



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

Managing the Regional and Local Road Network

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Department of Transport, Tourism and Sport



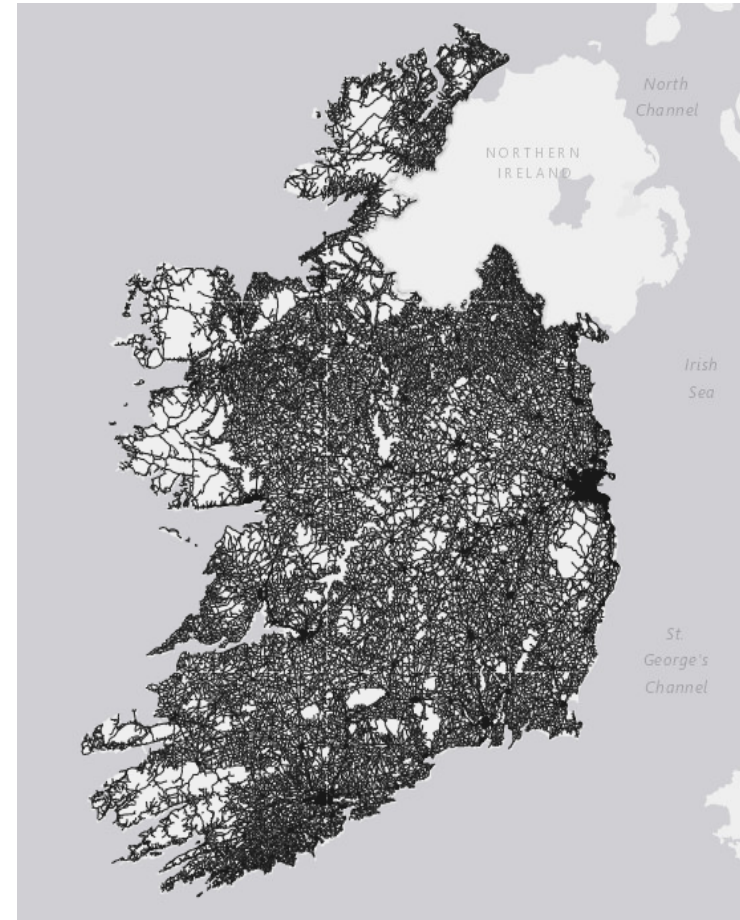
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Background

Roads in Ireland



Road Class	% Length	Length (m)
N	5.42%	5,412,847
NP	2.72%	2,717,234
NS	2.70%	2,695,613
R	13.15%	13,124,058
R	13.15%	13,124,058
L	81.43%	81,292,961
LT	24.18%	24,138,459
LP	23.83%	23,788,815
LS	33.42%	33,365,687
Grand Total	100.00%	99,829,867

