

# **Proposed Greenway at Cootehill, Co. Cavan**

Stage 1 Road Safety Audit with Appended Re-audit

Final Report

22<sup>nd</sup> April 2022

Prepared for

Michael Fitzpatrick Architects Ltd.

**Traffic Transport and Road Safety Associates Ltd.**

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## Document Control Sheet

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# 1 Introduction

This report presents the findings of a Stage 1 Road Safety Audit (RSA) of the design of a proposed greenway at Cootehill, Co. Cavan.

This RSA was commissioned by Michael Fitzpatrick Architects Ltd., who were also responsible for preparing the scheme design drawings on behalf of Cootehill Area Development Ltd.

This RSA has been undertaken by Traffic Transport and Road Safety Associates Limited (TTRSA) in accordance with the requirements of Transport Infrastructure Ireland (TII) GE-STY-01024 Road Safety Audit standard (as amended by TII to take account of prevailing COVID-19 legislation). The Audit Team members comprised: Matthew Steele (TII Auditor Ref. No. MS88315) and Pamela Townley (TII Auditor Ref. No. PT90300). A brief for this audit, in accordance with the requirements of TII GE-STY-01024, is included as Appendix A of this report.

A site visit for this RSA was undertaken by both Audit Team members during the afternoon and PM peak traffic hour on Friday 10<sup>th</sup> September 2021. The weather during the road safety audit site visit was initially dry with a dry road surface, later turning to rain with a wet road surface. The RSA was undertaken by TTRSA's audit team (taking account of prevailing COVID-19 restrictions) during the period 29<sup>th</sup> July 2021 to 17<sup>th</sup> September 2021.

This RSA examines the documents relating to the proposed scheme and on-site observations at the time of the audit site visit, and identifies issues which may have an adverse impact on road safety. The RSA does not examine or verify the proposed scheme for compliance with any other standards or criteria.

Issues which impact on road safety are listed as problems within this report, and relate to the documentation provided upon commencement of the RSA, and associated clarification. The problems identified are considered to require action in order to improve the safety of the scheme and minimise collision occurrence.

The scheme employer and designer are required to respond to this RSA by completing a Road Safety Audit Feedback Form, included as Appendix B of this report. If any of the recommendations within this RSA are not accepted, a written response is required within the feedback form stating the reasons for non-acceptance.

A Stage 1 RSA re-audit of proposed design changes limited to the section of the proposed greenway route extending between the entrance and northern extent of the Cootehill Business Park (relating to Route Section 3 as detailed within Section 2.1 of this report) was requested by Michael Fitzpatrick Architects Ltd. This Stage 1 RSA re-audit is included as Appendix C of this report.

## 2 Scheme Background

### 2.1 The proposed scheme

The scheme and scope of this RSA comprises the design of approximately 3.4km of proposed greenway at Cootehill, Co. Cavan, as depicted within the scheme drawing contained in Appendix A of this report. From south-west to north-east, there are five distinct sections to greenway:

- **Route Section 1)** An off-road track for both pedestrians and cyclists, approximately 320m in length and 3m in width, bordering the car park at the rear of the Errigal County House Hotel, to the R188 Cavan Road;
- **Route Section 2)** An on-road section of route approximately 550m in length utilising the R188 Cavan Road, where pedestrians will use existing sections of footpath and shoulder on the western site of the road, and where it is intended to provide on-road cycle tracks;
- **Route Section 3)** A partly on-road partly off-road section of route approximately 520m in length, within and adjacent to the Cootehill Industrial Estate. Pedestrians will utilise the existing footpath on the south-western side of the internal industrial estate road, before crossing onto the north-eastern side of the road at a new pedestrian crossing. A new unbound joint use pedestrian/cycle path will be constructed to the north of the crossing, being adjacent to the existing internal road for a distance of approximately 100m before entering a ramped section taking the route to the lower level of the adjoining fields. On-road cycle-tracks will be provided from the entrance of the Cootehill Industrial Estate to a point in the vicinity of the zebra crossing;
- **Route Section 4)** An off-road track for both pedestrians and cyclists, 3m in width with public lighting, adjacent to field boundaries and passing to the south of Cootehill Harps grounds, will continue for a distance of approximately 1260m, emerging onto the R188 Monaghan Road opposite Cnoic Alainn.
- **Route Section 5)** An on-road section of route approximately 740m in length utilising the R188 Monaghan road, where pedestrians will utilise the existing footpaths, including crossing the L2032 Redhills Road at the zebra crossing to the south of the Holy Family School, and where it is intended to provide on-road cycle tracks.

### 2.2 The existing situation

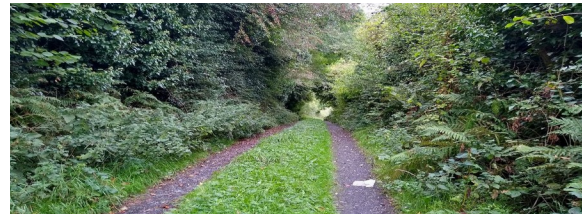
- Route section 1 of the route is currently a track/laneway used by agricultural machinery to access neighbouring fields. The width of the track varies, but is typically in excess of 3m. From the north, the track falls in grade to a point tangential to the rear of the Errigal County House Hotel, before rising to a point to the rear of the residential properties on Annalee Grove, and then falling to the R188 Cavan Road.
- From the south-west, route section 2 of the route has a kerbed footpath on the north-western side of the carriageway for a distance of approximately 275m, followed by a shoulder for a similar distance. The carriageway has a typical sealed width of 7.1m and traffic calming features and public lighting are present.



- Route section 3 of the route follows the alignment of an internal road within the Cootehill Industrial Estate. The width of the existing footpath is restricted to approximately 1.1m at the access gate off the R188. At the time of the audit site visit it was not possible to open this gate. The road within the estate varies in width from 7.3m to 8.3m. A continuous concrete footpath of between 1.8m and 2.0m in width aligns the western side of the road. The north-western end of the road is positioned adjacent to a steep slope approximately 4.5m in height. It is understood that a way-leave for agricultural vehicles is present at the bottom of the slope. Surface water drainage and public lighting are present.



- Route section 4 is currently a mix of agricultural and field tracks, the section of route running west from the R188 Monaghan Road appears to be regularly used and a damaged steel gate is present on the northern side of the track set back from the R188. The width of the track varies, but is typically in excess of 3m.



- Within route section 5, the footpath on the western side of the R188 Monaghan Road terminates at the northern boundary of the Holy Family School, entering the Clements Town Estate. A footpath with a sealed width of 1.5m, but an effective width of 1.0m due to overgrowth of vegetation, continues on the eastern side of the R188 Monaghan Road. The carriageway has a typical sealed width of 6.8m, but visual inspection of the carriageway shows areas with surface defects such as pot-holing. Public lighting is present.



### 2.3 Speed limits

The posted speed limit for the on-road section of route utilising the R188 Cavan Road (Route Section 2) is 60km/h. A special speed limit of 30km/h applies to the road within the Cootehill Industrial Estate (Route Section 3) but this is not currently signed. The posted speed limit on the R188 Monaghan Road (Route Section 5) is 50km/h to the northern boundary of the Clements Town Estate and then 60km/h to the northern extent of the proposed scheme.

### 2.4 Design Standards and Departures from Standards

The design standard applicable for the proposed greenway development are the; TII Publication 'DN-GEO-03047 - Rural Cycleway Design (Offline)'; DTTAS 'Greenways and Cycle Routes Ancillary Infrastructure Guidelines'; and, DTTAS 'Greenway Design and Brand Guidelines'. No departures from standards were reported to the audit team.

