



An Roinn Iompair,
Turasóireachta agus Spóirt
Department of Transport,
Tourism and Sport

Bridge Asset Management Project

Donegal County Council's
Past Bridge Management Experience

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12th September 2019



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Donegal County Council's Bridge Management Experience

A brief discussion on Donegal County Council's past inspections and the anticipated benefits the Bridge Management App will bring

Bridge Inspections – A Comparison



In 1988 Donegal County Council undertook a programme of bridge inspections

1482 bridges were inspected in total

- *50 were on National Roads*
- *372 on Regional roads*
- *527 on Local primary*
- *380 on Local secondary*
- *130 on Local tertiary*

1432 Bridge on Non National Roads

Basic inventory data recorded at each bridge

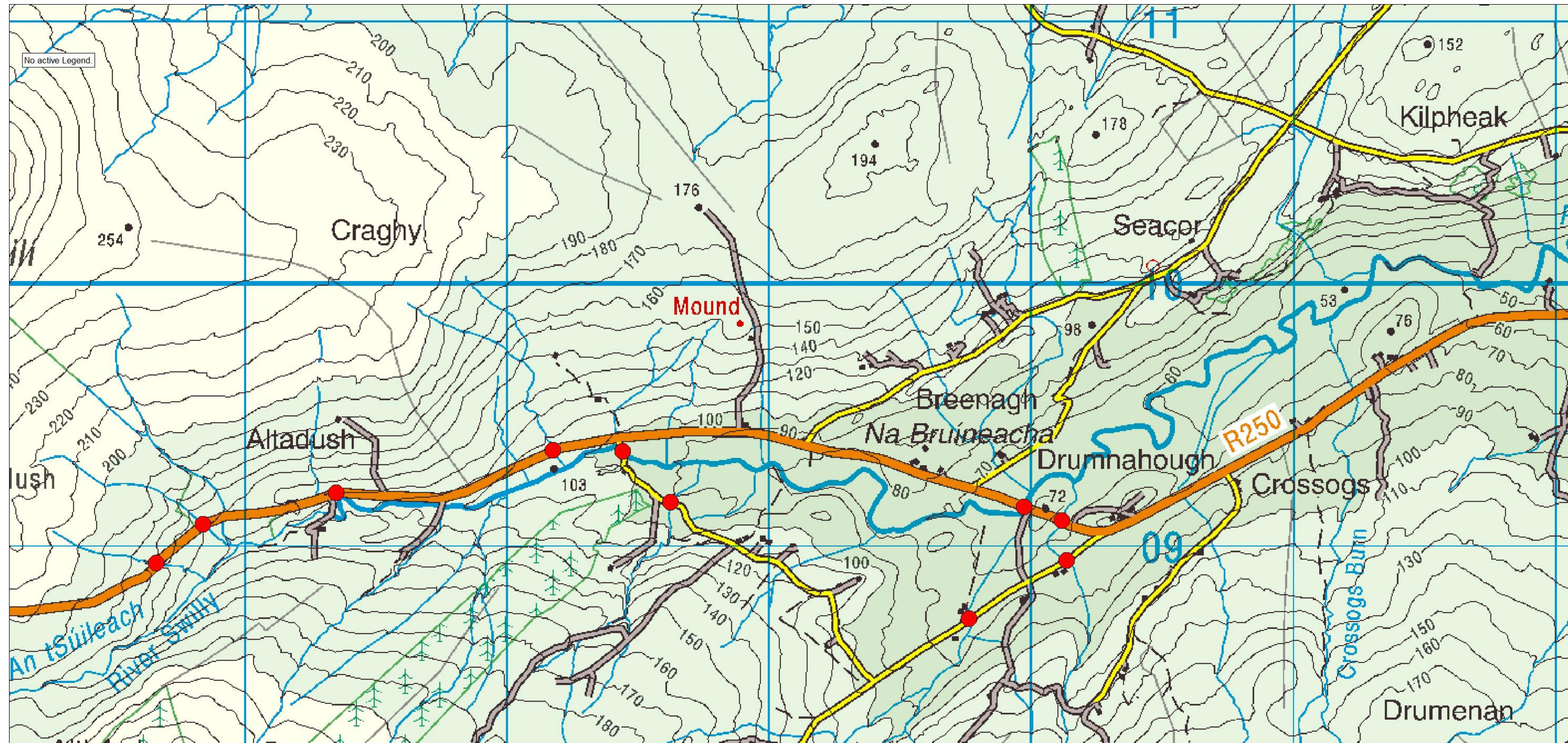
Bridges were given a Good, Fair or Poor condition rating

