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Additional Information

**Integrated Risk
Management Plan**

**2020-2024
Consultation Proposals**

LEICESTERSHIRE
FIRE and RESCUE SERVICE



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Demand

During the period Jan 2014 - Dec 2018, 39,262 incidents were attended by Fire and Rescue Services in Leicester, Leicestershire and Rutland. This is an average of 7,852 incidents per year.

Incident Type

Overall, 40% of these are false alarms, 29% are fires and 31% are special service incidents. 41% of all incidents occur in people's homes.

Table 1. Breakdown of incidents by incidents and property type over 5 years

	Incident Type	DWE	NOR	OTR	VEH	OUT	ALL
False Alarm	Automatic	5,532	3,168	874	1	6	9,581
	Good intent	1,997	641	125	800	1,862	5,425
	Malicious	357	117	30	16	55	575
Fire	Primary	2,168	1,213	125	2297	485	6,288
	Secondary	375	99	8	32	4,695	5,209
Special Service	Road collision	0	0	0	3355	0	3,355
	Medical	1,849	118	180	27	158	2,332
	Assist agencies	1,291	65	25	33	86	1,500
	Effect entry	919	55	35	154	13	1,176
	Flooding	466	63	8	7	5	549
	Lift Release	282	103	89	0	1	475
	Animal assist	122	37	0	32	230	421
	Person release	217	353	45	36	125	776
	Make safe	114	85	0	16	72	287
	Spills or leaks	18	19	0	203	21	261
	Hazardous	114	80	5	19	29	247
	Advice only	232	63	12	73	52	432
	Suicide	69	33	0	1	41	144
	Other	37	13	0	126	53	229
ALL	16,159	6,325	1,561	7,228	7,989	39,262	

Key: DWE = dwelling, NOR = non-residential, OTH = other residential, OUT = outdoor, VEH (road and rail vehicles, boats and aircraft)

Temporal Factors

There are fewer incidents from midnight to 7:00 and then begins to increase throughout the day and peaking between 18:00-19:59.

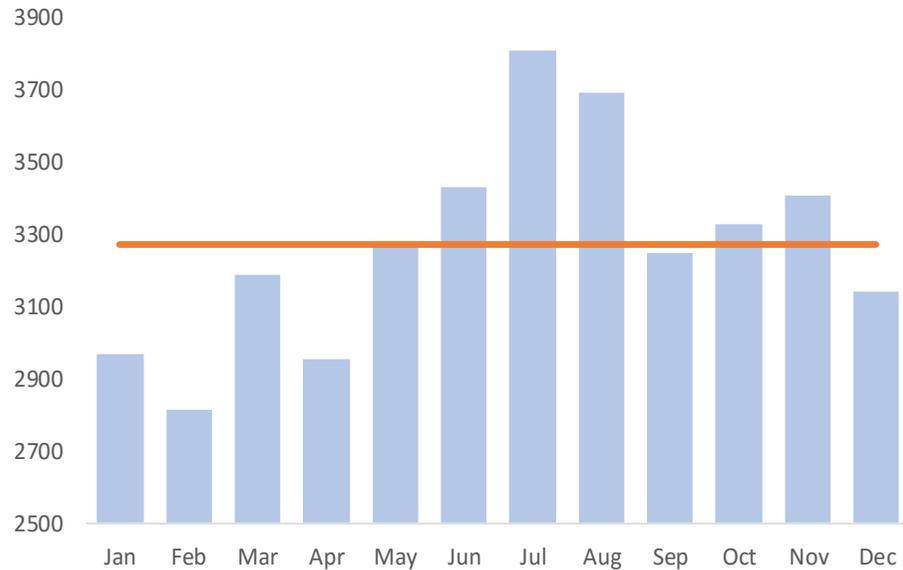
Chart 1. Incidents by day of the week and hour of the day over 5 years

Hour	Sun	Mon	Tue	Wed	Thu	Fri	Sat	All
0	218	180	161	170	181	181	210	1,301
1	178	137	120	138	160	167	160	1,060
2	141	104	139	157	121	131	180	973
3	156	104	101	112	129	103	139	844
4	154	118	117	93	98	123	150	853
5	118	92	110	111	95	100	136	762
6	128	97	113	100	100	113	113	764
7	119	152	134	156	154	155	126	996
8	137	193	209	215	172	222	181	1,329
9	188	209	216	250	235	257	187	1,542
10	215	226	265	271	240	261	252	1,730
11	227	259	232	255	263	282	244	1,762
12	276	303	264	278	263	255	267	1,906
13	278	283	276	259	279	276	314	1,965
14	292	262	257	276	267	274	311	1,939
15	325	286	306	305	284	283	286	2,075
16	336	325	341	327	316	313	321	2,279
17	354	330	370	335	323	326	320	2,358
18	332	364	354	378	345	365	389	2,527
19	360	372	325	348	340	318	359	2,422
20	354	328	316	325	353	306	333	2,315
21	308	340	294	310	306	293	311	2,162
22	269	250	242	248	260	282	281	1,832
23	212	220	201	223	215	242	253	1,566
All	5,675	5,534	5,463	5,640	5,499	5,628	5,823	39,262

There is a noticeable increase between 07:00-07:59 and 08:00-08:59 and then again from 15:00-15:59 to 16:00-16:59.

There is a known seasonal element to incidents as outdoor fires tend to occur more in the summer months and this evident in Chart 3.

Chart 3. No. of incidents per month over 5 years with average 2014-18



Spatial Factors

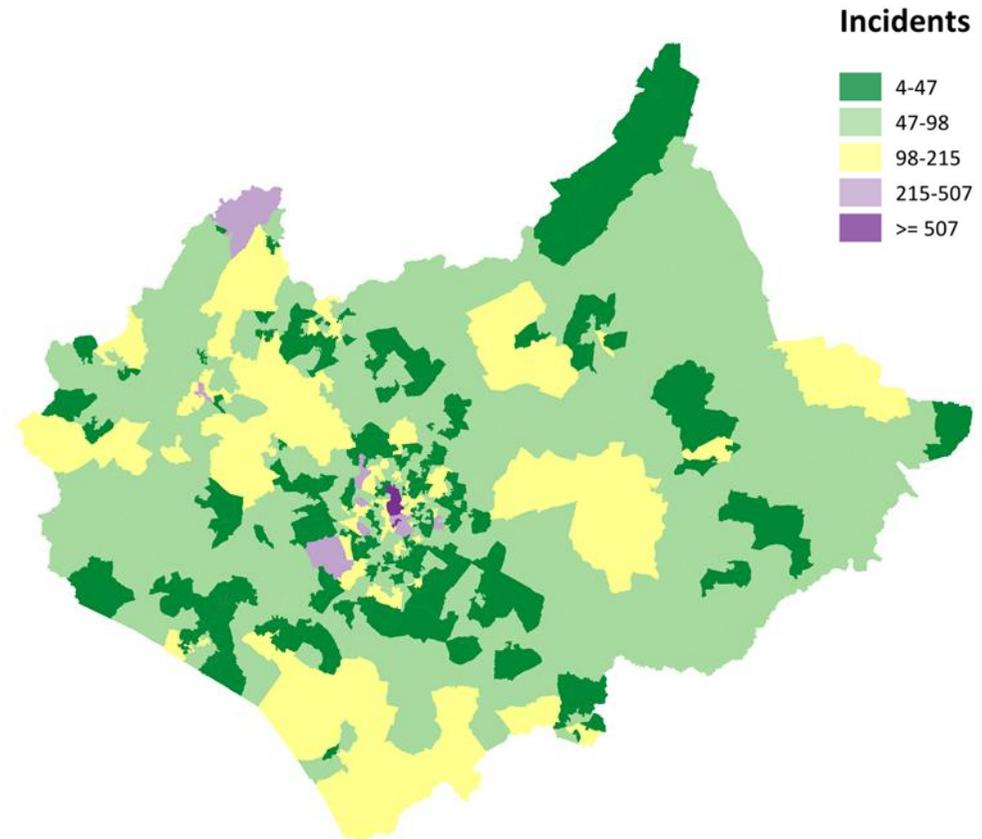
The local authority with the largest number of incidents attended is Leicester City with 41%. The next 2 largest contributors are Charnwood at 12.9% and North West Leicestershire at 12.3%. Higher demand areas include:

- Leicester City Centre
- Abbey Park and Frog Island areas
- Infirmary Road covering Leicester Royal Infirmary and Welford Road
- Beaumont Leys covering the Shopping Centre and Glenfield Hospital
- New Parks covering Aikman Avenue

- Braunstone covering area of Braunstone Park
- Evington covering the Leicester General Hospital
- Southfields covering Victoria Park and Leicester University
- Highfields covering area near Leicester Railway Station
- Enderby covering Fosse Park and M1 Jn. 21
- Coalville covering High Street
- Castle Donington covering M1 Jn. 24 and East Midlands Airport

Map 1. No. of incidents attended over 5 years 2014-18

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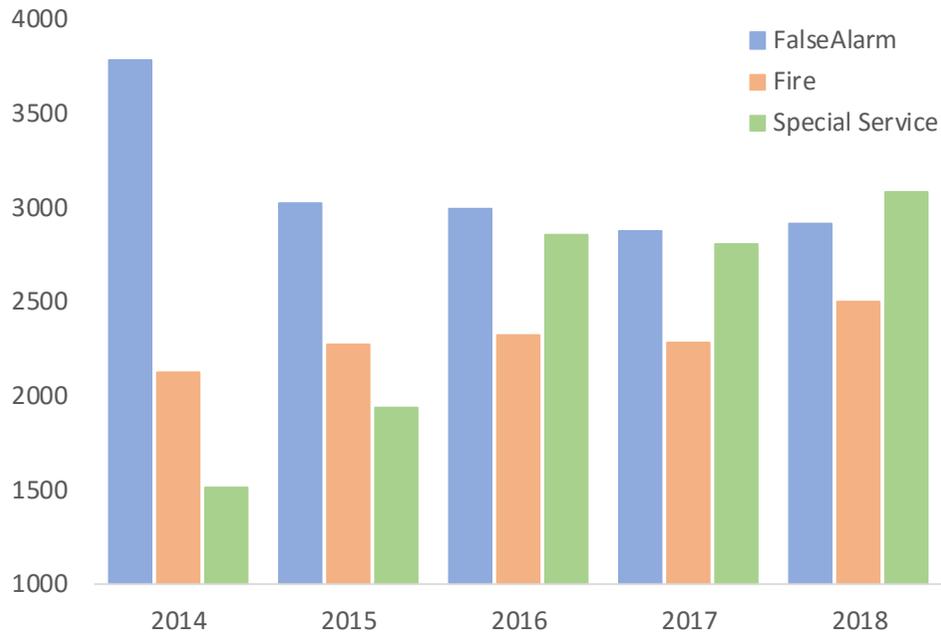


Change Over Time

Over a 10-year period, 45,770 incidents were attended between 2009-13 and 39,262 for the period 2014-18, which is a reduction of 16.6%. This is due to a reduction in fire and false alarm incidents, even though special service incidents have increased substantially.

Whilst, the total number of incidents are lower, there has been a 14.5% increase over the last 5-year period. The highest year was 2018, with 8,491 and the single biggest year on year increase was 2015 to 2016, in which 944 more incidents were attended.

Chart 4. No. of incidents by incident category per year



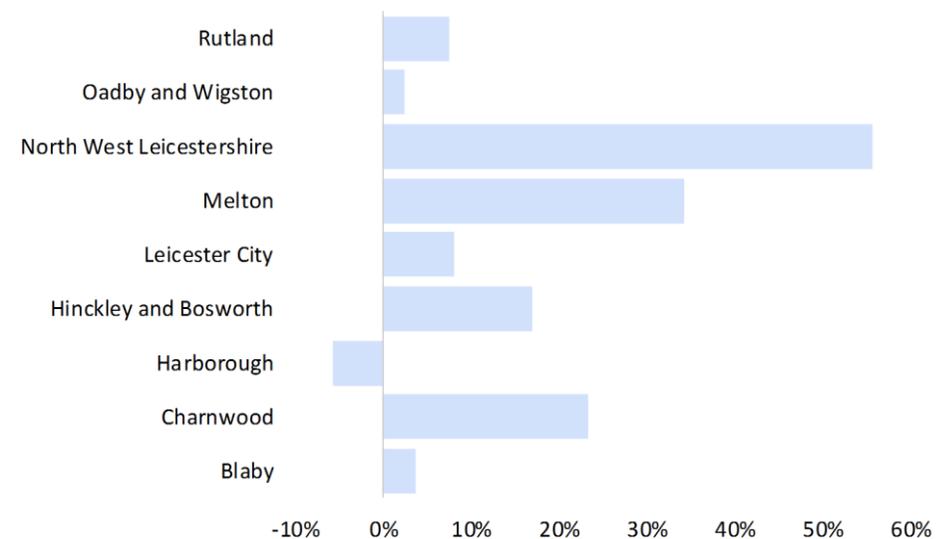
The main reasons for this increase is the continuing trend of attending more special service incidents, especially effecting entry, assisting other agencies and medical incidents.

False alarm incidents have reduced following the introduction of not attending unless there is a confirmed fire for some property types along with continued work with frequent service users.

Fires have increased over time due to more incidents involving road vehicles and vegetation, the latter was particularly more frequent during a prolonged hot and dry summer in 2018. Overall, the number of deliberate fires has remained stable at an average of 922 incidents per year.

Chart 5 shows how change has affected local authority areas, the only area not to see an increase was Harborough, which had a 6% decrease in incidents. In comparison, North West Leicestershire had the highest increase with a 56% increase. This was due to a local arrangement to attend medical incidents which has not been replicated everywhere in LLR.

Chart 5. Change in number of incidents by local authority 2014-18

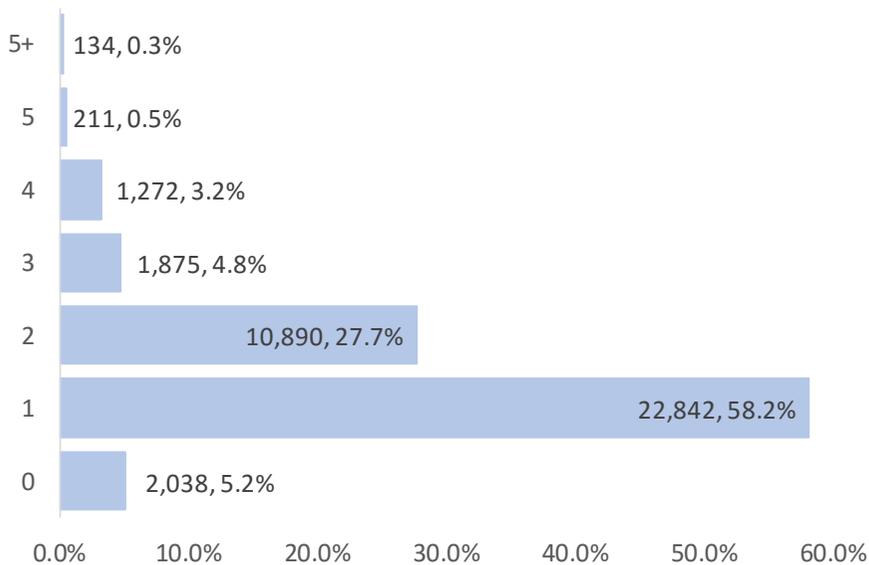


Pumping Appliances per Incident

The number of pumping appliances required for each incident is based on the predetermined attendance (PDA) which is a reflection of the risk to life and property encountered by the incident type. In some cases, more appliances are needed once the initial PDA has arrived at the scene.

Chart 5 shows that in over half of incidents only require 1 pumping appliances, in 2,038 (5.2%) of cases a non-pumping appliance was mobilised, which could for example an Officer in a car. Whilst the number of incidents attended by 2 or fewer pumps has decreased over time, the converse is true for incidents requiring 3 or more pumps. This is likely to be a reflection of an increase in PDA for high rise fires.

