The Institute of Asphalt Technology
Irish Branch

Managing the Regional and Local Road Network Pavements

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Department of Transport, Tourism and Sport

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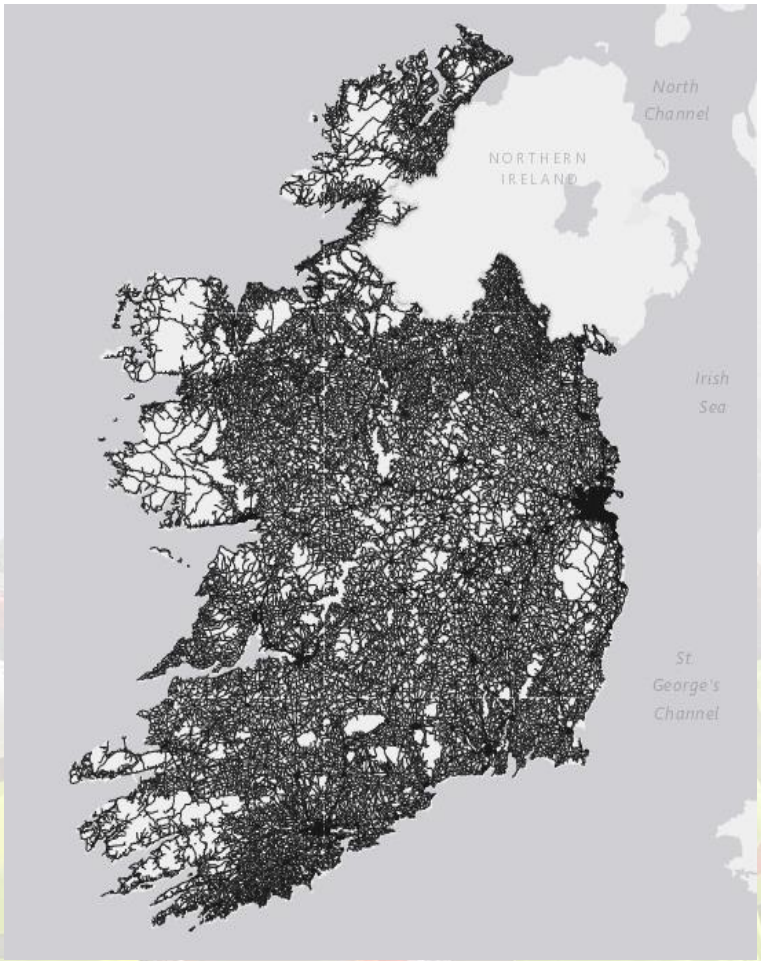
An Roinn Iompair
Turasóireachta agus Spóirt
Department of Transport,
Tourism and Sport

Background

Roads in Ireland

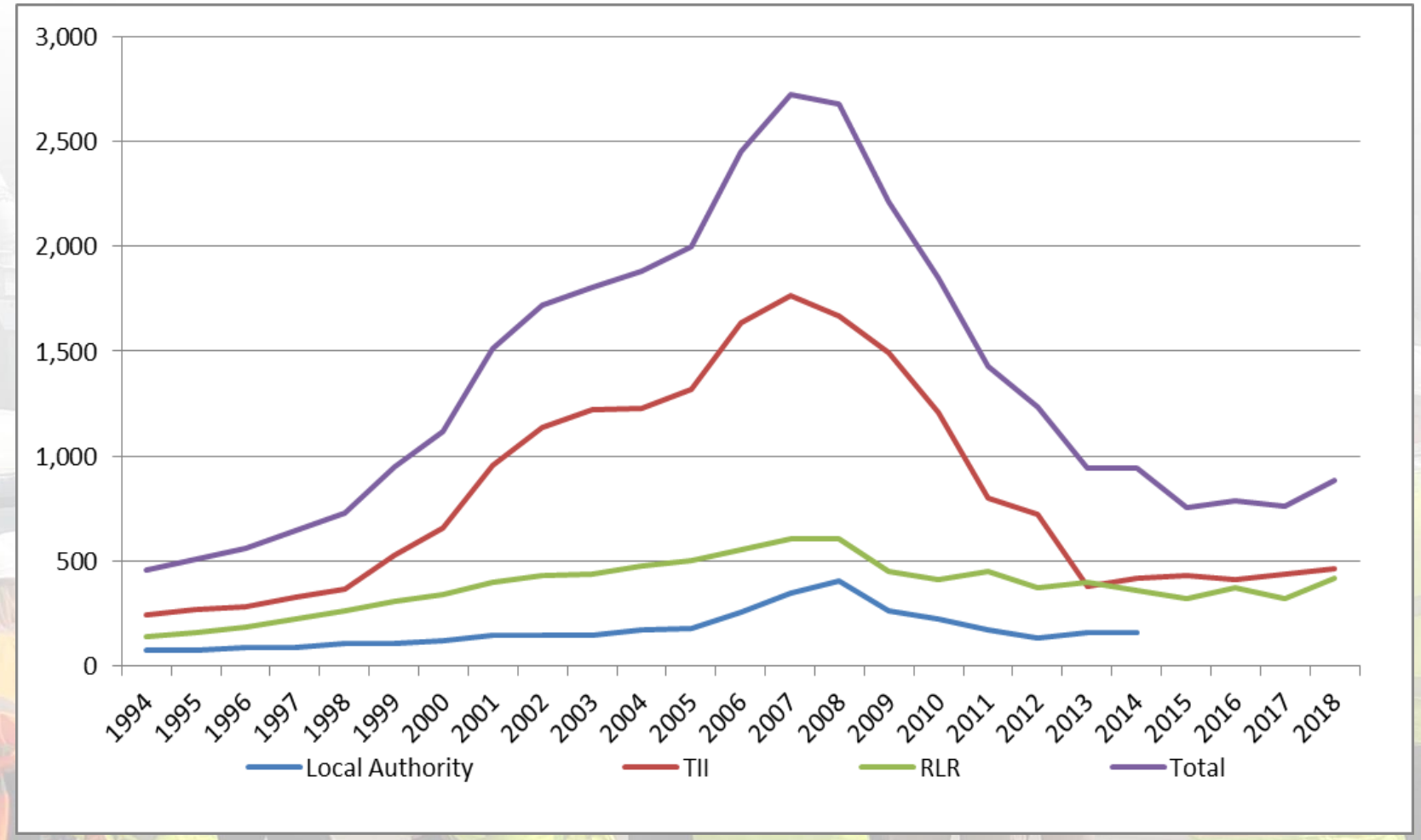
Road Class	% Length	Length (m)
N	**5.42%**	**5,412,847**
NP	2.72%	2,717,234
NS	2.70%	2,695,613
R	**13.15%**	**13,124,058**
R	13.15%	13,124,058
L	**81.43%**	**81,292,961**
LT	24.18%	24,138,459
LP	23.83%	23,788,815
LS	33.42%	33,365,687
Grand Total	**100.00%**	**99,829,867**



2.5 time EU average .... A lot of road!