Bridge Inspections – A Comparison



Bridge data held

10 Records

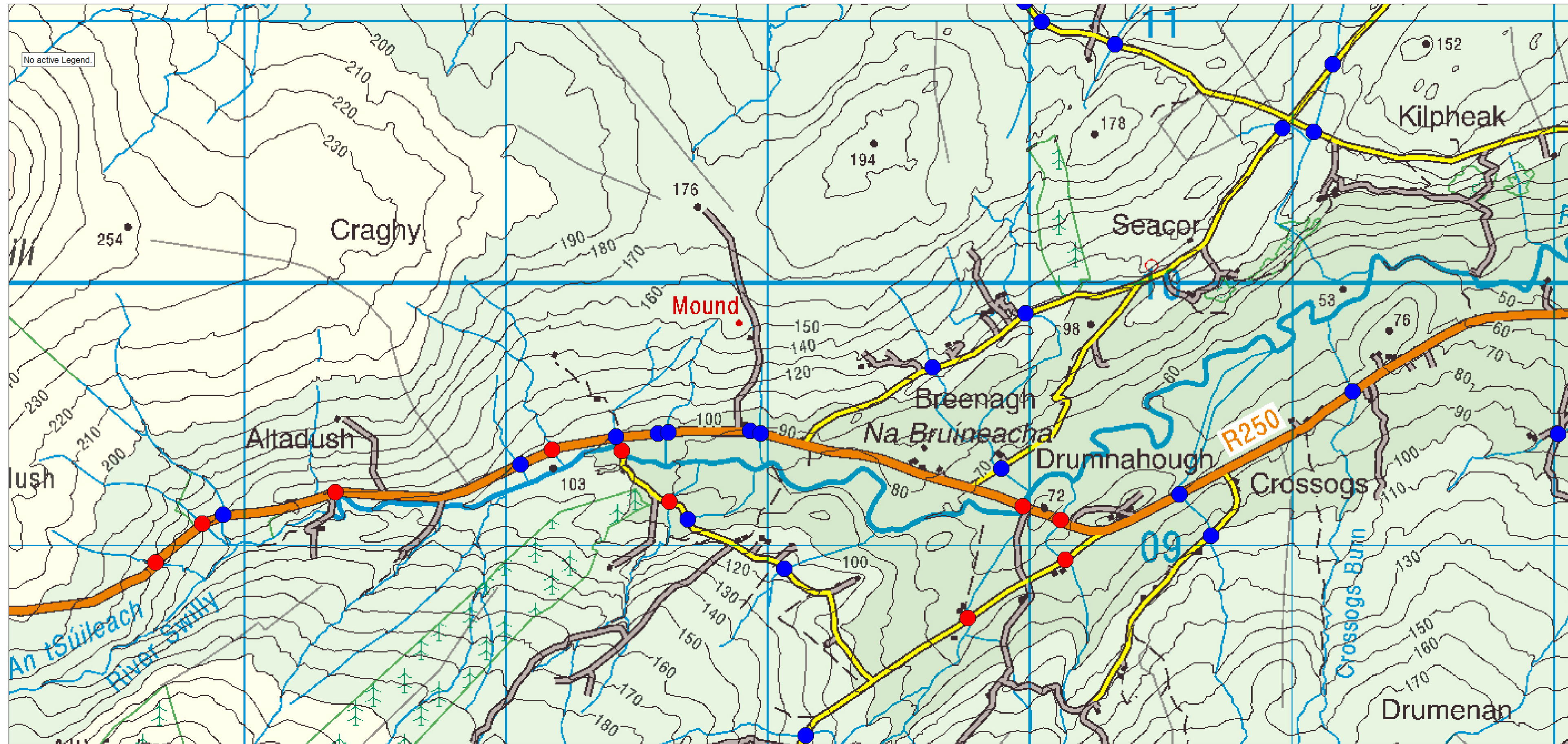


Bridge Inspections – A Comparison



Bridges Present

10 + 22 = 32 Bridges



Bridge Inspections – A Comparison



Problem – How many bridges do we have?