Chart 5. Number and percentage of incidents by no. of pumping appliances mobilised over 5 years



Conclusion

The total number of incidents over the past 5 years is lower than the previous 5 years, but incidents have been increasing year on year. This is due to an increase in effecting entry, assist other agencies and medical incidents as well as secondary fires. Higher demand areas are concentrated in Leicester City but some areas outside of the City have seen bigger increases.

Community Risk Model 2018

Background

The purpose of the Community Risk Model (CRM) is to identify geographical areas where Leicestershire Fire & Rescue Service (LFRS) is more likely to attend life risk incidents. This list shows which incident types are included along with the volume of incidents and weightings in brackets:

- Index of multiple deprivation – (1.5)
- Domestic property fires – 2168 (1.9)
- Fatal or serious injury fires - 170 (0.46)
- Non-residential property fires – 1053 (0.25)
- Road traffic collision extrications – 745 (1)
- Assist other agencies – 1492 (0.36)
- Effecting entry or exit – 1176 (0.36)
- Medical incidents – 2329 (0.36)
- Removal of people from objects – 139 (0.36)
- Suicide or attempted suicide – 144 (0.36)
- Water rescue – 91 (0.36)
- Other rescue/release of persons - 271 (0.36)
- Other transport incident – 84 (0.36)

The weighting is based on the frequency of casualties resulting from each incident type. It is based on 5 years of data (Jan 2014 – Dec 2018) and is aggregated at super output area which is a geographical area with an average of 1500 people, referred to throughout as a risk area.

Interpreting the Risk Model

The risk model shows which areas are more at risk, relative to the whole of Leicester, Leicestershire and Rutland (LLR), which means for example Oakham is compared to New Parks but it cannot quantify the actual risk in an area. The model provides a generalised view of risk in an area and does...

not take into account personal circumstances. This means, not everyone living in a higher risk area is equally high risk and not everyone in lower risk areas are low risk.

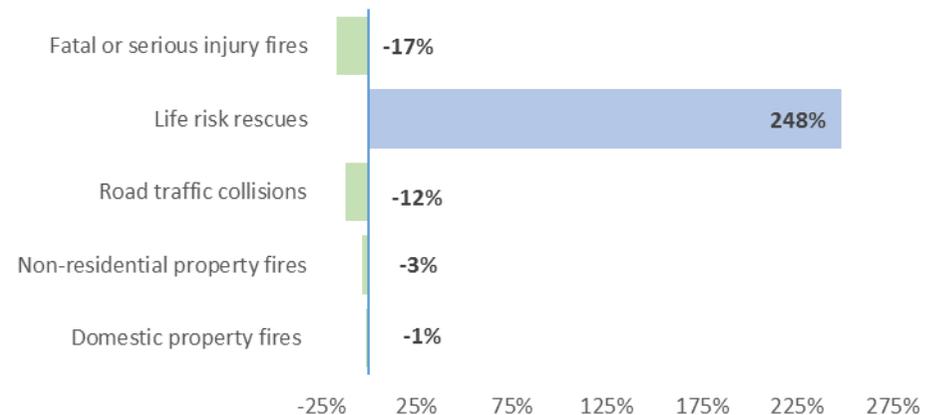
Verifying the Risk Model

The model was first created in 2014 and was verified by an independent company which concluded that the model was 'robust and comprehensive'. It has since been updated each year with the most recent update including incidents up to the end of 2018.

Changes to the Risk Model

There has been no update in the indices of multiple deprivation since 2015, but the types of incidents attended do change and Chart 1 shows how this compares to the previous model.

Chart 1. Percentage change in life risk incidents since the 2017 CRM



Fire related incidents have all decreased but life risk rescue incidents have increased substantially. This is due to more gaining entry and assisting other service incidents as well as the inclusion of medical incidents...

which have not been included in previous models.

It was decided to include medical incidents this time because of their volume. As it is still a pilot with only a few Stations involved, the weighting remains unchanged. Due to its lower weighting, it's inclusion does not significantly alter the spread of risk, other than a slight increase in risk for North West Leicestershire (a pilot area) at the lower end of the scale.

Updated Risk Model

Overall, the number of very high risk areas remains unchanged at 3 (0.5%) areas and there has been a decrease of 4 high risk areas to 10 (2%) areas. Medium risk areas has decreased by 1 area to 59 (10%) areas. At the lower end, there are fewer very low risk areas and more low risk areas.

Table 1. Comparison of risk areas by risk category to previous model

	V-High	High	Medium	Low	V-Low	Total
2018	3	10	59	208	331	611
2017	3	14	60	188	346	611

The 3 very high risk areas are:

- Leicester City Centre (main shopping area)
- Infirmary Road and Welford Road (including hospital and prison)
- Filbert Street (Filbert Village area)

Table 2 shows the spread of risk by local authority, the darker the shade the higher the percentage of areas in the local authority for the corresponding risk category. In general risk has concentrated in Leicester with only 2 higher risk areas in the Counties.

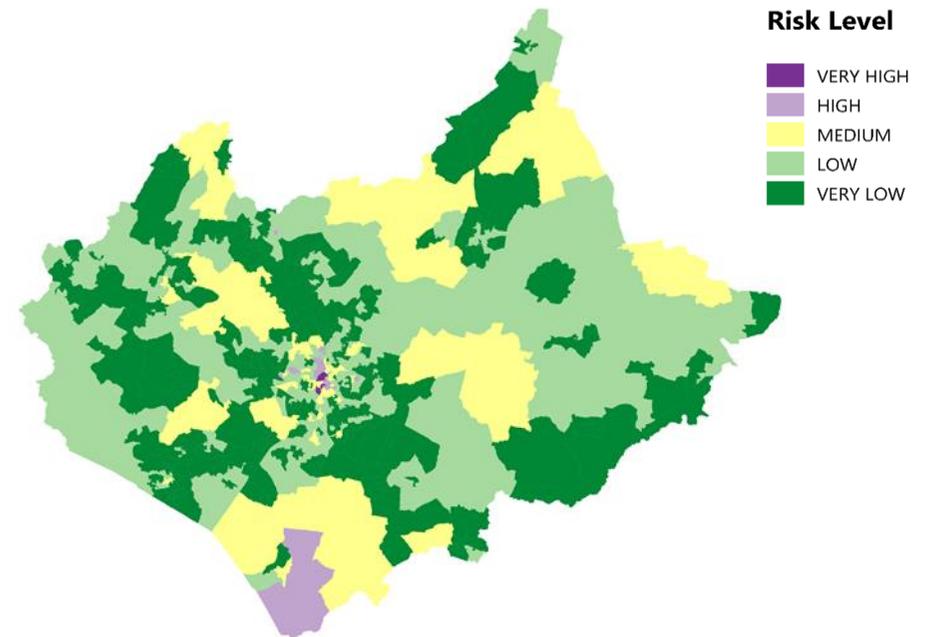
Outside of Leicester, North West Leicestershire and Melton have more areas in the medium to low risk categories.

Table 2. The percentage of areas by risk category by local authority

Area	V-High	High	Medium	Low	V-Low
Blaby	0%	0%	5%	25%	70%
Charnwood	0%	1%	2%	30%	67%
Harborough	0%	2%	15%	15%	68%
Hinckley & Bosworth	0%	0%	5%	23%	73%
Leicester	2%	4%	18%	44%	32%
Melton	0%	0%	10%	37%	53%
North West Leicestershire	0%	0%	9%	43%	48%
Oadby & Wigston	0%	0%	3%	31%	67%
Rutland	0%	0%	4%	39%	57%

Map 1. Community Risk Model 2018

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The table below provides a breakdown of each very high and high risk area and whether it is in the top 20% for each of the component elements of the risk model. For example, the area around Filbert Street is in the top 20% for all components apart from road traffic collisions.