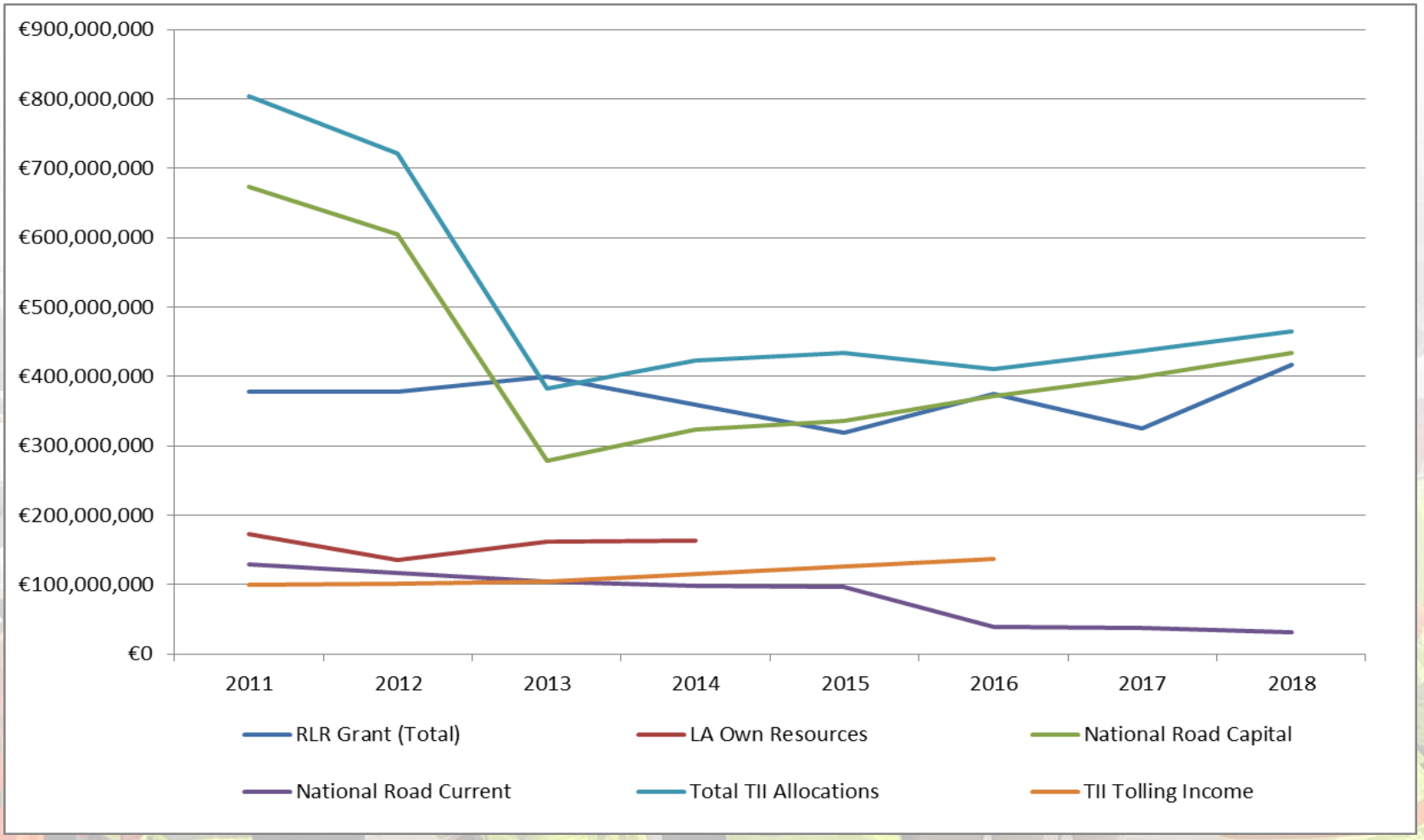
Regional and Local Roads

- Historical Funding Trends



Regional and Local Roads

- Historical Trends



Regional and Local Roads Investment Programme

Programme	2016 Amount € m	2017 Amount € m	2018 Amount € m	Comment
Restoration Maintenance	41	41	47	Surface dressing programme (+15%)
Restoration Improvement	148	165	195	Road pavement strengthening (+18%)
Discretionary Grant	64	70	71	
Bridge Rehabilitation	8	9	10	Bridge strengthening (+11%)
Drainage	-	-	10	New
CIS	-	-	10	New
Specific / Strategic	10	27	50	Large / Major projects (+85%)
Safety	8	7	8	Safety works & 30 km/h zones (+14%)
Miscellaneous	19	5	16	Includes salt purchase
Total	298	324	417	

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)
  - RI - €369m
  - RM - €87m
  - Routine - €124m
  - Total - €580m
  - Is this enough?