From the example approximately 1/3 of bridges had been inspected

These results were replicated through out County Donegal

3710 additional bridges detected

No inventory or inspection records for these bridges

Total bridge stock potentially 5142

Benefit 1 - The app Identifies bridges for inspections

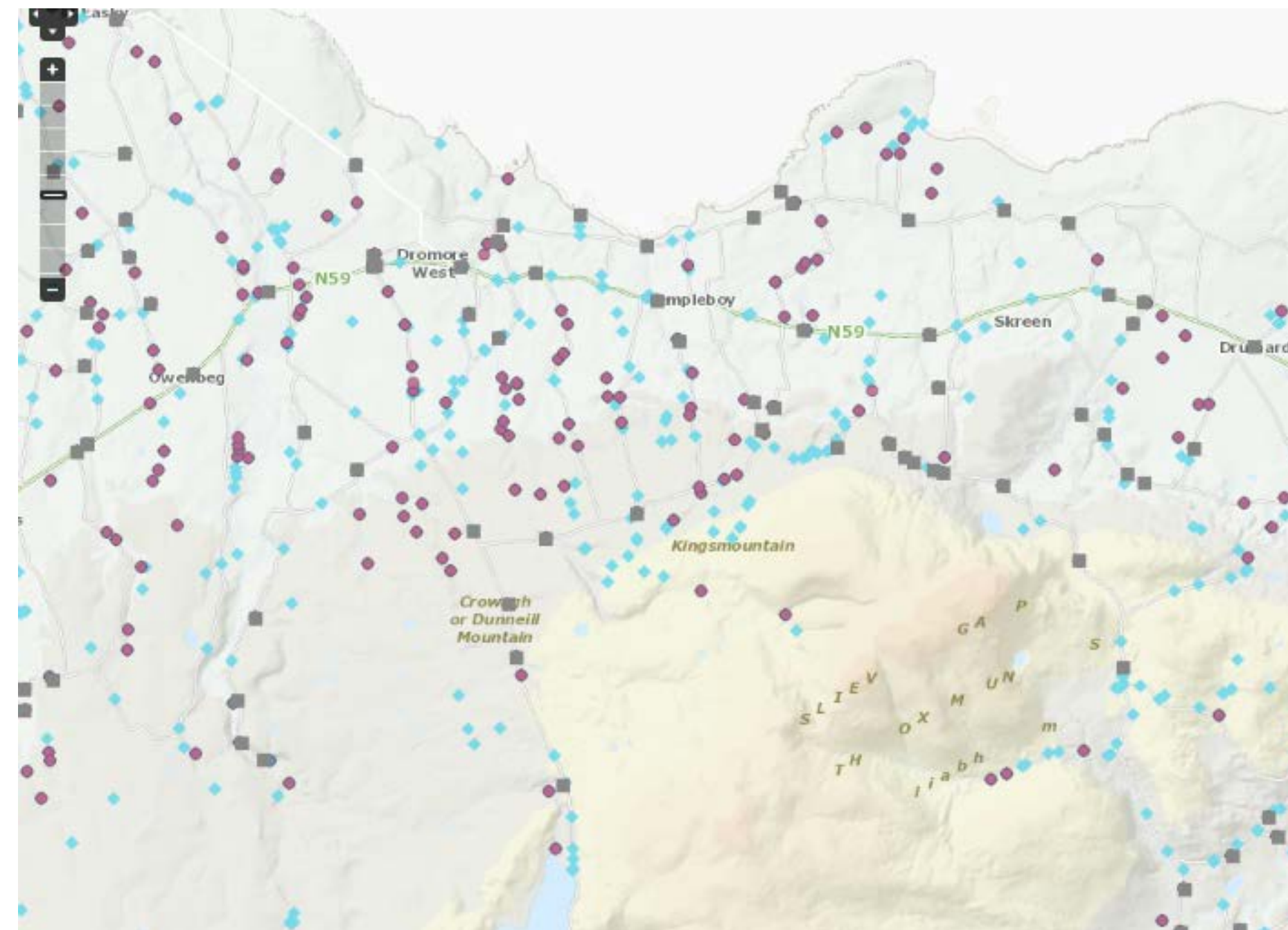
