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# Report Document

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**Project: 17874**

The Ramada Hatfield / Comet Hotel  
St Albans Road West  
Hatfield  
AL10 9RH

**Client:**

ISG

**Report written by:**

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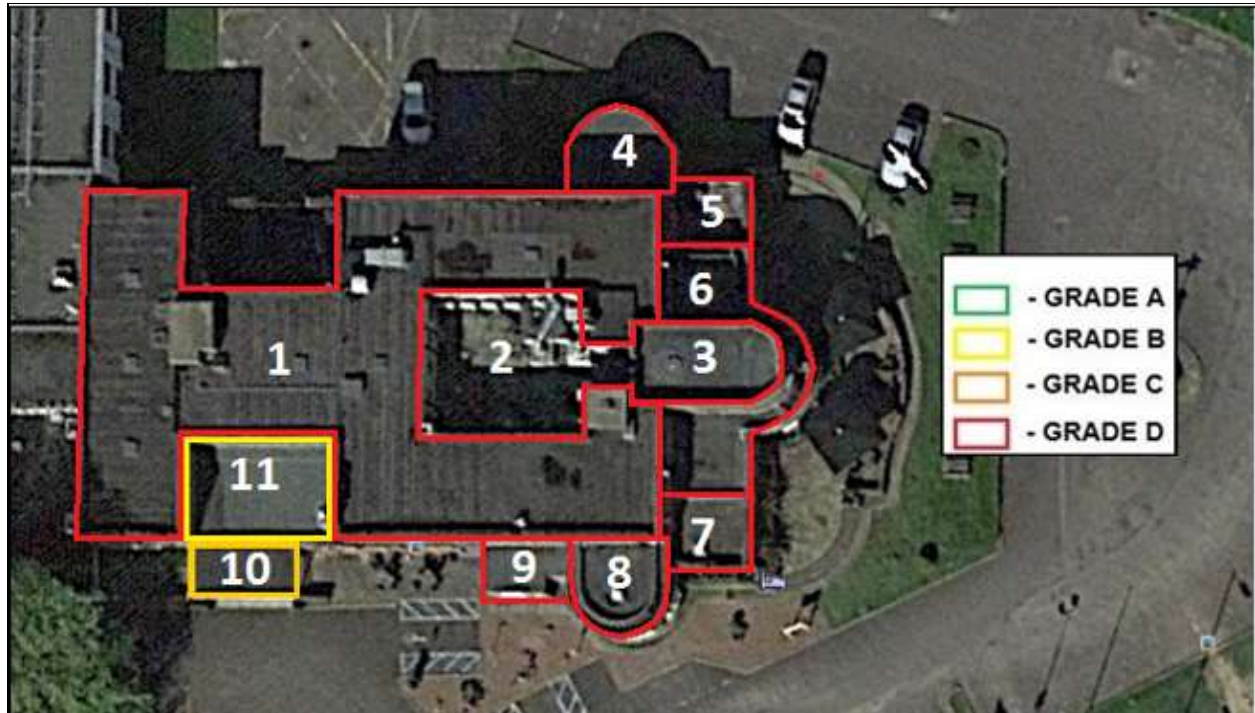
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## Roof Survey Report & Recommendations

Roof areas covered by this report: Main Roofs 1-11.



[A] - As new, no works required.

[B] - Functional: The waterproofing is performing as intended and should not require any works within 5-10 years.

[C] - Requires attention: The roof is showing signs of failure and budget should be set aside for refurbishment as soon as possible.

[D] - In need of urgent refurbishment: The roof areas should be refurbished or replaced as a matter of urgency.

### **1.0 Outline Description**

This report has been produced for ISG for the express use in the refurbishment of the designated roof areas of the property stated above. It is based on our site inspection of Ramada Hatfield on 16 November 2017 and should be read in conjunction with the enclosed photographs.

