



NRA NATIONAL ROADS CONFERENCE 2014

National Road Maintenance in Galway

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Galway County Council

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Galway County Council

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Galway County Council

The main purpose of the Maintenance Programme is to

- Provide consistency of standards of road maintenance across the National Network
- Demonstrate clearly that the funding allocated is being utilised to maximum benefit
- Highlight locations requires specific intervention
- Provide a sound technical basis for future maintenance funding.



Route Type	Responsibility	Maintained By
Motorways	National Roads Authority or PPP contracts	PPP companies or by private contractors under direct contract and supervision by the NRA
National Routes	National Roads Authority	Local Authorities on behalf of the NRA
Regional Roads	Department of Tourism Transport and Sport (DTTAS)	Local Authorities
Local Roads	Local Authority and DTTAS	Local Authorities



No	Maintenance Category	Type of Activity
1	Drainage Systems	Maintain water cuts (tables) Maintain drainage systems ie gully cleaning pipe jetting
2	Footpath Repairs	Repair footpath defects
3	Landscape Areas and Trees	Grass cutting, verge trimming possible tree and shrub surgery
4	Minor Pavement Maintenance	Pothole repair, repair localised defects, generally any repairs would not exceed 10 sq metres.
5	Road Sweeping Litter Removal	Road sweeping, litter picks as required removal of debris
6	Safety Barriers/Fencing and Walls	Repair of Safety Barriers (contract) Ensure repair of boundary fences/walls with roads margins
7	Signs/ Lines	Repair of damaged signs, junction bollards, and remarking of lines. (contract)
8	Verge Median Maintenance	Verge trimming, hedgecutting
8	Emergency Work	Aftermath of accident ie oil on road, severe weather ie localised flood
9	Other	



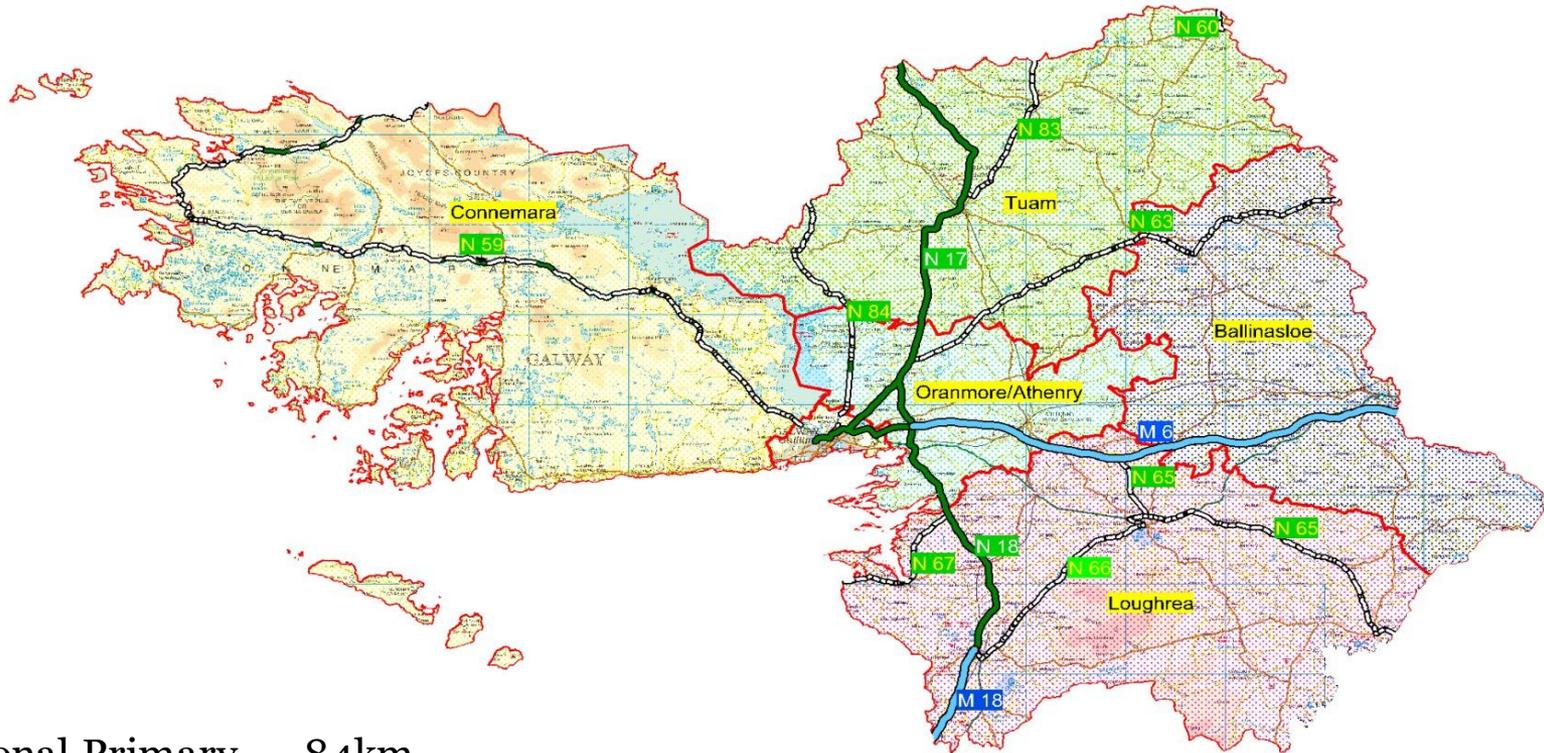
Factors Affecting the implementation of Maintenance of National Roads

- The ever decreasing number of outdoor staff.
- The demands of Health and Safety regulation compliance in particular staff requirements for implementation of TMP.
- Increasing availability and flexibility of the private sector to carry out road maintenance activities.



