

TECHNICAL BULLETIN

FOR RESIDENTIAL SURVEYORS

ASSESSING THE SAFETY OF HIGH-RISE BUILDINGS

MICROBORE HEATING SYSTEMS

THE FITNESS FOR HUMAN HABITATION BILL

RODENT INFESTATIONS

JAPANESE KNOTWEED RESEARCH

JAPANESE KNOTWEED - UNDERSTANDING THE PLANT

PCA WELCOMES JAPANESE KNOTWEED RESEARCH

JAPANESE KNOTWEED - A SURVEYORS PERSPECTIVE

IMPORTANT CHANGES TO THE PRE-ACTION PROTOCOL

WAISTELL AND WILLIAMS -V- NETWORK RAIL



THE TECHNICAL BULLETIN

FOR RESIDENTIAL SURVEYORS

Welcome to the Technical Bulletin for Residential Surveyors. This Bulletin is designed for residential practitioners who are members of RICS and/or the Sava Scheme.

Produced jointly by BlueBox partners and Sava here you will find technical articles, updates on convention changes and best practice. We hope you will find this useful in your day-to-day work and we welcome any feedback you may have and suggestions for future publications.

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CONTENTS

04

ASSESSING THE SAFETY OF HIGH-RISE BUILDINGS

PHIL PARNHAM MRICS

10

MICROBORE HEATING SYSTEMS

DR LISA BLAKE
PHIL PARNHAM MRICS

13

THE FITNESS FOR HUMAN HABITATION BILL

HILARY GRAYSON BSC EST MAN (HONS)
FIONA HAGGETT BSC (HONS) FRICS

17

RODENT INFESTATIONS

PHIL PARNHAM MRICS

21

JAPANESE KNOTWEED RESEARCH

COMMENTARY FROM SAVA & BLUEBOX

22

JAPANESE KNOTWEED – UNDERSTANDING THE PLANT

DR DAN JONES PhD, MSc, BSc, GCIEEM

25

PCA WELCOMES JAPANESE KNOTWEED RESEARCH

STEPHEN HODGSON

26

JAPANESE KNOTWEED

DAVID GREGSON, B.Sc., M.R.I.C.S., M.A.F.C.,
BioL. C.Eng

28


IMPORTANT CHANGES TO THE PRE-ACTION PROTOCOL

NIK CARLE FCIArb

29

WAISTELL AND WILLIAMS -V- NETWORK RAIL

NIK CARLE FCIArb



ASSESSING THE SAFETY OF HIGH-RISE BUILDINGS

A YEAR ON FROM GRENFELL TOWER: WHAT ISSUES ARE LIKELY TO BE OF CONCERN TO RESIDENTIAL PRACTITIONERS?

PHIL PARNHAM MRICS DIRECTOR, BLUEBOX PARTNERS

The fire at London's Grenfell Tower on 14 June 2017 was a human tragedy. As the disaster continues to be covered by the media and numerous investigations roll on, this article will focus on issues likely to be of concern to residential practitioners.

As ever, we try to provide suggestions on both evaluating the issues and reporting to clients. We have to stress these are no more than our own opinions and you must evaluate any suggestions given yourselves as practicing professionals.

What type of cladding is causing the problem?

Understanding the cladding system is key to properly analysing situations such as Grenfell.

Often called 'rainscreen cladding', this system has been around for more than 50 years, and over the last two decades has become the dominant cladding for most high-rise buildings.

Typically, most systems are non-load bearing. External cladding panels consist of several components:

- 1. An outer skin of rainscreen cladding panels fixed to a metal supporting frame.** The frame is fixed back to the structure of the building. Its main function is to protect from rain and improve the cosmetic appearance of the building. The panels do not provide thermal insulation.
- 2. A ventilated cavity.** As it is impossible to exclude all moisture (particularly wind-driven rain on upper

floors), the system includes a ventilated and drained cavity to tackle small amounts of water that get past the rainscreen. Most cavities are at least 25mm wide.

- 3. Thermal insulation.** Usually fixed directly to the structure of the building. Depending on the manufacturer's system, the outside surface of the insulation may be further protected using breathable sheathing felt. A wide range of materials are used including mineral insulation (such as Rockwool) or rigid foamed polymeric boards (such as Celotex).
- 4. An airtight vapour control layer.** Usually positioned on the warm side of the insulation (often on the surface of the existing wall), this has two primary functions. The first is to reduce the amount of water vapour getting into the wall construction from the inside of the building and the second to provide a layer to reduce air leakage into and out of the building. If this layer is not airtight, wind-driven rain will be able to penetrate the building itself due to differences in pressure.

This rainscreen cladding must be sealed to other parts of the building façade, such as other types of adjacent cladding, windows and doors. If these seals are ineffective, it may not meet water and fire resistance standards.

Fire-stopping is particularly important because if flames reach into the ventilated cavity they could quickly spread around the outside of the building. Typical locations of

fire stopping include the junctions of the cladding and compartment walls and floors as well as around the windows and other openings.



Figure 1: A rainscreen over-cladding system fixed to an existing 1950s block, approaching completion. The rainscreen is solid aluminium panels with mineral wool insulation. If installed properly, this would probably be considered low risk.

Materials used

Various materials can be used as the rainscreen cladding layer, including fibre cement panels, solid metal sheets and composite sheets. The most common composite sheet consists of aluminium sandwiching a thin core of different filler materials, including calcium silicate or polyethylene.

It is important to note that the composite sheets are relatively thin, usually between 3 and 7 mm thick and must not be mistaken for insulated cladding panels which contain thermal insulation.

Important Note:

The type of cladding used at Grenfell is an aluminium composite material (ACM). It's important not to confuse this with another use of ACM, which usually denotes 'asbestos containing materials'. It's possible that clients may suffer from similar confusion.

Not the first

Although the tragedy at Grenfell resulted in the highest number of fatalities, it was not the first serious fire in a multi-storey residential block. Others include:

- **Garnock Court, Irvine, Scotland, 1999.** One person died and five were injured. Witnesses reported that a vertical ribbon of cladding on one corner of the block was quickly ablaze. The fire reached the 12th floor within ten minutes. Following the fire, plastic cladding and windows were removed as a precautionary measure and the Scottish Building Regulations amended.
- **Laknal House, Southwark, London, 2009.** Six people died and at least 20 injured. An inquest found that botched renovations had removed fire-stopping material, which allowed a blaze to spread. The problem was not picked up in safety inspections carried out by Southwark Council. The council was prosecuted in 2017 and pleaded guilty to four charges concerning breaches to safety regulations and expressed "sincere regret for

the failures that were present in the building". Despite calls for a public inquiry, no further investigations were carried out.

- **Lomond House, Charles Street, Glasgow, 2015.** Fire spread up through eight storeys of this block owned by Glasgow Housing Association. The blaze came just two years after improvement works which enclosed balconies to make the flats warmer. After the fire, the housing association improved fire-stopping in the block.

These three examples together with numerous others from around the world clearly show that fire safety of high-rise blocks has been a concern for decades.

What caused the fire at Grenfell?

Much has been written about the cause of the fire at Grenfell, and almost a year later new revelations appear on a regular basis. Because of the ongoing inquiry and the various criminal investigations, we won't attempt to review such a complex case – we simply could not do this justice. However, to carry out effective assessments of residential flats in high-rise blocks, particularly at home buyer and building survey level, it's useful to understand some of the emerging facts:

- The main reason for the rapid spread of the fire is likely to be the type of rainscreen cladding panels. They were Reynobond PE panels, consisting of two coated aluminium sheets, laminated to both sides of a flammable polyethylene core.
- A rigid polyisocyanurate (PIR) foam was used to thermally insulate the existing walls of the building behind the rainscreen. This rigid insulation burns when exposed to heat and gives off toxic cyanide fumes.
- Evidence continues to emerge about the effectiveness of the fire-stopping within the ventilated cavity. Many commentators suggest the 'chimney' effect of an open cavity allowed the quick spread of the fire.

More facts will emerge as inquiries progress, but these factors have driven much of the government's response to the disaster.

Government action

In response to Grenfell, the Ministry of Housing, Communities and Local Government (MHCLG) established the 'Building Safety Programme' (BSP) to cover high-rise residential buildings, including hotels. Its aim is "to make sure that residents of high-rise buildings are safe - and feel safe - now, and in the future".

With support from local fire and rescue services and a panel of independent expert advisers, the BSP supports building owners in taking immediate steps to ensure their residents' safety and in making decisions on any necessary remedial work.

The panel advised the government to identify the type of ACM used in any residential building over 18 metres tall. This was to ensure the cladding was of 'limited combustibility' and that it meets current Building Regulations guidance on external fire spread. To help in this process, cladding samples were tested by the Building Research Establishment (BRE) free of charge, but the building owners were responsible for collecting the samples.

In July 2017, the panel also recommended large scale testing of whole cladding systems to understand the way in which different types of ACM panels behave with different types of thermal insulation in a fire. These tests were carried out by the BRE in accordance with British Standard 8414 and involved building a 9-metre high demonstration wall with a complete cladding system. The findings were communicated to owners of residential blocks through various channels.

