

**Scheme design overview (SDO) for non-trunk roads**

**SDO - PROPOSED NEW ROAD – REV A**

Refer to the provided Notes for Guidance (Appendix B) when completing the overview report.

Scheme name:	<u>Curraghinalt Gold Project: Proposed New Road - REV A</u>	
Design organisation:	Hoy Dorman	Designer ref: 2016021
Contact details:	Name: Martin Hoy	Tel no:

**1. Project details**

A	Description - Project Aims and Objectives	<p><i>This SDO is Revision A to the previous version submitted as part of the TA Addendum Appendix 6</i></p> <p><i>The proposed new road is an alternative route of a section of the existing road (known as the U1244 ref: schedule of public roads) that is proposed to be abandoned as part of this proposed development. The section of the U1244 that is proposed to be abandoned is a single-track road, constructed of un-bound material with several passing bays and is on average approximately 3m wide.</i></p> <p><i>The proposed new road is 1,380m long, 3m wide with intervisible passing bays. The design criteria that was considered is as listed below:</i></p> <ul style="list-style-type: none"> <li>▪ <i>Retain the existing character and distinctiveness of the route.</i></li> <li>▪ <i>Utilise the engineering parameters of the existing track and the adjacent routes.</i></li> <li>▪ <i>Usage of the existing route (Road proposed to be abandoned).</i></li> <li>▪ <i>Environmental impact.</i></li> </ul> <p><i>This SDO will also cover the junction between proposed new road and the U1244, where the U1244 is to be stopped-up as part of the abandonment.</i></p>		
	Location	<p><i>The proposed new road is located north of the B46 Crockanboy Road and is situated between Greencastle and Gortin.</i></p> <p><i>Please refer to drawing 2016021-P-CIV-170, Abandoned Road / Proposed New Road.</i></p>		
C	Design Speed (See DEM 118/16)	<i>100A</i>	<u>Design Speed Selection Method (Tick as appropriate)</u> <input checked="" type="checkbox"/> Pre-Set <input type="checkbox"/> Calculated (TD9 Method)* <input type="checkbox"/> Measured Speed*	
	*Prior agreement to deviate from pre-set design speeds must be obtained from Divisional Client:			
	Design Speed Accepted by Divisional Client:	(Tick as appropriate) <input type="checkbox"/>	Signed (Client SPTO):	Date:

Notes for completion:

1. If a particular box is not relevant, do not leave it blank, instead state “not applicable” or similar.
2. Text boxes can be expanded if necessary.

D	Traffic and NMU flows	<p><i>Hoy Dorman undertook a manual traffic survey of the existing track (U1244) over six days, on two separate three-day periods to inform us of the current traffic use and speed of the existing track. These survey dates were as follows:</i></p> <ul style="list-style-type: none"> <li>▪ <i>8th-10th January 2016</i></li> <li>▪ <i>17th-19th January 2016</i></li> </ul> <p><i>Traditionally, survey results of this type are broken down into 15-minute intervals for each day the survey is undertaken. In this case, due to the lack of traffic/activity in the area, the aforementioned method was not used. Rather an overview observation provided to inform of existing track use.</i></p> <p><i>The vast majority of road traffic that was recorded during the survey was attributed to either:</i></p> <ul style="list-style-type: none"> <li>▪ <i>Site traffic relating to the Dalradian Project Site or</i></li> <li>▪ <i>Farmers accessing their fields / sheds.</i></li> </ul> <p><i>The only remaining activity as recorded over the 6 days included a few individuals running and several individuals walking.</i></p> <p><i>We would expect the above findings to translate into predicted use of the proposed new road.</i></p> <p><i>In relation to observed speed, this was measured at least 12 times over the survey period, this resulted in an average 85 percentile speed of 20mph. However, it should be noted that the design speed for the new road is pre-set (DEM118/16) to 100kph and not reflective of the nature of the existing road, proposed road or surrounding roads.</i></p>
E	Collision History	<p><i>No recorded collisions 2013-2016 on existing road (U1244). This is the latest information available.</i></p>