Table 3. Risk scores in the top 20% by risk area and component of risk score

Risk Area and Category	IMD	DOF	NRF	RTC	LRR	FSI
Leicester City Centre: Clock Tower (VH)	In top 20%					
Infirmery/Welford Rd (VH)	In top 20%	In top 20%	In top 20%	Not in top 20%	In top 20%	In top 20%
Filbert St (VH)	Not in top 20%	In top 20%	In top 20%	In top 20%	Not in top 20%	In top 20%
Leicester City Centre: Dover St (H)	In top 20%	In top 20%	In top 20%	Not in top 20%	In top 20%	In top 20%
Leicester City Centre: Southfields (H)	In top 20%	In top 20%	In top 20%	Not in top 20%	In top 20%	Not in top 20%
Leicester Highfields (H)	In top 20%	In top 20%	Not in top 20%	Not in top 20%	In top 20%	In top 20%
Leicester Abbey Rise (H)	In top 20%					
Leicester Braunstone Frith (H)	In top 20%	In top 20%	Not in top 20%	Not in top 20%	In top 20%	In top 20%
Leicester Frog Island & Abbey Park (H)	In top 20%	Not in top 20%	In top 20%	Not in top 20%	In top 20%	Not in top 20%
Leicester New Parks (H)	In top 20%	In top 20%	Not in top 20%	In top 20%	In top 20%	Not in top 20%
Leicester Crown Hills (H)	In top 20%	In top 20%	Not in top 20%	Not in top 20%	In top 20%	In top 20%
Loughborough Bell Foundry (H)	In top 20%	In top 20%	In top 20%	Not in top 20%	In top 20%	In top 20%
Lutterworth Misterton (H)	Not in top 20%	Not in top 20%	In top 20%	In top 20%	Not in top 20%	Not in top 20%

Key: IMD (indices of multiple deprivation), DOF (domestic fires), NRF (non-residential fires), RTC (road traffic collisions), LRR (life risk rescues), FSI (fatal and serious injury fires)

It shows that most risk areas are in the top 20% for deprivation and domestic fire incidents and road traffic collisions feature the least. In other words, higher risk fire areas do not coincide with higher risk road traffic collision areas, the two tend to be different.

Comparison to previous model

There are two main reasons why a risk area moves from one category to another, either due to less incidents occurring in the area or more incidents occurring in another area. In many cases, it is a combination of both factors. Using a 5-year time dataset means that risk areas are less likely to be affected by short term i.e. 1-2 year changes in incident volumes.

Table 4. Comparison of risk areas which have moved from or to very high or high risk from the previous model with component factors

Increase in risk Decrease in risk

Area	2017	2018	D	N	R	L	F
Lutterworth Misterton	VH	H	○	○	○	○	○
Castle Donington Daleacre	H	M	○	○	○	○	○
Markfield & Stanton-under-Bardon	H	M	○	○	○	○	○
Coalville Agar Nook	H	M	○	○	○	○	○
Enderby Fosse Park	H	M	○	○	○	○	○
South Wigston (Glen Parva YOI)	H	M	○	○	○	○	○
Leicester Beaumont Leys	H	M	○	○	○	○	○
Leicester Braunstone	H	M	○	○	○	○	○
Leicester Humberstone (Forest Rd)	H	M	○	○	○	○	○
Leicester Freemans (Filbert St)	H	VH	○	○	○	○	○
Leicester City Centre (Dover St)	M	H	○	○	○	○	○
Leicester Highfields (St. James Rd)	M	H	○	○	○	○	○
Leicester Braunstone Frith (Tatlow Rd)	M	H	○	○	○	○	○
Leicester Crown Hills (Ambassador Rd)	M	H	○	○	○	○	○

Key: D (domestic fires), N (non-residential fires), R (road traffic collisions), L (life risk rescues), F (fatal and serious injury fires)

The table identifies risk areas which have moved from or into the high and very high categories. For each area it indicates how the component factor has changed, so for example, for Lutterworth Misterton, the risk from domestic fires, life risk incidents and fire casualties has decreased but there has been an increase in risk from road traffic collisions and non-residential property fires. This could be due to more incidents in that area or fewer incidents elsewhere.

There are a few risk areas where more components have increased, rather than decreased but the overall risk has decreased. For example, in Braunstone the risk of non-residential fires, road traffic collisions and life risk rescue incidents have gone up however the risk to life from these incidents is low and the increase is marginal. It is outweighed by the bigger decrease in risk from domestic property fires and fire casualty incidents as well as the higher weighting attached to these incidents. The net effect is a decrease in risk for the area.

Conclusion

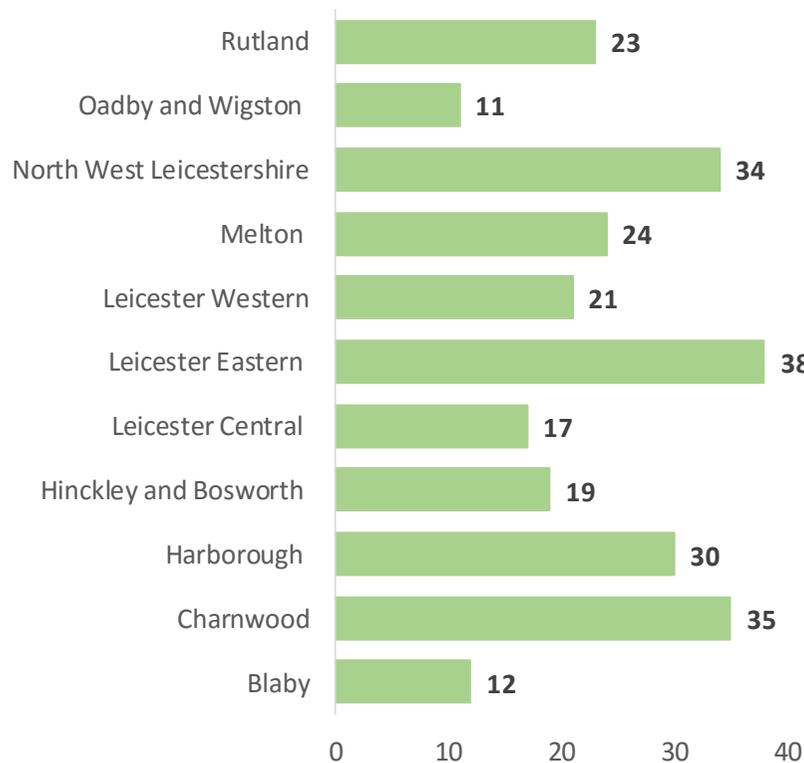
Overall, the level of risk has decreased with 4 fewer high risk areas. The location of higher risk areas has also changed with risk concentrating in Leicester City compared to other areas. The biggest change has been the substantial increase in life risk rescue incidents such as medical incidents and gaining entry, however it has had a minimal impact on life risk due to the lower weighting attached to it.

Site Specific Risks

There are currently 264 site specific risks (SSR) at Categories 2-4, of which 163 (61.7%) are Category 2, 68 (25.8%) are Category 3 and 33 (12.5%) are Category 4 risks. These range from buildings of historic importance, industrial and manufacturing premises, public buildings, sporting venues and transportation hubs, with Category 4 representing the highest risk.

Table 1 provides a breakdown of SSR's by performance district. In general, 29% of risks are in Leicester with many on the east side of the city.