Regional and Local Roads

Maintenance & Rehabilitation Needs

- Backlog ?
- Other Assets
  - Bridges (30,000) ?
  - Public Lighting ?
  - Traffic Equipment ?
  - Drainage ?
- SFILT being updated with PLUTO project

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Road Management

Success Factors (World Bank)

- Like any system the success of an RMS system depends three fundamental components:

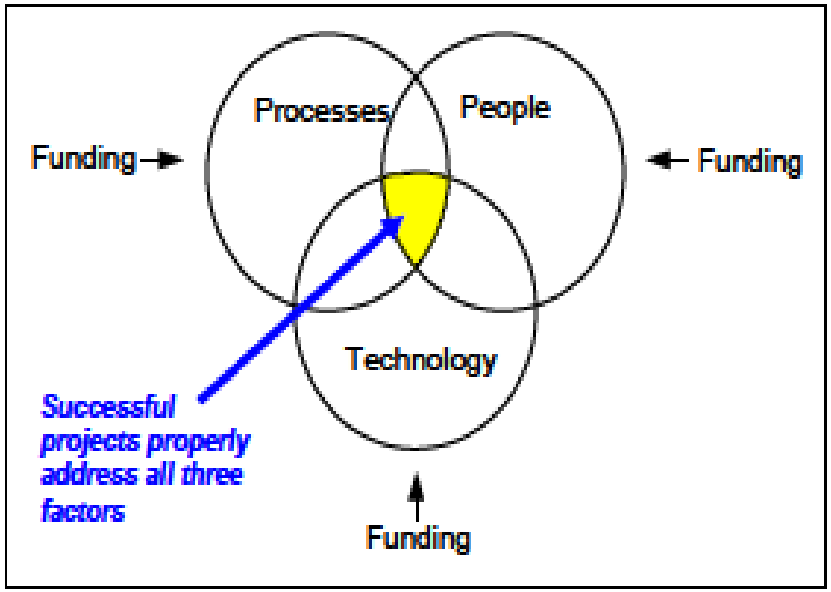
PROCESSES – PEOPLE - TECHNOLOGY - FUNDING

- There must also be a commitment to adequate funding. If any of these are lacking, the system will not be successful.

The best technology in the world 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 utilize it.

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



Success Factors (World Bank)

PROCESSES – PEOPLE - TECHNOLOGY - FUNDING

- For Ireland this means: -
- Processes – Guidelines / Circulars mandating and 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 utilize 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, and 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.

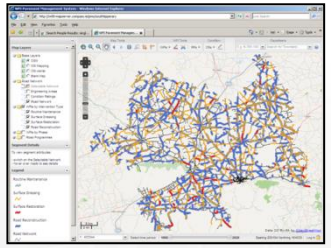
Pavement Management - Objectives

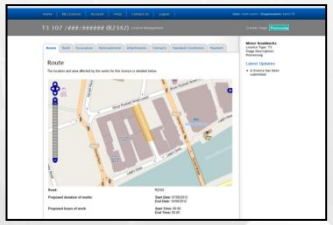
So far …. developed and implemented a system to record: -

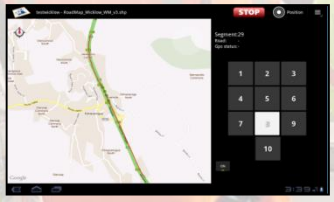
- Works on the Road Network such as: -
  - Road Openings (Licensing System)
  - Pavement Surface Maintenance / Improvement Works
- Condition of the Network for a range of parameters (visual and mechanical)
- Inventory and known value of Road Network (surface, geometry, etc.)
- Speed Limits

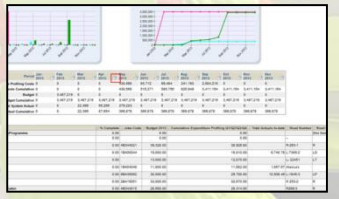
Technology / IT (LGMA)

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

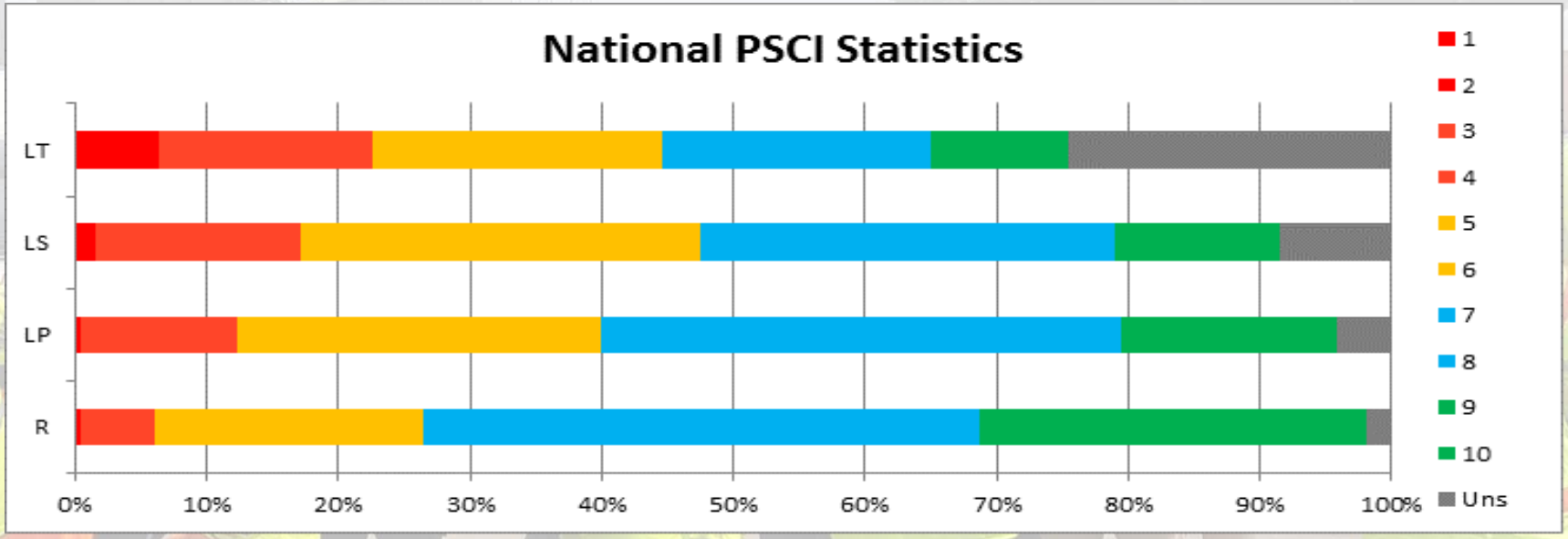
Overall Rating	Treatment Measures	Surface	Structure
10	**Routine Maintenance**	Excellent	
9		Very Good	
8	**Resealing & Restoration of Skid Resistance**	Fair	Good
7		Poor	
6	**Surface Restoration** – Carry out localised repairs and treat with surface treatment or thin overlay.	Fair	Fair
5		Poor	
4	**Structural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

