

# The Highways Network – are you climate ready?



## A resilient network in practice?

# What we'll cover.

- Resilience, understanding the issues and types of impacts.
- Identifying your resilient network.
- Reducing the probability of flooding & other severe weather impacts.
- Key projects.
- Use of materials,
- Existing & future challenges & opportunities.

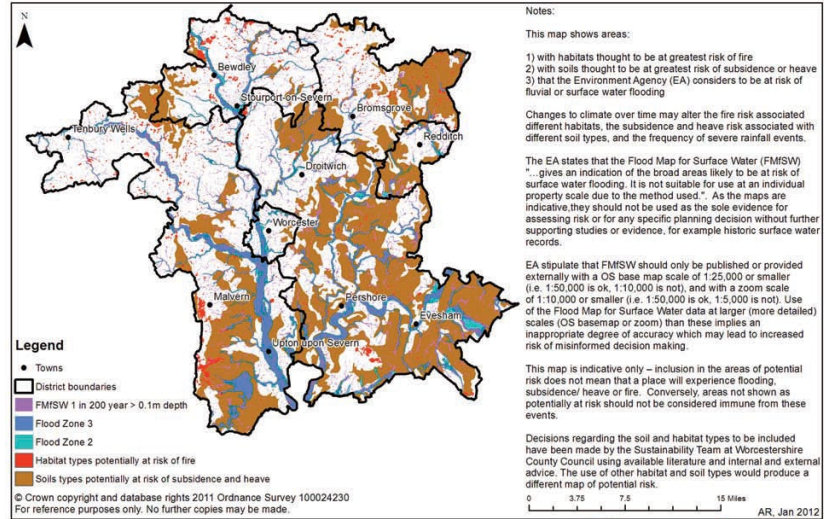
# Resilience - understanding the issues & types of climate change impact.

Highways GIS.

Flooding – EA 3<sup>rd</sup> generation maps.

Heat maps/high & exposed locations.

Soil/geology.



Strategic Alert Map



**Worcs Highways & Travel** @WorcsTravel · 16 Feb  
Another example of how impossible or dangerous travelling around the Teme Valley is right now

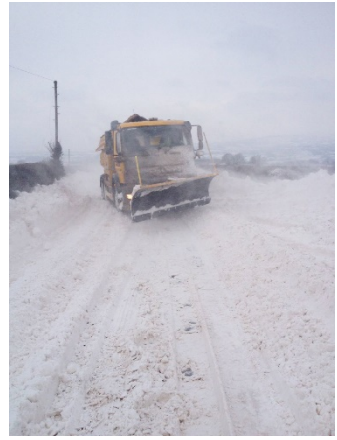
Avoid all but essential travel, do not drive into flood water or ignore 'Road Closed' signs

#StormDennis #floodaware

**michael whitefoot photography** @whitefootphoto · 16 Feb  
Ham bridge into Shelsley - so both bridges out of action @WorcsTravel



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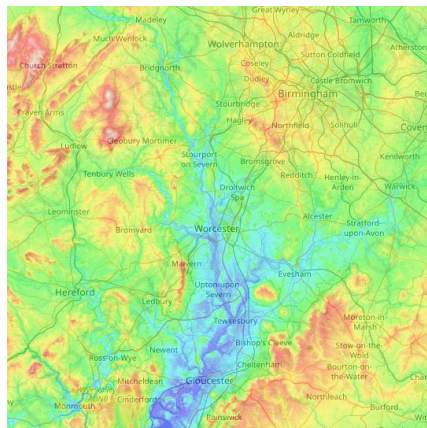
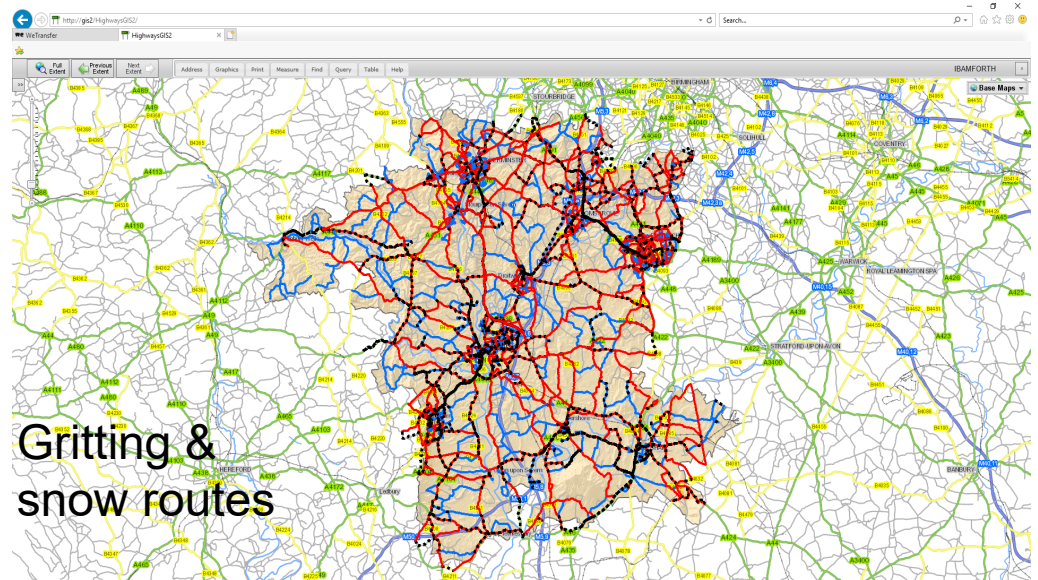
# Identifying your resilient network & impact sources 2

Gritting routes & snow plus (first responders, critical infrastructure, key businesses).

