



Thermographic Survey

DOMESTIC EXAMPLE REPORT

iRed Ltd, Unit 6 The Old Flour Mill, Emsworth, PO10 7BT

Survey Date

8th January 2016

Report Date

21st January 2016

Thermographer

Mr. N.Gineer (ABBE Diploma QCF Level 4)

Job No.

20000

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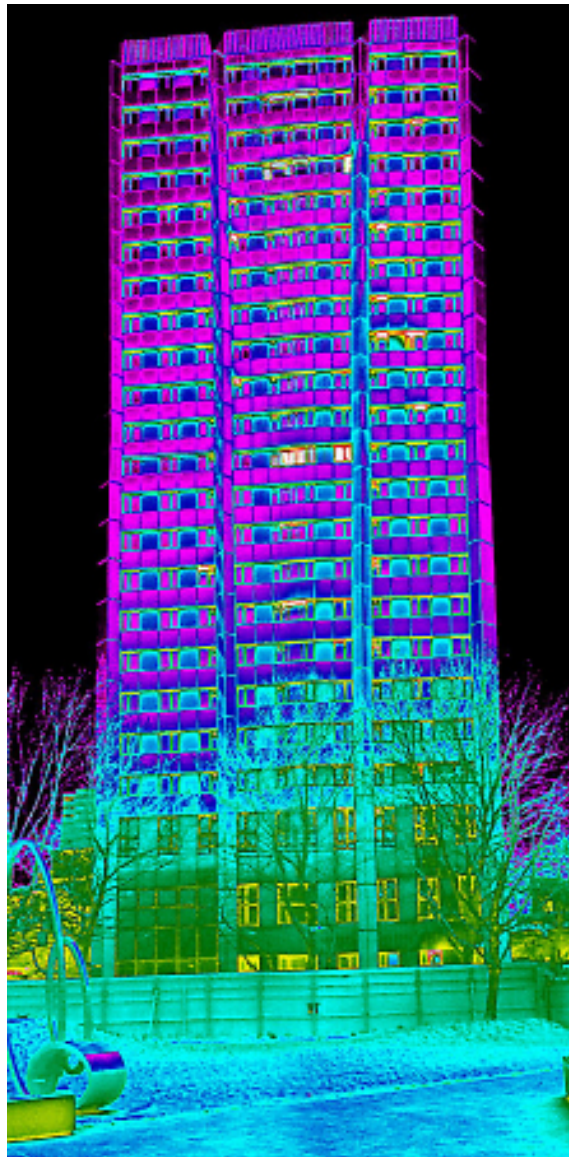


How can thermography help?

Thermography is a term used to describe a type of photography that uses the different temperatures of walls, floors, ceilings, furniture, etc. to create pictures as opposed to visible light as in normal photographs. By converting surface temperatures to colours - red (hotter)/blue(colder) we can see where heat is escaping from a building and work out the cause:

- Is it a draught?
- Is there insulation missing?
- Is there something bypassing the insulation?

If surface temperatures get too low then condensation can form on them which leads to dampness - ideal conditions for black mould to grow.



What will you see in a report?

A Thermographic Report will include images/photos taken from outside and inside a building. On each page you will see the thermographic image and a corresponding digital image to help you 'get your bearings' in a room. Each digital image will also include a temperature scale so you can see how hot and cold surfaces actually are and there will be a separate box giving the 'environmental conditions' - inside and outside air temperatures.

A thermography expert will analyse every image in the report and identify whether a problem exists and, if so, what the cause is likely to be. The following report pages show buildings - or rooms - with some typical problems and comments on what can be seen.

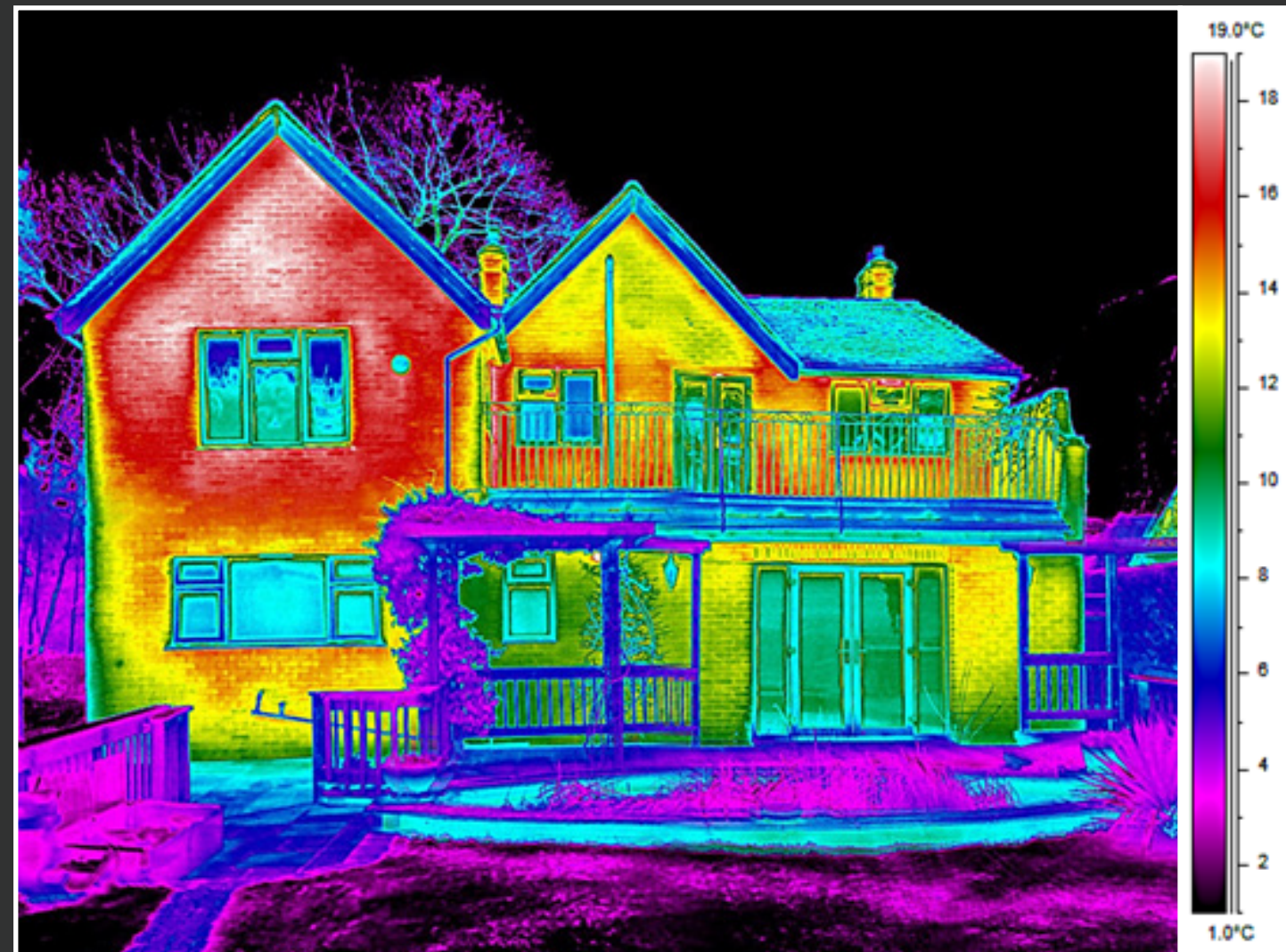


Domestic Building Surveys

Thermographic surveys enable you to assess a building's thermal performance without having to cover it with temperature probes - or dismantling it. Information contained in a thermal image like the one above can be used to identify the location and severity of any problems. However, thermographers need to be careful in their analysis since the 'hot' area in the upper left part of the house has been caused by heat from the sun - called 'solar gain'. The digital image explains why the other South-facing aspects of the house haven't been so badly affected - they have been painted white (which reflects the sun) or are shaded by the balcony. To prevent problems from solar heating thermographic surveys should be carried out at night.

Air Temp: **6°C**
Ref. Air Temp: **-31°C**
Emissivity: **0.92**
Wind Speed: **1-2m/s**
Wind Direction: **SSW**

Thermal Image



Digital Image



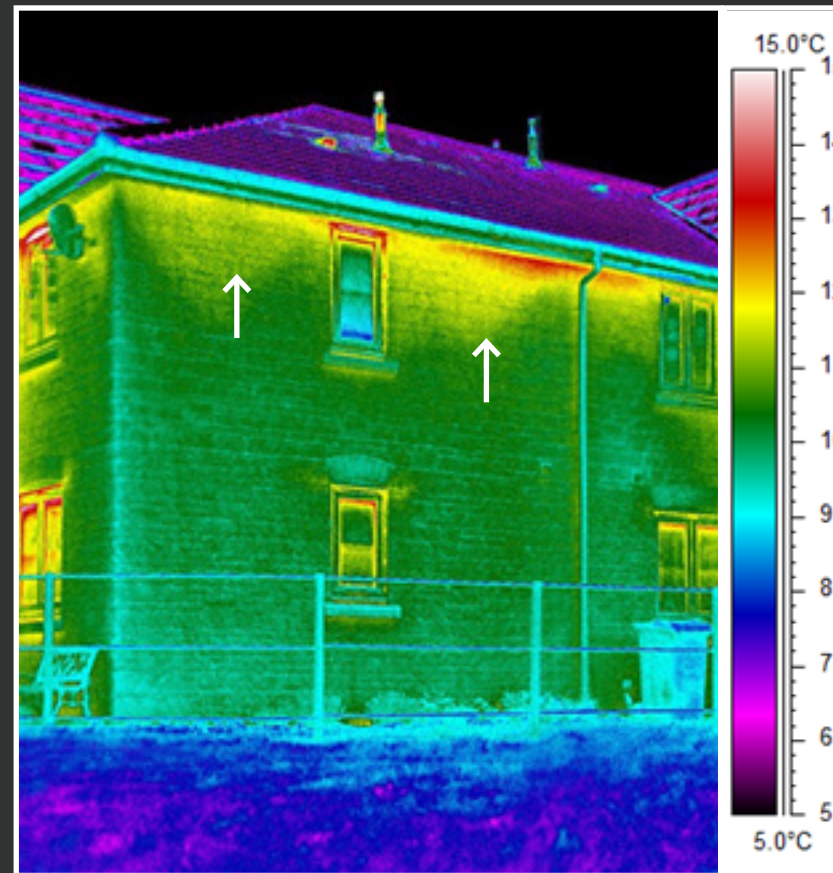


Continuity of Insulation No.1

Even modern, new-build houses are not immune to missing insulation. The two white arrows in the thermal image point to areas where cavity wall insulation has compacted or slumped leading to some increased heat loss across the cavity wall. You cannot see any indication of this problem in the digital photo.

External Air Temp: **8.5°C**
Internal Air Temp: **24°C**
Relative Humidity: **65%**