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

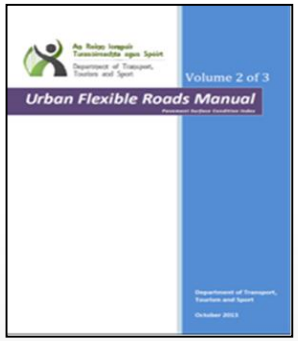
Pavement Surface Condition Index (PSCI)

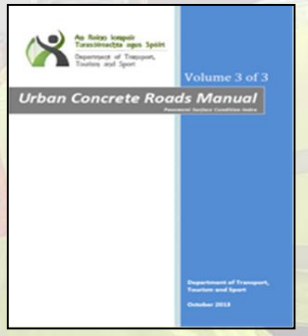
- Condition Rating Index (2012 & 2013) – 3 Manuals
- Project Level & Network Level implementation (RW 3/2018 previously RW 21/2014)

	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



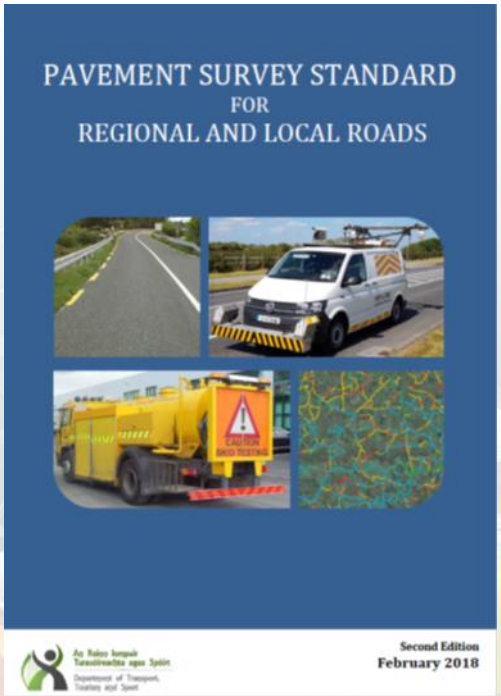


- Pavement Surface Condition Index (PSCI)
- Extensively used for Managing Works / Funding (LA / RMO / DTTAS / DPER)
- but also by: -
    - C&AG / Oireachtas PAC
    - National Oversight (NOAC / DTTAS)
    - Timber Transport
    - Milk Collection
    - Construction Impacts
    - Road Openings
- Ubiquitous
- However this raises issues on data quality / training

Pavement Management Survey Regime

Pavement Management Survey Regime - Review

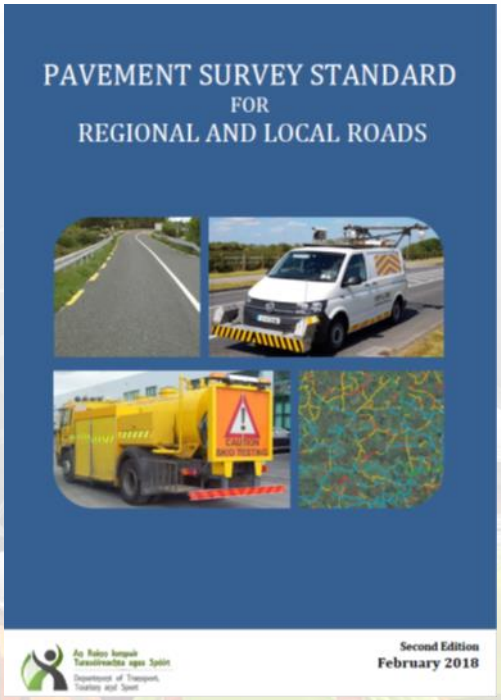
- A lot of the building blocks are in place
- Essential to have an effective survey regime for an effective PMS (bread & butter)
- In place since 2014 as Circular RW 21 and followed on from earlier back to 2010



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?

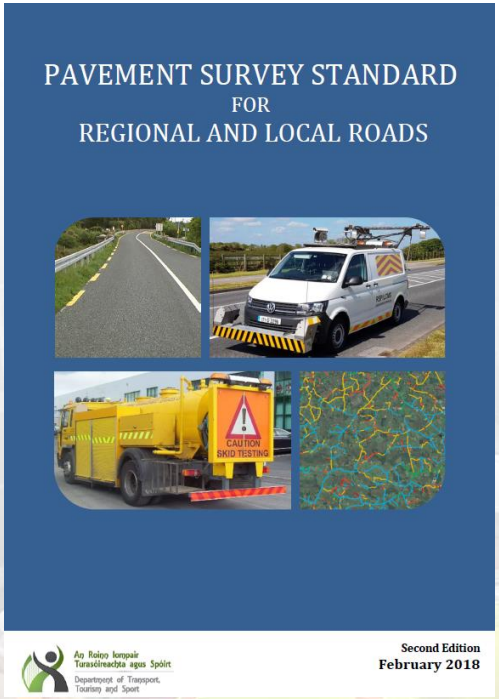


Pavement Management Survey Regime

New issued February 2018 (Circular RW 03)

Objectives

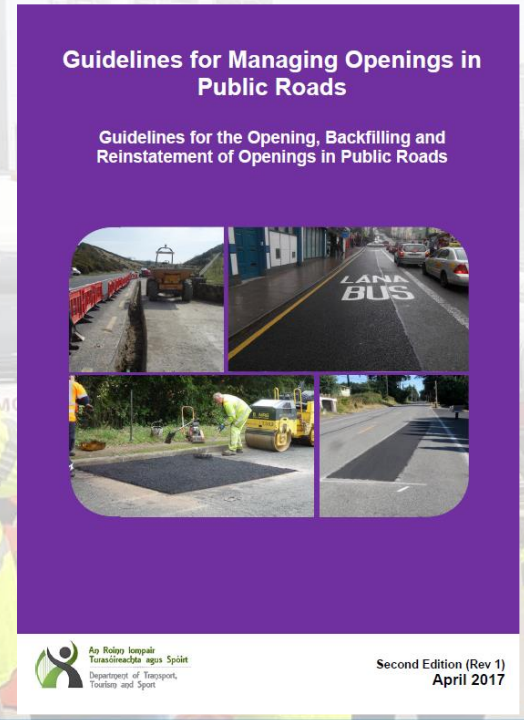
- Close out outstanding tasks (History of Works / Inventory)
- Improve efficiency of survey regime (mechanical / Visual)
- Improve context/background
- Improve alignment with current/emerging/future requirements
- Address Quality Control
- Address Training
- Define role of RMO more clearly for surveys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

