



Department of Place Highways & Engineering

Place Scrutiny Committee 12th February 2020

**Bolton
Council**



Scrutiny Committee 'Ask'

Highways -

- Quality of Repairs
- Latest Techniques
- Criteria for Highway defects/
potholes
- Repair Schedule
- Road Markings



The importance of the Highway Network

It contributes and supports quality of life as well as the local and regional economy.

“The Highways infrastructure asset is the most valuable asset owned by the public sector in the UK. Its importance for national and local economic prosperity and the public’s quality of life is well documented and cannot be understated” – **Highway Maintenance Efficiency Partnership**

“The performance of the UK’s transport networks was central to sustained productivity and competitiveness” – **Eddington Transport Study**



The Highway Network in Bolton

- 1000km+ of Carriageways
- 1800km+ of Footways
- Rebuild Cost £1.6Bn
- One –off Improvement Cost (backlog) £70M*

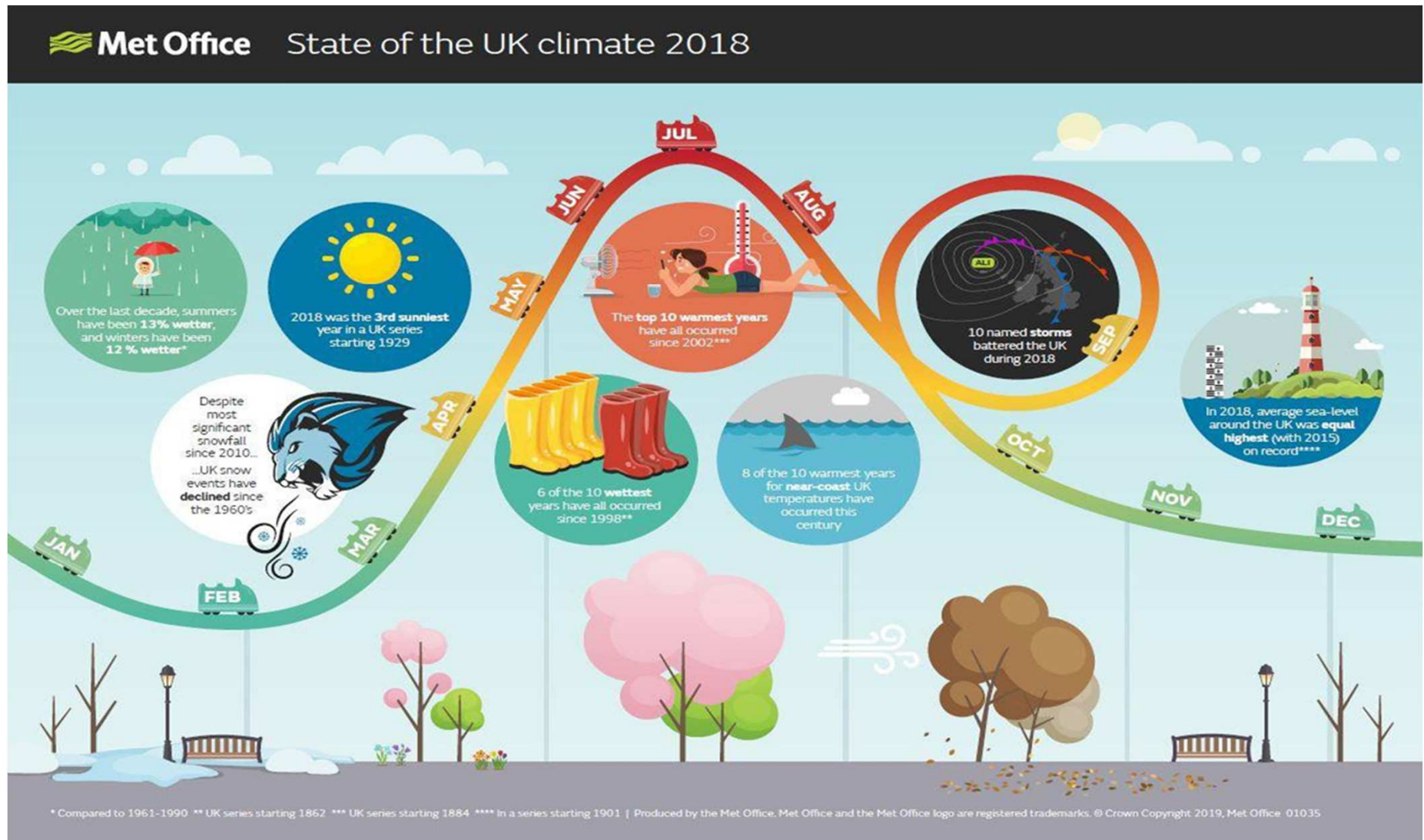
***National method for calculating backlog has changed to improve to sustainable steady state not repair all defects**