National Road Network and Municipal Districts

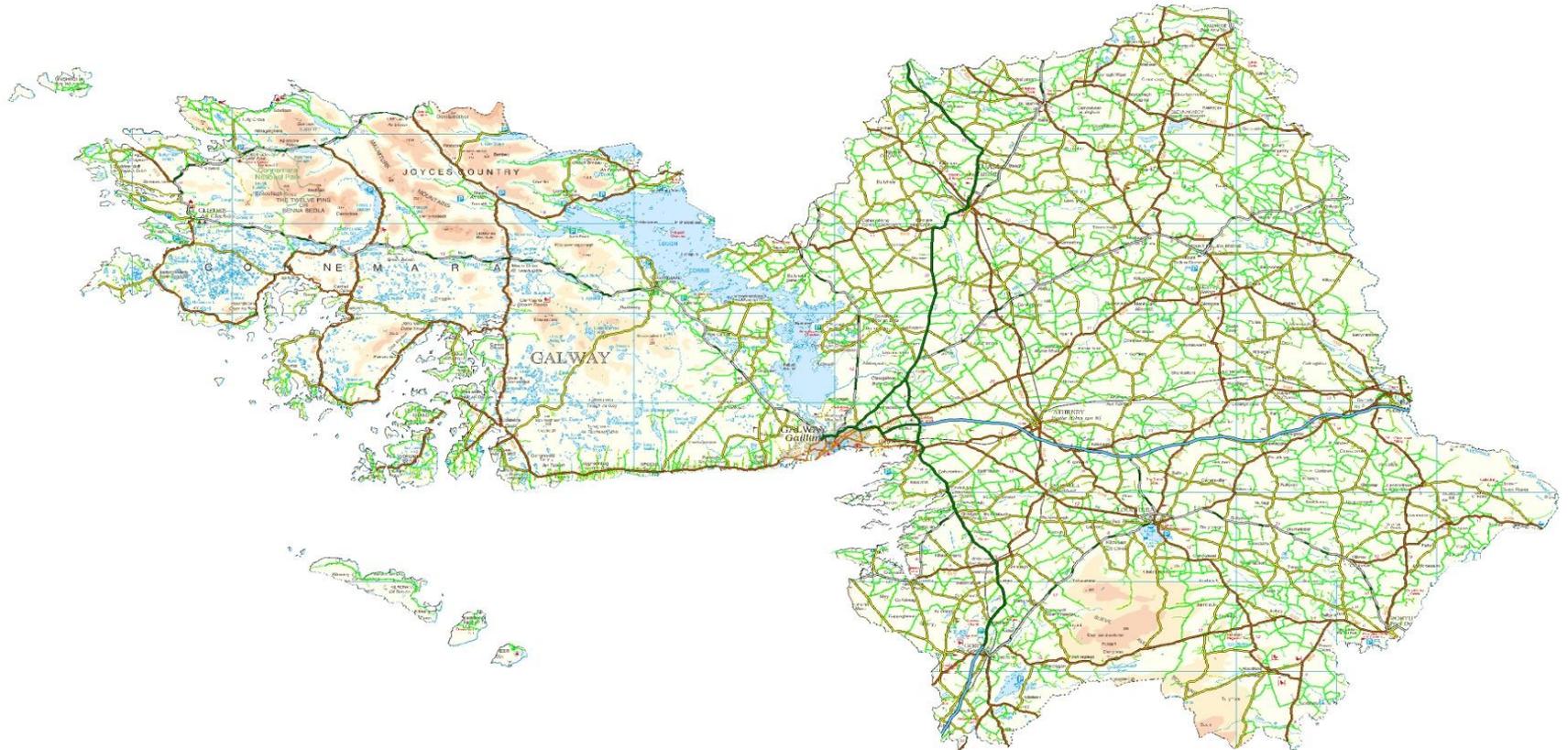
— Municipal District Boundaries



- National Primary - 84km
- National Secondary - 296km
- National Roads equates to 7% of total National Network
- National Network equates to 6% of total road network in County Galway



Galway County Road Network





National Network County Galway

Length of National Roads	Length in Kilometres	Total Maintenance allocation	Allocation per Kilometre
National Primary	84	€241,780	€2,878
National Secondary	296	€510,914	€1,726

Network Inspections

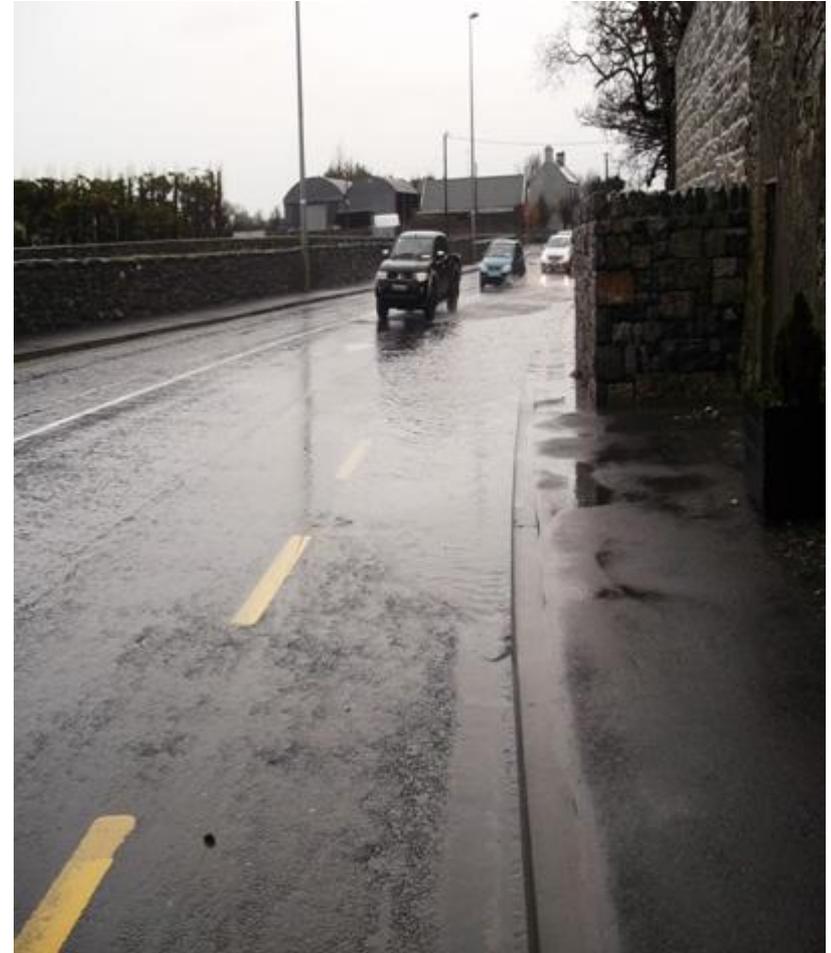
Purpose of Inspections

- Identify safety related issues with immediate hazard to road users
- Any defect or hazard that is safety related immediately notified to Area Office/ Area Engineer/ GSS
- Identify routine maintenance needs – programming of works
- Emphasis on planned works as opposed to reactive works
- Routes to be driven/ walked

National Route Maintenance Work Details

Routine / Planned Maintenance Works	Maintenance Scheme Works	NRA Contract Works
Verge trimming	Pavement repairs	Crash barriers/ fencing
Hedge cutting	Drainage works	Sign maintenance
Up keep of Water cuts	Edging	Road markings
Litter picking	Footpath repairs	Stud fitting
Drainage cleaning/ jetting	Ironmongery repairs	Junction bollards
Road sweeping	Opening new water cuts	
Weed spraying		
Landscaping / Trees		
Wall repairs		
Emergency pothole repairs		

Drainage Defects



Pavement defects



What do you need to carry out a defect survey on the National Network?

PPE



Conforms to: EN471 Class 3

MAXIBAR LED Magnetic Roof LIGHTBAR



IT IS USED FOR

- **Road Safety**

It is lightweight, compact, easily installed

- **Various flashing modes**

Tablet - Samsung Galaxy 2



Smartphone - Samsung Galaxy Mini S3

Timeframe of surveys

1. Initially when the first survey is carried out ever on a route it takes up a substantial amount of time.
2. First time a survey was carried out showed up a huge backlog of defects on the routes
3. For example initial survey on the N17 - 49km long- 3 towns – 792 defects recorded – 5 days (overloaded the system)
4. Average time to carry out survey on same route now is 2 days -302 defects
5. Frequency of survey 3 months on this route at present

Types of Maintenance

- Reactive (Category 1) –responding to emergencies
- Planned (Category 2) –cyclical/routine



Defects

begin survey >>



Drainage	C1	C2
Footpath Repair	C1	C2
Landscape Areas & Trees	C1	C2
Minor Pavement		

Location Detail

Surface Course: HRA

Description: Pavement failure-cracking, depression in carriageway, requires 5m x 3m repair

Length(m): 5

Minor Pavement Maintenance

Category 2

©2014 Google - Map data ©2014 Google

repairs

repair

repaired



1 2 3 4 5 6 7 8 9 0

q w e r t y u i o p

a s d f g h j k l

↑ z x c v b n m , ! . ? ↑

Sym English(UK)

Drainage	C1	C2
Footpath Repair	C1	C2
Landscape Areas & Trees	C1	C2
Minor Pavement		

