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Transport Infrastructure Ireland

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Rural Cycleway Design

Update to DN-GEO-03047

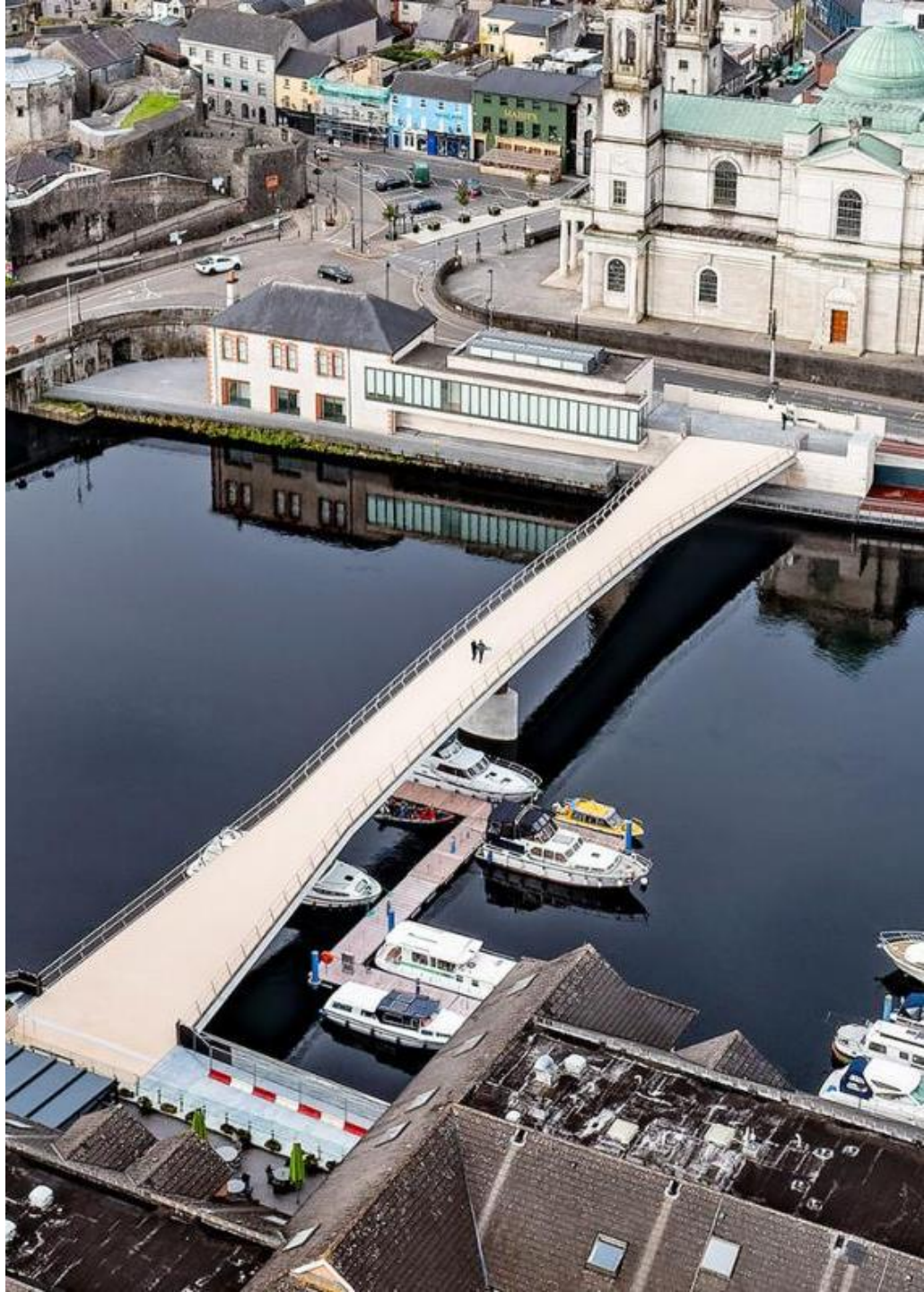
New "Chapter 8" Structures

Fergal Cahill
Senior Manager
TII Structures Engineering & Asset Management

Presentation Outline

Rural Cycleway Design (Offline & Greenway)