### 2.5 Traffic Collision Information

Consultation of the Road Safety Authority online collision data (for the period 2005 to 2016 inclusive) available to the initial issue date of this report, indicates that the following four collisions resulting in injury were reported on the on-road sections of the greenway:

- In 2009, a minor collision involving a right-turning goods vehicle was reported at the R188 Cavan Road/L2017 junction;
- In 2007, a minor collision involving a single car was reported on the R188 Monaghan Road to the south of its junction with the L2032 Redhills Road;
- In 2014, a serious collision involving a motorcyclist was reported on the R188 Monaghan Road at the Clements Town estate junction; and,
- In 2006, a serious collision involving a motorcyclist was reported on the R188 Monaghan Road to the north of the Clements Town estate junction.

## **2.6 Information provided for the audit**

Documents and information provided for this audit are detailed with the RSA brief contained in Appendix A.

## 3 Stage 1 Road Safety Audit Findings

### 3.1 Route Section 1

#### 3.1.1 Problem: Tie-in at the Errigal County House Hotel

Whilst an existing gated access is currently provided between the car park of the Errigal County House Hotel and the proposed greenway route section in the vicinity of the Errigal Ringfort it is unclear from the information provided for this audit of whether this gated access comprises part of the greenway route. This gated access will create a desire line for access to the greenway route but due to the state of disrepair of this gate and associated kerbing, there is potential for pedestrians and cyclists to be injured whilst traversing this gated access, including for example slip/trip type injury at the kerbing or transition between adjacent surface conditions.

**Recommendation:**

Provide safe access for pedestrians and cyclists at this gated access.

#### 3.1.2 Problem: Level of luminance of section of off-road track

The lack of public lighting luminance for the section of greenway route between the R188 regional road and Errigal Ringfort will reduce pedestrian and cyclists awareness of the greenway route alignment and route infrastructure, increasing the risk of pedestrians and cyclists colliding with track-side vegetation, fencing, or gate/barrier infrastructure.

**Recommendation:**

Provide adequate levels of luminance for safe pedestrian and cyclists access along this section of the proposed greenway route.

#### 3.1.3 Problem: Off-road approach gradient to the R188 (adjacent to Annalee Grove)

The gradient of the section of greenway route in the immediate vicinity of its tie-in with the R188 regional road to the east of Annalee Grove is excessive for safe cyclists access and will increase the risk of loss-of-control type injury collision for cyclists. Cyclist will not also be able to safely negotiate the access barrier at this locality of the route in the context of the gradient of the route, increasing the potential for cyclists to directly collide with this access barrier infrastructure.

**Recommendation:**

Revise the gradient of this section of the greenway route to provide appropriate gradients for safe access for cyclists.

#### 3.1.4 Problem: Access barrier infrastructure

It is unclear from the drawing information provided for this audit of how the proposed access barrier for the section of greenway route onto the R188 regional road to the east of Annalee Grove will provide safe access for agricultural vehicles along the laneway; or how and where this access barrier will be positioned in terms of the existing gated access across the laneway and the gated access adjacent to the laneway. Inappropriately positioned gate and barrier infrastructure can reduce safe access for pedestrians, cyclists and agricultural vehicles. It should be noted that a field gated access at this location is not incorporated within the proposed greenway route design.

**Recommendation:**

Provide safe access for pedestrians, cyclists and agricultural vehicles on this section of greenway route, taking full account of the existing infrastructure and requirements for agricultural vehicles.



## **3.2 Route Section 2**

### **3.2.1 Problem: Insufficient design detail**

No information has been provided for the audit of the following elements of design of the proposed R188 on-road cycle track of the greenway route section extending between the eastern vicinity of Annalee Grove and Cootehill Industrial Estate: the proposed width and surfacing of the cycle track on each side of the carriageway; proposed revision of road markings; proposed road signing indicating the cycle track and presence of cyclists; proposed priority control of the cycle track; how existing the cycle track will be physically protected from vehicle parking and associated manoeuvring which occurs within the hard shoulder sections of this route including within the hatched area of the Abcon/Cavmac industrial estate junction); how existing vertical traffic calming features and associated road-side delineators will be revised for safe access for cyclists; how cyclists will safely transition from the proposed on-road cycle tracks to the off-road sections of greenway route; or how existing sections of footpath will be amended at the transition between off-road and on-road cycle track. The lack of adequate safe cycle track access, lack of road-user awareness of the potential presence of cyclists and cycle turning movements across the carriageway, and lack of safe access transition between on-road and off-road sections of greenway route for cyclists, can all increase of the risk of a range of collision types.

#### **Recommendation:**

Provide safe access for cyclists for access to/from and along the proposed on-road cycle track sections of greenway route, ensuring that appropriate width and surfacing of cycle track are provided, appropriate road signing and road markings are provided including for priority control, adequate visibility and inter-visibility of cyclists across road junctions are provided, protection of the cycle track from vehicle parking is provided, existing traffic calming measures and associated road-side delineators are revised, transition measures to facilitate safe cyclist access across the carriageway or merge onto/from the carriageway are provided (for example jug-handle features), traffic calming measures in advance of the R188 approaches to the commencement sections of on-road cycle tracks are provided, and safe access for those pedestrians traversing across the transition of off-road to on-road cycle track facilities are provided, and that the existing footpath at the terminal point of the off-road cycle track in the vicinity of Annalee Grove is repaired. A Stage 1/2 RSA of the proposed design of the on-road cycle track should be undertaken prior to construction.

### **3.2.2 Problem: Continuity of pedestrian route on the R188 Cavan Road**

No information has been provided for this audit of how safe pedestrian access will be provided on the section of the greenway route extending between the existing terminal point of the footpath on the northern side of the R188 carriageway in the vicinity of the Abcon/Cavmac industrial estate junction and the existing terminal point of footpath at the western radius of the Cootehill Industrial Estate junction. Inadequate pedestrian access including: inadequate protection of the pedestrian route from vehicle parking and inadequate inter-visibility adjacent to vehicle accesses can increase the risk of conflict and collision involving pedestrians, and inadequate route dimensions, surfacing and tactile guidance can increase the risk of slip/trip type injury or misguide those pedestrians with visual impairments into the path of vehicles.

#### **Recommendation:**

Provide a safe pedestrian route for this section of the greenway route, ensuring that this route is of sufficient width with adequate construction for vehicle cross-overs and level transition to connect with existing terminal points of existing footpath, is protected from vehicle parking, has adequate tactile guidance for those pedestrians with visual impairments, and that adequate inter-visibility is provided at vehicle access points which intersect the pedestrian route.

### **3.3 Route Section 3**

#### **3.3.1 Problem: Pedestrian access to the Cootehill Industrial Estate**

There is potential for pedestrian trip and fall injury within the vicinity of the western radius Cootehill Industrial Estate junction as pedestrians inadvertently overstep the level difference between the edge of the constructed footpath and adjacent verge, attempt to cross the longitudinal level difference of a section of the constructed footpath, or slip on uncleared surface of the footpath (tree slime).

Pedestrians with visual impairments will also be misguided by the existing tactile paving at the junction of the industrial estate and lack of connecting footpath section, resulting in these pedestrians walking within the carriageway with resultant potential for conflict and collision with other road-users.

Pedestrians with visual impairments will also not be aware/able to detect the existing pedestrian gate infrastructure in the vicinity of the industrial estate junction with resultant potential injury for these pedestrians as they inadvertently collide with this infrastructure.

