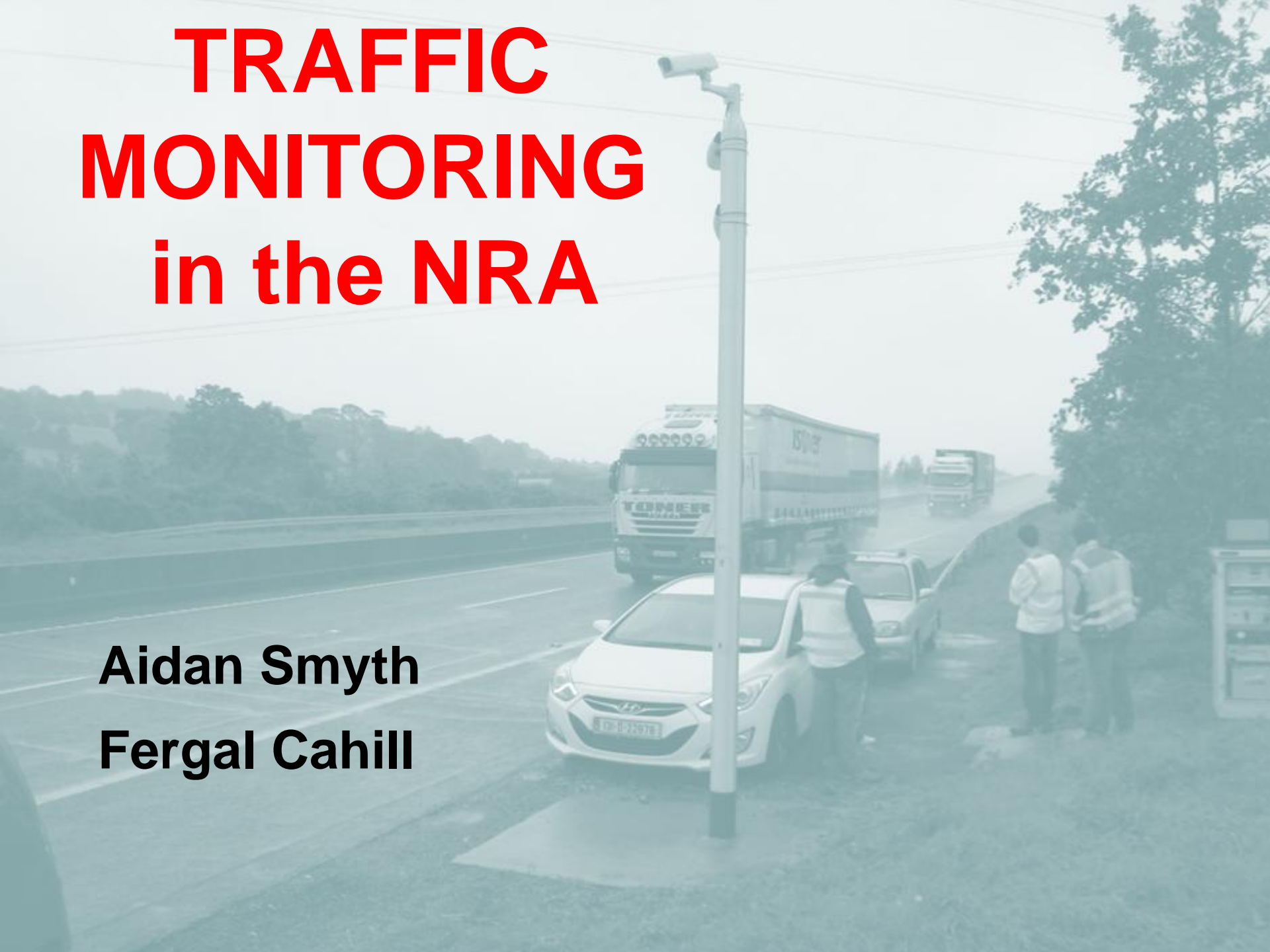


TRAFFIC MONITORING in the NRA

**Aidan Smyth
Fergal Cahill**



National Roads Authority's

Online Traffic Data at

www.nratrafficdata.ie

*Aidan Smyth TECH IEI
Senior Technician NRA*

NRA Conference – Westport 2014

Traffic Counting – a few of the Why's?

& it's not just to be nosey

Constant Demand for traffic data by Multiple Users

- NRA/Local Authorities /EU/Consultants & Transportation Specialists/Planners/Central Statistics Office/Public & YOU?

Planning

- *Traffic modelling & Analysis for Strategic Route Planning*
- *Economic Assessments – (Pre and Post Road Project Appraisals)*
- *Monitor Growth Patterns - used as one of many Economic Growth indicators*

Road Design / Maintenance & Research

- *Road and Pavement Design (AADT / 30th Highest Hour /Peak flows etc)*
- *Road Maintenance Planning (Life cycle expectations based on volumetric flows)*
- *Vehicle Kilometre Statistics – (for National use and EU & international comparisons)*
- *Trials for new Road Materials (Life-cycle appraisal)*

Road Safety / Environmental

- *EU requirements to compare Accident Statistics vs Vehicle Volumes per Route Section*
- *Monitoring Speed trends & Analysis of Road Design Speed vs Actual Speeds*
- *As a guide for traffic management requirements e.g. What & when are the peak flows. When to deploy?*
- *Pollution Studies / Noise Studies*

NRA Traffic Counting – a little history

1980s / early 90s

- *approximately 55 Inductive loop counter units nationwide covering various routes and route types including Commuter / Inter-urban/ Rural / Tourist profile type routes*
- *Data was retrieved locally every 6/8 weeks from battery operated units*
- *Only 2 (two) classification levels available (6m > vehicles > 6m in length)*
- *Count data supplemented by Local Authority 7 Hour visual counts*
- *NRA Annual Publication National Roads and Traffic Flow (discontinued from 2004)*

Late 1990s -2012

- *In 1997 - First major upgrade under the EU TAP (Technical Assistance Programme) - counter volumes increase to c. 110 units nationwide*
- *Data retrieval automated over standard telephone lines*
- *Mains operated so less down time due to battery failure*
- *capable of classifying in excess of 7 different classes*
- *the number rises to c.140 by 2005 - with particular emphasis on new road schemes*
- *NRA makes data available on NRA website - Monthly ADT/Bank Holiday/% growth & % HGV Summary figures*
- *Daily and monthly CSV data file downloads available from website for individual sites.*

NRA Traffic Counting – the latest

- 2012 - NRA Contract issued for the **Supply Installation Operation and Maintenance of a Traffic Monitoring System**

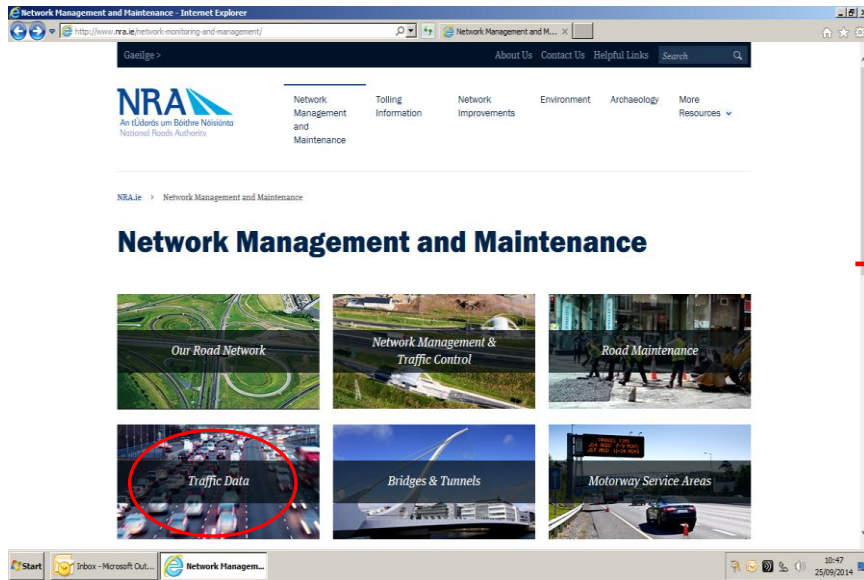
The Purpose?