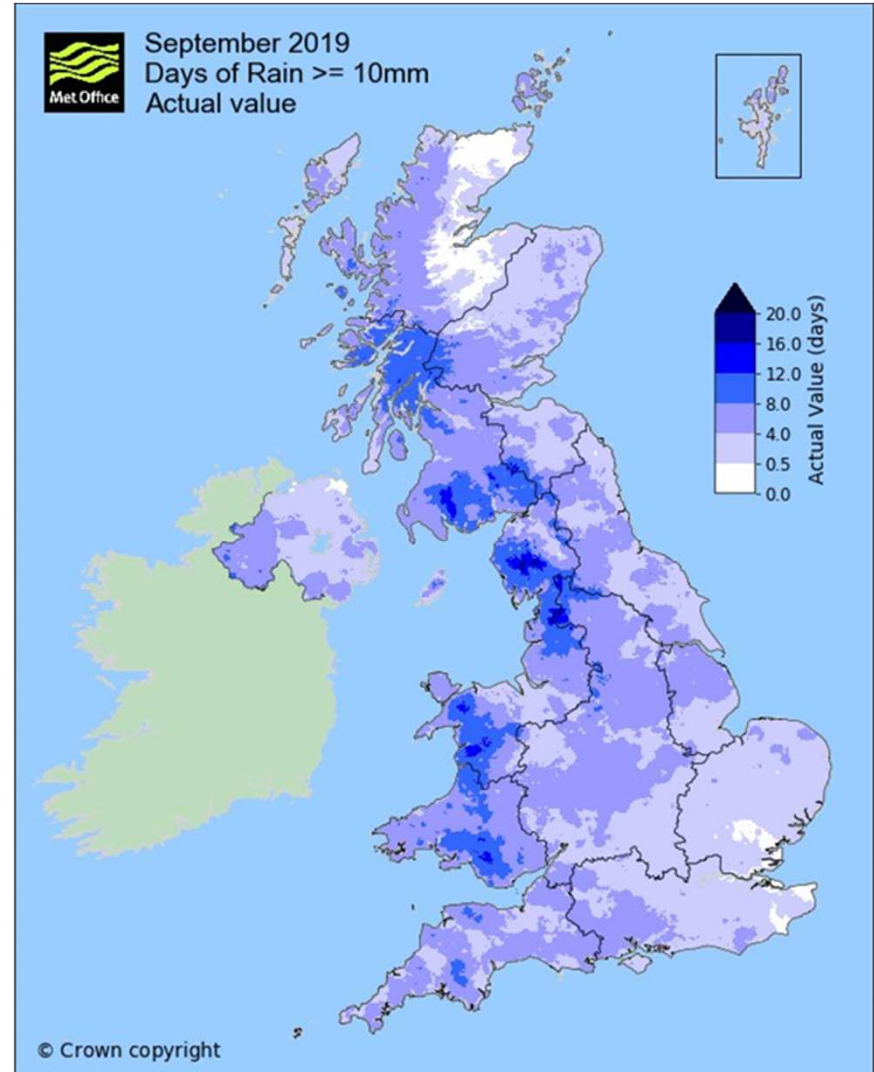
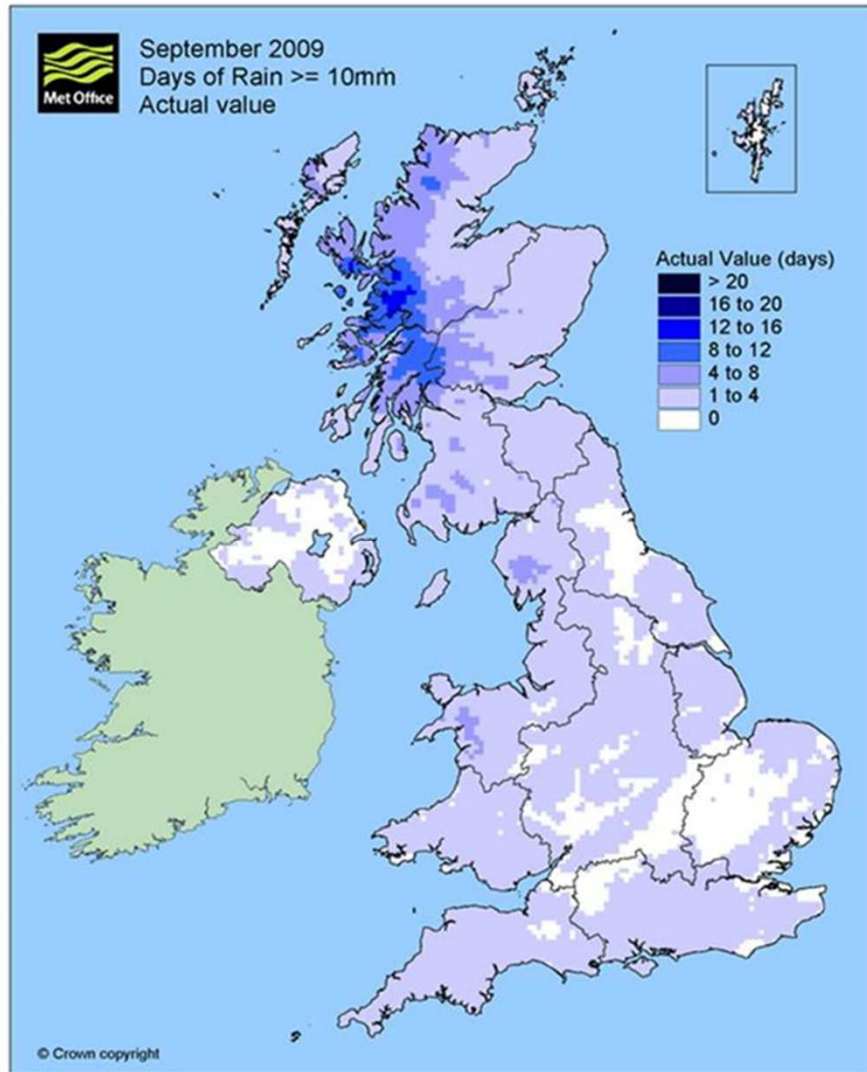
The Highway Network in Bolton

