Report Document – No. 52874

PROJECT NAME: **Great Cliff- Dawlish**

Project Address:
Great Cliff
Marine Parade
Dawlish
Devon
EX7 9EX

Client Details: Great Cliff (Dawlish) Ltd.

Report written by:

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Roof Survey Report & Recommendations

Roof area covered by this report: Roof 01, Roof 02, Roof 03

Key:
[A4] - As new, no works required.
[B3] - Functional: The waterproofing is performing as intended and should not require any works within 5-15 years.
[C2] - Requires attention: The roof is showing signs of failure and budget should be set aside for refurbishment as soon as possible.
[D1] - In need of urgent refurbishment: The roof areas should be refurbished or replaced as a matter of urgency.

1. Outline Description

This report has been produced for Great Cliff (Dawlish) Ltd 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 Great Cliff, Marine Parade, Dawlish, Devon, EX7 9EX and should be read in conjunction with the enclosed photographs.

2. Scope of Report

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. Roofs

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

3.1. Roof 01

Weather at time of survey: Sunny

Core Sample Information

ID	Feature	Condition	Thickness
1	Deck - Plywood	Dry	18 mm
	Waterproofing - EPDM	N/A	N/A

Thermal Performance & Conformance to the Building Regulations

We have completed thermal calculations to determine the existing roof system's thermal performance (U-value).

Based on the information obtained during our survey, our calculations suggest the roof has a U-value of 3.94 W/m²K.

The latest edition of Approved Document L (ADL), which details requirements for thermal performance under the Building Regulations, confirms the following:

The roof refurbishment of a dwelling (a self-contained unit designed to accommodate a single household) should achieve a U-value of 0.16 W/m²K. To avoid the risk of condensation, the absolute minimum U-value at any point can be no greater than 0.35 W/m²K.

As there is a need to strip the existing roof to the basic structural components (e.g., the structural roof deck or the rafters), the refurbishment is now classified as a renovation of a thermal element under

ADL. To comply with the Building Regulations, you must upgrade the insulation to the whole area unless:

a. Less than 50% of the roof area is refurbished or,
b. No more than 25% of the external building envelope is being renovated.

Roof Defects and Design Considerations

Roof Surface

Roof Surface Condition:

- The roof surface appears to be in a poor condition.

Comment:

- This roof is the main roof area of the building. The high points appear to be in the centre, with falls directing water towards both the front and rear of the building, where it drains via the mansard slate roof and exits through the external gutters. There are parapet walls at both ends of the building, capped with coping stones. The waterproofing assembly comprises of a plywood deck overlaid with a rubber/EPDM membrane. The field area includes sixteen vents, and there is a total of eight rooflights- four large and four small.
- Blisters within the existing waterproofing system strongly suggest that there may be design issues relating to interstitial condensation. Another possible explanation is that water vapour was trapped during construction, or water has found its way into the roof system during the service life of the roof.
- The presence of organic material and staining may indicate that the roof has not been draining as designed. The accumulation of organic matter can obstruct the flow of water to the gutters, leading to ponding, which accelerates membrane wear and increases the risk of leaks, particularly at seams or penetrations. If the organic matter is not removed, the service life of the roof is likely to be reduced.
- Bird droppings (Guano) present a risk to health and should be removed by a specialist. Rotting organic matter is likely to adversely affect the service life of the roof due to the high acid content that can weaken adhesives and slowly degrade the membrane if left in place.
- There is physical damage to the existing roof waterproofing system, there is a hole in the EPDM leaving the timber substrate open to the elements. It is highly likely that rainwater will ingress into the roof system or building.
- Localised repairs have been made using an EPDM membrane. Repairs to this area suggest an on-going or historical issue at this location.




Repairs

Upon inspection, we identified that localised repairs have been undertaken using an EPDM membrane. Patch repairs suggest a historical issue at this location and patch repairs can create an uneven surface that traps water, leading to ponding and further damage to the membrane.


Falls

Roof Slope: Falls (Deck)
Standing Water: No areas of ponding (standing water) were identified during our survey.
Comment: All available evidence at the time of our survey suggests that the roof slope (fall) complies with the current standards BS 6229:2018.

