



Roof Survey Report

Dell Quay Sailing Club
Dell Quay Road, CHICHESTER
PO20 7EE, England

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1 Introduction

Further to our site inspection we have prepared the following survey report based on the current condition of the existing roof/s. This survey report is based on our visual inspection of the roof/s together with our exploratory core test samples. It should be noted that core test samples are taken to identify the existing roof construction to deck level and to provide an indication of the roof condition. Due to the limited number of core samples that can be practically taken on a roof, Bauder Ltd cannot be held responsible for any changes in roof build-up in areas where core samples have not been taken.

1.1 Roof Access

Roof access was gained externally using an extension ladder.

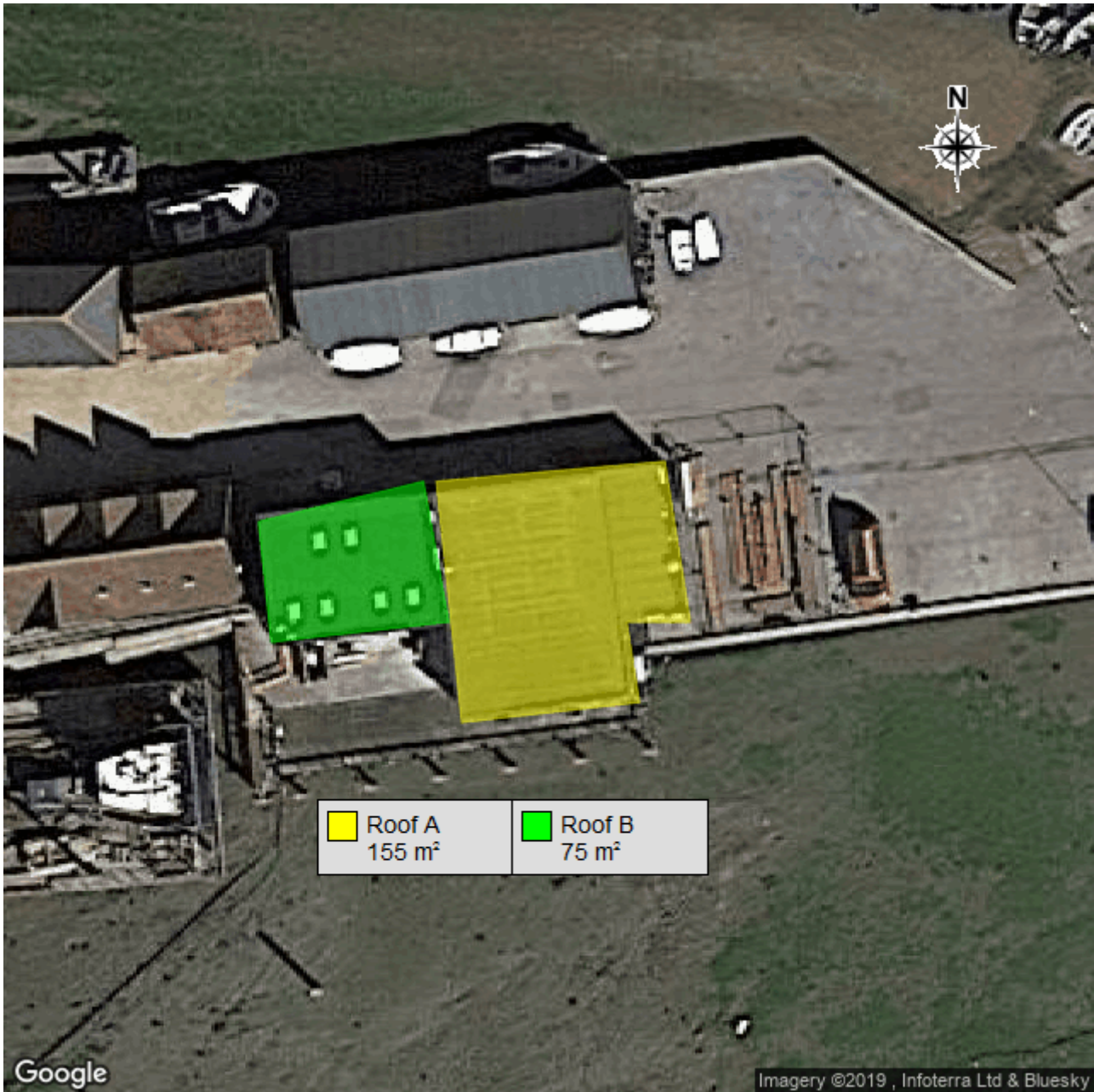
1.2 Confirmation of Client brief

To carry out an evaluation and produce a condition report for the flat roof areas concerned, together with specification proposals for upgrading the thermal performance and renewing the waterproofing system.