Identifying the type of ACM

ACM cladding can't be identified visually, as solid aluminium sheets look the same as aluminium composites, particularly from ground level. An ACM can only be properly identified by inspecting a cut edge of a panel. Even then, the nature of any filler material can only be determined through laboratory tests. Owners of potentially affected blocks must provide two samples from the same building, both above and below 18 metres from the ground. This particular test identified three types of ACM, categorised by the filler used:

- Category 3 ACM (least fire resistant). Two sheets of aluminium with an unmodified polyethylene filler. The type used on Grenfell.
- Category 2 ACM. Two sheets of aluminium with a fire-retardant filler.
- Category 1 ACM (most fire resistant). Two sheets of aluminium with a limited combustibility filler.

It is also necessary to understand the interaction between cladding panels and the thermal insulation, along with any cavities and voids that need to be fire-stopped. The large-scale tests investigated this relationship.

Advice from the BSP

Rather than go through the detailed and complex results, we have reproduced part of the summary from the Building Safety Programme (update and consolidated advice for building owners following large scale testing) issued in February 2018:

- **Category 3 ACM presents a significant fire hazard on buildings over 18m with any form of insulation.**
In our view, this means this type of cladding does not meet the building regulation standard under any circumstances.
- **Category 2 ACM:**
 - » **presents a notable fire hazard on buildings over 18m when used with rigid polymeric foam-based insulation on the evidence currently available.**
 - » **can be safe on buildings over 18m if used with non-combustible insulation (e.g. stone wool), and where materials have been fitted and maintained appropriately, and the building's construction meets the other provisions of Building Regulations guidance, including provision for fire breaks and cavity barriers.**
- In our view, this means that the nature of the thermal insulation and how the cavities and other junctions are fire stopped are critical to the safety of this type of cladding.
- **Category 1 ACM can be safe on buildings over 18m with foam insulation or stone wool insulation, if materials have been fitted and maintained appropriately, and the building's construction**

meets the other provisions of Building Regulations guidance, including provision for fire breaks and cavity barriers.

The scale of the problem

Based on figures released by the Building Safety Programme in March 2018, the total number of residential and public buildings in England fitted with Aluminium Composite Material (ACM) and over 18 metres tall was 319. Of these, 306 have ACM cladding systems that are unlikely to meet current Building Regulations guidance and therefore present fire hazards, according to the panel of experts.

Of these 306 buildings:

- 158 are social housing buildings (managed by local authorities or housing associations)
- 134 are private sector residential buildings, including hotels and student accommodation
- 14 are public buildings, including hospitals and schools.

Of the 158 social housing buildings that failed large-scale system tests, 65% (103) have begun remediation. Just seven have completed. Data is still being collected on progress of private sector buildings.

This information is held centrally and while getting access to a database of affected blocks would be very helpful in the valuation process, it's not that simple. According to the Guardian (16 March 2018), concern over terrorism and arson has led to councils and landlords keeping the location of affected blocks secret.

One council-owned block in Berkshire with combustible insulation has been attacked by arsonists several times and many affected blocks have 24-hour fire wardens.

It is important to build up your knowledge of residential blocks in your local area. Local press and media are a useful source of information as the issue still attracts a great deal of public interest.

Scale of remedial work

The BSP points out the complexity of remediation work on affected buildings. It involves broader fire



Figure 2: Local authority residential block with Category 3 ACM installed in 2009. It was removed, and replacement is still under discussion.

safety systems, typically including provision for escape, compartmentalisation and fire-fighting equipment. Although the nature of remediation schemes will vary between blocks, for most Category 3 ACMs, removal and replacement is the only safe option.

Private residential blocks

To gain an insight into how this has been affecting private residential blocks, we have included three typical examples:

Blenheim Centre, Hounslow

Mixed commercial and residential development, owned by Legal & General who announced ownership of the entire, multi-million-pound cost of removing the Grenfell-style cladding to the flats above the Blenheim Centre. Therefore, the 334 residential leaseholders at the flats will be spared repair bills estimated between £20,000 and £30,000 for each flat. As an interim measure, 16 fire marshals have been employed 24/7 at a cost of £165,000 a month.

Citiscap, Frith Road, Croydon.

Residential complex with 93 dwellings with ACM cladding. It's estimated it will cost £2 million to make the block safe, as well as £20 000 a month for fire marshals. FirstPort, the Property Managers took the issue of liability to a tribunal. In March 2018, the London Residential Property First Tier Tribunal ruled against the leaseholders, insisting they should pay because 'if the manager is obliged to do work ... the tenants are obliged to contribute to the cost although they remain entitled to dispute the reasonableness of the cost'.

Following this announcement, Barratt Developments announced it will pay for the remediation work and the backdated and future fire safety costs, saying: "Citiscap was built in line with all building regulations in place at the time of construction. We don't own the building or have any liability for the cladding. The important thing now is ensuring that owners and residents have peace of mind."

Sesame Apartments, Battersea, London

According to the Guardian (19 April 2018) residents of 80 flats are each facing bills of up to £40,000 because the building is clad with ACM panels. Leaseholders were told by the managing agent that the freeholder would not be responsible for the costs. It seems the leaseholders are about to receive £8,000 bills to cover a new fire alarm and the cost of a 24-hour watch in the building, but it's the potential £2.2m bill for replacing the combustible panels that is most concerning. The managing agent said it hoped insurers and warranty providers would pay the bill. These three different outcomes show how difficult it is to predict not only how the safety issues will be resolved, but who will pay.

Buildings under 18m tall

The BSP focuses on residential blocks higher than 18 metres, as this is the criterion contained in Approved Document B of the Building Regulations and usually equates to blocks of 5/6 storeys and higher. However, what if a residential block of less than 18m high is clad with a Category 3 ACM over a polymeric insulation layer? Does this pose any less of a risk? It could be argued

that occupants would notice little difference between a four or sixth floor flat when fire is rapidly spreading across the block's façade.

The Local Government Association says:

"Buildings less than 18 metres tall are not subject to the same requirements in terms of cladding. However, we will be working with the Government to take account of the learning from all this work in reviewing current regulations and requirements"

This echoes advice included on the website of the Building Safety Programme:

"The government is working with the Expert Panel to consider whether there are any heightened risks linked to other cladding systems and broader fire and building safety issues in high rise buildings"

In our view, this clearly suggests that when the highest risk installations are resolved, the government will consider other less urgent problems, which could include lower rise blocks clad with ACM panels. Watch this space.

Advice from RICS

Following Grenfell, the RICS issued several guidance notes:

- **Valuation** - [Tower blocks and cladding: valuation statement.](#)
- **Technical** - [a briefing note produced by Gary Strong](#) FRICS Director of Practice Standards & Technical Guidance (RICS). This is aimed at practitioners looking at remediation options for clients.
- [A Video update by Gary Strong](#)

Although RICS cannot be prescriptive about what valuers should do or say, their valuation statement gives useful reminders on handling uncertainty:

- Where there is considered to be a material uncertainty around a valuation these uncertainties should be clearly articulated. The revised RICS Valuation – Global Standards (Red Book) 2017, effective from 1 July 2017, addresses how to deal with this in sections VPS 3.2.2 (o) and VPGA10. This states that the addition of a commentary around uncertainty is only mandatory where the uncertainty is material. In addition, the use of an uncertainty clause should only be employed in exceptional circumstances and must be proportionate to the case i.e. the prevailing uncertainty really only relates to high-rise or high-risk buildings.
- Where a decision on how much explanation and detail is necessary concerning the supporting evidence, the valuation approach and the particular market context needs to be made, it makes it clear that this is a matter of judgment in each individual case. In any event, RICS standards advise that it would not normally be acceptable for a valuation report to have a standard caveat to deal with unspecified material valuation uncertainty. The degree to which an opinion is uncertain will normally be unique to the specific valuation, and the use of standard clauses can devalue or bring into question the authority and professionalism of the advice given.

Although many RICS members would have preferred clearer advice from their professional institution, dealing with uncertainty is always a challenge and must be dealt with on a case by case basis. Two points can be made:

- The problems associated with high-risk cladding on

high-rise buildings clearly constitutes a ‘material uncertainty’ if the constructional type is not known.

- It is not acceptable to use a standard caveat simply because a property is in a high-rise residential block. There must be a clear ‘trail of suspicion’ that justifies the expression of uncertainty. For example, many modern blocks are clad with non-combustible material (such as brick or stone) and although we will not know for sure whether the cladding conforms to all the building regulations, there may be little justification to call for further investigations.

Advice from lenders

Although RICS must be measured and objective, lenders and surveying organisations are more prescriptive about what they want to see in a report. We have found some examples that could help to establish current norms across the sector.

- **General advice to valuers from large surveying company** – “The tragic events at Grenfell Tower put the spotlight on fire safety in large blocks of flats. Where a valuer has uncertainty over the type of cladding or other fire safety measures then, in consultation with our lender client and in the absence of any other specific reporting requirements, the guidance to the valuer is to recommend further investigation prior to confirming value”.
- **Specific advice to valuers from a lender** – “Valuers should express caution around fire safety. Discretion can be used on blocks which for example are traditionally brick clad. However, where the block has any aspect which could be considered to impact the safe occupation and marketability, including other forms of external cladding, Valuers should return a zero value until proof has been received that the block meets Building Regulations and the testing requirements outlined by the Department for Communities and Local Government (DCLG). For the block to be suitable for lending, proof must be obtained from the landlord that Building Regulation and testing requirements have been met. This proof can be obtained pre or post inspection, but a zero value must be returned until provided”.
- **Clause to include in a valuation report from a large surveying company** – “The building has external cladding. In the light of recent events, a report is required from a Fire Safety Officer or a Structural Engineer with appropriate fire prevention experience confirming that the property has been inspected post-14 June 2017 and the cladding system confirmed to meet current requirements.”

The problems with assessing properties in high-rise blocks

Even before Grenfell, lenders never liked tower blocks. Here is a list of factors that could affect their decision to lend:

- Is the block a Large Panel System or other prefabricated system?
- Are the service charges high and/or escalating?
- Is there evidence of poor security, vandalism and crime in and around the block?
- Does the block have lifts (especially important if it is

above four storeys high)?

- Is there a limited history of re-sales on the open market?
- Is there evidence of proactive estate/block management? and
- Is the mix of tenants and owner-occupiers sensibly balanced?

Add in the issue of ACM cladding and it is not surprising that many high-rise flats do not measure up.

Many lenders will accept flats in high-rise blocks if they are good quality, modern, ex-local authority, medium and high-rise purpose built or converted flats in prestigious areas of city centres.

BlueBox partners protocol for assessing high-rise flats

To help with decision-making, we have produced a protocol that may be useful for residential practitioners.

WARNING: It is designed to help you come to a view based on the evidence you collect. This is **NOT** a process that automatically provides you with the ‘right’ answer. Instead it puts you in the right ‘ball park’ so you can then make your own decision. This protocol should:

- Pose the most important questions.
- Help show that you have followed a rational process.
- Provide a record for your files.

Tick the appropriate box. The more ‘yes’ responses, the more likely the property will be acceptable. The more ‘no’ responses, the less likely the property will be acceptable and the greater the justification for further recommendations. This is not a numerical exercise but can provide a more objective basis for assessment.

| YES | NO |
|---|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
| Is the building less than 5 storeys or 18m? | |
| <input type="checkbox"/> | <input type="checkbox"/> |
| Is the cladding non-metallic? | |
| <input type="checkbox"/> | <input type="checkbox"/> |
| Has any suspect cladding been tested to BS 8414 since 14 June 2017 and proved satisfactory? | |
| <input type="checkbox"/> | <input type="checkbox"/> |
| Has a fire risk assessment been carried out since 14 June 2017 and proved satisfactory? | |
| <input type="checkbox"/> | <input type="checkbox"/> |
| Is the construction of the block likely to be acceptable? (NOT LPS or other prefabricated system). | |
| <input type="checkbox"/> | <input type="checkbox"/> |
| Is it satisfactory security, no evidence of vandalism, or other crime? | |
| <input type="checkbox"/> | <input type="checkbox"/> |
| Does the block have a lift? | |
| <input type="checkbox"/> | <input type="checkbox"/> |
| Is there evidence of satisfactory management of the block? | |
| <input type="checkbox"/> | <input type="checkbox"/> |
| Is there a satisfactory mix of tenants and owner-occupiers? | |
| <input type="checkbox"/> | <input type="checkbox"/> |
| Is there satisfactory evidence of demand in the form of sales? | |
| <input type="checkbox"/> | <input type="checkbox"/> |
| Are the service charges reported to be reasonable and stable? | |

Typical report phrase

These questions cover a wide range of characteristics of high rise flats. Rather than cover all the issues, we have included a phrase/paragraph that relates only to the cladding of a block. If you are concerned about the cladding, the following phrase may work for a HomeBuyer Report (or level 2 equivalent):

Part of this block is covered with metal faced cladding panels (describe which part). Government tests have shown some types of cladding panels can pose a serious fire risk. Not only will this put the occupants at a safety risk, it can also result in higher property insurance premiums, costly management charges and expensive large-scale remedial work. This will impact on value.

The vendor/landlord/freeholder should provide sufficient proof that the cladding and the rest of the building meets the requirements laid down in the Ministry of Housing, Communities and Local Government 'Building Safety Programme' (including the latest monthly updates).

If this is not provided, you should not proceed with the purchase.

The precise content depends on the nature of the property, but such a situation would warrant a condition rating three (further investigation), a nil valuation (if appropriate) and clear warnings to the client about proceeding with the purchase.

Further investigations – what type and who should carry them out.

One of the problems with recommending an issue needs further investigation is the client will phone you straight back and ask who should carry it out.

Cladding tests should be done by an assessor employed by a test laboratory accredited by the UK Accreditation Service to carry out tests in accordance with BS 8414 and classify results to BR135. However, the BRE are currently doing this for free.

For fire risk assessments, the National Chief Fire Officer Council recommends you choose someone from a professional body that operates a certification scheme for fire risk assessors and fire risk assessment companies. They have a very useful guide on how to find and appoint an appropriately qualified person.

A review of the building regulations

Shortly after Grenfell, the government announced it was going to carry out a review of the building regulations and fire safety. Led by Dame Judith Hackitt, its purpose was to make recommendations that will ensure there is a sufficiently robust regulatory system for the future and to provide further assurance to residents. The review examined the building and fire safety regulatory system, with a focus on high-rise residential buildings.

An interim report was published in December 2017 with the final report (Building a Safer Future) appearing in May 2018.

Interim and final reports – key findings

The interim found that the current regulatory system for ensuring fire safety in high-rise and complex buildings was not fit for purpose.

'This applies throughout the life cycle of a building, both during construction and occupation, and is a problem connected to the culture of the construction industry and the effectiveness of the regulations.'

The final report was equally damning. Dame Judith found '...that Indifference had led a "race to the bottom" in building safety practices with cost prioritised over safety'. However, because the report stopped short of recommending a ban on flammable cladding, it was criticised by a number of groups including the survivors and the bereaved family members. So fierce was the reaction, the government announced they would consult on banning flammable cladding.

It is beyond the scope of this article (and of its author) to provide a full Account of the current situation because it is rapidly changing. There is a clear indication that a complete overhaul of building regulations and associated legislation will occur in the near future. It is important that all residential practitioners keep up to date with developments as the implications are considerable even for those not involved with high rise buildings.

Further sources:

Here are the most useful sources of information:

Building Safety Programme:

<https://www.gov.uk/guidance/building-safety-programme>

RICS:

<http://www.rics.org/uk/news/grenfell-tower/>

National Fire Chiefs Council:

<https://www.nationalfirechiefs.org.uk/Home>

Local Authority Building Control:

<https://www.labc.co.uk/news/grenfell-updates-and-statements>



MICROBORE HEATING SYSTEMS

HOW THEY WORK, THE ISSUES & HOW TO REPORT ON THEM

DR LISA BLAKE TECHNICAL MANAGER, SAVA
PHIL PARNHAM MRICS DIRECTOR, BLUEBOX PARTNERS

Many heating systems in the UK still use microbore piping. Here, we take a look at the advantages and disadvantages of microbore piping and how best to report on it.

History of microbore piping

Microbore pipes were introduced in the 1970s and were hailed as an innovative plumbing material for central heating systems. The piping comes on rolls and consists of copper pipe with a thickness between 8 mm and 10 mm.

The narrow pipe was flexible enough to be gently bent by hand, reducing the need for joints and soldering which can cause additional heat loss and leakage. This meant that installing the pipe-work for a central heating system could be regarded as a DIY task, saving the homeowner time and money.

More recently, as the price of copper has increased, and we are more environmentally aware, there is renewed interest in microbore piping.

How does microbore differ from conventional systems?

Microbore piping is not only flexible and easy to install, but the narrower pipes also use less water. This means that microbore heating systems need less boiler



Figure 1 - coil of copper micro-bore pipe

heat and a smaller capacity boiler can be used. The reduced surface area of the pipes also means less heat loss.

Microbore systems are always two-pipe systems using the flow and return convention. Traditional older systems can often be one-pipe systems, where the heat flow from the boiler is one continuous loop.

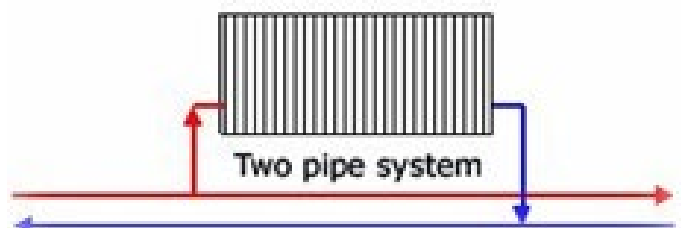


Figure 2 - one and two-pipe systems

Microbore heating systems often have both the flow and return on the same side of the radiator (twin entry valves). These valves further reduce costs by economising on the pipework. Traditional systems tend to have bottom opposite end (BOE) connections, where the water goes into and comes out of the radiator at either end of the bottom of the radiator. These twin entry valves take hot water from the boiler, which is then piped to the other end of the radiator through a length of 10mm pipe (spreader pipe). The spreader pipe ensures hot water circulates throughout the whole radiator.

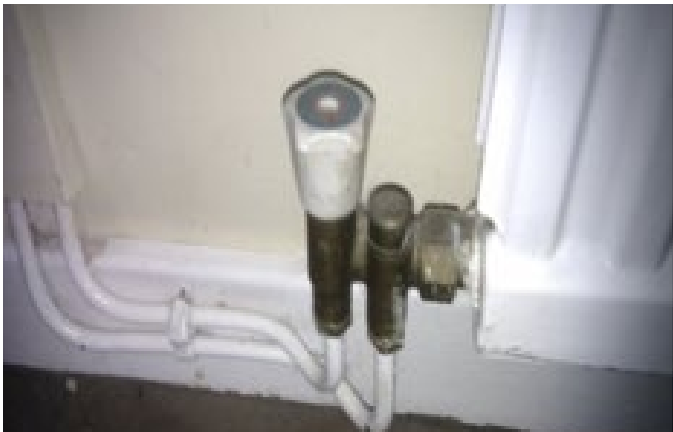


Figure 3 – Twin entry valves

The spreader pipe is surrounded by another pipe with a wider diameter, which doesn't extend as far into the radiator. This is called the return pipe. The cooler water from the bottom of the radiator is returned to the boiler via the return tube attached to the valve.

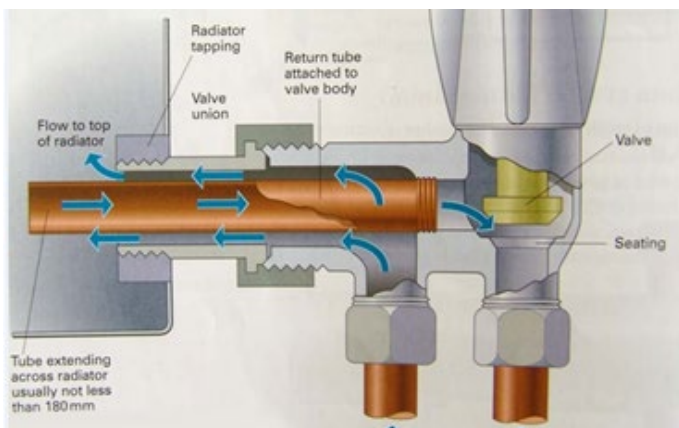


Figure 4 - Twin entry valve - flow and return

As more people changed to double radiators, the twin entry valves were often replaced with BOE, as the spreader pipe would have nowhere to go. In addition, if the new radiator has back tappings (the inlet of the radiator where the valves will be screwed), the twin entry system can't be used as this required end tappings.

The microbore system connects the radiators using a flow manifold and a return manifold, similar to underfloor heating. Generally, it uses one set of manifolds for each floor.

With the narrow microbore piping, the manifold must be within about 5m of each radiator and are usually installed under floor boards or in the airing cupboard. The manifold is fed by 22mm pipes from the boiler and the 8 or 10mm microbore piping then goes to the radiators.

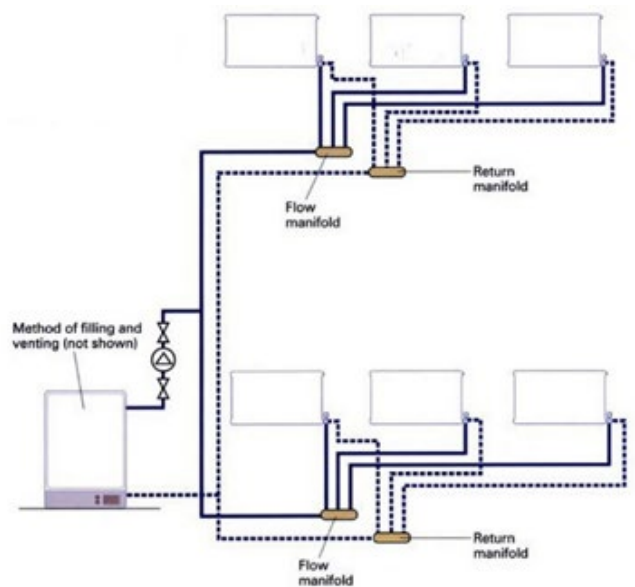


Figure 5 - radiators connected to manifolds



Figure 6 - microbore manifold

Modern microbore

Microbore as a heating application has pretty much gone full circle, particularly since the introduction of plastic 'speedfit' pipework.

Over the last 10 years, 'speedfit' pipework has become commonplace on new build property for similar reasons to the

copper version during the '70s. It comes on a coil, is easy to manipulate, has a smaller diameter meaning it's less invasive to existing joists and can be more easily contained in the wall structure to ensure there is no visible pipework. 'Speedfit' technology also makes effecting a firm water tight connection much easier and removes the need for a blowlamp. The 'speedfit' is less prone to kinks or dents and, as it is plastic, less prone to build up of sediment.

How does 'speedfit' work?

The 'speedfit' pipework connects the boiler to the radiators in the same way as copper microbore - by using manifolds. On these type of installs, there should be at least 600mm of copper pipe from the boiler before it converts to plastic. If plastic pipework is running down a wall and into the radiator valves, it is good working practice to run metallic tape down the length of pipework. This is so that, once covered by plaster and decoration, a home owner can use an electrical checker to establish where the pipe is located so they don't inadvertently drill through it when installing a curtain tie back or curtain pole.



Figure 7 - 'speedfit' radiator plate

Issues with microbore systems



Figure 8 - 'speedfit' radiator valve

If installed correctly and well-maintained, the system can be problem free. It's vital to use a suitable inhibitor and to flush regularly, ideally by an engineer familiar with microbore systems.

A common issue with the microbore system is that it's only suitable for smaller domestic properties, due to potentially

longer pipe runs (greater frictional resistance) and the limited available flow rate, unless more manifolds are used. The smaller pipes can become blocked with internal sediment, particularly in hard water areas.

Although the malleable narrow copper pipes make this system easier for DIY installation, they can become kinked easily, which impedes the flow of water and leads to a build-up of sludge and sediment. The copper pipes leading to the radiators are often traced into the wall above the skirting board to avoid 'hoover bash'.

Reporting on microbore systems

While microbore systems do have a particular set of characteristics, they should be treated like all other carbon-based fuels for assessment and reporting.

The most important question to ask the vendor is whether the system has been serviced/inspected by an appropriately qualified person. If authentic looking evidence is produced, then you should consider allocating a condition rating 1 for that particular element. However, if the system hasn't been serviced or no evidence is produced during your inspection, then a condition rating 3 should be applied. This is because of the potential hazard posed by gas, oil or solid fuel boilers. An installation that can kill should never be rated as a 2 as this gives the wrong message in terms of urgency.

Although this '1 or 3' approach is clear for the practitioner, the client could be disappointed with such a minimalist approach. Consequently, you could add a carefully worded phrase that places the client in the right area, such as:

For Gas heating

"The property is heated by a microbore gas central heating system consisting of a boiler in the cupboard on the landing with radiators in every room. There is no evidence that the heating system has been properly installed or serviced within the last twelve months and many of the radiators pipes are dented and bent. **Condition rating 3 (further investigation).**

"Heating installations should be checked and serviced regularly (usually every year) by a registered 'competent person' but there was no evidence of this. You should ask an appropriately qualified person to do this before you commit to the purchase and you should not use this boiler until this has been done.

"Although the nature and extent of the repair work will not be known until this report has been received, you should budget for extensive repairs."



THE FITNESS FOR HUMAN HABITATION BILL

WHAT SURVEYORS NEED TO KNOW

HILARY GRAYSON BSC EST MAN (HONS) DIRECTOR OF SURVEYING SERVICES, SAVA
FIONA HAGGETT BSC (HONS) FRICS DIRECTOR OF OPERATIONS, BLUEBOX PARTNERS

The Fitness for Human Habitation and Liability for Housing Standards (Homes) Bill was introduced by Karen Buck, the Labour MP for Westminster North.

First presented before the Grenfell Tower disaster, the bill was initially defeated by Conservative MPs. However, in the wake of Grenfell and with a swell of public opinion backing stricter sanctions on irresponsible landlords, this new version of the bill has gained the full support of the government. So much so that the Department for Housing, Communities and Local Government even helped to draft it. Given this political backdrop, there is the feeling that the bill will eventually pass into law.

It has the full backing of Shelter, the Residential Landlords Association and National Landlord Association. Now at committee stage, it's due to be scrutinised by a Public Bill Committee, although no date has yet been announced.

All this parliamentary activity brings it a step closer to becoming law, what implications will this have for surveyors, landlords and managing agents?

What is in the bill?

For the first time, the bill defines the meaning of the phrase "fit for human habitation". In this context, the term "unfit" will now cover issues like fire safety, inadequate

heating, poor ventilation, condensation and mould, therefore covering issues that could be hazardous to the health of tenants and occupiers.

This means that the phrase "fit for human habitation" will apply to properties that are non-hazardous to the health of people living in them.

The bill also says that, should private or social tenants be exposed to unsafe areas in the property they are renting, they will be able to legally force their landlords to take remedial action to resolve the issues.

Amending current clauses

The bill is intended to amend a clause which already exists in Section 8 of the Landlord and Tenant Act 1985, which required homes to be "fit for human habitation" at the start of the tenancy and to remain so throughout. Problems arose as the clause only applied to homes with a rent of £80 or less per annum in London (£52 or under elsewhere), which is not a situation currently reflected in any tenancy in England or Wales.

It is also intended to amend the Building Act 1984 to make provision about the liability for works on residential accommodation that do not comply with Building Regulations, and for connected purposes.

Although the central aim of the bill hasn't changed following its reintroduction, its scope has been updated. It now applies to all areas of a building "in which the landlord has an interest", including communal areas. Additionally, the categories that determine whether a house is fit for human habitation have been updated, with the bill now reflecting the list of 29 hazards listed on the 2004 Housing Health and Safety Rating System (HHSRS). This was initially created to enable local authorities to enforce living standards across the private rented sector.

Why is the bill needed?

As the HHSRS already applies, why is this bill necessary? According to Shelter, "...renting, in both the social and private sectors, is not fit for purpose, and hasn't been for a generation. Too many renters live in unsafe conditions. In total, over 1 million private and social tenancies have Category 1 hazards, home to about 2.5 to 3 million people, including children. These figures have been pretty much static for the last 3 years."

In addition, the 2015/2016 English Housing survey found that the number of properties with a Category 1 hazard under the HHSRS (that is a "serious and immediate risk to a person's health and safety") numbered 244,122 in the social sector and 794,600 in the private sector.

Problems with current system

The HHSRS depends on local authorities receiving a complaint about potential hazards and then being required to enforce those complaints. In addition, the HHSRS cannot be used against local authority landlords, as that would mean local authorities enforcing against themselves.

Also, in practice, it is not commonly employed against other social landlords due to the close relationship they have with local authorities. Essentially, in many cases it's unenforceable.

Therefore, the bill is intended to act as a stronger, more enforceable version of HHSRS by adopting and applying its rules to all landlords and all rented properties.

Despite bad press surrounding 'bad' landlords in the private sector, the irony is that the tragedy at Grenfell Tower predominately affected tenants in the social sector and was the bluntest reminder possible of the dangers of unsafe accommodation. It demonstrated the appalling consequences of ignoring health and safety problems.

How will the bill impact on tenants?

It will give tenants a way to take effective action themselves rather than rely on overstretched local authorities. If they rent a property in poor condition and the landlord fails to do the necessary maintenance, the bill gives tenants the right to take their landlord to court where the property is not fit. This applies to both private and social tenants.

They will be able to apply directly to the Court using their own evidence for an injunction to compel their landlord to carry out works, or for damages (compensation) for the

landlord's failure to keep the property in good repair. According to Shelter, this will not only empower tenants by giving them the tools they need to enforce repairs or rectify problems but will improve the housing stock generally through making landlords aware of their responsibilities and the risk of being sued.

At Grenfell Tower, tenants had repeatedly raised safety concerns which were not addressed by the landlord. However, they had no further options or routes to redress. In theory, the bill would change this.

However, according to Shelter, as it currently stands the bill still would not have applied in the case of Grenfell. They say it must be extended to apply to all common parts (for example, stairwells) and the structure of the building, assuming this is also the landlord's responsibility.

With these revisions, tenants would be able to compel their landlord to make repairs to these too. The problems that were being raised by Grenfell tenants, such as fire doors, emergency lighting and sprinklers, would only be covered by an extension to the bill. Shelter will be pressing for amendments at committee stage.

How might the bill impact on agents and surveyors?

It's possible that the legislation will affect lettings agents who fully manage properties on behalf of landlords, if the properties don't meet the new standards. The responsibility of ensuring that the property is "fit for human habitation" could well be passed on to them, depending on the specific terms of their agreement with the landlord.

Empowered tenants (either individually or in groups undertaking class actions) seeking their own route to redress will be able to directly instruct surveyors or environmental health officers to provide a report on the property and act on their behalf.

For surveyors to benefit from this, they must fully understand HHSRS and the definitions of hazards.

Replacing current surveying suite

It also raises the question of whether the existing suite of survey products are 'fit for purpose'. If a surveyor is instructed by a landlord, will a HomeBuyer Report be sufficient in terms of fitness for human habitation? While 'services that kill' may be sufficiently covered by a valid gas or electrical safety certificate, and dampness can be identified, where would this leave slips, trips and falls?

We also think this will likely cause lenders to rethink their risks on Buy-to-Let property. It's possible that they will tighten their lending requirements, which will require a valuer to have an awareness of the HHSRS hazards and their scoring system.

Potential impact on value

What, if any, will be the impact on value? Our immediate reaction was that any impact on value will be small, because most of the houses affected will be at the bottom end of the market and will already be hit by MEES

(Minimum Energy Efficiency Standard).

However, this could be too simplistic. While many F and G properties are unlikely to meet the HHSRS requirements, RDSAP is not about fitness for habitation, rather it solely covers energy efficiency.

When considering 'slips, trips and falls', the following could impact on the risk:

- inappropriate light fittings meaning rooms are poorly lit.
- issues that make working in a kitchen with hot water, a stove and hot oil more dangerous.
- floor surfaces and grading that if not well designed and constructed combine to become slippery when wet.
- pathways that become slippery when poorly drained.
- poorly located and inadequate power points in rooms, requiring extension cords that cross main paths in the house.
- loose steps.
- missing floorboards or tears in flooring materials.

All the above could quite easily be found in properties with a good energy efficiency rating.

Changes in policies

Inevitably there will be some 'surprise' properties, where hazards exist due to design or alterations. Hazards will result in costs and potential voids while the issue is rectified, both of which are risk factors for the lenders.

As a result, we may see a tweak to policies on Buy-to-Let and more obligation placed on valuers to report potential hazards and their impact on value and/or whether the house can be let. If this is the case, valuers will have to fully understand the HHSRS.

Other professionals providing more general management or letting services for landlords will also need to understand the legislation. This will enable them to ensure their landlords' properties meet the new definition of being fit for human habitation. Even if the property managers themselves are not liable, they could suffer from a knock-on effect regarding their portfolios and revenue streams should the landlord sell the property.

Given the government's support of the bill, its relatively short length and the political climate following Grenfell, it's not unreasonable to expect Royal Assent before the end of 2018.





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RODENT INFESTATIONS

IDENTIFYING AND REPORTING

TECHNICAL TEAM, SAVA

PHIL PARNHAM MRICS DIRECTOR, BLUEBOX PARTNERS

At Sava, we handle complaints on behalf of surveyors on a regular basis and from direct experience know that homeowners are not best pleased if they move into a property to find they're sharing it with unwanted house guests.

We're focusing predominantly on rat and mice infestations as these species have adapted well to the human environment, have health implications, are common pests and can cause much upset if found in the home.

We have seen cases where homeowners have been woken by the sounds of rats crawling in their loft space, and others who claimed it was "too embarrassing to invite people over to their new home".

While this could be construed as an overreaction, it's certainly true that rodents can pose a health hazard, particularly for vulnerable members of the community. Those at risk include the elderly, the very young, people with a disability and those with health problems.

It's worth noting that rodents are among the most successful animals on earth, largely due to their ability to adapt to their environment, their natural intelligence

and reproductive abilities.

Current legislation

There are various pieces of legislation relating to the control of rodents within a property:

- **The Prevention of Damage by Pests Act 1949** means that a local authority has a duty to ensure, so far as practicable, that their district is kept free from rats and mice. They must carry out inspections, destroy rats and mice on relevant land, keep that land free from rats and mice (so far as practicable) and enforce the duties of owners and occupiers of land.
- **The Building Act 1984** covers Building Regulations and the sections applicable to pest control are:
 - » To secure the health, safety, welfare and convenience of persons in or about buildings and of others who may be affected by buildings or matters connected with buildings.
 - » To prevent waste, undue consumption, misuse or contamination of water and to further the protection or enhancement of the environment.
 - » To make regulations with respect to the design and construction of buildings, demolition of buildings, and the provision of services, fittings and equipment in or in connection with buildings

- **Section 83 of the Public Health Act 1936** covers cleansing of filthy or verminous premises. Local authorities have the power to give notice on the owner or occupier of the premises requiring them to remedy the condition of the premises.
- **Section 82 of the Environmental Protection Act 1990** explains summary proceedings by persons aggrieved by statutory nuisances. If the infestation is considered a 'statutory nuisance', tenants may be able to bring a prosecution to the landlord or agent under this act.
- **The Destructive Imported Animals Act 1932** and the **Wildlife and Countryside Act 1981** mean it is illegal to release the grey squirrel into the wild.

Explaining rats

There are two species of rat in the UK: the brown rat, also known as the Norway rat, common rat or sewer rat (*Rattus norvegicus*) and the black rat, also known as the ship rat (*Rattus rattus*).

The brown rat usually eats around one tenth of its body weight every day. Wild rats are opportunist omnivorous eaters, meaning they eat whatever they can find (including breakfast cereal) but typically, their diet consists of grains, fruits, vegetables, seeds and nuts.

In suitable conditions, the brown rat can breed throughout the year and the female can produce up to five litters during this time. The gestation period is 21 days and one litter can result in up to 14 rats. The population can grow from 2 to 15 000 in just one year.

The average life span of a brown rat is two to three years, while the average lifespan of a black rat is one year.

Explaining mice

Mice are a common pest, but usually more troublesome around autumn and winter. The two types of mice are: the house mouse (*Mus domesticus*) and the field mouse, also known as wood mice and yellow necked mice (*Apodemus spp.*).

Like the rat, mice are omnivorous but prefer to eat grains, fruits and seeds.

Explaining squirrels

The grey squirrel may be a familiar animal in the United Kingdom but isn't a native species. It was introduced from North America during the late 19th century. Since then, the grey squirrel has displaced the native red squirrel across most of England and Wales, although the latter has managed to hang on in parts of Scotland, Ireland, Cumbria, Northumberland and on the Isle of Wight.

Grey squirrels (*Sciurus carolinensis*) are regarded as a pest species in the UK while the red squirrel (*Sciurus vulgaris*) is a fully protected species.

Grey squirrels can enter domestic property in search of food and shelter and, because of their size, can cause considerable damage to properties, including dislodging roof tiles.

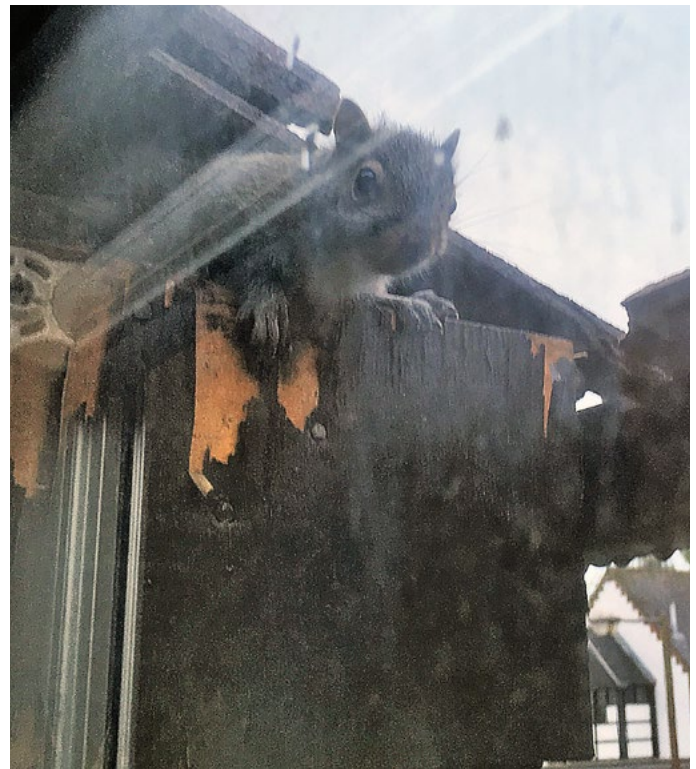


Figure 1 shows a grey squirrel coming out of a broken fascia board, and the damage caused.



Figure 2 shows the grey squirrel trying to re-enter the property after a mesh panel was fixed by a pest controller.

Hazards and risks

Rodents present hazards and risks to both people and property. This is common knowledge and the reason why people want to urgently rectify any infestations found on their property.

Disease

Rats and mice can spread many diseases, such as salmonellosis, Weil's disease, leptospirosis, rat bite fever, hantavirus and plague. The diseases can be contracted by humans from direct contact with rodent faeces, urine, blood or saliva, inhalation of air contaminated by rodent faeces and urine, ingestion of contaminated food/water or from bites or scratches by a rodent.

Damage and financial impact

All rodents have a pair of incisor teeth in the upper and lower jaws that continually grow. They use these to gnaw at the fabric of the homes they inhabit. Because of these sharp teeth, rats and mice can cause damage to the building fabric.

They can gnaw through electrical wires and plumbing and therefore cause flooding and fires in homes. They can also damage woodwork, such as skirting boards and cupboard doors and while the damage itself might not be large, the only remedy could be to completely replace the damaged entity. They can also damage possessions by gnawing through soft furnishings, paper or books.

For obvious reasons, the damage caused by rodents can have a significant financial impact on owners and occupiers, if it isn't controlled quickly.

Contamination of water tanks

Rodents can also contaminate stored water (for example, cold water storage tanks, feed and expansion tanks). This can be through their droppings or, in the worst cases, when they drown.

We know of one case where a squirrel's decomposing body blocked the outlet of the central heating system, which had to be flushed clear and the F&E tank replaced.

Fear, stress and embarrassment

As well as physical hazards, such as damage to the building, rodents can cause a lot of stress to homeowners and tenants through both fear and/or embarrassment.

For some, a fear of much smaller mammal might seem irrational, but fear of rats and mice (clinically known as musophobia) is one of the most common specific phobias. It can cause extreme anxiety, shortness of breath, sweating, nausea or shaking.

A rodent infestation can also be socially embarrassing, causing homeowners to avoid inviting friends and family over due to the noises made by the rodents in the loft or under the floorboards.

Identifying factors of rats and mice

If rats, mice or squirrels are in residence during an inspection, there could be repercussions if it's wrongly reported.

Surveyors should be aware of the factors that indicate that rats or mice could be in a building:

■ Droppings

Rat droppings are usually found in specific locations rather than all over the area they inhabit. This means that they're not immediately apparent, while mice droppings are usually scattered randomly.

It is also common to find rodent droppings on the benching of inspection chambers.

Ensure you check all accessible areas for droppings. Rats and mice can produce between 40 and 80 droppings per night, and they're usually dark brown in colour and shaped like a grain of rice, but slightly larger for rats. If the droppings are shiny, it indicates that they are fresh, and the rodent is nearby, further suggesting the problem is active and ongoing.

■ Urine odour

Rodents urinate frequently, giving off a strong ammonia-like smell. Keep this in mind when carrying out an inspection as it can help to establish the presence of a rodent problem. As well as a strong smell, their urine also contains minerals such as calcium, which dries to leave a chalky residue.

■ Rub marks

Due to poor eyesight, rats and mice tend to use the same routes. In doing so, they leave behind dirt and grease from their bodies.

■ Scratching noises

Scratching noises are more likely to be heard at night when rodents are more active. Brown rats may be heard in the loft, while mice access smaller areas, such as between partition walls, under floorboards, in false ceilings, cellars and lofts. It is possible for young rats to access these areas also.

■ Access holes

Brown rats excel at digging and create extensive burrowing systems, so they can take shelter, nest and store food. Rat burrows are usually situated next to solid objects or structures, while mice holes are more hidden. Mice are likely to find their way in and around the homes they inhabit through openings that already exist, such as the gaps around the drain pipes under the kitchen or bathroom sink.

■ Nests

Rats usually nest in their burrows. Be aware that nests can also be found in lofts, under eaves and in cavity walls. They use any materials they can find, such as insulation or cardboard to shred up and use for their nest.

Mice will also use soft material for nesting, which can be found in places such as lofts, suspended ceilings, cavity walls, under floorboards, behind fridges and in airing cupboards.

■ **Footprints**

In lesser used areas of the property where dust may have accumulated, you might find footprints and tail marks, which can help identify whether rodents are present.

■ **Water source**

As rodents need access to water, rat and mice runs are likely to be found near a water source, such as a leak or a water tank.

Reporting on infestations

If you notice evidence of a rodent infestation, you must make a clear record in your site notes and tell your client. Although there is no strict rule regarding where to locate the issue, we think you should report the matter in the element it mostly affects. For example: roof space, floors (where you notice the problem in the void), drainage or in the grounds (where you notice general signs outside). The main clause should then be cross referenced in the ‘risks to people’ section of the report, where the possible risk to health should be mentioned.

Here is a typical clause for a HomeBuyer Report:

F1 Roof space/structure

Evidence of rodent infestation was seen in the roof space.

This included:

Rodent droppings near the loft hatch;

Piles of chewed material; and

Damage to adjacent timbers.

This is a risk to the health of the occupants and could result in further damage to the building (see J3)

Condition Rating 3 (further investigations)

Rodent infestations can spread diseases and illness, result in damage to the building through their incessant gnawing and are often unsettling for occupants. You should ask an appropriately qualified person to inspect the problem and provide a report together with a quotation before you commit to the purchase.

Case study

We recently settled a claim due to a rat infestation discovered in the loft and cavity walls by new owners after moving into their property.

The claimants had a Home Condition Survey completed, and the surveyor failed to detect the presence of rats. There was, however, evidence of rat droppings in the loft space from the date of inspection, so it was not possible to defend the report. A without prejudice offer was made to the claimants to bring the matter to a swift and amicable resolution. It was important to resolve the matter as quickly as possible due to the risk of the rats causing more damage to the property.

Before the claimants contacted the surveyor about the issue, they attempted to resolve it themselves with bait and traps. They also contacted the water company and arranged a full drainage inspection with CCTV to see if there were any cracks in the pipes.

This inspection confirmed there were no cracks or apparent issues with the pipes and this was not the entry point for the

rodents. The claimants wanted the costs already incurred, as well as the quote obtained by the pest control company to eradicate the rats, clean the area, install new loft insulation and for installation of cavity wall insulation.

The amount the claimants were seeking was excessive on the basis that claims of this nature are assessed on the basis of ‘diminution of market value’. We were able, therefore, to reduce the claim amount by around 50%.

What can we take from this case?

It is important to utilise best practice to avoid missing anything important in the condition report.

We never found out exactly how the rats were entering the property, however, if you identify any holes or damage in the fabric of the building under inspection, or areas where rodents can potentially enter the property, extra vigilance is necessary.

It is also good practice to include a seller’s questionnaire, which includes a section asking the seller if they are aware of any issues that may affect the decision of any potential buyer.

In this case, in our response to the claimants we included that we considered it highly likely that the previous vendors of the property would have been aware of the issue but failed to disclose it to the sellers at the time of the sale. Therefore, it was our view that the claim should be re-directed to the vendors.



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JAPANESE KNOTWEED RESEARCH

COMMENTARY FROM SAVA & BLUEBOX

You may be asking why we're covering Japanese knotweed again. At Sava, we spend a disproportionately large amount of time dealing with complaints and potential claims arising from Japanese knotweed and, while it has been an issue for a long time, it feels as though the public's reaction to it is now bordering on the hysterical. For this reason, we feel it's worth covering again.

In this Technical Bulletin, we look at recent research from Dr Dan Jones, Managing Director of Advanced Invasives Limited and an Honorary Researcher in Swansea University Department of Biosciences.

As well as covering detailed research on control options, we also look at an interesting view from David Gregson, a Chartered Surveyor and Environmentalist, who followed this research.

While the feature doesn't formally represent the views of either Sava or BlueBox, David makes the valid point that surveyors should be able to recognise knotweed at any time of the year. He suggests that Japanese knotweed reports could be another form of specialist report recommended by surveyors.

Further research

We believe another research report is due to be published imminently, this time undertaken in conjunction with Leeds University. We understand this will address the physical impact of the plant.

When this is published, we should have a much better understanding of the implications of this plant from both a property and ecological perspective and we will return to knotweed again.

RICS guidance

RICS is in the process of revising its Guidance on Japanese Knotweed but this is on hold pending the publication of this second research paper. As part of this review, the Risk Criteria associated with knotweed will be reviewed.

Revising the Guidance properly will, we think, be a long process involving other stakeholders, but we will keep an eye on developments in case RICS publishes any interim documentation.

Keep a look out for the plant, even if you are in a low-risk area, and make sure you can identify it at all times of the year.

JAPANESE KNOTWEED – UNDERSTANDING THE PLANT

DR DAN JONES SUMMARISES THE RESEARCH
CONDUCTED BY SWANSEA UNIVERSITY

DR DAN JONES PHD, MSC, BSC, GCIEEM | MANAGING DIRECTOR, ADVANCED INVASIVES LTD

Fall from grace

Japanese knotweed (*Fallopia japonica* var. *japonica*), is one of a number of knotweed species, introduced into Europe in the mid-19th century (1841) by Philipp Franz Balthasar von Siebold, a German botanist and physician living in The Netherlands. In 1850 he sent a specimen of Japanese knotweed to Kew Gardens in London. Kew offered the plant for sale to local commercial nurseries, and by 1854, knotweed had travelled as far as the Royal Botanical Gardens in Edinburgh.

Since first escaping from cultivation in Maesteg, Wales in 1886, Japanese knotweed now has a well-established range across the UK. It is found in over 70% of the UK hectads – 10km×10km grid-squares that are used to see how widely distributed plants and animals are. It is worth noting that although knotweed may be present in these hectads, it is not necessarily abundant throughout each grid. Further afield, knotweed is now established across mainland Europe, North America and the Southern Hemisphere. This global spread is astonishing; particularly, as to date, this has mainly occurred via plant fragments (vegetative) and not from (viable) seed.

From a horticultural perspective it is clear why knotweed was so prized for planting schemes: it is easy to propagate (spread), growing rapidly from early in the growing season



Figure 1: Japanese knotweed in flower, Cardiff.
© Advanced Invasives 2018

to 2.5m tall and it is visually striking – particularly in the summer and autumn months when it produces abundant creamy-white blossoms. However, as an ecologist, plant ‘traits’ such as ease of propagation and spread are precisely why knotweed has, and will continue to be, quite literally a huge problem; both for native biodiversity and increasingly, wider society.



Figure 2: Who's problem is it? A Japanese knotweed issue that can't be ignored in Cardiff.
© Advanced Invasives 2018



Figure 3: Where do you start? Japanese knotweed growing along the headwaters of the River Rhymney in South Wales, crossing public and private property boundaries. Who is responsible for the control of such infestations?
© Advanced Invasives 2018

From the past to the present

With the benefit of hindsight, it can be all too easy to be critical of historic events. However, this story continues to develop into the present, as successive cycles of legislation and poorly-evidenced knotweed control practice have continued to drive further spread of knotweed in to the national consciousness and print media of the UK.

In the UK alone, it has been estimated that Japanese knotweed control costs the UK economy c.£170 million per annum.¹ But, until now, there has never been a study of the scale needed to truly test how effective these treatments are. They are being sold to home and landowners with no unbiased research to back up their worth. However, we

have recently completed the largest Japanese knotweed field trial ever conducted globally, and working with academic and industry partners, found the best way of treating the plant long term.²



Figure 4: Aerial view of the Invasives Research Centre (IRC) in Taffs Well, near Cardiff.
© Google Earth 2018

Control not kill

The key to our approach was to understand the plant, in order to control it. Japanese knotweed's ease of spread and rapid growth from a deep rhizome (root) system was initially prized for planting schemes. During our research,

1 Williams F, Eschen R, Harris A, Djeddour D, Pratt C, Shaw R, Varia S, Lamontagne-Godwin J & Thomas S (2010). The Economic Cost of Invasive Non-Native Species on Great Britain. CABI Wallingford.
2 Jones D, Bruce G, Fowler M, Law-Cooper R, Graham I, Abel A, Street-Perrott FA & Eastwood DC (2018). Optimising Physiochemical Control of Invasive Japanese Knotweed. Biological Invasions <https://doi.org/10.1007/s10530-018-1684-5>



Figure 5: Plot comparison before and after treatment at the Invasives Research Centre (IRC) in Taffs Well, near Cardiff.
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it became apparent that because a Japanese knotweed stand contains significant underground and spreading biomass, we would need to do large field trials, to reflect real world conditions. So, we set up 58 different 15 metre x 15 metre (225 square metre) field trial plots, located in south Wales (UK), and repeated each method three times in these areas.

Between 2011 and 2016 we benchmarked all 19 of the active control methods and herbicides used for controlling knotweed in the UK, Europe and America. This experiment continues to be unique in terms of scale, duration, and scientific rigour and is the largest Japanese knotweed field trial ever conducted, globally. It is plain to see why this research has not been conducted before - the commercial cost has been (conservatively) estimated at £1.2 million. However, given the on-going costs of managing knotweed in the UK, the value of the experiment is self-evident.

Through our research, we have defined a new patent pending approach to Japanese knotweed treatment; The 4-Stage Model™. This model links herbicide selection and application with the seasonal surface-rhizome flows in the knotweed plant. Within the first three years of the experiment reported on here, we found that glyphosate-based herbicides control above ground knotweed growth significantly better than all other herbicide groups currently used for knotweed control. We also found that physical methods such as covering simply do not work. Importantly, we are not describing eradication (which is almost impossible to achieve in short timeframes using

herbicides), but rather a type of extended “dormancy” where the plant does not grow above ground.

Moving forwards

Now, we are using our research to replace out-dated guidance based on short-term experiments and anecdotal information; in short, we’re discovering how best to tackle invasive plants in real-world conditions, informed by the evidence of what actually works.

About Dr Dan Jones



Dan is Managing Director of Advanced Invasives Limited and an Honorary Researcher in Swansea University Department of Biosciences. Dan has a particular interest in applying scientific understanding of invasive plant ecology to real world problems.



PCA WELCOMES JAPANESE KNOTWEED RESEARCH

COMMENTARY FROM STEPHEN HODGSON

STEPHEN HODGSON CHIEF EXECUTIVE, PROPERTY CARE ASSOCIATION

The Property Care Association (PCA) welcomes the new research which looks at the treatment options for Japanese Knotweed. We have long advocated the need for a highly specialised treatment regime for Japanese knotweed.

Essentially, the research has confirmed that Japanese knotweed is very difficult to kill. We support this research fully. It's a great piece of work and the findings validate what we have been doing and saying for a number of years. They align with the cautious approach we have publicised in the PCA's Invasive Weed Control Code of Practice and in our industry best practice.

We are sharing the findings across our membership and will be looking in particular at the reference

to the most effective timings for treatment, as this will be an important element of us continuing to develop best practice.

Ultimately, the research highlights the importance of selecting the correct and diligent treatment options, carried out accurately by professionals who are specialists in this area, who understand the physiology of the plant and have the expertise to control and manage invasive plant species.

PCA members treat the plant and monitor for regrowth. The monitoring element is crucial to the whole treatment process. As responsible contractors, our members are able to offer insurance-backed guarantees, which mirror the terms of contractors' own guarantees, to give reassurance

that this persistent plant is treated and controlled. This offers a great level of reassurance to our members' clients.

Japanese knotweed does tend to get over-hyped, but it and other invasive non-native species are just plants and we are taking all steps necessary to 'normalise' them so the issue is viewed generally as any other type of property problem. That means it can be identified, risk assessed and treated with minimal impact by recognised experts.



JAPANESE KNOTWEED

A SURVEYOR'S PERSPECTIVE

DAVID GREGSON, B.SC., M.R.I.C.S., M.A.E., C.BIOL., C.ENV CHARTERED SURVEYOR, BIOLOGIST, ENVIRONMENTALIST

Following research by Dr Dan Jones, Chartered Surveyor, Biologist and Environmentalist, David Gregson considers its impact on property professionals moving forwards.

As a residential surveyor providing surveys and valuations for purchasers, I have based my working practices regarding Japanese knotweed on the received wisdom and general guidance available to the profession.

This can be summarised as follows:

1. Various methods of treatment are available, some of which are more or less environmentally acceptable than others.
2. A variety of different herbicides are claimed to be effective in the treatment of Japanese knotweed.
3. Some herbicides with anecdotally good results in controlling JKN have been withdrawn from the market due to perceived environmental risks, the most important of which are picloram-based synthetic auxins.
4. Rhizome-removal and soil cleaning is a treatment advocated by large firms in the sector.
5. Hand pulling of emerging knotweed stems is preferred by some as the most environmentally-friendly method.
6. Where chemicals are used, once the stems stop emerging from the ground following treatment and for a period of two years afterwards, the rhizomes are considered dead, and the problem eliminated.

7. The underground spread of knotweed roots spans up to seven metres from the edge of the emerging stems. They are usually at a depth of about one metre but can reach down to three metres deep.

Lender perspective

The reaction of lenders to properties affected by Japanese knotweed does vary, but it is possible to obtain a mortgage on a property where Knotweed is present.

However, lenders will treat each case individually, taking into account the cost of eradication and the effect on saleability and value. In making these judgements, they will consider other factors impacting on the property. For helpful information on this, see the [RICS Professional Information Paper on Japanese knotweed and Residential Property 1st Edition](#), published in 2012 and written by Phil Parnham from BlueBox Partners.

Generally, lenders willing to provide finance will seek a commitment of advance funding for a three-to-four-year treatment programme by a company able to offer a warranty. Many such companies are members of the Property Care Association.

Past and present research

It would be reassuring if all our knowledge about Japanese

knotweed was based on sound academic research. Unfortunately, this has not been the case. While there has been some past research into the control of knotweed in the environment, notably in Belgium some years ago, most of our understanding of the problem is largely the product of assumption and guesswork.

The recently published research by Dr Jones and his colleagues reproduced in this Technical Bulletin is the best information now available in relation to treatment and overturns many of our previous assumptions.

Up until now the best guidance available for surveyors has been the previously mentioned RICS Information Paper, particularly Section 4.

Following the new research, we know that only the use of glyphosate-based herbicidal compounds works. However, even that cannot kill the rhizome under the ground. While picloram would be a viable alternative, it has been withdrawn from use.

Where does this leave us?

This could be a very negative scenario for property owners. We don't know the kind of impact any vestigial traces of knotweed will have on property values in the long term.

It's possible that areas still affected after treatment, may need to be treated in a similar way to other contaminated land. If this is the case, then it would likely have a greater impact on value than a temporary problem being treated under an insurance backed scheme.

It could take Japanese knotweed out of the category of problems akin to wall tie failure or rising damp (something to be 'fixed') and more into the territory of properties which have a bypass road built next to them (something you have to live with).

The limited means of controlling knotweed is also likely to be of concern to environmentalists. As a Chartered Environmentalist, as the only way to bring Japanese knotweed under some sort of control is to use a powerful and controversial herbicide, it is very concerning environmentally.

As to how it will affect the surveyor on the ground, that remains to be seen. Over the last few years I have been instructed by insurers to provide Expert Reports regarding surveyors facing negligence claims for failing to identify Japanese knotweed when inspecting properties.

Legal cases

I think the frequency of such claims is likely to increase in the future. We also know from the recent cases of *Smith and Waistell v Network Rail* (currently the subject of an appeal) and *Smith v Line* that potentially large sums of money can be awarded to parties whose properties have been invaded by Japanese knotweed from adjoining land, both above and below ground.

There are legal firms particularly active in this area, seeking out claims work and offering no win, no fee terms to prospective claimants. It's possible that these new findings may lead to more of these.

Bearing in mind it's possible that legal cases could increase, the most important thing for surveyors is knowing how to identify Japanese knotweed whatever the time of the year.

There is certainly no real excuse for not being able to do so when it is growing actively. The RICS guide is supplemented by many online resources to help identify Japanese knotweed when it's emerging in the spring, actively growing in summer, flowering in autumn and dying back in winter.

Areas where knotweed is uncommon

This is also the case for surveyors who work in areas where knotweed is uncommon. Not being able to recognise the plant is unlikely to succeed in the event of a claim. Just because it is rare does not mean it won't appear.

I recently visited a property in the Home Counties where I could not see any Japanese Knotweed in the general environment for miles around. Yet it was in a garden of a small house, up against the fence with the neighbour and, in my opinion, easily identifiable and in full flower when the surveyor visited. I cannot say how it got there - possibly in some imported topsoil or farm manure. For all I know the individual surveyor involved may only encounter Japanese knotweed very rarely, if at all, but I fully expect the PI claim to succeed, assuming there are not defensible reasons why it could not be identified.

It can be much more difficult to identify in the winter, or when vendors have made a conscious effort to remove above ground evidence before the surveyor's visit. Japanese knotweed can be confused with other plants, and even someone like myself with long experience often must look carefully to distinguish it in winter from plants such as Angelica or some Willowherbs.

The best advice is to be vigilant and, if in doubt, ask for a specialist report, just as you would if you are unsure about any other matter where evidence is inadequate or equivocal. Take care also to look for knotweed on neighbouring land. For example, a current case involves a small garden from which all evidence of knotweed was systematically removed by the vendor before sale. However, there was clear evidence of it in neighbouring gardens. Whatever the rights and wrongs of this, as we all know the lawyers will always go after the one with the P.I. first!

Vendor responsibility

All property vendors are now obliged to disclose the presence of Japanese knotweed on the standard pre-contract enquiry forms. This may be an appropriate start point for enquiry in some cases.

The most important factor in how this develops is the impact the new research has on the lending policies of mortgage providers and the risk analysis of insurers. Their attitude will strongly influence the material effect on future value of properties.

In general terms, finding a constructive way of dealing with knotweed is in everyone's interests, as it is likely to be a major component of our environment for a very long time.

CLOSED

CLAIMS

IMPORTANT CHANGES TO THE PRE-ACTION PROTOCOL

HOW WILL IT IMPACT SURVEYORS?

NIK CARLE FCIARB PARTNER, BROWNE JACOBSON



Claimants bringing professional negligence claims against surveyors have long been required to follow the relevant pre-action Protocol. The Protocol aims to give parties the best opportunity to settle their dispute, without the need to start Court proceedings.

In early May 2018, an important amendment was introduced to the Protocol. Now, within their Letter of Claim, claimants should indicate whether they wish to refer their dispute to adjudication.

Adjudication is a relatively formalised form of alternative dispute resolution (ADR). For some claims, it can offer a much quicker and less expensive route to obtaining a ruling on the dispute. The adjudicator will often be a barrister, solicitor or other practitioner with particular experience in professional negligence claims.

In 2016, the Ministry of Justice and some senior members of the judiciary gave their backing to a tailored adjudication scheme for professional negligence disputes. The scheme has been available as a pilot option after a much-publicised re-launch in 2016 (“the Pilot Scheme”).

Anecdotally, the take-up of the Pilot Scheme over the last two or three years has not been very good. It may be fair to say

that it is better-suited to higher-value disputes, where both parties are represented.

As it stands, the amendment does not tie the parties to using the Pilot Scheme specifically. It may be that, in due course, other adjudication choices in this sector will start to come on stream.

If claimants do wish to refer for adjudication, they need only put forward the names of three proposed adjudicators for possible agreement.

If they do not wish to adjudicate, claimants are expected to give reasons for their decision. These reasons should be good and readily-justifiable ones. In all likelihood, claimants are likely to suggest that another form of ADR might be more apt: mediation or negotiation, for example. Claimants may also signal that they are open to adjudication, in principle, but that they would rather revisit the question at some later stage.

For surveyors receiving Protocol Letters of Claim, this recent change throws the spotlight on ADR at a much earlier stage. Surveyors and their PI insurers now have a means to keep claims away from the spectre of Court proceedings. It will be harder for claimants to forge ahead to litigation without first properly working through the alternatives. Claimants who ignore this new focus on adjudication risk being saddled with a Costs Order at some point further down the line.

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WAISTELL AND WILLIAMS -V- NETWORK RAIL

SURVEYOR LIABILITIES: IMPLICATIONS OF THE COURT OF APPEAL'S DECISION

NIK CARLE FCIARB PARTNER, BROWNE JACOBSON

Although Network Rail's appeal did technically fail, this was not an out-and-out victory for the two householders involved, by any means.

In the County Court, the men had been awarded:

- £4,320 each to reflect the cost of treating the knotweed; plus
- about £10,500 (for Mr Williams) and £10,000 (for Mr Waistell) to reflect the residual diminution suffered in the market value of their properties - even after the treatment programmes had been carried out.

The effect of the Court of Appeal's judgment was to wipe out the claimants' diminution awards. They were not left with very much to show for compensation after many years of fighting their cases. This will have been especially disappointing for the claimants and their lawyers because the diminution in value element was almost certainly the main prize that they were chasing from the outset.

When they take out actions against other landowners for private nuisance, claimants cannot recover damages linked to the fact that, let's say, lenders might be cautious about lending in such situations. This is so, the Court ruled, because: *"...the purpose of the tort of nuisance is not to protect the value of property as an investment or a financial asset ..."*

In nuisance actions, however, there may still be an entitlement to damages if claimants can prove that the knotweed has adversely affected their ability to enjoy the amenity and utility of their property.

By contrast, if proceedings are based on professional liability principles (i.e. in the tort of negligence rather than nuisance), an action of that sort will most likely put a claimant's financial interests at the fore. In such a professional negligence setting,

therefore - where (for example) a surveyor is sued for failing to spot the presence of knotweed during the course of a survey - conventional diminution in value awards should still be available - so property as a devalued asset or investment.

The Court of Appeal's decision is not good news for property professionals or for surveyors particularly. Defendants to nuisance actions will often not be insured but surveyors facing professional liability allegations are almost always backed by PI cover.

It had been hoped that the Court of Appeal might (for policy reasons) 'play down' the seriousness of knotweed but no - it went the opposite way. It is easy to see how diminution in value assessments might now be enlarged because of the Court of Appeal's alarming pronouncements about knotweed:

This "pernicious" weed doesn't merely carry the risk of future physical damage to buildings on the land but more than that: "... its presence imposes an immediate burden on landowners who face an increased difficulty in their ability to develop, and in the cost of developing, their land, should they wish to do so, because of the difficulties and expense of eradicating [it] ..."

The Court of Appeal rather side-stepped the question of the stigma around Japanese knotweed (and how this might play into damages awards in other cases e.g. in the professional negligence category). It will be interesting to see how valuation expert evidence develops in the light of the Waistell and Williams decision. Generally, however, the message is that surveyors need to be on their guard more than ever before.

[Note:- Network Rail was refused leave to appeal to the Supreme Court]