## 2. Scheme design proposals

A	Identified Improvement Measures	<p><i>The proposed new road is an alternative route for a section of the existing road (U1244) that is to be abandoned.</i></p> <p><i>The proposed new road is an improvement of a section of the U1244 which is unsurfaced and not designed nor constructed to relevant standard. Design / improvements of the proposed new road are detailed below in section 3.</i></p> <p><i>The eastern stopped up section of the U1244 has been incorporated into the proposed new road where the proposed road connects to the U1244. A verge is to be created where the existing road is to be stopped up. The proposals also include warning signage on approach to the junction and hedgerow planted to obstruct visibility of any potential through route.</i></p>
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B	Relevant Design Documents	<p><i>Design Manual for Roads and Bridges (DMRB)</i></p> <ul style="list-style-type: none"> <li>- Volume 6, Section 1, CD 109, Highway Links Design</li> <li>- Volume 6, Section 2, CD 123, Geometric Design of at-grade priority and signal-controlled junctions</li> <li>- Volume 6, Section 1, CD 127, Cross-Sections and Headroom's</li> <li>- Volume 4, Section 2, CG 501, Design of Highway Drainage Systems</li> <li>- Volume 2, Section 2, TD 19/06 Requirements for Road Restraint Systems</li> </ul> <p><i>Traffic Signs Manual</i></p> <ul style="list-style-type: none"> <li>- Chapter 4 Warning Signs</li> <li>- Chapter 5 Road Markings</li> </ul>
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### 3. Assessment of improvement measures.

ACHIEVABLE DESIGN	A	Key design features (Including comparison of proposed with existing and required values)	<b>Road Geometry - Cross-Section</b>	
			<i>Proposed</i>	<p>The proposed carriageway is 3.0m wide, with 1.5m grass verges either side (verges widened locally for VRS and forward sight distance). Earthworks are 1V: 2H.</p> <p>Intervisible passing bays increase carriageway width to 5.5m. The 5.5m is maintained through 20m. The entry and exit taper ratio is 1:5.</p>
			<i>Existing</i>	<p>The existing carriageway varies in width and is on average approximately 3m wide.</p>
			<i>Required Values</i>	<p>DMRB CD 127 Para NI/1.1 'A reduced carriageway with a minimum carriageway width of 6.00 metres shall be permitted for rural all-purpose single carriageway (S2) roads with design flows of 5000 AADT or less'</p> <p>Dfl Roads requested a 3m wide carriageway as part of their consultation response.</p> <p>DMRB CD 127 Figure 2.1.1N1e: Dimensions of Cross-Section Components for Rural All-Purpose Roads Mainline. Verge width is minimum 2.50m, hard strip 1.0m</p>
			<b>Highway Design – Stopping Sight Distance</b>	
			<i>Proposed</i>	<p>Minimum Stopping Sight (SSD) distance along the proposed road is 70m. Two low speed bends have a reduced stopping sight distance of 50m. These bends occur at;</p> <ul style="list-style-type: none"> <li>▪ Ch518 - Ch571</li> <li>▪ Ch841 – Ch879</li> </ul>
			<i>Existing</i>	<p>Existing SSD varies considerably along the existing track.</p>
			<i>DMRB Required Values</i>	<p>CD 109 – Table 2.10 Stopping Sight Distance for a design speed 100kph: Desirable minimum 215m One step below desirable minimum 160m</p>