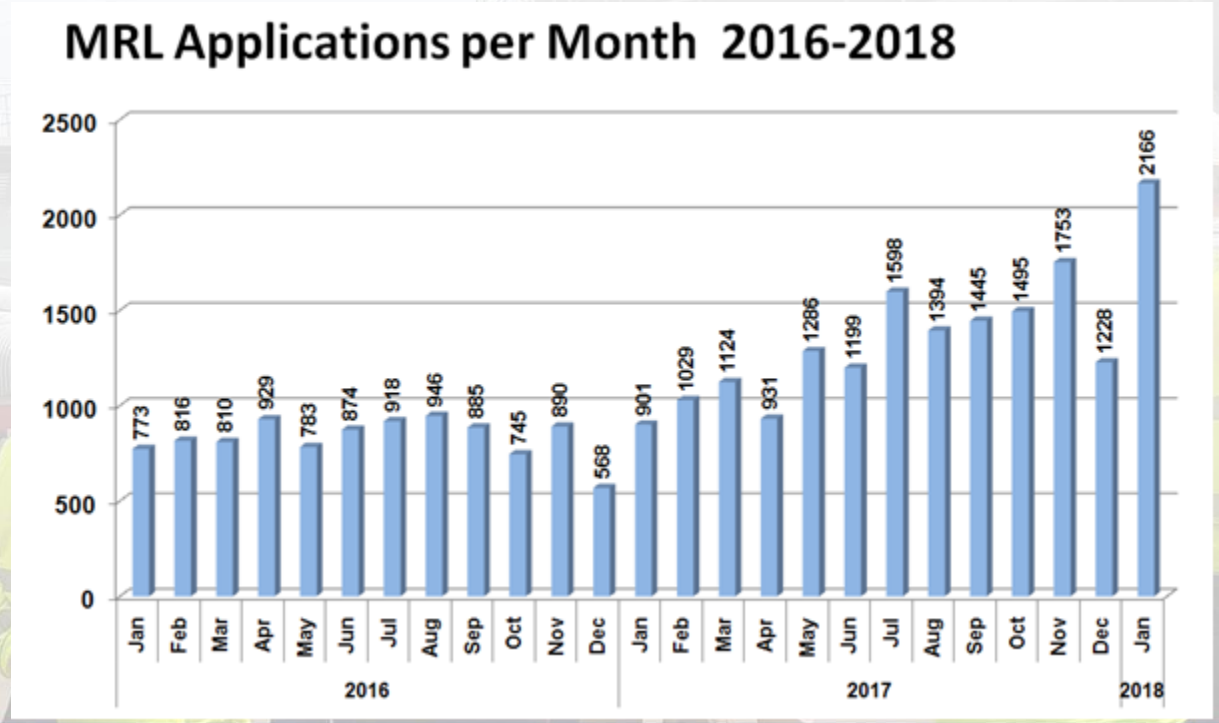


Road Licensing System

MapRoad Licensing system usage

- Guidelines applicable to all road authorities and to all road openings.
- 409 Organisations, 1650 individual Users (1000 Applicant Users/ 650 Authority Users)
- Very large task, still not complete
- Currently Road Openings but will expand to others





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Road Management Developments

Road Management Development

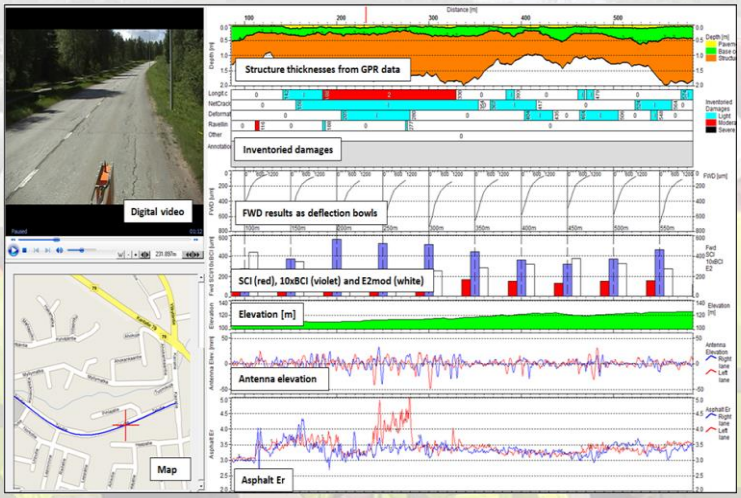
- Main Areas
  - Funding / Grants
  - Road (Asset) Management
  - Road Licensing