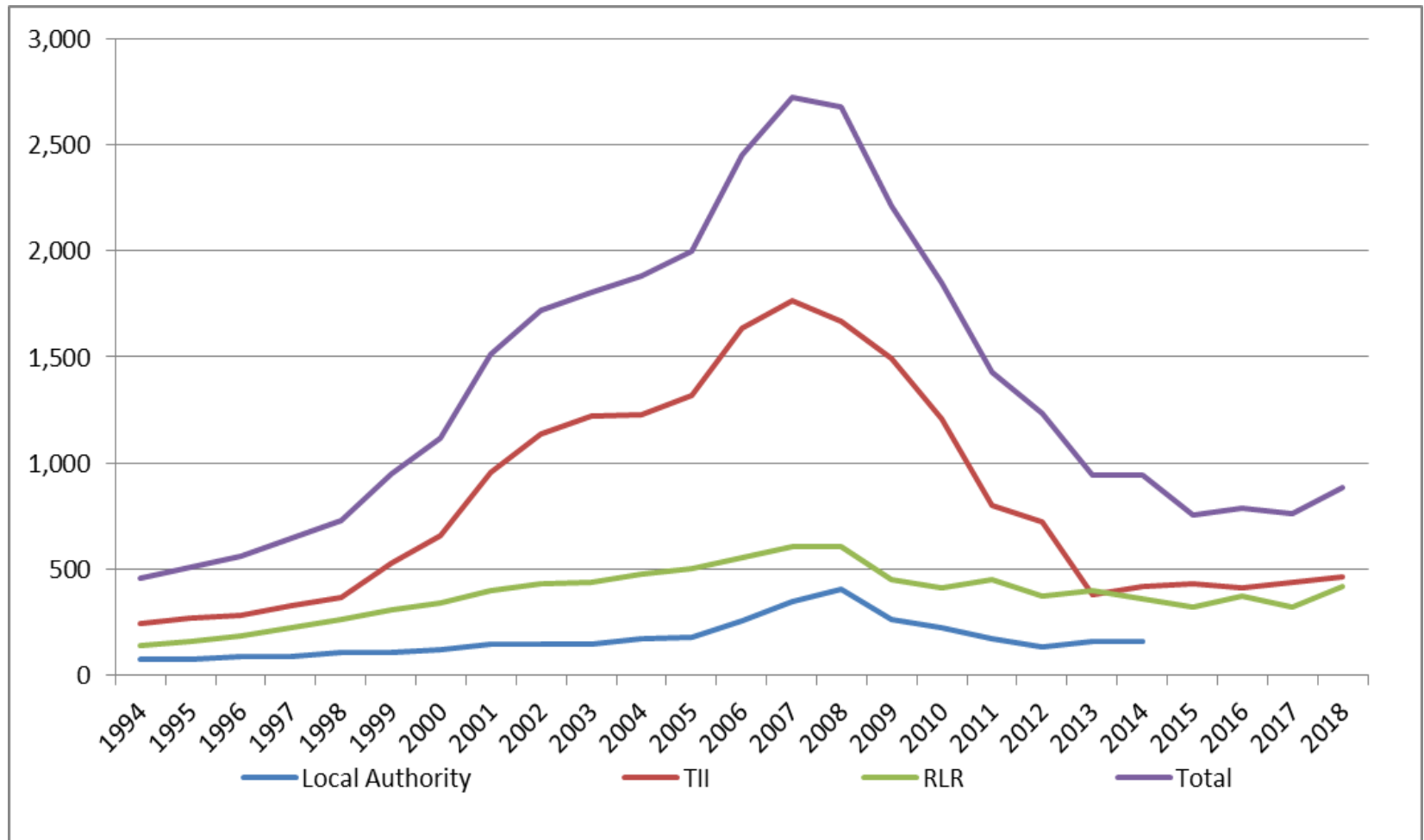


2.5 time EU average A lot of road!