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	SSD of 70m is one step below desirable minimum of a 60kph design speed, and SSD of 50m is two steps below desirable minimum.
<b>Road Geometry – Horizontal Alignment</b>	
<i>Proposed</i>	The following curve radii have been used 2,040m, 720m, 510m, 180m, 90m, 50m.
<i>Existing</i>	The existing horizontal alignment vary along the existing track.
<i>DMRB Required Values</i>	CD 109 – Table 3 Horizontal curvature Design Speed 100kph.  Minimum Radius without elimination of adverse camber = 2040m  Desirable Minimum R with Superelevation of 2.5% = 1440m  Desirable Minimum R with Superelevation of 5% = 720m
<b>Road Geometry – Superelvetation</b>	
<i>Proposed</i>	The proposed new road has a crossfall of 2.5%.  Superelevation of 5% has been applied to all horizontal curvature with radii less than 2040m. Rate of change in channels 0.9%-1%. 2/3 of superelevation has been applied on the approach tangent with the remaining 1/3 applied on the curve.
<i>Existing</i>	There is no evidence of superelevation along the length of the existing road.
<i>DMRB Required Values</i>	CD 109 Para. 4.2 On curves less than those shown in Table 2.10, (minimum R with superelevation of 2.5%) superelevation shall be provided in accordance with Equation 4.2  $S = V^2 / (2.828 \times R)$
<b>Road Geometry – Widening on Curves</b>	
<i>Proposed</i>	Carriageway widening of 0.5m per lane was applied around curves with a radius less than 180m, transitioning back to 3m carriageway at rate of 1:50  Auto tracking has confirmed a use of 0.5m widening on curves permits standard HGV to manoeuvre.
<i>Existing</i>	There is no evidence of carriageway widening along the length of the existing road.

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			<p><i>DMRB Required Values</i></p> <p><i>CD 109 Para 4.11 For Carriageways less than the Standard Widths as defined in CD 127, widening shall be:</i></p> <p><i>1) 0.6m per lane where the radius is between 90m but below 150m subject to maximum carriageway widths of 7.9m, 11.9m and 15.8m (for 2, 3 and 4 lanes respectively).</i></p> <p><i>2) 0.5m per lane where the radius is between 150m and 300m, subject to a maximum width not being greater than the standard widths in CD 127.</i></p> <p><i>3) 0.3m per lane, where the radius is between 300m and 400m subject to a maximum width not greater than the standard widths in CD 127.</i></p>
			<b>Road Geometry – Vertical Alignment</b>
	<i>Proposed</i>		<p><i>Minimum grade used 0.5% / maximum grade used 10%.</i></p> <p><i>K value for crest curves 13, one crest curve required a K value of 10. K values used for sag curves are 20 and 13 where K value of 20 could not be achieved.</i></p>
	<i>Existing</i>		<p><i>The existing vertical alignment varies along the existing track.</i></p>
	<i>DMRB Required Values</i>		<p><i>CD 109 Para 5.2.2 The desirable minimum gradient for a kerbed road should be 0.5% to enable effective drainage.</i></p> <p><i>Para 5.2.3 Where kerbs are inappropriate, false channel paths may be avoided by using over the edge drainage. (Note, proposed new road won't be kerbed and will have over the edge drainage, min. 0.5% gradient still provided.)</i></p> <p><i>Para 5.1 table 5.1. Maximum permitted relaxation is 8% gradient.</i></p> <p><i>CD 109 table 2.1 (Vertical curvature 100kph)</i>  <i>Desirable minimum Crest K Value = 100</i>  <i>One step below desirable min crest K value = 55</i>  <i>Desirable minimum sag K value = 26</i></p>
			<b>Vehicular Access – Visibility Splays</b>
	<i>Proposed</i>		<p><i>Crossroad junction – The site access road will have sightlines of 2.4m x 70m.</i></p> <p><i>The junction at the start of the proposed road (west) has 2.4m x 50m sightlines.</i></p> <p><i>The junction at the end of the proposed road (east) has 2.4m x 33m sightline to the west (road to east stopped up)</i></p>
	<i>Existing</i>		<p><i>There are a limited number of accesses onto the existing road, mainly field gates, bar a holiday let cottage which is now owned by Dalradian Gold Ltd. There appears to be limited visibility splays along the length of the existing road for either field or access.</i></p>

