

Thermographic Commercial Building Survey

SAMPLE REPORT

By

Pixel Thermographics Ltd



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	Thermographic Commercial Building Survey SAMPLE REPORT	Date:
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Report Details

Client

Address

Contact Person

Contact Person Address

Phone Number

Email Address

Thermographer

Thermographer Certification ITC Level 2 Certified Thermographer

Survey Equipment Flir Thermacam P640 Infrared Camera
Reporter 9.2 Software

Inspection Date 2016

Start Time 17:00

Finish Time 21:30

Environmental Details

Internal Temperature - Start 21°C

Internal Temperature - Finish 21°C

External Temperature - Start 0°C

External Temperature - Finish 0°C

Wind Speed - Start 3 mph from the West

Wind Speed - Finish 3 mph from the West

Humidity - Start 88%RH

Humidity - Finish 92%RH

Information

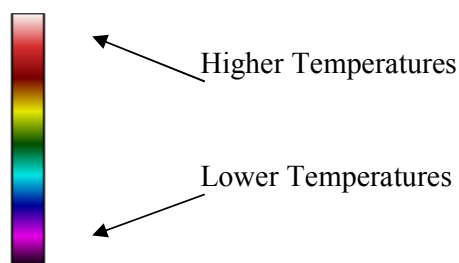
This Thermographic survey was carried out on behalf of

A FLIR Thermacam P640 was used to capture the thermal data which is recorded within the report.

The following report has been compiled to give the client an overall indication of the thermal efficiency of the property.

The role of the Thermographer is to interpret the thermal patterns shown in the images and comment on these for the client. The onus is on the client to draw conclusions from this report and undertake any actions that they feel necessary to improve the overall thermal efficiency of the property.

The thermal images were taken whilst the property was under normal heating conditions. These images are shown in a colour palette called 'rainbow high contrast' (see sample scale below). You will see by the scale on the right hand side of each image that cold areas are shown to be dark whilst hot areas are shown to be white.



The temperature scale on the side of both the internal and external images has been adjusted to highlight any anomalies and therefore may not reflect the exact temperature of all objects in the image.

The survey was conducted at a time to ensure that the solar loading effects of the sun were eliminated and to help with attaining a minimum temperature difference between internal and external temperatures of at least 11°C.

.....
 ITC Level 2 Certified Thermographic Engineer

Disclaimer

Any recommendations given in this report are intended as a guide only. By issuing this report neither Pixel Thermographics Ltd or any of its employees make any warranty, expressed or implied, concerning the contents of this report. Pixel Thermographics Ltd cannot accept responsibility for inappropriate actions taken as a result of this report.

	Thermographic Commercial Building Survey SAMPLE REPORT	Date:
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SCOPE OF SURVEY

This survey was conducted with the intention of inspecting and highlighting areas of the property showing signs of:

- Thermal Bridging
- Air Leakage
- Discontinuous Insulation
- Water Ingress
- Air Infiltration (Draughts)
- Structural Defects

Thermal Bridging

Thermal bridging occurs where the building structure is not sufficiently insulated to prevent heat being conducted to the external surface of the property. This can lead to condensation and mould growth within the property along with wasting energy.

Air Leakage

Air leakage can occur where paths are available for air within the property to escape the building and thus cause energy wastage.

Discontinuous Insulation

Discontinuous or missing insulation within a property can cause heat to be lost from a building. This can lead to condensation and mould growth within the property along with wasting energy.

Water Ingress

Water ingress within a property can lead to significant damage to the structure and also result in energy loss through damaging insulation.

Air Infiltration (Draughts)

Air infiltration (draughts) within a building can cause significant energy loss and result in heating systems having to work harder to maintain set-points.

Structural Defects

Buildings over a period of time are subject to movement and degradation of materials which can result in thermal anomalies.

EXECUTIVE SUMMARY

The survey has highlighted several areas within the building which are resulting in heat losses and energy wastage. The key areas of concern are:

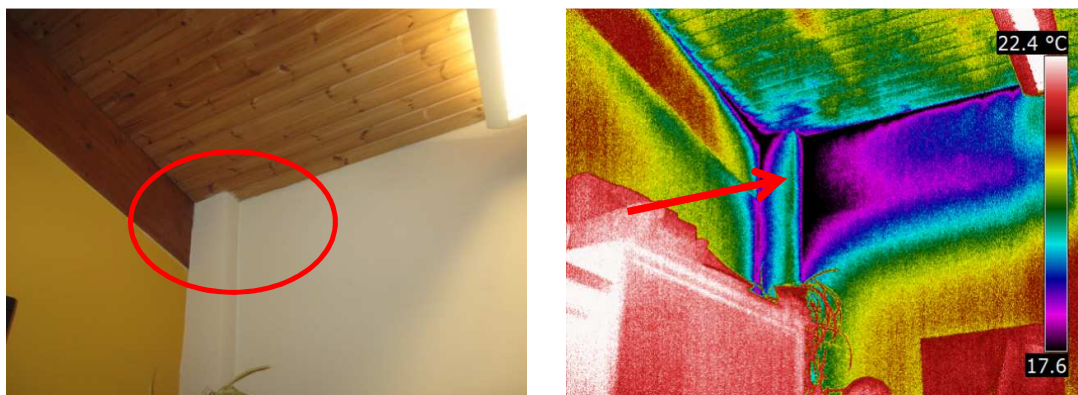
- Cold Air Ingress and Warm Air Leakage Via Roof Edge
- Cold Air Ingress From Gaps Around Window Frames
- Air Ingress into Upper Roof Area

Cold Air Ingress and Warm Air Leakage Via Roof Edge

The Lower roof edge section (shown circled in the photograph below) shows significant signs of air movement. This means that warm air is leaking from the building and also cold air is entering the building.



Thermal image above shows warm (red) areas on the external brickwork. This indicates air leakage from the building and appears to occur where the roof support beams penetrate the walls.



In the same area internally, significant cold air movement (darker colours) was identified. This occurs where cold air from a prevailing wind is forced into the building.

This effect was noted throughout the whole perimeter of the roof system and is causing considerable cooling of the building (particularly in the upper floor).

External close visual inspection and sealing of any gaps will help reduce this cold air ingress and improve the comfort in the top floor area.

Contd.

At the rear of the property, the staff kitchen and Area Managers office are both suffering from significant air ingress from the roof edge detail. This is highlighted in the images below:



The cold (dark) area in the thermal image above clearly shows how cold air enters from the roof edge and drops down the wall.

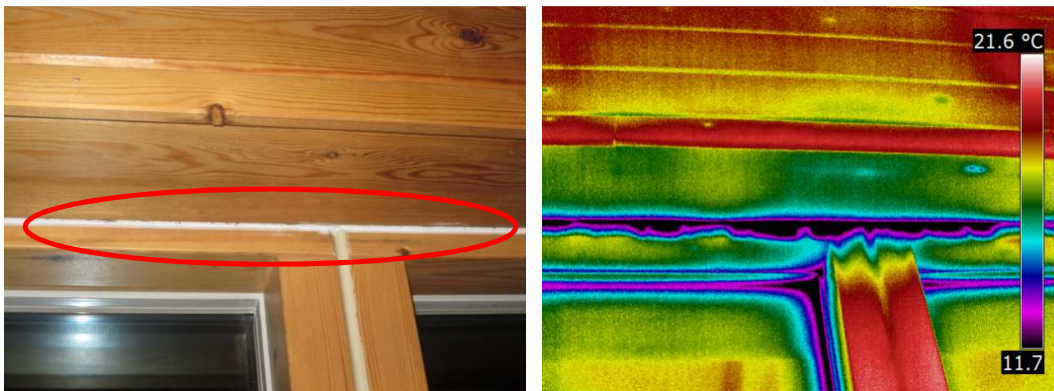
Recommended action is to carry out external visual inspection of roof edge details and seal any gaps to prevent the cold air ingress.

Cold Air Ingress From Gaps Around Window Frames

Many of the windows within the building have developed cracks and visible gaps around the frames.

The gaps / cracks are allowing cold air to enter the areas which significantly cool the rooms and result in heating having to work harder.

The images below demonstrate the effect internally:



Even though sealant is present, this has failed and is not providing a seal.

This type of issue was noted throughout the property.

An extensive operation of sealing window frames internally using suitable silicone sealant would greatly reduce the cooling effects of this cold air entry.

Air Ingress into Upper Roof Area

The upper roof area also shows signs of air leakage and cold air ingress into the top floor area.

The image below highlights the areas of concern:



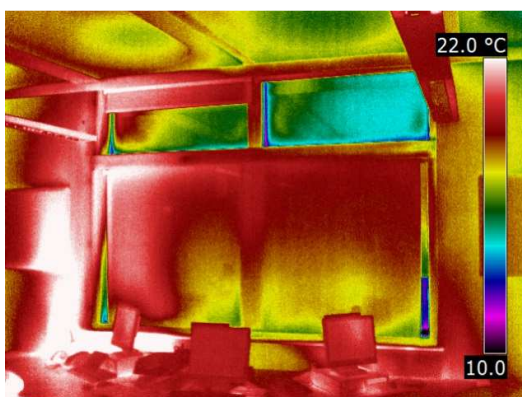
Warm air leakage and cold air entering the office area significantly cools the office area.

Visual external inspection of the areas around these windows and sealing of any gaps will greatly reduce the cold air ingress into the room.

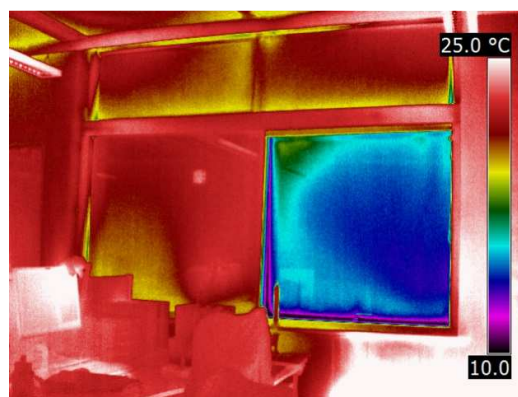
Other Observations

It was noted that where secondary glazing has been installed on the motorway side of the building that it makes a significant improvement in reducing cold air ingress from relatively poor window seals. Extending the use of secondary glazing or replacing windows would bring about further improvements in air ingress within the facility.