Regional and Local Roads



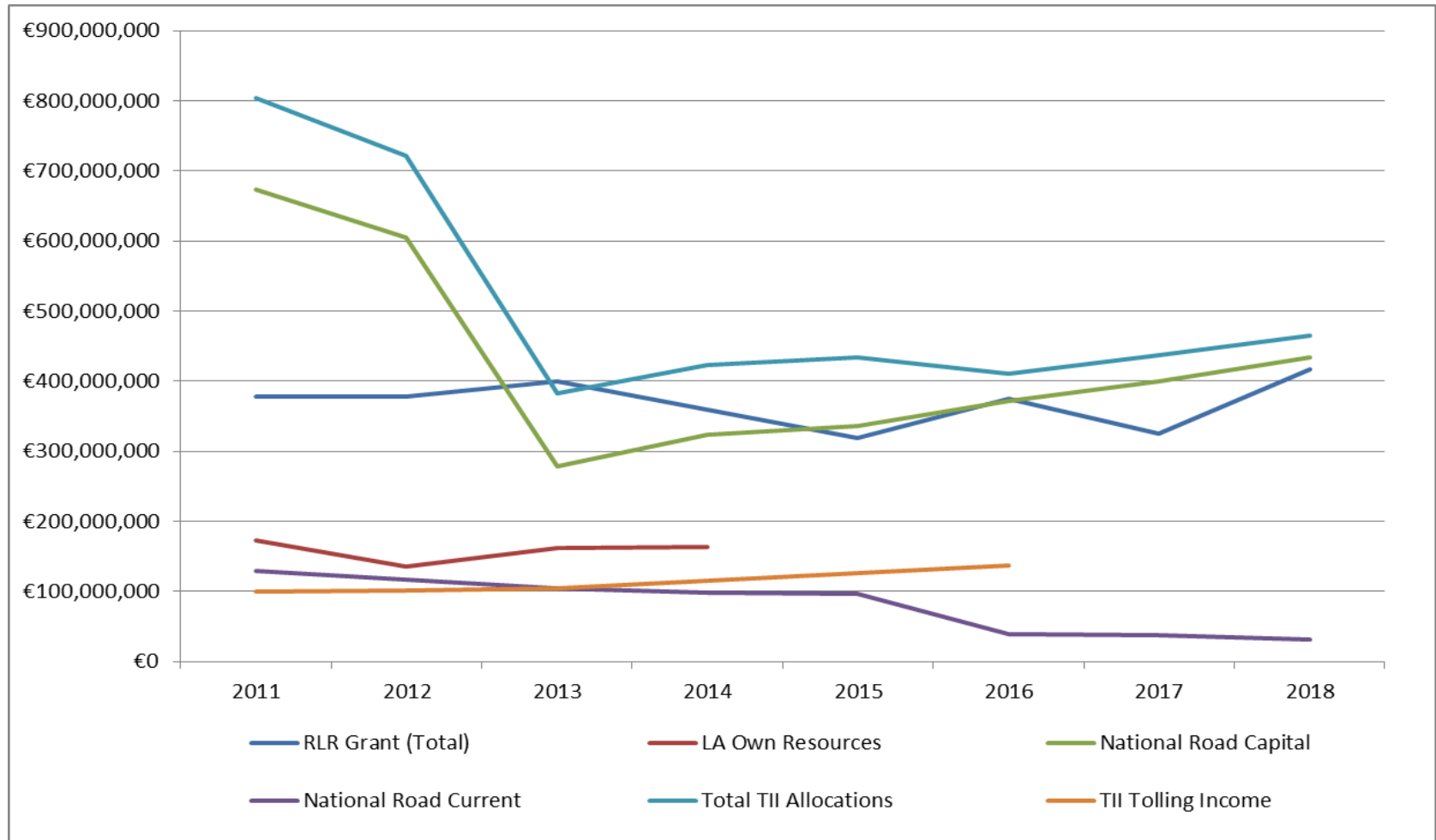
- Historical Funding Trends



Regional and Local Roads



- Historical Trends



Regional and Local Roads



Maintenance & Rehabilitation Needs

Surface Dressing

Minimum length of required per year is 4,700 km i.e. **5% of network.**

Achieve just over half of target in 2013

Strengthening

Minimum length of required per year is 4,700 km i.e. **5% of network.**

Achieve significantly less than strengthening target in 2013

Steady State Expenditure (2014 - SFILT)

- €580m (2014)
- €630m (2018)
- Is this enough?
- Backlog?

Regional and Local Roads



Maintenance & Rehabilitation Needs

Other Assets

- Bridges (30,000) ?
- Public Lighting ?
- Traffic Equipment ?
- Footways ?
- Drainage ?

Backlog ?

Claims ?

SFILT being updated with PLUTO project



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Road Management

Success Factors (World Bank)



PROCESSES – PEOPLE - TECHNOLOGY - FUNDING

For Ireland this means: -

Processes – Guidelines / Circulars mandating setting out requirements for use

People – Setting up the RMO as support office / centre of excellence

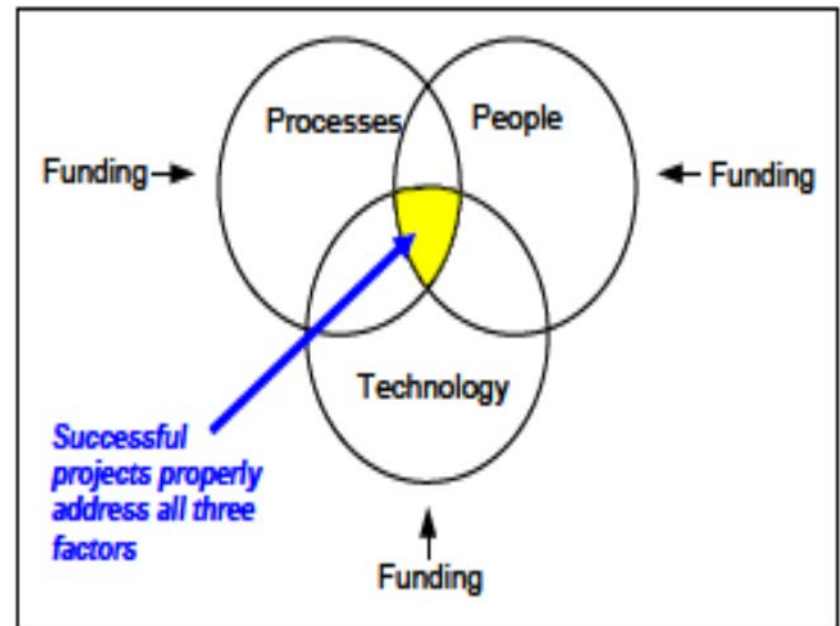
Technology – MapRoad

Funding – RLR Investment Programme

Will ultimately fail: -

- If implemented in an environment where there are no people to run it,
- where the business processes are not in place to utilise it (very nice system in the corner!).

For an RMS to be successful, the importance of each component must be clear.



Pavement Management



The process of planning the maintenance and repair of a network of roadways in order to optimise conditions over the entire network.

Incorporates life cycle costs into a more systematic approach

A Pavement Management System (PMS) is a software planning tool used to:

- aid pavement management decisions.
- model future pavement deterioration due to traffic and weather
- recommend maintenance and repairs to the road's pavement based on the type and age of the pavement and various measures of existing pavement quality.

Research has shown that it is far less expensive to keep a road in good condition than it is to repair it once it has deteriorated. This is why pavement management systems place the priority on preventive maintenance of roads in good condition, rather than reconstructing roads in poor condition.

Pavement Management Process



A pavement management approach is a process that consists of a number of typical tasks / steps to include:

- Asset Inventory / Definition
 - *Identifying pavement conditions, identifying good, fair and poor pavements.*
- Prioritisation
 - *Assign importance ratings for road segments, based on traffic volumes, road functional class, and community demand.*
- Condition Prediction & Analysis
- Work Planning & Scheduling
 - *maintenance of good roads to keep them in good condition.*
 - *repairs of poor and fair pavements as remaining available funding allows.*

Pavement Management - Objectives



So far developed and implemented a system to record: -

- Works on the Road Network such as: -
 - *Road Openings (Licensing System)*
 - *Pavement Surface Maintenance / Improvement Works*
- Condition of the Network for a range of parameters (visual and mechanical)
- Inventory (surface, geometry, etc.)
- Speed Limits

Technology / IT (LGMA)