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		<i>Required Values</i>	<p>As per CD 123 Para 3.5</p> <p>CD 109 – Table 2.10 Stopping Sight Distance for a design speed 100kph: Desirable minimum 215m One step below desirable minimum 160m</p> <p>SSD of 70m is one step below desirable minimum of a 60kph design speed. 50m SSD is two steps below.</p> <p>CD 123 Para 3.8 minimum distances used to locate point x and there generating visibility splay is point 2) 2.4m for simple priority junctions</p>
		<b>General – Junctions</b>	
		<i>Proposed</i>	<p>The proposed new road will adjoin with the public road network at either end. There are no public accesses along the proposed road.</p> <p>There is a private access road at approx. ch685, this arrangement will be a crossroad, with the following requirements being met of the private access road;</p> <ul style="list-style-type: none"> <li>▪ The private access road is to have security gates suitability positioned and controlled to prevent straight through movements on both sides of the proposed road to be adopted.</li> <li>▪ A level crossing on the private access road is provided on the approaches to the proposed road to be adopted.</li> <li>▪ Traffic of the private access roads will not access the proposed road at this crossroad junction.</li> <li>▪ Proposed junction markings dia. 1010</li> </ul> <p>Give way markings have been provided at the junctions at either end of the proposed road (Dia. 1103, 1009, 1004). In addition, at the most western junction Give way sign and pole marking dia 1023 added.</p> <p>The eastern junction where the road is to be stopped up, will have:</p> <ul style="list-style-type: none"> <li>▪ Hedgerow to be planted (min 1.2m high) to obstruct visibility of any through movement.</li> <li>▪ Existing surface to be grubbed up and replaced with verge.</li> <li>▪ New Road Layout Ahead (dia 7014) signage to be placed on existing approaches to the proposed junction.</li> </ul>
		<i>Existing</i>	There are no give way or any other road markings on the existing track.
		<i>Required Values</i>	As per Traffic signs manual chapter 4 and chapter 5.

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			<b>Drainage</b>			
			<i>Proposed</i>	<i>Over the edge - combined surface/sub-surface drainage, in the form of filter carrier pipes (perforations on upmost side of pipe only) in filter media trenches along the verge. Access chambers will be spaced a maximum of 100m. Cut off drains on top and bottom of earthworks have been included. Drainage will outfall to watercourse (Pollanroe Burn). Design is as per CG 501.</i>		
			<i>Existing</i>	<i>There is no formal drainage associated with the existing track.</i>		
			<i>Required Values</i>	<i>Design is as per CG 501</i>		
			<b>Boundary Treatment &amp; VRS</b>			
			<i>Proposed</i>	<i>The boundary treatment on the proposed infrastructure side of the proposed new road shall be NK security fence 2.234m high (or similar). The opposite boundary treatment will be rails and post fence, which is a typical of the boundary treatment in the surrounding area.</i>  <i>Vehicle Restraint System will be N2 W4. Set back is 600mm or behind the forward sight line whichever is farthest.</i>		
			<i>Existing</i>	<i>Existing boundary treatments consist of traditional hedgerows, fencing and stone walls. There are no vehicle restraint systems along the length of the existing road.</i>		
			<i>DMRB Required Values</i>	<i>CD 127 table 2.2.4 desirable minimum set back value 1200mm.</i>		
			<b>B</b>	<b>Description of Constraints / Limiting Factors</b>	<p><i>The existing road proposed to be abandoned is a single-track road. The design of the proposed new road is fundamentally constrained by retaining the existing character and distinctiveness of the route. This design objective limited the application of the DMRB standards. The 100kph design speed is pre-set (DEM118/16) and not reflective of the nature of the existing road, proposed road or surrounding roads.</i></p> <p><i>The general typography of the land: This affected both the horizontal and vertical alignments of the proposed new road. To ensure that the design was both environmental and economic sustainable the proposed road matches the natural topography, which limited the application of the DMRB standards.</i></p> <p><i>Further constraints are as follows;</i></p> <ul style="list-style-type: none"> <li>▪ <i>Road to be abandoned is surfaced with un-bound material.</i></li> <li>▪ <i>No apparent design standard used on existing road to be abandoned or adjoining roads</i></li> <li>▪ <i>No street lighting at existing junctions and surrounding area</i></li> <li>▪ <i>No signage or makings at existing junctions and surrounding area</i></li> <li>▪ <i>Further application of DMRB would have resulted in increased speeds.</i></li> </ul>	