Bridge Inspections – A Comparison



Screen shot from PMS Bridge management App



Known bridges



Blue dots are potential bridges

Bridge Inspections – A Comparison



Problem – Bridge Location Identification



View from the road no obvious bridge



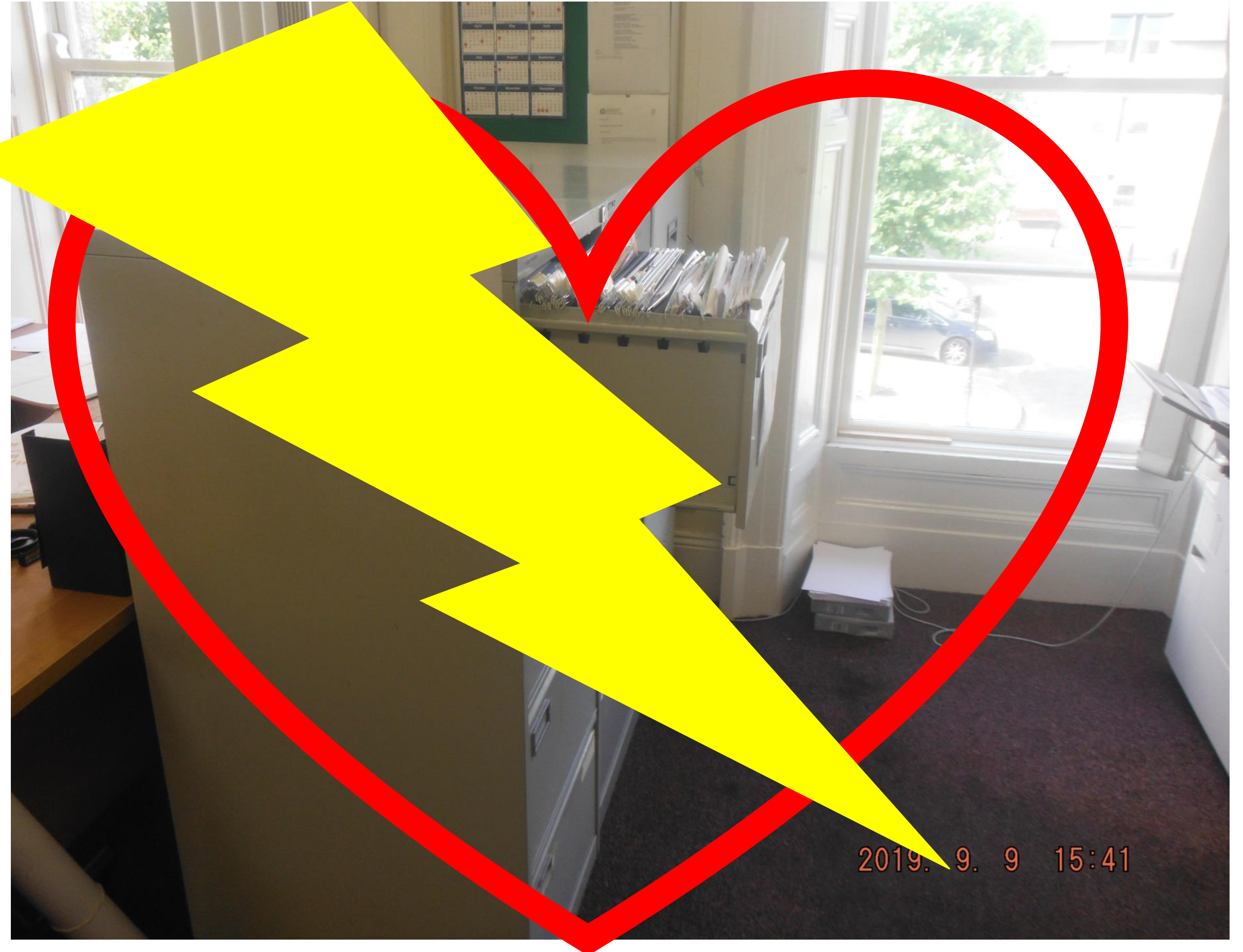
Significant bridge present with no parapets