- Background of greenway delivery to date;
- Reasons for the update to DN-GEO-03047;
- Contents & Scope of the new “Chapter 8” Structures to DN-GEO-03047;
- New “Chapter 8” Structures Technical Acceptance process;
- Additional Design Requirements for Existing Structures;
- Inspection & Maintenance;
- TII Regional Bridge Management;
- Summary;



Background to Greenway Delivery

Prior to September 2021:

- Delivery of Greenways overseen by Department of Transport;
- **Local Authority delivered**;
- Examples:
  - Great Western Greenway (2011);
  - Waterford Greenway (2017);
  - Limerick Greenway (2021);

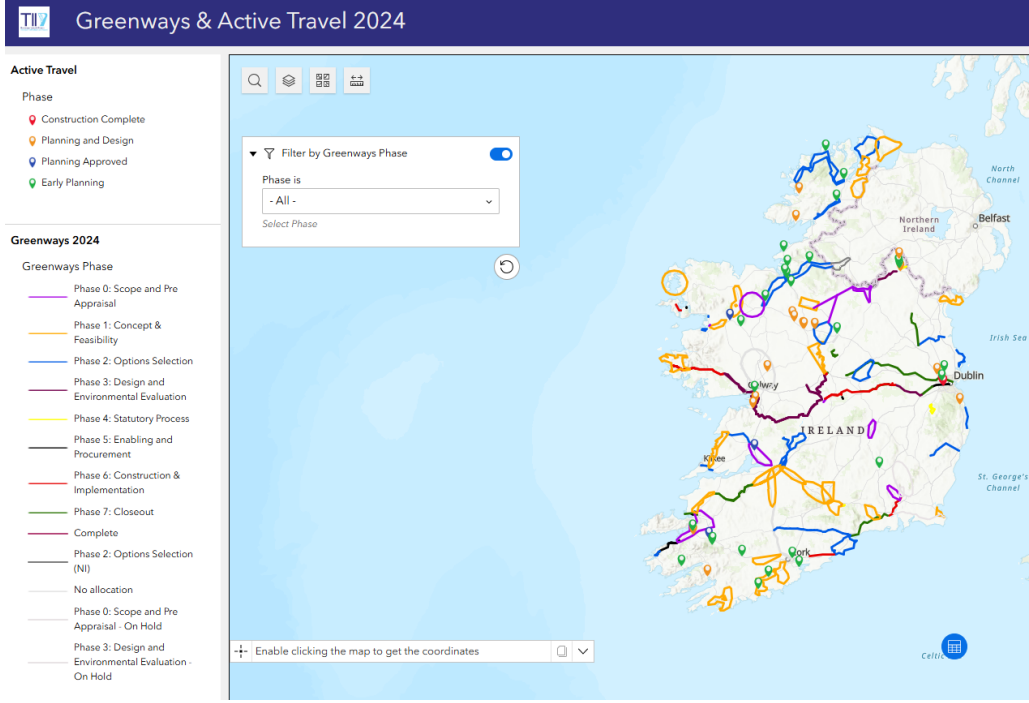
Since September 2021:

- Minister confirmed – TII to manage greenway programme as Approving Authority under the Public Spending Code;
- **Local Authority delivered**;
- Annual funding provided by the Department of Transport;

Background to Greenway Delivery

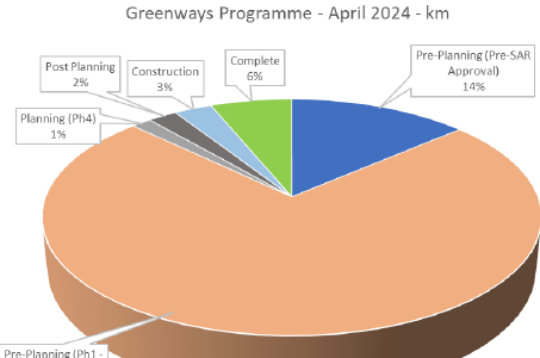
Current Greenway Status:

- ~ 60 Schemes at various phases;
- ~ 2,430 km;
- ~ 1,600 bridges possibly (assuming a structure every 1.5km);



- Pre-Phase 1: c. 300km
- Phase 1 to Phase 3 (inclusive): c. 1,800km
- Phase 4: c. 40km
- Phase 5: c. 50km
- Phase 6: c. 90km
- Complete: c. 150km

Phase 1 to 4: Complexity & Time



Approximate Construction Projections:

- 2025: c. 80km
- 2026: c. 90km

NB: Subject to approvals/consent/funding

Reasons for Update

- Previous version of DN-GEO-03047 [August 2022] – Design Standard which provided advice and requirements regarding the planning, design and development of rural offline cycleways & greenways which are funded through TII;
- However, no guidance provided to Local Authorities with respect to the design of new structures or the repurposing of existing structures along greenways;
- Also, no guidance provided with respect to Structures Technical Acceptance requirements for structures on greenways;
- Responsibilities for greenway structures needed to be clarified, especially with respect to existing structures (in particular their inspection, assessment, maintenance and ongoing management);

New “Chapter 8” Structures

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TII Publications

GE PE DN CC OP AM RE

Rural Cycleway Design (Offline & Greenway)

DN-GEO-03047
February 2025

https://cdn.tii.ie/publications/DN-GEO-03047-04.pdf

New “Chapter 8” Structures

Scope / Application

- New build & existing structures on rural offline cycleways, including national & regional greenways;
- Structures = bridges, boardwalks, tunnels / underpasses, retaining structures and structures that meet the criteria outlined in Section 1.2 of DN-STR-03001 – Technical Acceptance of Road Structures on Motorways and Other National Roads;
- Existing structures = structures that were constructed prior to the consideration of the route as cycleway and intended to be repurposed for use on these routes. These may include structures such as disused railway bridges, tunnels, underpasses or retaining walls and will be in varying states of disrepair;
- The design, assessment, construction and/or modification of structures shall ensure the safety of users with consideration given to the maintenance needed to ensure safety throughout the life of the structure;

New “Chapter 8” Structures

8.2 Technical Acceptance

- Structures with interface to national roads - DN-STR-03001 applies as normal;
- Structures without interface to national roads – DN-GEO-03047 “Section 8” Technical Acceptance Procedure required;
- DN-GEO-03047 “Section 8” Technical Acceptance Procedure:
  - An appropriate & robust Technical Acceptance Procedure must be demonstrated;
  - Culminating in a Technical Acceptance Report (TAR);
  - Accompanied with Certification by Designer / Assessor & Checker (i.e. design, assessment, specification & construction complies with TAR) and Accepted by the Local Authority;
- Each Local Authority is responsible as Sponsoring Agency to administer the “Section 8” Technical Acceptance Procedure;

New “Chapter 8” Structures

8.2 Technical Acceptance

- Particular attention needs to be paid to the re-purposing of existing structures:
  - the inherent risks & challenges of bringing them back into service;
  - the potential costs and complexities due to the structures age, form and condition;
  - the importance of engaging only suitably qualified and experienced engineers (specialist expertise);
- Prior to inclusion of existing structures in any Technical Acceptance Procedure an initial *Feasibility Evaluation* is required, including a *Preliminary Structural Assessment;*
- Prior to submission of a Technical Acceptance Report [TAR] a *Detailed Structural Assessment* should be undertaken;

New “Chapter 8” Structures

8.7 Additional Design Requirements for Existing Structures

- Structural Assessments should be undertaken for all existing structures that are intended to be re-purposed including:
    1. Initial Feasibility Evaluation;
    2. Preliminary Structural Assessment;
    3. Detailed Structural Assessment;
- TII Structures Assessment Standards (AM-STR-series) apply;