Rainwater Goods

Subject: Draining edge without an external gutter
Comment: The draining edge is located at the front and rear of the building, where water drains via the mansard roof. The draining edge appears to be in poor condition. The circled area highlights a patch repair to this detail, which suggests a previous issue with water ingress. The presence of living organic material and staining may indicate that water is not being removed as intended. All organic matter should be cleared to prevent further drainage issues and potential damage to the roofing system.

Details

Detail: Roof Vent
Location: Field area
Condition: Poor
Comment: There are sixteen roof vents in this area. The detailing around these vents appears to be in average condition; however, all sixteen vents are missing the required jubilee clips. To prevent exposure to environmental elements, it is essential that each vent is fitted with a weatherproofing collar securely fastened with a jubilee clip. This configuration ensures a watertight seal and helps maintain the structural integrity of the roofing system. Additionally, there is evidence of staining, organic material, and guano present. If not removed, these contaminants are likely to reduce the service life of the roof.




Detail: Boiler Flue (suspected)
Location: Field area
Condition: Average
Comment: There are four suspected boiler flues on this roof area, two each end of the building. These flues are beginning to show rust/corrosion. Rust weakens the integrity of the metal, creating

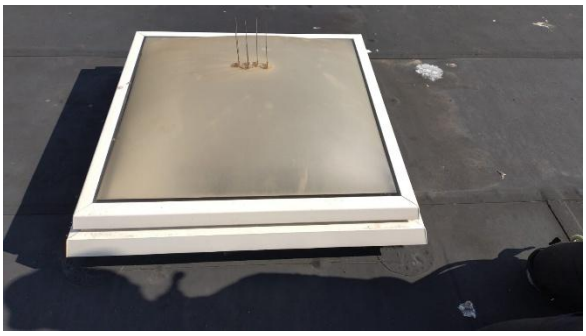
potential gaps or holes. If not addressed the boiler flue would be more vulnerable to damage from weather, wind, or water ingress.

Detail: Mansard edge
Location: Mansard
Condition: Average
Comment: The mansard edge runs the length of the front and the rear of the roof area. The lead to this detail appears to be in average condition. The growth of moss, algae, or lichen on the lead or can hold moisture against the materials, promoting corrosion of the lead. Regular cleaning of the lead is essential to prevent biological growth that could cause long-term damage. A patch repair using EPDM membrane has been used on the waterproofing of this detail. This could suggest there have been water ingress issues in this area.

Detail: Parapet kerb with coping stone
Location: Perimeter edge
Condition: Average
Comment: The parapet kerbs are located each end of the building, one on each perimeter and a little detail situated alongside the mansard roof. Organic material/Lichen is present on both the abutment and the coping stones to this detail. Unless removed Lichen accelerated the degradation of the mortar joints by penetrating the surface, and the moisture retained in the moss undergoes freeze-thaw cycles which further compromises the integrity of the waterproofing. The parapet detail currently sits below the 150mm upstand heigh required by BSS6229:2018. This will need to be raised to achieve 150mm above the finished surface level with the introduction of insulation.


Rooflights

Subject: Polycarbonate
Access Hatch: N/A
Condition: The rooflight is in a poor condition.
Comment: There are eight rooflights in this roof area. All eight units provide poor light transmission into the building and the glazing has been damaged by the effects of UV radiation, leading to discolouration of the unit. These may need to be replaced to ensure internal light levels are maintained.

Rooftop Plant

Subject: TV ariels
Comment: There is one aerial located on the parapet wall neighbouring Roof 02. The aerial appears to be in average condition and should be temporarily decommissioned during the works. It can be reinstated upon completion, if required.

3.2. Roof 02

Weather at time of survey: Dry

Core Sample Information (Assumed)

It was not possible to undertake a core sample at the time of inspection. A visual inspection Was carried out and the build-up is assumed to be the same as roof 01 on site. Appropriate core samples will be required to establish existing construction and condition prior to works commencing.

Thermal Performance & Conformance to the Building Regulations

We have completed thermal calculations to determine the existing roof system's thermal performance (U-value).

