

ABOVE GROUND SURVEYS

Roof Condition Report

Survey Date:	5th November 2025
Report Date:	06 December 2025
Location:	51.3455°N, 0.5425°E (Swanley, Kent)
Survey Method:	UAV Aerial Inspection
Equipment:	DJI Mavic 3 Pro (Hasselblad Camera)
Images Captured:	4 High-Resolution Photos (36.5MP each)
Analysis Method:	Automated Computer Vision Processing

1. Executive Summary

This report presents the findings of an aerial roof inspection conducted using unmanned aerial vehicle (UAV) technology. The survey captured high-resolution imagery of the roof structure to assess its current condition and identify any areas of concern requiring maintenance or repair.

The inspection was conducted under suitable weather conditions with good visibility. Four aerial photographs were captured from various angles to provide comprehensive coverage of the roof surface. Advanced computer vision analysis was applied to detect moss/algae growth, surface anomalies, weathering patterns, and overall condition.

Key Metric	Average Result	Assessment
Moss/Algae Coverage	~3-5%	Low - Acceptable
Dark Spots/Debris	3.74%	Minimal
Surface Weathering	4.57%	Light
Texture Uniformity	Consistent	Good
Overall Score	3/8	Fair Condition

2. Survey Details

Parameter	Value
Date of Survey	5th November 2025
Time of Survey	13:03 - 13:06 GMT
Weather Conditions	Overcast (suitable for survey)
Drone Model	DJI Mavic 3 Pro
Camera	Hasselblad L2D-20c (FC8482)
Image Resolution	8064 x 4536 pixels (36.5MP)
Image Format	MPO (Multi-Picture Object)
Flight Altitude	Approximately 160 meters AGL
Number of Images	4
GPS Coordinates	51°20'26"N, 0°32'33"E
Focal Length	6.72mm
Aperture	f/1.7
ISO	100

3. Aerial Imagery

The following high-resolution images were captured during the aerial survey. Each image has been taken from a different position to ensure complete coverage of the roof structure.

Above Ground Surveys - Roof Inspection Images



Figure 1: Overview of captured aerial imagery showing all four survey positions

4. Image Analysis

Advanced computer vision algorithms were applied to analyze the captured imagery. The following analyses were performed to assess roof condition:

- **Moss/Algae Detection:** Color segmentation to identify biological growth
- **Dark Spot Analysis:** Detection of debris, staining, or potential damage
- **Weathering Assessment:** Identification of bleached or faded areas
- **Texture Analysis:** Surface irregularity and uniformity assessment
- **Color Segmentation:** Identification of distinct surface regions

4.1 Moss & Algae Detection

The following analysis identifies areas of biological growth (moss, algae, lichen) on the roof surface. Green highlighted areas indicate detected growth. Biological growth can retain moisture and potentially cause tile degradation over time.