Benefit 2 - The app identifies the bridge location using GPS

Bridge Inspections – A Comparison



♥ I ♥
LOVE
ADMIN
SAID NO ONE EVER



Bridge Inspections – A Comparison



Problem - Data entry

DCC's Bridge inspection results
5000+ double sided sheets

Some electronic data to enable
prioritisation



Bridge Inspections – A Comparison



Traditional solution

Employ a Student Engineer
for the summer

Make a Student Engineer
question their life choices



Bridge Inspections – A Comparison



Benefit 3 – Data captured is automatically added to PMS

Data is immediately live for all to see

No errors in transcribing data from form to database

With GPS data is attributed to correct bridge

No admin required

Bridge Inspections – A Comparison



Pavement Management System x +

donegal.maproadpms.ie/pms/

Standard Tools | Works Tools | Speed Limits | Surface Inventory Tools | Road Schedule | Footways | Gazetteers

Map Layers

- Base Layers
 - OSI (aerial)
 - OSI (premium)
 - OSI (discovery)
 - OpenStreetMap
 - Grey Background
 - Google Hybrid
 - Blank Map
- Road Layers
 - Road Schedule
 - Road Junctions
 - Road Classes
 - TI Road Network
- Boundaries
 - Network Editing
 - 3rd Party Datasets
 - Works
 - Roads Programmes
 - Speed
 - Bridges
- Bridges
 - Maintenance Inspection
 - Engineering Inspection
 - Weight Restriction
 - Height Restriction
 - Years Since Maintenance
 - Prime2 Bridges
- Road Intersections Layers
 - Road Intersections
 - Water Intersections
 - Stream Intersections
 - Rail Intersections
- MapRoad Layers
- Surveys

Legend

Bridges Maintenance Inspection

- Unrated
- Good
- Warning
- Alert
- Bridge
- Culvert

Bridge - DL-L6684-B-000

General | Non-Site Data | Maintenance Inspections | Engineering Inspections | History | Files

