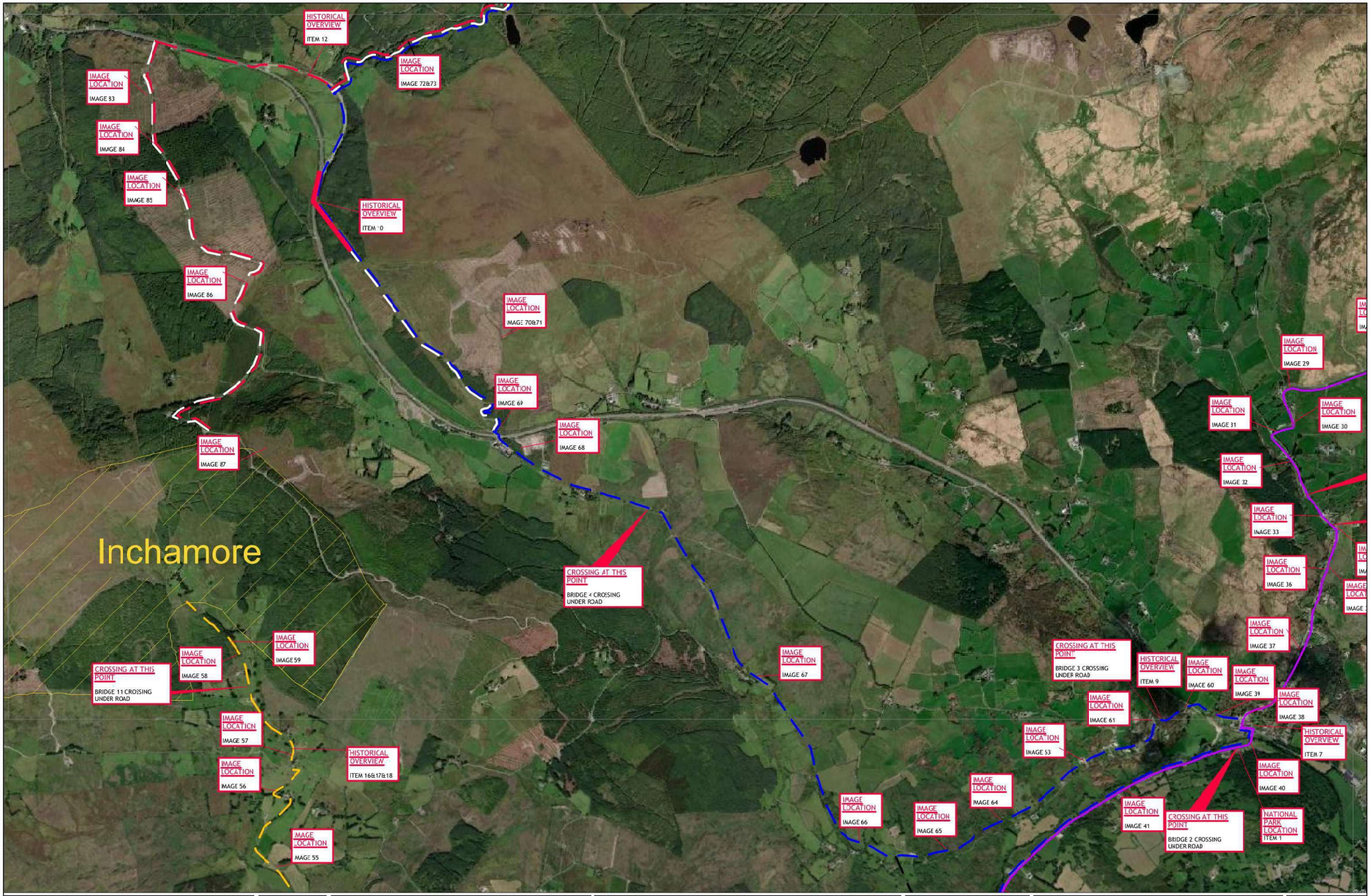

COLOUR DRAWING

Date Drawn:	2021-01-04
Drawn By:	C.Nolan
Date Issued:	2021-01-04
Issued By:	C.Nolan

bsi. BIM Verified Design & Construction Capital/Delivery PAS 1192-2

Rev	Amendment	By	Date
PR1	LAYOUT UPDATED	CN	2021-01-05

Client:

Job: Gortyrahilly, Inchamore and Cumneennabuddoge Windfarms

Title: DLE DILLENGENCE CABLE OVERVIEW SHEET 2/5

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Stage:	PLANNING
Scale @ A1:	AS STATED
Technician Check:	P.J. Mulcahy
Engineer Check:	A. O'CONNELL
Approved:	D. Gallery
Drawing No:	201-164-002
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bmtrada SYSTEM CERTIFICATION ISO 9001 CERTIFICATION

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Client:

Job: Gortyrahilly, Inchamore and Cumneennabuddoge Windfarms

Title: DUE DILLENGENCE CABLE OVERVIEW SHEET 3/5

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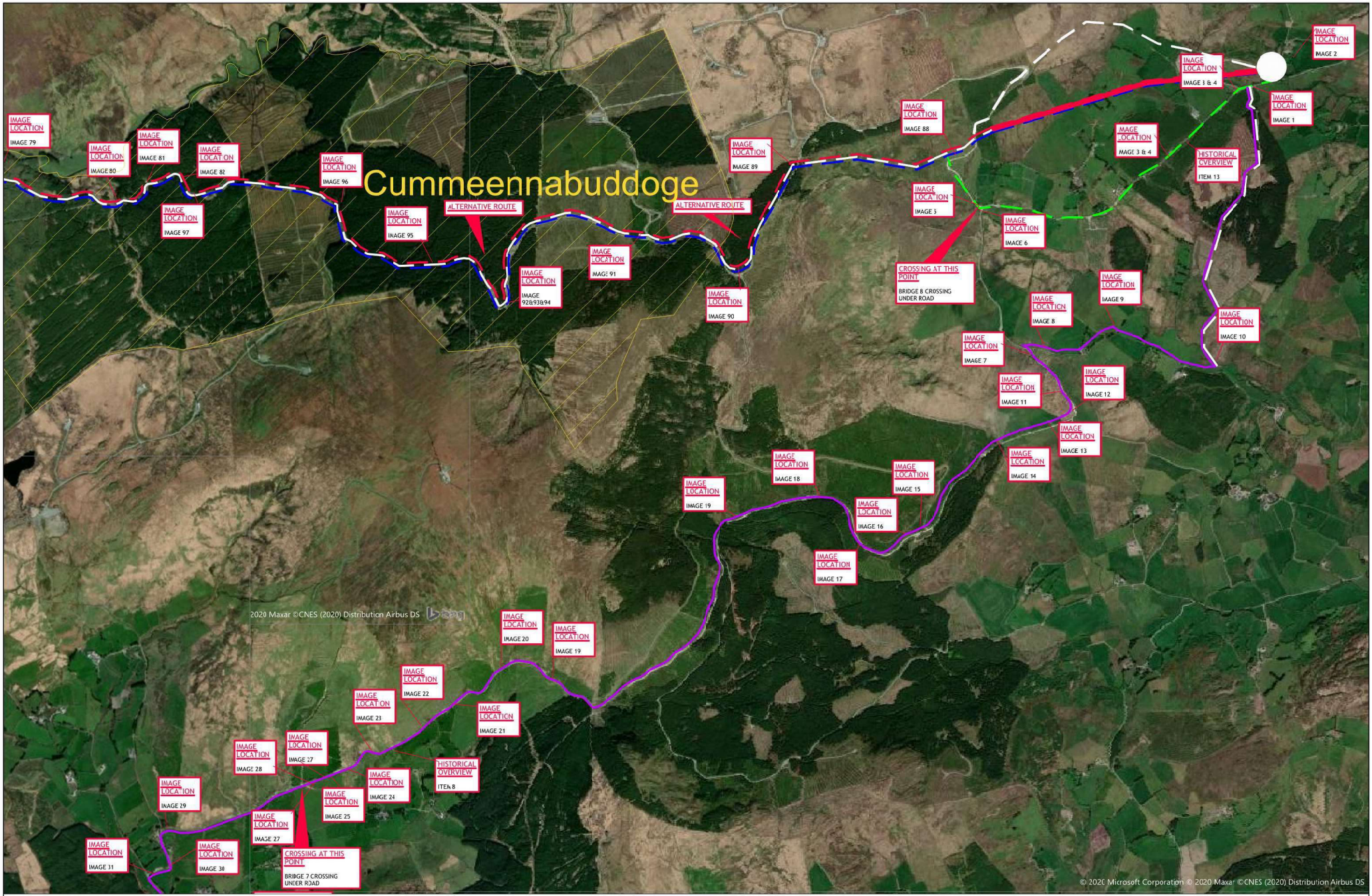

COLOUR DRAWING

Date Drawn:	2021-01-04
Drawn By:	C.Nolan
Date Issued:	2021-01-04
Issued By:	C.Nolan

bsi. BIM Verified Design & Construction Capital/Delivery PAS 1192-2

Rev	Amendment	By	Date
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Client:

Job: Gortyrahilly, Inchamore and Cumneennabuddoge Windfarms

Title: DLE DILLENGENCE CABLE OVERVIEW SHEET 4/5

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Engineer Check:	A. O'CONNELL
Approved:	D. Gallery
Drawing No:	201-164-004
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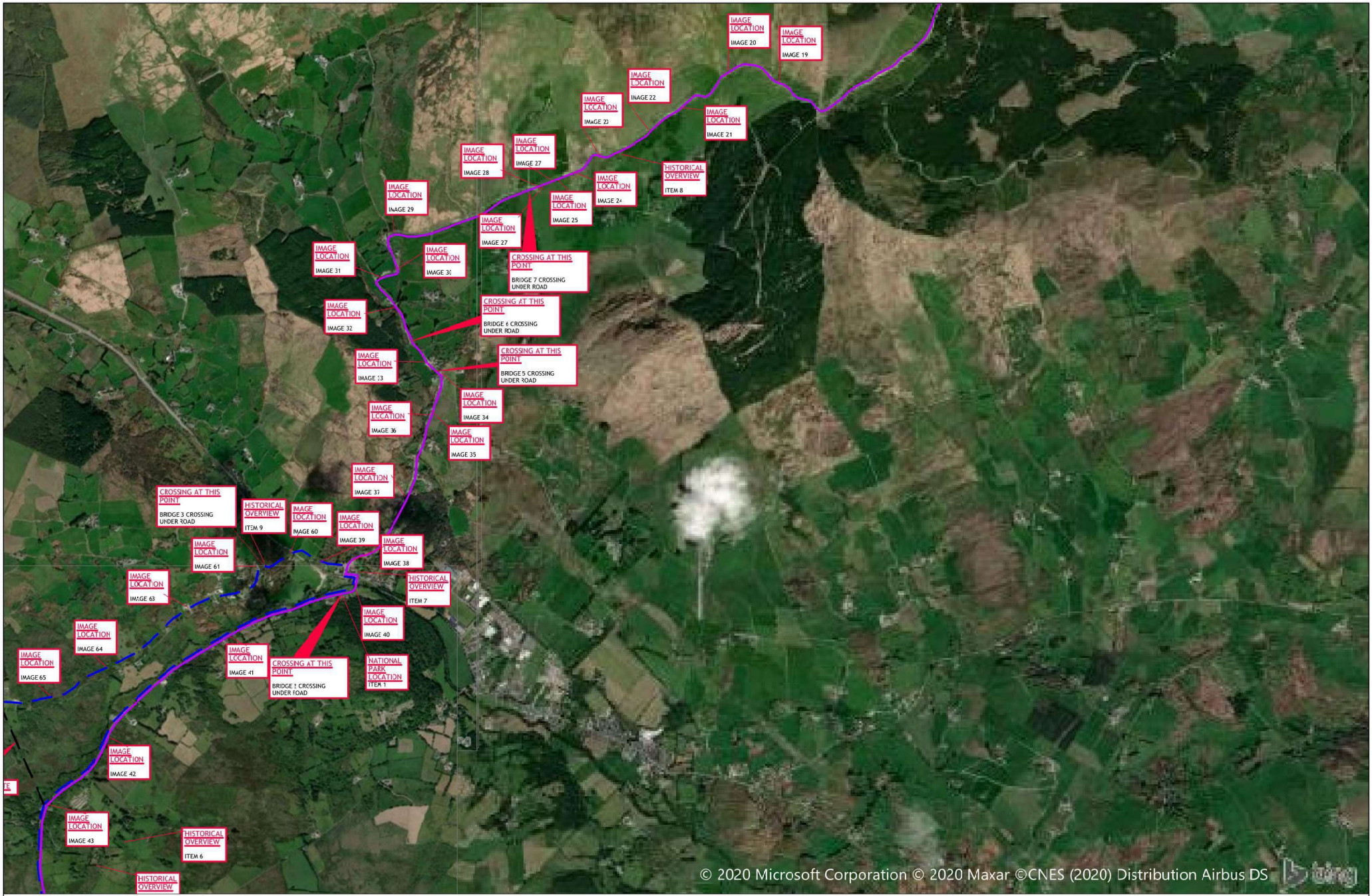