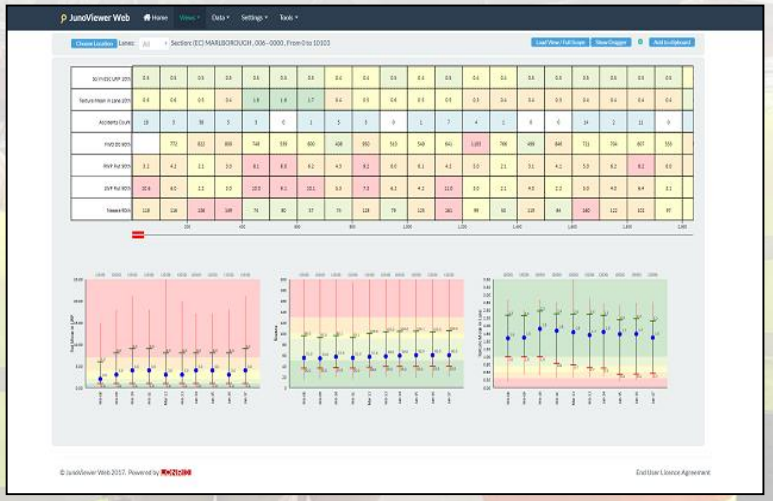
Road Management Development

- 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

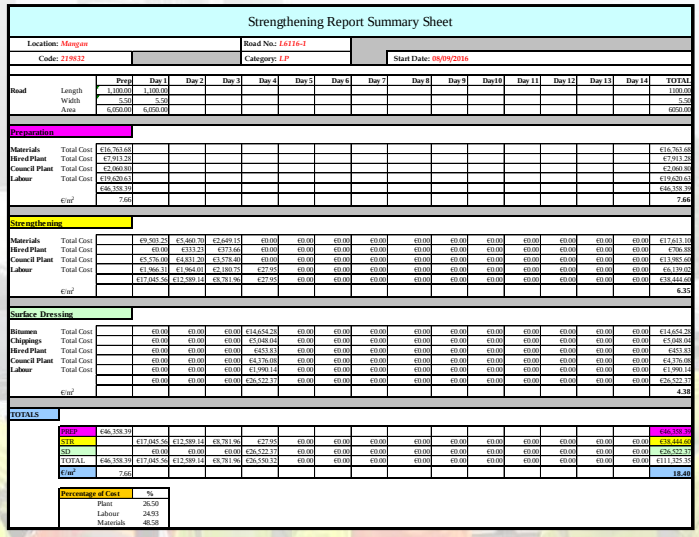
- Pavement Management Next Steps ……
  - Project Level
    - Decision processes for maintenance / improvement works
    - Better decision making using data such as with ‘strip maps’
    - Works recording





Road Management Development

- Pavement Management Next Steps
  - Project Level
    - Works recording

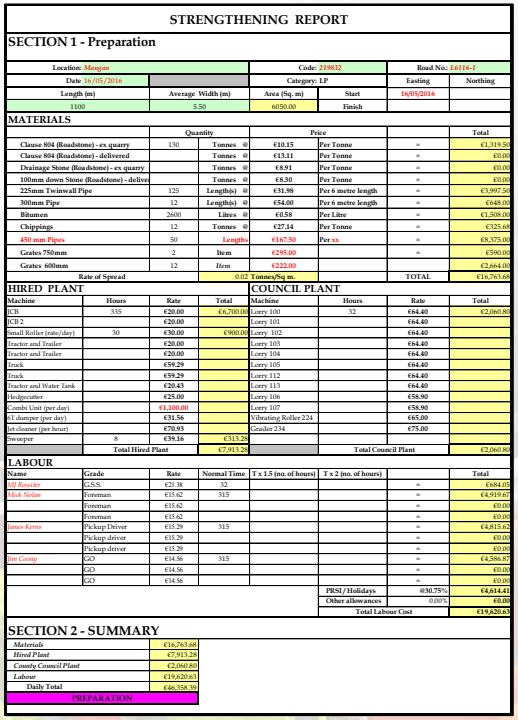


Strengthening Report Summary Sheet

Location: Mangan | Road No.: L6116-1 | Code: 219832 | Category: LP | Start Date: 08/09/2016

		Prep	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day10	Day 11	Day 12	Day 13	Day 14	TOTAL
Road	Length	1,100.00	1,100.00														1100.00
	Width	5.50	5.50														5.50
	Area	6,050.00	6,050.00														6050.00
Preparation																	
Materials	Total Cost	€16,763.68															€16,763.68
Hired Plant	Total Cost	€7,913.28															€7,913.28
Council Plant	Total Cost	€2,060.80															€2,060.80
Labour	Total Cost	€19,620.63															€19,620.63
		€46,358.39															€46,358.39
	€/m²	7.66															**7.66**
Strengthening																	
Materials	Total Cost		€9,503.25	€5,460.70	€2,649.15	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€17,613.10
Hired Plant	Total Cost		€0.00	€313.23	€373.66	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€706.89
Council Plant	Total Cost		€5,576.00	€4,831.20	€3,578.40	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€13,985.60
Labour	Total Cost		€1,966.31	€1,964.01	€2,180.75	€27.95	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€6,139.03
			€17,045.56	€12,589.14	€8,781.96	€27.95	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€38,444.60
	€/m²																**6.35**
Surface Dressing																	
Bitumen	Total Cost		€0.00	€0.00	€0.00	€14,654.28	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€14,654.28
Chippings	Total Cost		€0.00	€0.00	€0.00	€5,048.04	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€5,048.04
Hired Plant	Total Cost		€0.00	€0.00	€0.00	€453.83	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€453.83
Council Plant	Total Cost		€0.00	€0.00	€0.00	€4,376.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€4,376.00
Labour	Total Cost		€0.00	€0.00	€0.00	€1,990.14	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€1,990.14
			€0.00	€0.00	€0.00	€26,522.37	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€26,522.37
	€/m²																**4.38**
TOTALS																	
	PREP	€46,358.39															€46,358.39
	STR		€17,045.56	€12,589.14	€8,781.96	€27.95	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€38,444.60
	SD		€0.00	€0.00	€0.00	€26,522.37	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€26,522.37
	TOTAL	€46,358.39	€17,045.56	€12,589.14	€8,781.96	€26,550.32	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€0.00	€111,325.35
	€/m²	7.66															**18.40**

Percentage of Cost	%
Plant	26.50
Labour	24.93
Materials	48.58



STRENGTHENING REPORT

SECTION 1 - Preparation

Location: Mangan | Code: 219832 | Road No: L6116-1 | Date: 16/05/2016 | Category: LP | Easting | Northing | Length (m) | Average Width (m) | Area (Sq. m) | Start: 16/05/2016 | Finish

MATERIALS

	Quantity		Price			Total
Clause 804 (Roadstone) - ex quarry	130	Tonnes @	€10.15	Per Tonne	=	€1,319.50
Clause 804 (Roadstone) - delivered		Tonnes @	€13.11	Per Tonne	=	€0.00
Drainage Stone (Roadstone) - ex quarry		Tonnes @	€8.91	Per Tonne	=	€0.00
100mm down Stone (Roadstone) - delive		Tonnes @	€8.30	Per Tonne	=	€0.00
225mm Twinwall Pipe	125	Length(s) @	€31.98	Per 6 metre length	=	€3,997.50
300mm Pipe	12	Length(s) @	€54.00	Per 6 metre length	=	€648.00
Bitumen	2600	Litres @	€0.58	Per Litre	=	€1,508.00
Chippings	12	Tonnes @	€27.14	Per Tonne	=	€325.68
450 mm Pipes	50	Lengths	€147.50	Per xx	=	€8,375.00
Grates 750mm	2	Item	€295.00		=	€590.00
Grates 600mm	12	Item	€222.00		=	€2,664.00
Rate of Spread			0.02 Tonnes/Sq m.		TOTAL	€16,763.68