##### **Recommendation:**

Provide safe pedestrian access for the greenway route section in the vicinity of the Cootehill Industrial Estate junction, ensuring that level and safe continuous pedestrian route is provided, including a safe route across the industrial estate carriageway in the vicinity of the junction with appropriate tactile paving guidance. Provide appropriate measures to define and delineate the presence and approach route of the industrial estate pedestrian gate for those pedestrians with visual impairments.

#### **3.3.2 Problem: Insufficient design detail**

No information has been provided for the audit of the proposed design elements of the proposed on-road cycle track of the greenway route section extending between R188/Cootehill Industrial Estate junction and off-road section of greenway route within the Cootehill Industrial Estate: the proposed width and surfacing of the cycle track on each side of the industrial estate carriageway; proposed road markings and signing of the cycle track; proposed priority control of either the cycle track or R188/industrial estate junction with; how cyclists will safely transition from the proposed on-road cycle tracks to the off-road sections of greenway route; or how existing sections of footpath will be amended at the transition between off-road and on-road cycle track. The lack of adequate safe on-road cycle track access, lack of road-user awareness of the potential presence of cyclists and cycle turning movements across the carriageway, and lack of safe access transition between on-road and off-road sections of greenway route for cyclists, can all increase the risk of a range of collision types.

##### **Recommendation:**

Provide safe access for cyclists for access to/from and along the proposed on-road cycle track sections of greenway route, ensuring that appropriate width and surfacing of cycle track are provided, appropriate road signing and road markings are provided, adequate visibility and inter-visibility of cyclists across side access junctions are provided, transition measures to facilitate cyclists to safely cross the carriageway or merge to/from the carriageway are provided taking full account of pedestrian route access, and traffic calming measures on the industrial estate road on the approaches to the commencement section of on-road cycle tracks are provided as necessary. A Stage 1/2 RSA should be undertaken of the proposed design of this on-road cycle track section of the greenway route.

#### **3.3.3 Problem: Lack of design detail for zebra crossing**

No information has been provided for this audit of the design of the proposed zebra crossing across the carriageway of the industrial estate. Inappropriate design including inadequate access dimensions, gradients, surfacing, surface water drainage, and tie-in with the carriageway, inadequate Belisha beacon infrastructure and public lighting luminance and contrast, inadequate forward visibility/inter-visibility, and inadequate road markings, signing or priority control, and close proximity to adjacent site access points, can all increase the risk of injury and collision for those pedestrians utilising this controlled crossing point.

**Recommendation:**

Provide safe access for pedestrians at this proposed zebra crossing, taking full account of all of these elements of the design. A Stage 1/2 RSA should be undertaken of the proposed zebra crossing incorporating the pedestrian and cycle route facilities within the vicinity of this zebra crossing.

**3.3.4 Problem: Available route width in the vicinity of the proposed zebra crossing**

It is unclear from the information provided for the audit of how adequate route width will be provided for the off-road section of greenway route aligning the Cootehill Industrial Estate carriageway in the vicinity of the proposed zebra crossing and site access point located immediately northwards of this zebra crossing. Inadequate off-road route width can lead to conflict and collision between pedestrians and cyclists.

**Recommendation:**

Provide adequate width of route for safe access for pedestrians and cyclists.

**3.3.5 Problem: Visibility at existing access point within Cootehill Industrial Estate**

It is unclear from the information provided for the audit of how adequate inter-visibility or priority will be provided between pedestrians and cyclists approaching to cross the existing site access point/vehicle crossing (located to the north west of the proposed zebra crossing of the Cootehill Industrial Estate) and those road-users egressing from this site access point. Inadequate inter-visibility and lack of priority can increase the risk of collision between pedestrians, cyclists and these egressing road-users.

**Recommendation:**

Provide adequate inter-visibility and priority at the off-road route section which traverses this existing site access point.

**3.3.6 Problem: Conflict with existing landscape planting/vegetation**

There is potential for existing tree vegetation located within the eastern verge of the off-road section of greenway route aligning the Cootehill Industrial Estate carriageway to either restrict safe pedestrian and cyclist access along this off-road route, with resultant injury (including eye injury) to pedestrians/cyclists colliding directly with this tree vegetation, or slip/fall/dismount injury or collision with other road-users as these pedestrians/cyclists are forced onto the adjacent carriageway.

**Recommendation:**

Remove the tree vegetation from this off-road section of the greenway route, providing appropriate boundary fencing without reducing the effective width of the greenway route.

**3.3.7 Problem: Ramped section of track adjacent to the internal Cootehill Industrial Estate road**

From the information on existing and proposed levels shown on drawing no. 21164-CGW-MFA-00-ZZ-DR-A-502-P-01 provided for this audit, a number of related road safety issues result from the proposed design of the off-road ramp adjacent to the internal Cootehill Industrial Estate road, all of which have an adverse road safety impact for road users and users of the greenway:

- A level difference of approximately 0.5m is shown between the top of the proposed off-road ramp and the immediately adjacent carriageway of the internal industrial estate road. A vehicle leaving the carriageway at this location would be most likely to overturn, with resulting injury to vehicle occupants and other road users in the vicinity;
- Whilst an anti-climb post and rail fence is provided on the eastern side of the ramp, no protection is provided to stop pedestrians falling/climbing over the proposed retaining wall and falling from height onto the off-road track. Such falls are likely to result in high severity injury.
- The mid-section of the proposed off-road ramp is elevated by approximately 2m over the level of the existing way-leave track immediately adjacent to the east. It is not clear from the information provided

how this level difference will be safely accommodated, as the only design detail provided for this audit indicates an anti-climb post and rail fence. Without adequate structural support to the eastern side, there is a risk of the proposed off-road ramp failing/collapsing, creating an immediate hazard to users of the ramp and adjacent way-leave track; and,

- The indicated level differences at the tie-in point between the proposed ramp and existing way-leave track, and the extension of the post and rail fence across the way-leave track, do not maintain safe access for users of the way-leave track.

**Recommendation:**

Revise the design of the proposed ramp and associated features such as the retaining wall and fencing to provide safe access for: users of the industrial estate road; greenway users; and, users of the way-leave track.

### **3.4 Route Section 4**

#### **3.4.1 Problem: Potential collision with proposed lighting columns**

Whilst proposed lighting columns are indicated on drawing no. 21164-CGW-MFA-00-ZZ-DR-A-502-P-01 provided for this audit, it is likely that the proposed spacing of the columns, up to 120m, will result in dark sections of the off-road section of route, increasing the risk of a range of pedestrian/cyclists injury including pedestrian trips and falls and cyclists colliding with any debris on the track surface. In addition, no details have been provided for this audit in relation to the offset of the proposed lighting columns from the proposed off-road track. Inadequate offset increases the risk of cyclists and pedestrians colliding with lighting columns.

**Recommendation:**

Provide adequate and uniform public lighting for the entire off-road section of route, ensuring that lighting columns are positioned with an appropriate offset from the edge of the greenway route.

#### **3.4.2 Problem: Access barrier infrastructure**

It is unclear from the drawing information provided for this audit of how the access barrier proposed across the laneway of the off-road section of the greenway route west of the vicinity of Cnoic Alainn will provide safe access for agricultural vehicles using this laneway, or how the existing gated access across this laneway will provide safe access for pedestrians and cyclists. Inappropriately positioned gate and barrier infrastructure can reduce safe access for pedestrians, cyclists and agricultural vehicles.

**Recommendation:**

Provide safe access for pedestrians, cyclists and agricultural vehicles on this section of greenway route, taking full account of the existing infrastructure and requirements for agricultural vehicles.