Introduction

1.3 Roof Plan

1.3.1 Dell Quay Sailing Club



Any measurements displayed on the map above are approximated and are therefore not to be used in tenders.

2 Existing Roof Construction

2.1 Core Sample Analysis

Core samples are taken as a method of confirming the existing deck and waterproofing system construction and provide indicative feedback regarding general condition. Please note that the findings are representative only of the particular location tested and this is used to give general guidance as to the likely overall condition and deck construction.

2.1.1 Roof A

No. of core samples taken:	2
Construction Type:	Cold Roof
Surfacing:	Slate mineral finish
Waterproofing:	2 layer BS747 Built-up bituminous membrane system
Insulation:	None present
Vapour Control:	None present
Roof Deck:	Core sample 1 - Woodwool slab Core sample 2 - Plywood panels
Condition of core sample:	The deck is dry.

Existing Roof Construction



Core sample 1 showing woodwool deck.



Core sample 2 showing plywood deck.



Overview of Roof A.

2.1.2 Roof B

No. of core samples taken:	1
Construction Type:	Cold Roof
Surfacing:	Slate mineral finish
Waterproofing:	3 layers BS747 Built-up bituminous membrane system
Insulation:	None present
Vapour Control:	None present
Roof Deck:	Plywood panels
Condition of core sample:	The deck is dry.

Existing Roof Construction



Core sample taken on Roof B.



Overview of Roof B.

3 Issues and Considerations

3.1 Roof A and Roof B

3.1.1 Decks

Roof A - The existing deck is woodwool, these slabs are made up of randomly distributed shredded wood fibres, petrified by chemical impregnation and bound together with cement and compressed into slabs. If the panels are not left plain or unfinished a factory applied finish of cement based slurry or bituminous layer is installed to provide a surface upon which to apply the roof finishes.

From as far as we are able to determine, the deck appears to be in an adequate condition. However if the existing waterproofing is stripped from the woodwool deck the structural integrity of the deck can be compromised. Woodwool decking is no longer manufactured which limits the options available if localised replacement is required.

Note - an adequate provisional sum should be set aside to cover for any unforeseen issues related to the removal of the existing waterproof covering that may necessitate localised repairs to the existing deck.

Roof B - The decking is believed to be in a good condition and of a suitable construction type to be reused as part of the roof refurbishment.

3.1.2 Existing Waterproofing

The existing waterproofing system is constructed as a cold roof, comprising built-up bituminous membranes installed onto the roof deck.

The condition of the existing waterproofing is of concern. The material covering is coming to the end of its serviceable life and demonstrating signs of age, fatigue and fragility that could lead to serious failure.

Any water ingress would affect the upgrade potential of retaining the current system as part of an overlay solution. Investing in refurbishment works now offers the opportunity of minimising costs by using the existing waterproofing as a component of an overlay system.

This waterproofing system is showing all the typical defects consistent with a covering of this age including; surface oxidation, cracks, splits, blisters, rucks and signs of repair.

The thermal performance of the existing roof build-up is poor and well below current standards. If re-waterproofed, the roof would not meet current Building Regulation requirements without the insulation also being upgraded. One of the risks associated with inadequate levels of insulation is the potential for condensation to form within the structure or waterproofing system during periods of climatic extreme. This roof would therefore benefit from being thermally upgraded in line with current standards.

Issues and Considerations



Installation of membrane is incorrect and laps should be staggered, this is a clear weakness which could lead to issues.



Membrane has lost all of its mineral and its at the end of its serviceable life.



Laps are beginning to fail.



Further lap issues.

3.1.3 Falls

The roof has been designed to drain to the internal channels. However, standing water collects within the gutter due to a lack of adequate cross-falls. These falls should be improved within the new roof design.

Issues and Considerations



There is a lot ponding in a small section of the roof due to a lack of cross falls, this will be rectified by installing a tapered gutter.



Ponding on Roof B due to a lack of cross falls and a build up of membranes at the outlet.

3.1.4 Drainage

We noted that the existing lead chutes are aged, defective and generally in poor condition. These are considered unfit for reuse and should be replaced as part of the re-waterproofing works.



Outlet has been blocked off, new lead chute to be installed to hopper.



Build up of laps has created an issue at the chute. This will be rectified with the new system.

3.1.5 Upstands and Details

Requirements for waterproofing at upstands and details

Codes of Practice (BS 8217: 2005) dictate that the minimum height for waterproofing upstand detailing is 150 mm, taken from the finished surface. Perimeter kerbs should be a minimum height of 50 mm above the finished surface and detailed with a welted drip detail or edge trim.

There should be no mechanical penetrations to kerb waterproofing or need for secondary weathering. Kerbs that are weathered with mechanically fixed metal capping or concrete copings are categorised as 'abutment upstands' and must comply with the minimum height requirement of 150 mm.