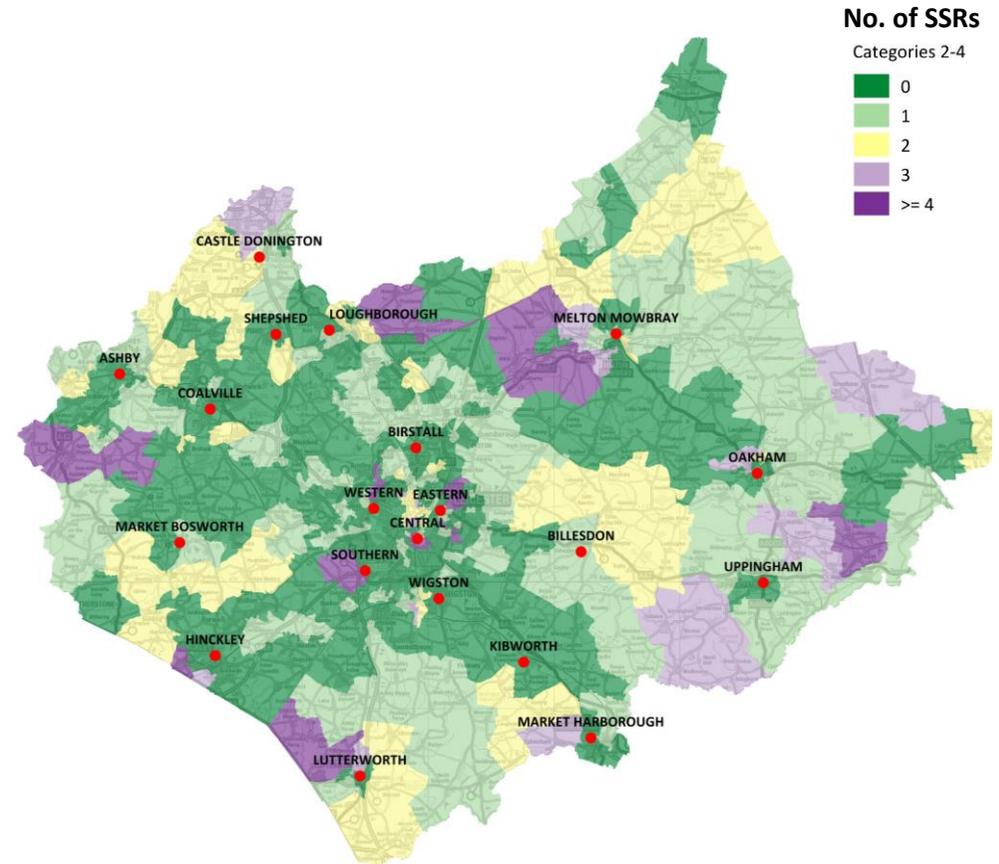
Table 1. No. of site specific risks by performance district



Of the 33 highest risk sites, there are 8 Category 4 sites in Leicester, the same amount in Rutland and 6 in Melton. The distribution of sites is shown in Map 1 by super output area and in relation to Stations.

Map 1. No. of category 2-4 site specific risks by super output area

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Response Times

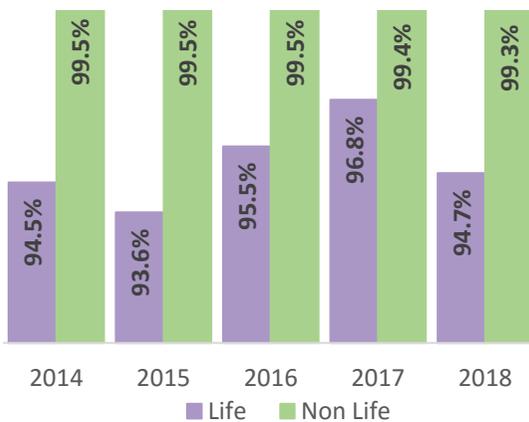
The time it takes a fire engine to arrive at the scene of an emergency incident is an important performance measure. The three main components which determine a fast response are: dealing with the initial call, getting to the fire engine and travelling to the incident.

Response Standard

LFRS currently measures response times from the time the crew are on the fire engine to when the fire engine arrives on scene. The standard we aim for is for the first vehicle to arrive in 10 minutes in 95% of life risk incidents and in 20 minutes at 99% of non-life risk incidents.

This is taken from research into survivability following a road traffic collision, known as the golden hour rule. In this golden hour, FRSs had a 10-minute window to get to the scene, so the casualty could be stabilised and transferred to hospital. It was first published in our IRMP 2009-12.

Chart 1. Percentage of incidents attended with response standards by type and year



Each attendance not meeting the standard is investigated. There are 2 main reasons for failures: firstly, travel distances either because the incident is further than 10 minutes away from the fastest fire engine or because the fastest fire engine was not available and another was deployed. Secondly, finding the location, either not being able to find the location straightaway because of incorrect or insufficient address details or because it is in a remote location.

Overall, 196 life risk and 188 non-life risk incidents were not attended within the response standard over 5 years. Whilst the non-life risk standard has been met consistently each year, achieving the life risk standard has been more difficult. In 3 out of 5 years, it has under 95.0%.

then 10 minutes away from the fastest fire engine or because the fastest fire engine was not available and another was deployed. Secondly, finding the location, either not being able to find the location straightaway because of incorrect or insufficient address details or because it is in a remote location.

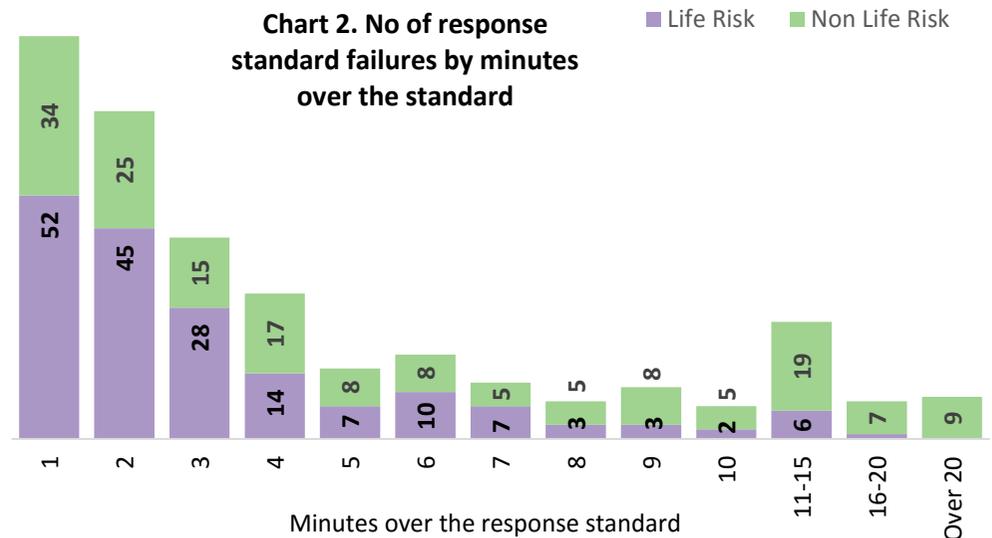
Furthermore, 20 failures occurred during a period of industrial action which lasted from May 2014 to Nov 2015.

54% of life risk incident failures were 2 minutes over the response standards, so were attended within 12 minutes. For non-life risk incidents, 55% of failures were 4 minutes over the response standards so attended within 24 minutes. Chart 2 shows this distribution by the number of elapsed minutes.

Failures over time

More failures (72%) occur during the day from 7:00-18:59 then at night (28%) from 19:00-06:59 and this is same for life risk failures only. The number of failures increase throughout the day and peak in the afternoon from 15:00-