Bridge

Bridge Type*: Beam | Principle Function*: Public Road

Number (calc.): DL-L6684-B-000 | Name (Plate): 228 /249

Name (alias): The structure name

Road Number: L6684

Is in Skew? ☐ | Skew Angle: | Is Flood Relief? ☐ | Number of Openings: |

Height Restriction: | Is Signage Present? ☐ | Height Restriction (on signage): |

Weight Restriction? ☐ | Weight Restriction (on signage): |

Bridge Over: Watercourse | Bridge Under: | Services Evident? ☐

Dimensions

Length*: 9.5 | Width*: 3.2 | Height: 1.9

Number of Spans*: 2 | Total Span*: 8.6 | Max. Span*: 4 | Min. Span*: 4

Materials*

☐ Masonry ☒ Concrete ☐ Metal ☐ Timber ☐ Plastic

Access Hazards

☐ Steep Banks ☐ Deep Water ☐ Fast Water ☐ Very Tall Structure

☐ Unstable Bed ☐ Vegetation ☐ IAPS ☐ Restricted by Fencing

☐ Illegal Dumping ☐ Livestock ☐ Traffic ☐ Services

Comment

Delete Bridge | Export Bridge | Zoom to Bridge | Update Bridge | Cancel

Select time period: 01/01/2014 | 31/12/2025

GPS | ING | ITM | Easting: 613998 | Northing: 903526 | Log Out

StructureItem (1).docx | 2018_12_13_11_07....jpg | 2018_12_13_11_07....jpg | 2018_12_13_11_06....jpg | 2018_12_13_11_06....jpg | StructureItem.docx | Show all

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Bridge Inspections – A Comparison



Problem – Inspection consistency

Donegal County Council over 40 technical staff to undertake inspections from Senior Engineers to Road Service Supervisor

Varying quality of inspection, results and outputs

No photos to verify, compare or contrast

Makes prioritisation very difficult

Bridge Inspections – A Comparison



Benefit 4 – The App and guidance aids, improve consistency

Formulated and simple input criteria for inventory and maintenance inspections

Reduces input errors and misclassifications

Bridge condition rules applied automatically

Standardised training leads to a consistent approach

Guidance document leads to a consistent approach

Photos now available to verify, compare and contrast results

Bridge Inspections – A Comparison



Pavement Management System x

donegal.maproadpms.ie/pms/

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Standard Tools

Works Tools

Speed Limits

Surface Inventory Tools

Road Schedule

Footways

Gazetteers

E.g. R-705

Townland...

Bridge - DL-L6684-B-000

General Non-Site Data Maintenance Inspections Engineering Inspections History Files

Date	Surveyor	Parapets	Access And Egr	Vegetation	External Walls	Abutments And	Deck Or Arch
13/12/2018	smccrory	Warning	Good	Good	Good	Alert	Alert

Delete Bridge Export Bridge Zoom to Bridge Update Bridge Cancel

Select time period: 01/01/2014 31/12/2025

GPS ING ITM Easting: 614228 Northing: 903997

Log Out

StructureItem (1).docx

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2018_12_13_11_06...jpg

2018_12_13_11_06...jpg

StructureItem.docx

Show all

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Bridge Inspections – A Comparison