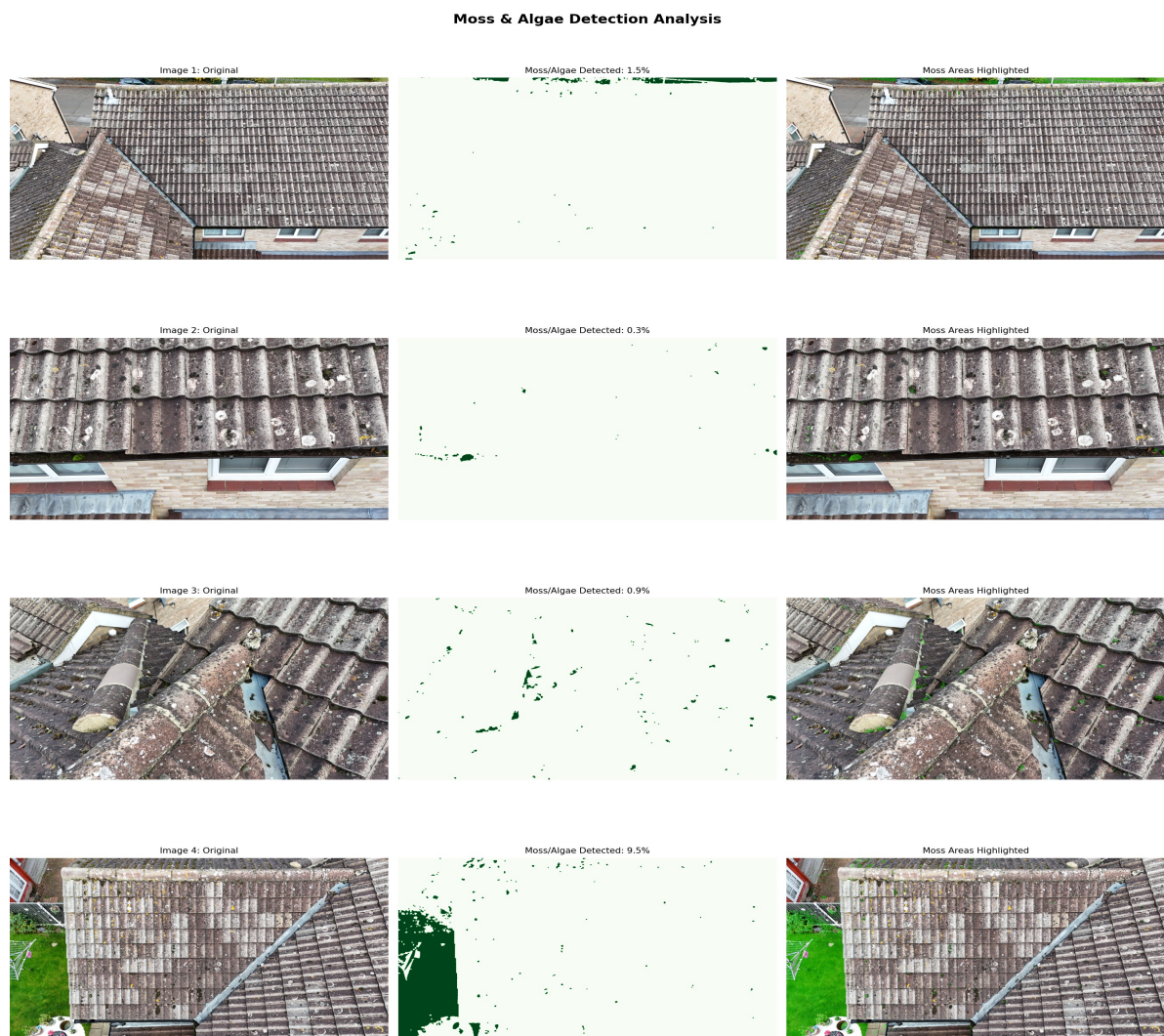


Figure 2: Moss and algae detection analysis - green areas indicate biological growth

4.2 Surface Condition Analysis

This analysis examines the roof surface for dark spots (potential debris, staining, or damage), weathered areas (bleaching, fading), and surface texture irregularities. Each image is assessed individually to identify localized issues.