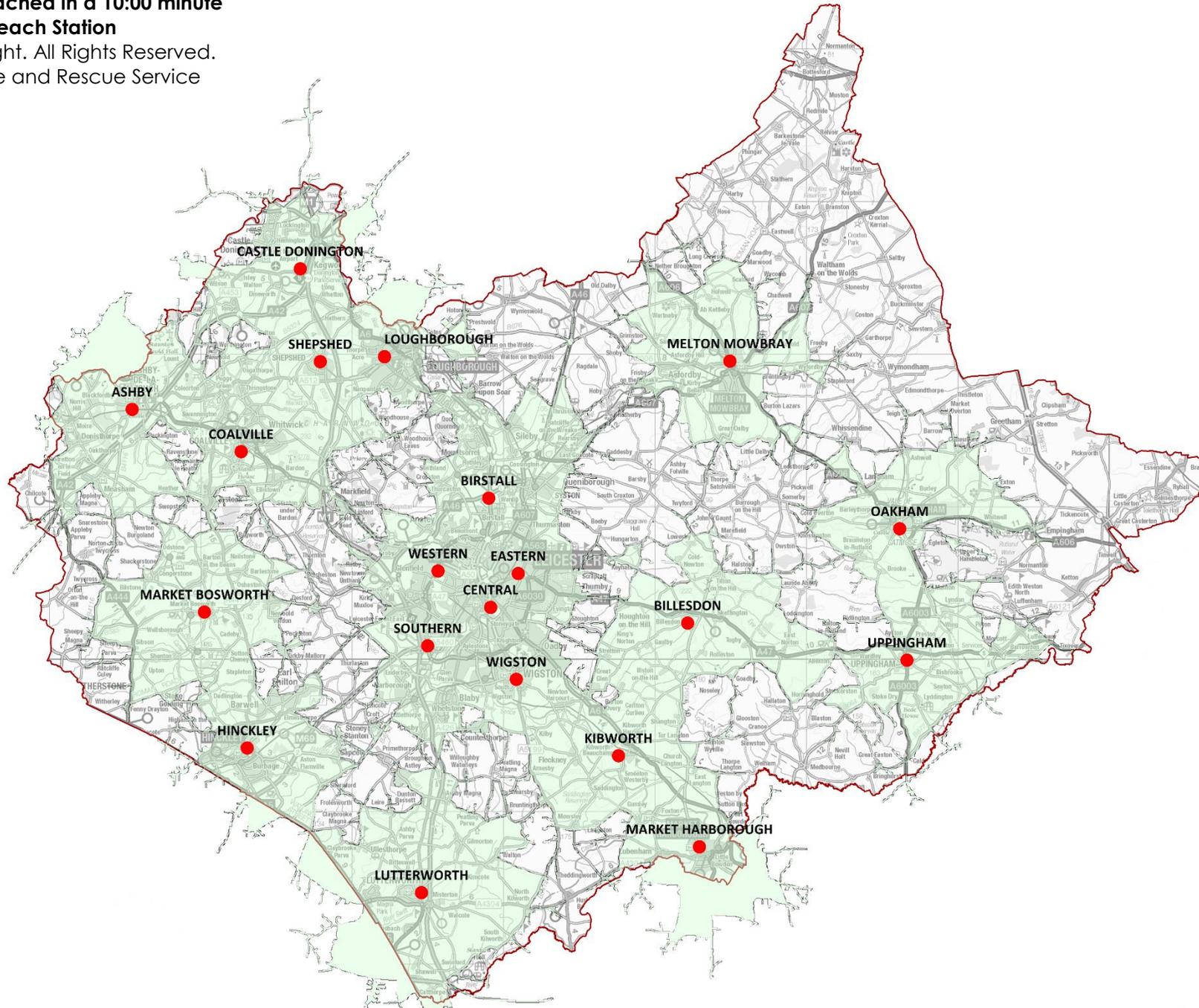
Chart 2. No of response standard failures by minutes over the standard



16:59 and is lower in the evenings. The peak is earlier in the day compared to demand which peaks around 19:00.

Map 1. Areas reached in a 10:00 minute travel time from each Station

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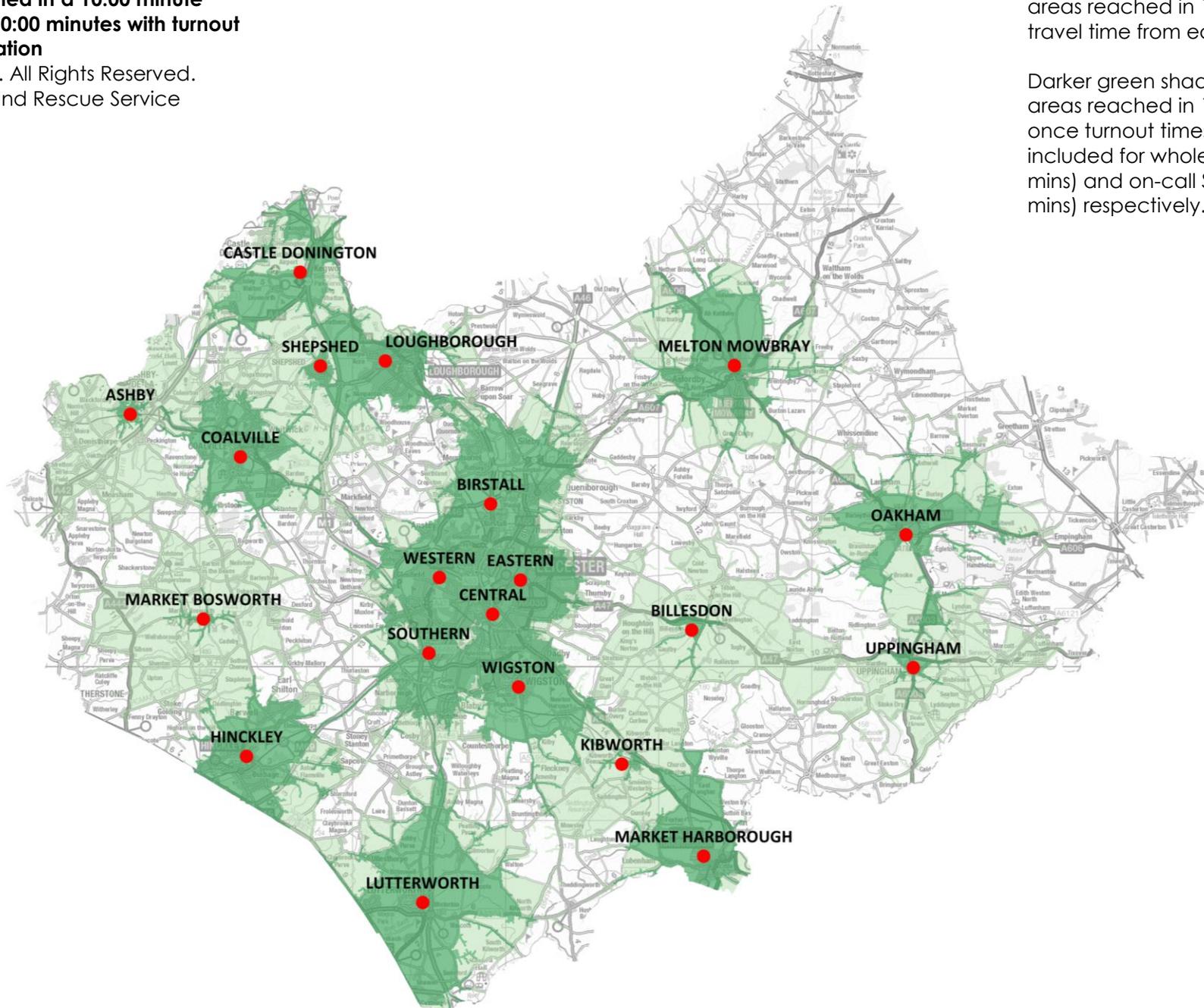


Map 2. Areas reached in a 10:00 minute travel time and in 10:00 minutes with turnout times from each Station

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Lighter green shading shows areas reached in 10:00 mins travel time from each Station.

