance in both north and southbound directions, however the clear zones along both sides of the R400 are characterised by soft verges and vegetation, which reduces the overall junction conspicuity and clear forward visibility to and from the site access. The levels to the rear of the verges are unknown, and there is no fencing in place at present. There are a number of unprotected hazards in the clear zone of the R400 at present, on both sides of the

carriageway. The proposed layout will result in the creation of new hazards including kerbs and a new channelising island and all associated signage and posts.

Visibility to the right and left from the existing access is shown in figures 6 and 7, with visibility to the left and right from the L10091 minor road opposite, taken from approximately 2.4m back from the channel line on the major road. Inappropriately located vegetation and overgrown verges can compromise clear intervisibility between motorists, and can lead to an increased risk of pulling out type incidents, right angled collisions and hazardous overtaking manoeuvres. The design proposals include illustration of a 3m x 160m visibility splay to the left and right at the access junction, with a note to say the visibility splay is to be kept clear, however the provision for clearance and maintenance of the verge area and treatment of any level differences to the rear has not been shown. It was noted that there is no provision for junction definition posts on either of the minor arms at the junction at present to highlight the location of the junction during the hours of darkness.



**Figure 5: Southbound approach to Junction on R400 showing poor junction conspicuity due to overgrown verges at present**



**Figure 6: Visibility to left (north) from existing access**



**Figure 7: Visibility to right (south) from existing access**



**Figure 8: Visibility to left (south) from minor road opposite site (L10091)**



**Figure 9: Visibility to right (north) from minor road opposite site (L10091)**

### Recommendations

1. Visibility splays from the proposed site access/egress and minor access road opposite should be clear and unobstructed at all times in accordance with traffic speeds.
2. Vegetation should also be removed from all locations where clear forward visibility of relevant signage could be obstructed.

3. Detailed design should include for site clearance and any necessary earthworks or fencing to address soft verges and level differences to the rear of the verges.
4. Any new hazards should be removed from or located outside the clear zone or subject to a risk assessment to determine the need for VRS in accordance with TII DN-REQ-03034.

### 2.1.6 Problem – Surface Proposals Generally

The existing carriageway surface was in a state of disrepair at some locations at the junction, on the minor road approaches, with significant loose debris also noted within the channel lines at the junction which can increase the risk of skidding and loss of control, and present a risk of windscreen shatter. Unravelling joints were also noted along with significant rutting and cracking, which can lead to ingress of water and further carriageway deterioration. Temporary Traffic Management (TTM) works were in place at the site at the time of the site visit, inclusive of Chapter 8 Traffic Signs Manual (TSM) signage regarding loose chippings, soft verges and a slippery surface. The pavement condition may deteriorate further from any construction activities arising from the site expansion, with a risk that mud, debris and gravel may be carried out onto the carriageway of the R400 and contribute towards an increase in the risk of skidding and loss of control for all vehicles. The detailed design for the access junction includes resurfacing on the major road for a distance of 50m back from the centreline of the Quarry access road, as well as resurfacing for a distance of 30m on the southern arm, but does not include provision for resurfacing or remediation on the proposed design layout on the northern arm of the junction.



**Figure 10: Poor carriageway condition on minor road opposite site**



**Figure 11: Poor carriageway condition and loose debris at Site Access**



**Figure 12: Poor carriageway condition and loose debris at Site Access**



**Figure 13: Poor carriageway condition on minor road  
And TSM Wk 074 Signage for Soft Verge**

### Recommendations

1. The condition of the existing carriageway should be assessed on the northern arm of the junction, with pavement repair and resurfacing to be provided where necessary to ensure loose debris is not carried out onto the major road and the crossroads junction.

2. The existing carriageway skid resistance should also be assessed on approaches to the site, with provision for high friction surfacing as necessary to minimise any skidding or loss of control risks in wet and icy conditions.
3. Provision should also be made for suitable TTM during construction at the site in accordance with the requirements of Chapter 8 of the TSM, with suitable site management post construction to minimise the risk of dirt and debris from the Quarry site being carried out onto the public road.
4. Joints between old and new carriageway surfaces should be kept out of the wheel track for two-wheeled vehicles.