- Upgrade to new counter and communications hardware & software *Aim – to eliminate emerging problems with an older system & enable provision of more up to date & more in depth data*
- Install new sites across the network covering routes & sections not previously covered
AIM - to have at least one counter on every National Route & fill gaps where required
- Install 6 new WIM (Weigh in Motion Sites)
AIM - to provide statistical data on loading/overloading for in house studies.
- Install renewable power sources at new sites
AIM- two fold - 1) to enable speedier site activation 2) Environmental Awareness in reducing our carbon footprint
- Install “Safe” Parking Bays & footpaths at each site
Aim – to enhance the safety of maintenance personnel attending site

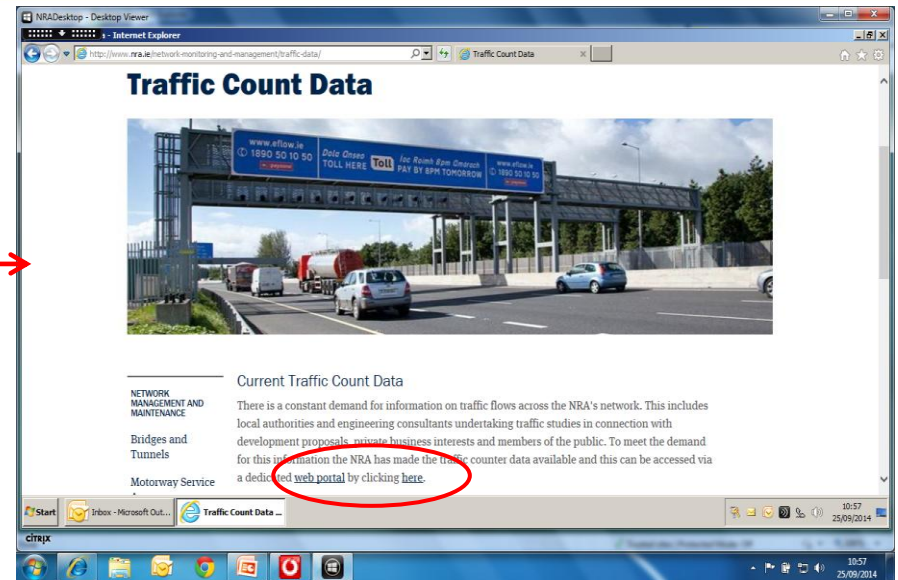
The Result

- *New Dedicated Interactive traffic data website <https://www.nratrafficdata.ie>*
- *Now 270 + Traffic counters Nationwide (c.130 + new sites.)*
- *Data updated within days instead of quarterly*
- *Over 100 sections/routes previously not covered, now covered with at least one permanent Counter.*
- *c.14 Additional Counters on Cross border routes.*
- *c.45 Additional counters on western seaboard routes*
- *c.40 Additional counters in midland and southern counties*
- *additional c.50 + PPP traffic counters to be added to public website*

Where to find the link on the NRA webpage?



*Under Network Management Page
Click Traffic Data*



Historical Data still available via this page!

Follow the underlined link



<https://www.nratrafficdata.ie>
the interactive map homepage

• **Some of the features!**

• Dots represent the **actual** counter locations

• Drop down Explanatory notes on LH Panel

• View Map or Counter List options

• Specific Search Function or zoom in to locate your chosen counter

Location: C2 > Site Groups > Live > Live

Map of Sites List of Sites Search...

NRA
An tÚdarás um Bóithre Náisiúnta
National Roads Authority

Traffic

ABOUT THE WEBSITE
MAP INTERFACE
SITE LIST
SEARCH FUNCTION
SITE DATA
EXPLANATION OF REPORTS
IMPORTANT NOTICE

NRA
An tÚdarás um Bóithre Náisiúnta
National Roads Authority

NRA Traffic Data Site

The National Roads Authority datainfo@nra.ie
St. Martin's House P: +353 1 6602511
Waterloo Road Dublin 4 F: +353 1 6680009
Ireland

Done Internet | Protected Mode: On 100%

Click on a green dot.....

A summary bubble appears showing

- Site name & location
- AADT for 2013 plus
- Estimated AADT for 2014 based on data to date
- % HGV for the given year
- coverage, i.e. the proportion of the year for which data is available
- plus a further link.....
Click on "SITE DATA" to reveal...

The screenshot shows the NRA Traffic Data Site interface. On the left is a navigation menu with the NRA logo and the text 'An tÚdarás um Bóithre Náisiúnta National Roads Authority'. The menu items are: Traffic, ABOUT THE WEBSITE, MAP INTERFACE, SITE LIST, SEARCH FUNCTION, SITE DATA, EXPLANATION OF REPORTS, and IMPORTANT NOTICE. The main area features a map of Ireland with a data bubble for site 1051. The bubble contains the following information:

1051
N5 Between Westport and Castlebar, Doon, Co. Mayo

	2014	2013	2012
AADT	8691	8382	-
% HGV	3.0%	3.1%	-
Coverage	73.0%	83.5%	-

Below the table is a link for 'Site Data'. The map shows the location of site 1051 on the N5 road in County Mayo. The bottom of the page includes the NRA logo, the text 'NRA Traffic Data Site', and contact information for The National Roads Authority: St. Martin's House, Waterloo Road, Dublin 4, Ireland. Contact details include email (datainfo@nra.ie), phone (+353 1 6602511), and fax (+353 1 6680009). The footer also shows the Windows taskbar with the Start button, the Internet Explorer icon, and the system tray showing the date and time (12:03, 25/09/2014).



The data calendar

The screenshot shows a web browser window displaying the 'Tabular Calendar' application. The main content is a calendar for the year 2014, with data availability for various dates highlighted in green. A red starburst highlights the first day of January. A red circle highlights the site dropdown menu, which is currently set to 'Site: NRA - 00000001051 - 1051'. A red arrow points to the 'Daily Volume' report type, which is highlighted in a red box. The application also displays a summary of data availability from Mar 01, 2013 to Sep 29, 2014, and a report range from Jan 01, 2014 to Jan 01, 2014. The National Roads Authority (NRA) logo and contact information are visible at the bottom of the page.

•Date highlighted **green** = data available -

•Any site can be chosen from the dropdown box

•Various report types immediately available

•1st Jan highlighted by default but you can pick any individual date or series of dates (click first date, drag & hold to end date)

•so for example in this case if you click on **Daily Volume** & wait a moment you get

A daily volume report

Site Name: 1051 **Site ID: 00000001051** **Grid: 104533285049** **Description: N5 Between Westport and Castlebar, Doon, Co. Mayo**

	Average Daily Flow		East		West	
	Flow	%	Flow	%	Flow	%
00:00	70	42	60.0%	28	40.0%	
01:00	111	73	65.8%	38	34.2%	
02:00	100	62	62.0%	38	38.0%	
03:00	104	70	67.3%	34	32.7%	
04:00	41	27	65.9%	14	34.1%	
05:00	19	9	47.4%	10	52.6%	
06:00	21	10	47.6%	11	52.4%	
07:00	46	21	45.7%	25	54.3%	
08:00	91	28	49.0%	26	51.0%	
09:00	70	25	35.7%	45	64.3%	
10:00	147	80	54.4%	67	45.6%	
11:00	238	163	68.5%	75	31.5%	
12:00	413	264	63.9%	149	36.1%	
13:00	507	296	58.4%	211	41.6%	
14:00	501	307	61.3%	194	38.7%	
15:00	526	300	57.0%	226	43.0%	
16:00	461	254	55.1%	207	44.9%	
17:00	415	241	58.1%	174	41.9%	
18:00	338	166	49.1%	172	50.9%	
19:00	264	136	51.5%	128	48.5%	
20:00	234	110	47.0%	124	53.0%	
21:00	173	96	55.5%	77	44.5%	
22:00	120	54	45.0%	66	55.0%	
23:00	82	33	40.2%	49	59.8%	
07-19	1142	772	67.7%	370	32.3%	
06-22	4405	2494	56.6%	1911	43.4%	
06-24	4607	2581	56.0%	2026	44.0%	
00-24	5052	2864	56.7%	2188	43.3%	
am Peak	11:00	11:00				
Peak Volume	238	163		75		
Peak Factor	0.773	0.784		0.750		
pm Peak	15:00	14:00		15:00		
Peak Volume	526	307		226		
Peak Factor	0.920	0.903		0.911		

Event key: ■ Accident ■ Road Works ■ Special ■ Road Closed ■ Holiday
■ Weekends and defined holidays

- Various sub reports available under these tabs
look at individual directions /various time periods and/or individual vehicle classes for the date(s) selected
- Using these buttons
You can select the next or previous day or the same day the following week
- Graph or print your results your results or / save to excel to work with off line

Calendar page again!