1) Initial Feasibility Evaluation:
    - *Demonstrate the technical feasibility & likely costs of bringing the existing structure back into service;*
    - *Consider the feasibility of potential repairs or modifications needed to make the structure safe for use;*
    - *Consider the feasibility and associated costs of any future maintenance requirements to ensure service life;*

New “Chapter 8” Structures

8.7 Additional Design Requirements for Existing Structures

2) Preliminary Structural Assessment:

- *An Inspection for Assessment (to confirm geometry & materials) is required;*
- *The assessment shall consider any expected modifications / repairs required to bring the structure back into service;*
- *Preliminary cost estimate shall be developed, based on inspection data of sufficient level of detail to ensure a robust cost estimate at this stage of the process (to include all expected modifications & repairs);*
- *All details to be included within a Preliminary Design Report (PDR);*

New “Chapter 8” Structures

8.7 Additional Design Requirements for Existing Structures

3) Detailed Structural Assessment:

- *All information related to geometry and materials shall be confirmed by surveying & testing as necessary;*
- *This could include diver scour surveys; material testing; and / or rope access surveys to ensure a comprehensive understanding of the structural condition is obtained;*
- *The Detailed Structural Assessment should consider all future expected modifications / repairs;*
- *A detailed robust cost estimate to bring the structure back into service shall be developed along with any required operation and maintenance costs to ensure the assumed service life is achieved;*

New “Chapter 8” Structures

8.7 Additional Design Requirements for Existing Structures

Other items to consider:

- The desirable minimum remaining Service Life for existing structures should not be less than 30 years;
- The Structural Assessment shall demonstrate the structural safety for the remaining service life;
- All relevant repairs, strengthening and retrofitting shall be undertaken to ensure structural safety for users and maintainers;
- It may not be feasible / proportionate to provide minimum geometric widths as per standards – relaxations may be considered;
- It may not be feasible / proportionate to provide minimum performance levels for parapets / vrs – relaxations may be considered where Appropriate Risk Assessments & mitigation measures are proposed;
- Aesthetics & Conservation - if modifications are necessary, consideration of aesthetics and conservation will be required;
- Existing structures may be Protected, National Monuments or have historic / conservation merit - Engagement with all relevant stakeholders will be necessary [*AM-STR-06051 The Conservation of Road Structures also applies*];