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Drawn By:	C.Nolan
Date Issued:	2021-01-04
Issued By:	C.Nolan

bmtrada ISO 9001 CERTIFICATION bmtrada ISO 14001 CERTIFICATION bmtrada ISO 45001 CERTIFICATION

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Rev	Amendment	By	Date
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Client:

Job: Gortyrahilly, Inchamore and Cumneennabuddoge Windfarms

Title: DLE DILLENGENCE CABLE OVERVIEW SHEET 5/5

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Stage:	PLANNING
Scale @ A1:	AS STATED
Technician Check:	P.... Mulcahy
Engineer Check:	A. O'CONNELL
Approved:	D. Sallery
Drawing No:	201-164-005
Rev:	PR1

Appendix B Route Photographs (Refer to drawings 201-164-001/005 for location)

Image : 1
Coillte forestry Track

Image : 2
Water course crossing beneath the road.

Image : 3
Existing cable running down road

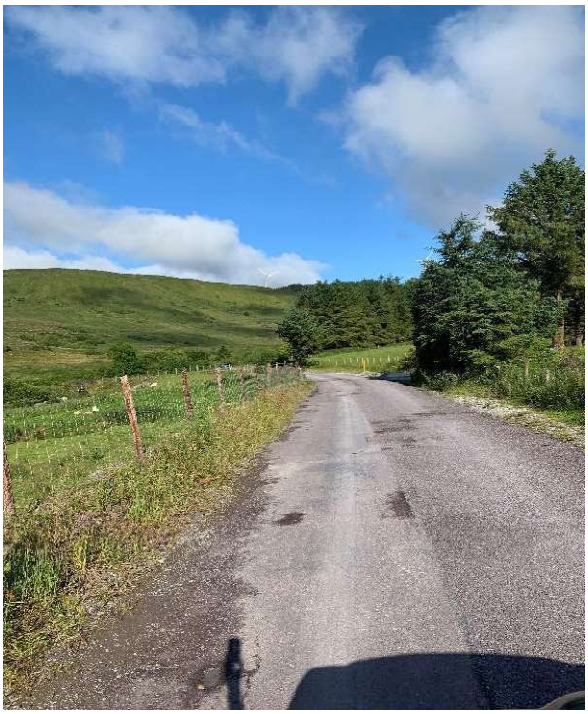


Image : 4
Existing cable crosses road to RHS before entrance to the existing windfarm entrance

Image : 5
Entrance to existing windfarms

Image : 6
Stream crossing under road at this point

Image : 7

Image : 8

Image : 9
Mature trees and unmaintained hedgerows either side of the road

Image : 10
Private land crossing river into Coillte owned property

Image : 11
Possible joint bay location of existing cable running in the road

Image : 12
Joint bay on the road here with a links box and communications chambers visible.

Image : 13
Possible location of joint bay which has had the covers tarred over.

Image : 14
Two twin wall drainage pipes crossing under road. Depth of cover approx. 500mm

Image : 15
Ebs marker post pictured along road edge before another possible joint bay location

Image : 16
Joint bay on the road here with a links box and communications chambers visible.

Image : 17
Joint bay located at this point

Image : 18
Joint bay on the road here with a links box and communications chambers visible.

Image : 19
Storm water pipe crossing under road at this location

Image : 20
Storm water pipe crossing under road at this location

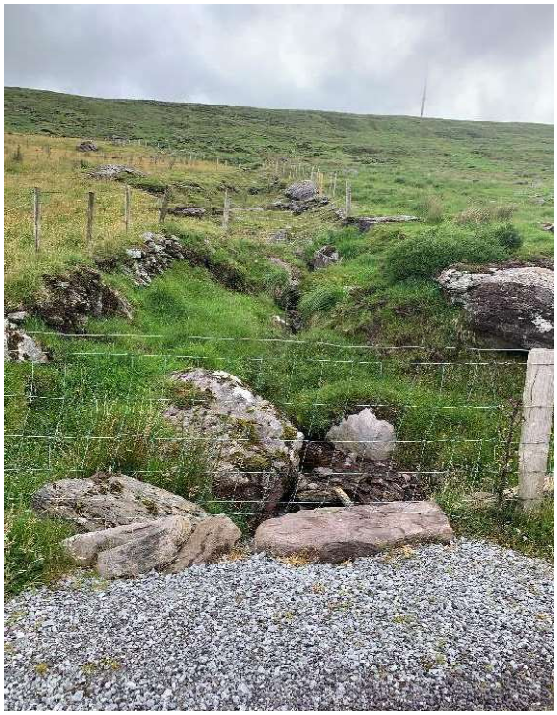


Image : 21
Storm water pipe crossing under road at this location

Image : 22
Joint bay visible at this location

Image : 23
Storm water pipe crossing under road at this location

Image : 24
Storm water pipe crossing under road at this location

Image : 25
Storm water pipe crossing under road at this location

Image : 26

Image : 27
Esb cable maker visible on the RHS of the road edge.

Image : 28
Joint bay on the road here with a links box and communications chambers visible.

Image : 29
Storm water pipe crossing under road at this location

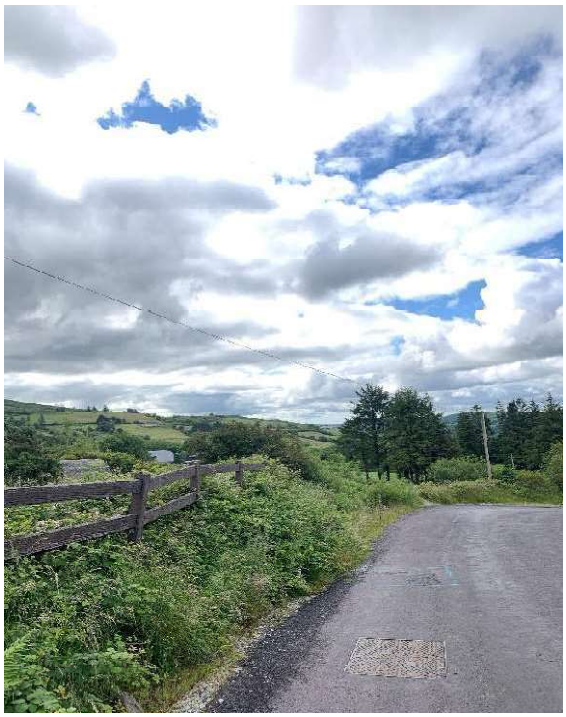


Image : 30
Joint bay on the road here with a links box and communications chambers visible.

Image : 31
Joint bay on the road here with a links box and communications chambers visible

Image : 32
Storm water pipe crossing under road at this location.

Image : 33
Esb cable maker visible on the RHS of the road edge.

Image : 34
Esb cable maker visible on the LHS of the road edge.

Image : 35
Storm pipe crossing under road as this location

Image : 36
Visible trench scar crossing road at this location

Image : 37
Joint bay on the road here with a links box and communications chambers visible.

Image : 38
Visible services in the village of Ballvourney

Image : 39
Visible services in the village of Ballvourney

Image : 40
Bridge crossing over the River Sullane heading towards Gortyrahilly

Image : 41
Joint bay on the road here with a links box and communications chambers visible.

Image : 42
Joint bay on the road here with a links box and communications chambers visible.

Image : 43
Road goes from double carriageway to single as proposed cable route deviates to the right

Image : 44
Mature trees on the RHS of the road here

Image : 45
Mature trees on the RHS of the road at this location

Image : 46
Proposed cable route to travel down the RHS of the road at this junction

Image : 47
Switch back along the purposed cable route

Image : 48
Mature trees along either side of the road

Image : 49
Site Notice for Mast at Gortyrahilly dated March 2019

Image : 50
Approx. location of Gortyrahilly windfarm

Image : 51
Approx. start of Route E

Image : 52
Joint bay on the RHS of the road at this location with a links box and communications chambers visible.

Image : 53
Stone wall to LHS of the road as there is a significant elevation change from the roads surface to the existing ground

Image : 54
Joint bay on the RHS of the road at this location with a links box and communications chambers visible.

Image : 55
Box stone culvert crossing at this location

Image : 56
Existing farm buildings on both sides of the road at this location

Image : 57
Existing farm track that leads to the Inchamore Site

Image : 58
Trees either side of the farmtrack at this location

Image : 59
Approx. location of Inchamore windfarm

Image : 60
Trees either side of the road at this location

Image : 61
Storm pipe crossing road at stone wall parapet

Image : 63
Storm pipe crossing road at stone wall parapet

Image : 64
Topography of the lands for the alternative route

Image : 65
Road has mature hedgerows and trees on either side of the road

Image : 66
Proposed route to follow the RHS at this Y junction

Image : 67
Farm yard in close proximity to the road

Image : 68
Farm house and out buildings in close proximity just before you cross the N22

Image : 69
Entrance to Coillte owned land

Image : 70
Forestry track on Coillte lands

Image : 71
Entrance to Coillte owned land just off N22

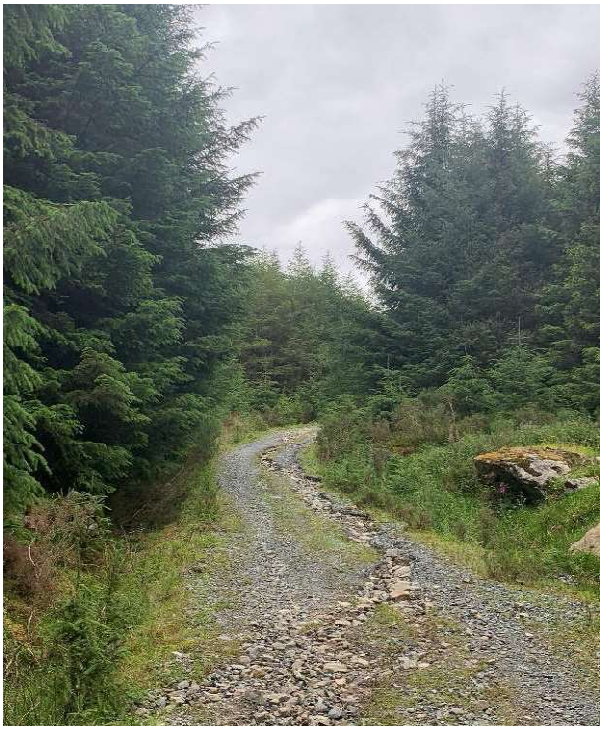


Image : 72
Forestry track on Coillte lands very step and heavily rutted

Image : 73
Forestry track on Coillte lands very step and heavily rutted

Image : 74
Forestry track on Coillte lands

Image : 75
Storm pipe crossing existing forestry track at this location

Image : 76
Box culvert crossing under road

Image : 77
Twin wall UPVC storm pipe crossing under road

Image : 78
Stream crossing track at this location

Image : 79
Twin wall UPVC storm pipe crossing under road

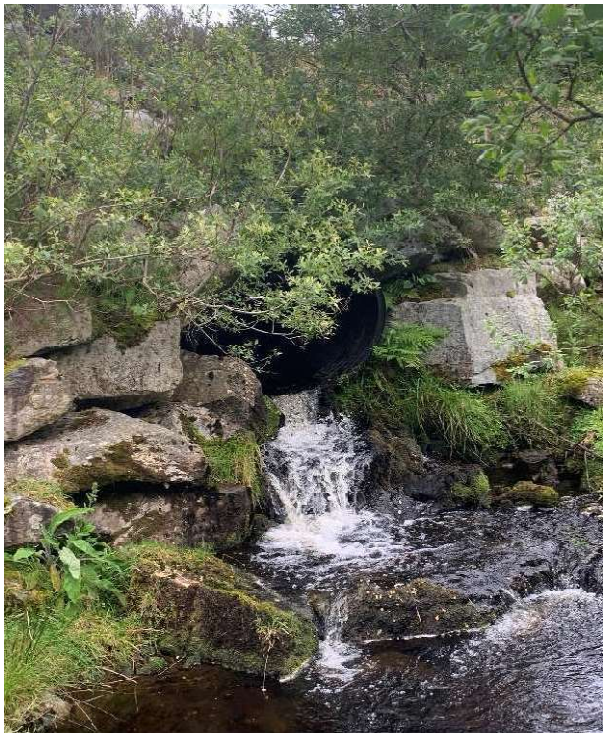


Image : 80
Stream crossing track at this location with a partial collapsed storm pipe