Based on the information obtained during our survey, our calculations suggest the roof has a U-value of 3.94 W/m²K.

The latest edition of Approved Document L (ADL), which details requirements for thermal performance under the Building Regulations, confirms the following:

The roof refurbishment of a dwelling (a self-contained unit designed to accommodate a single household) should achieve a U-value of 0.16 W/m²K. To avoid the risk of condensation, the absolute minimum U-value at any point can be no greater than 0.35 W/m²K.

As there is a need to strip the existing roof to the basic structural components (e.g., the structural roof deck or the rafters), the refurbishment is now classified as a renovation of a thermal element under ADL. To comply with the Building Regulations, you must upgrade the insulation to the whole area unless:

a. Less than 50% of the roof area is refurbished or,
b. No more than 25% of the external building envelope is being renovated.

Roof Defects and Design Considerations

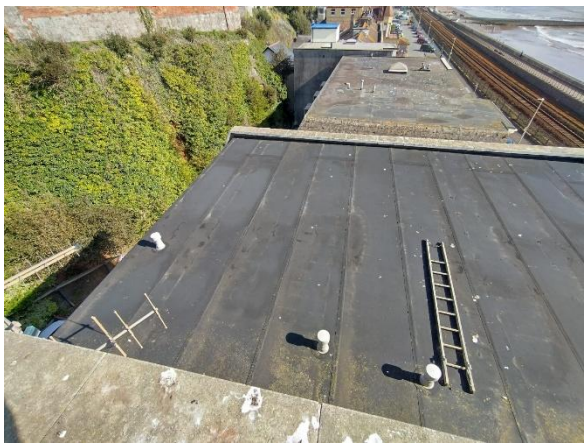
Roof Surface

Roof Surface Condition:

- The roof surface appears to be in a poor condition.

Comment:

- This roof area is a lower roof, situated next to roof 01 and abutting the main building. Like roof 01 this roof consists of an EPDM waterproofing and a parapet wall with coping stones run the perimeter edge. The high point appears to be central with the falls directing rainwater towards the mansard slate roof and draining through the external guttering.
- The lap/joint of the membrane is beginning to show signs of deterioration, a condition that is expected to worsen over time.
- Blistering observed within the EPDM waterproofing system may be down to several factors. Common causes include interstitial condensation due to poor design or insufficient ventilation, the entrapment of moisture during installation, or water ingress occurring over the roof's service life. Additional contributing factors may include poor adhesion between layers, and the use of incompatible materials or adhesives. Blisters can compromise the long-term performance of the roof by weakening the membrane's bond to the substrate, making it more susceptible to wind uplift and mechanical damage. Over time, they may also allow further moisture ingress, leading to deterioration of the underlying structure.
- Organic materials and staining are present throughout this roof area. Moss accelerates the degradation of the waterproofing coverings by penetrating the surface and the moisture retained in the moss undergoes freeze-thaw cycles which further compromises the integrity of the waterproofing.
- Bird droppings (Guano) present a risk to health and should be removed by a specialist. If not removed, guano is likely to adversely affect the service life of the roof due to the high acid content.

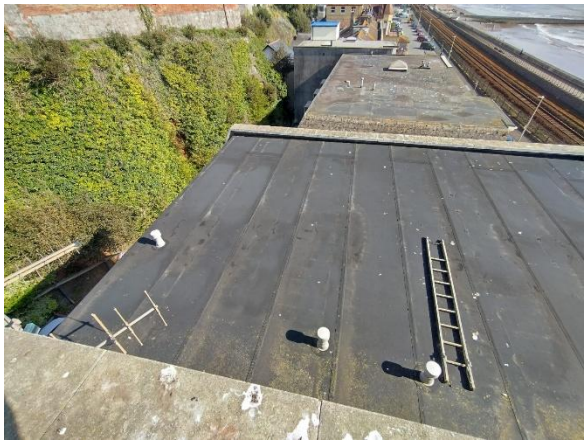


Repairs

There is evidence that localised repairs have been undertaken using an EPDM membrane on the seam/lap of the waterproofing. Multiple repairs suggest an ongoing or historical issue with the roof at this location.