#### **3.4.3 Problem: Insufficient design detail**

No information has been provided for the audit of the following elements of design of the proposed R188 on-road cycle track of the greenway route section between the northern vicinity of Cnoic Alainn and the northern vicinity of the Cavan county boundary: the proposed width and surfacing of the cycle track on each side of the carriageway; proposed revision of road markings; proposed road signing indicating the cycle track and presence of cyclists; proposed priority control of the cycle track; how existing the cycle track will be physically protected from vehicle parking/vehicle undertaking in the verge area opposite the vehicle site entrance to Halton's Amenity Park; how safe access, protection and adequate inter-visibility will be provided of/for cyclists on the western side of the carriageway adjacent to the car parking area opposite the R188/Cnoic Alainn junction; how cyclists will safely transition to/from the proposed on-road cycle tracks and off-road sections of greenway route particularly in the vicinity of the R188/Cnoic Alainn junction; how existing sections of footpath will be amended at the transition between off-road and on-road cycle track; or proposed public lighting for the cycle track along the sections of R188 carriageway where public lighting is not currently present. The lack of

adequate safe cycle track access, lack of road-user awareness of the potential presence of cyclists and cycle turning movements across the carriageway, lack of protection and inter-visibility for cyclists, and lack of safe access transition between on-road and off-road sections of greenway route for cyclists, can all increase of the risk of a range of collision types.

**Recommendation:**

Provide safe access for cyclists for access to/from and along the proposed on-road cycle track sections of greenway route, ensuring that appropriate width and surfacing of cycle track are provided and that the existing carriageway surface is repaired, appropriate road signing and road markings are provided including for priority control, adequate visibility and inter-visibility of cyclists across road junctions are provided, protection of the cycle track from vehicle parking is provided, transition measures to facilitate safe cyclist access across the carriageway or merge onto/from the carriageway are provided (for example jug-handle features, traffic calming measures in advance of the R188 approaches to the commencement sections of on-road cycle tracks are provided, and safe access for those pedestrians traversing longitudinal across the existing footpath at the transition of the off-road to on-road cycle track facilities are provided, and that adequate levels of public lighting are provided for the on-road cycle track. The northern terminal point of the proposed on-road cycle track should be terminated at a safe point further southwards with safe route connection to the recreation facility at Halton's Amenity Park, until such a time when safe on-road cycle track access can be provided northwards on the R188. A Stage 1/2 RSA of the proposed design of the on-road cycle track should be undertaken prior to construction.

### **3.5 Route Section 5**

#### **3.5.1 Problem: Pedestrian access cross the R188 Monaghan Road**

No information has been provided for this audit of how safe pedestrian access will be provided across the R188 carriageway to connect between the existing footpath routes aligning the R188 carriageway for the proposed greenway route section extending between the northern vicinity of Cnoic Alainn and the northern vicinity of the Cavan county boundary, noting that the existing footpath on the western side of the R188 carriageway terminates in the northern vicinity of Holy Family School. Inadequate safe pedestrian access across the R188 carriageway for this section of the defined greenway route can increase the risk of pedestrian/vehicle collisions.

**Recommendation:**

Provide pedestrian crossing point across the R188 at a safe location to provide safe connection between the existing footpath route sections of the proposed greenway, taking full account of site access points and visibility of/inter-visibility at this crossing point.

#### **3.5.2 Problem: Effective width of footpaths**

Sections of the existing hedge/tree vegetation boundary aligning the existing footpaths the R188 carriageway along the greenway route extending northwards Cnoic Alainn junction protrude onto the adjacent footpath, reducing the effective width of this footpath for safe access for pedestrians with visual and mobility impairments, and increasing the risk of injury including eye injury if pedestrians collide with this hedge/tree vegetation boundary.

**Recommendation:**

Ensure that existing hedge/tree vegetation boundary adjacent to footpaths is cut back and maintained at all times.

### **3.5.3 Problem: Lack of public lighting on R188 Monaghan Road route section**

The lack of public lighting for pedestrian access along the greenway route extending northwards from Clements Town estate will reduce safe access for pedestrians, increasing the risk of trip/fall type injuries or collision with those vehicles turning into/from the Halton's Amenity Park.

#### **Recommendation:**

Provide adequate public lighting for safe pedestrian access along this section of the proposed greenway route.

## **3.6 Both Off-road Route Sections**

### **3.6.1 Problem: Impact of agricultural vehicles on proposed unbound surfacing**

There is potential for deformation of the surfacing of off-road sections of greenway route which are required for agricultural vehicle access (including turning across the greenway route into field accesses) due to the axle loading, compaction of wheel tracks or displacement of surface material. The deformation of the surfacing can subsequently increase the risk of forced dismount injury collision for cyclists and pedestrian trip/slip type injuries.

#### **Recommendation:**

Ensure that adequate route construction and surfacing is provided for off-road sections of greenway route which are required for agricultural vehicle access, and that these sections of the route are maintained as a level surface finish at all times.

### **3.6.2 Problem: Track width and conflict between greenway users and agricultural vehicles**

There is potential for conflict and collision between those pedestrians and cyclists traversing the off-road sections of the greenway route and agricultural vehicles utilising these sections of the greenway route.

#### **Recommendation:**

Provide safe passing sections along these off-road sections of greenway route at points with adequate inter-visibility between agricultural vehicles and pedestrians/cyclists, ensuring that these passing sections are adequately constructed.

## 4 Audit Statement

We certify that we have examined the documentation provided for the audit as detailed in Section 2 of this report, and visited the site as detailed in Section 1 of this report. The audit has been carried out in accordance with TII GE-STY-01024 (as amended by TII to take account of prevailing COVID-19 legislation) with the sole purpose of identifying any features of the design that could be removed or modified in order to improve the safety of the scheme. The problems that we have identified have been noted in this report, together with suggestions for safety improvement that in our opinion should be studied for implementation. The Audit has been conducted by the persons named below who are independent from the design team for the scheme.

Matthew Steele  
(Audit Team Leader)

Signed:



Date:

17<sup>th</sup> September 2021

Pamela Townley  
(Audit Team Member)

Signed:



Date:

17<sup>th</sup> September 2021

## Appendix A – Stage 1 Road Safety Audit Brief

### Scheme: Proposed Greenway at Cootehill, Co. Cavan

TII Checklist Item	Yes/No/Not Applicable (N/A)	Comment
Design Brief	Yes	Undertake a Stage 1 Road Safety Audit for the proposed Dromore Greenway Cycle and Pedestrian routes at Cootehill, limited to the spatial area defined by the routes indicated on MFA drawing 2000- ABC- MFA-00- ZZ- DR- A-402 Rev P01, dated 19/04/2021 (provided for information).
Design Standard Applied	Yes	TII Publication 'DN-GEO-03047 - Rural Cycleway Design (Offline)'; DTTAS 'Greenways and Cycle Routes Ancillary Infrastructure Guidelines'; and, DTTAS 'Greenway Design and Brand Guidelines'.
Design Speed Applied	Yes	The route needs to be along hedgerow boundaries as agreed with landowners. A 10km/h speed limit is proposed on the immediate approach to bends. Warning signage will be provided and part of the hedgerow will be removed to allow for 15m sightlines.
Departures from Standard	No	
Scheme Drawings	Yes	<p>Documents prepared by, and provided by, Michael Fitzpatrick Architects to TTRSA on 25<sup>th</sup> August 2021:</p> <ul style="list-style-type: none"> <li>• Drawing Title: 'Cootehill Greenway - Proposed route of greenway through Cootehill Industrial park, Co. Cavan'; Drawing (File) Number: 21164-CGW-MFA-ZZ-00-DR-A-501-P-01;</li> <li>• Drawing Title: 'Site Map 2 (including Site Map 2 Drone Survey)'; Drawing Number: 21164-CGW-MFA-ZZ-00-DR-A-502-P-01; dated 25/08/2001;</li> <li>• Drawing Title: None – Sheet detailing access road, access onto the R188 Monaghan Road; cross section; and staggered approach barrier detail; and signing; Drawing Number: 21164-CGW-MFA-ZZ-00-DR-A-503-P-01; dated 25/08/2001;</li> <li>• Drawing Title: None – Sheet detailing total proposed route and lighting locations; Drawing Number: 21164-CGW-MFA-ZZ-00-DR-A-504-P-01; dated 25/08/2001;</li> </ul> <p>A product brochure for Holophane VMAX lighting consistent with that specified on drawing no. 21164-CGW-MFA-ZZ-00-DR-A-504-P-01, was provided by, Michael Fitzpatrick Architects to TTRSA on .25<sup>th</sup> August 2021</p>
Other scheme details, e.g. signs schedules, traffic signal staging	No	
Collision data for existing roads affected by the scheme	Yes	Consultation of the Road Safety Authority online collision data (for the period 2005 to 2016 inclusive) indicates that the following four collisions resulting in injury were



		<p>reported on the on-road sections of the greenway.</p> <ul style="list-style-type: none"> <li>• In 2009, a minor collision involving a right-turning goods vehicle was reported at the R188 Cavan Road/L2017 junction;</li> <li>• In 2007, a minor collision involving a single car was reported on the R188 Monaghan Road to the south of its junction with the L2032 Redhills Road;</li> <li>• In 2014, a serious collision involving a motorcyclist was reported on the R188 Monaghan Road at the Clements Town estate junction; and,</li> <li>• In 2006, a serious collision involving a motorcyclist was reported on the R188 Monaghan Road to the north of the Clements Town estate junction.</li> </ul>
Traffic surveys	No	
Previous RSA Reports and Designer Responses /Feedback Form	No	
Previous Exception Reports	N/A	
Start date for construction and expected opening date	No	
Any elements to be excluded from audit	No	
Any other information (list separately)	Yes	<p>The following items of clarification were provided to the Audit Team by Michael Fitzpatrick Architects on 25<sup>th</sup> August 2021.</p> <ul style="list-style-type: none"> <li>• The off-road route will be surfaced with quarry dust, but we are proposing a concrete surface approx. 3m at each junction to tie in with the existing concrete path / surface.</li> <li>• We will include signage at the junctions [between off-road routes and the public road], drawing 503 shows typical signage that will be included throughout the route.</li> <li>• We are proposing a staggered approach [barrier] at each of the junctions on to the public road which will include caution signage and reflectors. Please refer to drawing no.503 which illustrates the staggered approach [barrier] and signage proposed.</li> <li>• Grant funding for the route will not cover alterations to the existing pathways / public roadway.</li> <li>• There are no alterations proposed to the existing pedestrian access gate at industrial estate entrance. It will remain open for the public to access the route.</li> <li>• A zebra crossing is proposed within the industrial estate.</li> <li>• The route has been updated to show connection link to Halton's Amenity park entrance as the route will form part of a larger greenway project in the future (Refer to Drg. 504). We understand there is substantial upgrade works to the road and pathways at this location to facilitate the following, so we are proposing only line marking at this stage.</li> </ul>



LUMINAIRE SCHEDULE						
Symbol	Label	Qty	Catalog Number	Description	Lamp	File
T	A	3	VMX.2.LA044.V1.D 4D4.W029.PT1.C9	V-Max Streetlighting luminaire mounted post top on 6m columns	LED C.4000 Lumens	VMX.2.LA044. V1.D4D4.W02 9-IES
						29

----- TOTAL PROPOSED ROUTE DISTANCE = 3.5 Kilometers



Project Name	21164 - CGW-MFA-00-ZZ-DR-A-504
Client	Michael Fitzpatrick Architects Ltd
Project Details	Proposed development at Cooteshill, Co. Cavan for Cooteshill Area Dev.
Drawn By	Michael Fitzpatrick
Check By	Michael Fitzpatrick
Date	25/07/2021
Scale	1:1000
Sheet	P-01
Project	21164 - CGW-MFA-00-ZZ-DR-A-504
Client	Michael Fitzpatrick Architects Ltd
Project Details	Proposed development at Cooteshill, Co. Cavan for Cooteshill Area Dev.
Drawn By	Michael Fitzpatrick
Check By	Michael Fitzpatrick
Date	25/07/2021
Scale	1:1000
Sheet	P-01

## Appendix B – Road Safety Audit Feedback Form

**Scheme:** Proposed Greenway  
**Location:** Cootehill, Co. Cavan  
**Audit Stage:** 1

To be completed by Design Team				To be completed by Audit Team Leader
Paragraph Number in RSA Report	Problem accepted (Yes / No)	Recommended measures(s) accepted (Yes/ No)	Describe alternative measure(s). Give reasons for not accepting recommended measure. (Only to be completed if recommended measure is not accepted)	Alternative measures or reasons accepted by Audit Team (Yes / No)
3.1.1	Yes	Yes		
3.1.2	Yes	Yes		
3.1.3	Yes	Yes		
3.1.4	Yes	Yes		
3.2.1	Yes	Yes	This possible route between Annalee Grove and the industrial park along the R188 is subject to detail design and land acquisition.	
3.2.2	Yes	Yes	This possible route between Annalee Grove and the industrial park along the R188 is subject to detail design and land acquisition.	
3.3.1	Yes	Yes		
3.3.2	Yes	Yes		
3.3.3	Yes	Yes		
3.3.4	Yes	Yes		
3.3.5	Yes	Yes		
3.3.6	Yes	Yes		
3.3.7	Yes	Yes		
3.4.1	Yes	No	It is proposed to only have lighting at public road junction. The off road route will not include lighting due to the negative impacts this would have on the wildlife.	Yes. Ensure as part of the detail design that the lighting at public road/off-road route junctions includes adequate luminance of the proposed staggered approach barriers.
3.4.2	Yes	Yes		
3.4.3	Yes	Yes	On road route along the R188 – Cootehill Monaghan Rd is no longer part of this scheme. However the scheme will implement traffic calming measures at tie in junction on to the public road and adequate public lighting at junctions as part of this scheme.	
3.5.1	Yes	Yes	On road route along the R188 – Cootehill Monaghan Rd is no longer part of this scheme. However the scheme will implement safe access on to and from the off-road section from the existing footpaths on both sides of the R188 (Cootehill-Monaghan Rd).	
3.5.2	Yes	Yes	On road route along the R188 – Cootehill Monaghan Rd is no longer part of this scheme. However the existing hedge / trees will be set back subject to future detail design and land acquisition.	
3.5.3	Yes	Yes	On road route along the R188 – Cootehill Monaghan Rd is no longer part of this scheme. However additional public lighting will be included along this route subject to future detail design and land acquisition.	
3.6.1	Yes	Yes		
3.6.2	Yes	Yes		

MALCOLM MAGEE Print Name  
Design Team Representative  
(Michael Fitzpatrick Architects)

Signature:



Date: 01/12/2021

MALACHY MAGEE Print Name  
Scheme Client Representative  
(Cootehill Area Development Ltd.)