The images below show the difference between open and closed secondary glazed units:



Closed Secondary Glazed Window




Open Secondary Glazed Window

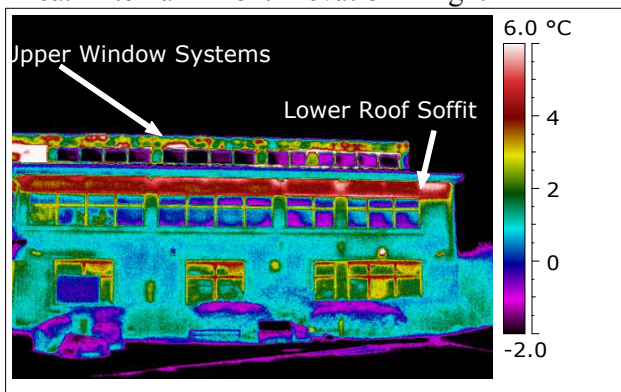
The following pages contain images and analysis gathered during the course of the survey

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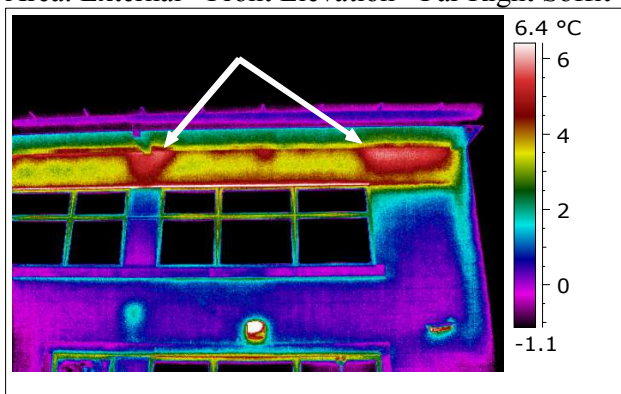
Area: External - Front Elevation - Right



Comment:

Thermal image highlights air leakage from 2 distinct areas.
The cladding around the upper window systems shows leakage which is likely to be caused by defective or incomplete seals.
The lower roof area leakage is analysed further in the image below.

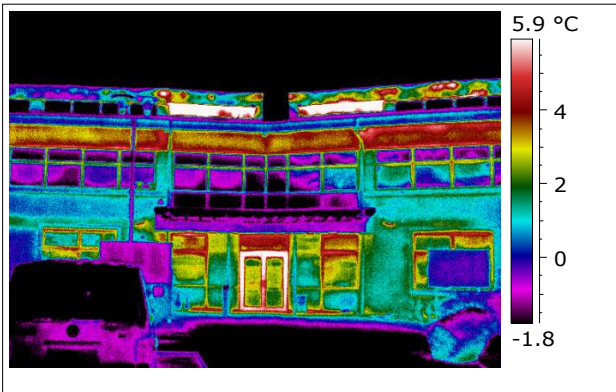
Area: External - Front Elevation - Far Right Soffit



Comment:

Air leakage noted from the underside of the soffit (roof overhang). Air appears to originate from the roof support structural beam penetrations.
Recommendation is to inspect these areas throughout the perimeter of the roof and seal any gaps.
Note that this air leakage will result in air ingress (draughts) inside the building.
Air leakage also noted from window frames (see later pages in report for internal inspection).

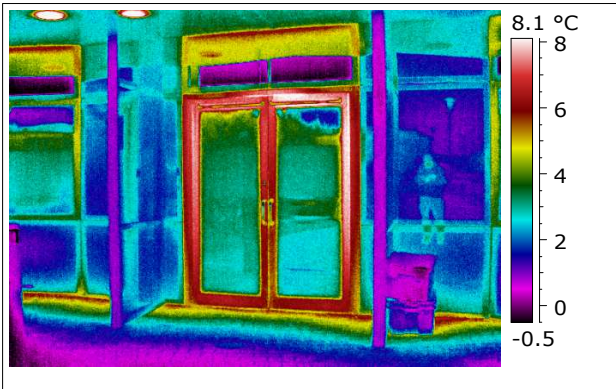
Area: External - Front Elevation - Centre



Comment:

Warm (white) areas should be ignored as these are extract vents.
Air leakage noted from cladding above upper windows.
Leakage also noted from lower roof support beams.
Recommendation is to inspect these areas throughout the perimeter of the roof and seal any gaps.
Note that this air leakage will result in air ingress (draughts) inside the building.
Air leakage also noted from window frames (see later pages in report for internal inspection).

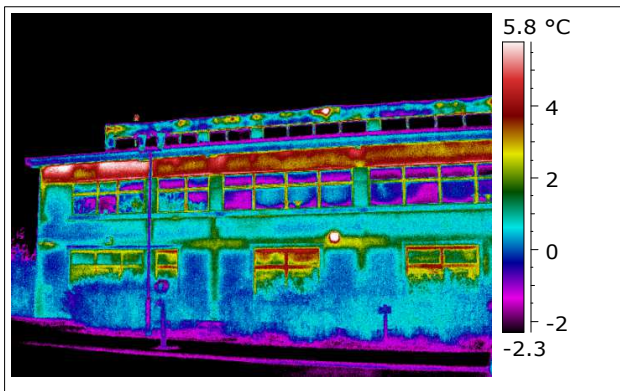
Area: External - Front Elevation - Main Entrance



Comment:

Air leakage from exterior door system which could have improved draught exclusion.

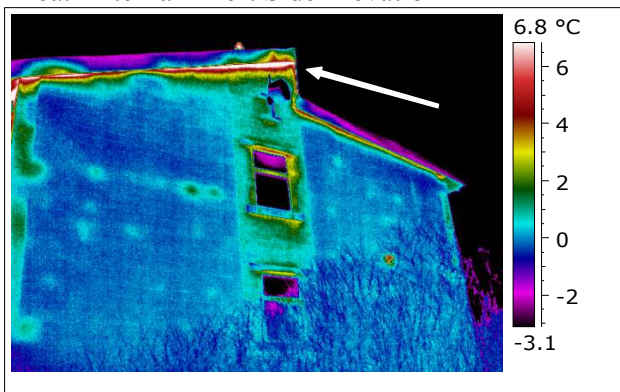
Area: External - Front Elevation - Left



Comment:

Further evidence of air leakage on high level cladding and main roof support beam penetrations.

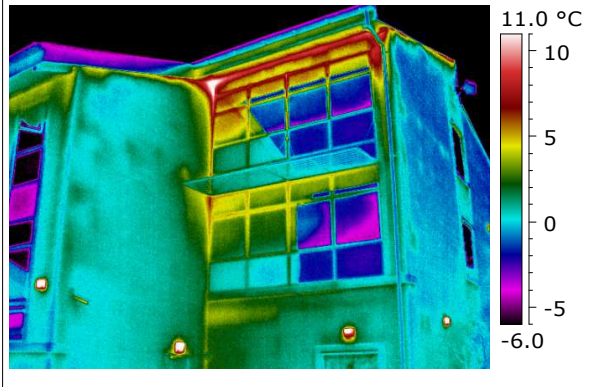
Area: External - Left Side Elevation



Comment:

Air leakage noted at high level detail.
Inspection and sealing as appropriate required.

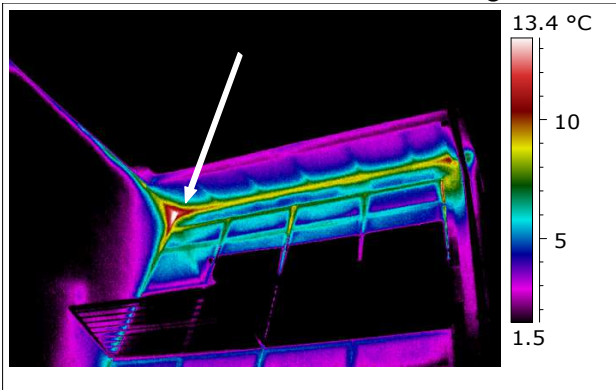
Area: External - Rear Elevation - Far Right



Comment:

Air leakage noted from underside of roof / soffit area where it is suspected that seals are not effective. See image below for closer view.

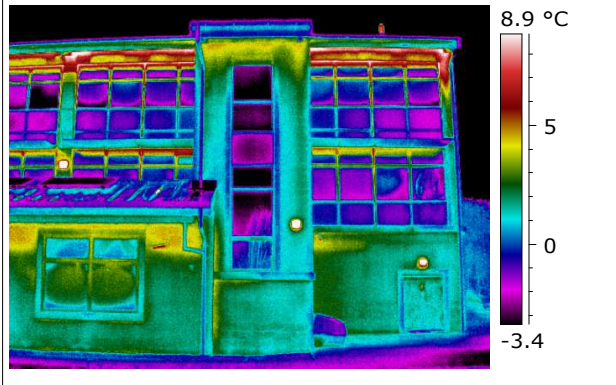
Area: External - Rear Elevation - For Right



Comment:

Air leakage noted from underside of roof / soffit area where it is suspected that seals are not effective. This will result in air ingress (draughts) into the building with a prevailing wind. Inspection and sealing any gaps recommended.

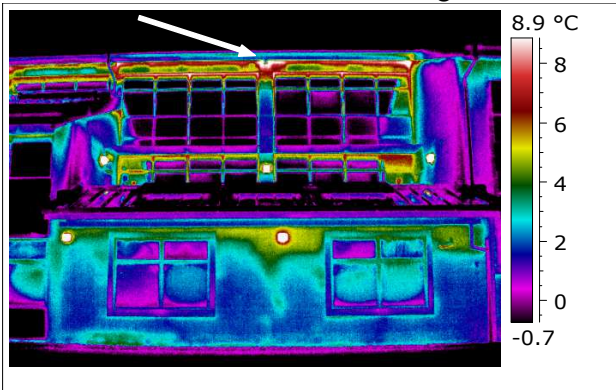
Area: External - Rear Elevation - Right



Comment:

Air leakage noted again at underside of roof where support beams penetrate walls.
Inspection and sealing recommended.

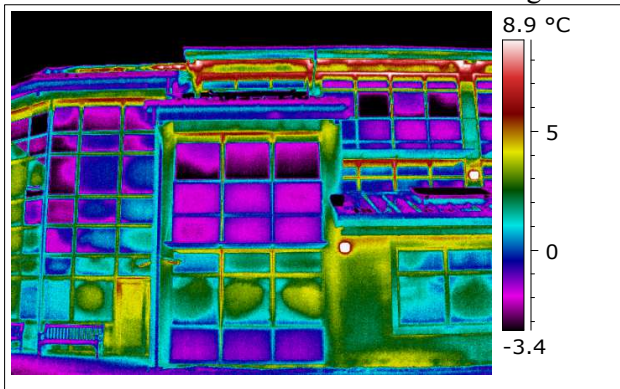
Area: External - Rear Elevation - Right of Centre



Comment:

Air leakage noted again at underside of roof where support beams penetrate walls.
Inspection and sealing recommended.

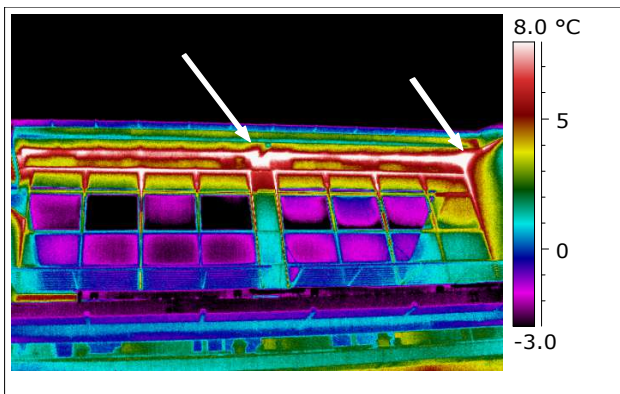
Area: External - Rear Elevation - Centre Right



Comment:

Air leakage noted again at underside of roof where support beams penetrate walls.
Inspection and sealing recommended.