- Annual cost to keep the carriageway asset in its **current** condition - **£15.1M**
- 2019-20 spend - **£7.9M** (inc Revenue Reactive)
 - DfT – **£3.1M**
 - Council Revenue - **£1.3M**
 - Council Strategic Investment – **£3.5M**
- 2020-21 Current Confirmed Budget - **£12.7M**

Climate Change - Overview



Climate Change - Rainfall



FUTURE PRECIPITATION CHANGE

PROBABILISTIC PROJECTIONS

WETTER WINTERS, DRIER SUMMERS*

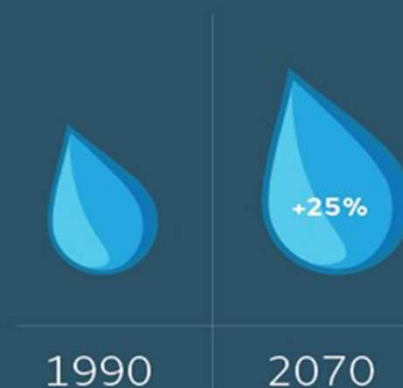
UKCP Probabilistic (25km) projections show that by 2070, under a high emission scenario, average winter precipitation is projected to increase, whilst average summer rainfall is projected to decrease.



UKCP LOCAL (2.2KM)

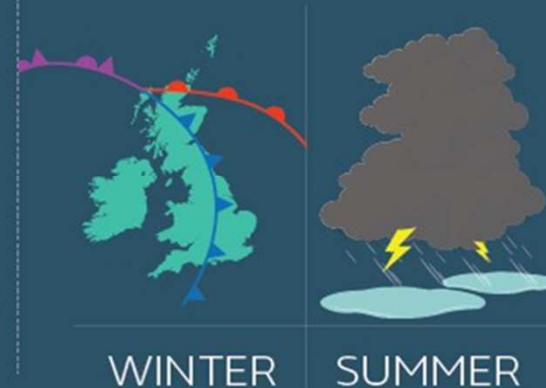
FUTURE INCREASES IN EXTREME HOURLY RAINFALL INTENSITY

By 2070, extreme hourly rainfall intensity associated with an event that typically occurs once every two years increases by 25%.