HIRED PLANT

Machine	Hours	Rate	Total
JCB	335	€20.00	€6,700.00
JCB 2		€20.00	
Small Roller (rate/day)	30	€30.00	€900.00
Tractor and Trailer		€20.00	
Tractor and Trailer		€20.00	
Truck		€59.29	
Tractor and Trailer		€59.29	
Tractor and Water Tank		€20.43	
Hedgecutter		€25.00	
€1,100.00		€31.56	
4T dumper (per day)		€70.93	
6T cleaner (per hour)		€39.16	€313.28
Sweeper	8	Total Hired Plant	€7,913.28

COUNCIL PLANT

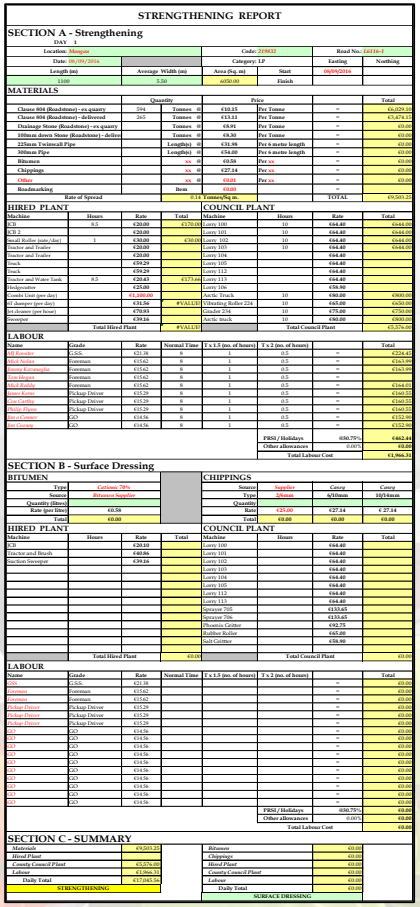
Machine	Hours	Rate	Total
Lorry 100	32	€64.40	€2,060.80
Lorry 101		€64.40	
Lorry 102		€64.40	
Lorry 103		€64.40	
Lorry 104		€64.40	
Lorry 105		€64.40	
Lorry 106		€58.90	
Lorry 107		€58.90	
Vibrating Roller 224		€65.00	
Grader 234		€75.00	
		Total Council Plant	€2,060.80

LABOUR

Name	Grade	Rate	Normal Time	T x 1.5 (no. of hours)	T x 2 (no. of hours)		Total
Jeff Rossiter	G.S.S.	€21.38	32			=	€684.08
Mick Nolan	Foreman	€15.62	315			=	€4,919.67
	Foreman	€15.62				=	€0.00
	Foreman	€15.62				=	€0.00
James Kerno	Pickup Driver	€15.29	315			=	€4,815.62
	Pickup driver	€15.29				=	€0.00
	Pickup driver	€15.29				=	€0.00
Jim Coony	GO	€14.56	315			=	€4,586.67
	GO	€14.56				=	€0.00
	GO	€14.56				=	€0.00
					PRSI / Holidays	@30.75%	€4,614.41
					Other allowances	0.00%	€0.00
					Total Labour Cost		€19,620.63

SECTION 2 - SUMMARY

Materials	€16,763.68
Hired Plant	€7,913.28
County Council Plant	€2,060.80
Labour	€19,620.63
Daily Total	€46,358.39
PREPARATION	



STRENGTHENING REPORT

SECTION A - Strengthening

DAY 1 | Location: Mangan | Code: 219832 | Road No.: L6116-1 | Date: 08/09/2016 | Category: LP | Easting | Northing | Length (m): 1100 | Average Width (m): 5.50 | Area (Sq. m): 6050.00 | Start: 08/09/2016 | Finish

MATERIALS

	Quantity		Price			Total
Clause 804 (Roadstone) - ex quarry	594	Tonnes @	€10.15	Per Tonne	=	€6,029.23
Clause 804 (Roadstone) - delivered	265	Tonnes @	€13.11	Per Tonne	=	€3,474.15
Drainage Stone (Roadstone) - ex quarry		Tonnes @	€8.91	Per Tonne	=	€0.00
100mm down Stone (Roadstone) - delive		Tonnes @	€8.30	Per Tonne	=	€0.00
225mm Twinwall Pipe		Length(s) @	€31.98	Per 6 metre length	=	€0.00
300mm Pipe		Length(s) @	€54.00	Per 6 metre length	=	€0.00
Bitumen		xx @	€0.58	Per xx	=	€0.00
Chippings		xx @	€27.14	Per xx	=	€0.00
Other		xx @	€0.01	Per xx	=	€0.00
Roadmarking		Item	€0.00		=	
Rate of Spread			0.14 Tonnes/Sq m.		TOTAL	€9,503.25

HIRED PLANT

Machine	Hours	Rate	Total
JCB	8.5	€20.00	€170.00
JCB 2		€20.00	
Small Roller (rate/day)	1	€30.00	€30.00
Tractor and Trailer		€20.00	
Tractor and Trailer		€20.00	
Truck		€59.29	
Truck		€59.29	
Tractor and Water Tank	8.5	€20.43	€173.66
Hedgecutter		€25.00	
Combi Unit (per day)		€1,100.00	
4T dumper (per day)		€31.56	#VALUE!
6T cleaner (per hour)		€70.93	
Sweeper		€39.16	
		Total Hired Plant	#VALUE!