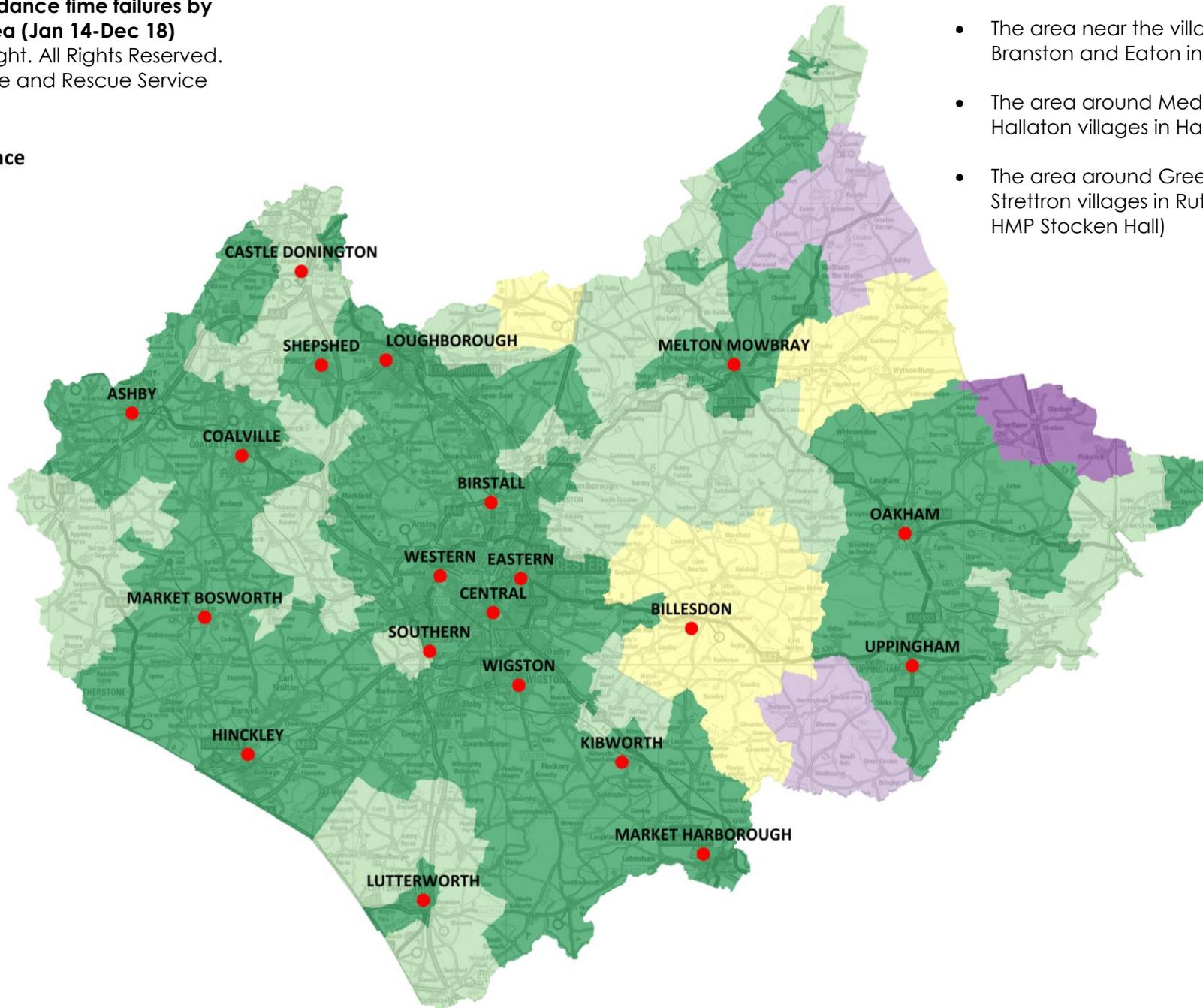
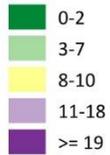
Darker green shading shows areas reached in 10:00 mins once turnout times have been included for wholetime (2:00 mins) and on-call Stations (7:00 mins) respectively.



Map 3. All attendance time failures by super output area (Jan 14-Dec 18)

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No. of Attendance Time Failures



3 areas with higher attendance failures are:

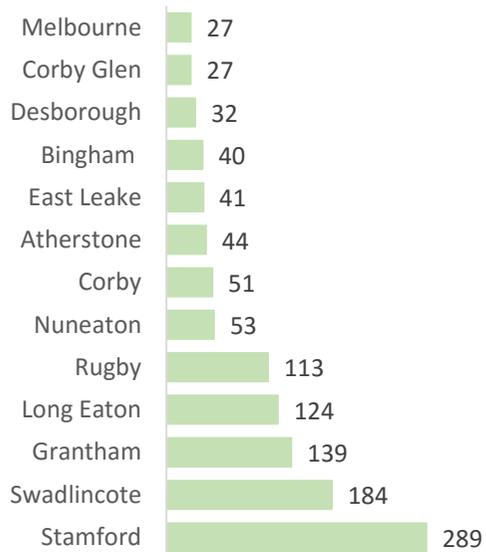
- The area near the villages of Belvoir, Branston and Eaton in Melton
- The area around Medbourne and Hallaton villages in Harborough
- The area around Greetham and Stretton villages in Rutland (including HMP Stocken Hall)

Over the Border

This is a summary of the activity of pumping appliances and heavy rescue units from over the border (OTB) Fire & Rescue Services which have been mobilised into Leicester, Leicestershire and Rutland (LLR) to attend incidents. It covers a 5-year period from Jan 2014 to Dec 2018.

In total, there were 1,283 mobilisations from neighbouring services into LLR and this represents about 2% of all mobilisations in this area. The main contributors are Lincolnshire (460, 36%), Derbyshire (355, 28%), Warwickshire (214, 17%), Nottinghamshire (131, 10%) and Northamptonshire (102, 8%) Services.

Chart 1. No. of mobilisations by over the border FRS's into LLR over a 5-year period broken down by the top attending Stations



The Chart shows the number of mobilisations by appliances over 5 years. For example, appliances from Stamford Station were mobilised 289 times over 5 years, the highest of any over the border Station.

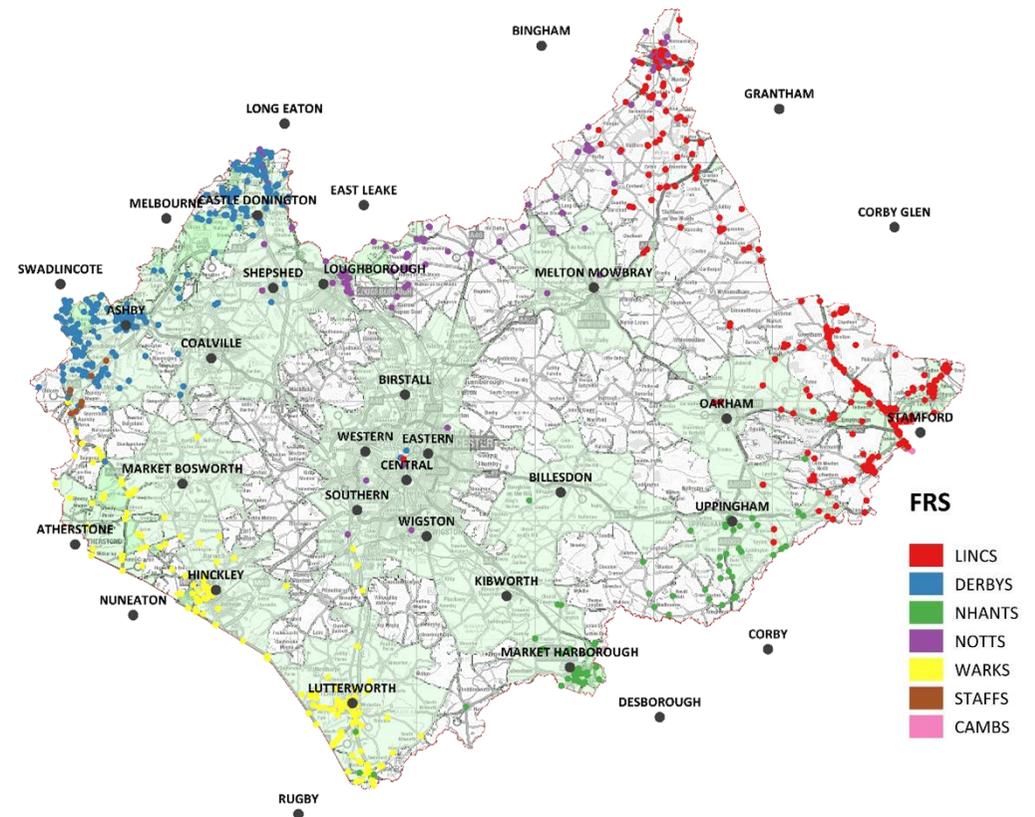
Map 1 shows where appliances are mobilised to in LLR along with indicative 10-minute travel times. This includes both life and...

...non-life risk incidents and all appliances which were mobilised to an incident.

The main reasons for OTB mobilisations are due to it being the nearest or the next nearest to an incident or to provide backup at large incidents. In this case an OTB appliance can attend the incident or be put standby at a LFRS Station whilst LFRS appliances are dealing with the incident.