Thermal Image



Digital Image



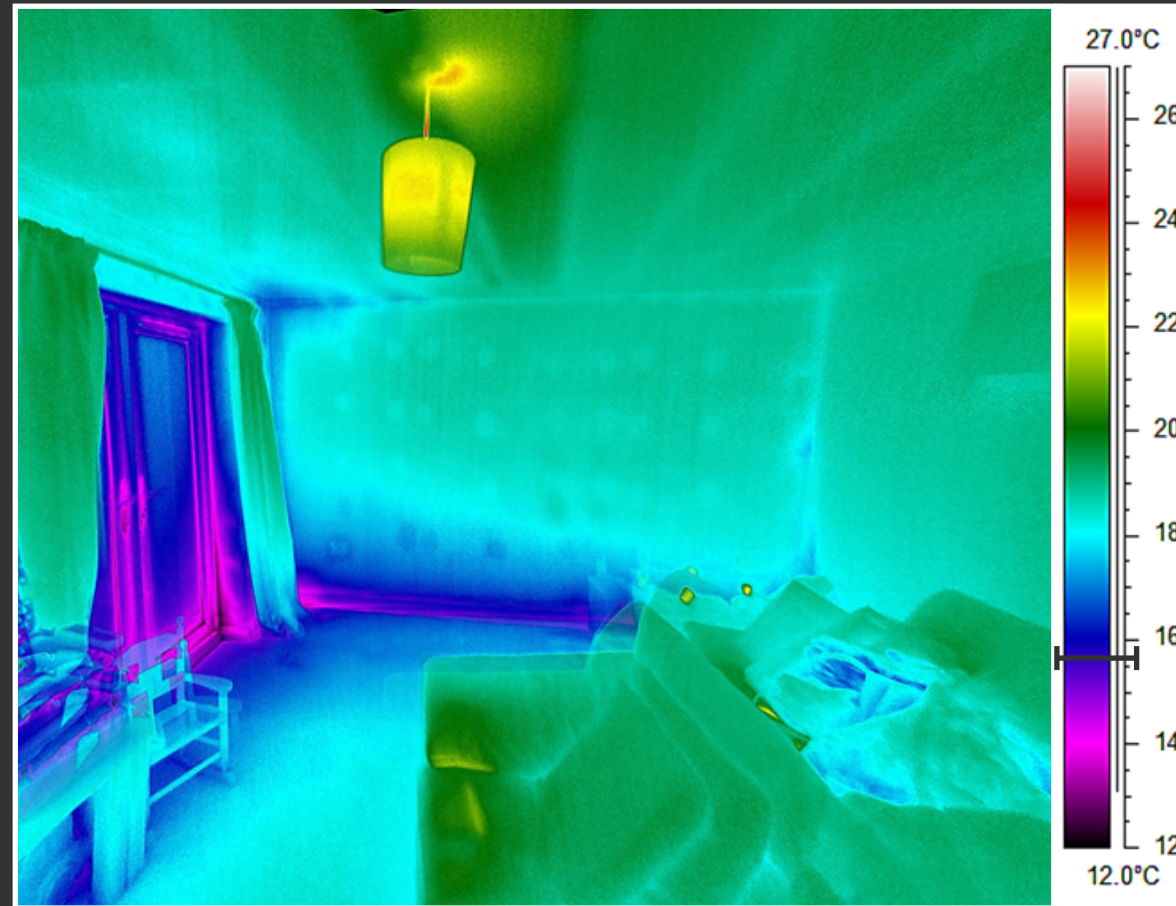


Continuity of Insulation No.2

There are extensive colder areas in the image above – around the patio door, the floor the floor and the walls and also in the ceiling. A photograph taken during an investigation to determine the reason(s) for the cold floor showed that no insulation had been included - the design called for 300mm. Since the surface temperatures in many areas are at or below the thermal index temperature (15.8°C) there is a high risk of condensation and mould growth over time. Additionally, any occupant in this area is likely to feel a high degree of thermal discomfort - see below.

External Air Temp: **20°C**
Internal Air Temp: **8°C**
Relative Humidity: **65%**

Thermal Image



Digital Image



External Image





Thermal Comfort Surveys

The owner of this house complained about feeling cold and would have to wear something on their feet to feel comfortable walking around the house in cold weather. This image shows a high temperature variation from ceiling to floor, but this variation is concentrated in the distance between the sofa and the floor. Since human beings feel uncomfortable if there is anything more than a 2°C - 3°C to temperature differences between their head and feet then this room is likely to cause severe thermal discomfort when sat on the sofa. The white arrow points to where a support beam above the ceiling is bypassing the insulation in the roof (a 'cold bridge') thereby reducing the effectiveness of the rest of insulation.

Air Temp: **26°C**
Ref. Air Temp: **30°C**
Emissivity: **0.92**
Distance to Target: **4m**
Thermal Index: **0.75**
Index Value: **21.9°C**