Roof Surface Condition Analysis

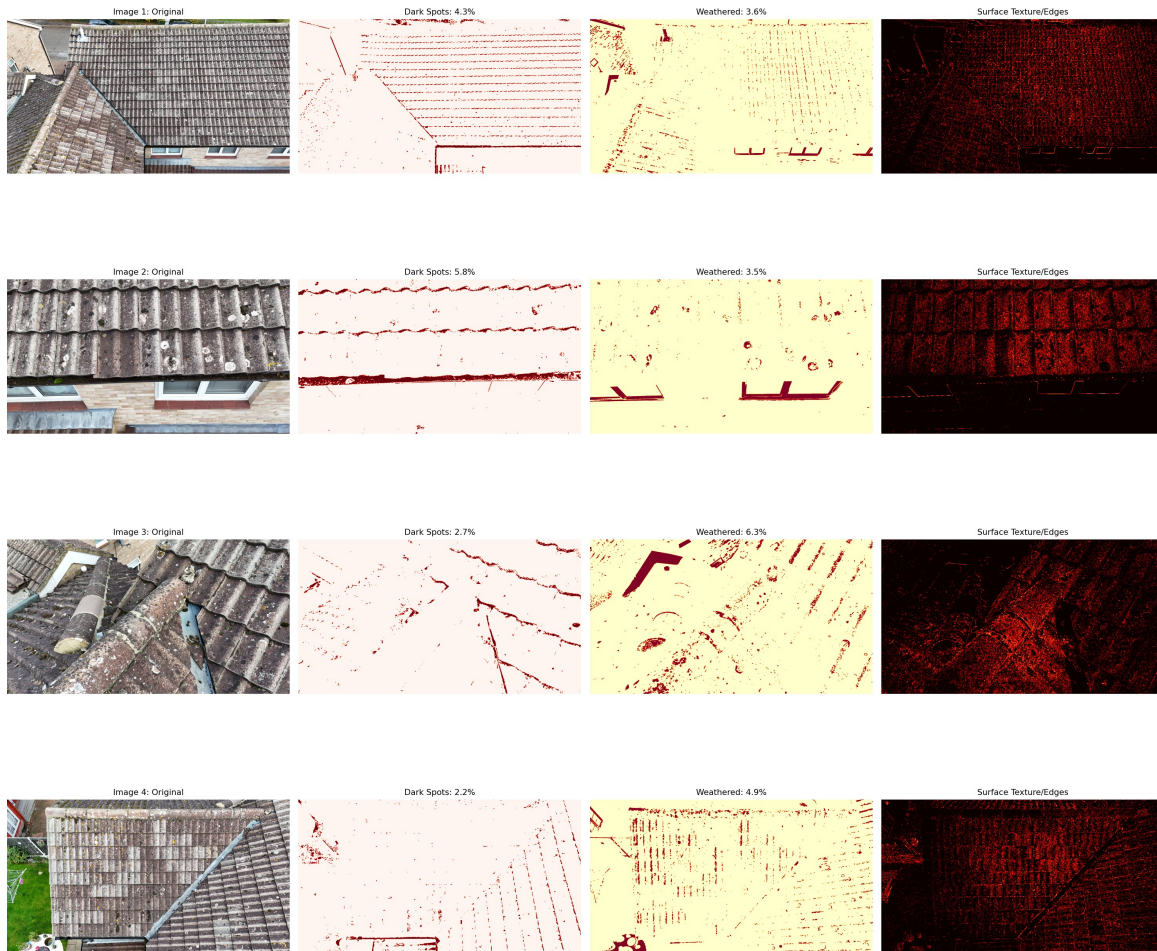


Figure 3: Surface condition analysis showing dark spots, weathering, and texture maps

Condition Analysis Summary by Image:

Image	Dark Spots (%)	Weathered Areas (%)	Texture Variance	Color Uniformity
Image 1	4.32	3.60	3,939	4,841
Image 2	5.76	3.54	3,451	4,532
Image 3	2.66	6.27	2,694	4,049
Image 4	2.23	4.87	3,417	4,090
Average	3.74	4.57	3,375	4,378

Note: Texture Variance measures surface irregularity (lower = smoother). Color Uniformity measures hue variation (lower = more uniform color).

4.3 Condition Overlay Map

The condition overlay combines all detected issues into a single color-coded visualization for easy identification of problem areas:

- **Green:** Moss/Algae growth detected
- **Red:** Dark spots (debris, staining, potential damage)
- **Yellow:** Weathered/bleached areas