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	C	<p>Impact of constraints on the achievable design</p>	<p><i>The impact of constraints on the achievable design are as follows;</i></p> <ul style="list-style-type: none"> <li>▪ <i>3m wide carriageway to reduce vehicle speeds and match existing characteristics</i></li> <li>▪ <i>Introduction of two low speed bends to control driver speeds</i></li> <li>▪ <i>SSD needed to be balanced as excessive visibility could increase driver speeds.</i></li> <li>▪ <i>Limited use of signage of road markings</i></li> <li>▪ <i>Steep sections vertical alignment required to minimise earthworks</i></li> <li>▪ <i>VRS required</i></li> <li>▪ <i>At the stopped-up section of the U1244, a junction was favoured over continuous alignments (i.e. creating horizontal curve) due to the differences of surfacing (road standard). In keeping with the principle of CD 109.</i></li> </ul>
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#### 4. Benefits and adverse impacts of the proposed design

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	<p>A</p> <p>Safety and Operation Considerations</p>	<ul style="list-style-type: none"> <li>▪ <i>The proposed road will have standard (paved) road make-up based on CBR at formation level. Improving on the existing road which is constructed from un-bound material. This will produce a smoother surface for vehicles and NMU and will shorten stopping distances and reduce potential risk for vehicles skidding / sliding.</i></li> <li>▪ <i>Drainage has been designed for the efficient removal of surface water, during short and intense storm events. Drainage chambers have been positioned in the verge, thus allowing safer operation of the road when wet and safer maintenance.</i></li> <li>▪ <i>Narrow road width will reduce driver speeds, with drivers being aware that two vehicles cannot pass without use of the passing bays. The narrow road width, horizontal curvature, low speed bends and SSD all have influence in lowering speeds.</i></li> <li>▪ <i>Give way markings ensure safer junctions for vehicle users. Previously the road to be abandoned had no markings.</i></li> <li>▪ <i>Road safety audits will be completed in accordance with DMRB GG119 Road Safety Audit.</i></li> <li>▪ <i>Vehicle Restraint System has been provided at suitable locations to reduce risk.</i></li> <li>▪ <i>At the stopped-up section of the U1244, a junction was favoured over continuous alignments (i.e. creating horizontal curve) due to the differences of surfacing (road standard). In keeping with the principle of CD 109, ensuring drivers are aware of the change of road standard before a manoeuvre, rather than the driver being suddenly presented with a change of road standard (via introduction of a continuous alignment). The proposed hedgerow shall obstruct visibility of any through movement. The junction also lowers vehicle speeds.</i></li> <li>▪ <i>2.4m x 70m sightlines have been provided at the site access roads at the crossroad junction with the proposed road. This junction will be solely used for the proposed development.</i></li> </ul>
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JUSTIFICATION	B	Buildability and Maintenance considerations	<ul style="list-style-type: none"> <li>▪ <i>The vertical and horizontal alignment of the road follows the general topography of the land, this reduces the creation of larger earthworks.</i></li> <li>▪ <i>The construction of the proposed road will be standard, which all highway construction contractors and DFI Roads will be familiar with.</i></li> <li>▪ <i>The width of the proposed road design will require a full road closure for major maintenance works.</i></li> <li>▪ <i>All manholes/inspection chambers are located in the verge, no chambers located within carriageway.</i></li> <li>▪ <i>Sub-surface drainage is provided in the form of filter carrier drains, which will prolong the life span of the pavement structures.</i></li> <li>▪ <i>The proposal at the stopped-up end of the U1244 are easy to construct and to maintain. When compared to a continuous alignment arrangement.</i></li> </ul>
	C	Environmental Considerations	<p><i>The vertical and horizontal alignment of the road follows the general topography of the land. This reduces the creating of larger earthworks, reducing the potential for material volume needing brought to and from site. The proposed road corridor is consequently reduced resulting in less adverse impact to environmental aspects.</i></p> <p><i>A full Environmental Statement (ES) has been produced as part of the overall scheme. This EIA has taken account of relevant environmental considerations in relation to the proposed new road.</i></p>
	D	Social / Community Issues	<i>The proposed new road is an alternative route of a section of the existing road (U1244) which is proposed to be abandoned therefore social/community issues will be unaffected.</i>
	E	Economy / cost effectiveness	<i>The proposals represent a concise and efficient layout with an acceptable and fitting design provision given the constraints and the nature of the surrounding environment.</i>