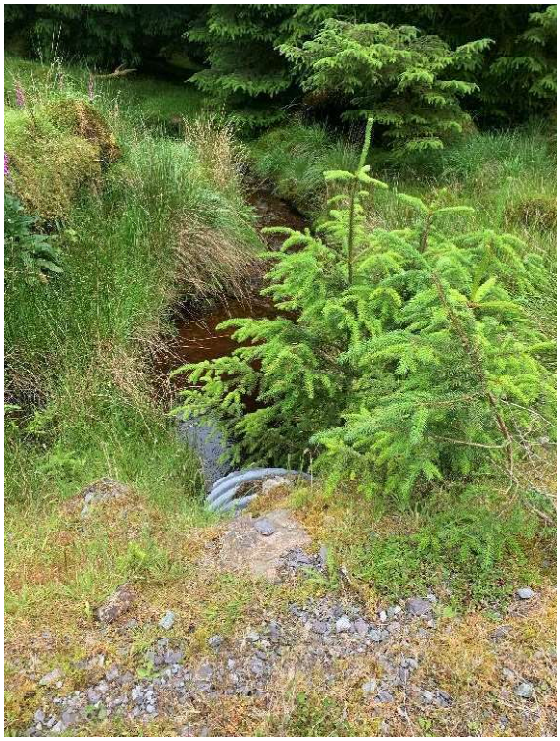


Image : 81
Twin wall UPVC storm pipe crossing under road

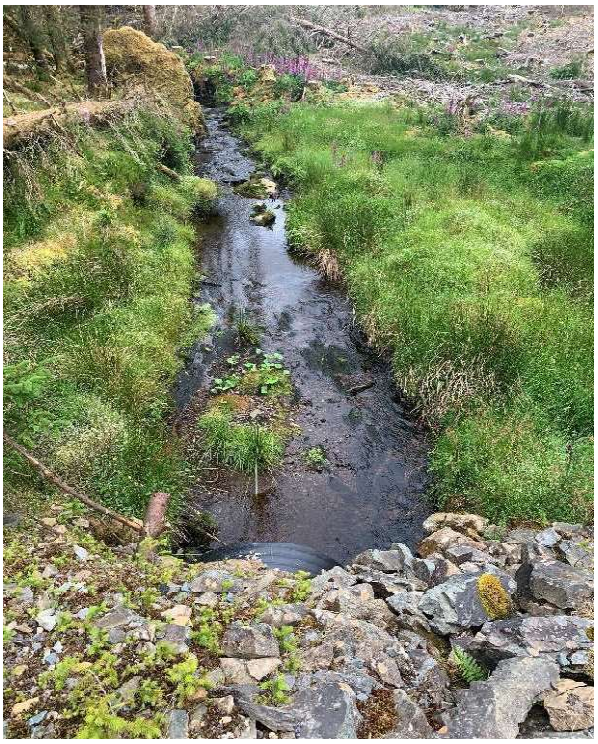


Image : 82
Stream crossing track at this location with a partial collapsed storm pipe

Image : 83
Coillte track at the Inchamore site

Image : 84
Coillte track at the Inchamore site

Image : 85
Coillte track at the Inchamore site

Image : 86
Coillte track at the Inchamore site

Image : 87
Approx. site location of Inchamore

Image : 88

Ballyvouskill substation to the north of this image

Image : 89
Coillte track at the Cummeennabuddoge (CMBG) site

Image : 90
Coillte track at the Cummeennabuddoge (CMBG) site

Image : 91
Coillte track at the Cummeennabuddoge (CMBG) site

Image : 92
Storm crossing at the Cummeennabuddoge (CMBG) site

Image : 93
Storm crossing at the Cummeennabuddoge (CMBG) site

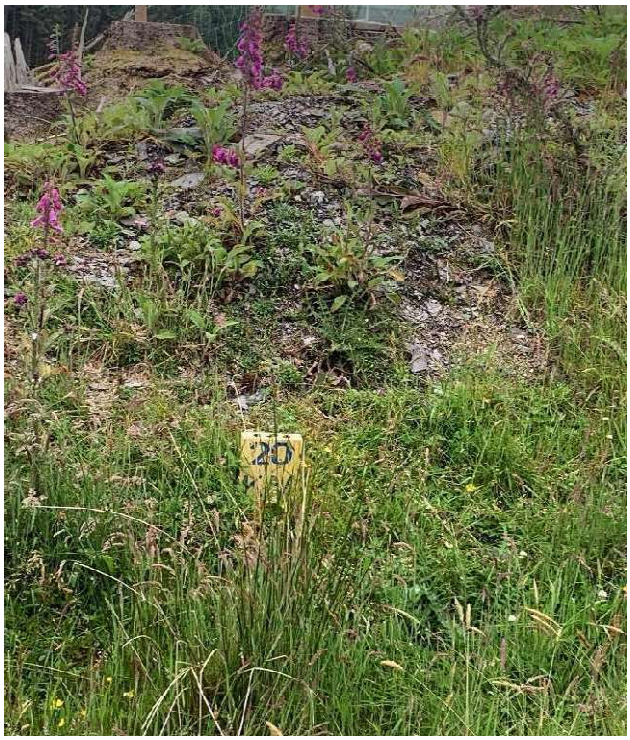


Image : 94
Cable marking post at the Cummeennabuddoge (CMBG) site

Image : 95
Coillte track at the Cummeennabuddoge (CMBG) site

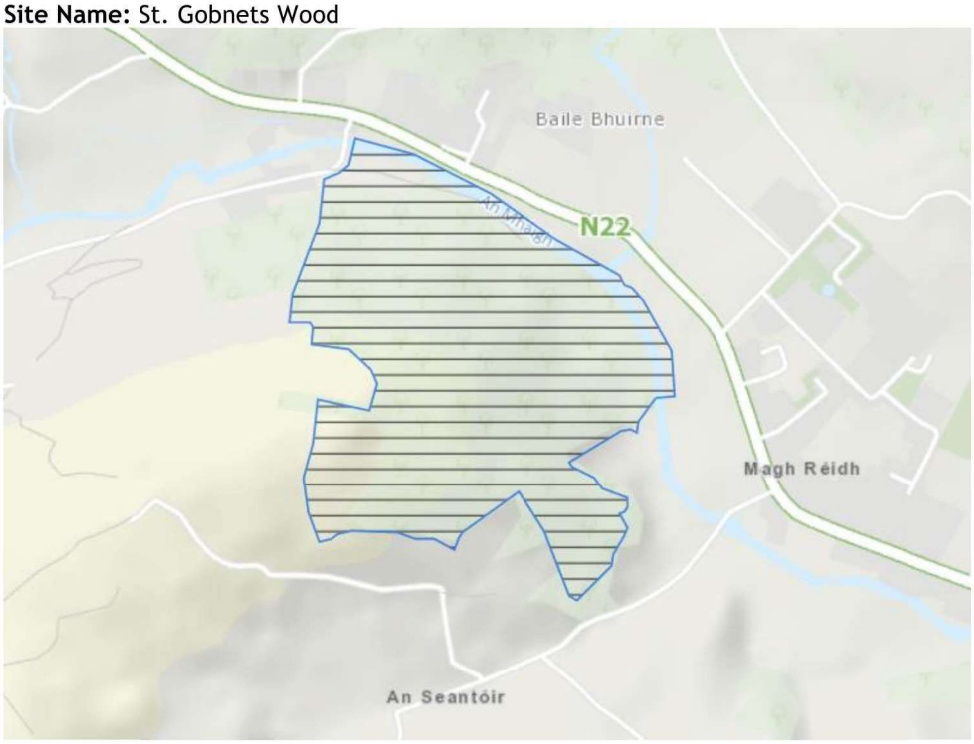
Image : 96
Coillte track at the Cummeennabuddoge (CMBG) site

Image : 97
Coillte track at the Cummeennabuddoge (CMBG) site

Appendix C Information from National Parks and Wildlife Services

12.1 National Parks & Wildlife Services Route Overview

Item 1 - Proposed Natural Heritage Area
Site Name: St. Gobnets Wood



Appendix D Bridge Inspection Reports

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Bridge No. 1 Inspection Report

Coillte CGA & SSE 110kV Grid Route at Gortyrahilly, Inchamore and Cummeennabuddoge (CMBG)

July 2020

Document Control

Document Number: 201-164-BIR-01

Revision	Date	Prepared	Checked	Approved
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Table of Contents

1.0 Introduction

PUNCH Consulting Engineers have been commissioned to undertake a Civil and Structural Due Diligence Report for the proposed cable routes at Gortyrahilly, Inchamore & Cummeennabuddoge (CMBG) , Millstreet, for Coillte Group.

The proposed cable routes include a number of watercourse crossings. These crossings have been visited and assessed by PUNCH as part of the due diligence study.

This report sets out the findings of a visual inspection of Bridge No. 1 (PUNCH project specific reference). The inspection was completed on 30/06/2020 by Declan Walsh and Kevin O'Kelly of PUNCH.

2.0 Location

The existing structure is located south-west of the village of Ballyvourney, Co. Cork just off the N22, refer to Figure 1. The bridge carries a local road over a tributary of the River Sullane.

ITM Grid reference E: 517766, N: 577460.