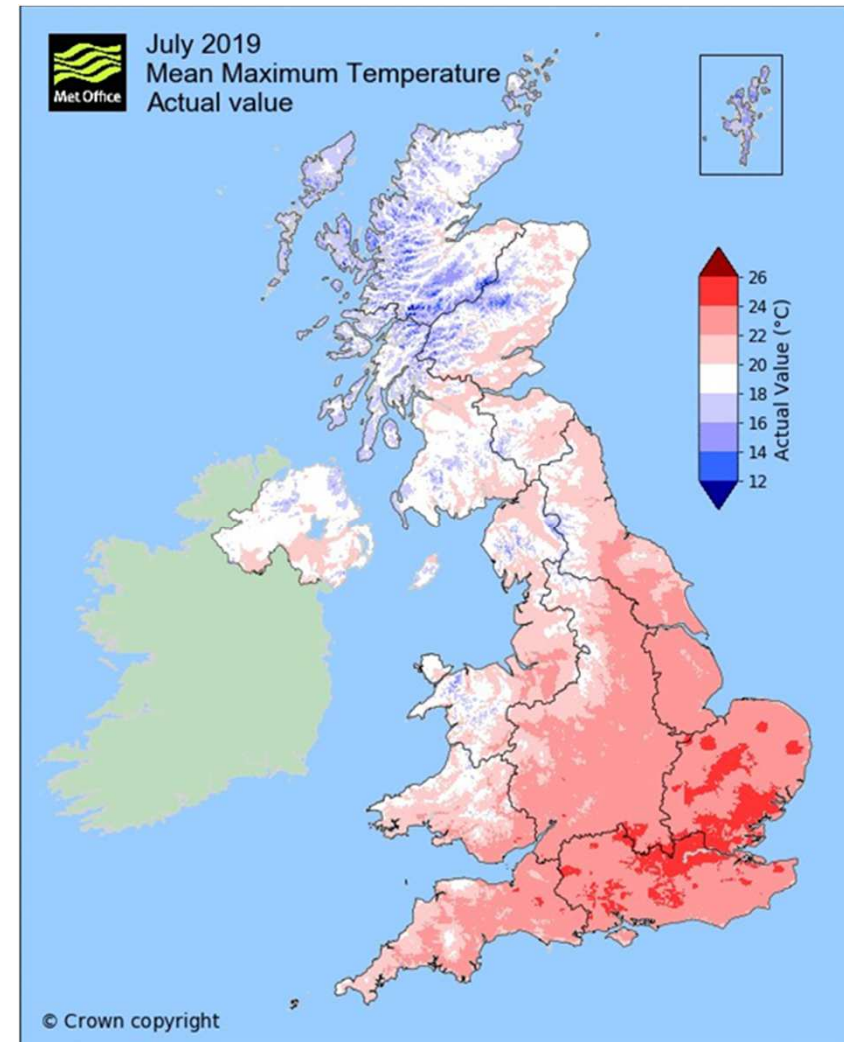
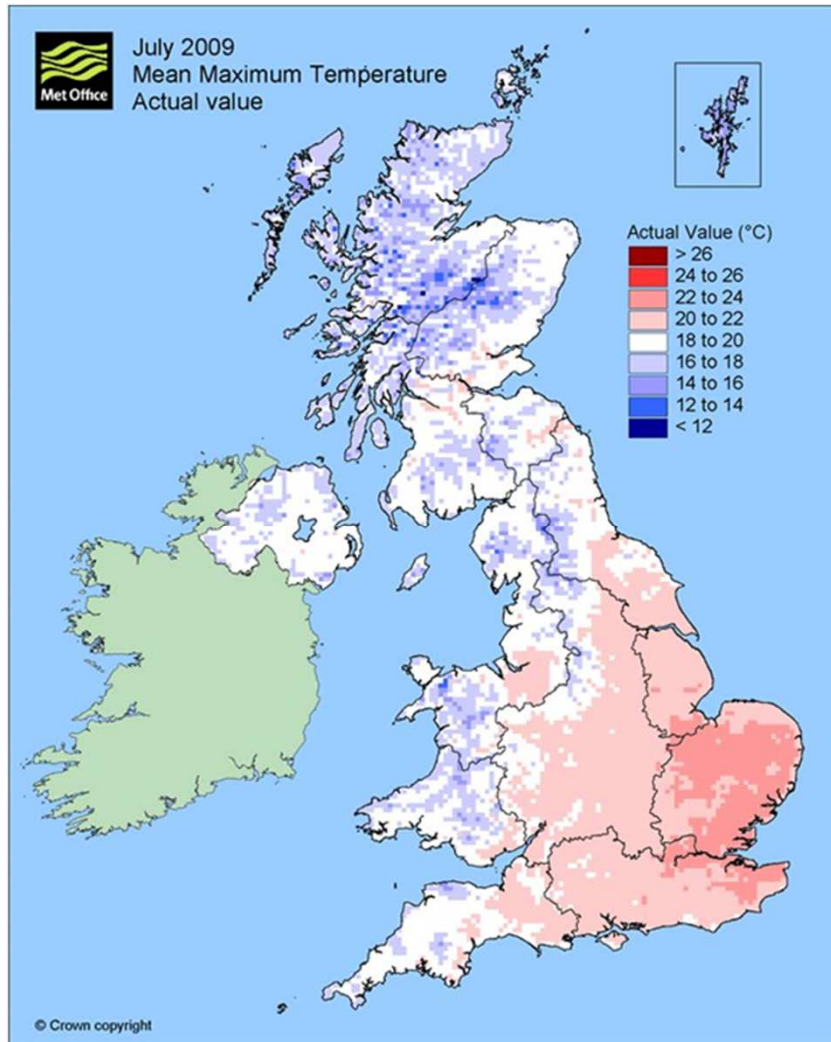


CHANGES IN THE TYPE OF RAINFALL

By 2070, Local (2.2km) projects more of the rain in winter will come from frontal rain events of higher intensity and in summer from short lived high intensity showers.



Climate Change - Temperature

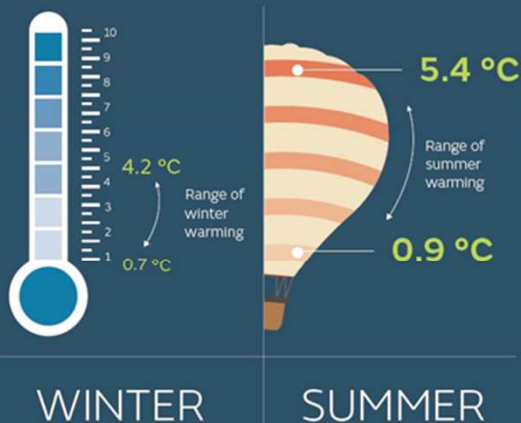


FUTURE TEMPERATURE CHANGE

PROBABILISTIC PROJECTIONS

RIISING SEASONAL TEMPERATURES*

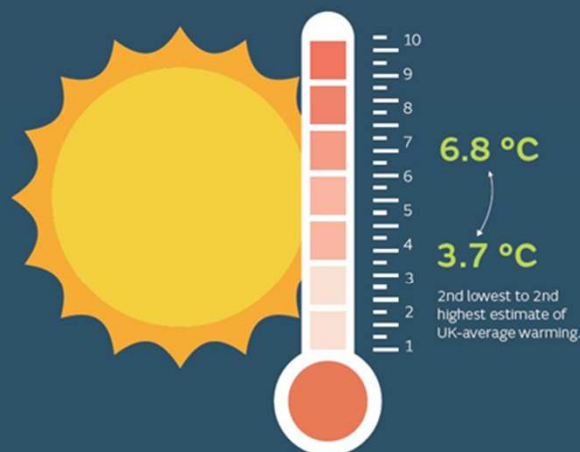
UKCP Probabilistic (25km) projections show that by 2070, the range of average seasonal temperature changes are projected to increase*.