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## 5. Compensatory (mitigation) measures - to address/reduce potential risks

MITIGATION	A	Included Measures	<p><i>Crossroad junction private road – proposed road: The private access road is to have security gates and suitability positioned remote controlled barriers to prevent straight through movements on both sides of the access road where it crosses the proposed new road to be adopted. A level crossing on each side of the private access road is provided on the approaches to the proposed road to be adopted.</i></p> <p><i>VRS provided in areas of that posed suitable risk to driver safety.</i></p>
	B	Rejected Options	<p><i>Warning signage and markings have been used sparingly to keep in line with the adjoining and surrounding road network.</i></p> <p><i>Street lighting has not been provided to keep in line with the characteristics of the surrounding roads and setting.</i></p>

## 6. Attachments and other information

A	List of Attachments / Drawings	<p><i>Please refer to the FEI Addendum drawing package in relation to the relevant drawings listed below;</i></p> <ul style="list-style-type: none"> <li><i>• 2016021-P-CIV-170 Abandoned Road / Proposed New Road.</i></li> <li><i>• 2016021-P-CIV-130 Proposed Private Streets Determination Plan Layout</i></li> <li><i>• 2016021-P-CIV-131 Proposed Private Streets Determination Longsection Sheet 1 of 2</i></li> <li><i>• 2016021-P-CIV-132 Proposed Private Streets Determination Longsection Sheet 2 of 2</i></li> <li><i>• 2016021-I-CIV-1050 Proposed Junction Arrangement at Abandonment Extents.</i></li> </ul>
B	Consultations	<i>Several PAD meetings have been held with DfI Roads where aspects of the above road were tabled and discussed.</i>
C	Other Relevant Information	<i>N/A</i>

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## 7. Checked and submitted by design organisation

Submissions from TransportNI Design and Consultancy Services must be checked and signed by an SPTO or above. Submissions from external Consultants must be checked and signed by a chartered engineer within the design team.		
Design organisation: <b>Hoy Dorman</b>	Grade: <b>Director</b>	Professional qualification: <b>CEng, FIEI, FICE, MCIHT, MCPA</b>
Signed: 	Print name: <b>Martin Hoy</b>	Date: <b>14 Feb 2020</b>

## 8. Divisional client recommendation/ comments

Signed:	<b>Project Sponsor</b>
Print name:	Date:

## 9. Decision

Approved :	<b>Divisional Manager</b>
Print name:	Date:

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## Scheme design overview (SDO) for non-trunk roads

# SDO – West Junction of U1244

Refer to the provided Notes for Guidance (Appendix B) when completing the overview report.