Core Samples: These are taken for guidance purposes and indicate the construction only at the sample locations/s. Condition/levels of degradation affecting the coverings are only applicable at the time of inspection. Both construction and condition may vary throughout the roof area.

## 2.0 Scope

This report is not a structural survey.

Any comments on roof structure or other building related issues in this report should not be taken to imply that its integrity has been assessed or deemed acceptable. A qualified party should verify any concerns relating to the integrity and/or capabilities of any part of the structure.

All the Langley Waterproofing Systems Ltd reports are written on the basis that the substrates, roof deck and structure are sound and durable. We cannot accept responsibility for the consequences of the latent defects in the roof deck and structure.

Listed Building Status: It is the responsibility of the building surveyor and/or client to ascertain the status of the building/s in question.

## 3.0 Existing Construction

### 3.1 Core Sample – Roofs 1, 3, 4, 5, 7

- Structural Deck - Screeded Concrete
- Waterproofing – Asphalt 25mm (Layer 1)
- Waterproofing – Asphalt 25mm (Layer 2)
- Waterproofing – 2 Layer Bituminous Felt with Cap Sheet

### 3.2 Core Sample –Roof 2

- Structural Deck - Screeded Concrete
- Waterproofing – Asphalt 25mm (Layer 1)
- Waterproofing – Asphalt 25mm (Layer 2)
- Waterproofing – 2 Layer Bituminous Felt with Cap Sheet
- Waterproofing – Liquid Overlay System

### 3.3 Core Sample – Roofs 6 & 8

- Structural Deck - Screeded Concrete
- Waterproofing – Asphalt 25mm
- Waterproofing – 2 Layer Bituminous Felt with Cap Sheet

### 3.4 Core Sample – Roof 9

- Structural Deck - Screeded Woodwool
- Waterproofing – 2 Layer Bituminous Felt with Cap Sheet

### 3.5 Core Sample – Roof 10

- Structural Deck - Plywood
- Waterproofing – 2 Layer Bituminous Felt with Cap Sheet

### 3.6 Core Sample –Roof 11

- Structural Deck - Profiled Metal Sheet
- Vapour Control Layer – Bituminous Felt
- Insulation – Rigid PUR (50mm)
- Waterproofing – 2 Layer Bituminous Felt with Cap Sheet

**Please Note:**

Roofs 1 - 5 & 7 core samples returned wet between the 2 layers of asphalt.  
Roofs 6, 8 - 11 returned dry.

## 4.0 Drainage/Falls

### 4.01 Main Roofs 1, 2, 4, 6, 8

Falls have been created within the deck. Drainage is via internal outlets.

### 4.02 Main Roofs 3, 5, 7, 9-11

Falls have been created within the deck. Drainage is via a chute to external rainwater goods.

## 5.0 Thermal Properties

U-value calculations are carried out in accordance with BS EN ISO 6946: 2007.

Condensation calculations performed in accordance with BS5250.

### 5.1 Roofs 1, 3-8

- The calculated (when dry) U-value of this roof is 4.17 W/<sup>2</sup>K.

### 5. Roof 2

- The calculated (when dry) U-value of this roof is 2.27 W/<sup>2</sup>K.

### 5.1 Roof 9

- The calculated (when dry) U-value of this roof is 1.47 W/<sup>2</sup>K.

### 5.2 Roof 10

- This area is unheated and therefore does not require thermal insulation / upgrading.

### 5.1 Roof 11

- The calculated (when dry) U-value of this roof is 0.47 W/<sup>2</sup>K.

Building Regulations – Approved Document L1B Conservation of fuel and power in existing buildings: requires that (when re-roofing), the existing roof construction must achieve the dry threshold U-value of 0.35 W/m<sup>2</sup>K or better. If the threshold value is not achieved then the roof must be thermally upgraded to meet the current required maximum U-value of 0.18 W/m<sup>2</sup>K.