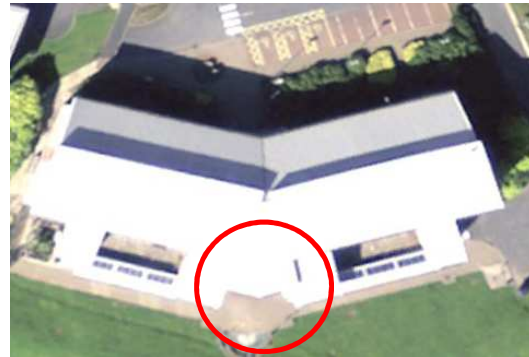
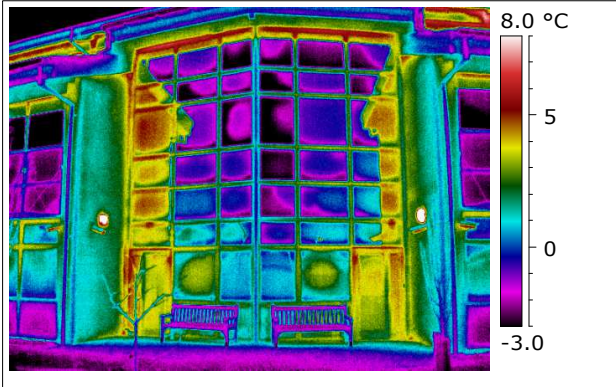
Area: External - Rear Elevation - Centre - Soffit



Comment:

Image further highlights the air leakage from underside of roof where support beams penetrate.

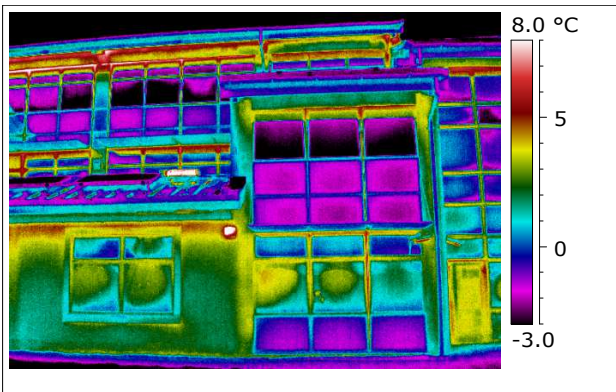
Area: External - Rear Elevation - Centre Left



Comment:

Air leakage noted from exit doors and along top edge of window structure.

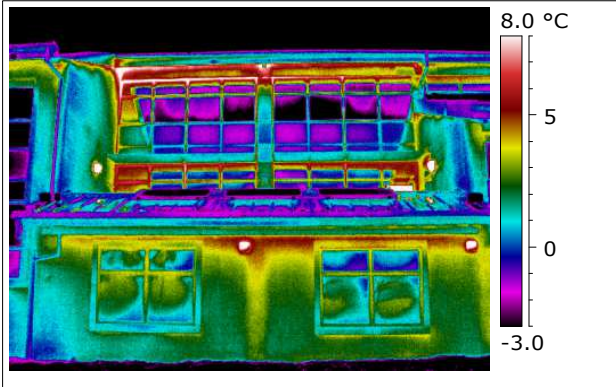
Area: External - Rear Elevation - Left of Centre



Comment:

Air leakage noted again at underside of roof where support beams penetrate walls.
Inspection and sealing recommended.

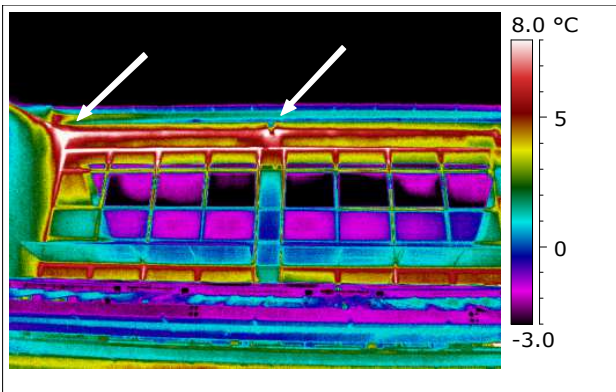
Area: External - Rear Elevation - Left



Comment:

Air leakage noted again at underside of roof where support beams penetrate walls. Inspection and sealing recommended.

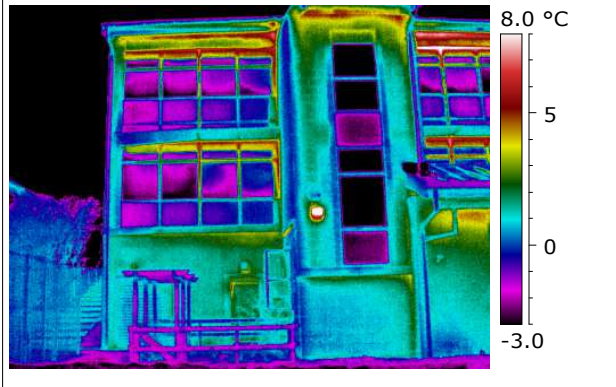
Area: External - Rear Elevation - Left - Soffit



Comment:

Image further highlights the air leakage from underside of roof where support beams penetrate.

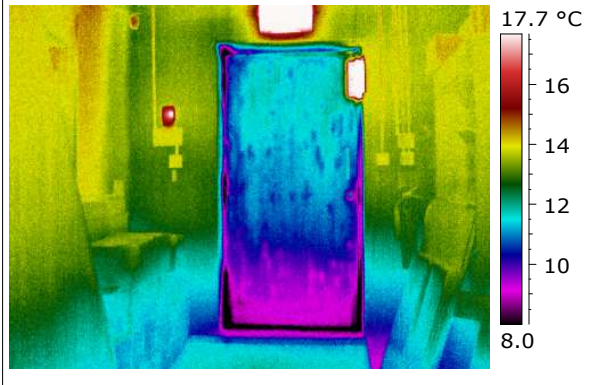
Area: External - Rear Elevation - Far Left



Comment:

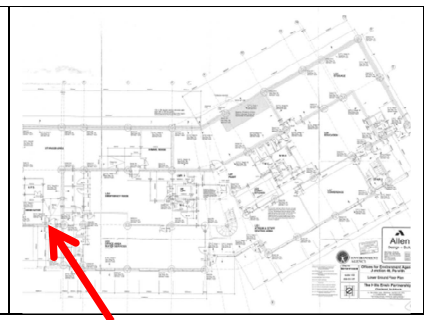
Air leakage noted again at underside of roof where support beams penetrate walls.
Inspection and sealing recommended.

Area: Lower Ground Floor - Storage Room - Door

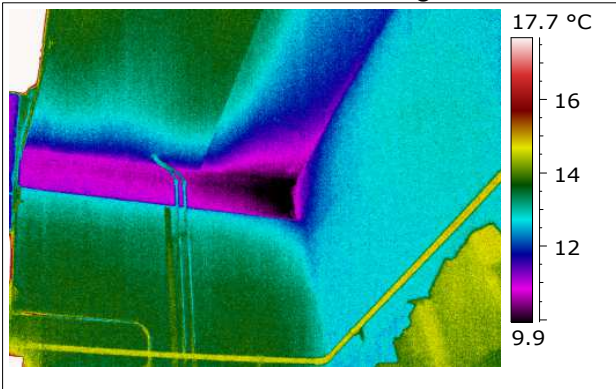


Comment:

Door is poorly sealed – better draught exclusion would reduce cold air ingress into the area.

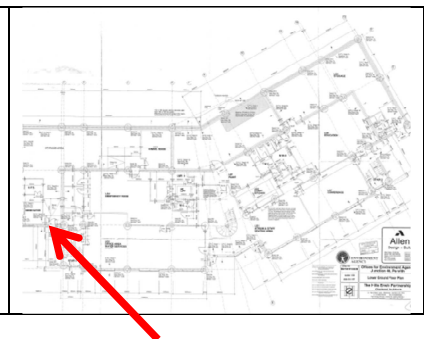


Area: Lower Ground Floor - Storage Room - Wall Above Door

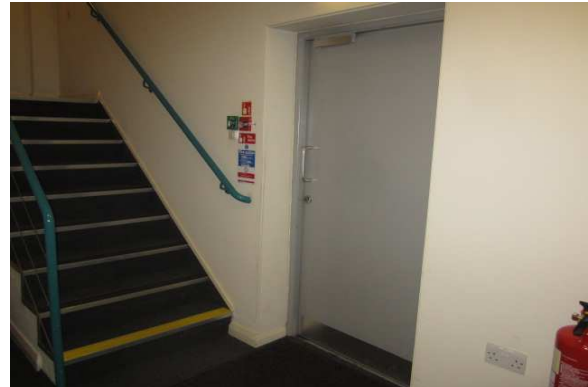
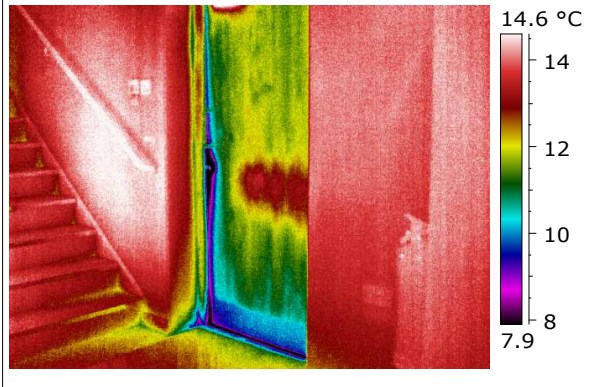


Comment:

Cold air ingress into area from visible gap at support beam. Sealing the gap would prevent this cold air ingress.

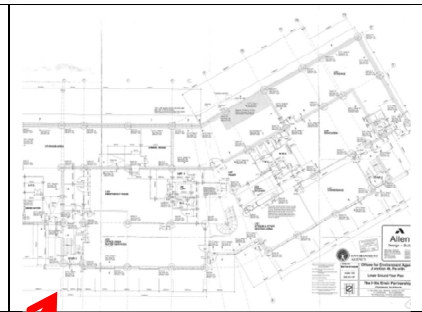


Area: Lower Ground Floor - West Stairwell - Door

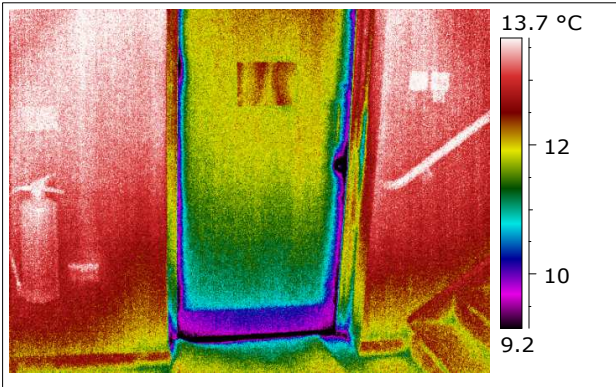


Comment:

Door is poorly sealed – better draught exclusion would reduce cold air ingress into the area.

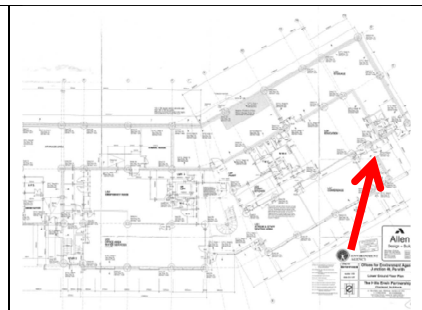


Area: Lower Ground Floor - East Stairwell - Door

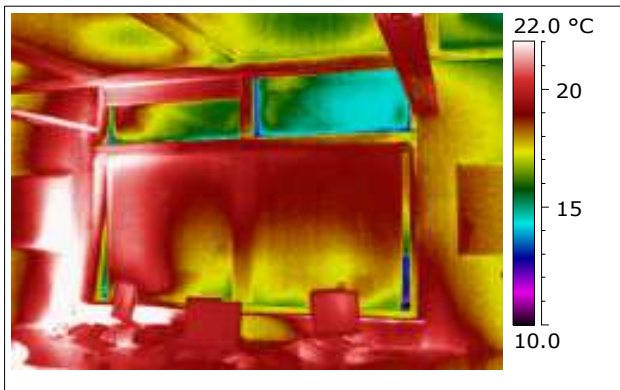


Comment:

Door is poorly sealed – better draught exclusion would reduce cold air ingress into the area.



Area: Lower Ground Floor - Cornwell Breakout Room - Window

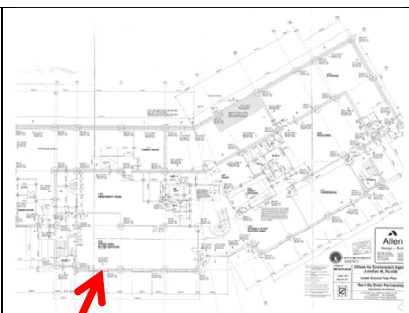


Comment:

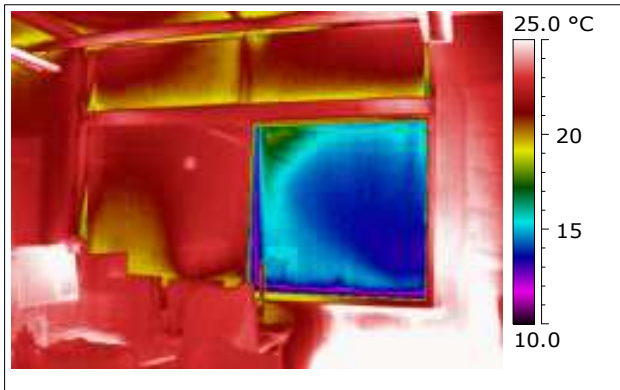
Secondary glazing installed on the motorway side of the building (lower windows only) greatly reduces air ingress into the rooms (as well as reduces noise from motorway).

Image above demonstrates improvement in thermal performance.

Image below demonstrates effects when secondary glazing is opened.



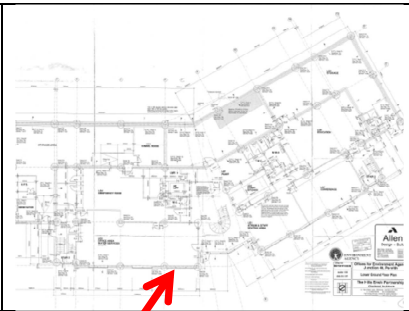
Area: Lower Ground Floor - Cornwell Breakout Room - Window



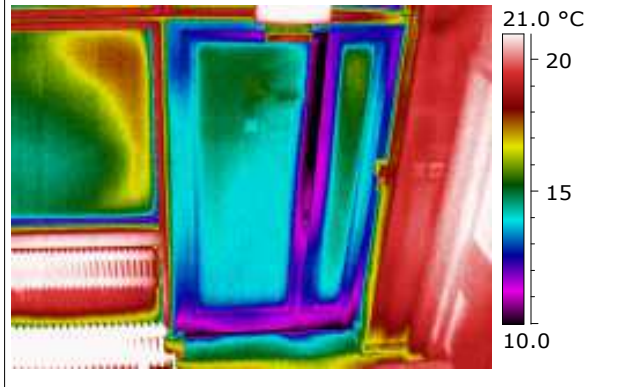
Comment:

Image provided to demonstrate the significantly improved thermal performance of the window systems with secondary glazing installed. This greatly reduces air ingress from windows.

Image above shows an open secondary glazed unit.



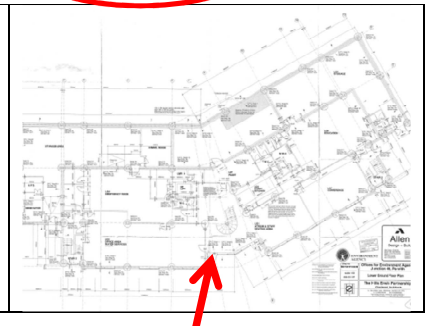
Area: Lower Ground Floor - Atrium - Rear Exit Door



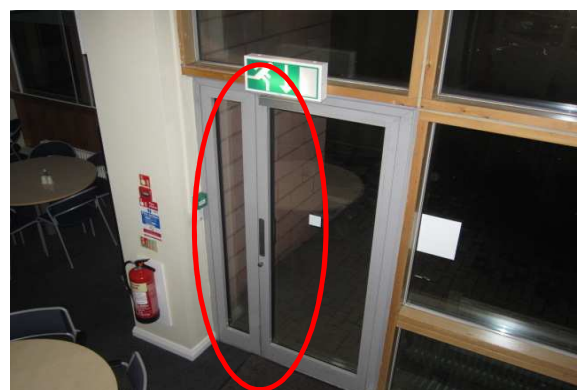
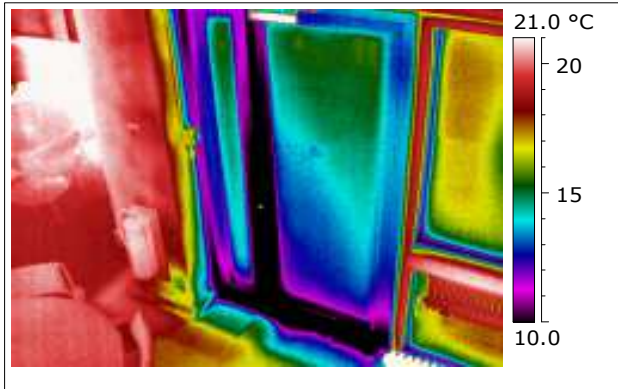
Comment:

Exit door is very poorly sealed and results in significant air ingress into the atrium area.

Draught exclusion required to reduce the cold air ingress.



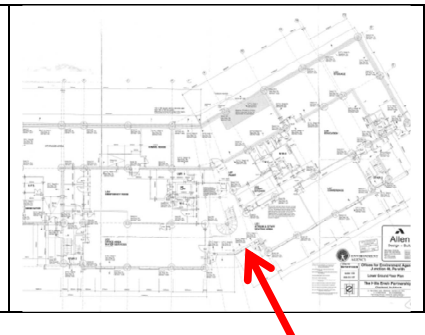
Area: Lower Ground Floor - Atrium - Rear Exit Door



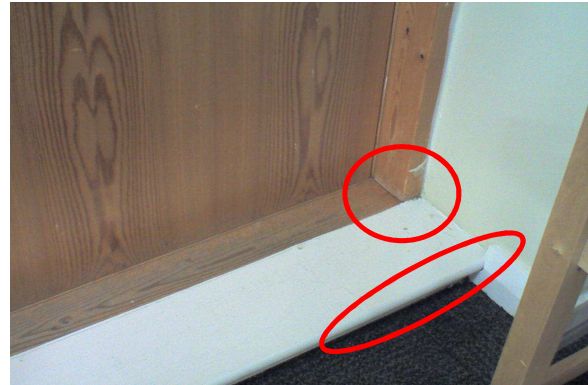
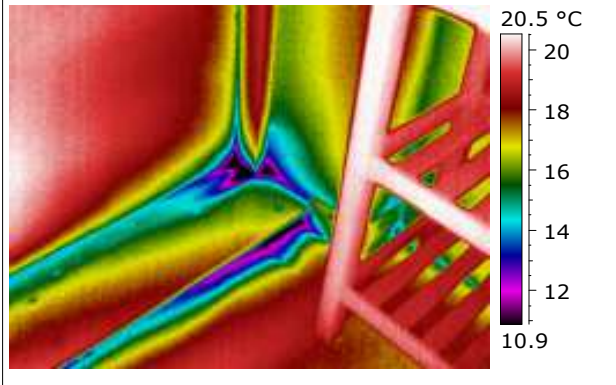
Comment:

Exit door is very poorly sealed and results in significant air ingress into the atrium area.

Draught exclusion required to reduce the cold air ingress.



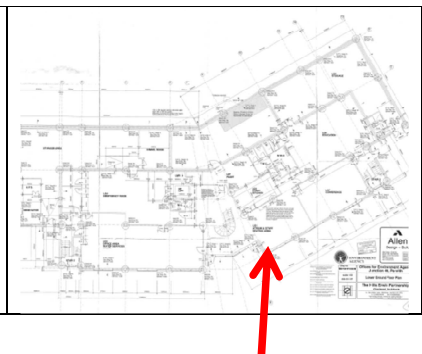
Area: Lower Ground Floor - Seating Area By Atrium



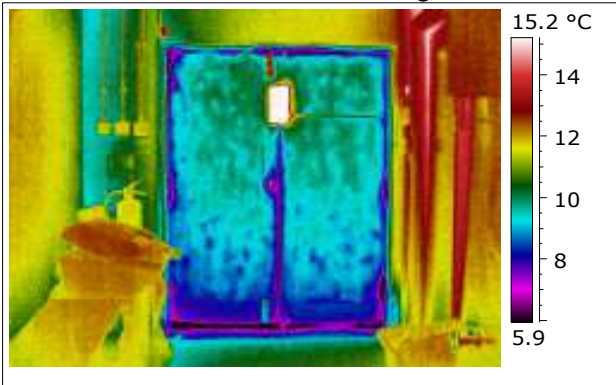
Comment:

Visible gaps in wood paneling frames allow cold air ingress to enter the area.

Suitable silicone sealant could be used to seal any gaps.

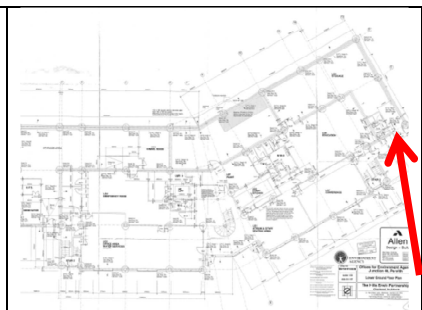


Area: Lower Ground Floor - Storage Area - Rear Doors

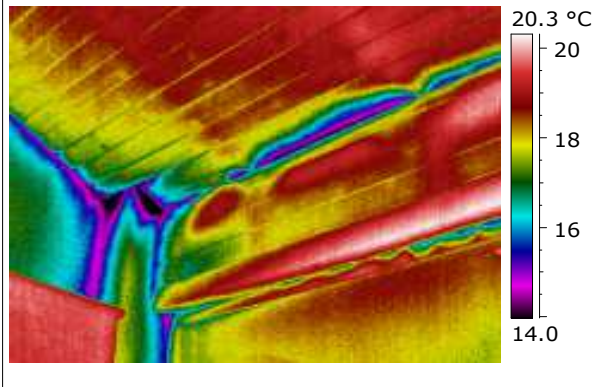


Comment:

Door is poorly sealed – better draught exclusion would reduce cold air ingress into the area.



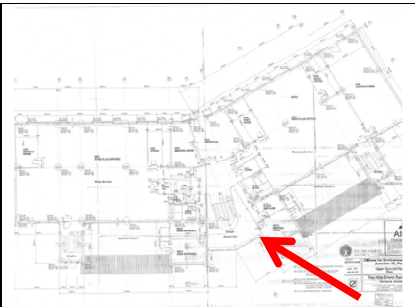
Area: Upper Ground Floor - Staff Kitchen - Ceiling



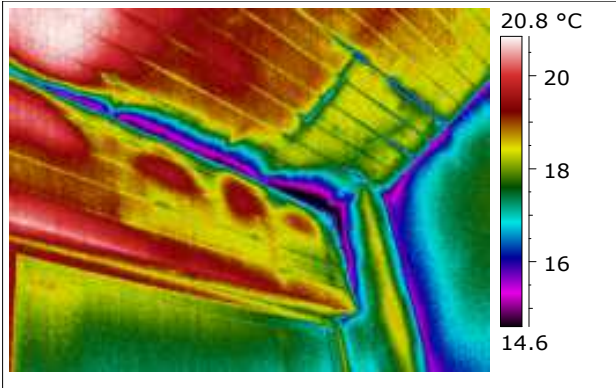
Comment:

Cold air ingress noted at ceiling level from wooden paneling.

Ingress appears to occur at the roof line of the building where the support beams penetrate the walls. External inspection and sealing of the roof overhang and roof support beams would greatly reduce cold air ingress and the resultant cooling effects.



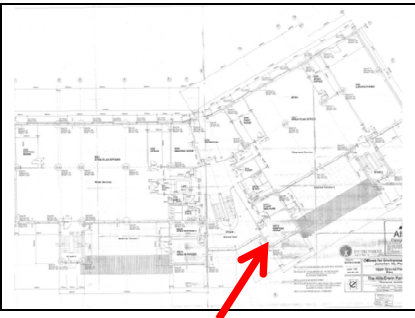
Area: Upper Ground Floor - Staff Kitchen - Ceiling



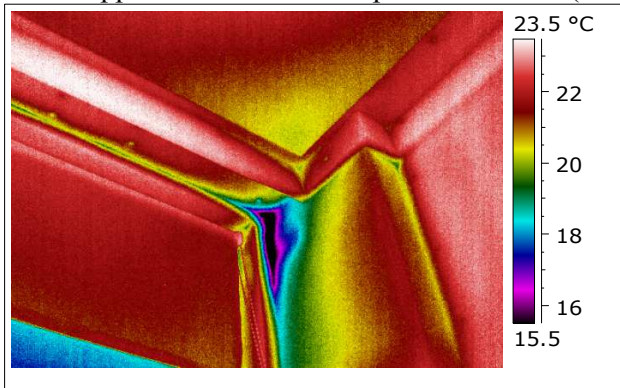
Comment:

Cold air ingress noted at ceiling level from wooden paneling.

Ingress appears to occur at the roof line of the building where the support beams penetrate the walls. External inspection and sealing of the roof overhang and roof support beams would greatly reduce cold air ingress and the resultant cooling effects.



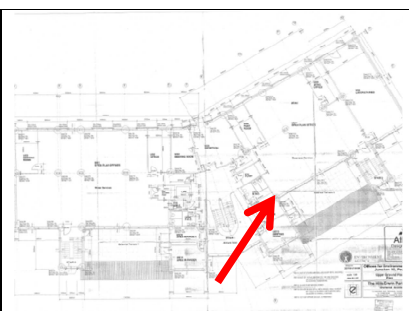
Area: Upper Ground Floor - Open Plan Office (UG7) - Window Frames



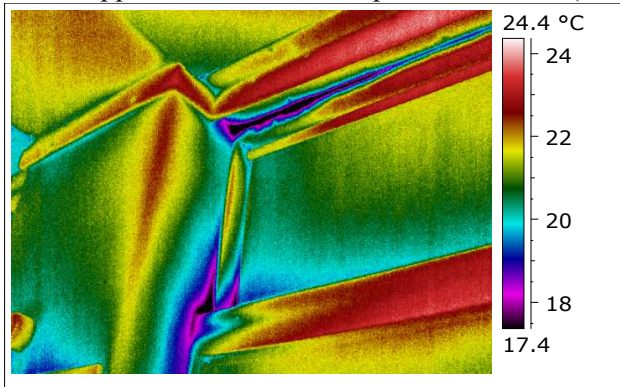
Comment:

Visible gaps around window frames allow cold air to enter the room.

Applying suitable silicone sealant around the edges of window frames will greatly reduce the cold air and the cooling effects of this air.



Area: Upper Ground Floor - Open Plan Office (UG7) - Window Frames



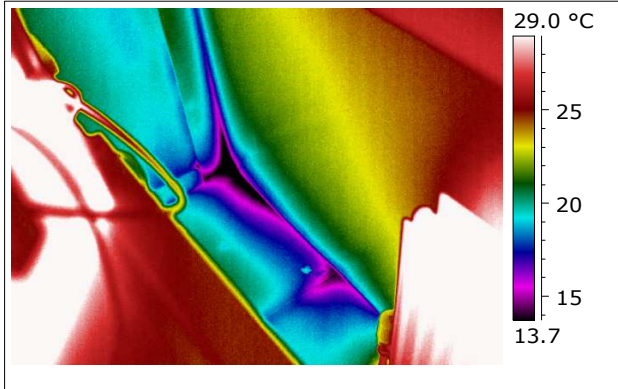
Comment:

Visible gaps around window frames allow cold air to enter the room.

Applying suitable silicone sealant around the edges of window frames will greatly reduce the cold air and the cooling effects of this air.



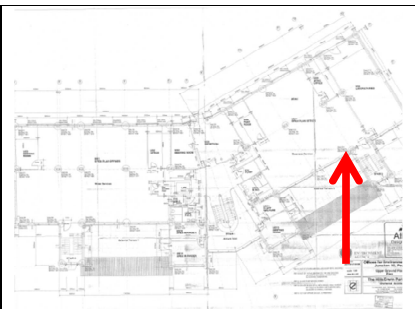
Area: Upper Ground Floor - Open Plan Office (UG7) - Wood Panelling



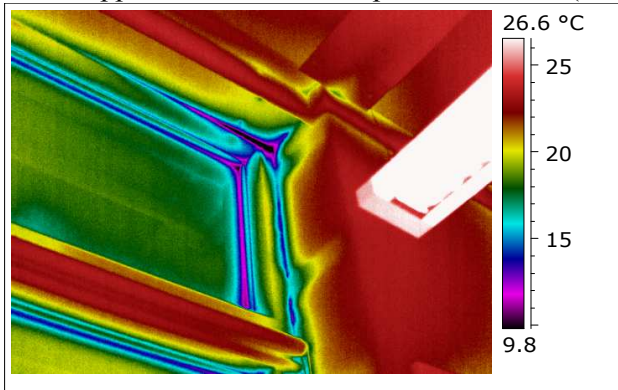
Comment:

Visible gaps in wood paneling frames allow cold air ingress to enter the area.

Suitable silicone sealant could be used to seal any gaps.



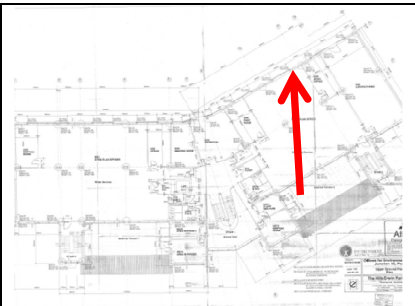
Area: Upper Ground Floor - Open Plan Office (UG7) - Window Frames



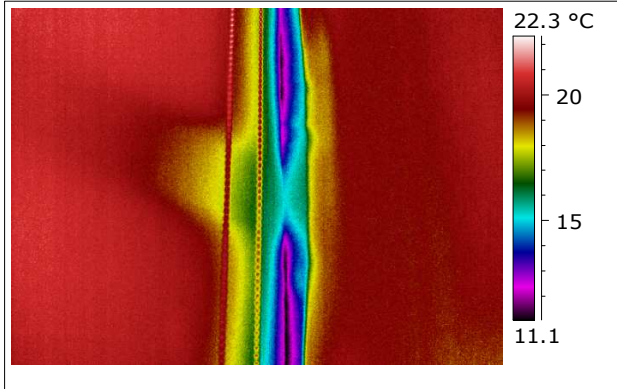
Comment:

Visible gaps around window frames allow cold air to enter the room.

Applying suitable silicone sealant around the edges of window frames will greatly reduce the cold air and the cooling effects of this air.



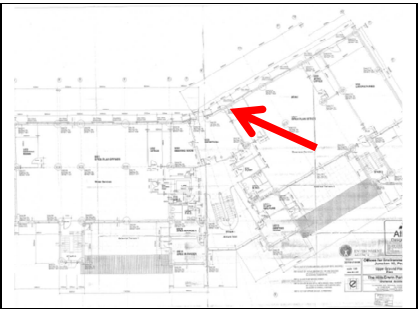
Area: Upper Ground Floor - Open Post Room - Window Frames



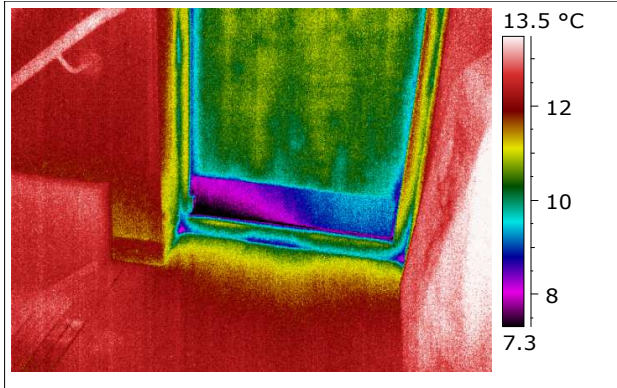
Comment:

Visible gaps in window frames allow cold air to enter room.

Suitable silicone sealant will prevent his cold air entry.



Area: Upper Ground Floor - East Stairwell - Door to Balcony

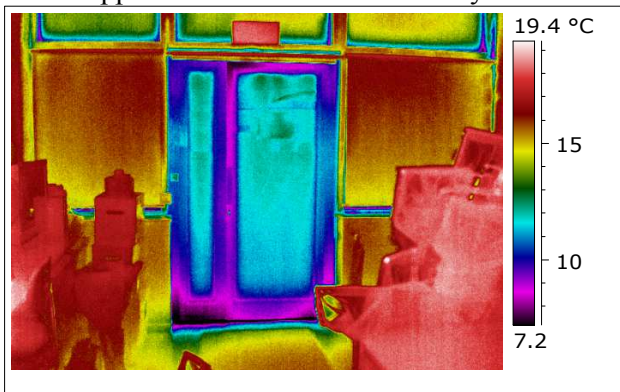


Comment:

Door is poorly sealed – better draught exclusion would reduce cold air ingress into the area.

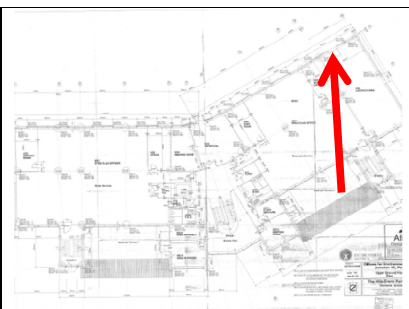


Area: Upper Ground Floor - Laboratory - Door

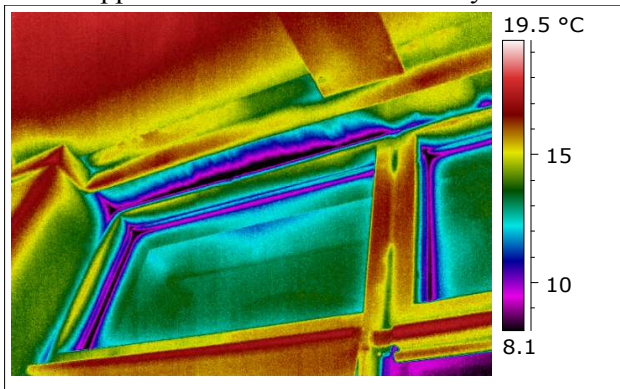


Comment:

Door is poorly sealed – better draught exclusion would reduce cold air ingress into the area.



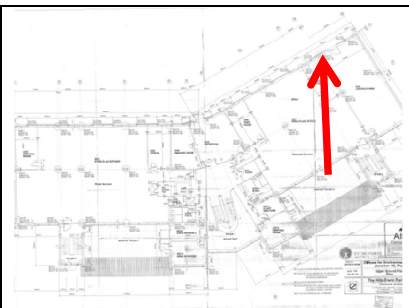
Area: Upper Ground Floor - Laboratory - Window Frames



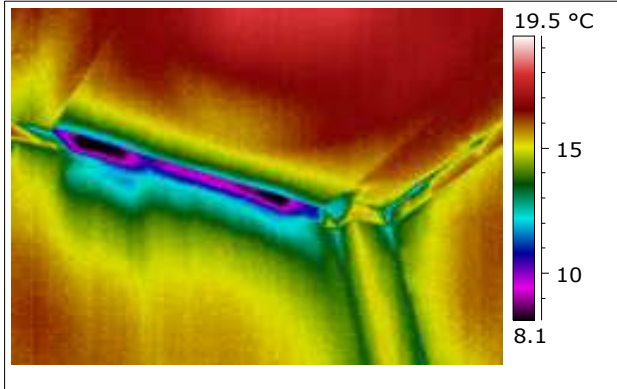
Comment:

Visible gaps around window frames allow cold air to enter the room.

Applying suitable silicone sealant around the edges of window frames will greatly reduce the cold air and the cooling effects of this air.



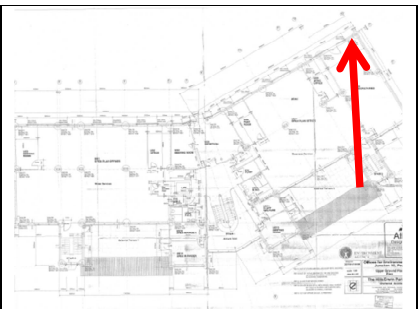
Area: Upper Ground Floor - Laboratory - Ceiling



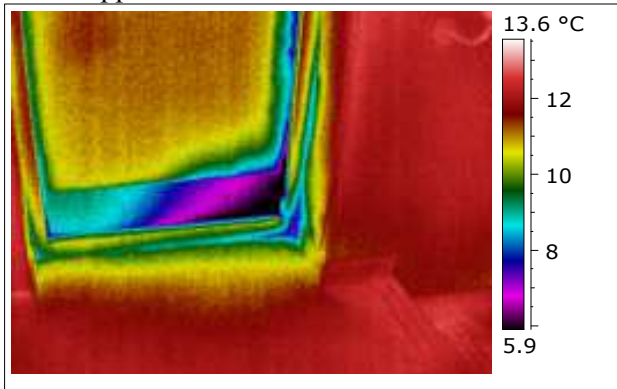
Comment:

Visible gap in ceiling allows cold air to enter.

Sealing the gap will prevent the cold air entering the room.

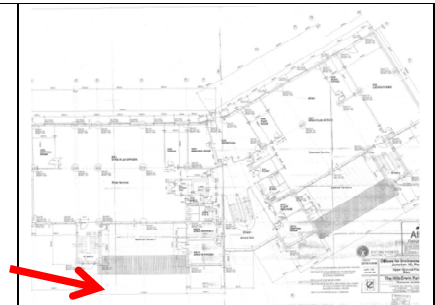


Area: Upper Ground Floor - West Stairwell - Door to Balcony

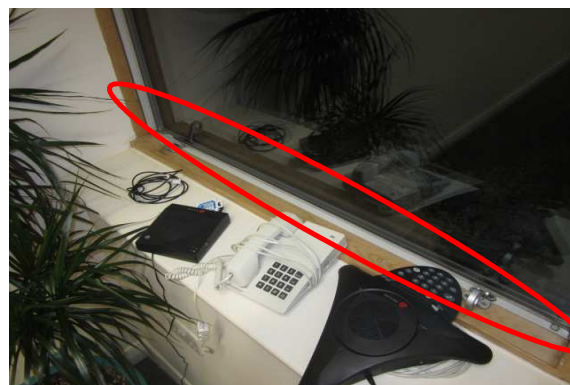
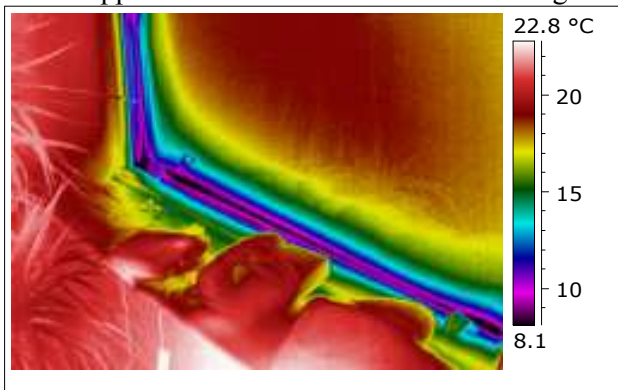


Comment:

Door is poorly sealed – better draught exclusion would reduce cold air ingress into the area.



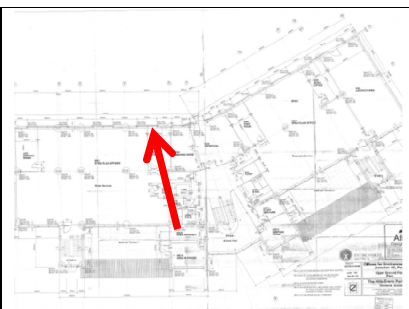
Area: Upper Ground Floor - Coniston Meeting Room - Window Frames



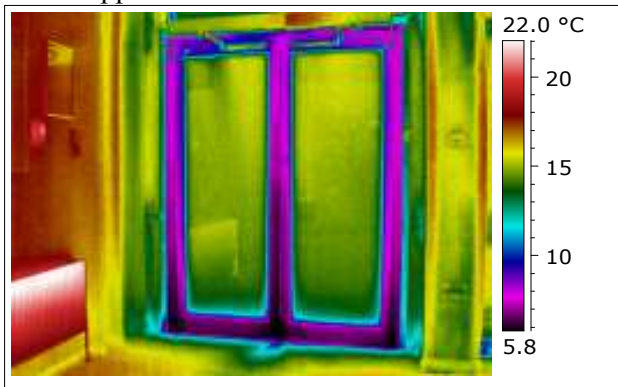
Comment:

This window is typical of all windows throughout the building and highlights that the seals do not perform particularly well and allow air to enter the room.

The secondary glazing installed on the motorway side of the building greatly reduces the cooling effects of this air ingress.

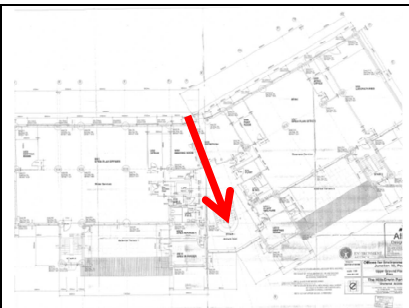


Area: Upper Ground Floor - Main Entrance Doors

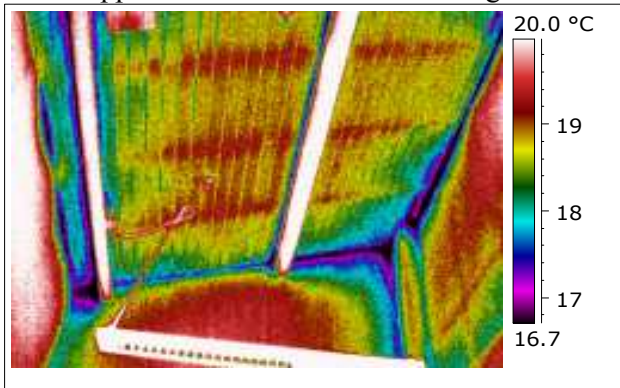


Comment:

Cold air ingress noted on main entrance doors which appear poorly sealed.



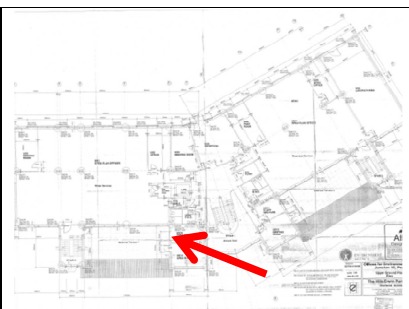
Area: Upper Ground Floor - Area Manager Office (UG15) - Ceiling



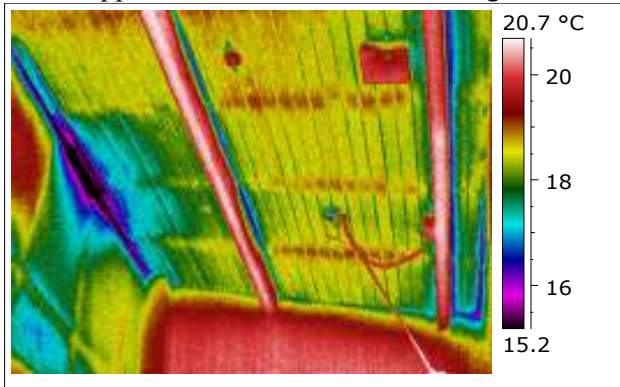
Comment:

Thermal image highlights significant cold air ingress (shown as dark colours) from the roof paneling.

Air entering the roof systems should be prevented and realistically can only be done externally by visual inspection of edge / corner details and for sealing to take place where gaps are present.



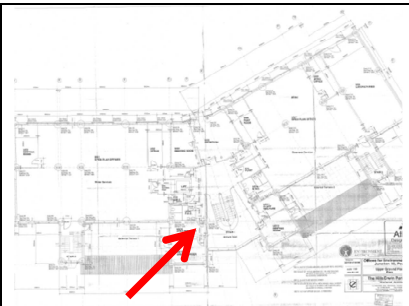
Area: Upper Ground Floor - Area Manager Office (UG15) - Ceiling



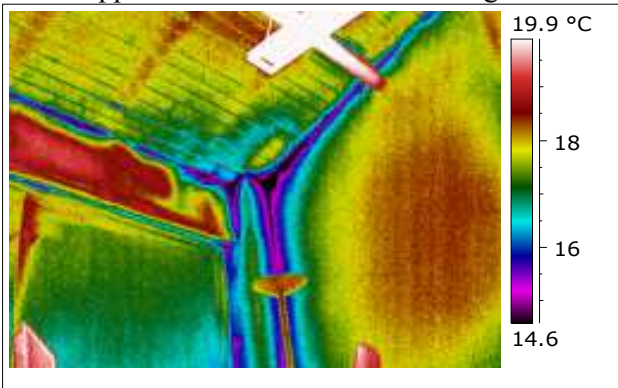
Comment:

Thermal image highlights significant cold air ingress (shown as dark colours) from the roof paneling.

Air entering the roof systems should be prevented and realistically can only be done externally by visual inspection of edge / corner details and for sealing to take place where gaps are present.



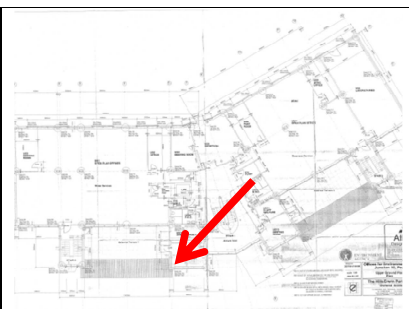
Area: Upper Ground Floor - Area Manager Office (UG14) - Ceiling



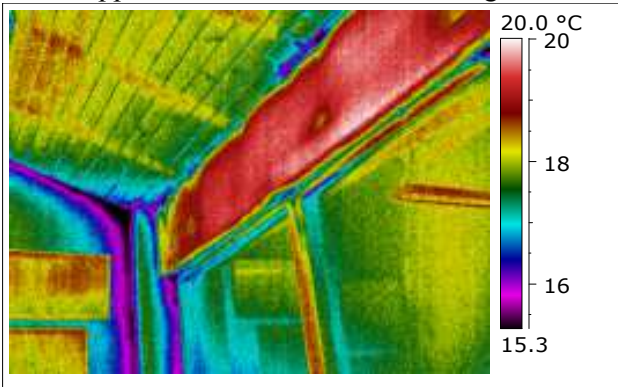
Comment:

Thermal image highlights significant cold air ingress (shown as dark colours) from the roof paneling.

Air entering the roof systems should be prevented and realistically can only be done externally by visual inspection of edge / corner details and for sealing to take place where gaps are present.



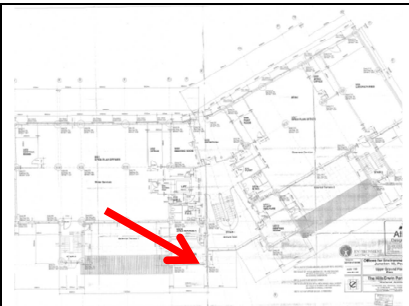
Area: Upper Ground Floor - Area Manager Office (UG14) - Ceiling



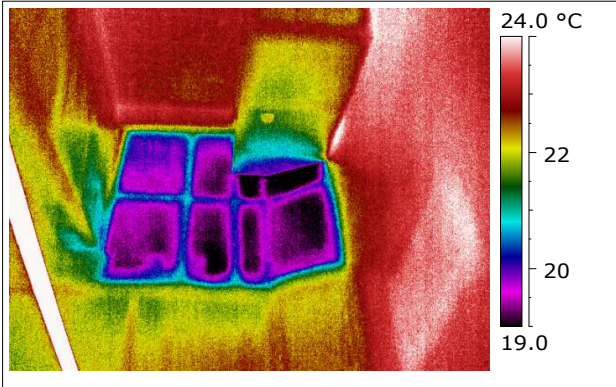
Comment:

Thermal image highlights significant cold air ingress (shown as dark colours) from the roof paneling.

Air entering the roof systems should be prevented and realistically can only be done externally by visual inspection of edge / corner details and for sealing to take place where gaps are present.

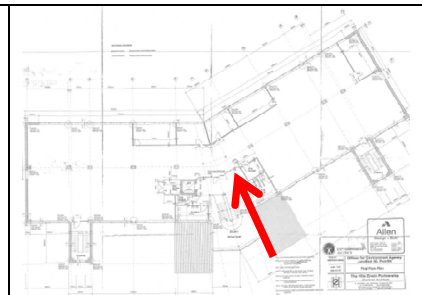


Area: First Floor - Top of Stairs - Upper Wall

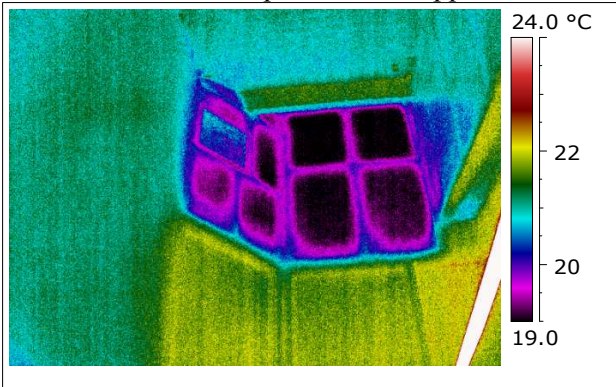


Comment:

Thermal image highlights suspected missing insulation in this section of the upper wall.

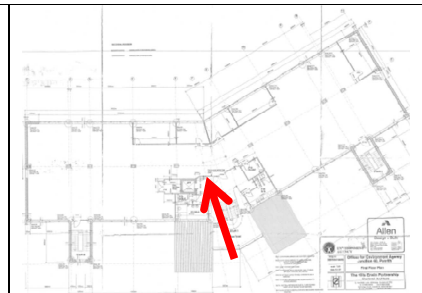


Area: First Floor - Top of Stairs - Upper Wall

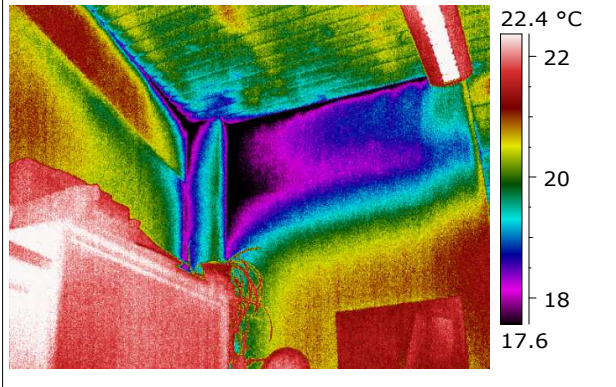


Comment:

Thermal image highlights suspected missing insulation in this section of the upper wall.



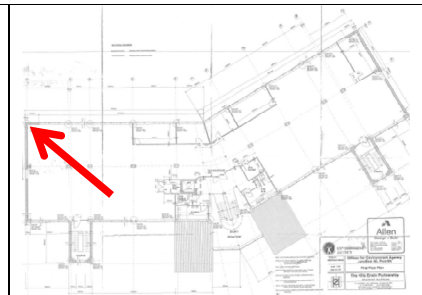
Area: First Floor - Upon Plan Office (West) - Wall / Ceiling



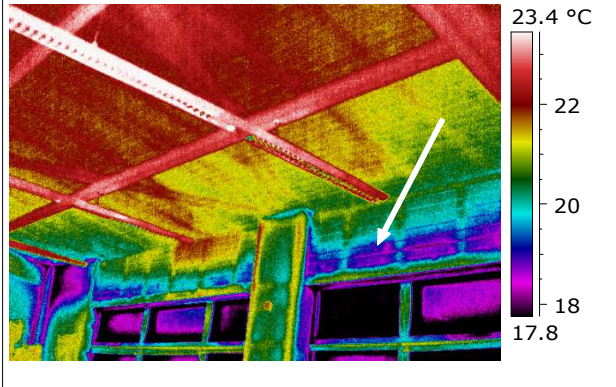
Comment:

The cool (dark) colour indicates cold air movement behind wall.

Air appears to enter via the corner detail externally which should be inspected and any gaps sealed to prevent ingress.



Area: First Floor - Upon Plan Office (West) - Window Frames

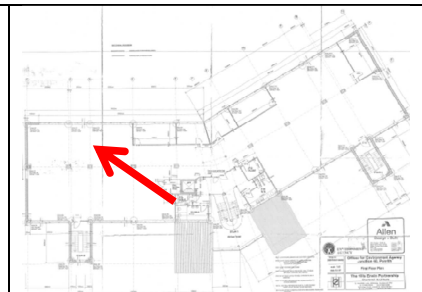


Comment:

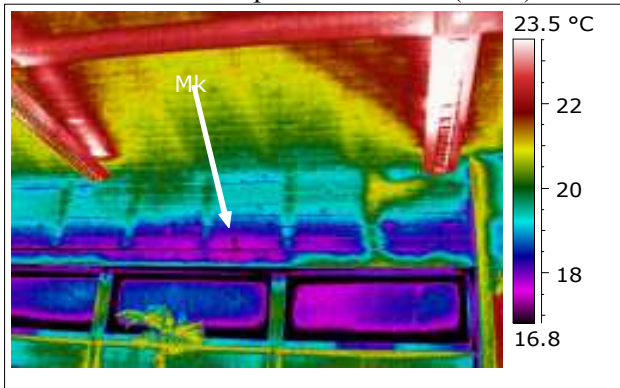
The thermal image highlights cold air ingress into wood paneling above the windows.