Signature:



Date: 01.12.2021

Road Safety Audit signed of by:  
**Matthew Steele**  
**BA(Hons) MSc FCILT FRGS MCIHT**  
(Audit Team Leader)

Signature:



Date: 1st December 2021

## **Appendix C – Re-audit of Design Changes**

#### **Appendix C 4.1 – Background to this Re-audit**

Where changes are made to a scheme following the preparation of a Road Safety Audit (RSA), section 3.18 of the Transport Infrastructure Ireland Road Safety Audit Guidelines (GE-STY-01027) allows for a re-audit of the changes to the scheme.

In reference to the proposed greenway pedestrian/cycle route scheme, changes to the proposed design have been made by the scheme Client in relation to the proposed section of the greenway route extending northwards from the R188 regional road/Cootehill Industrial Estate junction to the northern proposed extent of the route (located to the north of the current constructed carriageway of the Cootehill Industrial Estate). As informed by the design team and depicted in the associated design drawings for this RSA re-audit included within this section of the report, these proposed design changes include:

- demarcating this section of the greenway route as a 4.15m wide shared pedestrian/cycle off-road joint use route (without segregation between pedestrians and cyclists), removing the previously proposed on-road cycle lanes within the Cootehill Industrial Estate area;
- the section of the greenway route between the R188 regional road/Cootehill Industrial Estate junction and the current northern extent of the constructed carriageway of Cootehill Industrial Estate will now be aligned immediate to the kerbline of the Cootehill Industrial Estate carriageway with the setback of existing utility poles and fencing outside of the greenway route;
- a raised zebra crossing facility will be provided across the carriageway in the mid section of the greenway route;
- the revised alignment of the route from the previous proposed east direction at the locality of the northern boundary of the current constructed Cootehill Industrial Estate carriageway to an alignment which extends northwards and then southwards along existing agricultural laneways to then transition in an east direct towards the R188 Monaghan Road/Harps grounds. This northern extension of the route alignment partially includes a graded constructed embankment;
- the provision of staggered timber barrier/access gate at the intersection point between where the greenway route aligning the kerbline of the Cootehill Industrial Estate carriageway transitions to the off-road greenway route utilising an agricultural laneway. This gate access will incorporate post infrastructure approximately 1.8m in height;
- the provision of a staggered timber barrier/access gate within the boundary treatment of the northern point of the greenway route;
- the provision of a post and rail fence with anti-climb fencing aligning the section of the greenway route adjacent to embankments and agricultural laneways;
- the removal of the existing pedestrian gate at the Cootehill Business Park gated access (but retaining existing gate/entrance piers); and,
- the provision of road signing to indicate cyclists dismount at the proposed zebra crossing of this greenway route within the Cootehill Industrial Estate and in the vicinity of the retained pedestrian gate piers at the Cootehill Industrial Estate gated access.

For consistency, the audit team for this RSA re-audit comprises the same audit team members who prepared the Stage 1 RSA report issued on 17<sup>th</sup> September 2021. The audit team undertook an additional site visit to the proposed section of the proposed greenway route extending northwards from the R188 regional road/Cootehill Industrial Estate junction on 7<sup>th</sup> April 2022 during which the weather was dry and the road surface was damp in places following earlier rain showers.

The scope of this RSA re-audit is limited to the proposed design of the aforementioned section of greenway route detailed within the information provided for the RSA re-audit does not include detailed

design of the greenway route, or traffic management, or implemented construction of the greenway route.

The following three sub-sections cover the following: the information provided for this RSA re-audit; a summary review of the Stage 1 RSA findings and recommendations associated with the section of greenway route subject to the Stage 1 RSA re-audit; and, the findings of this RSA re-audit, which in common with Section 3 of this RSA report, are presented in standard problems and recommendation format, and are considered to require action in order to improve the safety of the scheme and minimise collision occurrence.

Both the scheme Client and scheme Design of the proposed greenway route scheme are required to respond to this RSA re-audit by completing a Road Safety Audit Feedback Form, included as Appendix D of this report. If any of the recommendations within this RSA re-audit are not accepted, a written response is required within the feedback form stating the reasons for non-acceptance.

#### **Appendix C 4.2 – Information provided for this RSA re-audit**

The following information has been provided by the design team to the audit team for this RSA re-audit:

Information prepared by Michael Fitzpatrick Architects Ltd and provided to TTRSA by Michael Fitzpatrick Architects Ltd on 21<sup>st</sup> March 2022:

- *Drawing Number: 21164-501-P-02; Drawing dated April 2022 [Cootehill Cycling /Pedestrian Route Project]*
- *Drawing Number: 21164-504-P-02; Drawing dated April 2022 [Cootehill Cycling /Pedestrian Route Project]*
- *Drawing Number: 21164-506-P-02; Drawing dated April 2022 [Cootehill Cycling /Pedestrian Route Project]*

Information prepared by Michael Fitzpatrick Architects Ltd and provided to TTRSA by Michael Fitzpatrick Architects Ltd on 23<sup>rd</sup> March 2022:

- *Drawing Number: 21164-510-P-01; Drawing dated November 2021 [Cootehill Cycling /Pedestrian Route Project]*

Information prepared by Michael Fitzpatrick Architects Ltd and provided to TTRSA by Michael Fitzpatrick Architects Ltd on 13<sup>th</sup> April 2022:

- *Drawing Number: 21164-510-P-02; Drawing dated November 2021 [Cootehill Cycling /Pedestrian Route Project]*
- *Drawing Number: 21164-504-P-03; Drawing dated April 2022 [Cootehill Cycling /Pedestrian Route Project]*
- *Drawing Number: 21164-506-P-03; Drawing dated April 2022 [Cootehill Cycling /Pedestrian Route Project]*
- *Information provided by e-mail correspondence [summarised]: Concrete surfacing will be provided for the 4.15m wide shared-use section of greenway route aligning the carriageway of the Cootehill Industrial Estate, no segregation of this share-use section of greenway route are proposed. The existing boundary fence of the Waste Water Treatment Plant located adjacent to the existing western footpath of the carriageway of the Cootehill Industrial Estate will be setback from the proposed western edge of the shared-use section of the greenway route. The gate posts of the proposed barrier access gates (to the section of greenway route utilising the agricultural laneway) will be 1.8m in height.*







### Appendix C 4.3 – Summary Review of Stage 1/2 Road Safety Audit Findings

As part of preparing this RSA re-audit, the audit team have undertaken a summary review of whether the problems and recommendations identified in Section 3 of this report relating to the proposed section of the greenway route extending northwards from the R188 regional road/Cootehill Industrial Estate junction (and those agreed by the scheme Client in Appendix B of this report) have been incorporated into the information provided for this RSA re-audit. The findings of this summary review are included in the table below.

