TORRO SITE INVESTIGATION

SUMMARY REPORT

Aldershot, Hampshire

20 September 2024

Report number: SI20240920_aldershot

Site Investigator: Sarah Horton

Authors: **Site Investigator:** Sarah Horton sarah.horton@torro.org

David Smart david.smrt@gmail.com

Date: 9 November 2024

Document status: Final

Document history:

Author	Version	Type	Date	Comments
Horton, S.	0.1	Initial draft	18/10/2024	
Smart, D.	0.2	Re-draft	21/10/2024	
Horton, S.	0.3	Minor edit	23/10/2024	
Horton, S.	0.4	Re-draft into template	7/11/2024	
Horton, S.	1.0	Final	9/11/2024	Reviewed by David Smart.

Keywords: tornado, Aldershot, Hampshire, Mesoscale Convective Vortex (MCV), Mesoscale Convective System (MCS)

How to cite: Horton, S (2024). TORRO site investigation summary report: Aldershot, Hampshire 20 September 2024.

https://www.torro.org.uk/pdf/SI/SI20240920_aldershot.pdf

DOCUMENT OR CONTENT NOT TO BE REPRODUCED WITHOUT EXPRESS PERMISSION

Site Investigation summary

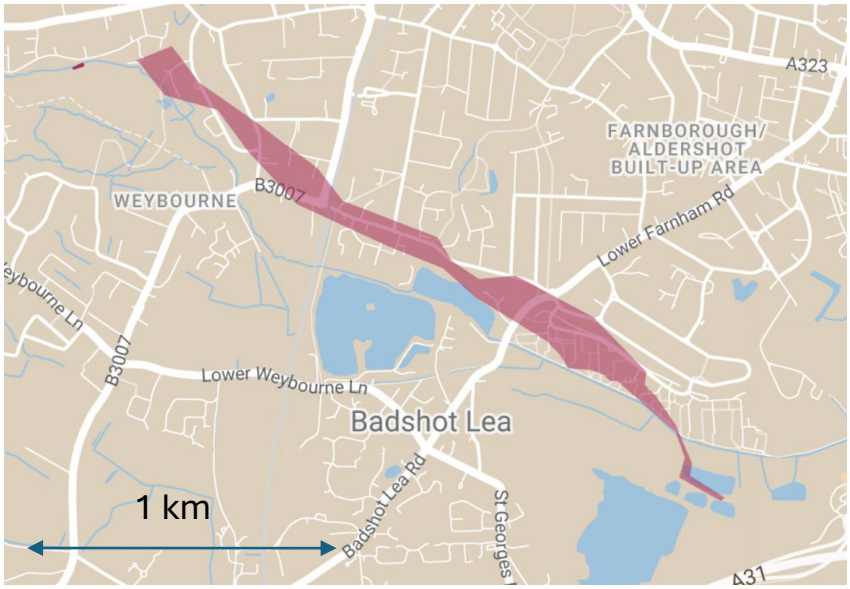

Figure 1: Damage track of the Aldershot tornado (2024). Map data ©2024 Google

Cause of damage:	Tornado
Strength:	T2/T3
Track Length:	2.4km
Maximum Width:	140m
Time/ duration	1100 UTC or soon after/ 5 min
Map Location/postcode	GU11 /3RS/3LY/3QG/3XG

Key damage indicators

1. Flat roofs (construction felt and batten) from two external stairwells were removed by the tornado and landed up to 95m NW of origin (locations: 51.2336, -0.7555 and 51.2334, -0.7544) **Intensity rating: T2**
2. Varying tiled roof damage along the track. Two chimneys were toppled. (locations: 51.2411, -0.7743 and 51.2396, -0.7706) **Intensity rating: T2**
3. Tree damage included large trees toppled or snapped along the track. Trees early in the track (located around: 51.23134, -0.7508) lost large boughs, landing WSW, W and NW. **Intensity rating: T2**
4. A very large oak with an estimated girth diameter of 1m located at the end of the track (location: 51.2424, -0.7745) snapped at the base, falling W. The tree trunk looked partially diseased. **Intensity rating T2/T3**

Meteorological summary

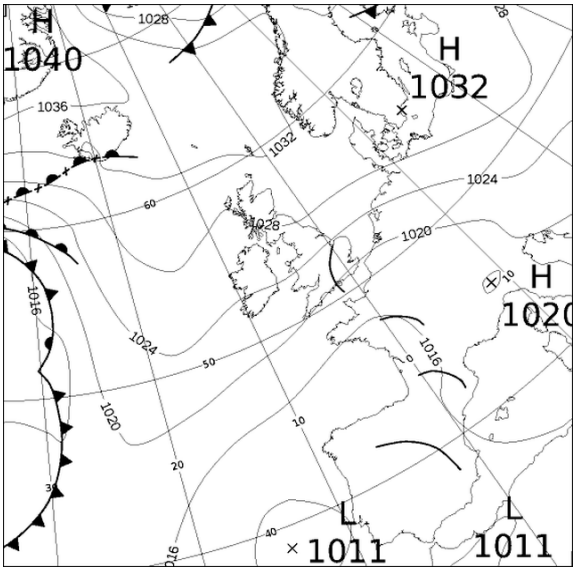

Figure 2: Section of UKMO ASXX 1200 UTC 20 September 2024. Note the surface trough in easterly flow over southern England. Original: Crown copyright.