Thermal Image



Digital Image

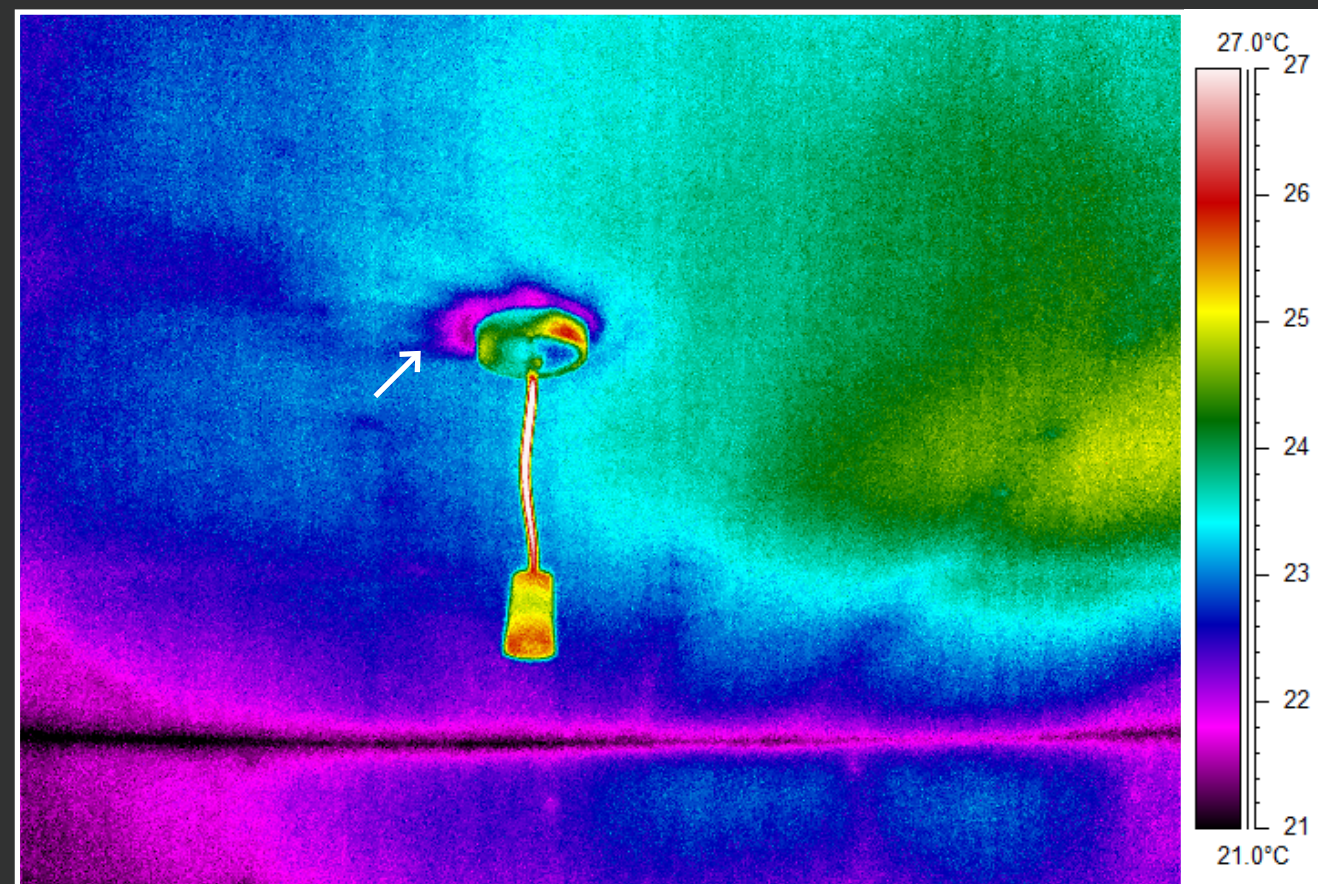




Air Leakage Surveys

The white arrow points to some air leakage from the roof space past the lighting rose into the room. A house can lose substantial amounts of heat through excessive air infiltration - commonly called draughts. Draughts also reduce the level of thermal comfort experience by the occupants so excessive air infiltration should be minimised. However reducing the designed ventilation rates are likely to be counter-productive since the risk of condensation will increase rapidly as the ability to remove excess moisture from the air is reduced.