Paragraph Number in RSA Report	RSA report section 3 Problem Heading	Incorporated into the information provided for this RSA re-audit (Yes / No / Not Applicable / Partly).
3.3.1	Hazardous pedestrian access to the Cootehill Industrial Estate in vicinity of junction with R188 and at the pedestrian gate access entrance to the Industrial Estate.	Partly. Road safety issues remain and are incorporated within Sections 4.4.1 to 4.4.4 of this report.
3.3.2	Insufficient design details of the proposed on-road cycle track of the greenway route section extending between R188/Cootehill Industrial Estate junction and off-road section of greenway route within the Cootehill Industrial Estate.	Partly. The proposed on-road cycle track of the greenway route section within the Cootehill Industrial Estate (extending between the R188/Cootehill Industrial Estate junction and the off-road laneway section of the greenway to the northern area of the Industrial Estate) has been revised to a kerbed off-road share-use route. Road safety issues relating to cyclist safety of the revised nature of the route are contained within Section 4 of this report.
3.3.3	Lack of design detail for proposed zebra crossing.	Partly. Road safety issues remain and are incorporated within Sections 4.4.5 and 4.4.10 of this report.
3.3.4	Available route width in vicinity of proposed zebra crossing.	Yes.
3.3.5	Visibility at existing access point within Cootehill Industrial Estate [eastern side of carriageway]	N/A. The proposed alignment of the greenway route has been revised.
3.3.6	Conflict with existing landscape planting/vegetation located within the eastern verge of greenway route aligning the Cootehill Industrial Estate carriageway.	Yes.
3.3.7	Road safety issues relating to proposed design of the off-road ramp adjacent to the internal Cootehill Industrial Estate road.	Yes. The proposed alignment of the greenway route has been revised. Other road safety issues relating to this revised alignment of the greenway

		route are incorporated into Sections 4.4.6 to 4.4.9 of this report.
3.6.1	Potential for deformation of the surfacing of off-road sections of greenway route which are required for agricultural vehicle access.	No. This road safety issues is highlighted within Section 4.4.8 of this report.
3.6.2	Potential for conflict and collision between those pedestrians and cyclists traversing the off-road sections of the greenway route and agricultural vehicles utilising these sections of the greenway route.	No. This road safety issues is highlighted within Section 4.4.8 of this report.

#### Appendix C 4.4 – Findings of this RSA re-audit

##### Appendix C 4.4.1 Problem: Hazardous pedestrian and cyclist access at current proposed terminal point of greenway route at western radius Cootehill Industrial Estate at junction onto R188

It is unclear from the drawing information of how safe pedestrian and cyclist access will be provided at the current proposed terminal point of the greenway route on the western radius of the junction of the Cootehill Industrial Estate onto the R188 regional road. The following elements of the proposed design/existing constructed junction can increase the risk of injury to pedestrians and cyclists at this locations:

- the lack of facilities for cyclists to safely merge/diverge from the greenway route onto the R188 regional road carriageway;
- the lack of inter-visibility immediate to the east of the terminal point of the greenway route due to the hedge vegetation of the adjacent property boundary;
- the lack of facilities for pedestrians and cyclists to cross the R188 regional road carriageway to access onto/egress from the greenway route;
- the inadequate width of the existing footpath and verge adjacent to the section of stone wall entrance sign of the Cootehill Industrial Estate at the western radius of this junction (noting that the available width is approximately 3.7m);
- lack of definition and tactile paving to indicate the shared-use nature of this section of the greenway route/associated terminal point of the route at the western radius of the Cootehill Industrial Estate at its junction with the R188.
- the potential for any proposed signing relating to the greenway route to be positioned to obstruct visibility splays or reduce the dimensions of the route for the safe passage of pedestrians and cyclists.

##### Recommendation:

Provide safe pedestrian and cyclist access for the current proposed terminal point of the greenway route section located on the western radius of the Cootehill Industrial Estate junction at its junction with the R188, ensuring that cyclists and pedestrians can safely access and connect to/from existing footpath and carriageway routes including crossing the R188 carriageway in the vicinity of the western radius of the R188/ Cootehill Industrial Estate junction. Also ensure that appropriate hazard/tactile paving for the greenway route terminal point at this location is provided and that signing relating to the greenway route/shared nature of the greenway route does not adversely affect road-user safety. A Stage 2 RSA should be undertaken of the detailed design of this section of the greenway route prior to construction.

#### **Appendix C 4.4.2 Problem: Potential for injury to pedestrians and cyclists whilst traversing vegetation debris**

The existing western footpath which aligns the southern section of the Cootehill Industrial Estate road was observed during the site visit for this RSA re-audit to be partially covered in vegetation debris, which can increase the risk of pedestrian slip injury and cyclist forced dismount injury.

##### **Recommendation:**

Ensure that the surface of the proposed greenway route is kept clear of vegetation/vegetation debris.

#### **Appendix C 4.4.3 Problem: Potential for injury to pedestrians and cyclists at existing crossing points**

There is potential for collision or slip/trip injury to pedestrians and for forced dismount injury to cyclists in the locality of existing dropped crossing points including at those with tactile paving, due to:

- the potential for pedestrians with visual impairments to not adequately detect the presence of these crossing points when the footpath route is widened and subsumed into the greenway route
- the level difference between constructed dropped crossings and the adjacent constructed carriageway (for access by pedestrians and cyclists); and,
- the presence of service covers located both within the existing footpath route (to be subsumed into the greenway route) and at crossing points (including at the current proposed terminal point of the greenway route at the western radius of the Cootehill Industrial Estate junction onto the R188) and located within pedestrian route across the carriageway at crossing points.

##### **Recommendation:**

Provide appropriate tactile paving for these crossing points, ensuring that tactile paving is of the correct dimension and formation for this proposed shared-use section of the greenway route, noting that these crossing points will also be used by cyclists to egress from/onto the greenway route from other areas/routes of the Industrial Estate. Ensure that appropriate surface levels are provided at dropped kerb crossings across the carriageway. Provide anti-skid covers for all service covers located within the proposed greenway route and at dropped crossing points (including those at the current proposed terminal point of the greenway route at the western radius of the Cootehill Industrial Estate junction onto the R188) and those service covers located within the carriageway adjacent to these crossing point and within the pedestrian route across the carriageway at these crossing points.



**Appendix C 4.4.4 Problem: Conflict and collision between pedestrians and cyclists at retained piers of existing gated pedestrian access at entrance to Cootehill Industrial Estate**

There is potential for conflict and collision between northbound cyclists and southbound pedestrians on the shared-use section of the greenway route adjacent to the retained piers of the existing gated pedestrian access at the entrance to the Cootehill Industrial Estate, particularly with the masking effect of the eastern pier (of the pedestrian access) at this location.

**Recommendation:**

Provide measures to ensure safe access for both pedestrians and cyclists is provided at this location (for example terminating the shared-use route on the approaches to the pier structures to provide priority for pedestrians and providing adequate detectable deflection on the approaches to the eastern pier structure). A Stage 2 RSA should be undertaken of the proposed detailed design of the greenway route section at this location prior to construction.

**Appendix C 4.4.5 Problem: Hazardous access at proposed zebra crossing facility**

It is unclear from the drawing information provided for this RSA of how safe access will be provided for all road-users at the proposed raised zebra crossing facility across the carriageway of the Cootehill Industrial Estate. Inadequate definition, detection, and awareness of the zebra crossing; the lack of priority control; and inadequate geometric profile and surface water drainage of the raised zebra crossing can all increase the risk of collision between vehicles and those using the zebra crossing and collision between pedestrians and cyclists using the zebra crossing. There is also the potential for pedestrians/cyclists to inadvertently overstep/encroach over the verge adjacent to the greenway route at the north-eastern and south-eastern areas of the zebra crossing with subsequent injury to these pedestrians/cyclists particularly in the context of level differences relating to the adjacent verge/embankment.

**Recommendation:**

Provide priority control for this proposed zebra crossing, ensuring that all prescribed road signing and road markings are provided. Ensure that adequate geometric profile and surface water drainage is provided for the proposed raised zebra crossing. Provide measures to ensure that pedestrians have priority at the zebra crossing and that appropriate tactile/hazard paving detection is provided for the 'controlled' zebra crossing point and to delineate the termination/commencement of the shared-use section of route on each side of this zebra crossing. Provide infrastructure measures to ensure that pedestrians and cyclists cannot physically overstep/encroach over the verge/embankment adjacent to the greenway route at the north-eastern and south-eastern areas of the zebra crossing whilst ensuring that inter-visibility splays at the zebra crossing are not restricted.