Air is suspected as entering via the roof support beam penetrations (see external imaging on earlier pages of this report).

Inspecting and sealing gaps outside would greatly reduce the cold air ingress and the cooling effects.



Area: First Floor - Upon Plan Office (West) - Window Frames

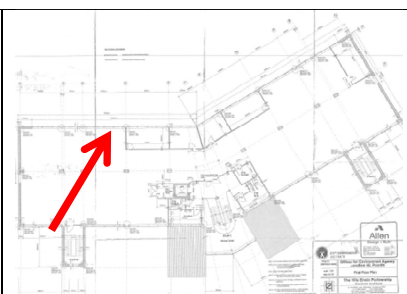


Comment:

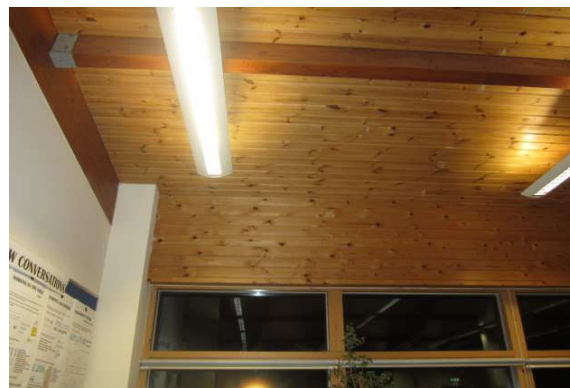
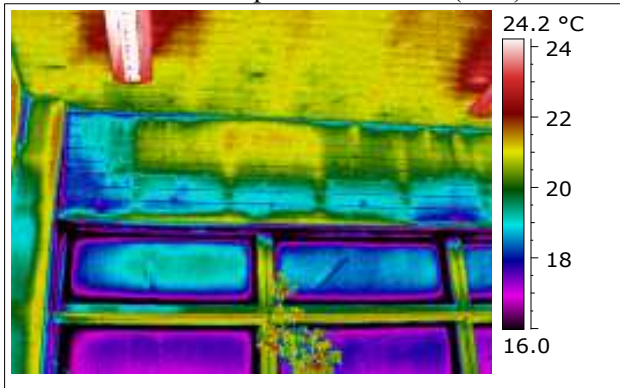
The thermal image highlights cold air ingress into wood paneling above the windows.

Air is suspected as entering via the roof support beam penetrations (see external imaging on earlier pages of this report).

Inspecting and sealing gaps outside would greatly reduce the cold air ingress and the cooling effects.



Area: First Floor - Upon Plan Office (East) - Window Frames

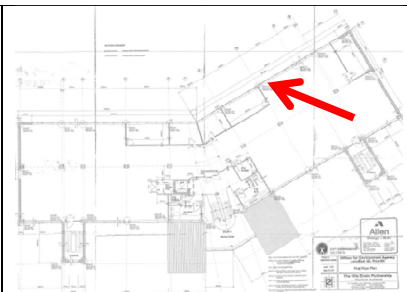


Comment:

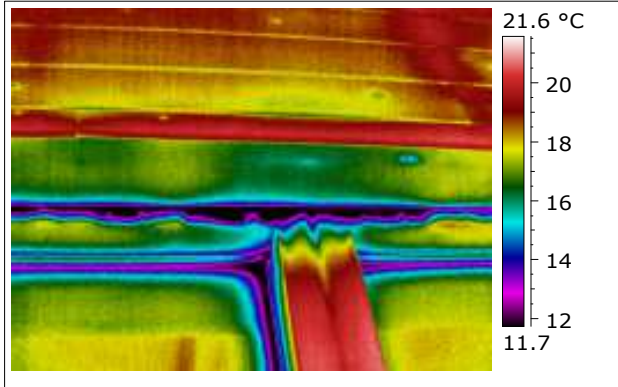
The thermal image highlights cold air ingress into wood paneling above the windows.

Air is suspected as entering via the roof support beam penetrations (see external imaging on earlier pages of this report).

Inspecting and sealing gaps outside would greatly reduce the cold air ingress and the cooling effects.



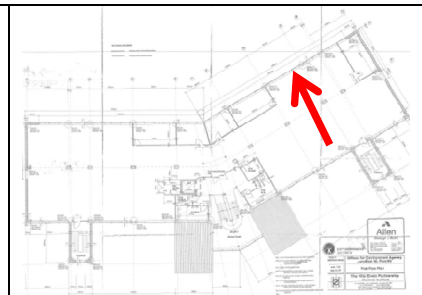
Area: First Floor - Upon Plan Office (East) - Window Frames



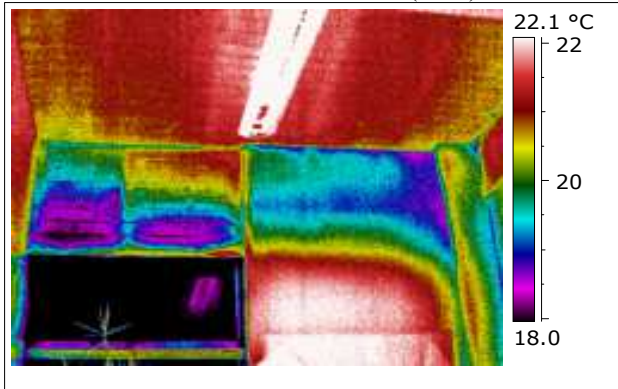
Comment:

Visible gaps around window frames allow cold air to enter the room.

Applying suitable silicone sealant around the edges of window frames will greatly reduce the cold air and the cooling effects of this air.



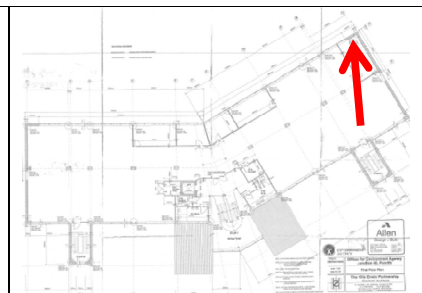
Area: First Floor - Corner Office (East) - Wall



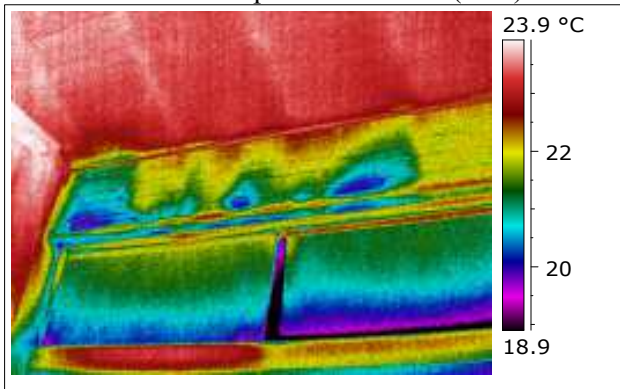
Comment:

The cool (dark) colour indicates cold air movement behind wall.

Air appears to enter via the corner detail externally which should be inspected and any gaps sealed to prevent ingress.



Area: First Floor - Upon Plan Office (East) - Window Frames

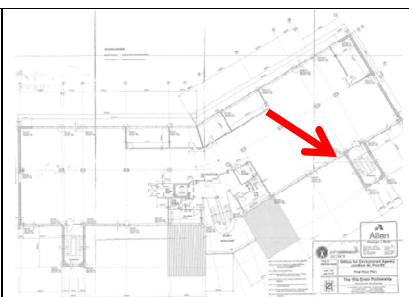


Comment:

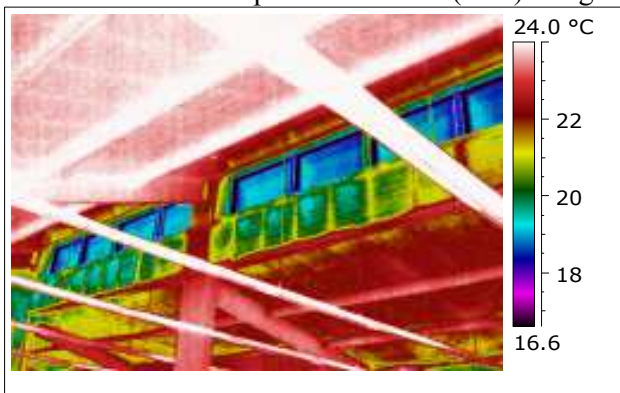
The thermal image highlights cold air ingress into wood paneling above the windows.

Air is suspected as entering via the roof support beam penetrations (see external imaging on earlier pages of this report).

Inspecting and sealing gaps outside would greatly reduce the cold air ingress and the cooling effects.



Area: First Floor - Upon Plan Office (East) - High Level Windows

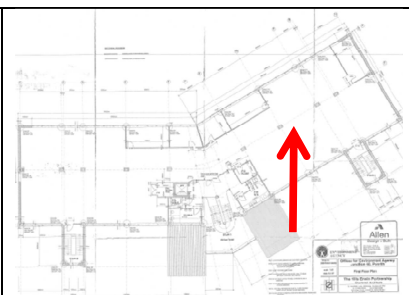


Comment:

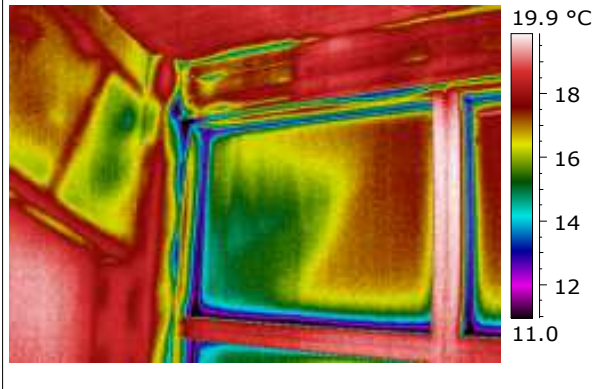
The thermal image highlights cold air movement behind the wooden high level paneling.

Air is suspected as entering the fabric of the building via gaps in the external window and cladded areas.

Visual inspection required to locate gaps which should be suitably sealed.



Area: First Floor - Atrium - Window Frame



Comment:

Visible gaps around atrium window frames allow cold air to enter the room.

Applying suitable silicone sealant around the edges of window frames will greatly reduce the cold air and the cooling effects of this air.