Location Detail

Surface Course: HRA

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Length(m): 5

Minor Pavement Maintenance

Category 2

©2014 Google - Map data ©2014 Google

repairs repair repaired

1 2 3 4 5 6 7 8 9 0

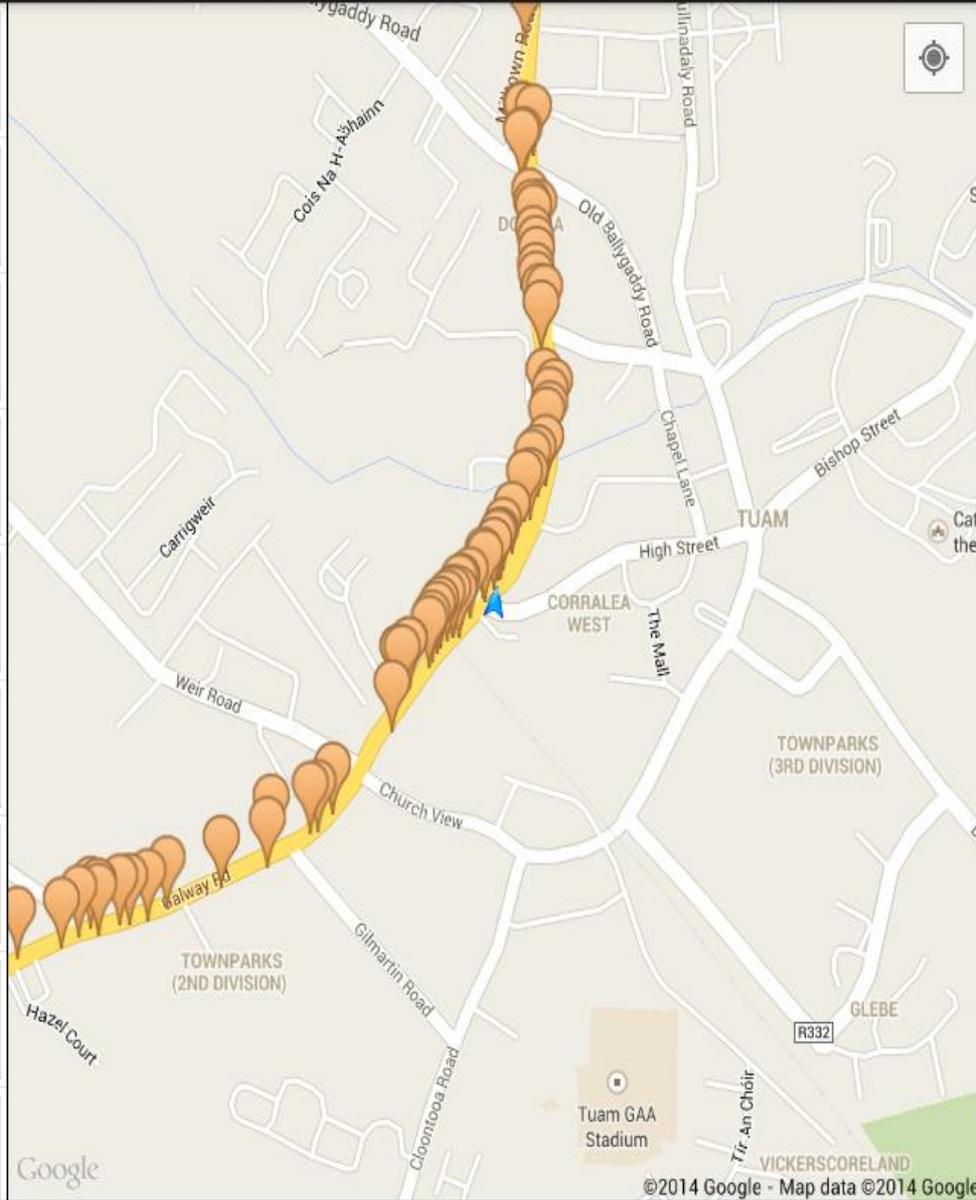
q w e r t y u i o p

a s d f g h j k l

↑ z x c v b n m , ! . ? ↑

Sym English(UK)

Drainage	C1	C2
Footpath Repair	C1	C2
Landscape Areas & Trees	C1	C2
Minor Pavement Maintenance	C1	C2
Road Sweeping & Litter Removal	C1	C2
Safety barrier/Fences repair & maintenance	C1	C2
Signs/Lines	C1	C2
Verge/Median Maintenance	C1	C2
Emergency	C1	C2



No Locations Recorded

Back in Office





Map Portal Sign In

Username or Email

You can sign in with your assigned username or the email address you used to register.

Password

Sign In

- Singular Defects
- Date Map
- Surveys
- Latest Survey
- Recorded
- Current Programme
- Completed Programmes
- Budget Sheets

ne, JOHN!

...LE, please log out and [contact the NRA IT to](#)
...t. It's important to log on with your own account as
...ct information so you have less to fill in and to
...p. The latest version of the mobile application
... [Google Play](#). If you can not install it from Google
... Play you may be able to install it from our server [here](#).

You should check for updates as the application is updated frequently.
Comments and feedback can be sent to appfeedback@nra.ie. Problems
should be reported to helpdesk@nra.ie.

Help and Guidance on using the Mobile App and the MapPortal can be
found [here](#) as well as in [this PowerPoint presentation](#). You can also
download a manual for the portal [here](#).

Instructions for recording repairs to barriers can be found in [this document](#).

Advice for managing invasive species can be found in [this document](#).

The system is taken off-line occasionally. This is for maintenance and
administrative reasons. When the system is off-line it will be clearly
indicated and you will not be able to log in. If it is off-line, you should try
accessing it again later.

Latest News

[View All](#)

Information on Invasive Species

Advice for managing invasive species can
be found in [this document](#).

Added by Niall Hayden on 20/8/2014 @ 15:50

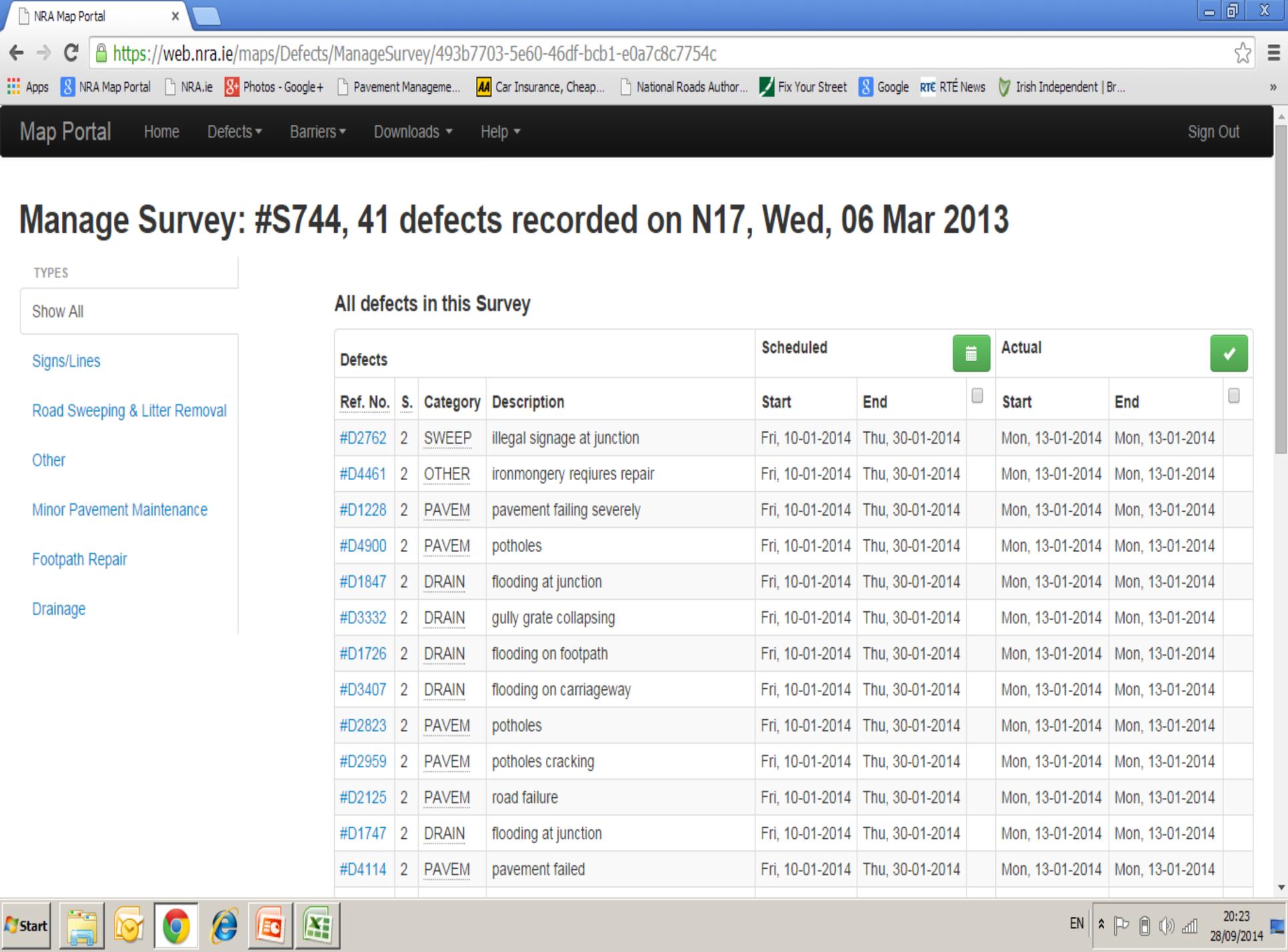
Surveys in Galway

Your Surveys

Manage defects in your survey



#S	Area	Date	Route	Defects		
#S941	GC	Wed 13-Feb-2013	17	1		
#S724	GC	Thu 14-Feb-2013	17	34		
#S723	GC	Thu 14-Feb-2013	18	86		
#S727	GC	Fri 15-Feb-2013	17	34		
#S728	GC	Mon 18-Feb-2013	17	83		
#S735	GC	Mon 25-Feb-2013	83	66		
#S737	GC	Tue 26-Feb-2013	63	87		
#S738	GC	Wed 27-Feb-2013	84	88		
#S744	GC	Wed 06-Mar-2013	17	41		
#S752	GC	Thu 14-Mar-2013	17	92		
#S927	GC	Wed 23-Oct-2013	17	13		
#S933	GC	Thu 24-Oct-2013	17	53		
#S1020	GC	Thu 24-Oct-2013	83	2		
#S932	GC	Thu 24-Oct-2013	18	5		
#S981	GC	Wed 27-Nov-2013	18	48		
#S1062	GC	Mon 13-Jan-2014	17	62		
#S1063	GC	Tue 14-Jan-2014	17	45		
#S1069	GC	Thu 16-Jan-2014	18	20		



Manage Survey: #S744, 41 defects recorded on N17, Wed, 06 Mar 2013

TYPES

Show All

- Signs/Lines
- Road Sweeping & Litter Removal
- Other
- Minor Pavement Maintenance
- Footpath Repair
- Drainage

All defects in this Survey

Defects				Scheduled 			Actual 		
Ref. No.	S.	Category	Description	Start	End	<input type="checkbox"/>	Start	End	<input type="checkbox"/>
#D2762	2	SWEEP	illegal signage at junction	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D4461	2	OTHER	ironmongery requires repair	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D1228	2	PAVEM	pavement failing severely	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D4900	2	PAVEM	potholes	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D1847	2	DRAIN	flooding at junction	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D3332	2	DRAIN	gully grate collapsing	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D1726	2	DRAIN	flooding on footpath	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D3407	2	DRAIN	flooding on carriageway	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D2823	2	PAVEM	potholes	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D2959	2	PAVEM	potholes cracking	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D2125	2	PAVEM	road failure	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D1747	2	DRAIN	flooding at junction	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>
#D4114	2	PAVEM	pavement failed	Fri, 10-01-2014	Thu, 30-01-2014	<input type="checkbox"/>	Mon, 13-01-2014	Mon, 13-01-2014	<input checked="" type="checkbox"/>

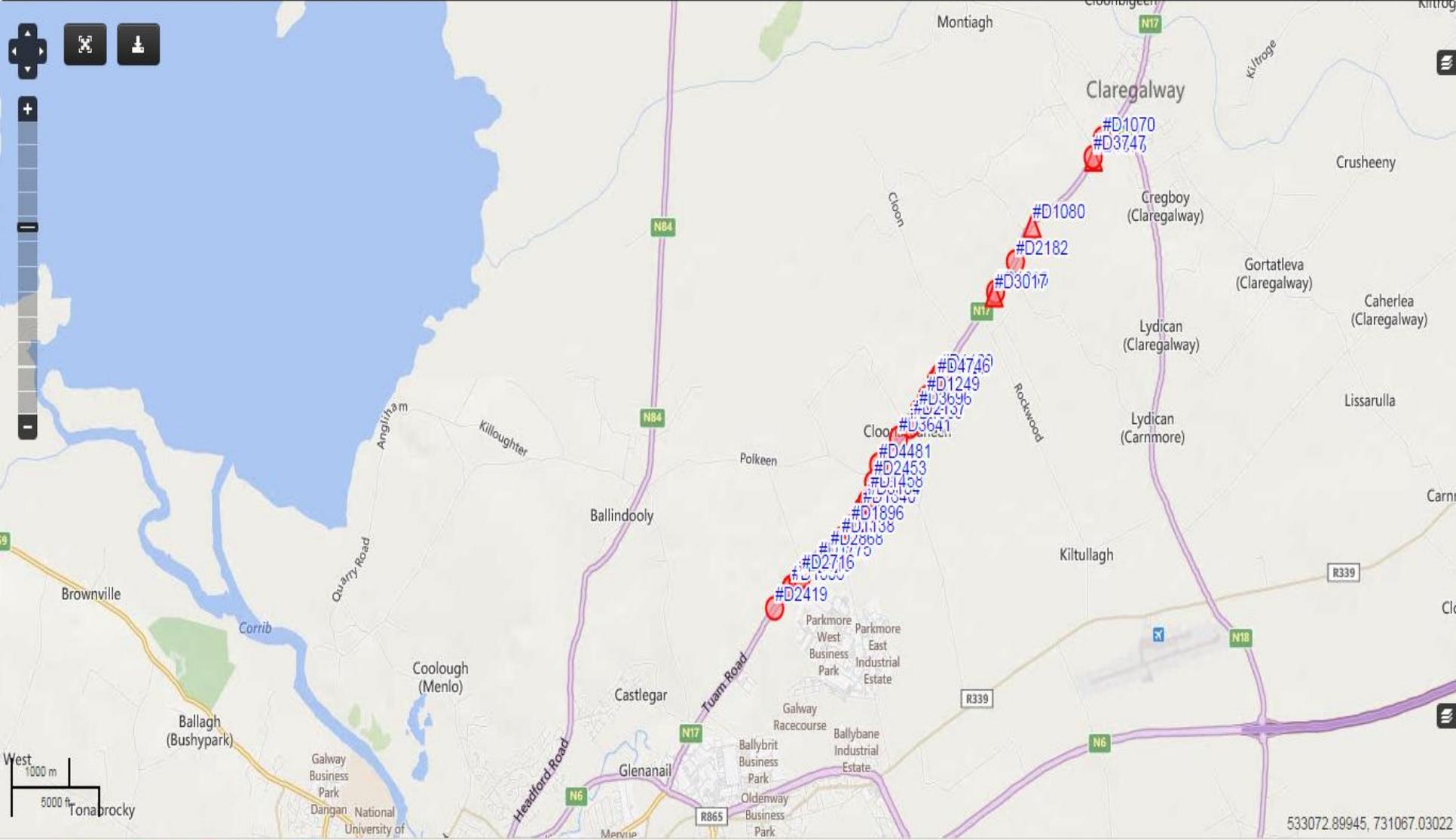
Surveys in Galway

Your Surveys

View Survey on Map



#S	Area	Date	Route	Defects	
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#S738	GC	Wed 27-Feb-2013	84	88	 
#S744	GC	Wed 06-Mar-2013	17	41	 
#S752	GC	Thu 14-Mar-2013	17	92	 
#S927	GC	Wed 23-Oct-2013	17	13	 
#S933	GC	Thu 24-Oct-2013	17	53	 
#S1020	GC	Thu 24-Oct-2013	83	2	 
#S932	GC	Thu 24-Oct-2013	18	5	 
#S981	GC	Wed 27-Nov-2013	18	48	 
#S1062	GC	Mon 13-Jan-2014	17	62	 
#S1063	GC	Tue 14-Jan-2014	17	45	 
#S1069	GC	Thu 16-Jan-2014	18	20	 



View Defect Record

#3017 Minor Pavement Maintenance (C1), N17

14-Feb-2013 12:59
Surface Type: SD

Description Of Defect
road failing

N 17

Planned Start 10/01/2014
Planned End 31/01/2014

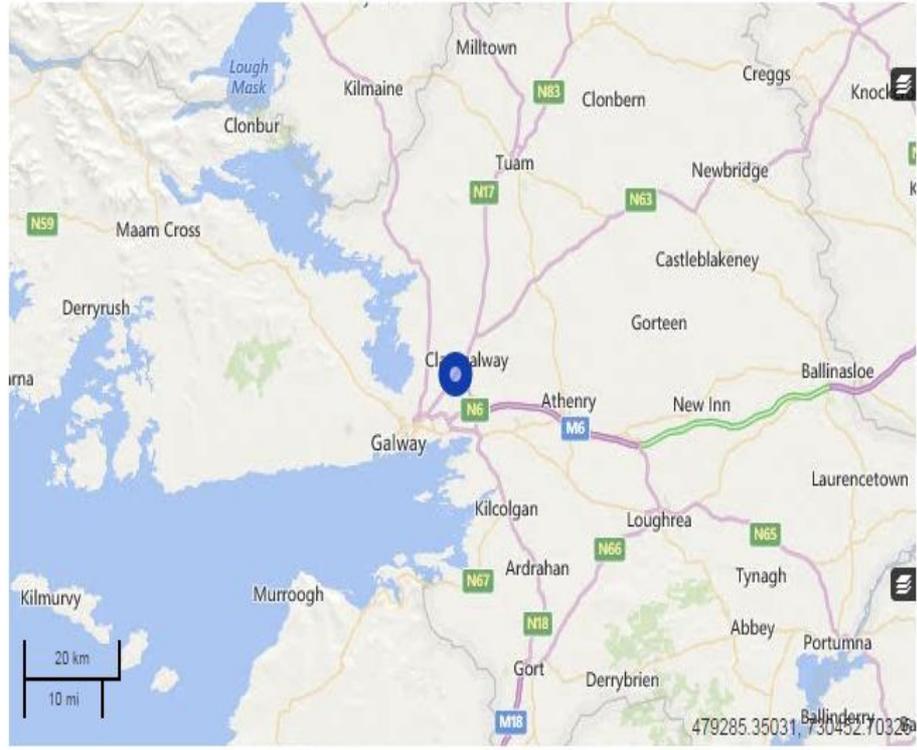
Actual Start 13/01/2014
Actual End 13/01/2014

Work Verified By Site Inspection

No Funding Applications.

Add Comment

Comment



ITM 535575.3916833026, 731184.0371850019
INGR 135569.05943842785, 231106.62728122136
LATLON -8.967104000000004, 53.32698499999997
BASE MAPPING -998213.451170327, 7043711.82211474(EPSC:3857)

N66_2013 (1)

John Coyle > Downloads > N66_2013 (1)

Search N66_2013 (1)

Organize Extract all files

Name	Type	Compressed size	Passw
N66_2013	Microsoft Office Excel Comm...	132 KB	No

1 item

Downloaded

Date	Time	File Name	Size	Time	Action
03/2014	14:30:23				
03/2014	14:43:37				
03/2014	10:03:58				
03/2014	10:04:34				
04/2014	14:11:59				
04/2014	14:53:20				
04/2014	13:54:39				
05/2014	15:30:16				
05/2014	15:39:19				
05/2014	15:53:44				
05/2014	10:05:49				
09 May 2014	10:55	n67.zip	132 kb	09/05/2014 10:56:19	
09 May 2014	11:19	N66_2013.zip	132 kb	09/05/2014 11:20:06	
12 May 2014	15:54	N60.zip	134 kb	12/05/2014 15:54:42	
14 May 2014	16:06	n65_pavement_repairs.zip	134 kb	14/05/2014 16:06:58	
15 May 2014	12:40	N17_PAVEMENT_REPAIRS.zip	133 kb	15/05/2014 14:13:22	
28 August 2014	16:48	barrier.zip	6 kb	28/08/2014 16:48:56	