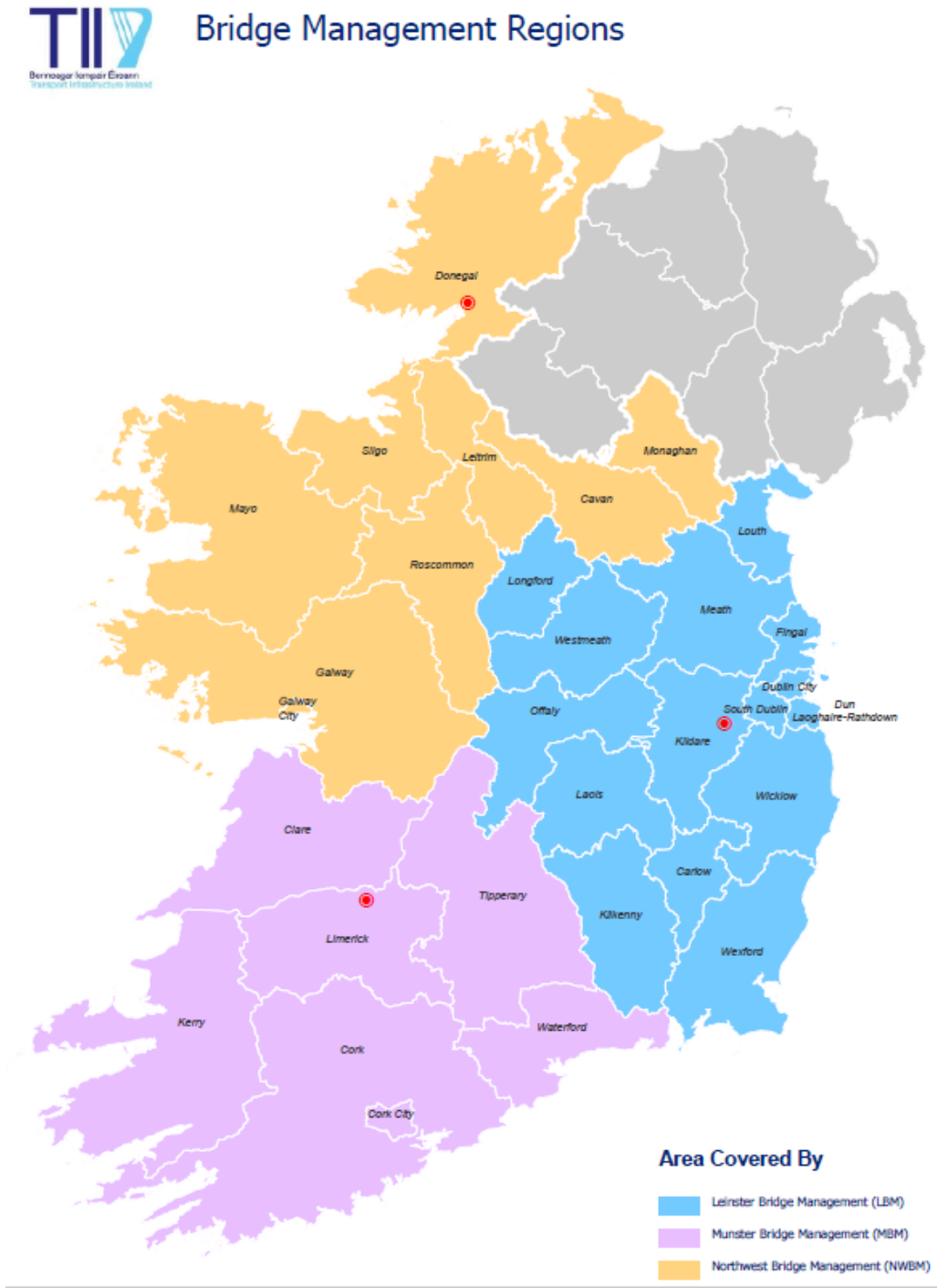
New “Chapter 8” Structures

8.9 Inspection & Maintenance

- Inspection & Maintenance requirements are important considerations to ensure the ongoing safety / durability of an existing structure;
- Inspection & Maintenance requirements are linked to any expected service life (typical 30 years);
- All Inspection & Maintenance requirements should be defined within an Operations and Maintenance Manual for each structure;
- Inspections should be scheduled and managed through an appropriate Asset Management System (AMS):
  - For structures which interface with National Roads - EIRSPAN applies;
  - Elsewhere - The Department of Transport Bridge Asset Management System Guidelines apply;
- All Inspectors should be suitably qualified & experienced for the form and complexity of structure under review;
- Chapter 8 provides guidance on frequency and expectations with regard to:
  - Maintenance Inspections;
  - Engineering Inspections & Structural Condition Ratings;
  - Routine Maintenance;

TII Regional Bridge Management

- 3 Bridge Management Regions:
  - Leinster Bridge Management (Kildare NRO);
  - Munster Bridge Management (Limerick NRO);
  - North-West Bridge Management (Donegal NRO);
- Can provide advice to Local Authorities:
  - with regard to the requirements of the new Chapter 8 Structures of DN-GEO-03047;
  - what would be expected in terms of demonstration of an appropriate & robust Technical Acceptance Procedure;



Summary

- New “Chapter 8” clarifies the Local Authority’s role in administering an appropriate Structures Technical Acceptance Procedure;
- Local Authority should be able to demonstrate that an appropriate Technical Acceptance Procedure has been implemented;
- Certification of the structures TA process is required;
- Particular attention needs to be paid to the re-purposing of existing structures (Risks & Challenges);
- Some guidance provided on design, assessment, inspection and maintenance of structures;
- An Asset Management System needs to be implemented to administer future O&M to ensure Service Life;
- Appropriate & Realistic cost estimates need to be developed at each stage of a greenway project (particularly for existing structures);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