Revert to the Calendar Page

- Each time you wish to view a different report
- Or a report from a different site

For Multiple date selection

- e.g. one month - Click on the first date, hold & drag to the last date.
- The selected period will highlight

Then select your report.

e.g. [Monthly Volume...](#) Wait a moment to see

The screenshot shows the 'Tabular Calendar' page in Internet Explorer. The browser address bar shows the URL: https://www.nra.ie/trafficdata/ie/c2/calendar_alt.asp?sgid=zvy/mx08@1SPJE&LX16&sgid=N4. The page title is 'Tabular Calendar - Internet Explorer'. The main content area displays a calendar for the year 2014, with months from January to December. A date range from August 18 to August 24, 2014, is highlighted in green. On the right side of the page, there is a dropdown menu for the site, currently set to 'NRA - 000000001051 - 1051'. Below the site dropdown, the location is 'N5 Between Westport and Castlebar, Doon, Co. Mayo'. There are several report type buttons: 'Summary', 'Volume', 'Class', and 'Map'. The 'Volume' button is selected. Below these buttons, there is a section for 'Data available from Mar 01, 2013 to Sep 25, 2014' and 'Report range from Aug 01, 2014 to Aug 31, 2014'. There are also buttons for 'Multi-Day Volume', 'Daily Volume', 'Weekly Volume', 'Weekly Summary', 'Monthly Volume', 'Monthly Summary', and 'Hourly Direction'. The 'Monthly Volume' button is circled in red. At the bottom of the page, there is the NRA logo and the text 'NRA Traffic Data Site'. The footer also includes contact information for The National Roads Authority: 'datainfo@nra.ie', 'P: +353 1 6602511', 'F: +353 1 6680009', and 'Dublin 4 Ireland'. The system tray at the bottom right shows the date and time: '12:19 25/09/2014'.



Now you get a full months figures

Monthly Volume Report NRA 00000001051: 2014-08-01 to 2014-08-31

Site Name: 1051 Site ID: 00000001051 Grid: 104533285049 Description: N5 Between Westport and Castlebar, Doon, Co. Mayo

Setup	Channel All directions					Time Period 1 hour					Class Any					Precision Normal					Exclude data: None					Average	Total								
N5 1051	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Workday	7 Day			
1 Aug	2 Aug	3 Aug	4 Aug	5 Aug	6 Aug	7 Aug	8 Aug	9 Aug	10 Aug	11 Aug	12 Aug	13 Aug	14 Aug	15 Aug	16 Aug	17 Aug	18 Aug	19 Aug	20 Aug	21 Aug	22 Aug	23 Aug	24 Aug	25 Aug	26 Aug	27 Aug	28 Aug	29 Aug	30 Aug	31 Aug					
00:00	95	123	113	96	72	60	72	103	126	161	66	86	101	118	114	119	165	92	105	97	142	117	119	112	90	90	85	106	107	91	92	96	104	3235	
01:00	54	93	103	79	27	27	34	34	85	112	37	29	29	53	48	59	124	33	28	24	32	56	100	114	54	18	32	34	29	69	89	37	53	1739	
02:00	23	52	81	61	17	16	15	31	60	84	35	22	18	53	23	56	108	27	24	19	20	26	48	94	42	21	24	17	26	60	58	26	39	1261	
03:00	18	34	62	78	15	14	13	19	51	84	34	17	9	48	10	40	93	26	19	15	17	19	45	63	24	14	15	8	18	45	45	21	31	1012	
04:00	20	14	29	29	14	17	15	21	34	30	14	12	7	19	14	37	43	16	16	19	19	19	26	45	17	14	12	17	15	18	34	16	21	636	
05:00	32	21	12	18	29	39	36	31	34	22	40	29	49	33	38	86	21	39	29	33	29	37	29	15	31	28	36	28	36	27	26	33	32	993	
06:00	89	56	39	52	100	103	95	89	49	29	106	113	80	101	111	110	44	96	108	109	104	115	78	60	122	119	106	116	98	58	51	100	88	2697	
07:00	395	165	136	124	370	391	388	367	131	84	400	401	451	438	408	173	100	456	442	455	447	434	170	173	411	442	446	429	439	148	105	406	330	9919	
08:00	497	237	140	146	499	503	526	509	261	102	510	559	565	589	542	227	128	520	541	568	556	515	273	179	530	606	647	640	612	243	113	532	435	13083	
09:00	540	371	207	258	550	530	558	548	411	257	525	579	519	574	627	431	299	502	533	581	582	568	428	227	507	583	601	587	610	378	203	549	484	14694	
10:00	609	536	328	438	627	609	667	607	570	401	579	555	612	620	661	539	406	634	582	584	629	546	570	315	542	578	594	565	561	509	314	593	552	16907	
11:00	741	764	529	684	776	655	773	717	710	528	686	647	640	704	722	668	612	642	712	713	740	679	742	534	683	691	665	714	673	629	487	699	676	20860	
12:00	787	752	602	739	790	748	755	844	748	677	653	690	745	806	766	757	711	673	712	777	760	773	789	649	725	643	648	687	728	644	589	736	724	22367	
13:00	813	748	735	714	748	773	743	869	718	744	696	750	720	711	822	802	759	703	713	765	743	775	854	715	684	680	712	651	695	595	712	740	739	22862	
14:00	846	723	620	804	745	788	767	833	739	769	757	714	754	749	852	747	735	748	708	756	764	897	821	687	714	694	700	757	736	655	702	768	755	23281	
15:00	874	758	671	750	856	717	799	828	817	780	775	731	747	771	874	808	792	768	750	753	755	831	838	363	781	689	827	764	862	391	365	786	767	23685	
16:00	837	819	536	798	790	819	920	969	783	754	867	905	927	977	905	792	733	942	850	874	874	883	809	438	824	836	918	912	819	572	511	881	822	25193	
17:00	972	724	503	769	981	917	989	906	708	763	870	973	944	977	898	796	720	942	927	975	928	945	744	506	857	854	982	823	819	370	487	920	837	25569	
18:00	810	663	610	746	727	757	848	779	623	635	704	800	794	844	844	766	645	671	785	847	873	868	859	670	461	687	754	745	679	716	285	467	718	724	22118
19:00	399	460	412	632	482	476	528	617	426	468	430	501	480	494	611	454	521	398	504	603	487	566	559	364	378	453	456	439	511	296	394	514	492	15019	
20:00	440	401	370	411	353	372	413	436	381	332	296	355	373	389	488	400	374	353	377	387	399	497	376	326	298	379	331	307	429	312	275	389	379	11630	
21:00	355	309	351	277	248	310	305	314	314	389	238	297	293	322	317	320	307	256	244	278	331	366	300	282	201	271	257	261	256	236	207	292	292	8962	
22:00	245	234	251	199	182	220	246	262	253	171	148	177	225	225	232	245	195	164	198	217	217	232	218	204	132	169	176	164	211	205	109	207	207	6356	
23:00	195	165	150	141	130	135	145	235	179	129	118	165	182	152	184	201	141	147	157	259	187	175	153	182	120	167	157	128	152	147	96	166	162	4974	
07-19	8721	7260	5617	6970	8459	8207	8733	8776	7219	6494	8022	8304	8418	8760	8843	7405	6666	8315	8337	8674	8646	8705	7708	5447	7945	8050	8485	8208	8270	5619	5255	8395	7845	240538	
06-22	10214	8486	6789	8362	9642	9468	10074	10232	8389	7612	9092	9370	9644	10066	10370	8680	7912	9418	9570	10051	9967	10249	9021	6479	8944	9272	9625	9321	9604	6521	6182	9652	9096	288446	
06-24	10654	8885	7190	8702	9954	9823	10465	10729	8821	7912	9358	9912	10061	10443	10786	9126	8248	9729	9925	10527	10371	10676	9392	6865	9196	9608	9968	9623	9967	6873	6387	10064	945	290176	
00-24	10896	9222	7590	9063	10128	9996	10650	10968	9211	8405	9584	10107	10274	10767	11033	9523	8802	9962	10146	10734	10630	10950	9759	7308	9454	9793	10172	9833	10198	7183	6731	10294	915	299072	
am Peak	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00
Peak Volume	741	764	529	684	776	655	773	717	710	528	686	647	640	704	722	668	612	642	712	713	740	679	742	534	683	691	665	714	673	629	487	699	676	20860	
pm Peak	17:00	16:00	13:00	14:00	17:00	17:00	16:00	15:00	17:00	17:00	17:00	17:00	16:00	15:00	17:00	16:00	15:00	16:00	17:00	17:00	17:00	17:00	13:00	14:00	17:00	17:00	16:00	15:00	14:00	13:00	17:00	17:00	17:00	17:00	
Peak Volume	972	819	735	804	981	917	989	969	817	780	870	973	944	977	905	808	792	942	927	975	928	945	854	715	857	854	982	912	862	655	712	920	837	25569	