### 2.1.7 Observation – Traffic Speeds and Volumes Generally

There were no 85<sup>th</sup> percentile speed surveys provided to the Audit Team. The current posted speed limit on the Regional Road adjacent to the site is 80 km/hr. The Audit Team considered that a number of risks may arise from traffic approaching the site access junction on the R400 at inappropriate speeds, as well as the likelihood of significant speed differentials between through traffic on the R400 and traffic slowing to turn into the site or slow-moving vehicles turning out of the site. In the case of the latter, a demand for overtaking manoeuvres is likely to occur.

There was no information provided on current or anticipated traffic volumes to determine whether there will be any significant material operational traffic effect on the R400, however it was considered that significant demands for right turning manoeuvres into the site may present higher risks in respect of gap acceptance at peak times, which are likely to be exacerbated by existing geometric issues, such as the crossroads configuration, and the absence of right turn reservoir or passing bay to prevent obstruction of through traffic.

### Recommendations

1. Current 85<sup>th</sup> percentile speeds should be considered on the R400, to determine if the proposed access geometry is sufficient to cater for all likely demands with adequate margins of safety.

2. Two-way AADTs on the R400 as well as anticipated traffic volumes and turning movement proportions at the site and the minor road opposite should be quantified to determine the need for further mitigation measures to minimise risks arising at the access junction.
3. Upgrading the junction to provide a dedicated right turn facility should be considered where the right turning flow into the minor road exceeds 120 vehicles per day, as vehicles waiting on the major road to turn right will obstruct through traffic and create a hazard.
4. High speeds and/or overtaking traffic manoeuvres on the major road should be discouraged at priority junctions, and centreline road markings should prohibit overtaking manoeuvres on approaches to the junction.

## **2.3 NON-MOTORISED USER PROVISION**

### **2.3.1 Observation – Vulnerable Road User (VRU) Provision**

No details were provided to the Audit Team on any existing or likely pedestrian or cyclist demands and desire lines at the development access, and no provision has been made for VRUs within the detailed design layout for the junction on the major or minor roads, aside from a short section of substandard width footway on the entry and exit radii. It was noted that there are no VRU facilities on the road network adjacent to the site at present, and it is considered that any demand to access the site on foot or bicycle is highly unlikely due to the nature and location of the development in a rural environment.

#### **Recommendations**

Provision should be made for the specific requirements of non-motorised road users where necessary in the design of the priority junction, with due regard for the rural nature of the link.

## **2.4 ROAD SIGNS, MARKINGS AND LIGHTING**

### **2.4.1 Observation – Lighting Generally**

No information was provided on proposed lighting to accompany the proposed junction design although public lighting on rural roads is atypical. Insufficient lighting increases the risk of conflict for all road users during the hours of darkness.

## Recommendation

1. A review of all lighting requirements should be undertaken on the site access road. In the absence of street lighting, provision should be made for suitably located junction definition posts to highlight the presence of the junction during the hours of darkness
2. Internal site lighting should not cause dazzle or interference on the public road network, and any new lighting columns should be sufficiently setback from the carriageway edges on the major or minor roads to minimise the risk of being struck by passing vehicles.

### 2.4.2 Problem – Signing and Lining Generally

There was no signing and lining schedule produced to accompany the preliminary design, although notes to the relevant sign parameters with reference to the Traffic Signs Manual have been included on the design plan. There were no road markings on the approaches to the site at present, however provision has been made for centreline and edge of carriageway markings on the proposed layout.