UKCP LOCAL (2.2KM)

HOT SUMMER DAYS

Temperature of hot summer days**, by 2070, is projected to increase in the Local (2.2km) projections.



THE FREQUENCY OF HOT SPELLS*** IS PROJECTED TO INCREASE

The average frequency of hot spells, locally over the southern UK for the period 1981-2000, is once every 4 years.



By 2070, the average frequency of hot spells is projected to rise to about four times per year.

* Result are for the 10th-90th percentile range for the 2060-2079 period relative to 1981-2000 from UKCP Probabilistic (25km) projections.

** Hot summer days are defined as the 99th percentile of daily mean temperature.

*** Hot spells, defined as maximum daytime temperatures exceeding 30 °C for



Potholes Review – Prevention and a Better Cure (HMEP 2012 & 2013)

The Review, themes:

- **Prevention is better than cure** – intervening at the right time will reduce the amount of potholes forming and prevent bigger problems later.
- **Right first time** – do it once and get it right, rather than face continuous bills. Guidance, knowledge and workmanship are the enablers to this.

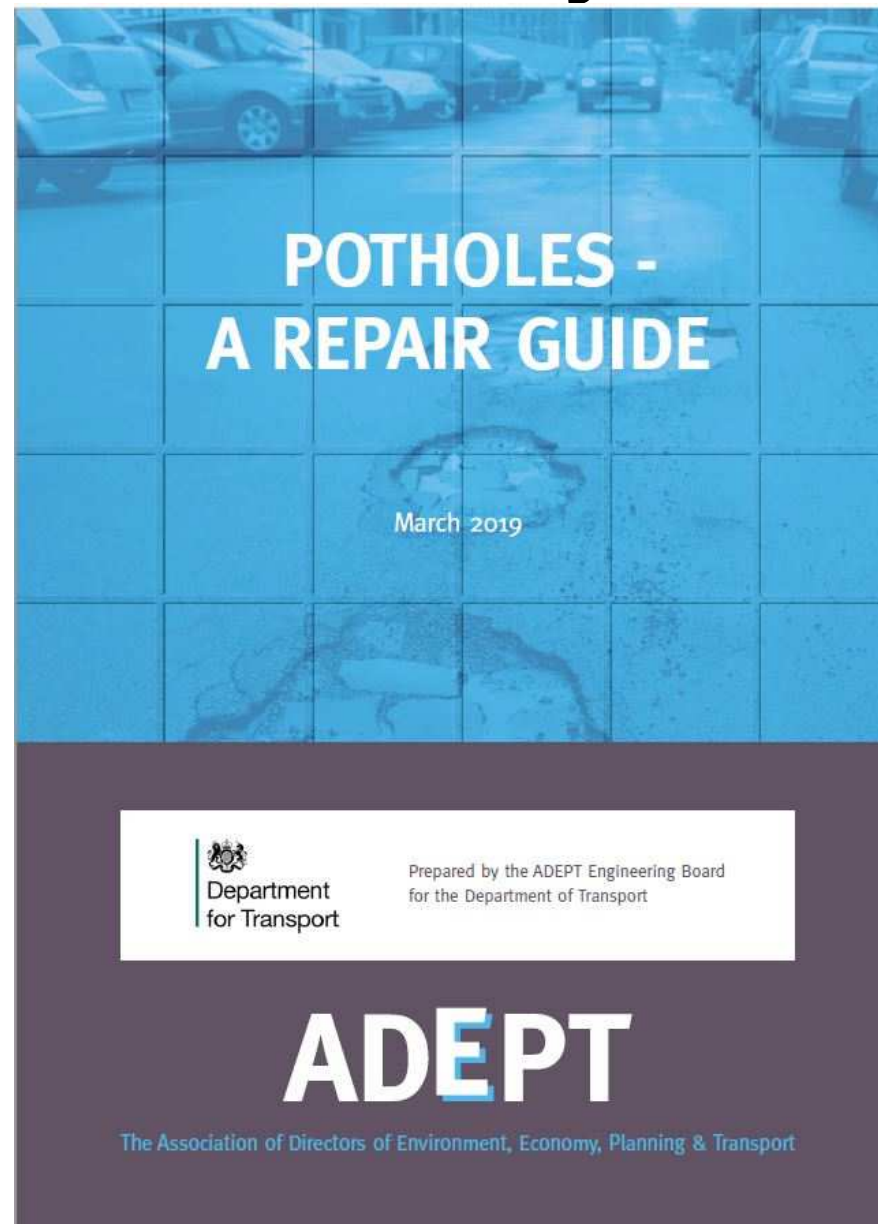


Quality

- National Specification
- Specific bespoke material requirements
- Other good practice e.g. ADEPT Guidance



Quality





Quality

What to use (i.e. treatment)	Where to use (i.e. location – rural / urban and local / national)	When to use (Temp / Perm) (Season)	Risks	Benefits
Patching with hot asphalt, mastic or bitumen-based material	Suitable for most locations and surfaces	Permanent, all-year round	No specific risks	Recognised and the preferred solution Accepted by users
Thermal road repairs	Most effective on hot rolled asphalt surfaces	Permanent, all-year round	May not treat an underlying failure mechanism	Restores from early stage cracking and fretting
In-situ / thermal recycling	Suitable for most locations and surfaces	Permanent, all-year round	Needs high volume of work to be a cost-effective solution	Avoids unnecessary material wastage
Spray injection patching	Most effective on rural evolved roads with low traffic flows	Mixed reports of service life and durability, particularly during autumn / winter	May not treat an underlying failure mechanism and creates surplus chippings	May be deployed on a find and fix basis
Cold applied instant material	Anywhere, however life expectancy reduces with increased traffic	Mainly temporary, however some products are fairly permanent (but may adversely affect perimeter material)	Different products are required for different locations and / or weather Lack of attention and cost of return visit and reputation	Speed of repair Some products are more durable Makes the road safe again – for a period of time