During the morning a small cluster of showers moved into south east England from north west France. These showers became more intense and more organised as they moved westwards. By ~1000 UTC the cluster exhibited signs of a mid-level to surface circulation resembling a small scale Mesoscale Convective Vortex (MCV) in reflectivity and radial velocity scans from the Thurnham and Chenies radars with cyclonically curved rain bands. A quasi-circular anvil with weak anti-cyclonic outflow was evident in visible satellite imagery. The cluster later evolved into a small-scale – MCS with leading line 'bow & arrow' morphology.

MRC:

The ….shear zone is at the western flank of the remnants of what looks like a strong, relatively short-lived outflow surge in the storm (visible as strong approaching velocities particularly in scans from 1001 to 1031 UTC). Prior to the outflow surge, at 0951 and 1001 UTC, there was a strong velocity couplet in the thunderstorm, after which the eastern side of the couplet (strong approaching radial velocities) expands and drifts west as the original velocity couplet broadens and then dissipates. One possible interpretation is some sort of vortex-induced or vortex-associated outflow surge, with secondary vortex-genesis under a new updraft that developed along the residual shear zone at the western edge of the decaying outflow surge. However you interpret it, the evolution looks interesting and complex. …

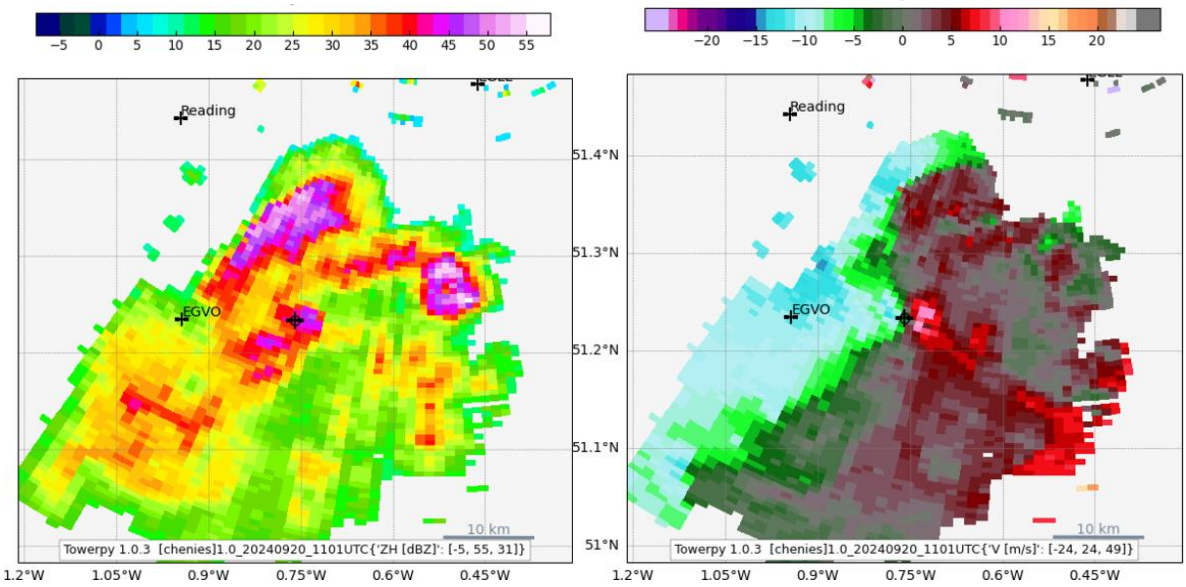

Figure 3: Snapshots from the Chenies radar at 1101 UTC. The target marker is located at Tice's Meadow, Aldershot (lat 51.233431, lon -0.75918), footage of a vortex on the ground at this location is available.

Comments

1 A TORRO convective discussion had been issued: Convective Discussion 10:02 BST Fri 20 Sep 2024 – 20:00 BST Fri 20 Sep 2024. Areas affected SE England, Cent S England, S Midlands, SW England, S Wales. Hazards: Hail 15-20mm diameter, heavy rain, CG lightning, gusty winds. Discussion; Showers and thunderstorms already across Kent/E Sussex will continue to move in a general westerly direction this morning, and should develop further/expand in coverage into this afternoon, as diurnal heating erodes low clouds and allows 500-1000J/Kg of CAPE to evolve. Relatively low freezing levels may allow some marginally severe hail to develop in the stronger cores in and close to the depicted area, although coverage will - of course -be hit-and-miss. Rather humid low-levels should preclude too much in the way of strong wind gusts, but a few isolated gusts to 40-50mph are possible. Heavy rain is likely in places too. Last updated by RPK at 10:07 BST Friday 20th September 2024

2 Relevant forum thread: TORRO Forum ACCESS RESTRICTED TO TORRO MEMBERS.

3 Other relevant events on this day: an isolated supercell-like storm developed inland close to the Hampshire coast much later, ~1700 UTC.