The following general signing and lining issues were noted which should be considered in advance of construction:

- 2.4.2.1 The proposed design does not include provision for Junction definition posts (JDPs). The proposed kerb buildouts and island will present new hazards which may not be clearly visible during hours of darkness.
- 2.4.2.2 Longitudinal approach markings at the proposed channelisation island appear to be located close to the hazard, increasing the risk that the hazard may be struck by passing and turning vehicles.
- 2.4.2.3 Proposed signs appear to be located too close to the carriageway edges, particularly on the proposed channelisation island, presenting an increased risk of being struck by passing and turning vehicles. There is evidence of existing warning signage at the site being struck, as shown in the photo in figure 17. Mounting heights of some of the existing signage is also low, which can present a hazard to two-wheeled vehicles.





**Figure 15: Road markings missing on Approach to Site**



**Figure 16: Road markings missing at Site Access**



**Figure 17: Low mounting Height and Limited Offset to Existing Signs**



**Figure 18: Low mounting Height to Existing Signs**

### Recommendations

1. A review of all existing and proposed signs and road marking requirements is recommended in advance of construction to take into account issues raised in this Stage 1/2 RSA report, with a signing and lining schedule to be produced to include sign sizes and mounting heights.

2. All signs should be placed in a location which is clearly visible to motorists and clear of vegetation, with signs to be passively safe, and/or provided with pole diameters less than 89mm.
3. All signs should be sufficiently setback from the carriageway edges to avoid being struck by passing/turning vehicles, typically a minimum 600mm offset is required between the edge of sign face and the edge of carriageway.
4. All signs and lines to have high reflectivity specification to ensure visibility during the hours of darkness, and provision should be made for road studs where necessary to further enhance delineation during the hours of darkness.
5. A JDP should be provided on each side of the junction at a prominent location to highlight the presence of the junction and enhance conspicuity of all associated hazards during the hours of darkness.
6. Longitudinal approach markings to the proposed channelising island on the southern arm of the junction should be provided at an offset of 150mm from the kerb edges.
7. Detailed design should include for site clearance to include for removal of any redundant signs and road markings, with suitable tie ins to existing markings to the north and south on the R400.
8. The Stop line edge nearest the major road should be a minimum 0.6m offset from the channel line on the paved surface.
9. Centreline markings proposals should be reviewed to include provision for measures to discourage overtaking manoeuvres on the approaches to the crossroads junction.

### 3. AUDIT TEAM STATEMENT

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We certify that we have visited the site and examined the drawings and information supplied. This examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified to improve the safety of the scheme. The problems identified have been noted within the report, together with suggestions for improvements which are recommended to be studied for implementation. No one on the Audit Team has been otherwise involved with the design of the measures audited. This audit has been carried out in accordance with TII GE-STY-01024 December 2017.

Signed:



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Date: 13/12/21

MIRIAM O'BRIEN

Signed:



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Date: 13/12/21

ANTHONY SUMNER

## APPENDIX A – ROAD SAFETY AUDIT BRIEF CHECKLIST

Have the following been included in the audit brief?: (if 'No', reasons should be given below)

	Yes	No
1. The Design Brief	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Departures from Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Scheme Drawings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Scheme Details (e.g. signs schedules, traffic signal staging)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Collision data for existing roads affected by scheme	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Traffic surveys	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Previous Road Safety Audit Reports and Designer Responses/Feedback Form	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Previous Exception Reports	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Start date for construction and expected opening date	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Any elements to be excluded from audit	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Any other information?</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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**APPENDIX B – SITE PHOTOGRAPHS**