In Bolton

- Multihog



- Thermal



In Bolton

- Volumatic Asphalt Mixer



**FRESH HOT
MIX ASPHALT
ON DEMAND**





Multihog & In-lay Asphalt

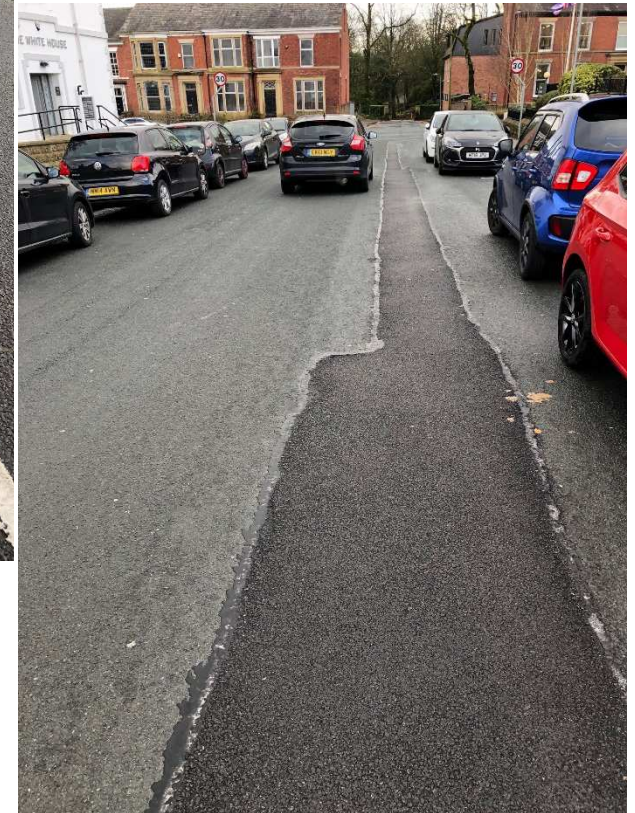


5yrs+



**<12mths – high
stress site**

Recent



Recently In Bolton

Spray Injection Patcher

- **Single Person Operation**
- **Self Contained Unit**
- **Ideal for Rural Sites**



Recently In Bolton

Spray Injection Patcher – Walker Fold Rd





Criteria for Highway defects/ potholes

- Planned Condition Assessment
- Routine Safety Inspections



Condition Assessment

	National Standard Survey (independent)	Local Factors Directly Considered	Insurance Priority
Classified Roads (A, B & C)	Y	N	1
Unclassified Roads (Residential)	Y	Y	3
Footways (All)	Y	Y	2



Condition Assessment

Asset	Type of Survey	Frequency
A Road Carriageway	Scanner Survey (specialist automated vehicle survey)	100% each year
B and C Road Carriageway	Scanner Survey (specialist automated vehicle survey)	100% each year
Unclassified Roads	Visual Inspection	100% each year
Footways	Visual Inspection	25% each year



The Highway Network in Bolton

Carriageway Conditions

Carriageway Type	Green	Amber	Red	R + A
'A' Road - Main Roads	83%	15%	2%	17%
'B & C' Roads - Secondary	80%	18%	2%	20%
'U' Roads – Most Residential	49%	31%	20%	51%

- Green – Generally Good
- Amber – Initial Treatment
- Red – Major Maintenance

National Network Condition

(2019 ALARM Survey)