Thermal Image



Digital Image

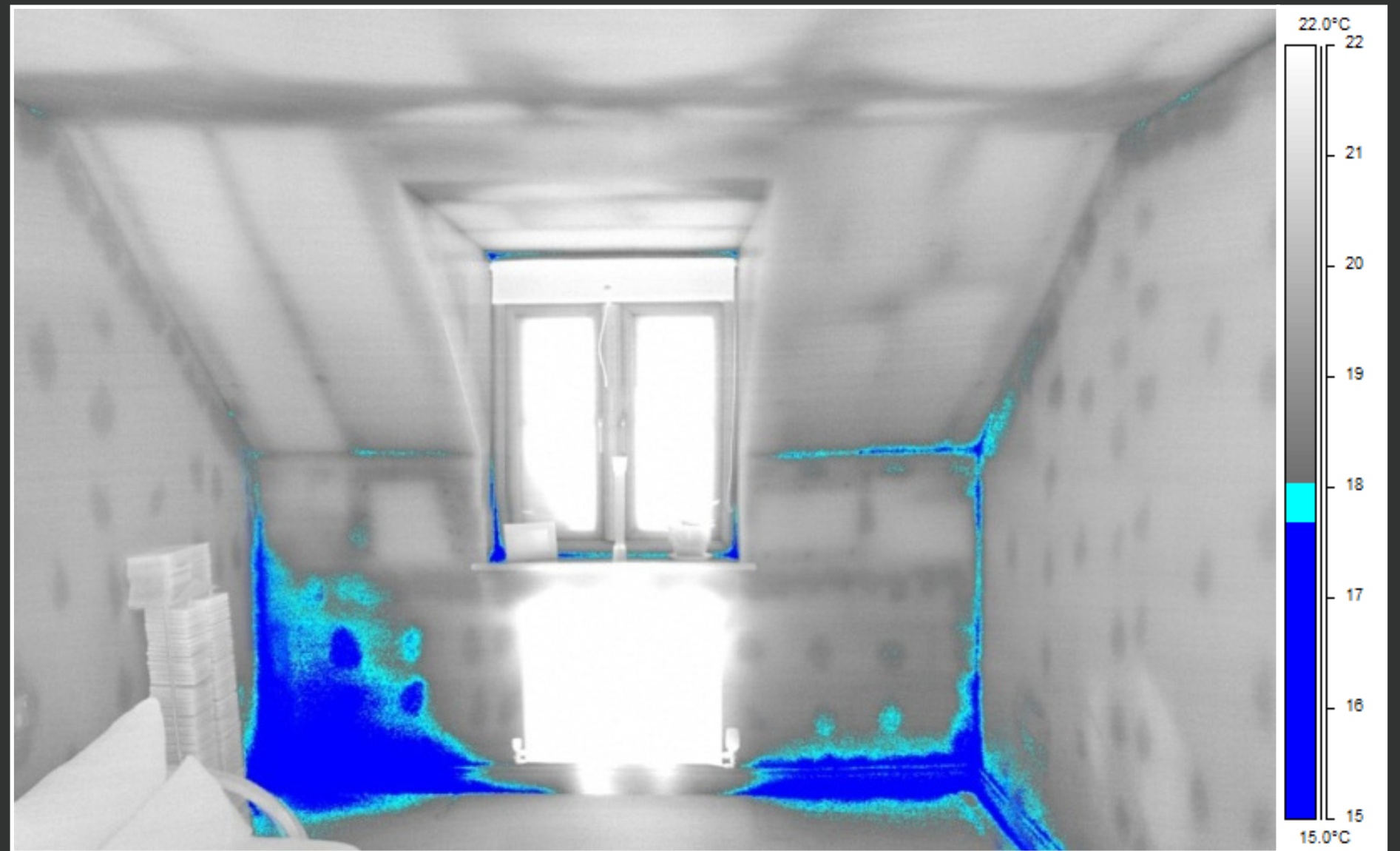




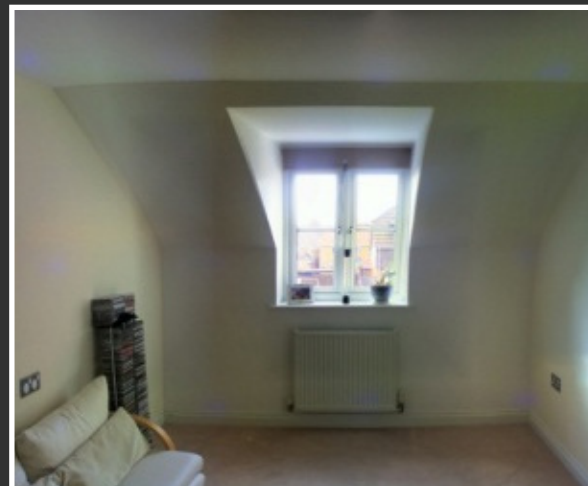
Damp & Mould Surveys

We introduced the concept of a Thermal Index temperature in an earlier slide. This is the temperature at which the risk of condensation and black mould growth increases significantly. The large image above has been processed from the small thermal image to show the areas with a high (dark blue) and lower (light blue) likelihood of condensation. A simpler way of showing which areas are at risk of condensation and mould growth is to mark the Thermal Index temperature with a bar on the temperature scale - as shown on page 7.

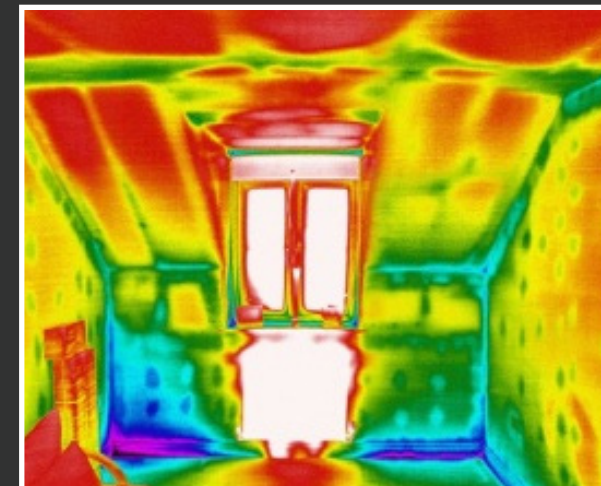
Isotherm



Digital Image



Thermal Image





Investigative Aerial Surveys

Our aerial surveys allow us to inspect buildings from new perspectives. This enables us to gather data and information that would otherwise be inaccessible without scaffolding or a mast.

Thermal Image