Roof Condition Overlay Maps

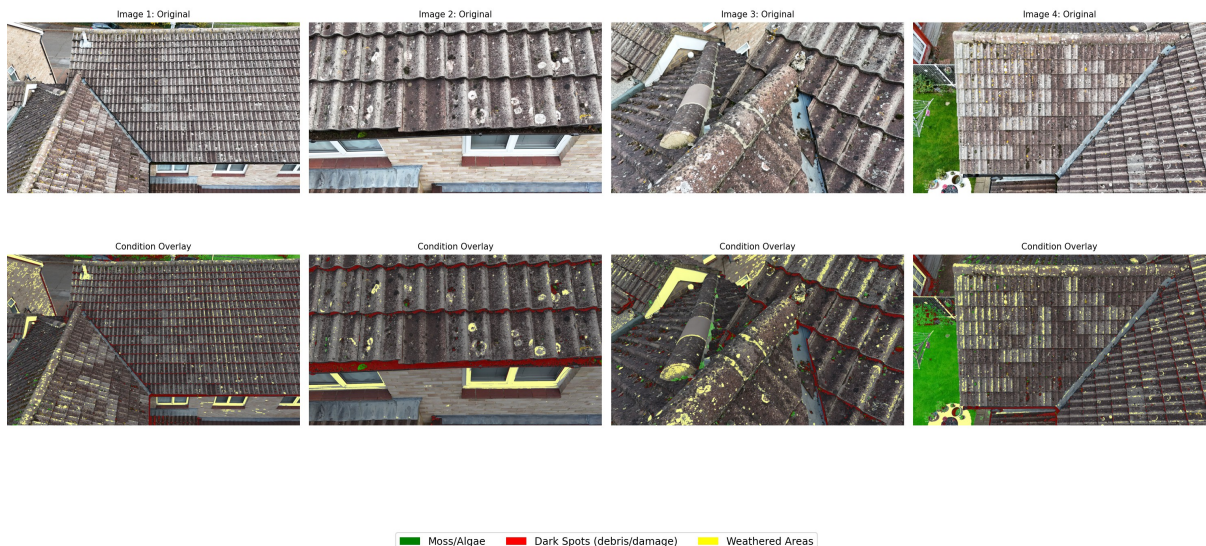


Figure 4: Combined condition overlay showing all detected issues

4.4 Color Segmentation Analysis

Color segmentation groups the roof surface into distinct regions based on color similarity. This helps identify the main roof materials, any patched or repaired areas, and overall color consistency of the roofing material.