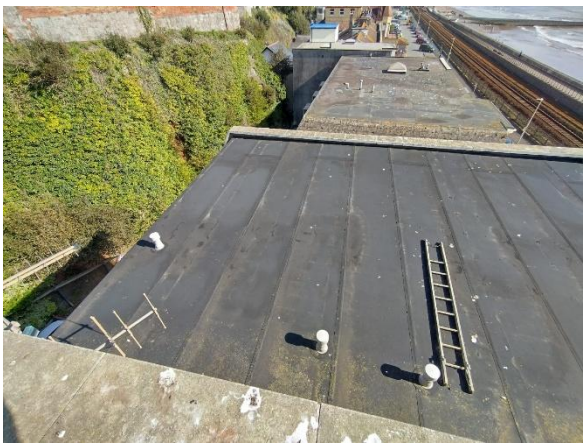
Falls

Roof Slope: Falls (Deck)
Standing Water: No areas of ponding (standing water) were identified during our survey.
Comment: Like roof 01, the high points appear to be in the centre, with falls directing water towards both the front and rear of the building, where it drains via the mansard slate. All available evidence at the time of our survey suggests that the roof slope (fall) complies with the current standards BS 6229:2018

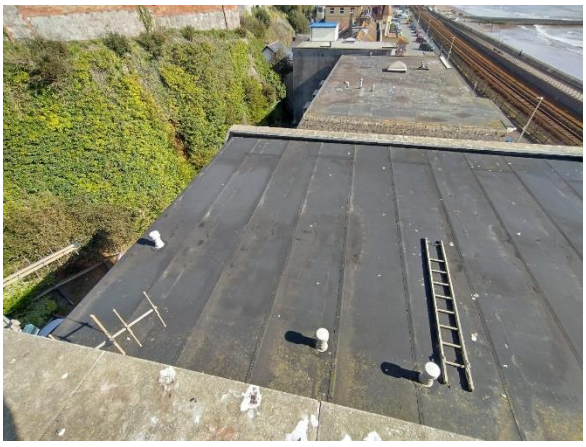


Details

Detail: Roof vents
Condition: Average
Comment: There are three roof vents in this area. The waterproofing membrane detailing these vents appears to be in average condition. However, all vents are missing jubilee clips. To prevent exposure to environmental elements, it is essential that each vent is fitted with a weatherproofing collar, securely fastened with a jubilee clip. This configuration ensures a watertight seal and helps maintain the structural integrity of the roofing system. There is evidence of staining, organic material, and guano present. If not removed, these contaminants are likely to reduce the service life of the vent details.

Detail: Mansard edge
Location: Front and rear of the building
Condition: Average
Comment: Due to access, we were unable to determine the full condition of this detail. A visual inspection was carried out from roof 01 which would suggest the mansard edge is in an average condition. Organic material is present, and staining is visible to the waterproofing membrane. Further clarification will be required to determine the condition of the lead flashing prior to works commencing.

Detail: Parapet kerb with coping stone
Location: Perimeter edge
Condition: Average
Comment: The parapet kerb is located on the perimeter edge of roof 02. Although this detail appears to be in an average condition, organic material/Lichen is present on the coping stones to this detail. Unless removed, Lichen accelerated the degradation of the mortar joints by penetrating the surface, and the moisture retained in the moss undergoes freeze-thaw cycles which further compromises the integrity of the waterproofing. The parapet detail currently sits below the 150mm upstand heigh required by BSS6229:2018. This will need to be raised to achieve 150mm above the finished surface level with the introduction of insulation.

Detail: Abutment with lead counterflashing
Location: Abutting the main
Condition: N/A
Comment: Due to access at the time of survey, we were not able to determine the condition of this detail. Further clarification will be required prior to works.

3.3. Roof 03

Weather at time of survey: Dry

Core Sample Information

This roof was inaccessible at the time of the survey. A visual inspection was carried out and the build-ups assumed to be the same as other similar roof areas on site. Further clarification will be required with appropriate means to establish the existing construction and condition prior to works.

Thermal Performance & Conformance to the Building Regulations

We have completed thermal calculations to determine the existing roof system's thermal performance (U-value).

Based on the information obtained during our survey, our calculations suggest the roof has a U-value of 3.50 W/m²K.

The latest edition of Approved Document L (ADL), which details requirements for thermal performance under the Building Regulations, confirms the following:

The roof refurbishment of a dwelling (a self-contained unit designed to accommodate a single household) should achieve a U-value of 0.16 W/m²K. To avoid the risk of condensation, the absolute minimum U-value at any point can be no greater than 0.35 W/m²K.

As there is a need to strip the existing roof to the basic structural components (e.g., the structural roof deck or the rafters), the refurbishment is now classified as a renovation of a thermal element under ADL. To comply with the Building Regulations, you must upgrade the insulation to the whole area unless:

a. Less than 50% of the roof area is refurbished or,
b. No more than 25% of the external building envelope is being renovated.

Roof Defects and Design Considerations

Roof Surface

Roof Surface Condition:

- The roof surface appears to be in a poor condition.

Comment:

- This roof area abuts the main building of roof 01. Unlike the other roof areas on site, this roof area's waterproofing covering is a mineral finished bituminous membrane. Drainage is via the drip edge leading to the mansard slate roof and into the external gutter. There is an abutment detail/change in level where roof 01 steps down to meet this roof area. There are two roof vents and one window on this roof space.
- The Bituminous membrane coverings appear tired and Mineral chippings that once protected the membrane have worn away and displaced due to wind, rain and UV exposure, indicating that the waterproofing qualities of the membrane has reached the end of its life.
- Surface crazing is a strong indicator that the roof waterproofing system is reaching the end of its service life. These effects are typically a material-related issue that suggest reduced flexibility. Crazing is likely to become more widespread over time.
- The lap/joint is beginning to show signs of deterioration. Failed joints can allow water to infiltrate, especially where roof membranes and other materials contract or expand due to temperature changes. This can result in water damage and structural issues.




Falls

Roof Slope: Falls (Deck)
Standing Water: No areas of ponding (standing water) were identified during our survey.

Comment: All available evidence at the time of our survey suggests that the roof slope (fall) complies with the current standards BS 6229:2018

Details

Detail: Mansard edge
Location: Perimeter edge
Condition: Poor
Comment: The mansard edge runs the full perimeter of roof 03. Age and summer temperatures have caused the bitumen to stain and ripple towards the low point of this drip detail. As the bitumen migrates it has a detrimental effect on the integrity of the cap sheet. Over time, this is likely to worsen, leaving the waterproofing system compromised. The lead flashing to the slate pitched roof appears to be in an average condition.

Detail: Roof vent
Location: Field area
Condition: Average

Comment: There are two roof vents to this area. Both vents appear to be in an average condition but are lacking the jubilee clip required to keep the capping cowl watertight.

Detail: Changing level
Location: Abutting roof 01
Condition: Average
Comment: We were unable to determine the condition of the change in level. Further clarification will be required to determine the condition of this detail, but this change in level would have to be considered during the works.

Rooflights

Subject: Polycarbonate
Access Hatch: No
Condition: The rooflight is in a poor condition.
Comment: There is one rooflight on roof 03. The glazing has been damaged/discoloured by the effects of UV radiation and may need to be replaced to ensure internal light levels are maintained. This rooflight will have to be raised with the introduction of insulation to meet the requirements of BS 6229:2018. A roof upstand must extend a minimum of 150mm above the finished surface of the roof system.

4. Summary

Roof 01:

This roof area is in a state of disrepair. The EPDM waterproofing has become fatigued, with the presence of staining and organic material throughout and there is physical damage to the EPDM waterproofing, with a small aperture subjecting the plywood deck to the elements. There are EPDM patch repairs to the lap of the membrane evident throughout the field area, indicating a potential ongoing issue with water ingress at this location. The core sample taken at the time of survey from this location was dry, leading us to recommend that the existing waterproofing is stripped back to the original deck and overlaid incorporating insulation to bring it up to current thermal regulations, whilst restoring the roof's integrity and functionality.

Roof 02:

We were not able to core sample this roof area at the time of survey, the build-up has been assumed to be the same as roof 01. A visual inspection indicates that the roof is in poor condition. Widespread staining is visible, the EPDM membrane shows signs of deterioration, and the laps within the waterproofing are beginning to fail. Based on these observations, we recommend that the existing waterproofing is stripped back to the deck and a new system installed, incorporating insulation to ensure compliance with current thermal regulations.

Roof 03:

This roof area is in a deteriorated condition. The Bituminous membrane coverings appear tired and mineral chippings that once protected the membrane have worn away and displaced due to wind, rain and UV exposure. Surface crazing to the mineral finish is a strong indicator that this waterproofing system is reaching the end of its serviceable life and should be considered for refurbishment. We

recommend that this roof is stripped back to its deck and overlayed using a new TA25 warm roof system, incorporating Parafoam insulation.

Design Considerations

- 'Safe2torch' compliant membranes are to be used in conjunction with all fire risk detailing and combustible materials
- The Parapet Kerb will need to be raised where necessary to ensure a 150mm upstand is achieved
- We recommend that the parapet copings are temporarily removed, plywood fixed to the internal and top face of the parapet and encapsulated with a new waterproofing system to provide a complete waterproofing detail. Once complete, copings can be reinstated.
- TV aerials to be temporarily removed and reinstated upon completion of the roofing works. CA to confirm any redundant aerials.
- Rooflights- All the rooflights are showing deterioration from UV and provide poor light transmission into the building. We recommend all the rooflights are considered for upgrading during the works.