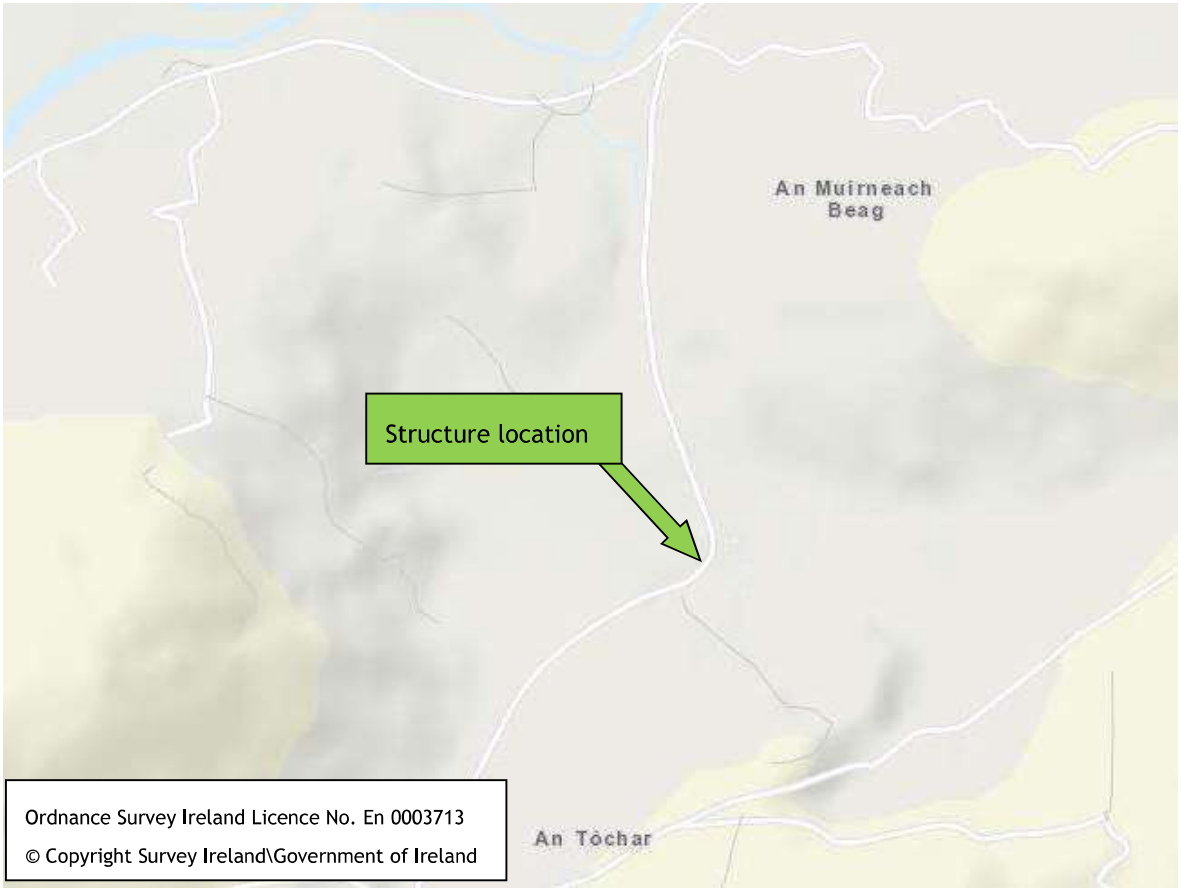

Figure 1 – Bridge Location

3.0 Bridge details

The bridge is a two span stone masonry "clapper" structure with spans of 0.85m (square). The bridge is at a skew of approximately 20 degrees to the road.

The original wing & parapet walls are of stone masonry construction. The upstream (east) parapet has been reconstructed in 140mm solid concrete blockwork.

4.0 Principal Inspection - Eirspan

The inspection carried out is based on the Principal Inspection proforma of the TII's Eirspan bridge management system. The Principal Inspection system is a systematic visual-only check of all elements of the bridge structure. A total of fourteen components of the bridge are considered as part of the inspection with each component assigned a rating number depending on its condition. The bridge is then assigned an overall rating number.

The condition rating is based on the table below. There is no invasive investigation carried out as part of the inspection.

Rating	Comment on damage, repairs etc.
0	No or insignificant damage.
1	Minor damage but no need of repair.
2	Some damage, repair needed when convenient. Component is still functioning as originally designed. Observe the condition development.
3	Significant damage, repair needed very soon. i.e. within next financial year.
4	Damage is critical and it is necessary to execute repair works at once, or to carry out a detailed inspection to determine whether any rehabilitation works are required.
5	The component has failed or is in danger of total failure, possibly affecting the safety of traffic. It is necessary to implement emergency temporary repair work immediately or rehabilitation work without delay after the introduction of load limitation measures.

4.1 Bridge Surface

The existing bridge surface consists of tar & chip wearing course with a grassed median and is in good order generally. Some minor surface wear and abrasion is evident.

Eirspan Rating: 1

4.2 Expansion Joints

There are no expansion joints on the bridge.

Eirspan Rating: N/A

4.3 Footway \ Median \ Verges

There are no footpaths provided on the bridge, with 600mm grass verges existing on either side of the road surface. The grassed verges encourage water ingress to the bridge structure.

Eirspan Rating: 2

4.4 Parapet \ Safety Barrier

There are no safety barriers in the vicinity of the bridge structure.

The upstream parapet is constructed in 140mm solid concrete blockwork and is 900mm high and 140mm thick.

The downstream parapet is of stone masonry construction and is 800mm high and 500mm thick.

The downstream parapet is covered in vegetation. Local removal of the vegetation suggests there are open joints throughout. The upstream parapet is in good condition.

Eirspan Rating: 2

4.5 Embankment \ Revetments

There are no embankments or revetments associated with this structure.

Eirspan Rating: N/A

4.6 Wingwalls \ Spandrel Walls \ Retaining Walls

Wing walls are of dry stone construction. Some missing stones were noted.

There are stone masonry spandrels on both elevations. The south end of the west spandrel has collapsed locally over a damaged section of the bridge deck.

Eirspan Rating: 3

4.7 Abutments

Stone masonry abutments are generally in good condition. Some open joints are evident.

Eirspan Rating: 2

4.8 Piers

The pier is generally in good condition through the bridge. Some open joints are evident. Some stones are missing from the east end of the pier.

Eirspan Rating: 2

4.9 Bearings

There are no bearings on this bridge

Eirspan Rating: N/A

4.10 Deck \ Slab\ Arch

The deck of the bridge consists of a composite 100mm deep solid stone masonry slab which spans abutment to pier and is simply supported.

The outermost slab on the west end of the south span has collapsed underneath the parapet.

A single slab has broken and dropped under the centre of the road in the north span.

No damage is evident at the surface above either of these locations.

Eirspan Rating: 4

4.11 Riverbed

A depth of approximately 950mm from the soffit of the deck to the river bed was recorded. The bed is gravelly generally with some larger stones through the bridge. No significant defects were noted.

Eirspan Rating: 1

4.12 Other Elements & Structure in General

A portion of the south span has been repaired with a 450mm diameter concrete pipe for a length of 1850mm toward the east side of the span. The pipe has been installed at bed level and fully surrounded with stone / rubble.

Significant damage is evident in the deck in both spans and in the eastern spandrel wall. Repair works should be executed without delay.

Maintenance repairs involving vegetation removal and general repointing of masonry elements should be completed.

Consideration should be given to sealing the bridge surface.

Eirspan Rating: 4

APPENDIX A

STRUCTURE PHOTOGRAPHS

General view of bridge surface

Stone masonry wall on the D/S side of the bridge in poor condition and very overgrown with vegetation. Masonry block wall on the U/S side of the bridge as seen in previous image,

Soffit of bridge deck/box stone culvert. Flag stone is damaged and has collapsed as seen viewed from U/S (north span).

Soffit of bridge deck – viewed from D/S. Collapsed Flagstone (north span)

Repair to existing culvert with a 450mm concrete drainage pipe (south span).

View of south span from the west

General view of the east elevation

Collapsed stones at the west end of the south span

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Bridge No. 2 Inspection Report

Coillte CGA & SSE 110kV Grid Route at Gortyrahilly, Inchamore and Cummeennabuddoge (CMBG)

July 2020

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Table of Contents

1.0 Introduction

PUNCH Consulting Engineers have been commissioned to undertake a Civil and Structural Due Diligence Report for the proposed cable routes at Gortyrahilly, Inchamore & Cummeennabuddoge (CMBG) , Millstreet, for Coillte Group.

The proposed cable routes include a number of watercourse crossings. These crossings have been visited and assessed by PUNCH as part of the due diligence study.

This report sets out the findings of a visual inspection of Bridge No. 2 (PUNCH project specific reference). The inspection was completed on 30/06/2020 by Declan Walsh and Kevin O'Kelly of PUNCH.

2.0 Location

The existing structure is located south-west of the village of Ballyvourney, Co. Cork just off the N22, refer to Figure.1. The bridge carries a local road over a tributary of the River Sullane.

ITM Grid reference E: 520184, N: 577015.

Figure 1 – Bridge Location

3.0 Bridge details

The structure is a three span stone masonry arch bridge with three equal spans of 6.0m. The wing & parapet walls are stone masonry construction.

The bridge carries a local road, connecting to the N22, over the River Sullane.

The overall length of the bridge is 34m.

4.0 Principal Inspection - Eirspan

The inspection carried out is based on the Principal Inspection proforma of the TII's Eirspan bridge management system. The Principal Inspection system is a systematic visual-only check of all elements of the bridge structure. A total of fourteen components of the bridge are considered as part of the inspection with each component assigned a rating number depending on its condition. The bridge is then assigned an overall rating number.

The condition rating is based on the table below. There is no invasive investigation carried out as part of the inspection.

Rating	Comment on damage, repairs etc.
0	No or insignificant damage.
1	Minor damage but no need of repair.
2	Some damage, repair needed when convenient. Component is still functioning as originally designed. Observe the condition development.
3	Significant damage, repair needed very soon. i.e. within next financial year.
4	Damage is critical and it is necessary to execute repair works at once, or to carry out a detailed inspection to determine whether any rehabilitation works are required.
5	The component has failed or is in danger of total failure, possibly affecting the safety of traffic. It is necessary to implement emergency temporary repair work immediately or rehabilitation work without delay after the introduction of load limitation measures.

4.1 Bridge Surface

The existing bridge surface consists of a dense bitumen macadam wearing course. Sirface wear and abrasion is evident throughout. Some rutting is developing towards the edges of the road surface on the approaches.

Eirspan Rating: 2

4.2 Expansion Joints

There are no expansion joints on the bridge.

Eirspan Rating: N/A

4.3 Footway \ Median\ Verges

There are no footways or median. The surfacing extends to the stone masonry parapets and seals the verges. Some minor vegetation is present.

Eirspan Rating: 1

4.4 Parapet \ Safety Barrier

There are no safety barriers in the vicinity of the bridge structure.

The existing parapets are constructed of stone masonry and are between 1100mm and 1200mm high above the road surface. Both parapets are approximately 620mm thick.

The condition of the parapets is generally good. Minor vegetation is present and localised loss of mortar was noted.

Eirspan Rating: 1

4.5 Embankment \ Revetments

There are no embankments or revetments associated with this structure.

Eirspan Rating: N/A

4.6 Wingwalls \ Spandrel Walls \ Retaining Walls

There were no obvious signs of bulging, loss of stones or significant cracking to suggest there is a problem with the wing walls to the abutments.

Vegetation is present on the spandrel walls on both faces. There is a watermain across the south elevation.

Eirspan Rating: 0

4.7 Abutments

The abutments are founded on bedrock. The face of both abutments has been repaired with gunite. Some minor vegetation growth is present. Minor cracks are noted in the gunite, however, no bulging or movement of the abutments is evident. The abutment footings have been protected with grout bags.

Eirspan Rating: 2

4.8 Piers

The piers are founded on bedrock. The pier faces have been repaired with gunite and the footings have been protected with grout bags. Some washout of the grout bags has occurred, however, no washout or undermining of the piers is evident.

Eirspan Rating: 2

4.9 Bearings

There are no bearings on this bridge

Eirspan Rating: N/A

4.10 Deck \ Slab \ Arch

The arch barrels have been repaired with gunite. Minor defects such as water ingress, calcite staining, and leaching are noted. Some of the gunite has deteriorated in the most western span and the original stones are exposed.

Eirspan Rating: 2

4.11 Riverbed

The riverbed is formed through bedrock with some silt and gravel deposits. Floating debris has gathered at the upstream ends of both piers and is contributing to locally turbulent flows through the bridge.

Eirspan Rating: 2

4.12 Other elements & Structure in General

Overall the structure is in good condition with few defects found. Maintenance repairs to the masonry elements and historical protection works to the pier and abutment footings are required. Debris should be removed from the riverbed.