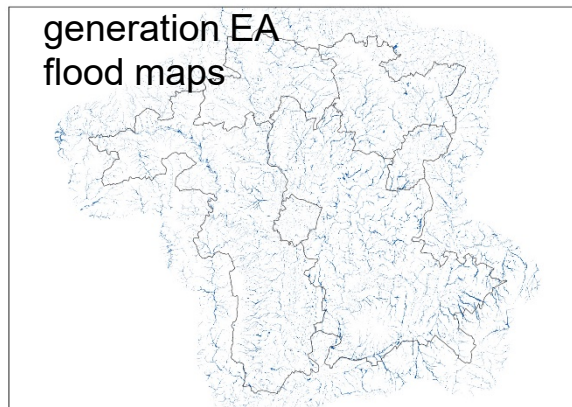
Topography & road direction ref exposure to sun.

1560+ flood spots.

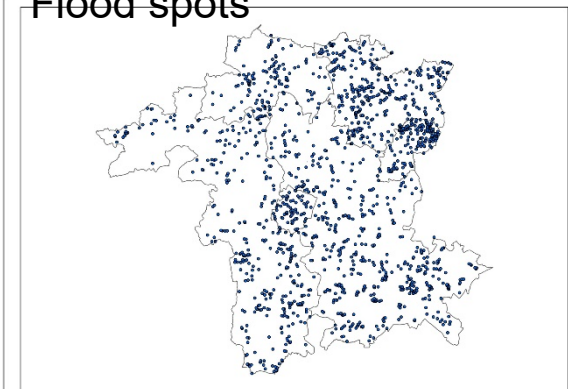
Key impact crossing points ref rivers & brooks.