Home Insert Page Layout Formulas Data Review View

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B I U Font

Wrap Text Merge & Center Alignment

General Number

Conditional Formatting as Table Styles

Format Cell Styles

Insert Delete Format Cells

Σ AutoSum Fill Clear Editing

Sort & Find & Filter Select

	A	B	C	D	E	F	G	H	I
1	ReferenceN	DTStamp	Severity	Description	RouteNo	Length	Category	Surface	Category
2	76026	13/01/2014 12:38	2	lorry tyre in verge remove	17	0	Road Sweeping & Litter R	SD	SWEEP
3	76027	13/01/2014 12:40	2	potholes hard shoulder	17	0	Minor Pavement Maintainer	SD	PAVEM
4	76028	13/01/2014 12:40	2	litter in verges	17	1000	Road Sweeping & Litter R	SD	SWEEP
5	76029	13/01/2014 12:41	2	pothole h/s	17	0	Minor Pavement Maintainer	SD	PAVEM
6	76030	13/01/2014 12:41	2	surface water running down h/s -soakpits and gullies	17	1000	Drainage	SD	DRAIN
7	76031	13/01/2014 12:43	2	potholes opening in carriageway	17	0	Minor Pavement Maintainer	SD	PAVEM
8	76032	13/01/2014 12:43	2	h/s covered in soil requires swept	17	650	Road Sweeping & Litter R	SD	SWEEP
9	76033	13/01/2014 12:45	2	sign missing from pole	17	0	Signs/Lines	SD	SIGNS
10	76034	13/01/2014 12:46	2	pothole forming	17	0	Minor Pavement Maintainer	SD	PAVEM
11	76035	13/01/2014 12:46	2	flooding in h/s	17	0	Drainage	SD	DRAIN
12	76036	13/01/2014 12:48	2	pavement failure in carriageway	17	4	Minor Pavement Maintainer	SD	PAVEM
13	76037	13/01/2014 12:49	2	pothole in h/s	17	0	Minor Pavement Maintainer	SD	PAVEM
14	76038	13/01/2014 12:49	2	pavement failure in carriageway	17	5	Minor Pavement Maintainer	SD	PAVEM
15	76039	13/01/2014 12:51	2	heavy litter verges	17	100	Road Sweeping & Litter R	SD	SWEEP
16	76040	13/01/2014 12:52	2	pavement failure	17	8	Minor Pavement Maintainer	SD	PAVEM
17	76041	13/01/2014 12:53	2	pavement failure carriageway sinking	17	5	Minor Pavement Maintainer	SD	PAVEM
18	76042	13/01/2014 12:54	2	pavement failure carriageway	17	10	Minor Pavement Maintainer	SD	PAVEM

Ready N17_CLAREGALWAY 100%

Start

EN 21:45 02/10/2014

Home Insert Page Layout Formulas Data Review View

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Alignment: Wrap Text, Merge & Center

Number: General, %, .00, .00

Styles: Conditional Formatting, Format as Table, Cell Styles

Cells: Insert, Delete, Format

Editing: AutoSum, Fill, Clear, Sort & Filter, Find & Select

	A	B	C	D	E	F	G	H
1	Location	Referencel	DTStamp	Severity	Description	RouteNo	Length	Category
2	City to Claregalway	76030	13/01/2014 12:41	2	surface water running down h/s -soakpits and gullies req	17	1000	Drainage
3	City to Claregalway	76035	13/01/2014 12:46	2	flooding in h/s	17	0	Drainage
4	City to Claregalway	78129	25/03/2014 12:10	2	cut back evergreen trees	17	0	Landscape Areas & Tr
5	City to Claregalway	76027	13/01/2014 12:40	2	potholes hard shoulder	17	0	Minor Pavement Mai
6	City to Claregalway	76029	13/01/2014 12:41	2	pothole h/s	17	0	Minor Pavement Mai
7	City to Claregalway	76036	13/01/2014 12:48	2	pavement failure in carriageway	17	4	Minor Pavement Mai
8	City to Claregalway	76051	13/01/2014 13:05	2	600mm sq lid pavement breaking away	17	0	Minor Pavement Mai
9	City to Claregalway	78119	25/03/2014 12:10	2	chip loss joints failing on road opening	17	1000	Minor Pavement Mai
10	City to Claregalway	78121	25/03/2014 12:10	2	severe depressions in carriageway on Tuam bound carriag	17	650	Minor Pavement Mai
11	City to Claregalway	78123	25/03/2014 12:10	2	pavement surrounding manhole broken away	17	0	Minor Pavement Mai
12	City to Claregalway	78124	25/03/2014 12:10	1	pavement cracked breaking up on road trench	17	0	Minor Pavement Mai
13	City to Claregalway	78125	25/03/2014 12:10	2	manhole on jn needs repaired	17	0	Minor Pavement Mai
14	City to Claregalway	76026	13/01/2014 12:38	2	lorry tyre in verge remove	17	0	Road Sweeping & Litt
15	City to Claregalway	76028	13/01/2014 12:40	2	litter in verges	17	1000	Road Sweeping & Litt
16	City to Claregalway	76032	13/01/2014 12:43	2	h/s covered in soil requires swept	17	650	Road Sweeping & Litt
17	City to Claregalway	76033	13/01/2014 12:45	2	sign missing from pole	17	0	Signs/Lines
18	City to Claregalway	76047	13/01/2014 13:00	2	left turning sign needs reattached to pole	17	0	Signs/Lines

N17 COST ANALYSIS City to Claregalway Claregalway Claregalway to Tuam Tuam Tuam to Milltown Milltown

Ready Average: 17 Count: 255 Sum: 4318 100%

Start, File Explorer, Mail, Chrome, Edge, PowerPoint, Paint, Excel

EN, 21:55, 02/10/2014

Costing process

1. Sort and filter hundreds of defects from surveys
2. In each defect category type => quantify the defects and estimate a repair cost for each defect
3. Cost each category type by route segment
4. Cost analysis on each route
5. Costing for entire National Network in County.