Scheme name:	<u>Curraghinalt Gold Project: Western Stopped-up End of U1244 REV A</u>	
Design organisation:	Hoy Dorman	Designer ref: 2016021
Contact details:	Name: Martin Hoy	Tel no:

### 1. Project details

A	Description - Project Aims and Objectives	<p><i>This SDO is Revision A to the previous version submitted as part of the TA Addendum Appendix 6.</i></p> <p><i>The scheme proposes to abandon and stop up a section of U1244. This SDO has been prepared for the design of the junction at the western stopped-up section of the U1244.</i></p> <p><i>The aim of this scheme is to ensure a safe and efficient design, following the stopping up of the priority road at the existing junction.</i></p> <p><i>The proposals for this junction are for it to remain as a junction, with a verge created where the existing road is to be stopped up. The proposals also include warning signage on approach to the junction and hedgerow planted to obstruct visibility of any potential through route.</i></p> <p><i>The eastern stopped-up section of the U1244 has been incorporated into the proposed new road which has its own SDO, please refer to this for further details.</i></p>		
B	Location	<p><i>Please refer to drawing</i></p> <ul style="list-style-type: none"> <li>• <i>2016021-P-CIV-170, Abandoned Road / Proposed New Road &amp; Drawing</i></li> <li>• <i>2016021-I-CIV-1050 Proposed Junction Arrangement at Abandonment Extents</i></li> </ul>		
C	Design Speed (See DEM 118/16)	<i>100A</i>	<p><u>Design Speed Selection Method ( Tick as appropriate ☑)</u></p> <p><input checked="" type="checkbox"/> Pre-Set</p> <p><input type="checkbox"/> Calculated (TD9 Method)*</p> <p><input type="checkbox"/> Measured Speed*</p>	
*Prior agreement to deviate from pre-set design speeds must be obtained from Divisional Client:				
		(Tick as appropriate)	Signed (Client SPTO):	Date:
Design Speed Accepted by Divisional Client :		<input type="checkbox"/>		

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D	Traffic and NMU flows	<p><i>The proposed stopping up at the western section of the U1244 will essentially not change its current use. The road to the west of the junction loops back onto the Crockanboy Road. The proposed new road is an alternative road towards the east and is to be offered for adoption.</i></p> <p><i>Please see below for traffic survey information relating the U1244 that a section is proposed to be abandoned.</i></p> <p><i>Hoy Dorman undertook a manual traffic survey of the existing track to be abandoned over six days, on two separate three-day periods to inform us of the current traffic use and speed of the existing track. These survey dates were as follows:</i></p> <ul style="list-style-type: none"> <li><i>• 8th-10th January 2016</i></li> <li><i>• 17th-19th January 2016</i></li> </ul> <p><i>There was a relatively low volume of traffic recorded during the survey with the majority of traffic recorded being attributed to:</i></p> <ul style="list-style-type: none"> <li><i>• Site traffic relating to the Dalradian Project Site or</i></li> <li><i>• Farmers accessing their fields / sheds.</i></li> </ul> <p><i>The only remaining activity as recorded over the 6 days included a few individuals running and several individuals walking.</i></p> <p><i>In relation to observed speed, this was measured at least 12 times over the survey period, this resulted in an average 85 percentile speed of 20mph</i></p> <p><i>The existing use of this junction will not change</i></p>
E	Collision History	<p><i>No recorded collisions 2013-2016 on existing road (U1244). This is the latest information available.</i></p>

Notes for completion:

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## 2. Scheme design proposals

A	Identified Improvement Measures	<i>The proposals for this junction are for it to remain as a junction, with verge created where the existing road is to be stopped up. The proposals also include warning signage on approach to the junction and hedgerow planted to obstruct visibility of any potential through route</i>
B	Relevant Design Documents	<i>Traffic Signs Manual - Chapter 4 Warning Signs</i>