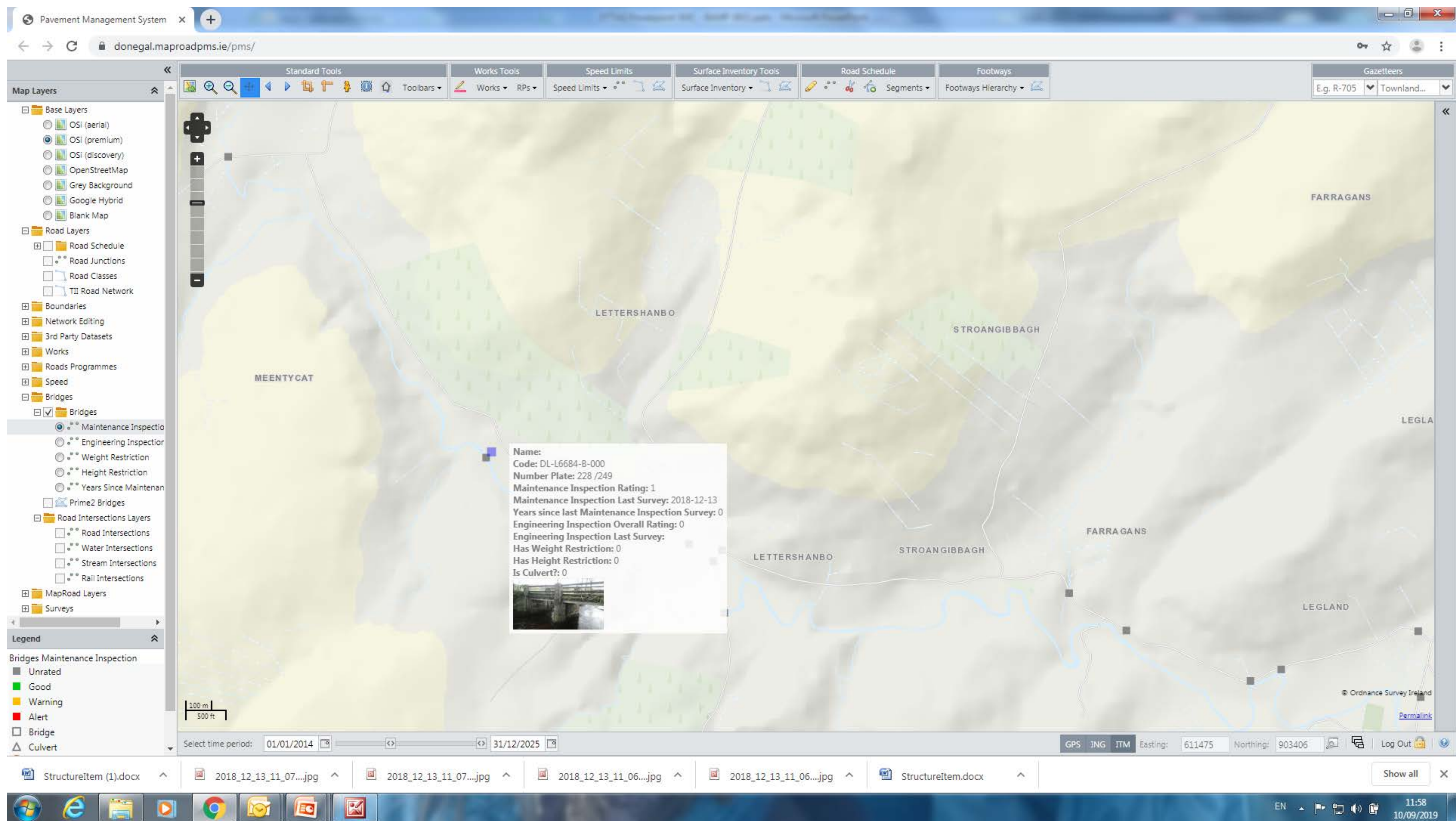
Problem – Photographic Records

Donegal County Council do not have a database of photographic records of our bridges

Photos traditionally lead to data storage and admin issues

Benefit 5 – The App captures and stores photos with the bridge record. It also retains photos from past inspections

Bridge Inspections – A Comparison



Bridge Inspections – A Comparison



Benefit 6 – Application of the data collected

Data collected is simple but highly useful

Helps Local Authorities understand the make up of their bridge stock

Helps Local Authorities understanding the condition of their bridge stock

Data can be exported to excel and further interrogated

Assists Local Authorities to create evidence based programmes of work

Enables Local Authorities to group bridges with similar characteristics

Bridge Inspections – A Comparison



A few examples

Funding applications - Identify poor bridges on Regional Roads

Works - Identify bridges for parapet repair or vegetation removal

Informed consent - Condition of bridges along a haul route

Direct safety inspections - Identify bridges with abutment / pier issues
following flood event

Manage at risk bridges – Monitor deterioration

Bridge Inspections – A Comparison



In summary – 6 main benefits from the APP

1. Identifies potential bridges for inspection
2. Identifies bridge location on site using GPS
3. Automatically loads data captured – NO ADMIN 😊
4. The system contributes to consistent and accurate inspections
5. Captures and stores photos with inspection data
6. The ability to interrogate and apply the data captured

Bridge Inspections – A Comparison

Good bridge management hopefully leads to less of this



Bridge Inspections – A Comparison

And this



Bridge Inspections – A Comparison

And enables more of this



Thank You