Eirspan Rating: 2

APPENDIX A

STRUCTURE PHOTOGRAPHS

Road surface showing wear, abrasion and some rutting

Road surface showing wear, abrasion and some rutting

General view of the eastern span, looking upstream

General view of the middle span, looking downstream

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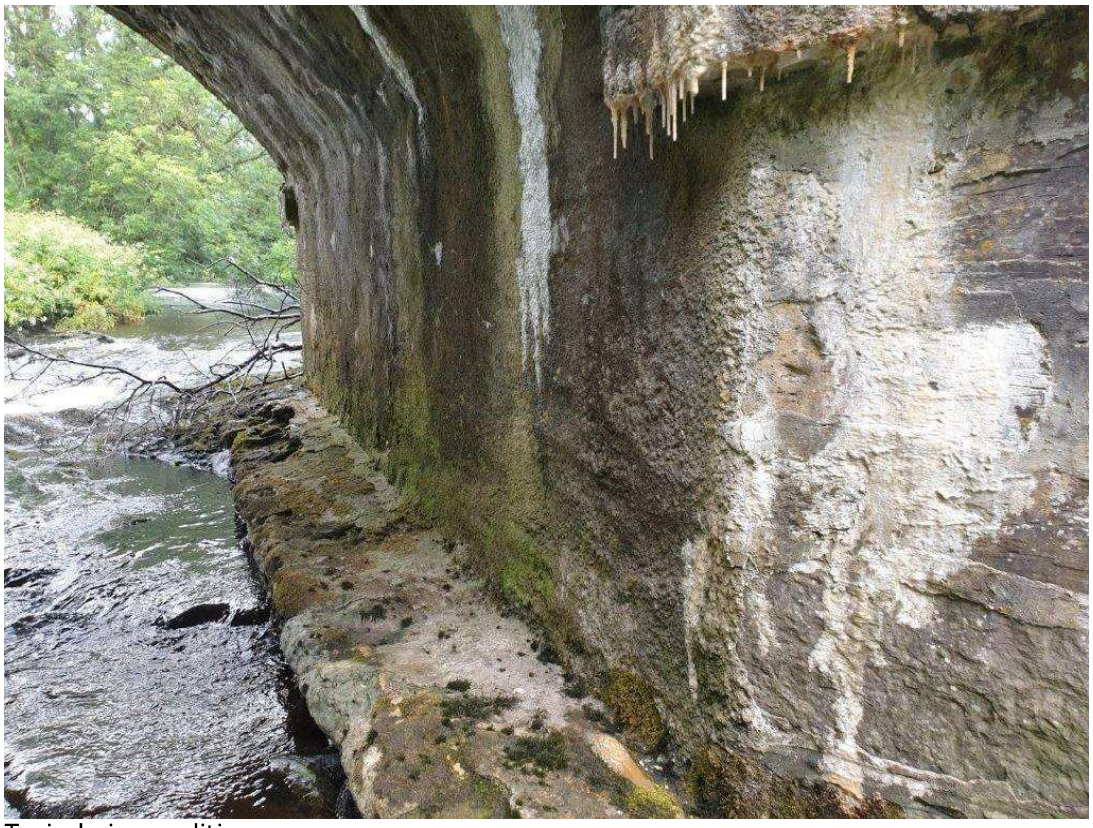
Western abutment



Typical pier condition

General view of the south elevation

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Bridge No. 3 Inspection Report

Coillte CGA & SSE 110kV Grid Route at Gortyrahilly, Inchamore and Cummeennabuddoge (CMBG)

July 2020

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Revision	Date	Prepared	Checked	Approved
R0 (1st issue)	July 2020	K. O'Kelly	D. Walsh	A. O'Connell

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1.0 Introduction

PUNCH Consulting Engineers have been commissioned to undertake a Civil and Structural Due Diligence Report for the proposed cable routes at Gortyrahilly, Inchamore & Cummeennabuddoge (CMBG) , Millstreet, for Coillte Group.

The proposed cable routes include a number of watercourse crossings. These crossings have been visited and assessed by PUNCH as part of the due diligence study.

This report sets out the findings of a visual inspection of Bridge No. 3 (PUNCH project specific reference). The inspection was completed on 30/06/2020 by Declan Walsh and Kevin O'Kelly of PUNCH.

2.0 Location

The existing structure is located south-west of the village of Ballyvourney, Co. Cork just off the N22, refer to Figure.1. The bridge carries a local road over a tributary of the River Sullane.

ITM Grid reference E: 518977, N: 577707.

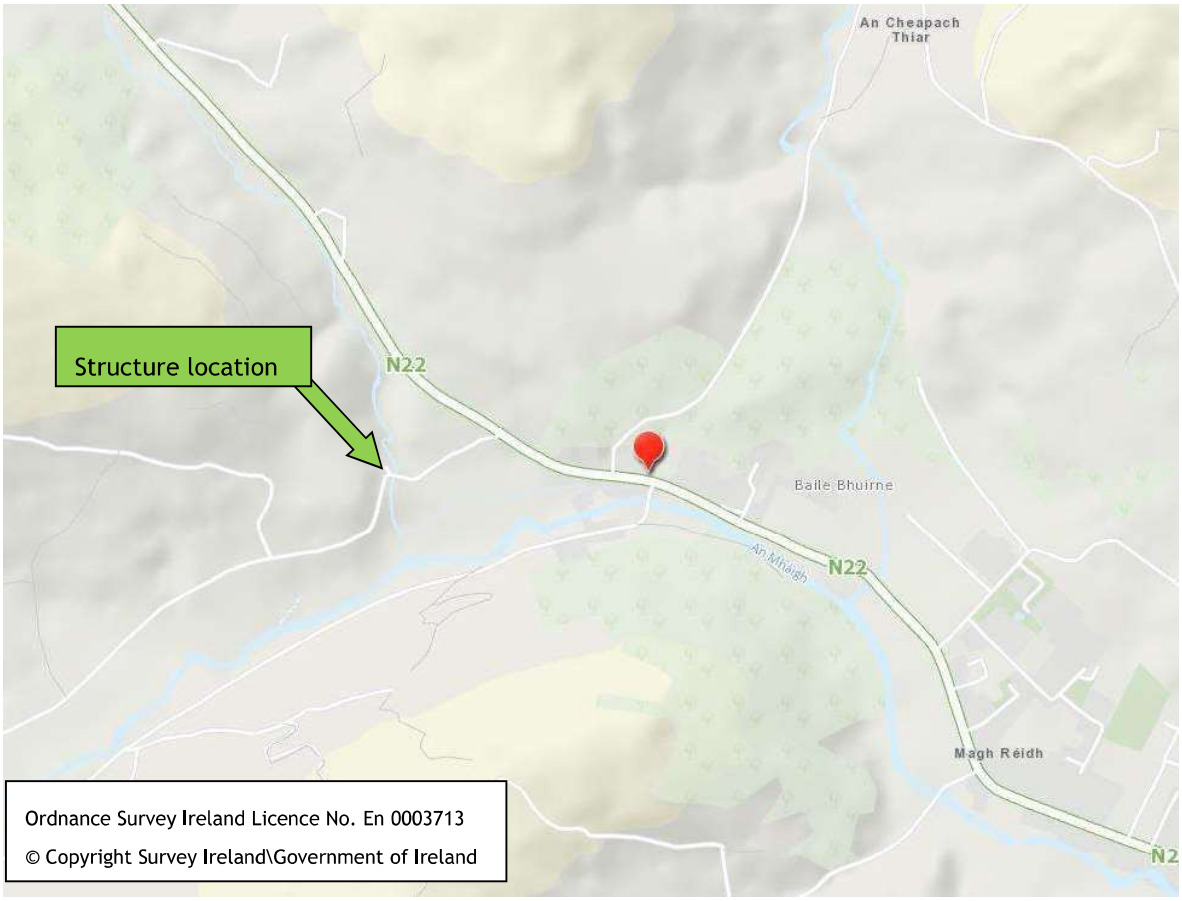

Figure 1 – Bridge Location

3.0 Bridge details

The bridge is a single span concrete and stone masonry arch structure with a span of 5.48m. The parapet walls are in concrete construction and the wing walls are both concrete and stone masonry construction.

The bridge carries a local road, connecting to the N22, over the River Sullane.

The overall length of the bridge is 11.0m.

4.0 Principal Inspection - Eirspan

The inspection carried out is based on the Principal Inspection proforma of the TII's Eirspan bridge management system. The Principal Inspection system is a systematic visual-only check of all elements of the bridge structure. A total of fourteen components of the bridge are considered as part of the inspection with each component assigned a rating number depending on its condition. The bridge is then assigned an overall rating number.

The condition rating is based on the table below. There is no invasive investigation carried out as part of the inspection.

Rating	Comment on damage, repairs etc.
0	No or insignificant damage.
1	Minor damage but no need of repair.
2	Some damage, repair needed when convenient. Component is still functioning as originally designed. Observe the condition development.
3	Significant damage, repair needed very soon. i.e. within next financial year.
4	Damage is critical and it is necessary to execute repair works at once, or to carry out a detailed inspection to determine whether any rehabilitation works are required.
5	The component has failed or is in danger of total failure, possibly affecting the safety of traffic. It is necessary to implement emergency temporary repair work immediately or rehabilitation work without delay after the introduction of load limitation measures.

4.1 Bridge surface

The existing bridge surface consists of dense bitumen macadam wearing course and is in good order generally. Some minor potholing, wear and abrasion are evident.

Eirspan Rating: 2

4.2 Expansion Joints

There are no expansion joints on the bridge.

Eirspan Rating: N/A

4.3 Footway \ Median \ Verges

There are no footpaths provided on the bridge. Soft verges on both sides of the carriageway are 600mm to 700mm wide with minor vegetation present. The bridge is therefore not sealed as the bitumen surfacing does not extend to the stone masonry parapets.

Eirspan Rating: 2

4.4 Parapet \ Safety Barrier

There are no safety barriers in the vicinity of the bridge structure.

The existing parapets are constructed in concrete and are between 800mm and 900mm high above the road surface. Both parapets are approximately 400mm thick.

Light vegetation is present on both parapets.

A large portion of the south parapet has partially collapsed and is unsafe.

Eirspan Rating: 4

4.5 Embankment \ Revetments

There are no embankments or revetments associated with this structure.

Eirspan Rating: N/A

4.6 Wingwalls \ Spandrel Walls \ Retaining Walls

There were no obvious signs of bulging, loss of stones or significant cracking to suggest there is a problem with the wing walls to the abutments.

The damage to the west end of the south parapet extends to the west spandrel on the south elevation. The spandrel walls are otherwise in good condition.

Eirspan Rating: 4

4.7 Abutments

The abutments appear to be stone masonry construction with some shuttered concrete repairs. No obvious problems were noted on either of the abutments.

Eirspan Rating: 1

4.8 Piers

There are no piers on the bridge.

Eirspan Rating: N/A

4.9 Bearings

There are no bearings on this bridge

Eirspan Rating: N/A

4.10 Deck \ Slab \ Arch

The arch appears to be in concrete construction. No details of the construction were available, but there are no obvious defects and the arch barrel appears to be in good condition overall. Some water ingress has occurred and the concrete is voided in places exposing rounded aggregate, no reinforcement is evident.

Eirspan Rating: 1

4.11 Riverbed

The watercourse flows on a gravel bed with some larger boulders. No significant damage was noted.

Eirspan Rating: 1

4.12 Other elements & Structure in General

The south parapet and spandrel wall require taking down and reconstruction where a partial collapse has occurred.

The structure is otherwise in good condition.

Eirspan Rating: 4

APPENDIX A

STRUCTURE PHOTOGRAPHS

General view of the bridge surface

South parapet showing partial collapse extending from the centre of the bridge

General view of the north verge and parapet

General view of the north elevation, looking downstream

General view of the arch soffit

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General view of the south elevation, note damage to parapet and west spandrel

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Bridge No. 4 Inspection Report

Coillte CGA & SSE 110kV Grid Route at Gortyrahilly, Inchamore and Cummeennabuddoge (CMBG)

July 2020

Document Control

Document Number: 201-164-BIR-04

Revision	Date	Prepared	Checked	Approved
R0 (1st issue)	July 2020	K O Kelly	D Walsh	A O'Connell

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1.0 Introduction

PUNCH Consulting Engineers have been commissioned to undertake a Civil and Structural Due Diligence Report for the proposed cable routes at Gortyrahilly, Inchamore & Cummeennabuddoge (CMBG) , Millstreet, for Coillte Group.

The proposed cable routes include a number of watercourse crossings. These crossings have been visited and assessed by PUNCH as part of the due diligence study.

This report sets out the findings of a visual inspection of Bridge No. 4 (PUNCH project specific reference). The inspection was completed on 30/06/2020 by Declan Walsh and Kevin O'Kelly of PUNCH.