Event key: Accident Road Works Special Road Closed Holiday
Weekends and defined holidays

Notes: Weekly (7-day) averages are calculated as the average of workday values and weekend values, weighted in the proportion 5:2.

Holiday: 2014-08-25 00:00 - 2014-08-25 23:59 Holiday - Yes

Various hourly blocks plus am & pm peak details

Total volume for the month

Using the tabs above the report!

Multi-Day Volume Report NRA 00000001053 2014-08-16 to 2014-08-31 - Internet Explorer

https://www.nrtrafficdata.ie/c2/tfdaysreport.asp?sgid=ZvyVmXU8jBt9PJc7JXt6&spid=N

Traffic Count Data Live Tabular Calendar Multi-Day Volu...

SITES DRAKEWELL

Multi-Day Volume Report NRA 00000001053: 2014-08-16 to 2014-08-31

Site Name: 1053 Site ID: 00000001053 Grid: 14143800377 Description: N5 Between Swinford and Charlestown, Cloonaghboy, Co. Mayo

Setup N5 1053 Channel Each Direction Time Period 1 hour Class Any Precision Normal Exclude data: None

All directions

	Sat 16 Aug	Sun 17 Aug	Mon 18 Aug	Tue 19 Aug	Wed 20 Aug	Thu 21 Aug	Fri 22 Aug	Sat 23 Aug	Sun 24 Aug	Mon 25 Aug	Tue 26 Aug	Wed 27 Aug	Thu 28 Aug	Fri 29 Aug	Sat 30 Aug	Sun 31 Aug	Average Workday	7 Day	Total Count
00:00	47	38	23	34	29	45	43	43	27	66	23	35	29	27	49	27	32	34	585
01:00	34	32	30	21	22	29	25	33	34	27	23	13	23	19	40	32	23	26	437
02:00	25	33	22	21	19	18	21	27	28	24	20	11	20	14	28	17	18	21	348
03:00	27	18	20	23	20	25	20	23	20	21	19	26	18	19	22	11	21	21	332
04:00	24	18	63	34	34	32	32	45	18	55	36	32	30	38	28	21	37	34	540
05:00	23	14	74	31	40	48	29	62	16	60	40	38	29	35	22	19	40	36	580
06:00	51	44	152	132	119	114	119	99	77	131	129	109	95	106	57	39	119	103	1573
07:00	105	84	250	230	213	226	219	152	376	254	228	229	254	223	111	79	230	208	3233
08:00	225	125	264	280	308	306	272	238	615	294	276	291	326	294	215	100	291	280	4429
09:00	318	211	274	289	274	262	255	321	355	254	275	272	282	290	283	139	275	274	4354
10:00	446	293	337	369	367	363	338	441	297	301	397	320	294	324	362	240	345	346	5489
11:00	603	540	437	476	440	468	449	610	418	502	410	393	373	414	432	381	429	448	7346
12:00	627	631	536	462	471	500	506	655	496	537	446	426	415	422	457	446	465	490	8033
13:00	587	679	504	462	431	537	551	620	537	574	401	430	482	430	469	493	470	497	8187
14:00	568	636	528	450	431	446	518	557	580	505	377	406	416	447	331	486	447	469	7682
15:00	561	598	557	370	463	436	589	583	493	523	368	404	423	453	402	472	451	471	7695
16:00	555	610	442	424	443	429	619	555	383	466	355	347	433	504	335	386	444	452	7286
17:00	494	647	419	434	454	472	667	537	423	429	428	424	412	614	270	444	480	477	7568
18:00	404	569	367	352	388	401	535	379	397	368	370	314	382	468	189	435	397	397	6318
19:00	298	433	293	265	306	254	422	330	433	268	226	222	236	355	149	432	287	296	4772
20:00	227	324	182	210	225	196	347	224	552	181	187	164	196	283	170	218	221	240	3886
21:00	152	206	159	134	172	168	265	151	477	131	121	105	113	233	130	172	163	178	2889
22:00	104	108	79	87	97	99	151	110	586	62	74	93	104	168	88	92	106	127	2102
23:00	59	52	57	49	55	58	75	46	268	60	58	52	60	78	55	48	60	68	1130
07-19	5493	5623	4915	4598	4683	4846	5518	5648	5370	5007	4331	4256	4492	4883	3856	4101	4725	4808	77620
06-22	6221	6630	5701	5339	5505	5578	6671	6452	6819	5718	4994	4856	5132	5860	4362	4812	5515	5624	90740
06-24	6384	6790	5837	5475	5657	5735	6897	6608	7763	5840	5126	5001	5296	6106	4505	4952	5681	5820	93972
06-24	6564	6943	6069	5639	5821	5932	7067	6841	7906	6093	5287	5156	5445	6258	4694	5079	5853	5991	96794
am Peak	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00
Peak Volume	603	540	437	476	440	468	449	610	615	502	410	393	373	414	432	381	429	448	448
pm Peak	12:00	13:00	15:00	12:00	12:00	13:00	17:00	12:00	22:00	13:00	12:00	13:00	13:00	17:00	13:00	13:00	17:00	13:00	13:00
Peak Volume	627	679	557	462	471	537	667	655	586	574	446	430	482	614	469	493	480	497	497

Start 2014 Online Data Pre... 2014 Online Data Pre... Multi-Day Volume ... Document1 - Microsof...

15:34 02/10/2014

- Another Site **N5** near Swinford
- Date Range
- 16th to 31st August for

• This is the report **BEFORE** modifying some of the options in the Tabs above the report

• Note the larger volume on 24th August

Having modified the tabs...

Multi-Day Volume Report NRA 00000001053 2014-08-16 to 2014-08-31 - Internet Explorer

https://www.nra.ie/c2/tfdaysreport.asp?sgid=ZvyVmXU8jBt9PJE&c7UXt6&spid=N

SITES DRAKEWELL

Multi-Day Volume Report NRA 00000001053: 2014-08-16 to 2014-08-31

Site Name: 1053 Site ID: 00000001053 Grid: 141443300277 Description: N5 Between Swinford and Charlestown, Cloonaghboy, Co. Mayo

Setup N5 1053 Channel Eastbound Time Period 3 hours Class BUS Precision Normal Exclude data: None