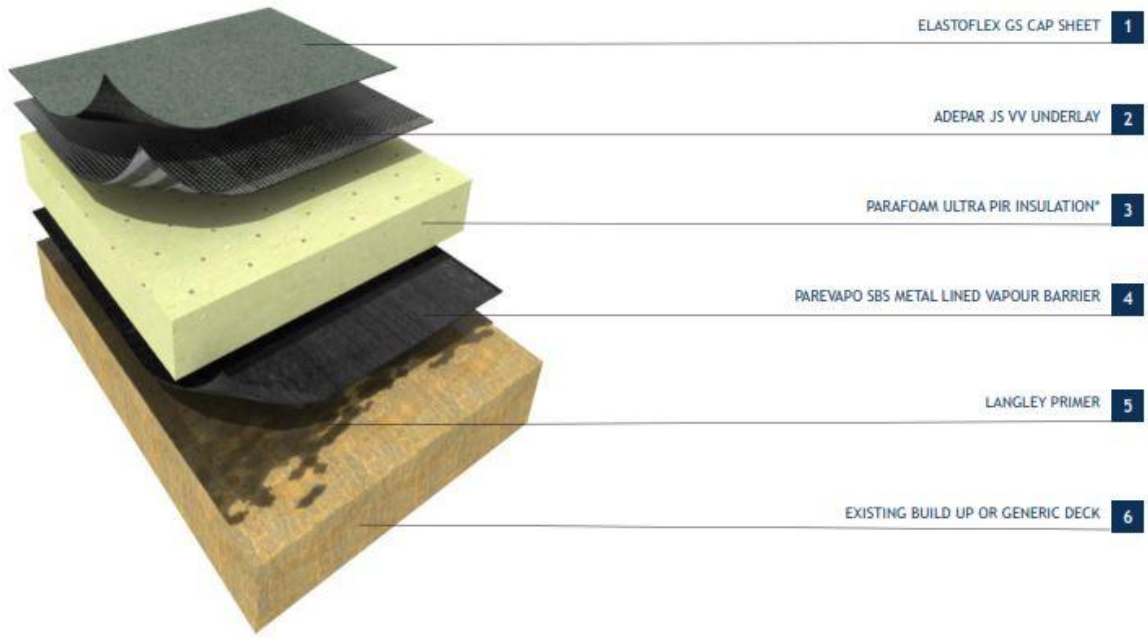
5. Recommendations

Roof Area	Grade	Deck Type	Insulation Requirement	Existing Waterproofing	Recommendation
Main Building - Roof 01	**D1**	**Plywood**	**Thermal upgrade to current regulations**	**EPDM**	**Strip to deck and overlay with TA25 Warm roof system, incorporation 140mm Langley Parafoam PUR to achieve 0.16 W/m²K.**
Main Building - Roof 02	**D1**	**Plywood (Assumed)**	**Thermal upgrade to current regulations**	**EPDM**	**Strip to deck and overlay with TA25 Warm roof system, incorporation 140mm Langley Parafoam PUR to achieve 0.16 W/m²K.**
Main Building - Roof 03	**D1**	**Plywood (Assumed)**	**Thermal upgrade to current regulations**	**RBM bituminous mineral cap sheet.**	**Strip to deck and overlay with TA25 Warm roof system, incorporation 140mm Langley Parafoam PUR to achieve 0.16 W/m²K.**

6. Proposed System

Guarantee Options

TA25 – 25 year insurance backed guarantee. Terms available at end of report.


ELASTOFLEX GS CAP SHEET 1
ADEPAR JS VV UNDERLAY 2
PARAFOAM ULTRA PIR INSULATION* 3
PAREVAPO SBS METAL LINED VAPOUR BARRIER 4
LANGLEY PRIMER 5
EXISTING BUILD UP OR GENERIC DECK 6

7. 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**

8. 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.

9. Appendices

- Glossary of Terms
- Bibliography

GLOSSARY OF TERMS

A/C units	Air conditioning plant.
ACM	Asbestos Containing Material.
Air and Vapour control layer (AVCL)	Membrane to control the passage of moisture laden air.
Attachment layer fixed/nailed)	An underlay used to isolate the new system from the substrate (usually mechanically.
Bunding	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	Rainwater 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 AVCL 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 AVCL. Bituminous membrane designed to prevent the passage of moisture laden air. Usually with an aluminium core.
Vapour check	See AVCL. Bituminous membrane designed to restrict the passage of moisture laden air.
Vapour barrier	See Air and 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.
Welted drip	Felt membrane edge detail.
Woodwool slab	Hybrid structural deck of cement coated wood shavings.

BIBLIOGRAPHY

The following British and European Standards and Codes of Practice are relevant to the installation of Langley roofing systems and products.

BS 6399 – 1: 1996	Loadings for Buildings. Code of Practice for dead and imposed loads.
BS 6399 - 2: 1997	Loadings for Buildings. Code of Practice for Wind Loads.
BS 8217 : 2005	Code of Practice for Built-up Felt Roofing.
BS EN 636 : 2012	Plywood, specifications.
BS 5268 – 2: 2002	Structural Use of Timber. Code of Practice for Permissible Stress Design, Materials and Workmanship.
BS EN 300 : 2019	Oriented Strand Boards (OSB). Definitions, Classifications and Specifications.
BS 747 : 2000	Reinforced bitumen sheets for roofing.
BS 6229 : 2018	Flat Roofs With Continuously Supported Roof Coverings – Code of Practice.
BS EN 12056 – 3: 2000	Gravity Drainage Systems Inside Buildings – Part 3 : Roof Drainage, layout and calculations.
BS EN 1253 – 1: 2022	Gullies for Buildings – Part 1 : Requirements.
BS 476 – 3 : 2004	Fire tests on building materials and structures. External fire exposure roof test.
BS 5250 : 2021	Code of Practice for the control of condensation in buildings.
BS 5950 – 6: 1995	Structural use of steelwork in buildings. Code of Practice for design of light gauge profiled steel sheeting.
BS EN ISO 6946 : 2007	Building components and building elements – Thermal resistance and thermal transmittance – Calculation method.
BR443:2002	Conventions for U-value calculations.
BS EN 13162: 2001	Thermal insulation products for buildings – Factory made mineral wool (MW) products – Specification.
BS EN 13163: 2001	Thermal insulation products for buildings – Factory made products of expanded polystyrene (EPS) - Specification.
BS EN 13164: 2001	Thermal insulation products for buildings – Factory made products of extruded polystyrene foam (XPS) - Specification.
BS EN 13165: 2001	Thermal insulation products for buildings – Factory made rigid polyurethane foam (PUR) products - Specification.
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