MapRoad

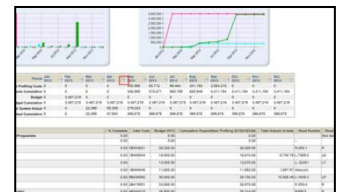
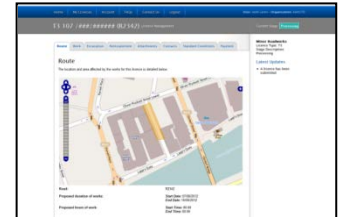
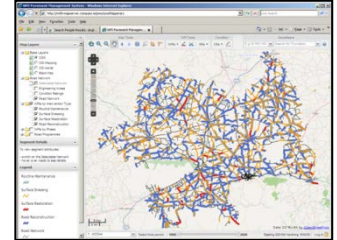
Integrated, Geographical Information System (GIS) enabled, Roads Management System.

MapRoad has five main elements:

1. Desktop System (original system)
 - *Bridges / Collisions / Hazards*
 - *Mechanical Data Viewer (2009)*
2. Web Based Interface (since 2010)
3. Licensing system
4. Project /Financial Module,
5. Mobile Apps

Publically owned WEB based

Open source software solutions where possible.



Pavement Surface Condition Index (PSCI)



Condition Rating Index (2012 & 2013) – 3 Manuals
 Project Level & Network Level implementation (RW 21/2014)

Overall Rating	Primary Rating Indicators*	Secondary Rating Indicators*
10	<u>No visible defects.</u>	Road surface in perfect condition, like new.
9	<u>Less than 10 % of surface with surface defects.</u>	Road surface in very good condition.
8	<u>10% to 30% of surface with surface defects¹</u>	Little or No Other defects.
7	<u>Greater than 30% of surface with surface defects¹</u>	Little or No Other defects. Old surface with aged appearance.
6	<u>Less than 20% of other Cracking² may be present.</u> <u>Patching generally in good condition.</u> <u>May be out of shape requiring some reduction in driver speed.</u>	Surface defects ¹ may be present. No structural distresses ³
5	<u>Greater than 20% Cracking² present.</u> <u>Patching generally in fair condition.</u> <u>Out of shape, requiring reduction in driver speed.</u> <u>Many localised structural distress³ (< 5 sq.m of surface) may be present.</u>	Surface defects ¹ may be present.
4	<u>Structural Distress³ present.</u> <u>Rutting or Alligator Cracking for 5% to 25% of surface.</u> <u>Short lengths of Edge Breakup/Cracking.</u> <u>Small number of Potholes.</u>	Other defects may be present.
3	<u>Significant areas of Structural distress³.</u> <u>Rutting or Alligator Cracking for 25% to 50% of surface.</u> <u>Significant continuous lengths with Edge Breakup/Cracking.</u> <u>Frequent Potholes.</u>	Other defects may be present.
2	<u>Large areas of Structural distress³.</u> <u>Rutting or Alligator Cracking for over 50% of surface.</u> <u>Severe Rutting (over 75 mm deep).</u> <u>Extensive Patching in very poor condition.</u> <u>Many Potholes.</u>	Very difficult to drive on.
1	<u>Severe Structural distress³ with extensive loss of pavement surface.</u> <u>Road Disintegration of surface.</u> <u>Many large and deep Potholes.</u> <u>Patching in failed condition.</u>	Severe Deterioration Virtually undrivable.

Overall Rating	Treatment Measures	Surface	Structure
		Excellent	Excellent
9	Routine Maintenance	Very Good	Very Good
8		Fair	Good
7	Resealing & Restoration of Skid Resistance	Poor	Good
6		Fair	Fair
5	Surface Restoration - Carry out localised repairs and treat with surface treatment or thin overlay.	Poor	Fair
4		Poor Overall	Poor Overall
3	Structural Overlay - Required to strengthen road. Localised patching and repairs required prior to overlay.	Poor Overall	Poor Overall
2		Very Poor Overall	Very Poor Overall
1	Road Reconstruction - Needs full depth reconstruction with extensive base repair.	Failed Overall	Failed Overall