	Sat 16 Aug	Sun 17 Aug	Mon 18 Aug	Tue 19 Aug	Wed 20 Aug	Thu 21 Aug	Fri 22 Aug	Sat 23 Aug	Sun 24 Aug	Mon 25 Aug	Tue 26 Aug	Wed 27 Aug	Thu 28 Aug	Fri 29 Aug	Sat 30 Aug	Sun 31 Aug	Average Weekday	Total Count
00:00	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	7
03:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
06:00	0	1	1	2	1	3	3	0	11	2	0	0	1	3	0	0	2	28
09:00	3	2	1	2	2	4	4	4	3	0	2	2	1	4	1	1	3	37
12:00	3	2	2	1	1	1	2	3	3	0	3	0	1	2	2	1	1	27
15:00	4	1	2	2	5	0	3	3	2	2	2	2	3	0	0	1	2	34
18:00	1	0	1	0	1	1	2	0	1	0	0	0	0	0	2	1	1	10
21:00	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	1
07-19	11	5	6	5	9	6	11	10	9	2	8	4	5	6	7	4	7	108
06-22	11	6	7	7	11	9	14	11	22	4	8	4	6	9	7	4	8	140
06-24	11	6	7	7	11	9	14	11	22	4	8	4	6	9	7	4	8	140
00-24	13	6	7	8	11	10	15	11	22	6	9	4	7	13	7	4	9	153
am Peak	09:00	09:00	06:00	06:00	09:00	09:00	09:00	09:00	06:00	03:00	09:00	09:00	00:00	09:00	09:00	09:00	09:00	09:00
Peak Volume	3	2	2	2	4	4	4	4	11	2	3	2	1	4	1	1	3	2
pm Peak	15:00	12:00	12:00	15:00	15:00	12:00	15:00	12:00	12:00	15:00	12:00	15:00	15:00	12:00	12:00	12:00	15:00	15:00
Peak Volume	4	2	2	2	5	1	3	3	3	2	3	2	3	2	2	1	2	2

Event key: Accident Road Works Special Road Closed Holiday Weekends and defined holidays

Notes on data: Weekly (7-day) averages are calculated as the average of workday values and weekend values, weighted in the proportion 5:2.

Holidays & Events:

Start	End	Type	Lanes	Included	Description
2014-08-25 00:00	2014-08-25 23:59	Holiday	-	Yes	Holiday

Data prepared by NRA October 2, 2014 3:05:11 PM.

Location: C2 > Site Groups > Live > Sites > 00000001053 (1053) > Multi-Day Volume Report

C2-Cloud Traffic Data ©2003-2014 Drakewell Ltd.

•Channel / Time Period & Class tabs have been modified

•Remember I mentioned the high volume on Sun 24th August 2014

•There is a corresponding high volume of Buses eastbound too?

**The Question is;
Was There a Match on??**

Can You help us to maintain this system? **YES!**

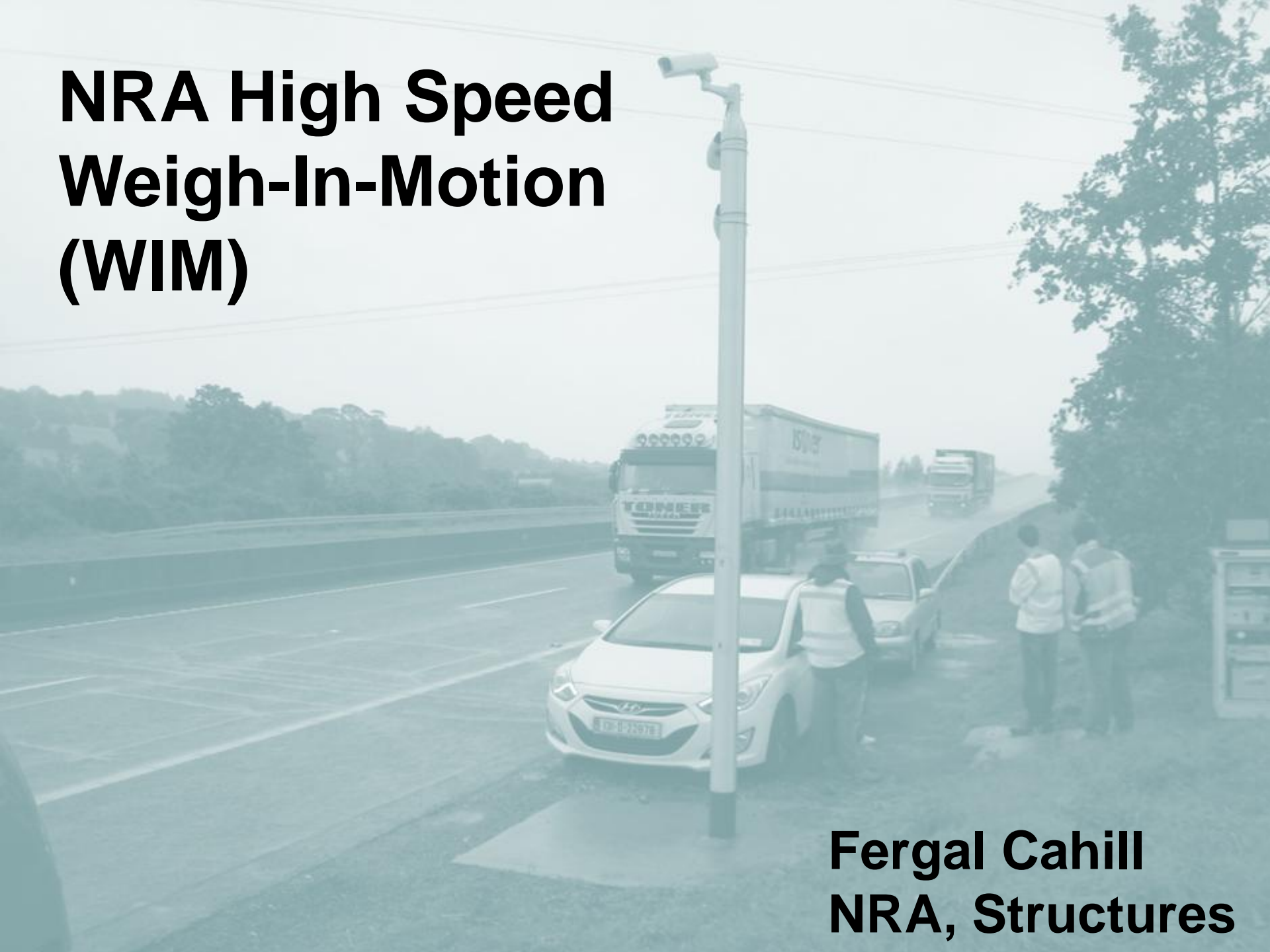
Roadside Cabinets + loop traces = **shallow SENSOR CABLES/ ELECTRICAL PILLARS/BURIED CABLES**

Ask your Area Engineers to Notify - Work Crews / Hedge cutters / Applicants for Road Opening Licences

If working at or near this type of equipment - **USE CAUTION** - if in doubt, contact the NRA



NRA High Speed Weigh-In-Motion (WIM)



**Fergal Cahill
NRA, Structures**

NRA High Speed Weigh-In-Motion

- What is High Speed Weigh-In-Motion (HS WIM)?
- Why do the NRA need HS WIM?
- What type of WIM system has the NRA installed?
- How are truck weights regulated in Ireland?
- What type of Data is being retrieved from the installed WIM?

What is High Speed Weigh-In-Motion?