2.0 Location

The existing structure is located west of the village of Ballyvourney, Co. Cork just off the N22, refer to Figure.1. The bridge carries a local road over a tributary of the River Aughboy.

ITM Grid reference E:516026, N: 578961.

Figure 1 – Bridge Location

3.0 Bridge details

The bridge is a single span concrete deck structure with a span of 3.64m. The parapet walls are concrete and concrete blockwork construction. Wing walls are concrete construction.

The bridge carries a local road, connecting to the N22, over the River Aughboy.

The overall length of the bridge is 5.0m.

4.0 Principal Inspection - Eirspan

The inspection carried out is based on the Principal Inspection proforma of the TII's Eirspan bridge management system. The Principal Inspection system is a systematic visual-only check of all elements of the bridge structure. A total of fourteen components of the bridge are considered as part of the inspection with each component assigned a rating number depending on its condition. The bridge is then assigned an overall rating number.

The condition rating is based on the table below. There is no invasive investigation carried out as part of the inspection.

Rating	Comment on damage, repairs etc.
0	No or insignificant damage.
1	Minor damage but no need of repair.
2	Some damage, repair needed when convenient. Component is still functioning as originally designed. Observe the condition development.
3	Significant damage, repair needed very soon. i.e. within next financial year.
4	Damage is critical and it is necessary to execute repair works at once, or to carry out a detailed inspection to determine whether any rehabilitation works are required.
5	The component has failed or is in danger of total failure, possibly affecting the safety of traffic. It is necessary to implement emergency temporary repair work immediately or rehabilitation work without delay after the introduction of load limitation measures.

4.1 Bridge surface

The existing bridge surface consists of tar & chip wearing course and is generally in good condition. Some wear and abrasion is evident.

Eirspan Rating: 2

4.2 Expansion Joints

There are no expansion joints on the bridge.

Eirspan Rating: N/A

4.3 Footway \ Median \ Verges

There are no footways at the bridge. There are grassed verges on both sides of the bridge and a grassed median in the centre of the carriageway.

Eirspan Rating: 1

4.4 Parapet \ Safety Barrier

There are no safety barriers in the vicinity of the bridge structure.

The east parapet is concrete construction and is 800mm high and 300mm thick. The west parapet has been reconstructed in solid concrete blockwork and is 800mm high and 225mm thick.

Both parapets are in good condition generally. Historical damage possibly due to vehicle impact is evident at the south end of the east parapet, however, displacement of the parapet has not occurred.

Eirspan Rating: 1

4.5 Embankment \ Revetments

There are no embankments or revetments associated with this structure.

Eirspan Rating: N/A

4.6 Wingwalls \ Spandrel Walls \ Retaining Walls

The wing walls are in good condition. There are no spandrel or retaining walls.

Eirspan Rating: 1

4.7 Abutments

The abutments are concrete construction. No obvious problems were noted on either of the abutments.

Eirspan Rating: 1

4.8 Piers

There are no piers on the bridge.

Eirspan Rating: N/A

4.9 Bearings

There are no bearings on this bridge

Eirspan Rating: N/A

4.10 Deck\ slab\ arch

The deck of the bridge consists of a composite 300mm deep concrete slab.

No information to the exact construction detail of the was available and no structural steel or reinforcing steel elements were evident. Some water ingress and calcite staining is evident generally along with some local scaling of the soffit surface. No significant structural defects were noted.

Eirspan Rating: 1

4.11 Riverbed

A depth of approximately 1550mm from the soffit to the river bed was recorded. The bed is paved with rubble stone through the bridge and is in good condition.

Eirspan Rating: 1

4.12 Other elements & Structure in General

Overall the structure is in good condition with few defects noted. General maintenance is required.

Eirspan Rating: 2

APPENDIX A

STRUCTURE PHOTOGRAPHS

General view of the bridge surface looking south

General view of bridge surface and west parapet

General view of bridge surface and east parapet

General view of east elevation, looking downstream

General view of the soffit of the bridge deck showing typical condition

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Local scaling of the soffit of the bridge deck

General view of the west elevation

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Bridge No. 5 Inspection Report

Coillte CGA & SSE 110kV Grid Route at Gortyrahilly, Inchamore and Cummeennabuddoge (CMBG)

July 2020

Document Control

Document Number: 201-164-BIR-05

Revision	Date	Prepared	Checked	Approved
R0 (1st issue)	July 2020	K. O'Kelly	D. Walsh	A. O'Connell

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1.0 Introduction

PUNCH Consulting Engineers have been commissioned to undertake a Civil and Structural Due Diligence Report for the proposed cable routes at Gortyrahilly, Inchamore & Cummeennabuddoge (CMBG) , Millstreet, for Coillte Group.

The proposed cable routes include a number of watercourse crossings. These crossings have been visited and assessed by PUNCH as part of the due diligence study.

This report sets out the findings of a visual inspection of Bridge No. 5 (PUNCH project specific reference). The inspection was completed on 30/06/2020 by Declan Walsh and Kevin O'Kelly of PUNCH.

2.0 Location

The existing structure is located North of the village of Ballyvourney, Co. Cork just off the N22, refer to Figure.1. The bridge carries a local road over a tributary of the River Bohill.

ITM Grid reference E: 519969, N: 583215.

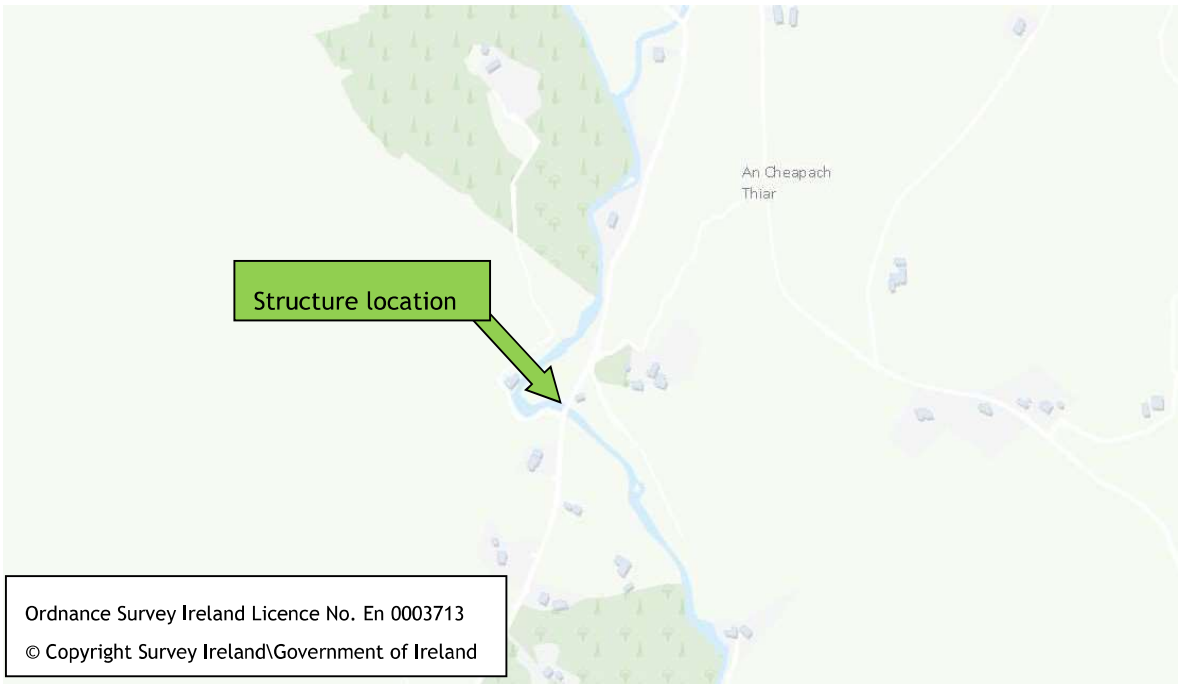

Figure 1 – Bridge Location

3.0 Bridge details

The bridge is a single span concrete and masonry arch bridge with a span of 6.0m. The parapet walls are stone masonry construction.

The bridge carries a local road, connecting to the N22, over the River Bohill.

The overall length of the bridge is 12.70m.

4.0 Principal Inspection - Eirspan

The inspection carried out is based on the Principal Inspection proforma of the TII's Eirspan bridge management system. The Principal Inspection system is a systematic visual-only check of all elements of the bridge structure. A total of fourteen components of the bridge are considered as part of the inspection with each component assigned a rating number depending on its condition. The bridge is then assigned an overall rating number.

The condition rating is based on the table below. There is no invasive investigation carried out as part of the inspection.

Rating	Comment on damage, repairs etc.
0	No or insignificant damage.
1	Minor damage but no need of repair.
2	Some damage, repair needed when convenient. Component is still functioning as originally designed. Observe the condition development.
3	Significant damage, repair needed very soon. i.e. within next financial year.
4	Damage is critical and it is necessary to execute repair works at once, or to carry out a detailed inspection to determine whether any rehabilitation works are required.
5	The component has failed or is in danger of total failure, possibly affecting the safety of traffic. It is necessary to implement emergency temporary repair work immediately or rehabilitation work without delay after the introduction of load limitation measures.

4.1 Bridge surface

The existing bridge surface consists of tar & chip wearing course and is in good order generally.

Eirspan Rating: 1

4.2 Expansion Joints

There are no expansion joints on the bridge.

Eirspan Rating: N/A

4.3 Footway \ Median \ Verges

There are no footpaths provided on the bridge. There are 500mm - 600mm wide soft verges on both sides of the carriageway.

Eirspan Rating: 1

4.4 Parapet \ Safety Barrier

There are no safety barriers in the vicinity of the bridge structure.

The existing parapets are of stone masonry construction and are between 600mm and 800mm high above the road surface. Both parapets are approximately 400mm thick.

Light vegetation is present on both faces of both parapets. A 1.50m section at the north end of the east parapet is missing. The top course of stonework is missing over a 1.50m length of the north end of the west parapet. A stepped crack is evident towards the south end of the east parapet, the section between the end of the parapet and the crack has moved.

Vegetation removal is required for a full inspection of the parapets to be carried out.

Eirspan Rating: 2

4.5 Embankment \ Revetments

There are no embankments or revetments associated with this structure.

Eirspan Rating: n\a

4.6 Wingwalls \ Spandrel \ Retaining Walls

There were no obvious signs of bulging, loss of stones or significant cracking to suggest there is a problem with the wing walls to the abutments.

There are no retaining walls.

There is a continuous crack between the arch barrel and spandrel walls on both elevations. This appears to be historical and is possibly due to differential movement between the solid concrete arch section and the spandrel walls.

Eirspan Rating: 1

4.7 Abutments

The abutments appear to be of concrete construction. There is a concrete plinth along the footing of both abutments. Some water ingress and calcite staining was noted. No significant structural defects were evident.

Eirspan Rating: 1

4.8 Piers

There are no piers on the bridge.

Eirspan Rating: N/A

4.9 Bearings

There are no bearings on this bridge

Eirspan Rating: N/A

4.10 Deck \ Slab \ Arch

The arch barrel is of concrete construction. Some water ingress and calcite staining is evident. No obvious structural defects were noted.

Eirspan Rating: 1

4.11 Riverbed

A depth of approximately 2.60m from the crown of the arch to the river bed was recorded. The bed is paved with cobble stones through the bridge and is in good condition.

Eirspan Rating: 1

4.12 Other elements & Structure in General

Overall the structure is in good condition with few defects found. Maintenance repairs to the parapet walls should be undertaken.

Eirspan Rating: 2

APPENDIX A

STRUCTURE PHOTOGRAPHS

General view of the bridge surface looking south

Local damage to the west parapet

General view of the south end of the east parapet

General view of the west elevation, looking downstream

General view of the arch barrel

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Vegetation growth on the west elevation

General view of the north abutment

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Bridge No. 6 Inspection Report

Coillte CGA & SSE 110kV Grid Route at Gortyrahilly, Inchamore and Cummeennabuddoge (CMBG)

July 2020

Document Control

Document Number: 201-164-BIR-06

Revision	Date	Prepared	Checked	Approved
R0 (1st issue)	July 2020	K. O'Kelly	D. Walsh	A. O'Connell

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1.0 Introduction

PUNCH Consulting Engineers have been commissioned to undertake a Civil and Structural Due Diligence Report for the proposed cable routes at Gortyrahilly, Inchamore & Cummeennabuddoge (CMBG) , Millstreet, for Coillte Group.