Issues and Considerations

This minimum height rule applies equally to upstands to roof lights, pipes, vents and door and window thresholds.

Waterproofed upstand detailing is usually weathered with lead or metal counter-flashings, metal capping and cladding. Termination bars should only be used when fixing to concrete abutments, where no provision exists for other forms of secondary weathering.

Removal of vertical cladding for access to re-waterproof

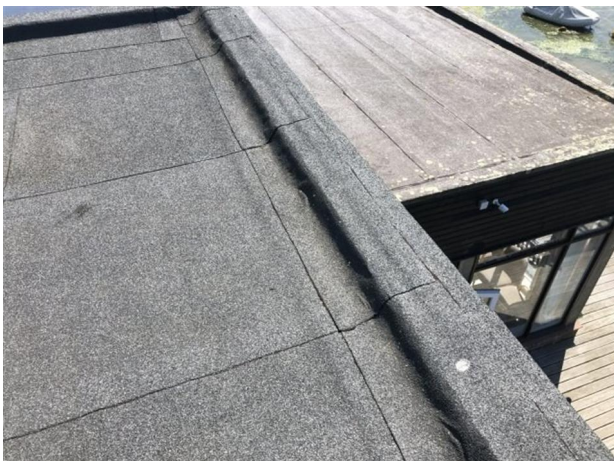
The existing cladding obstructs access to re-waterproof the upstand. It will therefore be necessary to remove the cladding to enable the roofing works to be undertaken. Upon completion the cladding can be reinstated allowing for any modification that maybe required.



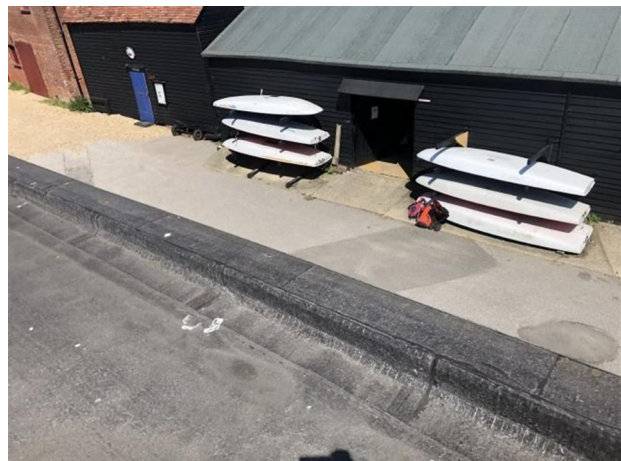
Cladding will need to be altered to create a 150mm upstand.

Increasing the height of perimeter kerbs

When the waterproofing is refurbished the perimeter check kerbs will not provide a 50mm upstand above the finished roof level. As a consequence the perimeter kerb will require raising.



Check kerbs will need to be raised.



Kerb to be raised. With this a new fascia panel will need to be installed to the external facade.

Raise existing rooflight kerbs

The existing rooflights mounted upon builders kerbs will need removing in order to allow the kerb height to be raised to the required minimum height and then re-waterproofed.

Issues and Considerations



Rooflight kerbs will need to be raised.

3.1.6 Rooflights

The current rooflights are proprietary plastic glazed units. These fall below current thermal and light transmittance standards and the performance will continue to decrease with age. The service life of these rooflights is not compatible with the service life of the new waterproofing system and for these reasons we propose that they are replaced. Please be aware that these units may contain asbestos in the internal linings.



Rooflights are in a poor condition and should be replaced.

4 Proposals

4.1 Roof A and Roof B

- The existing deck is to be re-used.
- The condition of the existing waterproofing is considered suitable for receiving an overlay system.
- We propose that the insulation is upgraded to comply with current Building Regulations, which will improve the thermal performance of this building and offers longer term payback in respect of reduced heating and/or cooling costs.
- To alleviate standing water within the existing gutter channels, tapered insulation has been included with our waterproofing system proposal specifically for these locations.
- The existing drainage chutes are to be removed and new site fabricated lead replacement items installed.
- Provision should be made for temporarily removing the cladding to allow working access to raise and waterproof the abutment upstands. Allowance is to be made for trimming the cladding and modifying the position of the lower fixing rails and/or metal drip flashing where required.
- The height of existing perimeter check kerbs must be increased to provide a minimum 50mm upstand above the finished roof level. The perimeter is to be raised to one consistent level around the full roof area.
- An additional depth of fascia board is to be installed to cover the new perimeter kerb. Alternatively the existing perimeter fascia boards could be renewed in their entirety. Any new fascia system to be installed to cover the perimeter kerb should be manufactured from a maintenance free material to offer a life expectancy that is at least comparable to the guarantee of the new waterproofing system. This avoids the risk of disturbing the waterproofing system or affecting the roof guarantee, should the existing fascia require replacing whilst the roof remains in-situ. Full details of the system and scope of works to the fascia boards is to be included within the main client specification/ schedule of works.
- The existing rooflights must be removed to enable the upstand kerb to be raised to comply with the required minimum upstand height. Raising the kerbs will affect the internal linings and provision should be included for any consequential extension and re-decorating work to the linings.
- The existing rooflights should be replaced with new modular Bauder Rooflight units that offer improved thermal and light transmittance performance and are classified as being non-fragile. These will complement the performance of the replacement waterproofing system during its serviceable life. Please advise your requirements and we will include these within our separate schedule and specification for replacement Bauder Rooflights.

4.2 Proposed Waterproofing System

Roof A and Roof B

Bauderflex Roof System

The Bauderflex Roof System offers an exceptional waterproofing solution to the specifier working with a limited budget, whilst still delivering a robust quality system with proven longevity. This product uses high tensile polyester reinforcement with highly modified SBS elastomeric bitumen. This produces a finished product with an elasticity of over 40%.

Where required the system will include Bauder PIR with a choice of either glass tissue or aluminium facing offering versatility in installation methods for both the insulation and the membranes. Bauder insulation provides excellent thermal performance and has outstanding dimensional stability and compressive strength, achieving an "A" rating in the BRE Green Guide. Bauderflex is suited to both new build projects and the refurbishment of existing buildings.

Guarantee Information

The Bauderflex system is supplied with a 20 year guarantee that includes products and workmanship. Full terms and conditions are available by request.

Key Features

- Insulation and waterproofing products are all manufactured by Bauder resulting in complete system compatibility and single source responsibility.
- Robust and extremely durable waterproofing that minimises the risk of physical damage and is capable of withstanding maintenance foot traffic.
- Bauderflex has an outstanding track record and has been used in the UK for over 30 years with proven durability in service. This provides complete peace of mind to specifiers past and present.
- 4.2mm cap sheet with high tensile strength and choice of 3 colours.
- Bauder site technicians monitor and sign off each installation and provide up-to-date site inspection reports directly to our clients via email.
- Bauder provides installation training for our approved contractor operatives to ensure the highest quality of the workmanship maintained.
- Reliable application in both high and low ambient temperatures – enables all year around installation.
- Reduced rain noise to gain an extra credit under point 5 of section 4 of BREEAM education 2008 for most projects.

5 Health & Safety and Construction Design Management

Bauder believes in promoting a strong safety culture at all times. Our Staff will adhere to the appropriate risk assessments and method statements as required under the Health and Safety at Work Act 1974 and Work at Height Regulations 2005. It is the client's duty of care to advise of any specific health and safety issues pertaining to the project as required under the Work at Height Regulations 2005.

As part of our duty of care we would like to draw attention to the following information:

The HSE Guide H&S in Roof Work (HSG33) states that **all** roofs should be treated as fragile unless declared otherwise by a competent person. Please refer to the Work at Height Regulations 2005 provision 9 for information on working with fragile/suspected fragile roof areas. Under the Health and Safety at Work Act 1974 Sections 3 and 4, it is the responsibility of employers and anyone who controls the work of others to ensure so far as it is reasonably practicable that persons are not exposed to risks that impact on their health and safety. Appropriate control measures must be in place before any work or contact with a fragile/suspected fragile roof area commences.

Safe access and egress to a roof is a major risk and requires careful planning. In particular, the following are likely to be fragile:

- Non reinforced fibre cement sheets e.g. asbestos
- Corroded metal decking
- Woodwool slabs
- Rotten chipboard or similar
- Stramit
- Slates or tiles
- Old roof lights
- Glass (including wired)

Specifying non fragile rooflights will help reduce the risk of falls from height. A non-fragility rating is required by the HSE (Health and Safety Executive) in order to comply with CDM (Construction Design and Management) Regulations 2015.

We draw your attention to your duties under the Construction (Design and Management) Regulations 2015. Regulation 4, Client's duties in relation to managing projects states that the client must make suitable arrangements for managing a project, including the allocation of sufficient time and other resources. Regulation 5, Appointment of the Principal Designer and the Principal Contractor states that where more than one contractor will be working on a project at any time, the client must appoint a Principal Designer and a Principal Contractor.

Please note that although Bauder will assist with the roof waterproofing system design, we will

not undertake the role of Principal Designer.

It is always the responsibility of the contractor to carry out a risk assessment on all aspects of the contract. The 'Safe2Torch' checklist is solely for guidance for the safe installation of torch-on reinforced bitumen membranes and use of gas torches in the workplace.