Camera's

Traffic Loops

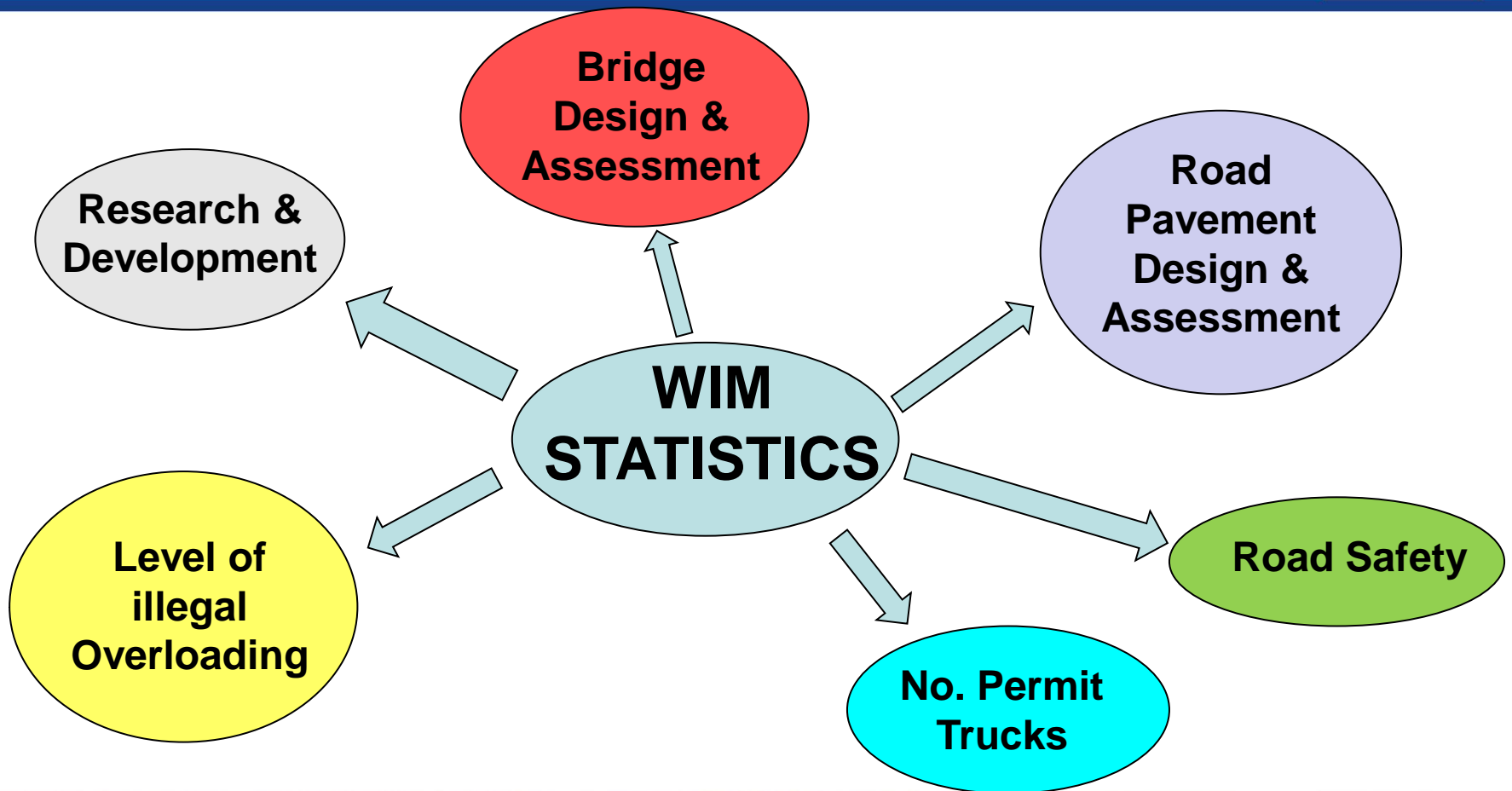
WIM Sensors

Control Cabinet

Why do the NRA need WIM data?



Why do the NRA need WIM data?



Why do the NRA need WIM data?

- **We're blind** – The NRA have no HCV loading / overload Network Indicators
- Overloaded Trucks / Axles cause a lot of damage to Roads & Bridges
- The relationship between axle weight & pavement damage is not linear
- 4th Power Law - Overloaded Axles cause exponential damage to pavements
- Initial NRA focus – determine the state of truck loading on National Primary's
- Knowledge facilitates more efficient management & maintenance
- Need a couple of years of good data prior to any detailed analysis being conducted (.....only 9 months so far)

NRA Weigh-In-Motion (WIM)

- Electro-Automation & Clonmel Enterprises JV (EACL)
 - Clonmel (Civils) & EA (Electronics & Software)
 - TDC Traffic System WIM (Drakewell)
- Supply + Installation + Operation + Maintenance (5 yrs)
- NRA Weigh-In-Motion Specifics:
 - 1) 6 Sites
 - 2) Data Collection
 - 3) Accuracy Class
 - 4) System Monitoring

NRA Weigh-In-Motion (WIM)

1) NRA WIM Sites (6) - Installed Q4 2012

#	County	Road	Location	Lanes
1	Dublin	M1	Donabate – between JN 4 & JN 5	2 + 2
2	Meath	R147 (Old N3)	Between Dunshaughlin & Dunboyne	2* + 2*
3	Kildare	N4	Maynooth	2 + 2
4	Kildare	M7	Lewistown – between Jn 10 & Jn 11	2 + 2
5	Wexford	N11	Gorey – between Jn 23 & Jn 24	2 + 2
6	Dublin	N7	Citywest South – between Jn 5 & Jn 6	3 + 3

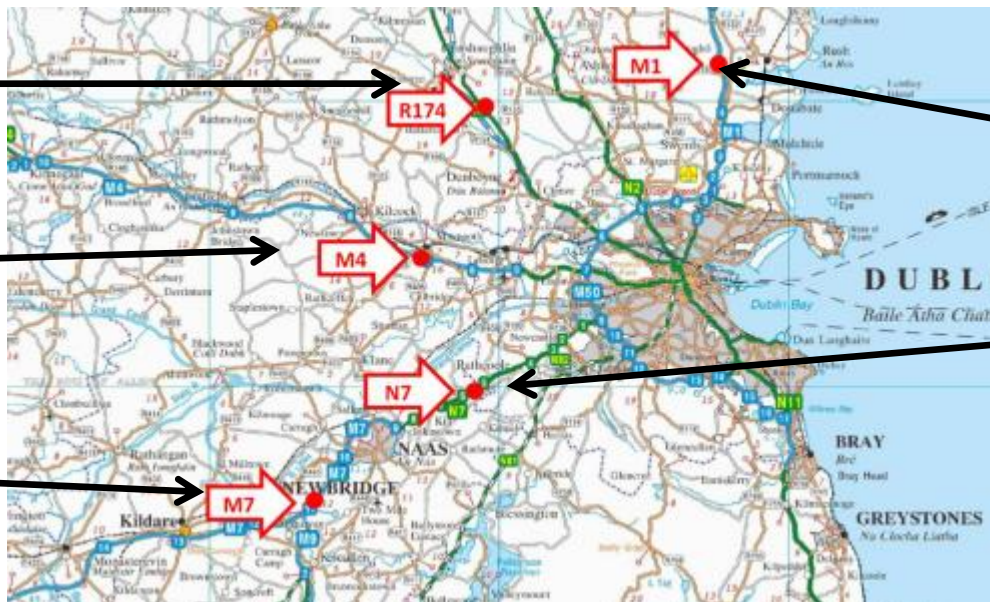
* R174 – 1 driving lane & 1 bus lane in each direction

NRA Weigh-In-Motion (WIM)

Site #2
Black Bull,
Meath

Site #3
Maynooth,
Kildare

Site #4
Lewinstown,
Kildare



Site #1
Donabate, Dublin

Site #6
Citywest South,
Dublin



Site #5
Gorey, Wexford



NRA Weigh-In-Motion (WIM)

2) Data Collection Records

Approx **2 Million records per quarter** – stored on server at Dublin port

Data Collection Requirements for each vehicle

1	Unique Registration number	7	GVW
2	Location	8	No. Of Axles & Axle Spacing's
3	Traffic Lane / Direction	9	Wheelbase
4	Date / Time Stamp	10	Vehicle length
5	Speed	11	Photograph
6	Weight per Axle (A1; A2; A3..etc)	12	Vehicle Class (7)

NRA Weigh-In-Motion (WIM)

3) WIM System Accuracy Class – C (15)

	Enforcement		Detailed Traffic Analysis	General Traffic Evaluation	Low Cost		
Accuracy Class	A (5)	B+ (7)	B (10)	C (15)	D+ (20)	D (25)	E
GVW	5	7	10	15	20	25	> 25
Group of Axles	7	10	13	18	23	28	> 28
Single Axle	8	11	15	20	25	30	> 30
Axle of a Group	10	15	20	25	30	35	> 35

NRA Weigh-In-Motion (WIM)

4) System Monitoring (In-Service)

- **You need to hold WIMs hand!**
- It's essential to verify WIM data periodically to ensure Quality
- On-Site System Checks & Calibration:
 - After installation is complete (Initial verification)
 - In-service verification - 2 times / year (Jan & July)
 - Verification after any repair works to WIM
- WIM Quarterly Reports & Quality Insurance Indicators

Legal Weight Limits for Trucks

Max Axle Weight

No. of Axles	Vehicle Description Vehicle No.	Class No	Axle Spacing (A) (m)	Maximum Weight Laden (Tonnes)	Illustration
2-Axle Vehicles	2-Axle Rigid Truck or 2-Axle Tractor Unit	2(a)	Less than 3 m	18 tonnes	
		2(b)	3 m or greater	18 tonnes	
3-Axle Vehicles	3-Axle Rigid Trucks or 3-Axle Tractor Unit	3(a)	N/A	26 tonnes	
	A Combination of A 2-Axle Tractor Unit with A Single Axle Semi-Trailer or 2-Axle Rigid Truck Drawing A	3(b)	Less than 3 m	22 tonnes	
	2-Axle Rigid Truck Drawing A Single Axle Trailer	3(c)	3 m or greater	26 tonnes	
4-Axle Vehicles	4-Axle Rigid Truck or 4-Axle Tractor Unit	4(a)	N/A	32 tonne (30 tonnes)	
	A Combination of A 2-Axle Tractor Unit with A 2-Axle Semi-Trailer	4(b)	N/A	38 tonnes	
	A Combination Of 3-Axle Tractor Unit With A Single Axle Semi-Trailer	4(c)	N/A	35 tonnes	
	2-Axle Truck Drawing A 2-Axle Trailer	4(d)	Less than 3 m	30 tonnes	
		4(e)	3 m or greater	36 tonnes	

2 Axle - 18T

5 Axle - 42T

3 Axle - 26T

4 Axle - 38T

6 Axle - 46T

No. of Axles	Vehicle Description Vehicle No.	Class No	Axle Spacing (A) (m)	Maximum Weight Laden (Tonnes)	Illustration
5-Axle Vehicles	A Combination Of A 2-Axle Tractor Unit with A 3-Axle Appropriate Semi-Trailer	5(a)	N/A	40 tonnes	
	A Combination Of A 3-Axle Tractor Unit with A 2-Axle Semi-Trailer	5(b)	N/A	42 tonnes	
	2-Axle Truck Drawing A 2-Axle Trailer	5(c)	Less than 3 m	34 tonnes	
		5(d)	3 m or greater	40 tonnes	
	3-Axle Truck Drawing A 2-Axle Trailer	5(e)	Less than 3 m	34 tonnes	
		5(f)	3 m or greater	40 tonnes	
6-Axle Vehicles	A Combination of 3-Axle Tractor Unit with A 3-Axle Semi-Trailer	6(a)	N/A	40 tonnes	
	A Combination of Vehicles With A Total of 6-Axles	6(b)	Less than 3 m	34 tonnes	
		6(c)	3 m or greater	40 tonnes	

7.5T



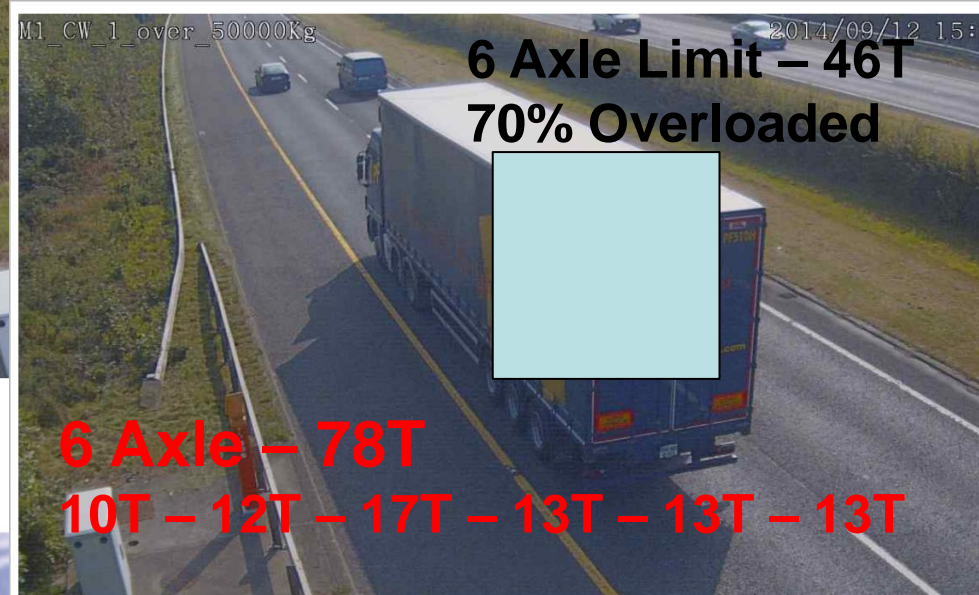
Legal Weight Limits for Trucks

Standard Truck	Permit Truck
2 to 6 axles (rigid / articulated)	6 axle +
98% of the population	2% of the population
Dominant in long span bridges	Dominant vehicle in loading events for short to medium span bridges
Mostly carrying consumer goods	Almost entirely related to the construction industry

However – some trucks that look like standard trucks are in fact permit trucks and may often be illegally overloaded trucks.



Legal Weight Limits for Trucks



NRA WIM Quarterly Reports

- 2 Million HCV records per quarter (6 sites)
- Data Visualisation – Collecting enormous amounts of **data is pointless** unless we can utilise in a meaningful manner
- So Key Statistics are extracted each quarter and compared to trends over previous quarters
- An important feature of these reports is the inclusion of “Quality Assurance Indicators” to check that the WIM system is measuring correctly

NRA WIM Quarterly Reports

NRA Quarterly WIM Reports – Statistics Provided

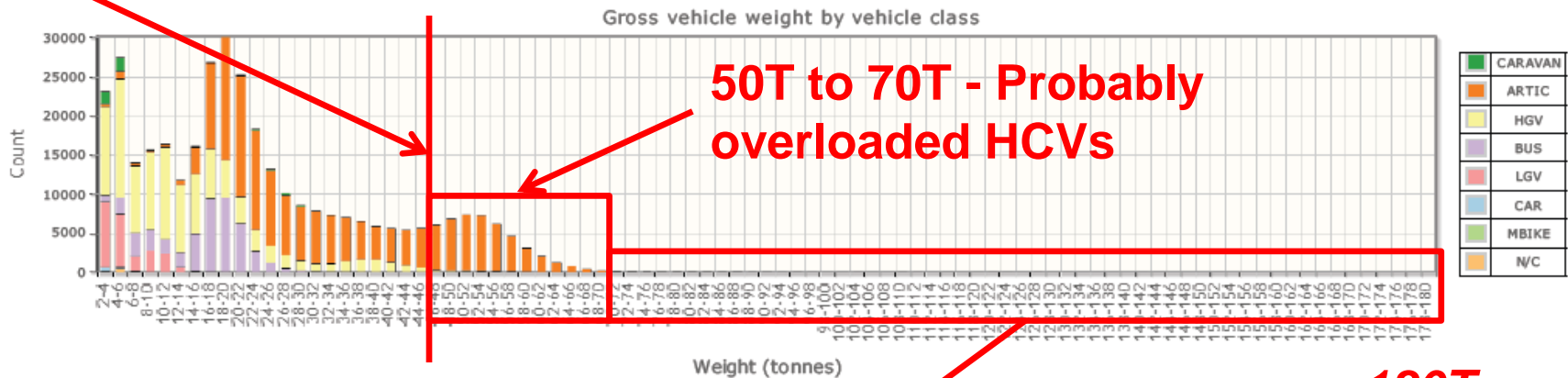
1	Site Summary	8	Average no. Of HCV / day Graph
2	Events	9	Vehicle Classification Pie Chart
3	Weight Histograms: <ul style="list-style-type: none">- Gross Vehicle Weights (GVW)- Individual Axle Weights- Tandem Axle Weights- Tridem Axle Weights	10	Exceedance Limit Tables: <ul style="list-style-type: none">- Trucks exceeding weight limits- Axles exceeding legal limits
4	No. of Axles Histogram	11	Photos of 5 Heaviest / 5 Longest HCVs
5	Mean Max Weekly GVW Graph	12	Flow Variation by time of day Graph
6	Mean Max Daily Axle Weight Graph	13	Speed Distribution Table
7	No. of Equivalent Standard Axles Graph	14	Quality Assurance Indicator Graphs: <ul style="list-style-type: none">-Steer Axles on 5 axle trucks-Mean Weekly Truck Weight-Last Axle spacing on 5 axle truck