The proposed cable routes include a number of watercourse crossings. These crossings have been visited and assessed by PUNCH as part of the due diligence study.

This report sets out the findings of a visual inspection of Bridge No. 6 (PUNCH project specific reference). The inspection was completed on 30/06/2020 by Declan Walsh and Kevin O'Kelly of PUNCH.

2.0 Location

The existing structure is located North of the village of Ballyvourney, Co. Cork just off the N22, refer to Figure.1. The bridge carries a local road over a tributary of the River Bohill.

ITM Grid reference E: 520038, N: 578913.

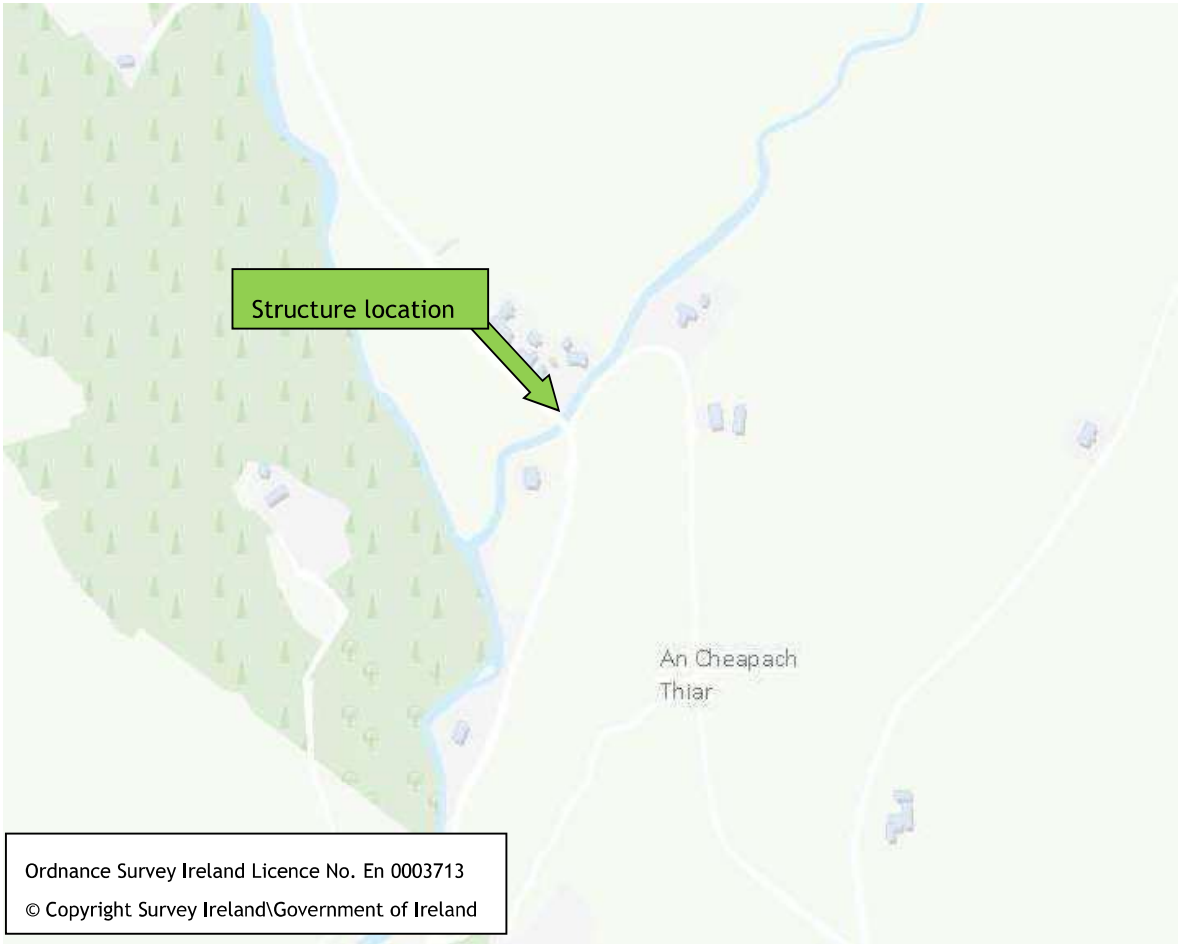

Figure 1 – Bridge Location

3.0 Bridge details

The bridge is a double span masonry arch structure with two equal spans of 3.67m. The wing & parapet walls are stone masonry construction. The parapets are rendered with a concrete topping.

The bridge carries a local road, connecting to the N22, over the River Bohill.

The overall length of the bridge is 12.5m.

4.0 Principal Inspection - Eirspan

The inspection carried out is based on the Principal Inspection proforma of the TII's Eirspan bridge management system. The Principal Inspection system is a systematic visual-only check of all elements of the bridge structure. A total of fourteen components of the bridge are considered as part of the inspection with each component assigned a rating number depending on its condition. The bridge is then assigned an overall rating number.

The condition rating is based on the table below. There is no invasive investigation carried out as part of the inspection.

Rating	Comment on damage, repairs etc.
0	No or insignificant damage.
1	Minor damage but no need of repair.
2	Some damage, repair needed when convenient. Component is still functioning as originally designed. Observe the condition development.
3	Significant damage, repair needed very soon. i.e. within next financial year.
4	Damage is critical and it is necessary to execute repair works at once, or to carry out a detailed inspection to determine whether any rehabilitation works are required.
5	The component has failed or is in danger of total failure, possibly affecting the safety of traffic. It is necessary to implement emergency temporary repair work immediately or rehabilitation work without delay after the introduction of load limitation measures.

4.1 Bridge surface

The existing bridge surface consists of tar & chip wearing course and is in good order generally.

Eirspan Rating: 1

4.2 Expansion Joints

There are no expansion joints on the bridge.

Eirspan Rating: N/A

4.3 Footway \ Median \ Verges

There are no footpaths provided on the bridge, with 650mm soft verges on both sides of the carriageway. The bridge is therefore not sealed as the bitumen surfacing does not extend to the stone masonry parapets.

Eirspan Rating: 1

4.4 Parapet \ Safety Barrier

There are no safety barriers in the vicinity of the bridge structure.

The existing parapets appear to be of masonry construction with concrete render and topping. Some cracking of the render and capping is evident but there are no significant structural defects. The parapets are 740mm - 840mm high and are both 500mm thick.

Light vegetation is present on both faces of the parapets.

Eirspan Rating: 2

4.5 Embankment \ Revetments

There are no embankments or revetments associated with this structure.

Eirspan Rating: N/A

4.6 Wing Walls \ Spandrel Walls \ Retaining Walls

Wing walls are of dry stone construction. Vegetation growth is present on all sides of the bridge.

Vegetation growth is present on both spandrels, however, no significant defects are evident.

Eirspan Rating: 1

4.7 Abutments

The abutments are of masonry construction with some concrete repairs. Minor defects including localised mortar loss, light vegetation, water ingress and calcite staining are evident.

Eirspan Rating: 2

4.8 Piers

The pier is of masonry construction with some concrete repairs. Minor defects including localised mortar loss, light vegetation, water ingress and calcite staining are evident.

Eirspan Rating: 2

4.9 Bearings

There are no bearings on this bridge

Eirspan Rating: N/A

4.10 Deck \ Slab \ Arch Barrel

Both arch barrels appear to be of concrete construction. Minor defects including localised water ingress and calcite staining are evident.

Eirspan Rating: 1

4.11 Riverbed

A depth of approximately 1750mm from the soffit to the river bed was recorded. The bed is paved with cobbles through the bridge with some larger boulders and is in good condition.

Eirspan Rating: 2

4.12 Other elements & Structure in General

Overall the structure is in good condition with few defects found. General maintenance repairs are required.

Eirspan Rating: 2

APPENDIX A

STRUCTURE PHOTOGRAPHS

General view of the bridge surface looking east

North parapet, west end

South parapet, east end

General view of the west elevation

View through east arch, looking south

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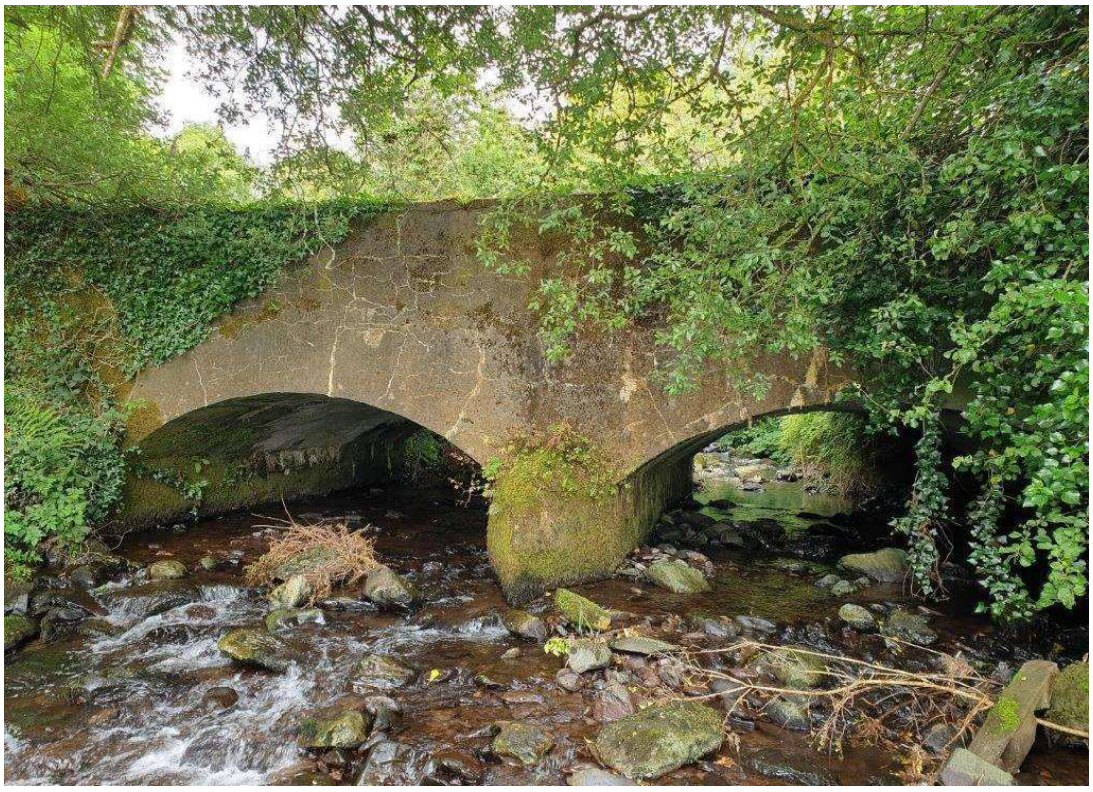
Typical condition of abutment & arch barrel



General view of south elevation

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Bridge No. 7 Inspection Report

Coillte CGA & SSE 110kV Grid Route at Gortyrahilly, Inchamore and Cummeennabuddoge (CMBG)

July 2020

Document Control

Document Number: 201-164-BIR-07

Revision	Date	Prepared	Checked	Approved
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1.0 Introduction

PUNCH Consulting Engineers have been commissioned to undertake a Civil and Structural Due Diligence Report for the proposed cable routes at Gortyrahilly, Inchamore & Cummeennabuddoge (CMBG) , Millstreet, for Coillte Group.

The proposed cable routes include a number of watercourse crossings. These crossings have been visited and assessed by PUNCH as part of the due diligence study.

This report sets out the findings of a visual inspection of Bridge No. 7 (PUNCH project specific reference). The inspection was completed on 30/06/2020 by Declan Walsh and Kevin O'Kelly of PUNCH.

2.0 Location

The existing structure is located North of the village of Ballyvourney, Co. Cork just off the N22, refer to Figure.1. The bridge carries a local road over a tributary of the River Bohill.

ITM Grid reference E: 520513, N: 579989.