Map 1. 10-minute travel times from home and over the border stations (in green) with OTB appliance mobilisations into LLR shaded by FRS

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Aerial Ladder Platform

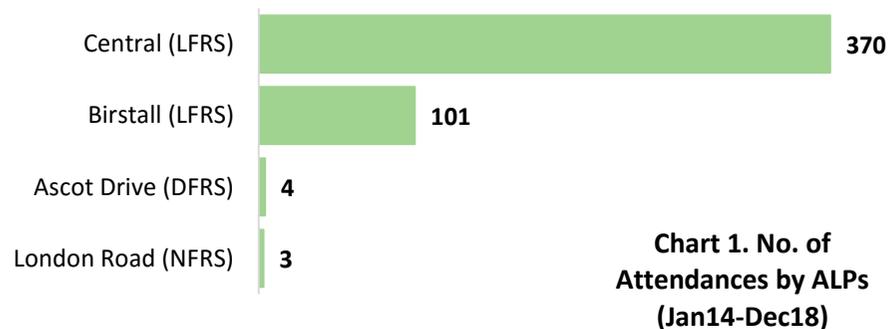
The Aerial Ladder Platform (ALP) is an emergency vehicle used to perform a range of tasks at height. This can include delivering water from height onto a fire, as an observational platform or rescuing people at height. LFRS currently has 2 ALPs, based at Central and Birstall Stations respectively.

Frequency of Attendances

In total, there were 478 mobilisations resulting in attendances for ALPs over a 5-year period. 200 (42%) of mobilisations were to false alarms incidents, 182 (38%) to fires and 96 (20%) to special service incidents. 318 (67%) of mobilisations were made to non-life and 160 (33%) to life risk incidents.

The frequency of mobilisations has been affected by stricter call challenge procedures for false alarms, introduced in Oct 2014. Consequently, the 255 mobilisations in 2014 reduced to an average of 56 per year and a maximum of 75 in any of the 4 subsequent years.

Over 5 years, 471 (99%) of mobilisations were by the 2 LFRS ALPs and 7 (1%) of mobilisations from ALPs belonging to our neighbouring FRSs.



There were 13 occasions when both LFRS ALPs were in use at the same time, on 8 occasions this was at the same incident and on 5 at different incidents.

Property Types

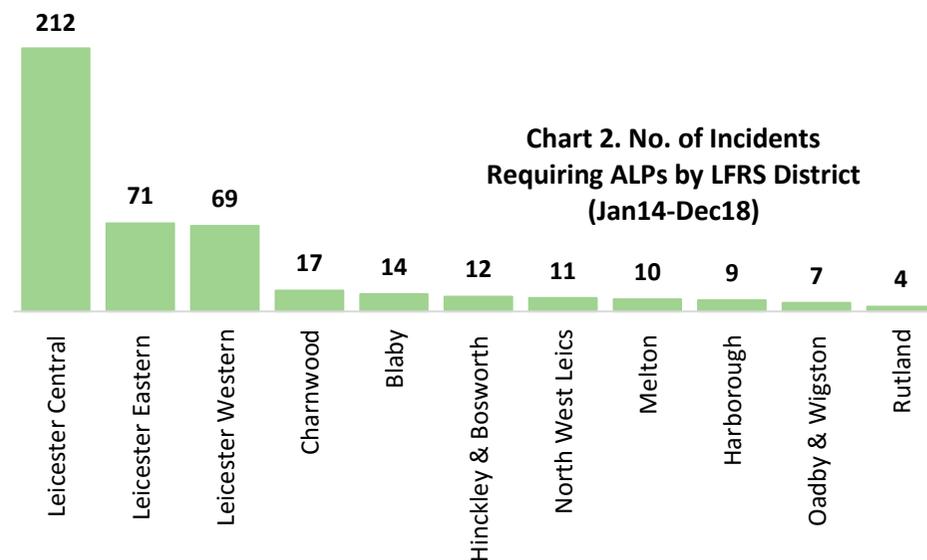
In general terms, fire engines can reach up to 3 floors and ALPs can reach up to the 8th floor. Of the 932 buildings of 4 or more floors in LLR 897 can be reached by ALPs, this leaves 35 buildings which cannot be reached by the ALPs. Such buildings have inbuilt safety features to address this risk. Of mobilisations, 273 (57%) were to domestic properties such as flats and 174 (36%) were to non-residential buildings such as factories.

Usage Over Time

The frequency with which the ALPs are used by day, time and month reflect the general trend for when incidents occur. This is lower in the morning, increasing throughout the day and peaking in the early evening. There is no discernible monthly trend with usage broadly the same throughout the year.

Incident Locations

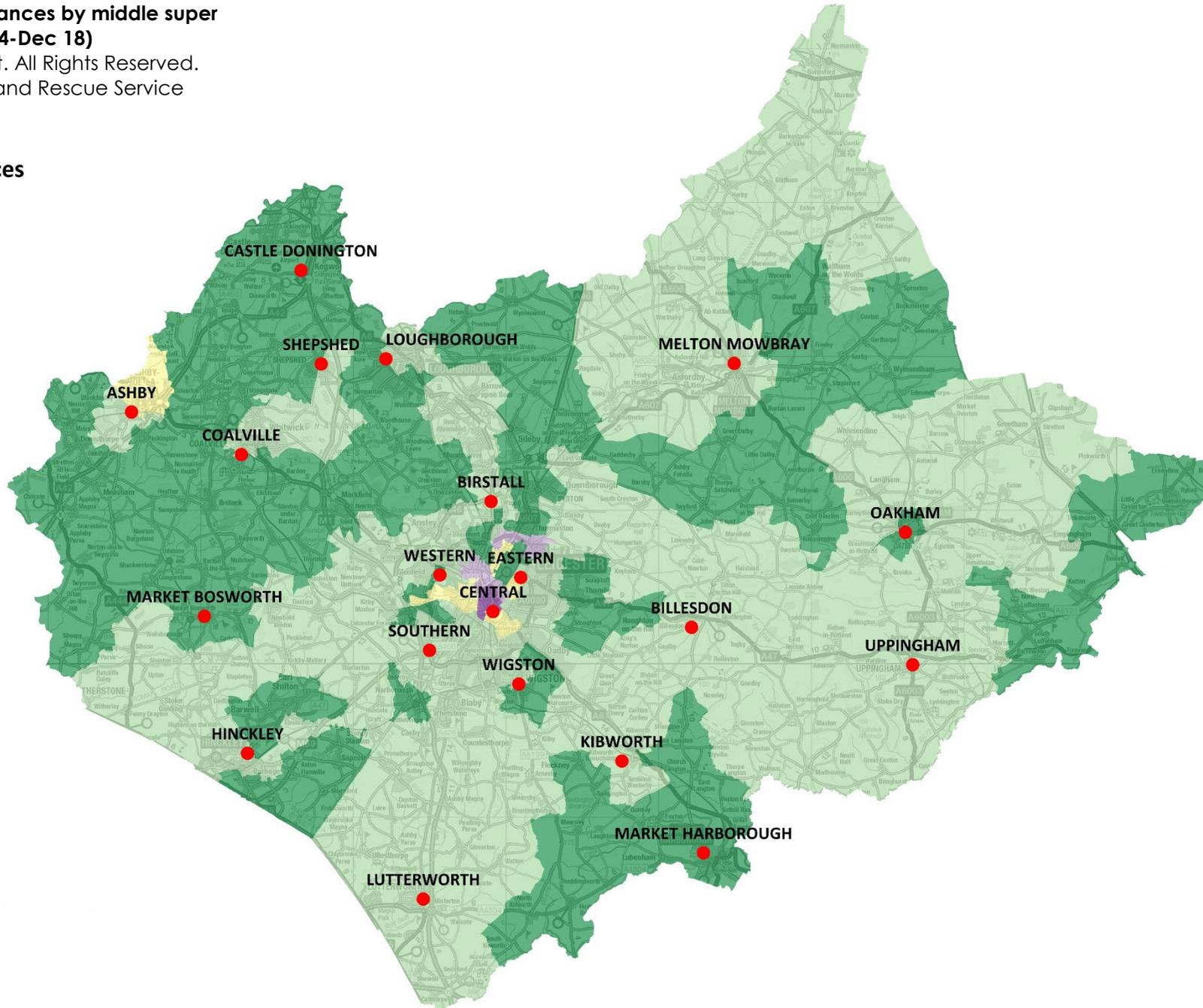
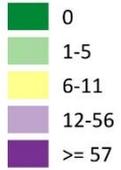
Over 80% of the time the ALPs are mobilised into Leicester with the Central area having the largest number of incidents.



Map 1. ALP attendances by middle super output area (Jan 14-Dec 18)

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No. of Attendances



Map 2. ALP attendances by middle super output area (Jan 14-Dec 18)

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No. of Attendances