NRA WIM Quarterly Reports

46T Limit

Gross vehicle weight (GVW)

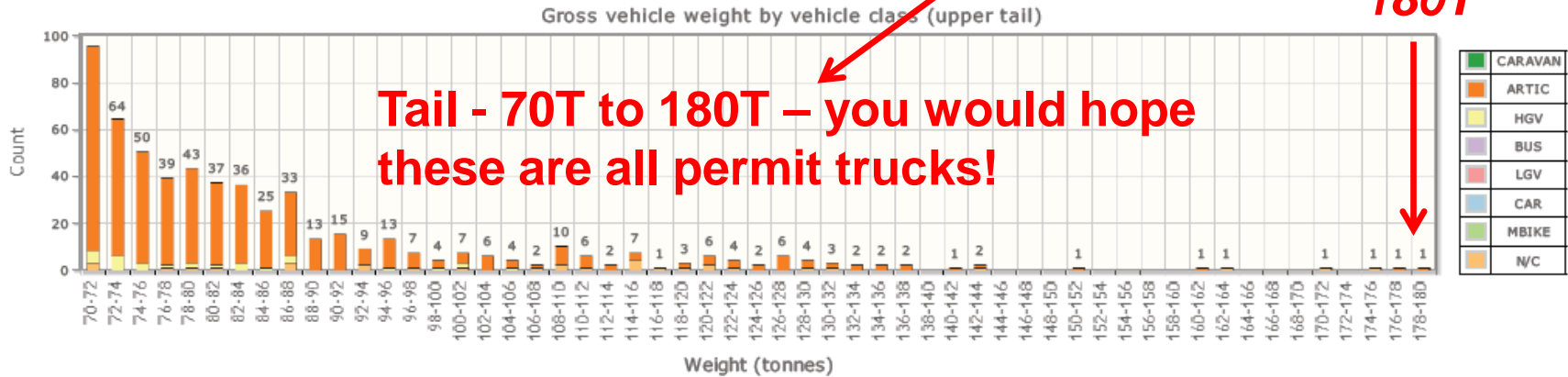
The chart below shows the gross vehicle weight (GVW) distribution for heavy commercial vehicles (HCV) split by vehicle class.



50T to 70T - Probably overloaded HCVs

Tail - 70T to 180T – you would hope these are all permit trucks!

180T



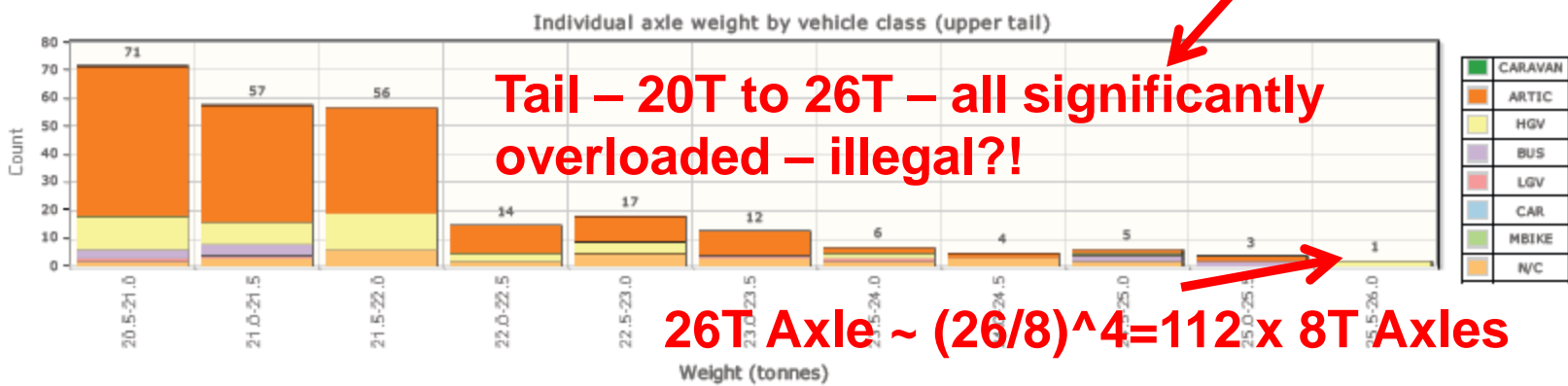
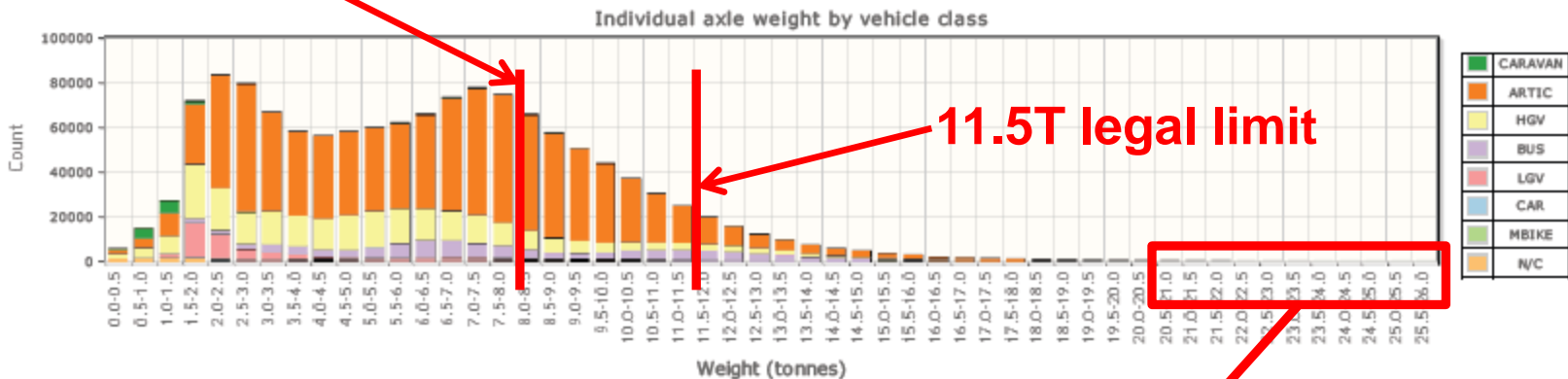
3) Weight Histograms – GVW - Q2 2014 – M1 Donabate

NRA WIM Quarterly Reports

8T Design Standard Axle

Individual axle weight

The chart below shows the individual axle weight distribution for heavy commercial vehicles (HCV) split by vehicle class. Axes that belong to a group (tandem/tridem) are included in this chart.



Tail – 20T to 26T – all significantly overloaded – illegal?!

26T Axle ~ $(26/8)^4 = 112 \times 8T$ Axles

NRA WIM Quarterly Reports

10% Overload of 4 Axle Vehicles

20% Overload of 5 Axle Vehicles

Trucks exceeding weight limits

The table below shows the number and percentage of trucks (rigid and articulated) exceeding gross vehicle weight legal limits.

Truck legal limit	Legal weight limits				
	2 axles and GVW > 18.0 tonnes	3 axles and GVW > 26.0 tonnes	4 axles and GVW > 38.0 tonnes	5 axles and GVW > 42.0 tonnes	6+ axles and GVW > 44.0 tonnes
Nº trucks	4314	2786	4301	19387	32282
Percentage of truck category exceeding	2.5%	20.1%	9.9%	19.5%	63.7%

20% Overload of 3 Axle Vehicles

Axes exceeding legal limit

The table below shows the number of axes exceeding the legal limit of 11.5 tonnes. The table also shows the number of trucks (rigid and articulated) and the number of buses/coaches that have at least one axle that exceeds this limit.

	Number	Percentage
Axes exceeding limit	79037	6.00%
Trucks with an axle exceeding limit	48528	12.80%
Buses with an axle exceeding limit	15158	30.42%

80,000 Axles > 11.5T in this 3 month period

10) Exceedance Limit Tables – Q2 2014 – M1 Donabate

NRA WIM Quarterly Reports



11) Photos of 5 Heaviest



Many Thanks for your Attention

Any queries, contact:

Aidan Smyth

asmith@nra.ie or datainfo@nra.ie

Fergal Cahill

fcahill@nra.ie