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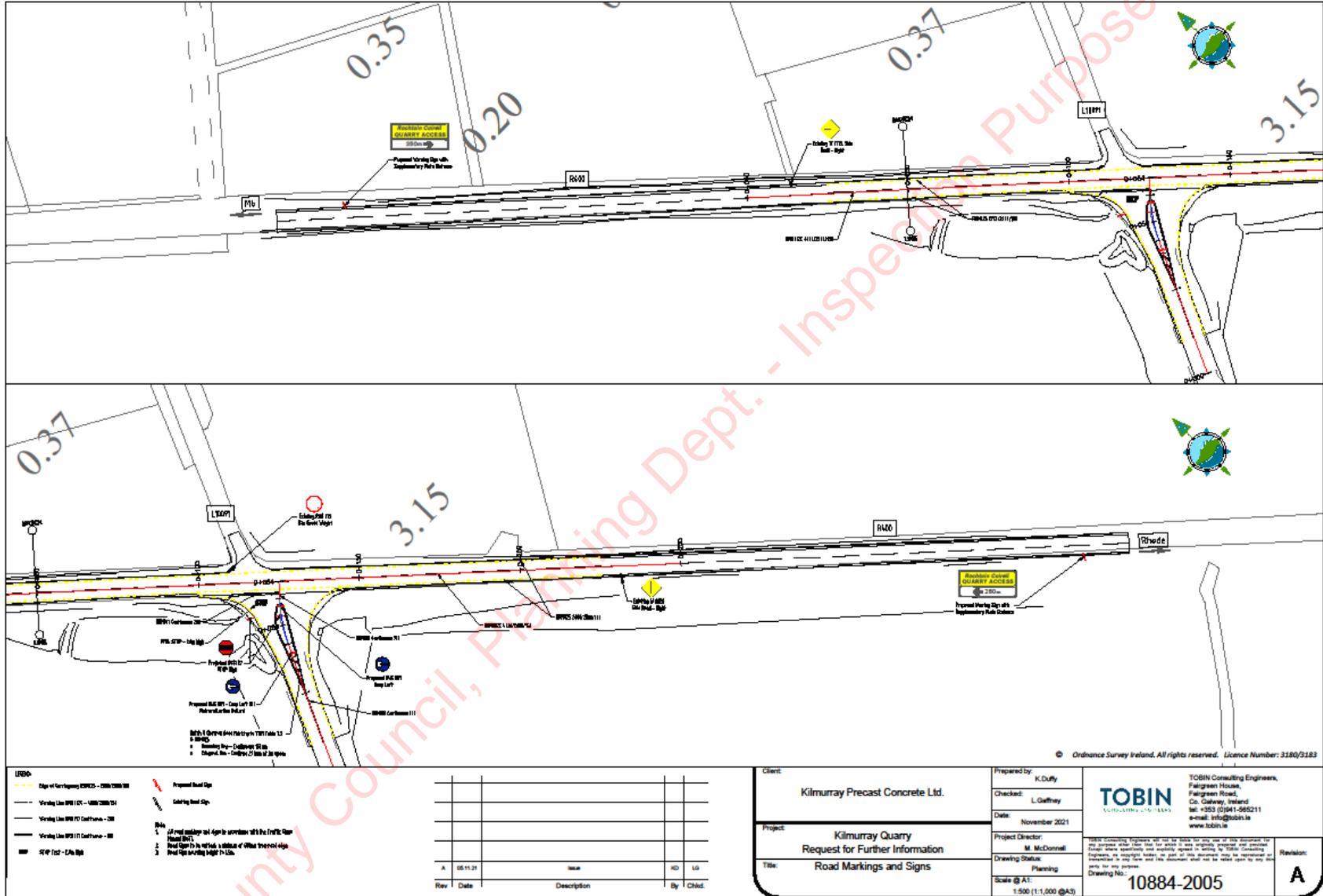




Road Safety Matters Ltd  
Urlingford Rd, Johnstown  
Kilkenny, Ireland E41 W721  
Tel +353 (0)56 883 8428  
[mobrien@roadsafetymatters.net](mailto:mobrien@roadsafetymatters.net)  
[www.roadsafetymatters.net](http://www.roadsafetymatters.net)

Company Registration No 657952 VAT No IE 3649269UH

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Rev	Date	Description	By	Check
A	05.11.21	Issue	HC	LG