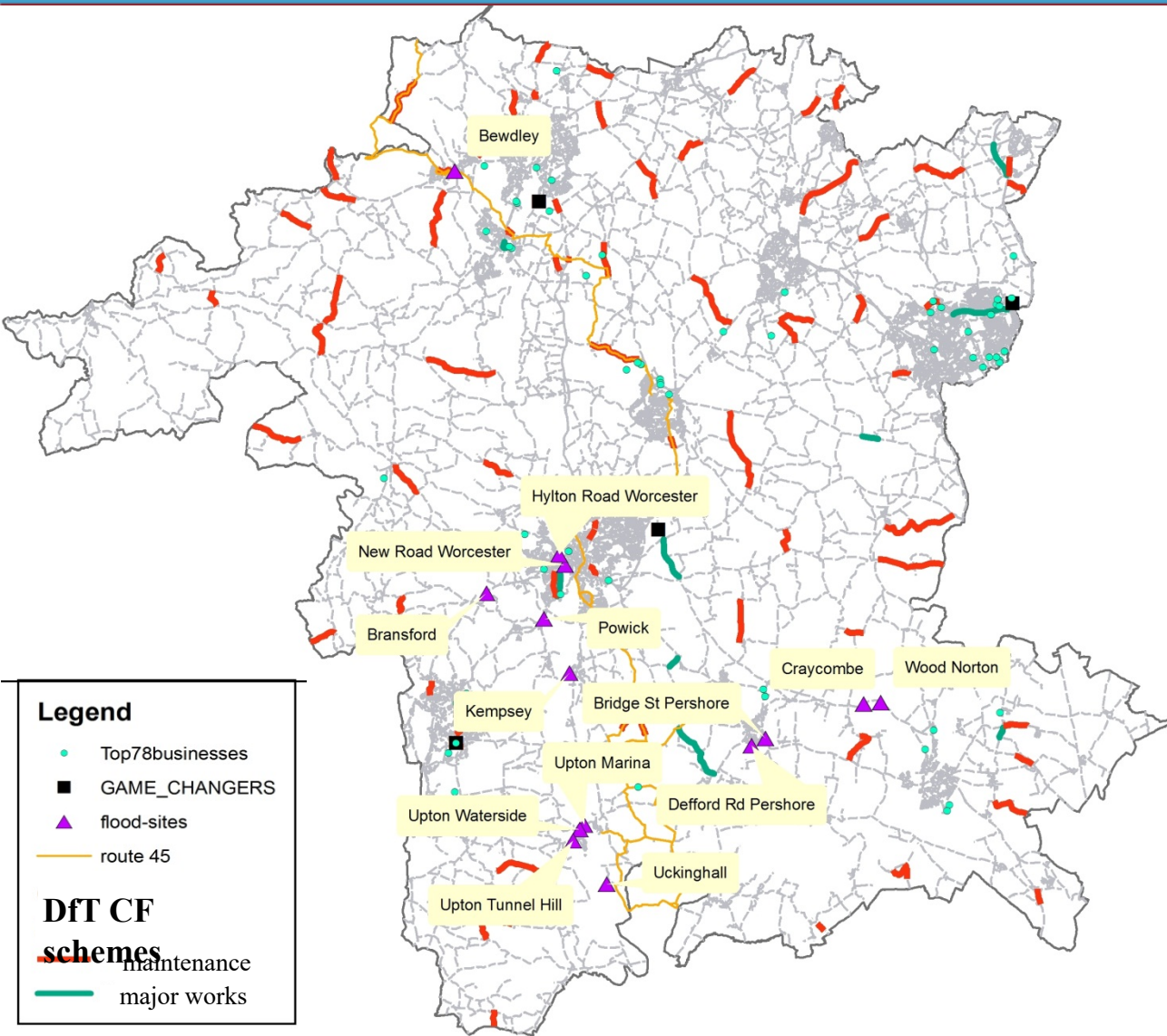


Third generation EA flood maps



Flood spots





- £22m WCC Highways Maintenance Fund to support improving condition & economic aspirations.
- 8 major flood alleviation projects completed directly & in partnership with the Environment Agency.
- £5m for highway adaptation LEP flood projects over 3 years.
- SEP funding bid for smaller but critical flood alleviation schemes.



## Reducing the probability of flooding & other severe weather impacts.

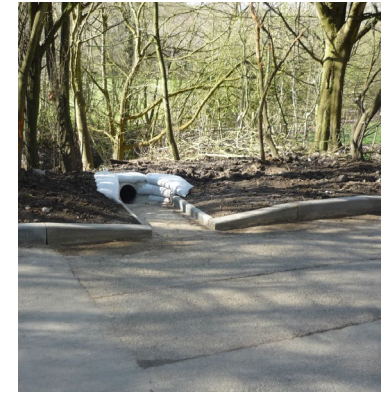
- Local and major flood prevention and protection schemes – New road/Hylton road, Worcester, Bewdley and Upton Marina, Craycombe A44 & more.
- Highway drainage improvement programme
  - Over £10m invested to date
  - Over 650 schemes completed
- Highway gully jetting regime – 112,000 assets.
- Ordinary watercourse management.
- Development control, Climate change strategy & spatial planning.

# Reducing the probability and impact of flooding & other severe weather impacts.

- Winter service planning & key routes including snow+ routes – hospitals, crematoria, emergency services, supermarkets. Snow contractors x 36.
- Saltstocks - 5,000 tonne strategic reserve.
- Storms, winds and disease – tree contractors and dedicated tree budget (increased by £200k annually ref ash die back, to be reviewed).
- Heatwave – key roads and materials use.
- Use of technology – link works, hotspots & visibility of issues/assets, providing for targeted investment.
- Partnerships & agile and flexible working, Districts, Town & Parish Councils, Environment Agency, Businesses & Ringway (Highways Term Service Contractor).
- Communications – social media, integrated systems for & with public, clear and user friendly website.

# Key projects.

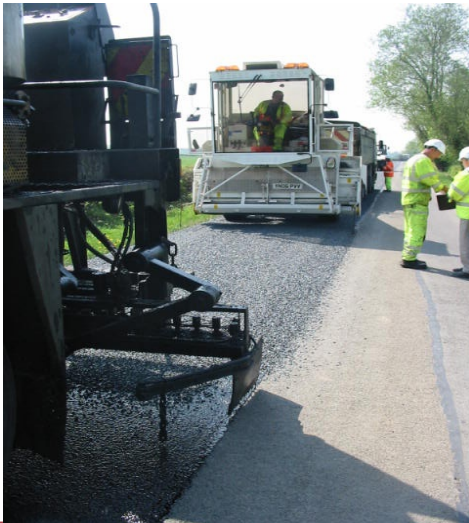
- New road, Worcester.
- Bewdley, riverside & bridge.
- Upton Upon Severn, Tunnel hill road raising.
- Bevere flood attenuation.
- Highways drainage schemes 650+.





# Use of materials

- Surface dressing – locations review, lockchip, binder. Cul-de-sacs.
- HRA with chippings, longevity and stands up well to prolonged hot weather.
- Warm temperature asphalt.



# Existing & future challenges & Opportunities.

- Climate change – wetter winters, more prolonged hot summers, flash & large scale flooding.
- Austerity.
- Highways competing with other adult & social care budget pressures.
- Capacity and skills.
- Development of materials – tolerance to extremes of weather versus cost.
- Reducing our carbon footprint – recycling, mileage travelled, Warm temp asphalt etc.
- More Technology – 3D camera asset assessment, integrated management systems, 5G & beyond.

# Questions?