Condition <=> Rating <=> Treatment <=> Money

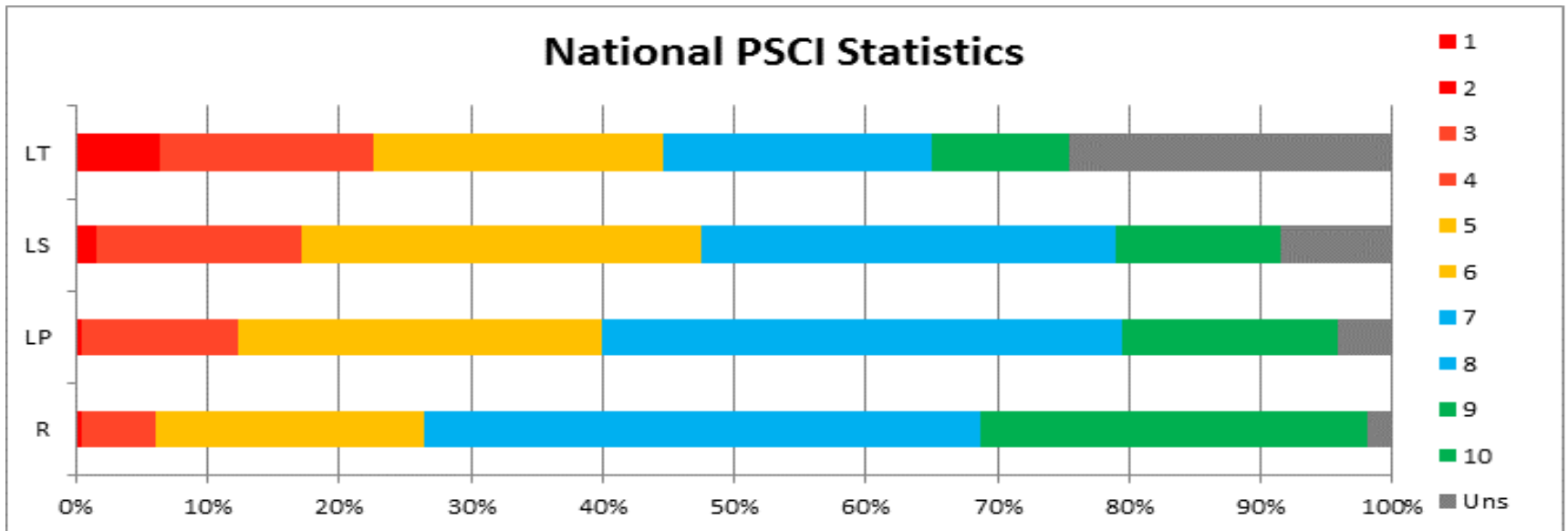
Pavement Surface Condition Index (PSCI)



Condition Rating Index (2012 & 2013) – 3 Manuals

Project Level & Network Level implementation - RW 3/2018 (previously RW 21/2014)

	1	2	3	4	5	6	7	8	9	10	Uns
R	0%	0%	0%	5%	6%	14%	22%	20%	22%	8%	2%
LP	0%	0%	1%	11%	8%	20%	24%	15%	13%	4%	4%
LS	1%	1%	3%	13%	11%	19%	21%	10%	9%	3%	8%
LT	4%	3%	4%	12%	9%	13%	14%	7%	8%	2%	25%
Total	1%	1%	2%	11%	9%	17%	20%	12%	12%	4%	11%



Key Users / Benefits



Pavement Surface Condition Index (PSCI)

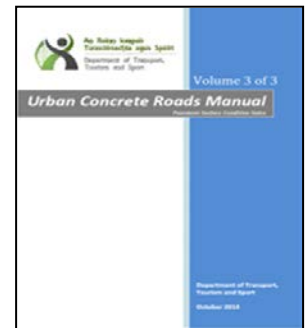
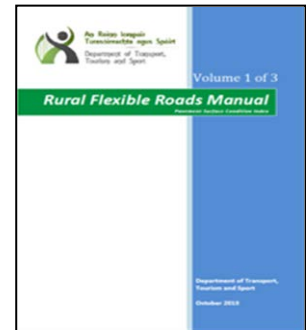
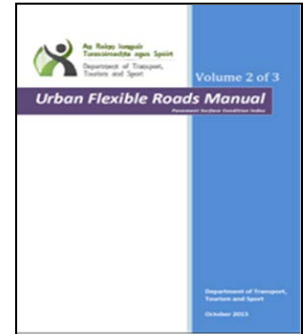
Extensively used for Managing Works / Funding (LA / RMO / DTTAS / DPER)

but also by: -

- *C&AG / Oireachtas PAC*
- *National Oversight (NOAC / DTTAS)*
- *Timber Transport*
- *Milk Collection*
- *Construction Impacts*
- *Road Openings*

Ubiquitous

However this raises issues on data quality / training

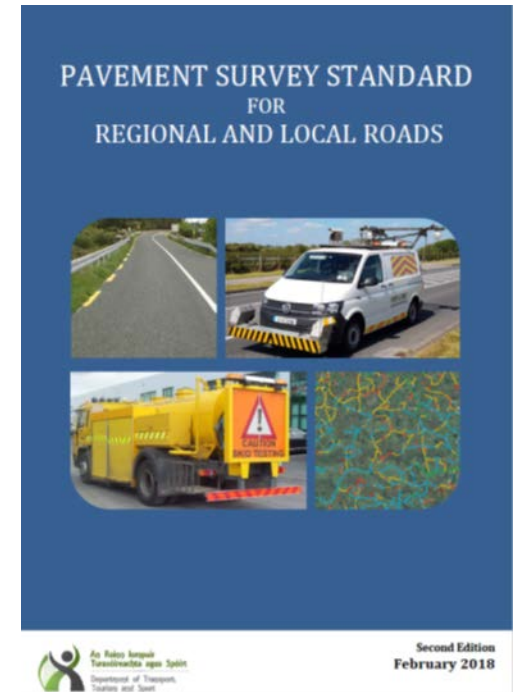


Pavement Management Survey Regime



Pavement Management Survey Regime Review

- A lot of the building blocks are in place
- Essential to have an effective survey regime for an effective PMS (bread & butter)
- In place since 2014 as Circular RW 21 and followed on from earlier back to 2010