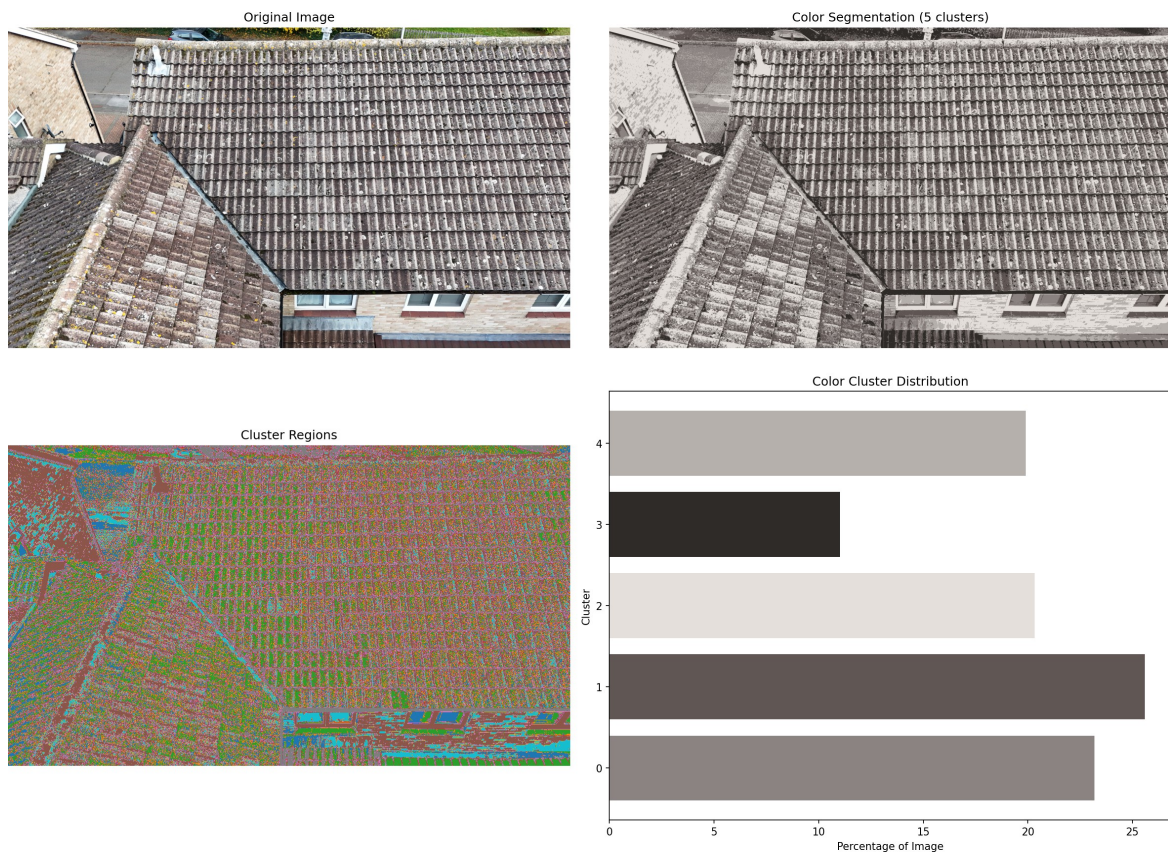


Figure 5: Color segmentation showing distinct surface regions

5. Observations & Findings

Based on automated analysis of the captured aerial imagery, the following observations have been made regarding the roof condition:

Area	Observation	Condition	Priority
General Roof Surface	Tiles appear intact with consistent colour. No visible displacement or major damage detected.	Good	Low
Moss/Algae Growth	Low levels detected (~3-5%). Typical for UK climate. Minor biological growth present.	Fair	Low
Dark Spots/Staining	Average 3.74% coverage. Likely shadows and minor weathering rather than damage.	Good	Low
Surface Weathering	Average 4.57% shows lighter areas. Normal wear consistent with tile age.	Good	Low
Texture Consistency	Variance within normal range. No significant surface irregularities detected.	Good	Low
Ridge Tiles	Visible in imagery and appear aligned. No obvious displacement.	Good	Low
Guttering	Visible at roof edges. Cannot assess blockages from survey altitude.	TBC*	Low
Flashings/Junctions	Not clearly visible at survey altitude. Ground inspection recommended.	TBC*	Medium

*TBC = To Be Confirmed with ground-level or closer inspection

6. Condition Rating Key

Rating	Score	Description	Action Required
Good	0-1	No visible defects or concerns	Routine maintenance only
Fair	2-3	Minor wear or early signs of deterioration	Monitor and plan maintenance
Poor	4-5	Visible damage or significant wear	Repair recommended within 6 months
Critical	6-8	Serious defects requiring immediate attention	Urgent Repair Required

This Property Assessment	
Overall Score: 3/8	
Rating: FAIR	
The roof is in acceptable condition with minor wear typical of its age.	

7. Recommendations

Based on the aerial survey and automated analysis findings, the following recommendations are provided:

Immediate Actions:

- No immediate actions required
- Roof appears structurally sound from aerial assessment

Short-term Maintenance (0-6 months):

- Consider moss treatment if growth increases beyond current levels
- Clear gutters before winter season (recommended biannually)
- Ground-level inspection of flashings and junctions recommended

Long-term Considerations (1-3 years):

- Monitor moss/algae growth - treatment may be needed if coverage exceeds 10%
- Consider protective coating if weathering progresses
- Schedule follow-up aerial survey in 2-3 years

General Maintenance Advice:

- Regular gutter cleaning (minimum twice yearly - spring and autumn)
- Annual visual inspection from ground level
- Periodic professional roof survey (every 3-5 years)
- Prompt attention to any visible damage or leaks
- Avoid pressure washing tiles as this can cause damage

8. Disclaimer

This report is based on visual and automated analysis of aerial imagery captured during the survey. The inspection is non-invasive and does not include physical access to the roof surface.

Limitations:

- Some defects may not be visible from aerial imagery
- Survey altitude (~160m) limits detection of small defects such as hairline cracks
- Automated analysis algorithms may produce false positives or miss some issues
- Weather conditions (overcast) may affect colour accuracy in images
- A physical inspection may be required for definitive assessment

This report should not be relied upon as a structural survey. For significant concerns, consultation with a qualified roofing professional is recommended.

Surveyor: Satyam Shah

Date: 6th Dec 2025

Reviewed by:

Date: