



# Rotorgraph

## Roof Inspection Report

In respect of:

124 Livingstone Road

Bradford

BD2 1BN

For: David Willetts

Report produced by Simon Hollis MRICS

For and on Behalf of Rotorgraph Surveys  
Limited

16<sup>th</sup> February 2025


Drone Inspection Report - Summary of Findings



124 Livingstone Road

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Signature:  For and on behalf of Rotorgraph Surveys Limited

Date of Report: 16<sup>th</sup> February 2023

## 1.0 About this Report

### 1.1 Address of the Property Surveyed (The Property)

124 Livingstone Road  
Bradford  
BD2 1BN

### 1.2 Brief and Report

Instructions were received from David Willetts to attend the property and undertake a drone inspection of the chimney and roof covering. Following the inspection, this report has been prepared based on the imagery taken whilst on-site. This report details our general opinion of the condition of the chimney and roof covering only. Unless specifically agreed in the Scope of Services the technical design of the roof elements, falls, fire compliance and wind loading calculations do not form part of this instruction. Plant and other rooftop elements are excluded from the inspection and the inspection and report should not be considered a full building survey.

We hope that the report helps you to make a reasoned and informed decision on any required repairs and maintenance. We detail the prioritisation of works in our Observations and Recommendations section (2.0). The information and recommendations detailed in this report are provided in good faith based on current best practices and experience, this is not intended to form any kind of guarantee. Where works are recommended, you should obtain detailed written quotations and establish design liability before you enter into a legal commitment. Where products are recommended, others will likely be available. If you decide not to act on the advice in this report, you do so at your own risk.

We have not been instructed to advise on repair methodology, prepare schedules of work, prepare tender documents or provide project management advice, however, if you would like to discuss any of these services, please do contact us.

### 1.3 Date of Inspection

The property was inspected by Rotorgraph Surveys Limited on 16<sup>th</sup> February 2025.

### 1.4 Client

This survey report and any associated correspondence are for your personal use only and no responsibility can be or will be taken to others who may see it or wish to depend on it.

### 1.5 The Surveyor

On behalf of Rotorgraph Surveys Limited, the site inspection survey was undertaken by Gary Brown.

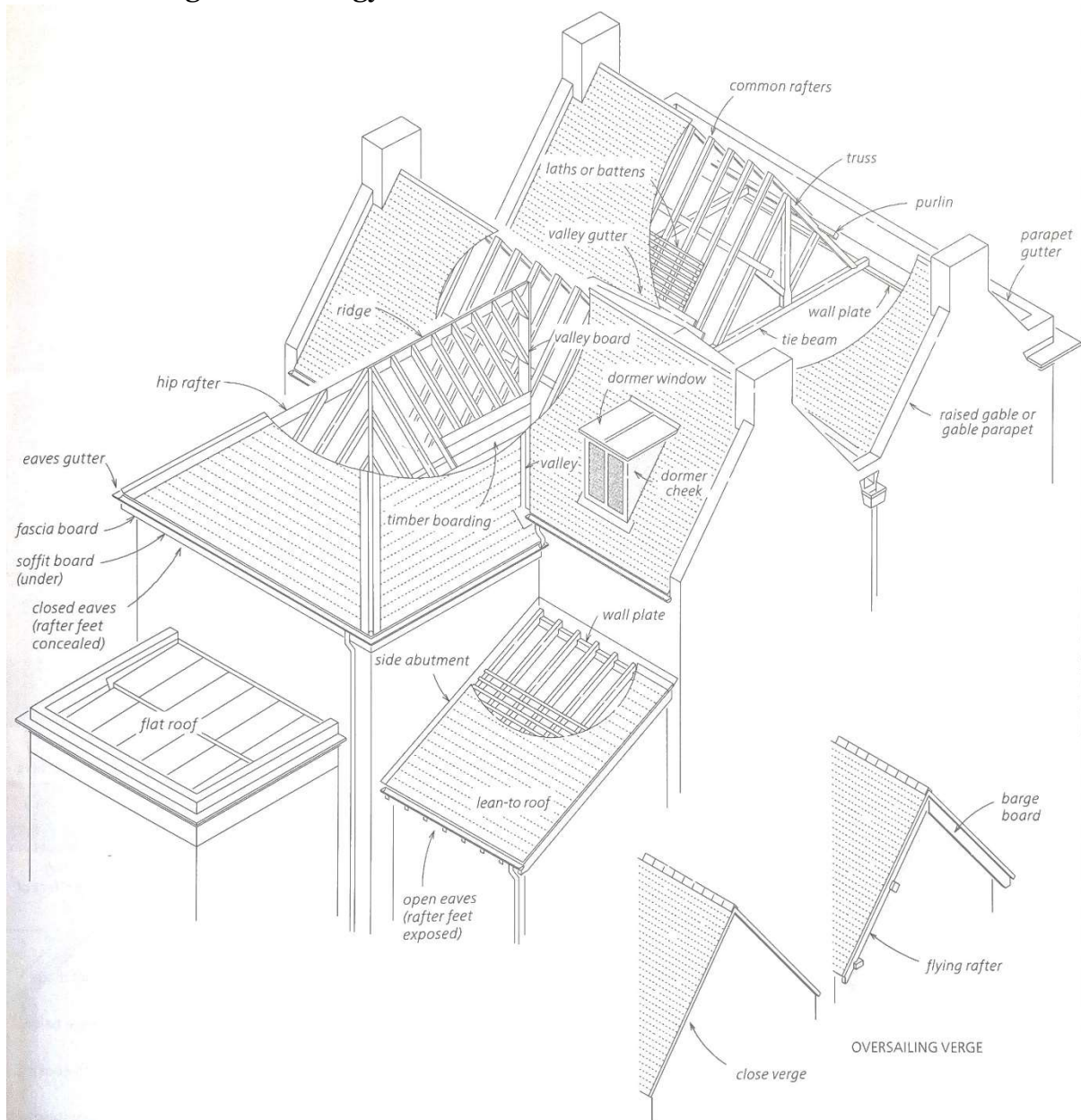
This inspection report was prepared by Simon Hollis based on the imagery taken on-site.

Simon holds a HND in Estate Agency, a Bachelor's with Honours degree in Urban Land Economics, a Master's Degree in Building Surveying and is a Member of the Royal Institution of Chartered Surveyors.

Simon is Dyslexic, please excuse any spelling or grammar errors in this report. Specialist software is used, unfortunately, it is not as clever as the developers would have you believe.

The Surveyors declares no conflict of interest in inspecting this property.

## 1.6 Roofing Terminology



Roofing Terminology. Credit: English Heritage

## Roof Recovering

Where recommendations are made for a replacement covering, the manufacturer should provide a detailed specification along with comprehensive drawings, u-value calculations, a condensation risk analysis, wind uplift calculations and a fixings specification and layout. The manufacturer should be able to supply a list of approved contractors to undertake the work and monitor the installation through on-site visits to confirm that the works undertaken meet their specifications and are undertaken to the appropriate standards of workmanship. If the manufacturer does not offer this service, we recommend that the project is managed by a suitably qualified independent professional.

Flat roof fall should be designed at 1:80 to achieve a finished fall of no less than 1:40.

When planning a roof recovering, any plant, roof accessways and penetrations need to be considered from the outset as they must be properly planned for.

Where more than 50% of the roof coverings are replaced, compliance with current building regulations will be required.

To comply with BS:6229, the roof needs to be inspected at least every 12 months or, as per the manufacturer's warranty provision.

## Pitched Roofs

The minimum fixings requirements of BS 5534 need to be achieved by the contractor together with any manufacturer-specific requirements bearing in mind wind uplift resistance data for the site.

All leadwork needs to be installed to the Lead Sheet Association guidance.

## Mortar

Mortar should always be sacrificial to the stone/brickwork/slates/tiles. In practice, this means that the mortar mix should be softer than the stone/brickwork/slates/tiles and be the point of any failure. Your mason must make the final decision on the specification of the mix as they will ultimately be responsible for the success of the job (liaison with the Conservation Officer may be required if the building has statutory protection).

Where we advise that works are required to pointing/flaunching/roof detail, unless otherwise detailed, a non-hydraulic lime (e.g., CalBux 90) should be used as the binder in the mix together with the appropriate aggregate for the job and local area (and the addition of a pozzolan, if required). For small repair works, a pre-mix could be considered, however for larger jobs and rendering, the mix should be mixed 'hot' on-site. The use of lime-based materials requires a detailed understanding of the site, the weather and atmospheric conditions, the type of masonry/brickwork, locally available limes, locally available aggregates and their grading/void ratios and suitable preparation of the substrate and finished detail.

For very specialist works and works to statutorily protected buildings, analysis of the existing and original mortars should be carried out so that the appropriate specification can be determined.

Unless specifically detailed in the report, cement (and its variants) should not be used as the binder in the mix. Hydrated, sometimes referred to as 'builders' lime' is also not appropriate to use to make mortar/render for traditional buildings.



Cementitious mortars and renders can cause several problems with traditional buildings. They are very hard and brittle so often crack when traditionally constructed buildings move with the seasons. These hairline cracks then allow rainwater to penetrate the mortar joints/render and accelerate the effects of freeze-thaw weathering and create problems with penetrating dampness. This moisture can also cause decay/insect attack to any timber that is socketed into/bearing onto the walls e.g., battens, joists, beams, lintels and sills.

As well as being hard and brittle, cementitious mortars are impermeable/significantly less permeable than lime-based mortars. In practice, this means that any moisture that makes its way into the structure is unlikely to be able to escape through the external leaf and if/when it does, it is likely to have to escape via the stone/brickwork and not through the mortar joints. This will place additional moisture stress on the stone/brickwork and likely accelerate decay.

When undertaking pointing repairs/re-pointing, the existing mortar should be removed by hand with a plugging chisel and lump hammer or an Arbourtech Allsaw. Angle grinders, SDS drills, mortar rakes, Kango hammers etc. should not be used as they will likely damage the stone/brickwork leading to repairs being required before the re-pointing works begin. Existing pointing needs to be removed to a depth of at least 25 mm or twice the width of the joint, whichever is greater (ashlar and fine brick pointing will need to be approached on a case-by-case basis and may require grouting as opposed to pointing).

### Brick and Stone Repairs

Brick and stone repairs should only be undertaken by specialist craftspeople using specialist materials. Using mortar to make surface repairs to stone and brickwork is not an acceptable method.

For localised repairs, a proprietary repair product should be used and can be tooled and pigmented to match the existing elevations. We have recently used Masons Mortar based in Glasgow which supplies a range of suitable products for most repair scenarios.

For larger repairs, stone/brick rotation or replacement stones and bricks may be needed. These should be like-for-like in terms of performance and aesthetics.

If the building has statutory protection, further investigation and a more detailed specification will be required for Listed Building Consent.

### Paints

Traditional paints for timber would have been based on white lead or linseed oil. Both of these are long-lasting and permeable. More recently, plastic-based paints have become the norm. Plastic-based paints are impermeable and can trap moisture beneath the surface accelerating the decay of the substrate. We do not recommend that plastic-based paints are used anywhere, instead, we recommend you consider the following:

Render/external areas (not made from timber) – limewash (homemade or pre-mixed), clay-based paint or mineral-based paint.

Timber – linseed oil-based paint.

When researching/purchasing paint, we recommend that you purchase paint with the lowest SD (diffusion) value for the colour/type of paint you need. Limewash is the most permeable finish and has an SD value of 0.01.



## 2.0 Observations and Recommendations

Our observations are made as if stood at the front of the property with the left-hand side being the gable end.

We only see the property during the course of one day in one season, usually only in one weather condition. It, therefore, may be necessary for you to observe and monitor some items.

When we note that works are required, we will usually advise that these are required:

Straight away – works should be undertaken without delay to stop the defect from having an immediate detrimental effect on the property.

Within the next year.

The short to medium-term – end of the first year to year five.

Long-term – post year five.

Record and monitor – photograph/measure the defect and check it with the change in seasons to see if it gets any worse. If it does get worse, further action may need to be taken.

### Limitations to our Inspection

The chimneys, roof(s) and guttering have only been inspected from ground level with the use of a drone, we have been unable to physically get close to the roof coverings etc. We have detailed our findings below; however, this should not be considered a full building survey and where there are multiples of the same defect, we have included examples.

## 2.1 Chimneys and Flashings

The property had 2 chimney stacks, front and rear.

The chimney stack is shared with the neighbouring property. Disrepairs on the neighbouring side of the stack could affect the subject properties side of the stack e.g., structural problems or moisture ingress and you should ensure you are happy with this arrangement before you legally commit to purchase. Your Legal Advisor should ensure satisfactory documentation is in place for this arrangement. Our observations and recommendations are based on the subject properties side only.

The chimney stacks are the most exposed part of the property and these should be inspected annually and their condition recorded to ensure that any defects are tracked and repairs are arranged when required. A poorly maintained stack can allow rainwater penetration internally and debris to block the rainwater goods and drainage.

Redundant chimney flues are full of impurities (ammonia, carbon, nitrates/salts, sulphur dioxide -> sulphuric acid) from years of burning fossil fuels. If flues are well-ventilated and dry, these are unlikely to cause any problems. If moisture builds up inside unventilated flues, these impurities will dissolve and migrate around the moist areas, damaging bricks and mortar. When the moisture finds somewhere to evaporate e.g., the surface finish of the chimney breast, some of these impurities will be left on the surface. If the surface finishes are not permeable e.g., a gypsum-based plaster and a plastic-based paint, damage to the surface finishes is likely to occur.

### Front Chimney Stack (shared)

#### Pots

There are two clay chimney pots on the subject side of the property, front and rear. The rear pot is leaning in toward the pitch and needs to be re-bedded this year.

Both of these pots are open. If the flues are redundant, they should have an appropriate vented cap fitted to the top of the pot. If the flues are in use, they should have the appropriate cowl (based on the appliance) fitted to the top of the pots.

#### Flaunching

The flaunching should be cambered to shed water away from the centre of the chimney stack to the perimeter. Here, it looks like the flaunching is flat.

The flaunching has shrunk a little around the base of the pots and will likely need to be replaced in the next couple of years.

There is vegetation growing in/on the flaunching, we recommend this be removed as soon as possible. If this is growing in a crack in the flaunching, this should be repaired.

#### Corbelling

The corbelling stones appear to be in acceptable condition; however, pointing is missing around the corbelling and stone course above. We recommend the defective pointing be raked out and the joints repointed this year. The missing pointing is causing moisture staining to the stack below.

#### Stack

The stack has been rendered, the render is failing in some areas and should be removed and re-rendered this year. See our comments above on mortars.

#### Flashings

Based on their colour, these look to be the original flashings. The detailing is incorrect and where the flashing is detailed into the stack, the mortar bed has been rendered over



which means that the render will get damaged when the flashings need to be replaced.

You should budget to replace the flashings when the render is replaced.



Rear Stack

Pots

There are two clay chimney pots, left and right. The left-hand pot is cracked and should be strapped or replaced this year. The right-hand pot has a metal bar and chain over the top going down the flue – we are not sure what this is for and you should try to ascertain this. Whatever problem this is trying to address, this is unlikely to be the correct way of doing it.

Both of the pots are open. If the flues are redundant, they should have an appropriate vented cap fitted to the top of the pot. If the flues are in use, they should have the appropriate cowl (based on the appliance) fitted to the top of the pots.



Flaunching

The flaunching appeared to be in acceptable condition.

Corbelling

There is no corbelling which will likely result in additional moisture stress being placed on the stack.



Stack

The stack appeared to be in acceptable condition. There is a lot of debris collecting around the back of the stack, this should be cleared in the next couple of months and the area under the debris checked for any further defects.

Flashings

The flashing appears to be missing around the left-hand side of the stack. The flashing



details that are present appear to be incorrect. We recommend you plan to replace the flashing in the next couple of years.



## 2.2 Roof Covering and Detail

The main roof covering is natural slate. The garage roof covering is mineral felt. Generally speaking, all of the roof coverings and details are in poor condition and repairs are needed now and they will likely be needed annually until the covering is replaced.

Where we have recommended repairs to the roof covering, this is to prevent rainwater ingress and dampness. Delays in undertaking these repairs could begin to compromise the roof and wall structure.

Overhead photo of the roof pitches, the front is to the right-hand side of the photo.



Front Pitch

Side-on photo of the front pitch. The pitch has 3 asymmetric sections, left-hand section, centre section and right-hand section. Generally speaking, the pitch is in poor condition with immediate repairs required and consideration to be given to recovering the roof in the not-too-distant future.

The shape of the roof is unusual and is likely going to be more expensive to repair because of this.



General comment – in several areas, the slates do not sit flat to the pitch which will likely accelerate fixing failure as a result of wind rattle.

We have included some example photos of this as opposed to every area where this is a problem.





The area of missing and damaged slates near the apex of the pitch should be replaced as soon as possible.



We recommend all of the slates and lead be checked along this abutment as it appears to be in poor condition with lead and slates slipping.

Repairs are likely to be needed and should be undertaken in the next couple of months.



Left-hand to centre section abutment - the condition of the covering and detail is particularly poor in this area and we recommend repairs are undertaken in the next couple of months.





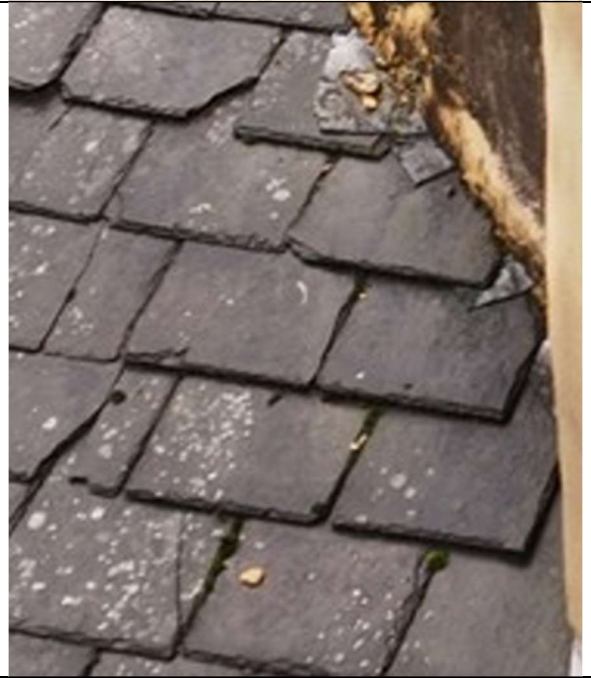
Areas of slates across the eaves course have been stuck on with a Flashband-type product. This kind of repair is inappropriate and the damaged slates should be replaced appropriately replaced and re-affixed in the next couple of months.



Centre section – damaged slates should be replaced this year – example photos below.



The damaged tiles around the chimney stack should be replaced this year.



A 'hip' detail sits where the centre and right-hand pitches converge. This is not the best way to detail this abutment and will add additional weight to the roof structure. The pointing is cracking in areas and we recommend this be raked out and repointed this year.



The parapet walls are outside the scope of this inspection; however, we noted they appeared to be in poor condition and will need repair work in the short term.



Rear Pitch

Side-on photo of the rear pitches – left and right-hand. The upper element of the rear pitch has been re-covered in non-matching slates. The pitch is in generally poor condition and in need of immediate repair and will need recovering in the not-too-distant future.





Side pitch – the area of slipping and damaged slates should be replaced in the next couple of months.



Missing and damaged slates should be replaced as soon as possible.



Slipping slates should be replaced as soon as possible.



The parapets and walls are outside the scope of this inspection; however, they appear to be in poor condition with repair work required this year.





Flat Roof

Overhead photo of the flat roof area. The mineral felt covering has had several repairs and is ruckling in all areas suggesting there is moisture trapped and it has de-bonded from the substrate. A plan should be made to replace this covering in the short term. When the covering is stripped, the deck should be inspected. If moisture has been getting in, it is likely that this will need repairs or replacement. We have included some example photos below.



The penetration through the covering has been incorrectly and poorly detailed. This needs to be appropriately designed when it comes to planning the re-covering of the roof.