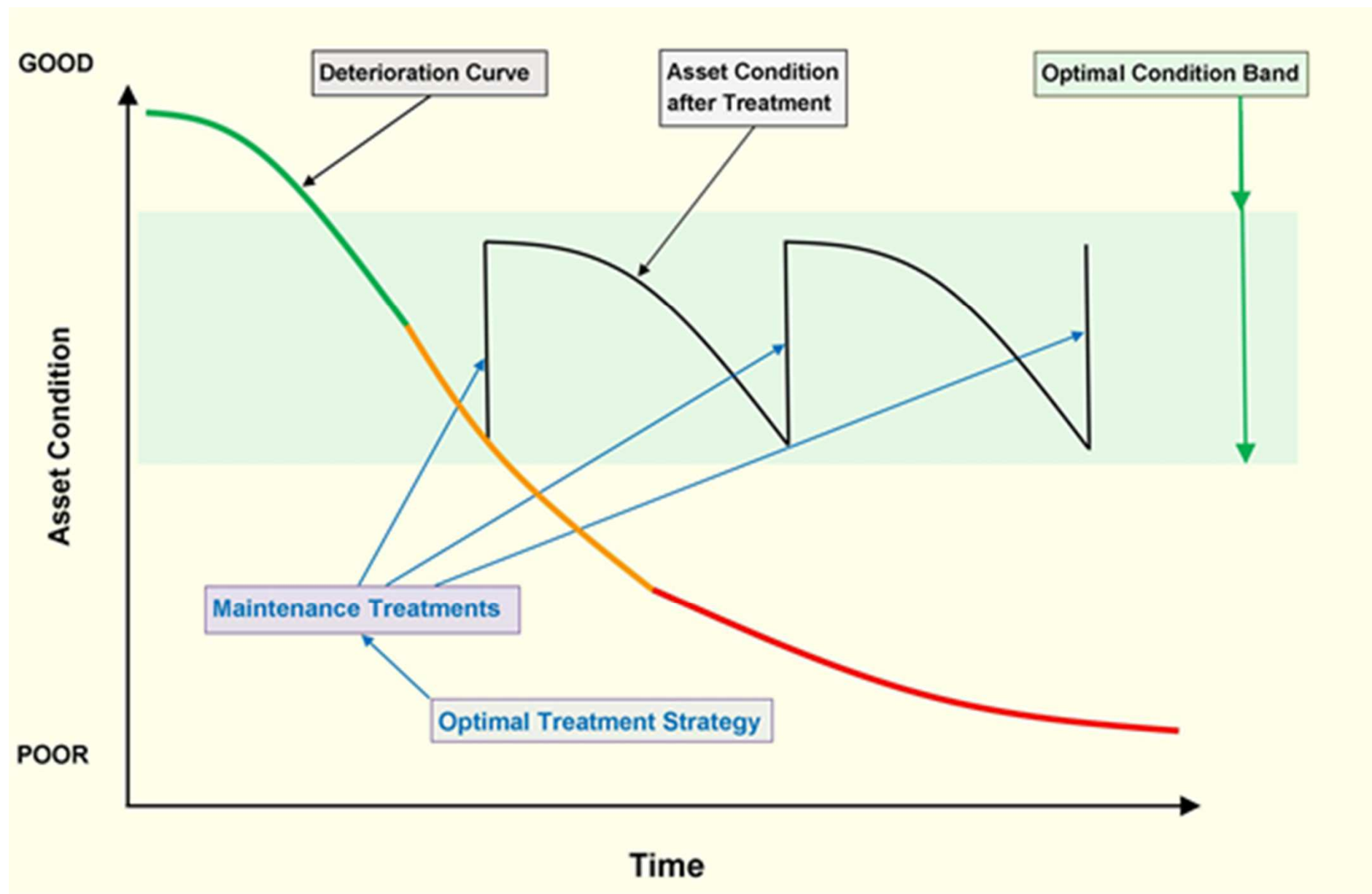
Road Condition Index

by road category (%)

KEY: ■ **GREEN**: carriageway in a good state of repair
■ **AMBER**: carriageway where some deterioration is apparent
■ **RED**: carriageway in poor overall condition – likely to require maintenance in the next 12 months

		PRINCIPAL		NON-PRINCIPAL		UNCLASSIFIED	
		TARGET	ACTUAL	TARGET	ACTUAL	TARGET	ACTUAL
GREEN	England	≥75	74 ↑	≥73	70 ↑	≥64	55 ↓
	London	≥65	65 ↓	≥63	64 ↓	≥59	54 ↓
	Wales	≥74	71 ↑	≥71	67 ↑	≥58	40 ↓
AMBER	England	≤23	23 —	≤22	24 ↓	≤24	29 ↑
	London	≤24	25 ↑	≤27	24 ↑	≤27	25 ↑
	Wales	≤22	25 ↓	≤22	27 ↓	≤30	34 —
RED	England	≤3	3 ↓	≤5	6 ↓	≤14	15 —
	London	≤10	9 ↑	≤7	11 ↓	≤22	21 ↑
	Wales	≤4	4 ↑	≤7	6 —	≤13	14 ↑

↑ Up from ALARM survey 2018 ↓ Down from ALARM survey 2018 — Same as ALARM survey 2018





Carriageway Safety Inspections

The following frequencies are based upon the network hierarchy used by Bolton Council					
Carriageway Hierarchy					
Feature	Category	Hierarchy	Inspection method	Frequency	Description
<u>Roads</u>	Strategic route	2	Walked or Driven	1 Month	Trunk and some principal roads 'A' roads between primary destinations
	Main distributor	3(a)	Walked or Driven	1 Month	Major urban network and inter primary links. Short term medium distance traffic.
	Secondary Distributer	3(b)	Walked or Driven	1 Month	Classified B and C class roads
	Link Road	4(a)	Walked	3 Months	Roads linking between the main and secondary distributor network with frontage access and frequent junctions
	Local Access	4(b)	Walked	12 Months	Roads serving limited numbers of properties carrying only access traffic.