Client:	Prepared by:	 TOBIN Consulting Engineers, Fairgreen House, Fairgreen Road, Co. Galway, Ireland tel: +353 (0)91-862211 e-mail: info@tobin.ie www.tobin.ie	Revision:
Kilmurray Precast Concrete Ltd.	K.Duffy		
Project:	Checked:	Project Director: M. McDonnell Drawing Status: Planning Scale @ A1: 1:500 (1:1,000 @A3)	A
Kilmurray Quarry Request for Further Information Road Markings and Signs	L.Gaughy		
	Date:	November 2021	Drawing No.: 10884-2005

### Road Safety Audit Feedback Form

Scheme: Reconfigured Access to Kilmurray Concrete Quarry, Derryrakin, Rhode, Co Offaly

Route No. R400

Audit Stage: 2

Date Audit Completed: December 2021

To Be Completed By Designer				To Be Completed by Audit Team Leader
Paragraph No. in Safety Audit Report	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Describe Alternative Measure(s). Give Reasons for not accepting Recommended Measure. Only Complete if recommended measure is not accepted	Alternative measures or reasons accepted by auditors (yes/no)
Problem 2.1.4 Recommendation 1.	No	No	Longitudinal gradient is away from the R400 along the private access road under review in this RSA, as per Drawing No. 10884-2001. The cross fall from the R400 to the existing road level on the public road will require a rate of change in gradient, which has resulted in the lower gradients of -1.7% and -0.61% in the Cross-section C-C close to the tie in with the existing road levels.	N/A
Problem 2.1.4 Recommendation 2.	Yes	Yes		

Problem 2.1.5 Recommendation 1. Site Access / Egress	Yes	Yes		
Problem 2.1.5 Recommendation 1. L10091 Minor Road	No	No	No works are proposed on the L10091 and hence are not included in the scope of the RSA. This is an existing road condition.	N/A
Problem 2.1.5 Recommendation 2. Site Access / Egress	Yes	Yes		
Problem 2.1.5 Recommendation 3.	Yes	Yes		
Problem 2.1.5 Recommendation 4.	No	No	No proposed hazards present within clear zone: <ol style="list-style-type: none"> <li>1. Kerbs are proposed with 45 degree splays and set back a minimum of 0.5m from carriageway</li> <li>2. Channelising island proposed 45 degree splay kerbs maximum 80mm high at a setback of 4.8m from carriageway.</li> <li>3. Proposed sign posts will be passively safe (i.e. 76mm or 89mm in diameter and maximum of 3.2mm thick).</li> </ol> Risk associated with existing hazards are low due to low collision history and low sinuosity: <ol style="list-style-type: none"> <li>1. Soft verges</li> <li>2. Level difference</li> </ol>	N/A
Problem 2.1.6 Recommendation 1. Northern Arm (i.e. L10091)	No	No	No works are proposed on the L10091 and hence are not included in the scope of the RSA. This is an existing road condition.	N/A
Problem 2.1.6 Recommendation 2. R400	Yes	No	Due to the high proportion of turning movements by HGVs, a HFS is likely to become quickly worn and require regular maintenance. Alternative proposal is the provision of suitable road surface micro-texture. Polished Stone Value (PSV) of 60 for site category Q Approaches to and across major and minor junctions with an AADF between 2501-5000. The Aggregate Abrasion Value (AAV) to be in accordance with Table 3.2 of TII DN-PAV-03023.	Yes
Problem 2.1.6 Recommendation 3. TTM	Yes	Yes		
Problem 2.1.6 Recommendation 4. Joints	No	No	Pavement drawings issued to RSA Team include road joints to TII standards with TII CC-SCD-00703 for transverse joints and TII CC-SCD-00704 for longitudinal joints, located outside wheel tracks.	N/A
Observation 2.1.7 Recommendation 1.	No	No	Swept path analysis drawings of the largest two vehicles onsite were submitted to the RSA Team. Refer to drawings 10884-2006 to 10884-2007	
Observation 2.1.7 Recommendation 2 & 3.	No	No	Existing AADT on R400 is 2747. At site access & L10091 (i.e. minor roads) turning movements of 267 vehicles occur between 7am and 7pm in baseflow, plus development traffic of 166 HGV	