2013 Maintenance Rates

Item	Unit	Unit Price
Provide for overall Traffic Management (TM) Include VMS Boards. PSCS Per route	item	€2000
Overlay repairs - plane out 100mm deep and overlay 60/40mm DBM/ Cl942	sqm	€50
Remove litter from verges and dispose of	km	€100
Verge trimming (ie cutting grass in verge)	km	€62.50
Hedge cutting around concealed road signage	item	€2.78
Install drainage soakpits in verge where carriageway flooding is occurring	item	€550.00
Open water cuts as directed by Area Engineer in verges	item	€15.00
Spraying Verges	km	€16.00
Edging of verges	km	€188.00
Pull Ragworth by hand	km	€210.00
Spray Ragworth by tractor mounted sprayer	km	€66.00

N17 Works to be done 2014**Location: City Boundary to Claregalway 4km**

Defect	Item	Type	#	Cost per item	Total cost €
Pavement defect	ironmongery	Double lid	0	€600	0
Pavement defect	ironmongery	SV	2	€250	€500
Pavement defect	ironmongery	Stop cock	1	€250	€250
Pavement defect	ironmongery	Manhole	4	€300	€1200
Pavement defect	ironmongery	Gully grate	0	€250	0
	TM				€1000
				TOTAL	€2950

Defect	Item	Type	#	Cost per item	Total cost €
Minor pavement maintenance	potholes	repair	4	€500	€2000
Minor pavement maintenance	Pavement failure	repair	70s qm	€50	€3500
				TOTAL	€5500

N17 Works to be done 2014 Location: City Boundary to Claregalway 4km

Defect	Item	Type	#	Cost per item	Total cost €
Minor Pavement	Pavement repairs	repair	74sqm	€50	€5500
Minor Pavement	Ironmongery	Lid repair	7	See table 1	€2950
Drainage	Flooding	Carriageway	10 soakpits	€550	€5500
Drainage	Flooding	Watercuts	0	€15/ cut	complete
Sweeping & litter removal	litter	Clean up	8km	€100/km	€800
Footpaths	Path/ kerb	Repairs	0	€100 sqm	€0
Other	Walls/ fencing	Repairs	0	€800	€0
Landscape	Trees/ hedges	Cut back	0	€70/km	€0
Verge	Jn bollards	Green/white	0	€0	€0
				TOTAL	€15,030

National Secondary Pavement repairs



Route	Pavement repair Cost
N59	€41,210
N63	€56,420
N65	€46,865
N66	€18,135
N67	€20150
N83	€44,850
N84	€12,350
	€239,980



1. **NRA Geo App**
 - record the defects
 - upload defects
 - show defects from previous surveys
 - close out repaired defects

2. **NRA Map Portal**
 - map the defects
 - list the defects
 - helps manage the defects
 - schedule the defects repairs
 - download to excel

3. **Excel sheet**
 - filter and sort defects
 - cost analysis of defects by category, route, county.

4. **Seek additional funding.**



To recap

Pilot Maintenance Programme - On the ground

- Reactive maintenance.
- N.R.A. funded overlays.
- Repairs falling between routine maintenance and full overlay. Intervention needed beyond normal reactive maintenance



Issues

- Communication.
- Budget holder/resources.
- Galway approach - Other counties differed.
- Contract versus Direct Labour.
- Traffic Management and Health & Safety.

Benefits of Programme

- Establish what the problems are on the National roads Network (and extent).
- Quantify problem – each Municipal District/Countywide.
- Assisted to establish true maintenance cost.
- Feeds down into manageable projects.
- Consistency of approach – projects cross new Municipal Districts.
- Example N63 Oranmore/Athenry M.D., Tuam M.D., Ballinasloe M.D.
- Table – works completed 2013/Targets 2014.

OM - Mini Projects 2013- 2014 County Galway

Year	Funding provided	Number of Mini projects	National Primary mini projects	National Secondary mini projects
2013	€174,000	12	3	9
2014	€262,000	6	3	3

2013 Activities	Number
Minor Pavement Repairs	8
Footpath Repairs	0
Drainage	1
Barriers	0
Other (ironworks)	3

2014 Activities	Number
Minor Pavement Repairs	1
Footpath Repairs	0
Drainage	4
Barriers	0
Other (edging)	1

Sample Mini Projects County Galway

Year	Route	Works	Cost
2013	N17	Repairs to ironworks and edging	€20,000
2013	N65	Drainage system repairs	€22,400
2013	N67	Pavement Repair	€50,000
2014	N17	Pavement Repair	€135,000
2014	N59	Watercuts – open new	€50,000



Finally

Our Conclusions

- Opportunity.
- Limited resources/minimum intervention.
- Table.

Proposed Maintenance works

Route	Pavement Repair Cost	Drainage Watercuts	Drainage Pipes & Gullies	Edging	Ironworks	Footpath
N17	€134,225.00	€0.00	€22,800.00	€64,000	€22,800.00	€11,000.00
N18	€54,925.00	€15,000.00	€8,500.00	€48,000	€8,500.00	€3,750.00
N59	€41,210.00	€50,000.00	€46,200.00	€80,000	€46,200.00	€26,410.00
N60	€0.00	€2,000.00	€0.00	€3,200	€0.00	€6,990.00
N63	€56,420.00	€16,000.00	€7,800.00	€64,000	€7,800.00	€10,650.00
N65	€46,865.00	€12,000.00	€17,950.00	€48,000	€17,950.00	€25,650.00
N66	€18,135.00	€10,000.00	€15,550.00	€32,000	€15,550.00	€40,250.00
N67	€20,150.00	€0.00	€3,000.00	€20,800	€3,000.00	€20,000.00
N83	€44,850.00	€0.00	€5,000.00	€22,400	€5,000.00	€14,000.00
N84	€12,350.00	€0.00	€2,100.00	€32,000	€2,100.00	€4,100.00
Total	€429,130	€105,000	€128,300	€414,000	€128,900	€162,800

Finally

Our Conclusions

- Opportunity.
- Limited resources/minimum intervention.
- Table.
- Reduce maintenance liability.
- Tool for management and filtering of data.
- Positive experience for Galway Co. Council

Photos of defects repairs



BEFORE



AFTER