COUNCIL PLANT

Machine	Hours	Rate	Total
Lorry 100	10	€64.40	€644.00
Lorry 101	10	€64.40	€644.00
Lorry 102	10	€64.40	€644.00
Lorry 103	10	€64.40	€644.00
Lorry 104		€64.40	
Lorry 105		€64.40	
Lorry 112		€64.40	
Lorry 113		€64.40	
Lorry 106		€58.90	
Articulated Truck	10	€80.00	€800.00
Vibrating Roller 224	10	€65.00	€650.00
Grader 234	10	€75.00	€750.00
Articulated truck	10	€80.00	€800.00
	Total Council Plant		€5,576.00

LABOUR

Name	Grade	Rate	Normal Time	T x 1.5 (no. of hours)	T x 2 (no. of hours)		Total
Jeff Rossiter	G.S.S.	€21.38	8	1	0.5	=	€224.47
Mick Nolan	Foreman	€15.62	8	1	0.5	=	€163.99
Danny Kavanaugh	Foreman	€15.62	8	1	0.5	=	€163.99
Tom Hogan	Foreman	€15.62	8	1	0.5	=	
Mick Reilly	Foreman	€15.62	8	1	0.5	=	€164.01
Brian Ennis	Pickup Driver	€15.29	8	1	0.5	=	€160.53
Con Carthy	Pickup Driver	€15.29	8	1	0.5	=	€160.53
Philip Flynn	Pickup Driver	€15.29	8	1	0.5	=	€160.53
Pat o Connor	GO	€14.56	8	1	0.5	=	€152.90
Jim Cooney	GO	€14.56	8	1	0.5	=	€152.90
					PRSI / Holidays	@30.75%	€462.44
					Other allowances	0.00%	€0.00
					Total Labour Cost		€1,966.31

SECTION B - Surface Dressing

BITUMEN

Type	Cationic 70%		
Source	Bitumen Supplier		
Quantity (litres)			
Rate (per litre)	€0.58		
Total	€0.00		

CHIPPINGS

Source	Supplier	Canny	Canny
Type	20mm	6/10mm	10/14mm
Quantity			
Rate	€25.00	€27.14	€ 27.14
Total	€0.00	€0.00	€0.00

HIRED PLANT

Machine	Hours	Rate	Total
JCB		€20.10	
Tractor and Brush		€40.86	
Suction Sweeper		€39.16	
		Total Hired Plant	€0.00

COUNCIL PLANT

Machine	Hours	Rate	Total
Lorry 100		€64.40	
Lorry 101		€64.40	
Lorry 102		€64.40	
Lorry 103		€64.40	
Lorry 104		€64.40	
Lorry 105		€64.40	
Lorry 112		€64.40	
Lorry 113		€64.40	
Sprayer 705		€133.65	
Sprayer 706		€133.65	
Dynamic Grither		€92.75	
Rubber Roller		€65.00	
Self Grither		€58.90	
	Total Hired Plant	€0.00	Total Council Plant €0.00

LABOUR

Name	Grade	Rate	Normal Time	T x 1.5 (no. of hours)	T x 2 (no. of hours)		Total
Jeff	G.S.S.	€21.38				=	€0.00
Foreman	Foreman	€15.62				=	€0.00
Foreman	Foreman	€15.62				=	€0.00
Pickup Driver	Pickup Driver	€15.29				=	€0.00
Pickup Driver	Pickup Driver	€15.29				=	€0.00
Pickup Driver	Pickup Driver	€15.29				=	€0.00
GO	GO	€14.56				=	€0.00
GO	GO	€14.56				=	€0.00
GO	GO	€14.56				=	€0.00
GO	GO	€14.56				=	€0.00
GO	GO	€14.56				=	€0.00
GO	GO	€14.56				=	€0.00
GO	GO	€14.56				=	€0.00
GO	GO	€14.56				=	€0.00
GO	GO	€14.56				=	€0.00
					PRSI / Holidays	@30.75%	€0.00
					Other allowances	0.00%	€0.00
					Total Labour Cost		€0.00

SECTION C - SUMMARY

Materials	€9,503.25	Bitumen	€0.00
Hired Plant	€0.00	Chippings	€0.00
County Council Plant	€5,576.00	Hired Plant	€0.00
Labour	€1,966.31	County Council Plant	€0.00
Daily Total	€17,045.56	Labour	€0.00
STRENGTHENING		Daily Total	€0.00
		SURFACE DRESSING	

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

Road Management Development

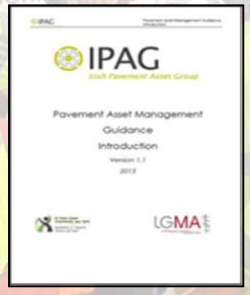
- Range of other areas in Asset Management: -
  - Bridges
  - Footways
  - Collisions / Accidents
  - Public Lighting
  - Traffic Data
  - Speed Limits

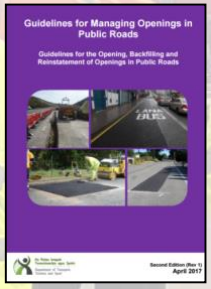
Road Management Development

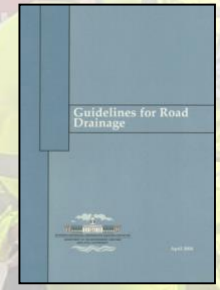
- Range of other areas for road licensing: -
  - Road Openings (Current)
  - Section 254 permits
    - Tables & Chairs
    - Hoardings / Scaffolding
  - Abnormal Loads
  - Events

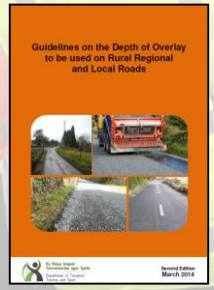
Guidance and Standards (DTTAS)

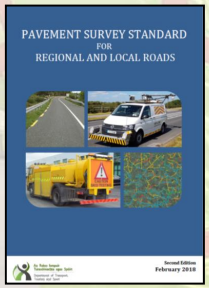
- Department Guidelines
  - Guidelines for Managing Openings in Public Roads (Purple Book) (2015 & 2017)
  - Guidelines for Road Drainage
  - Guidelines on the Depth of Overlay to be used on Rural Non National Roads (Orange Book) (2014)
  - IPAG (Irish Pavement Asset Group) Guidelines (2015)
  - Pavement Surface Condition Index (PSCI) (3 volumes) (2012 & 2013)
  - Guidelines for Scheduling of Roads in Ireland (2012 & 2013)
  - Circular 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
- System is an Asset
- Data is an Asset
- Other Gains
  - C-ITS
  - CAV

The Institute of Asphalt Technology
Irish Branch

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

Thank You

John McCarthy

Department of Transport, Tourism and Sport

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