**Appendix C 4.4.6 Problem: Potential for cyclists and pedestrians to collide with proposed fencing at northern section of greenway route aligning the Cootehill Industrial Estate road**

Whilst it is acknowledged that the post and rail fence proposed adjacent to the Cootehill Industrial Estate carriageway kerb at the northern extent of the greenway route would provide an element of protection/demarcation of this section of the greenway route, there is potential for cyclists and pedestrians to inadvertently directly collide with the proposed southern terminal end of this fence adjacent to the kerbside, with resultant injury to these cyclists/pedestrians.

**Recommendation:**

Revise the type of proposed kerbside fencing/or provide additional measures at this location of the greenway route, to ensure that cyclists and pedestrians cannot collide with fencing. Ensure that retro-reflective material is provided for all faces of the fence including the terminal end of this section of fencing. A Stage 2 of the detailed design of this section of kerbside fencing/measures and associated tie-in should be undertaken prior to construction.

**Appendix C 4.4.7 Problem: Potential for proposed timber barriers and timber gate of northern section of greenway route to adversely affect safe road-user access**

It is unclear from the drawing information provided for this RSA of the positioning of the proposed staggered timber barriers and timber gate at the northern most extent of the greenway route (including for agricultural vehicle access from the laneways onto the greenway route). Inadequate positioning of these timber barriers and timber gate can reduce safe access for pedestrians, cyclists and those using agricultural vehicles, including potential for road-user collision with these proposed timber barriers and timber gate.

**Recommendation:**

Ensure that the design and positioning of these proposed timber barriers and the timber gate does not adversely affect the safety of pedestrians, cyclists or agricultural vehicles utilising this section of the greenway route.

**Appendix C 4.4.8 Problem: Potential for hazardous access on northern section of greenway route**

As it is intended that agricultural vehicles will utilise the parallel northern sections of greenway route it is unclear from the drawing information provided for this RSA of:

- how safe access will be provided for pedestrian/cyclists and agricultural vehicles to pass one another;
- how pedestrians and cyclists will be prohibited from utilising the western agricultural laneway southwards of the defined greenway route;
- how agricultural vehicles will be able to access onto the section of greenway route which utilises the western agricultural laneway due to the presence of proposed post and rail fencing across the northern area of this western agricultural laneway; or,
- whether adequate construction of greenway route will be provided for agricultural vehicle loading.

Inadequate safe access for pedestrians/cyclists to pass agricultural vehicles can increase the risk of collision and injury to pedestrians and cyclists, and inadequate construction of greenway route for vehicle loading can lead to deformation and rutting of the greenway route surface with potential for slip/trip injury for pedestrians and forced dismount collision for cyclists. The temporary/permanent removal of fencing to gain access for agricultural vehicles on the northern area of the western laneway and the lack of boundary definition of the greenway route at the southern section of this western laneway can increase the likelihood of pedestrian/cyclists utilising this agricultural laneway north/south of the greenway route and associated increased risk of injury if they traverse the unsurfaced condition or embankment of these laneways external to the greenway route.

**Recommendation:**

Provide safe access for all road-users of the greenway route which utilises agricultural laneways, including adequate provision of passing places and ensuring that agricultural vehicle access onto/from the greenway route which utilises agricultural laneways is safely and fully accommodated, including ensuring that adequate laneway construction and surfacing is provided (and can be maintained at all times) including at the areas where the agricultural access points transitions with the agricultural laneway sections of the greenway route. Provide adequate boundary definition and protection of the greenway route which utilises agricultural laneways. A Stage 2 RSA of the detailed design of any proposed passing places, the construction of the greenway route which utilises the agricultural laneways, boundary treatment of the greenway route at agricultural laneways, and any proposed facilities to provide access for agricultural vehicles, should be undertaken prior to construction.

**Appendix C 4.4.9 Problem: Potential for collision with utility pole at northern extent of greenway route**

It is unclear from the drawing information provided for this RSA of whether the existing utility pole positioned in the locality of the northern extent of the greenway route will adversely impact on road-user safety including those using the greenway route and the agricultural laneway extending northwards from the greenway route.

**Recommendation:**

Ensure that this utility pole is not located within the greenway route or within agricultural laneway access routes.

**Appendix C 4.4.10 Problem: Potential for collision due to lack of public lighting**

Whilst it is proposed to setback the position of the existing public lighting columns which align the western side of the Cootehill Industrial Estate carriageway adjacent to the proposed greenway route, it is unclear whether adequate public lighting luminance levels will be provided for the proposed section of greenway route: aligning this carriageway including at the terminal point of the route with the R188; at the proposed zebra crossing point; and, at the access barrier intersection between the section of the greenway route aligning the carriageway and the section of greenway route utilising the agricultural laneway. Inadequate public lighting can increase the risk of collision between road-users utilising the proposed greenway route, the zebra crossing facility and accessing at the terminal/transition points of the greenway route.

**Recommendation:**

Ensure that the positioning of public lighting columns does not obstruct safe pedestrian access and ensure that contrast lighting is provided at the proposed zebra crossing facility and that adequate public lighting luminance levels are provided for the greenway route including: in the vicinity of the existing pedestrian access gates at the entrance to Cootehill Industrial Estate; at pedestrian crossing points; at the terminal point of the greenway route at the western radius of the Cootehill Industrial Estate at its junction with the R188; and, at the access barrier intersection between the section of the greenway route aligning the carriageway and the section of greenway route utilising the agricultural laneway.

## Appendix D – Re-audit Feedback Form

**Scheme:** Cootehill Greenway

**Location:** Cootehill, Co. Cavan

**Audit Stage:** Stage 1 RSA Re-audit (limited to route section within/north of Cootehill Industrial Estate)

To be completed by Design Team				To be completed by Audit Team Leader
Paragraph Number in RSA Report	Problem accepted (Yes / No)	Recommended measures(s) accepted (Yes/ No)	Describe alternative measure(s). Give reasons for not accepting recommended measure. (Only to be completed if recommended measure is not accepted)	Alternative measures or reasons accepted by Audit Team (Yes / No)
4.4.1	Yes	Yes		
4.4.2	Yes	Yes		
4.4.3	Yes	Yes		
4.4.4	Yes	Yes		
4.4.5	Yes	Yes		
4.4.6	Yes	Yes		
4.4.7	Yes	Yes		
4.4.8	Yes	Yes		
4.4.9	Yes	Yes		
4.4.10	Yes	Yes		

MALCOLM MAGEE

PRINT Name

Signature:



Date:

22-04-2022

Design Team Representative  
(Michael Fitzpatrick Architects Ltd.)

Malachy Magee

PRINT Name

Signature:



Date:

22-04-2022

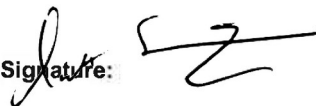
Scheme Client Representative  
(Cootehill Area Development Ltd.)

Road Safety Audit signed off by:

**Matthew Steele**

**BA(Hons) MSc FCILT FRGS MCiHT**  
(Audit Team Leader)

Signature:



Date: 22/04/2022

**Audit sign-off note:** In accordance with current TII guidance, no revised drawings are assessed as part of signing-off this feedback form. The information audited is limited to that contained within Appendix C of this Stage 1 RSA Re-audit.