			<p>2-way with 12 staff 2-way is minor arms total movement of 445 AADT. Note double count is included in the minor road totals.</p> <p>Comparison to <i>TII DN-GEO-03060 Table 4.1 Flow Ranges – Ghost Island Junctions</i>, a ghost island is not required.</p> <p>Future AADT in design year 2036 on the R400 is 2504. Compared to Table 4.1, a ghost island is not required.</p> <p>This proposal is for upgrade of the private arm of the crossroads only and for pavement improvement works on the R400.</p> <p>Provision of a near side passing option on the northeast side of the R400, would further exasperate the existing constrained visibility at the L10091 and in conjunction with no evidence of collisions at the junction, the existing junction layout was maintained on the R400.</p>	
Observation 2.1.7 Recommendation 4	No	No	<p>Provision of a single continuous centreline in this area may lead to increase driver impatience in an area where full forward visibility is provided. Restricting overtaking in this area, could result in the provision of dubious overtaking conditions which may result in a collision with vehicle emerging from the side roads not expecting overtaking to be occurring.</p> <p>Warning Road marking have been provided in accordance with DoT Traffic Signs Manual and to TII Standard Details.</p>	
Observation 2.3.1 Recommendation 1	No	No	<p>As stated in the observation “demand to access the site on foot or bicycle is highly unlikely due to the nature and location of the development in a rural environment”.</p>	
Observation 2.4.1 Recommendation 1	Yes	Yes	<p>Junction Definition Posts are proposed on the updated Drawing No. 10884-2005 to TII SCD-01204.</p>	
Observation 2.4.1 Recommendation 2	No	No	<p>Existing site is located over 2km from R400 and existing internal site lighting does not present a glare issue.</p> <p>No public lighting is proposed on the R400.</p>	
Problem 2.4.2 Recommendation 1	Yes	Yes	<p>Note all sign sizes and mounting heights are shown on Drawing No. 10884-2005. A schedule will be prepared in advance of construction in line with the proposals.</p>	
Problem 2.4.2 Recommendation 2	Yes	Yes	<p>Refer to Drawing No. 10884-2005 Notes in the Legend, which indicate sign heights.</p> <p>All signs proposed are passive with maximum diameters of 76mm or 89mm and 3.2mm thick in accordance with TII Specification.</p>	
Problem 2.4.2 Recommendation 3	Yes	Yes	<p>Refer to Drawing No. 10884-2005 Notes in the Legend, which indicate sign setback of 600mm.</p>	
Problem 2.4.2 Recommendation 4	Yes	Yes	<p>Refer to Drawing No. 10884-2005 Notes in the Legend, which indicate sign and line reflectivity in accordance with TII Specification Series 1200.</p>	

			Road Studs are proposed in accordance with the TSM, refer to Drawing No. 10884-2005.
Problem 2.4.2 Recommendation 5	Yes	Yes	Junction Definition Posts are proposed on the updated Drawing No. 10884-2005 to TII SCD-01204. To the private access road only as the L10091 is outside the scope of the works.
Problem 2.4.2 Recommendation 6	Yes	Yes	On Drawing No. 10884-2005 the road marking have been offset a minimum of 150mm.
Problem 2.4.2 Recommendation 7	Yes	Yes	
Problem 2.4.2 Recommendation 8	Yes	Yes	On Drawing No. 10884-2005 the road marking have been offset a 600mm in accordance with the TSM.
Problem 2.4.2 Recommendation 9	No	No	Refer to Alternative Response to Problem 2.1.7 Recommendation 4.

Signed: Laura J. Healy Designer Date 14/12/21

Signed: Dunán O'Riordan Audit Team Leader Date 13/12/21

Signed: Conor Kilmurray Client Date 14/12/21