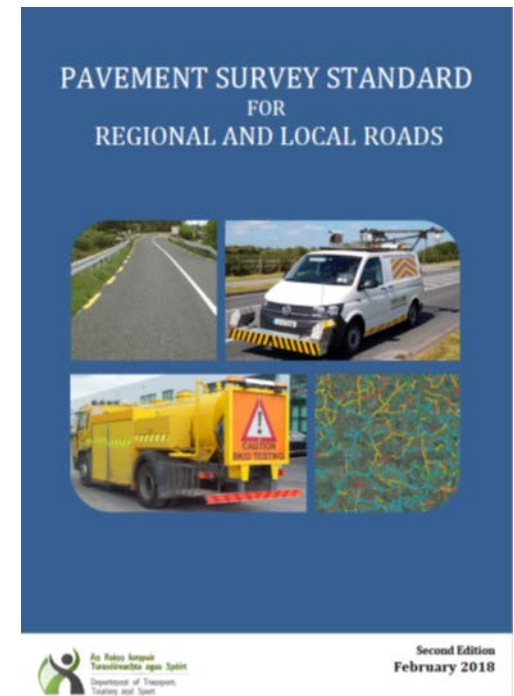


Pavement Management Survey Regime



Pavement Management Survey Regime Review

- How does PMS and Survey Regime Stand up / compare to others?
- What are other Pavement Management Systems doing?
- Is what we have effective?
- Are we achieving the objectives we should be?
- Where should we be going next?



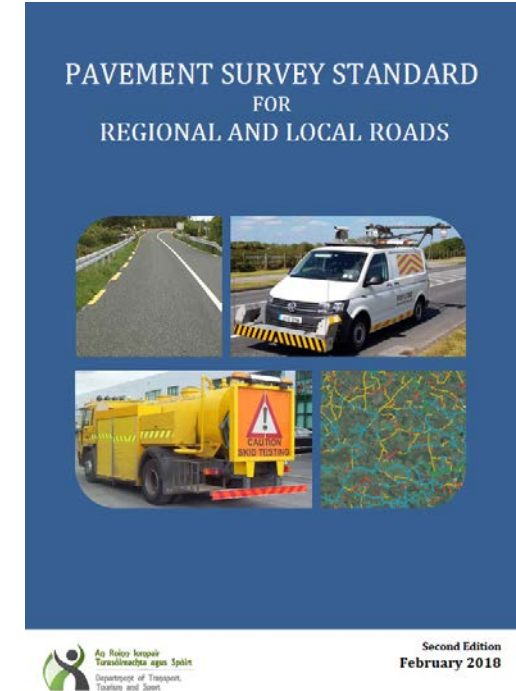
Pavement Management Survey Regime



New issued February 2018 (Circular RW 03)

Objectives

- Close out outstanding tasks (History of Works / Inventory)
- Improve efficiency of survey regime (mechanical / Visual)
- Improve context/background
- Improve alignment with current/emerging/future requirements
- Address Quality Control
- Address Training
- Define role of RMO more clearly for surveys and quality control





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Road Management Developments

Road Management Development



Main Areas – to date

Funding / Grants

Road (Asset) Management

Road Licensing

Road Management Development



Pavement Management Next Steps

User Improvements

National Level

- *Monitor and Track Performance (Indicators / KPI's etc.)*
- *Greater linkages to funding*

Network Level

- *Pavement Management Strategies*
- *Planning Pilots*

Needs to be Part of the Day Job (not something nice)

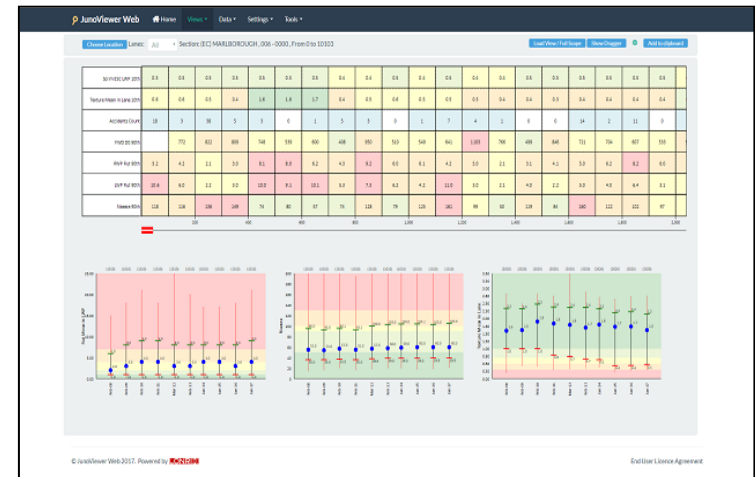
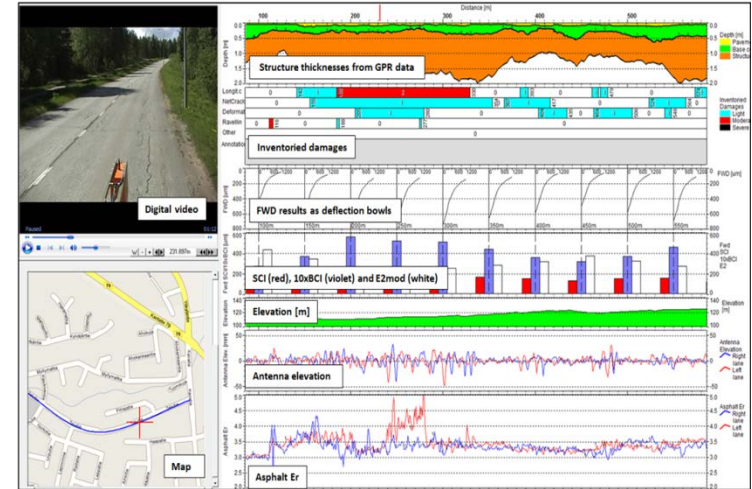
Road Management Development