Footway Safety Inspections

Feature	Category	Hierarchy	Inspection method	Frequency	Example
<u>Footways</u>					
	Prestige Areas	1(a)	Walked	1 Month	Major Town Centres, high density of shops
	Primary Walking Route	1	Walked	1 Month	Outer District town centres, high density of shops
	Secondary Walking Route	2	Walked	3 Months	Small retail outlets, secondary schools/colleges
	Link Footway	3	Walked	6 Months	Urban access, primary schools
	Local Access Footway	4	Walked	1 Year	Non feeder footways in housing estates
	Little used rural footway	4	Walked	1 Year	Rural footways limited usage

Defect Repair Response Times

Risk Matrix					
			PROBABILITY/LIKELIHOOD OF INTERACTION WITH HIGHWAY USER		
LEVEL OF DEFECT	Rare (1)	Unlikely (2)	Possible (3)	Likely (4)	Almost Certain (5)
Negligible (1)	1	2	3	4	5
Minor (2)	2	4	6	8	10
Moderate (3)	3	6	9	12	15
Significant (4)	4	8	12	16	20
Serious (5)	5	10	15	20	25
KEY TO RISKS					
Low		Medium	High		

Risk Factor	Defect Category	Priority Response	Response timescale
25	1	1	2 hour
15 to 25	1	2	24 hour
8 to 12	2	3	14 days
2 to 6	2	4	28 days
1	2	5	Considered for future planned maintenance
1	2	6	Review on next inspection



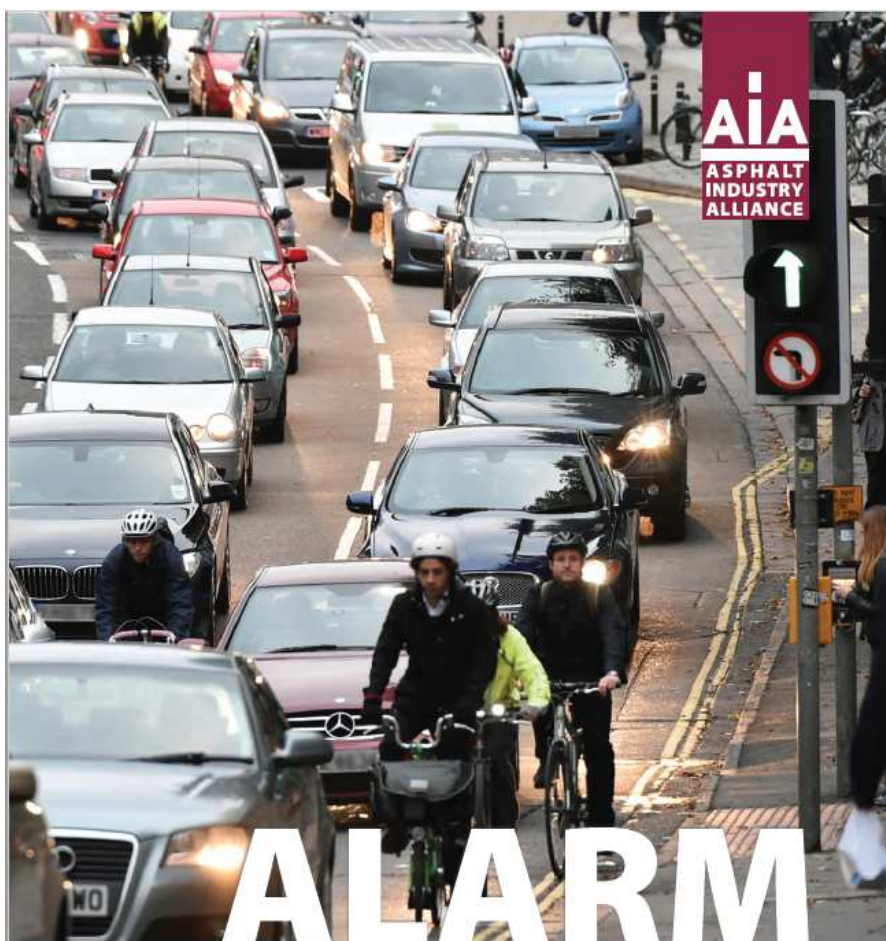
Potholes Identified / Reported

Financial Year	Potholes
2013/14	6,877
2014/15	6,834
2015/16	6,001
2016/17	2,119
2017/18	7,576
2018/19	5,518
2019/20 (so far)	4,042



Urgent / Reactive Repairs (Potholes)

- Two categories; Planned & Emergency
- 2019-20 Revenue budget for Urgent/ Minor Repairs - £1.3M
- Anticipated outturn Revenue cost - **£1.8M**
- On average there are approximately 1000 – 1200 urgent repairs (not just potholes) awaiting completion at anyone time.



Annual Local Authority
Road Maintenance Survey

2019

Publication embargo: 00.01 26 March 2019

Potholes

Average number of potholes filled per local authority, plus costs to fill as part of a planned programme and as a reactive repair



			PLANNED COST	REACTIVE COST
ENGLAND	15,067	▲	£41	£65
LONDON	2,711	▲	£42	£64
WALES	2,531	▲	£32	£70

Road surfacing frequency

Average frequency (years) of surfacing by road category with change from 2017/18



	All classes	Principal	Non principal	Unclassified
ENGLAND	79	37	56	99
LONDON	28	19	24 No change	29
WALES	59	42	40	74



Highway Maintenance

– Right Place & Right Time

- **Prevention is better than cure** – intervening at the right time will reduce the amount of potholes forming and prevent bigger problems later.
- **Right first time** – do it once and get it right, rather than face continuous bills. Guidance, knowledge and workmanship are the enablers to this.



Road Markings

- Budget - £50k pa
- Scope - ???
- Options/ priorities
- Materials
- Contractors



Fault Reporting Contact Points:

- <https://www.bolton.gov.uk/report-street-problem>
- **Tel: 01204 336600**



Questions?