## 3. Assessment of improvement measures.

ACHIEVABLE DESIGN	A	Key design features (Including comparison of proposed with existing and required values)	<ul style="list-style-type: none"> <li>▪ <i>Hedgerow to be planted (min 1.2m high) to obstruct visibility of any through movement.</i></li> <li>▪ <i>Existing surface to be grubbed up and replaced with verge.</i></li> <li>▪ <i>New Road Layout Ahead (dia 7014) signage to be placed on both approaches to the proposed junction.</i></li> </ul>
	B	Description of Constraints / Limiting Factors	<p><i>The proposals are fundamentally constrained by the characteristics of the existing roads.</i></p> <ul style="list-style-type: none"> <li>▪ <i>A connecting road to the junction is surfaced with unbound material and in poor condition, it is essential a track.</i></li> <li>▪ <i>No design standard used on either connecting road</i></li> <li>▪ <i>No street lighting at junction and surrounding area</i></li> <li>▪ <i>No signage or makings at junction and surrounding area</i></li> </ul>
	C	Impact of constraints on the achievable design	<p><i>One of the roads joining the junction is essentially a track and surfaced with unbound material, we concluded that to join these alignments via curvature would have created a risk to user safety as the road user would be suddenly presented with a change of road surfacing and road standard. The preferred design solution was to keep the junction as is to prevent any sudden change of road standard. This is in keeping with the principle of CD109.</i></p>

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#### 4. Benefits and adverse impacts of the proposed design

JUSTIFICATION	A	Safety and Operation Considerations	<p><i>The road junction will remain as is. The creation of new verge and hedgerow with appropriate signage on approach will ensure vehicles approaching the junction are aware of the new junction arrangement.</i></p> <p><i>The nature of the existing track will prevent high speeds.</i></p> <p><i>The junction ensures drivers are aware of the change of road surfacing before manoeuvring.</i></p> <p><i>There will be no change in traffic levels expected at this junction.</i></p>
	B	Buildability and Maintenance considerations	<p><i>The selected design option is easy to construct and to maintain. When compared against a continuous alignment.</i></p>
	C	Environmental Considerations	<p><i>The selected design option negates the need for formal road construction, reducing environmental impact.</i></p>
	D	Social / Community Issues	<p><i>Social / Community issues will not be affected.</i></p>
	E	Economy / cost effectiveness	<p><i>The selected design represents a concise and efficient layout with an acceptable and fitting design provision given the constraints and the nature of the surrounding environment.</i></p>

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## 5. Compensatory (mitigation) measures - to address/reduce potential risks

MITIGATION	A	Included Measures	<ul style="list-style-type: none"> <li>▪ <i>Provision of hedgerow to obstruct the previous through route.</i></li> <li>▪ <i>New signage warning road users of the new road layout in advance of the junction.</i></li> </ul>
	B	Rejected Options	<i>Not applicable</i>

## 6. Attachments and other information

A	List of Attachments / Drawings	<ul style="list-style-type: none"> <li>• <i>2016021-P-CIV-170 Abandoned Road / Proposed New Road.</i></li> <li>• <i>2016021-I-CIV-1050 Proposed Junction Arrangement at Abandonment Extents</i></li> <li>• <i>SDO Proposed New Road</i></li> </ul>
B	Consultations	<i>Several PAD meetings have been held with DfI Roads where aspects of the above arrangement were tabled and discussed.</i>
C	Other Relevant Information	<i>N/A</i>

## 7. Checked and submitted by design organisation

<p>Submissions from TransportNI Design and Consultancy Services must be checked and signed by an SPTO or above.</p> <p>Submissions from external Consultants must be checked and signed by a chartered engineer within the design team.</p>		
Design organisation: <b>Hoy Dorman</b>	Grade: <b>Director</b>	Professional qualification: <b>CEng, FIEI, FICE, MCIHT, MCPA</b>
Signed: 	Print name: <b>Martin Hoy</b>	Date: <b>14 Feb 2020</b>

## 8. Divisional client recommendation/ comments

Signed:	Project Sponsor
Print name:	Date:

## 9. Decision

Approved :	Divisional Manager
Print name:	Date:

Notes for completion:

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