## 6.0 Roof Observations and Defects

### 6.01 Roofs 1 - 8

- The roof coverings have been overlaid multiple times, the original asphalt covering was overlaid with another layer of asphalt and then a bituminous felt system (Roof 2 had an additional liquid overlay system installed). The multiple overlay systems indicate a history of ingress.
- Moisture was detected between the 2 layers of asphalt and the rooms below are displaying water marks caused by ingress.
- The bituminous felt waterproofing has lost its surface protection and will be susceptible to further deterioration through UV exposure.
- There is significant ponding water and moss growth indicating issues with the falls.
- There roof covering has reached the end of its lifespan with significant crazing and blisters forming in the roof covering.
- Internal parapet walls have been removed from roofs 4 & 6.
- There appears to be a lot of redundant and ineffectively weathered plant. Redundant plant will need to be removed and retained / new plant incorporated into the new roof covering.
- There is no insulation present and the roof does not achieve the threshold U-value of 0.35 W/m<sup>2</sup>K required by the current Building Regulations.
- The cement mortar has cracked to the perimeter coping stones.
- The asphalt upstands have come away from the parapet wall and will be contributing to ingress.
- The felt membrane has been subject to shrinkage which will be susceptible to ingress.
- Roof 6 has low-lying door thresholds that have been subject to water ingress.

#### 6.02 Roof 9

- Due to restriction there was no access to this roof.
- Woodwool slab was visible from beneath and felt covering was visible from the ground.

#### 6.03 Roof 10

- Canopy roof to the Entrance, the covering looks adequate but the external cladding is failing which will lead to ingress.
- Falls are created within the deck towards an integral gutter that runs along the parapet wall.
- Internal outlet discharges into external rainwater goods.

#### 6.04 Roof 11

- Corrugated metal deck with an insulated 3-layer RBM system.
- The roof covering appears to be in an adequate condition.
- Roof 11 discharges onto roof 10 via a chute.



## 7.0 Photographic Record



**Photograph No. 1**

Overview Roof 1 – Significant ponding water suggests issues within the deck and with drainage.



**Photograph No. 2**

Roof 1 – Moisture detected between the two asphalt coverings.



**Photograph No. 3**

Failed upstands have pulled away from the parapet allowing water to track inside.



**Photograph No. 4**

Roof 1 – Moss growth and crazing effect within the roof covering.





**Photograph No. 5**

Roof 2 – Standing water and significant moss growth indicate issues with drainage and falls.

Kerbs are visible to old plant/rooflight openings, these will make it hard to insulate the roof and consideration should be taken to removing / restoring them.



**Photograph No. 6**

Roof 2 Moisture detected between the two asphalt coverings.



**Photograph No.7**

Plant rooms and ducting covering the roof.

All redundant plant should be removed and existing kerbs / housing encapsulated into the new roof system.



**Photograph No. 8**

Roof 3 Overview – Moisture detected between the asphalt layers.

Parapet walls and coping stones require attention.

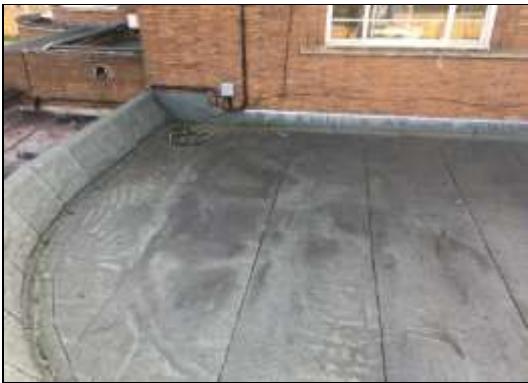


**Photograph No. 9**

Roof 3 - Drainage is towards a chute which discharges into external rainwater goods.

Access to the roof is via a staircase.

Like all of roofs 1-8 no cover flashing is present and the upstand has pulled away from the wall.



**Photograph No. 10**

Roof 4 - Internal parapet wall has been removed but still visible through the roof covering.

Significant crazing / blistering has formed in the covering indicating ongoing issues with ingress.



**Photograph No. 11**

The asphalt covering has receded exposing the parapet substrate beneath. This will be contributing to ingress.



**Photograph No. 12**

Roof 6 – South section has had the inner parapet wall removed. Internal outlet discharges onto roof 7.



**Photograph No. 13**

Roof 6 - Curved section of roof joining the 2 main areas together. Wires have been fixed through the felt covering. The asphalt covering has receded on the drip edge with moss growing in the void.



**Photograph No.14**

Roof 6 – curved section continued, north side has the parapet wall in place. Low door thresholds to both sides are only just above the roof level and display signs of ingress, consideration should be given to raising the door thresholds.



**Photograph No. 15**

Roof 8 – Internal parapet detail is still in place. Crazing and blisters have formed in the asphalt covering.



**Photograph No. 16**

Roof 8 - Large area of standing water to the perimeter section indicating issues with falls and drainage.





**Photograph No. 17**

Roof 9 – Felt covering visible from the ground and woodwool deck visible from beneath.



**Photograph No. 18**

Roof 9 – drains into an integral gutter which discharges into external rainwater goods.



**Photograph No. 19**

Roof 10 – 3 layer insulated felt covering on a metal profile deck. Roofs appears to be in an adequate condition.



**Photograph No. 20**

Parapet wall to the edge with a chute which discharges onto roof 11. Detritus is blocking the outlet and preventing drainage.



**Photograph No.21**

Roof 11 – Entrance canopy, 2 layer felt system on a plywood deck.

Covering appears to be adequate but the cladding is failing and requires attention.

## 8.0 Summary

The asphalt roof coverings have been overlaid multiple times with moisture detected between the systems. Ingress is visible from the inside indicating the roof coverings have reached the end of their serviceable life.

There is no insulation within the build-up which will result in increased energy bills. To comply with building regulations the roof should be thermally upgraded to achieve 0.18 W/<sup>2</sup>K.

## 9.0 Recommendations

### 9.01 Roofs 1 - 8

- We recommend stripping back the existing system to the 1<sup>st</sup> layer of asphalt and installing a bituminous membrane system.
- We recommend installing the Langley TA-20-W system including bituminous vapour barrier, tapered insulation (to achieve the required U-value 0.18 W/<sup>2</sup>K) with underlay and mineral cap sheet.
- Given the large areas of standing water and deflections in the deck we recommend a tapered insulations scheme to assist with drainage. Flatboard insulation is an option but the roof will have significant areas of standing water.
- All outlets openings should be increased where necessary.
- Langley Paraflash flashing system should be installed to all perimeter upstands.
- All plant / wires / pipes should be temporarily removed to facilitate the works. All redundant plant should be removed.
- All penetrations should be extended to allow the minimum 150mm upstand from the finished roof surface.
- All drip details should be formed of a welted drip or with lead. **Please note:** The contractor / MC should seek guidance on which detail is most suitable as the building is listed.

### 9.02 Roof 9

- We recommend overlaying the existing system and installing the Langley TA-20-W system including bituminous vapour barrier, flatboard insulation (to achieve the required U-value 0.18 W/<sup>2</sup>K) with underlay and mineral cap sheet.
- The roof does not have any thermal properties and it should be brought back up to current standards to comply with Building Regulations.
- Langley Paraflash flashing system should be installed to all perimeter upstands.
- All drip details should be formed of a welted drip or with lead.  
**Please note:** The contractor / MC should seek guidance on which detail is most suitable as the building is listed. The fascia will need to be adapted to account for the new raised roof level.

### 9.03 Roof 10

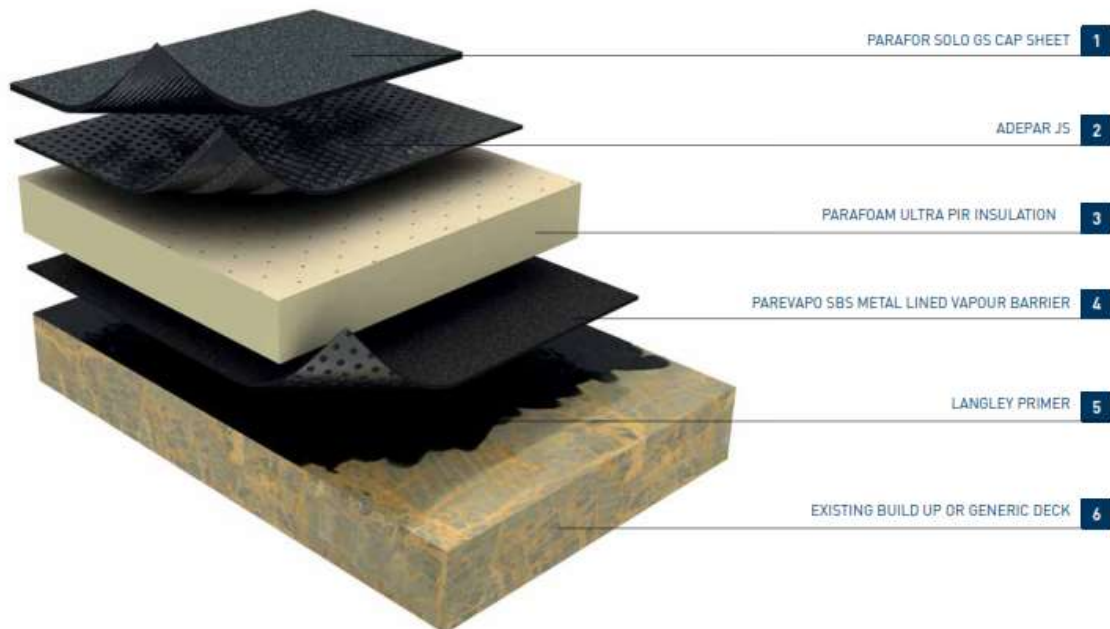
- The existing roof covering is over and entrance canopy and appears to be in an adequate condition.
- The cladding to the perimeter has failed and requires attention.
- If the client wished to have all roofs under a Langley Guarantee then the roof should receive the Langley TA-20-C 2-layer system comprising of a bituminous underlay membrane and mineralised cap sheet.

### 9.04 Roof 11

- The existing roof covering appears to be in an adequate condition, however, the current levels of insulation found in the build-up do not meet the requirements of current Building Regulations and consideration should be given to increasing the thermal value.
- If the client wishes to thermally upgrade the roof area, we would recommend installing the Langley TA-20-W system including bituminous vapour barrier, 90mm flatboard insulation (to achieve the required U-value 0.18 W/<sup>2</sup>K) with underlay and mineral cap sheet.



## 10.0 Example of Proposed System



### Langley Waterproofing Systems Ltd Guarantee

All the specified systems come with Langley Waterproofing Systems Ltd, unique single premium, independent insurance-backed guarantee. The premium is pre-paid, in full, for the guarantee period stated in the specification and covers the following:

- **Materials**
- **Labour**
- **System Design**
- **Consequential Loss**

In addition:

- **The guarantee is transferable between building owners.**
- **Cover increases in line with an approved construction price index.**
- **Each project is covered for the full value of reinstatement of materials including installation.**
- **Insurance cover automatically reverts to the building owner should Langley and the roofing contractor fail to rectify defects for whatever reason.**

## **Langley Waterproofing Technical Support**

The project/works will also be monitored by a Langley Technical Manager on a weekly basis, who will provide a written report on the progress and any issues arising. This monitoring service is provided to ensure full compliance with the specification and to approve the completed works for guarantee purposes and includes:

- **A detailed final inspection highlighting any snagging items.**
- **A joint 6 or 12 month defects inspection**

## **Appendices**

- **Glossary of Terms**
- **Bibliography**

## GLOSSARY OF TERMS

A/C units	Air conditioning plant.
ACM	Asbestos Containing Material.
Attachment layer fixed/nailed)	An underlay used to isolate the new system from the substrate (usually mechanically.
Bundling	Internal waterproofing creating a 'tank' to contain potential leaks from water tanks.
BUR	Built-up felt roofing.
Cap sheet	Top layer of a built-up membrane system.
Cat ladder	Fixed (vertical) access ladder.
Cold roof	Roof structure designed with the insulation on the warm side (inside) of the roof deck.
Composite deck	A hybrid structural deck of rigid foam insulation with a factory bonded plywood top.
Cut-to-falls insulation	Insulation boards manufactured with a built-in fall.
Dew point (condensate).	Temperature at which moisture laden air releases the moisture as liquid water.
Free-draining edge	Roof perimeter that allows water to drain over, usually to an external gutter.
Free-standing	Not affixed to or through the structure.
Granule finish	Factory applied protective layer of fine granules to cap sheet.
Hard edge	A timber batten installed at exposed edges of insulation as a support to prevent damage to the insulation.
Hybrid deck	A structural deck that is also an insulant.
Inverted roof	A warm roof structure designed with the insulation placed over the waterproofing system.
LMR	Lift Motor Room.
Mushroom vent	Roof penetration used as a pressure release to the substrate.
OSB	Oriented Strand board.
Partial bonding layer	See venting layer.
Pour & Roll	Method of bonding of bituminous membranes using hot bitumen.
PIR	Rigid polyisocyanurate.
Protected membrane roof	See Inverted Roof.
PUR	Rigid polyurethane.
RWO	Rain water outlet.
Refurbidrain	A purpose made rainwater outlet designed to fit inside an existing outlet.
Sandwich construction	A warm roof configuration, where the insulation is sandwiched between a vapour control layer and the waterproofing.
Scupper	Low level over-flow outlet from a bunded area such as a tank room etc.
Stramit	Trade name for a 'hybrid' supporting deck of compressed straw board.
SVP	Soil vent pipe.
SBS	Styrene-Butadiene-Styrene.
Tapered insulation	Insulation boards manufactured with a built-in fall.
Temperature gradient	The path of temperature change through a (roof) structure from inside to outside, plotted on a graph.
Timber deck	Either close boarding or tongue and grooved boards. (Not panelled material such as plywood, OSB board etc).
Torching	Method of bonding of bituminous membranes using propane gas torches.
Vapour barrier	See Vapour Control Layer. Bituminous membrane designed to prevent the passage of moisture laden air. Usually with an aluminium core.
Vapour check	See Vapour Control Layer. Bituminous membrane designed to restrict the passage of moisture laden air.
Vapour control layer	Underlay used below insulation to control the passage of moisture laden air.
Vapour barrier	See Vapour Control Layer. Bituminous membrane designed to prevent the passage of moisture laden air. Usually with an aluminium core.
Venting layer	Bituminous felt underlay with regular holes at predetermined centres to allow partial bonding of membranes on certain types of substrate.
Underlay	Interim layer of a multi-layer built-up membrane system.
Upside-down roof	See Inverted roof.
WBP	Water and Boil Proof (plywood).
Warm roof	Roof structure designed with the insulation on the cold side (outside) of the roof deck.
Welded drip	Felt membrane edge detail.
Woodwool slab	Hybrid structural deck of cement coated wood shavings.

## **BIBLIOGRAPHY**

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BS 6399 - 2: 1997	Loadings for Buildings. Code of Practice for Wind Loads.
BS 8217 : 2005	Code of Practice for Built-up Felt Roofing.
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BS 3837 – 2: 1990 (2002)	Expanded polystyrene boards. Specification for extruded boards.
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BS 1105: 1981 (1994)	Specification for woodwool cement slabs up to 125mm thick.
BS 8281: 1998	Code of practice for mastic asphalt roofing.
BS EN 795: 1997	Protection against falls from height. Anchor devices. Requirements and testing.