Figure 1 – Bridge Location

3.0 Bridge details

The bridge is a single span masonry arch bridge with a span of 3.0m. The wing & parapet walls are stone masonry construction.

The bridge carries a local road, connecting to the N22, over the River Bohill.

The overall length of the bridge is 8.0m.

4.0 Principal Inspection - Eirspan

The inspection carried out is based on the Principal Inspection proforma of the TII's Eirspan bridge management system. The Principal Inspection system is a systematic visual-only check of all elements of the bridge structure. A total of fourteen components of the bridge are considered as part of the inspection with each component assigned a rating number depending on its condition. The bridge is then assigned an overall rating number.

The condition rating is based on the table below. There is no invasive investigation carried out as part of the inspection.

Rating	Comment on damage, repairs etc.
0	No or insignificant damage.
1	Minor damage but no need of repair.
2	Some damage, repair needed when convenient. Component is still functioning as originally designed. Observe the condition development.
3	Significant damage, repair needed very soon. i.e. within next financial year.
4	Damage is critical and it is necessary to execute repair works at once, or to carry out a detailed inspection to determine whether any rehabilitation works are required.
5	The component has failed or is in danger of total failure, possibly affecting the safety of traffic. It is necessary to implement emergency temporary repair work immediately or rehabilitation work without delay after the introduction of load limitation measures.

4.1 Bridge surface

The existing bridge surface consists of tar & chip wearing course and is in good order generally.

Eirspan Rating: 1

4.2 Expansion Joints

There are no expansion joints on the bridge.

Eirspan Rating: n\a

4.3 Footway \ Median \ Verges

There are no footpaths provided on the bridge. There are soft verges on both sides of the carriageway. The north verge is 1300mm wide and the south verge is 650mm wide.

Eirspan Rating: 2

4.4 Parapet \ Safety Barrier

There are no safety barriers in the vicinity of the bridge structure.

The existing parapets are of stone masonry construction and are between 500mm and 600mm high above the road surface. Both parapets are approximately 450mm thick.

A short section (approx. 1m long) at the east end of the north parapet has been knocked. Two to three capping stones are missing from the centre of the north parapet.

Light vegetation and a minor loss of pointing was noted generally.

Eirspan Rating: 2

4.5 Embankment \ Revetments

There are stone revetments on both sides of the river upstream of the bridge. The revetments are in good condition, some light vegetation growth was noted.

Eirspan Rating: 1

4.6 Wingwalls \ Spandrel Walls \ Retaining Walls

The spandrel and wing walls are in fair condition. Some minor vegetation and mortar loss is evident.

There are no retaining walls.

Eirspan Rating: 2

4.7 Abutments

The abutments are in good condition generally. A stepped crack mid-way in the east abutment extends to mid height, recent movement is not apparent. Some light vegetation was present.

Eirspan Rating: 2

4.8 Piers

There are no piers on the bridge.

Eirspan Rating: N/A

4.9 Bearings

There are no bearings on the bridge

Eirspan Rating: N/A

4.10 Deck \ Slab \ Arch Barrel

There are extensive open joints throughout the arch barrel, some of these appear to be open for the full depth of the barrel.

Several stones are missing from the barrel towards the north face of the bridge.

Water ingress and light vegetation were also noted.

Eirspan rating: 3

4.11 Riverbed

A depth of approximately 2720mm from the soffit to the riverbed was recorded. The bed is gravelly with larger loose stones. No significant defects were noted.

Eirspan rating: 1

4.12 Other Elements & Structure in General

The arch barrel is in poor condition and requires reinstatement of missing stones and repointing. Consideration should be given to removing the soft verges and sealing the bridge surface to limit water ingress to the structure. Vegetation removal and repointing of masonry elements is required throughout.

Eirspan rating: 3

APPENDIX A

STRUCTURE PHOTOGRAPHS

General view of the bridge surface from the east

General view of the north parapet

General view of the south parapet

North elevation

General view of the arch barrel from the north

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General view of the west abutment and arch barrel

Dropped / missing stones in the arch barrel towards the north face of the bridge

General view of the south elevation

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Bridge No. 8 Inspection Report

Coillte CGA & SSE 110kV Grid Route at Gortyrahilly, Inchamore and Cummeennabuddoge (CMBG)

July 2020

Document Control

Document Number: 201-164-BIR-08

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1.0 Introduction

PUNCH Consulting Engineers have been commissioned to undertake a Civil and Structural Due Diligence Report for the proposed cable routes at Gortyrahilly, Inchamore & Cummeennabuddoge (CMBG) , Millstreet, for Coillte Group.

The proposed cable routes include a number of watercourse crossings. These crossings have been visited and assessed by PUNCH as part of the due diligence study.

This report sets out the findings of a visual inspection of Bridge No. 8 (PUNCH project specific reference). The inspection was completed on 30/06/2020 by Declan Walsh and Kevin O'Kelly of PUNCH.

2.0 Location

The existing structure is located west of the R582 Milstreet to Macroom Rd, Co. Cork. Refer to Figure.1. The bridge carries a local road over a tributary of the River Bohill.

ITM Grid reference E: 521822, N: 586734.

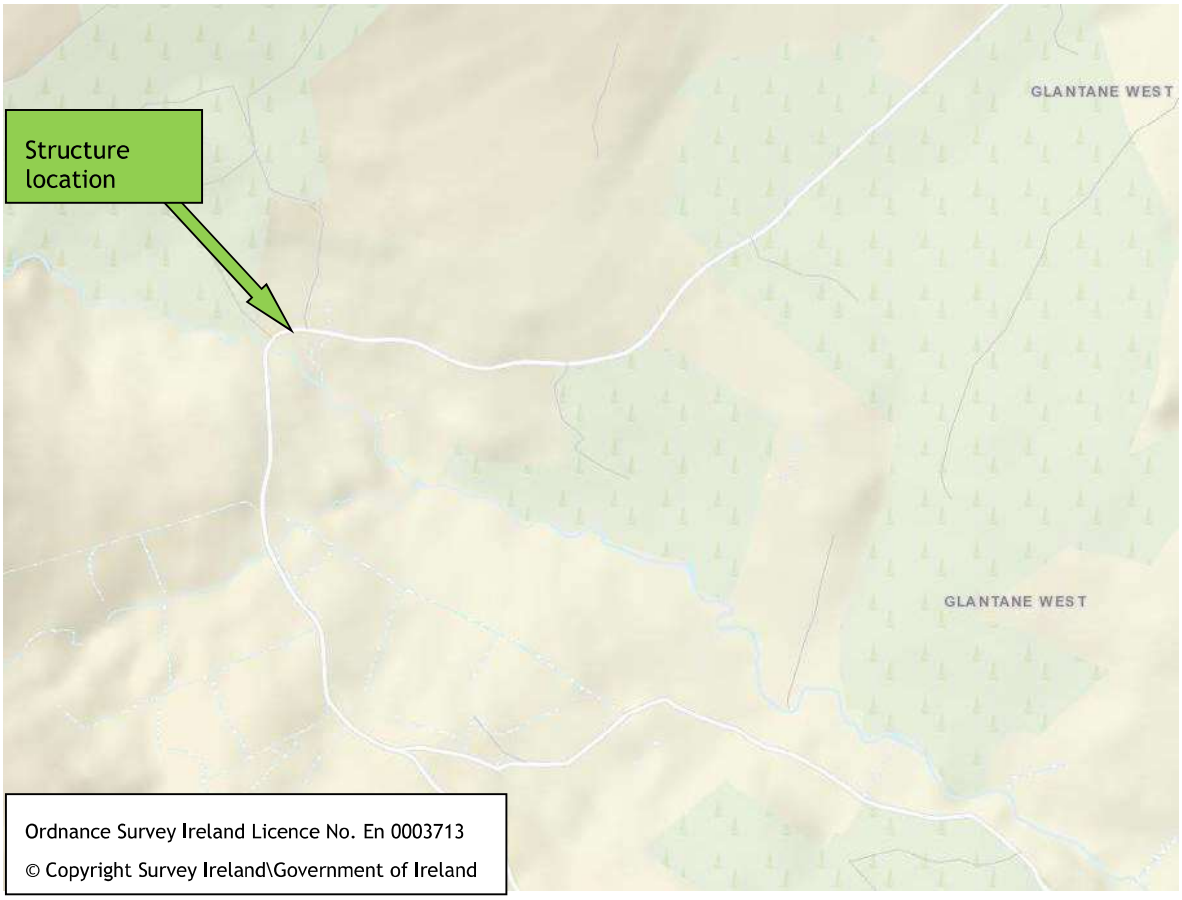

Figure 1 – Bridge Location

3.0 Bridge details

The bridge is a single span masonry arch bridge with a span of 3.0m. The wing & parapet walls are stone masonry construction.

The bridge carries a local road, connecting to the R582, over the River Foherish.

The overall length of the bridge is 7.50m.

4.0 Principal Inspection - Eirspan

The inspection carried out is based on the Principal Inspection proforma of the TII's Eirspan bridge management system. The Principal Inspection system is a systematic visual-only check of all elements of the bridge structure. A total of fourteen components of the bridge are considered as part of the inspection with each component assigned a rating number depending on its condition. The bridge is then assigned an overall rating number.

The condition rating is based on the table below. There is no invasive investigation carried out as part of the inspection.

Rating	Comment on damage, repairs etc.
0	No or insignificant damage.
1	Minor damage but no need of repair.
2	Some damage, repair needed when convenient. Component is still functioning as originally designed. Observe the condition development.
3	Significant damage, repair needed very soon. i.e. within next financial year.
4	Damage is critical and it is necessary to execute repair works at once, or to carry out a detailed inspection to determine whether any rehabilitation works are required.
5	The component has failed or is in danger of total failure, possibly affecting the safety of traffic. It is necessary to implement emergency temporary repair work immediately or rehabilitation work without delay after the introduction of load limitation measures.

4.1 Bridge surface

The existing bridge surface consists of tar & chip wearing course which has been recently overlaid and is in good condition.

Eirspan Rating: 1

4.2 Expansion Joints

There are no expansion joints on the bridge.

Eirspan Rating: N/A

4.3 Footway \ Median \ Verges

There are no footpaths provided on the bridge. There are soft verges on both sides of the carriageway. The west verge is 1100mm wide and the east verge is 660mm wide.

Eirspan Rating: 2

4.4 Parapet \ Safety Barrier

There are no safety barriers in the vicinity of the bridge structure.

The existing parapets are of stone masonry construction with a concrete capping and are between 800mm and 840mm high above the road surface. Both parapets are approximately 500mm thick.

There is one stepped vertical crack in the centre of the west parapet. There are three stepped vertical cracks in the east parapet.

Light vegetation and a minor loss of pointing was noted generally.

Eirspan Rating: 2

4.5 Embankment \ Revetments

There are no embankments or revetments associated with this structure.

Eirspan Rating: N/A

4.6 Wingwalls \ Spandrel Walls \ Retaining Walls

The wing and spandrel walls are covered in vegetation. A loss of pointing in the spandrel walls was evident.

There are no retaining walls.

Eirspan Rating: 2

4.7 Abutments

The abutments are generally in good condition. Vegetation removal and repointing works are required.

Eirspan Rating: 2

4.8 Piers

There are no piers on the bridge.

Eirspan Rating: 0

4.9 Bearings

There are no bearings on the bridge

Eirspan Rating: N/A

4.10 Deck \ Slab \ Arch Barrel

A substantial portion of the arch barrel has been repaired with a concrete plug between the quarter points, starting at the west face of the bridge and extending approx. two thirds of the length of the arch.

Open joints are evident in the masonry sections. Water ingress and light vegetation are noted.

Eirspan Rating: 2

4.11 Riverbed

A depth of approximately 2600mm from the soffit to the river bed was recorded. The bed is gravelly with larger loose stones. No significant defects were noted.

Eirspan rating: 1

4.12 Other Elements & Structure in General

Overall the structure is in fair condition. Maintenance repairs including vegetation removal and repointing of open joints should be carried out. Consideration should be given to sealing the bridge surface by removing the soft verges.

Eirspan Rating: 2