Pavement Management Next Steps

Project Level

- *Decision processes for maintenance / improvement works*
- *Better decision making using data such as with 'strip maps'*
- *Works recording*



Road Management Development



Range of other areas in Road Asset Management: -

Bridges

Footways (RMO)

Collisions / Accidents

Public Lighting (RMO Cork)

Traffic Data - draft

Speed Limits (with review)

Road Management Development

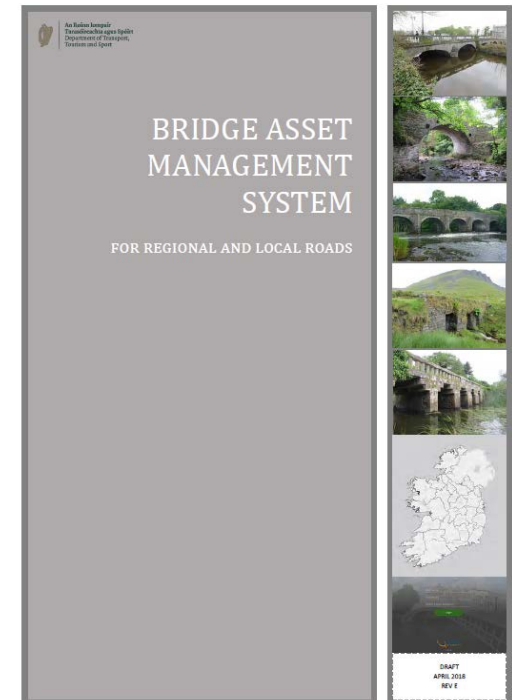


Bridges:

Local Authority Working Group established in 2016 in conjunction with Kildare CoCo.

Key priority areas are: -

- Guidelines (drafted)
 - *Basic Inventory*
 - *Maintenance Inspection*
 - *Engineering Inspection*
- Software (in development)
- Procurement
- Training (to support guidelines)



Road Management Development

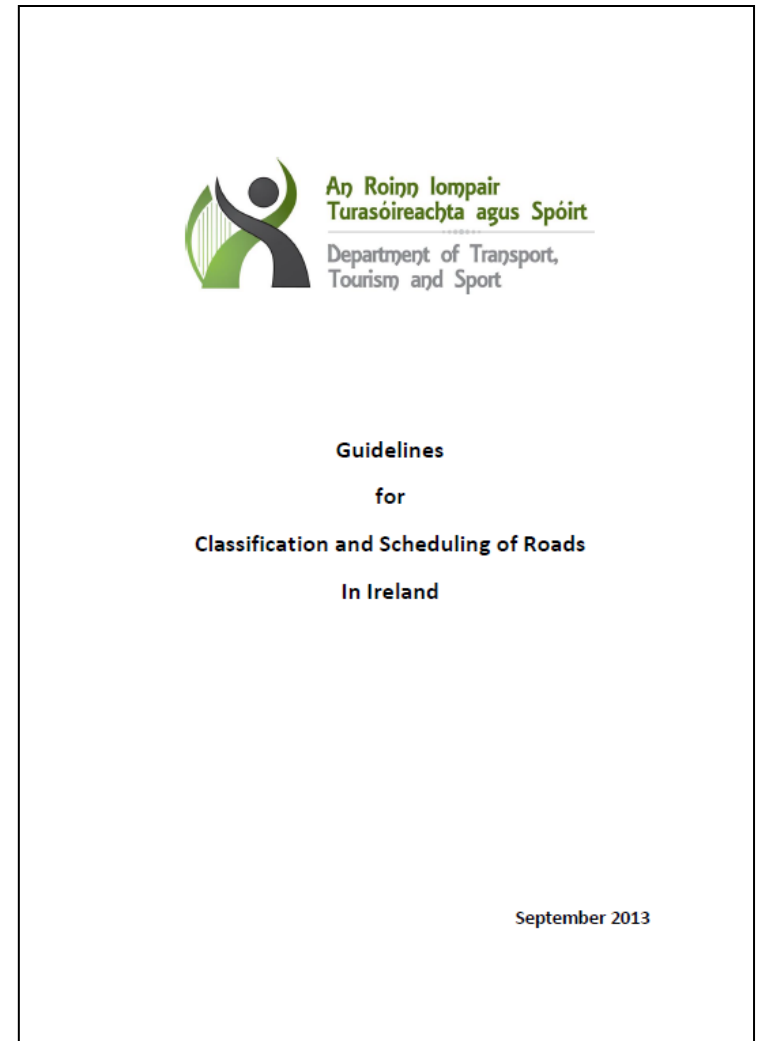


Road Schedule:

Last updated in 2013
Changes since

Issues arising

- Different types of Road
- Prime 2
- Dual Carriageways
- Junctions / Spurs
- CAV



Road Management Development

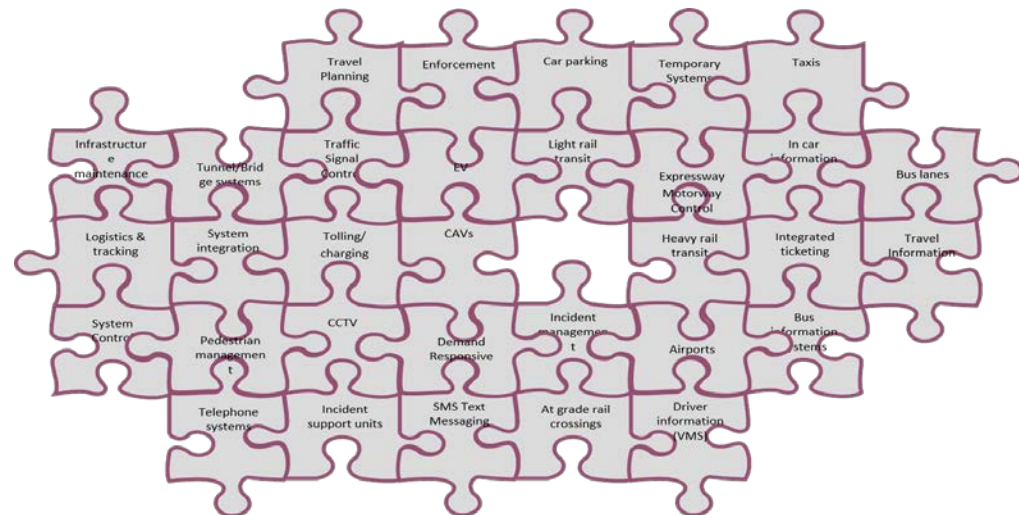


Connected and Autonomous Vehicles

Part of ITS

Stepped Implementation - jigsaw

Testing in Ireland



Road Management Development



Connected and Autonomous Vehicles

Impact / dependent on infrastructure

- *data*
- *design standards*
- *traffic*
- *maintenance*

New Infrastructure

- *ITS (physical / cloud)*



Road Management Development



Range of other areas for road licensing: -

Road Openings (Current)

Section 254 permits

— *Tables & Chairs*

— *Hoardings / Scaffolding*

Abnormal Loads

Events

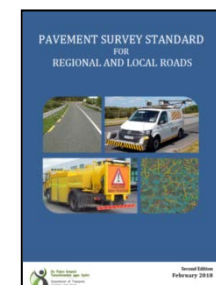
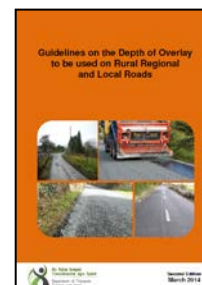
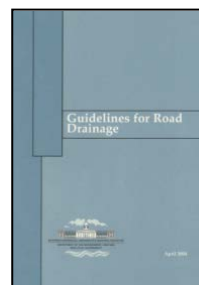
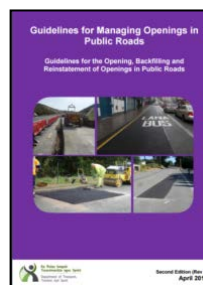
Guidance and Standards (DTTAS)



Department Guidelines

- Guidelines for Managing Openings in Public Roads (Purple Book) (2015 & 2017)
- Guidelines for Road Drainage
- Guidelines on the Depth of Overlay to be used on Rural Non National Roads (Orange Book) (2014)
- IPAG (Irish Pavement Asset Group) Guidelines (2015)
- Pavement Surface Condition Index (PSCI) (3 volumes) (2012 & 2013)
- Guidelines for Scheduling of Roads in Ireland (2012 & 2013)
- Standard on Pavement Management Surveys (2014 & **2018**)

On DTTAS & RMO Websites



Road Management Development



Institutional Structures

Road Management Office

- *Pavement Management*
- *Road Licensing*
- *Public Lighting*

DTTAS Support Office

- *Bridges*
- *Collisions*

Asset

- *Road Infrastructure*
- *MapRoad*
- *Data*

Other Gains

- C-ITS / CAV

Road Management Development



Benefits

- *Better maintained / managed road asset*
- *More efficient delivery on expenditure*
- *Reduced PL claims*

Other areas

- *C-ITS / CAV*



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Thank You

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8th January 2018

