Independent Reference Group
INTO FIRE SAFETY IN HOUSING EXECUTIVE TOWER BLOCKS

Fire Safety in Housing Executive Tower Blocks

Chair: Professor Alastair Adair

Findings Report

JANUARY 2018

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FOREWORD JANUARY 2018

Dear Interim Chair

Thank you for the invitation to chair the Independent Reference Group into Fire Safety in Housing Executive tower blocks. The report is published at an important time when fire safety in high rise residential buildings, in particular those that are fitted with external cladding, is a primary consideration for the Housing Executive and the Department for Communities and also at a national level following the horrific Grenfell Tower fire. As you indicated in your letter of invitation that launched the Independent Reference Group, the aim of the investigation is to reassure residents of Housing Executive high rise residential buildings and other parties that the cladding systems are safe and existing fire safety provisions are effective, and to bring forward any associated fire safety recommendations that emerge. It is in that context that the report and its recommendations are submitted.

The primary focus is on the cladding systems on the four tower blocks, combustibility of materials, structural design, installation and associated works and these aspects are especially pertinent following the tragedy of the Grenfell fire. Nevertheless, two other aspects are important for adequate fire safety provision.

Effective fire prevention and fire safety measures in high rise residential buildings also must consider a wider range of factors relating to the integrity of the building in particular that compartmentation is not compromised and that fire detection measures are fully operative. In order to ensure that these measures are effective Fire Risk Assessments were extended to all 33 Housing Executive tower blocks.

It is also important to consider behavioural aspects of how high rise residential buildings are used by building owners and residents and their fire safety responsibilities are fully understood for example, not propping open fire doors or blocking access routes, and that residents' concerns regarding breaches of fire safety measures and the management of fire safety are listened to and acted upon.

It is clear from our work that the Housing Executive, Department for Communities and the contributing statutory agencies attach the utmost priority to adequate fire safety provision. The proactive manner in which the Housing Executive carried out full scale fire tests on the cladding and undertook comprehensive Fire Risk Assessments reviews is a very welcome outcome. This investigation has demonstrated the benefits of an inter-agency collaborative approach to review the construction of the cladding and fire safety systems and to ultimately ensure they are fit for purpose.

Nevertheless, significant challenges lie ahead, and in an environment of ongoing reductions in public expenditure there cannot be any compromise or shortcuts taken in fire safety provision in high rise residential buildings.

The scale of the Grenfell fire tragedy and the colossal impact on so many lives and families has shaken public confidence in the commitment of high rise residential building owners and statutory agencies to provide adequate fire safety provision.

The interim report of Dame Judith Hackitt's ongoing Independent Review of Building Regulations and Fire Safety is scathing in their finding that the current regulatory system for ensuring fire safety in high-rise buildings is not fit for purpose leaving room for those who want to take shortcuts to do so. While compliance with the regulations confirms that the buildings are safe this is predicated on the regulations being applied correctly and the integrity of the buildings is not compromised.

The onus will likely be placed on all participants in the regulatory system to demonstrate beyond doubt that they meet current or any future legislative requirements on fire safety provision. It is only by doing so that public confidence can be restored.

As demonstrated in this report of the Independent Reference Group (IRG) such challenges identified in detailed inspections and comprehensive Fire Risk Assessments of the tower blocks are often found to be the necessary catalysts for confirming and enhancing fire safety provision.

In the IRG report, recommendations are made with regard to both policy development and operational aspects. These recommendations should not be seen as a criticism of existing policy and practice which we believe is implemented by officials in the Housing Executive and the statutory agencies with the safety of residents as a primary concern.

In relation to policy, foremost among these is that the Housing Executive and the Department for Communities consider the outcomes of the Independent Review of Building Regulations and Fire Safety in England.

An examination of policy in relation to the role of the sprinkler systems within Housing Executive high-rise accommodation is recommended as the installation of sprinklers as a fire suppression measure may give greater confidence to residents.

In terms of operational aspects, the work identified in the Fire Risk Assessment Action Plan should be carried through to completion as a priority. We also recommend that communications with residents in tower blocks, be enhanced to ensure that fire safety procedures are clearly understood and identification of those residents in each block potentially requiring assistance.

I am grateful to the members of the Independent Reference Group who have each brought their own areas of expertise to the discussions and analysis that have been invaluable in the production of the report. Further details on the Independent Reference Group are outlined in Appendix 1. As might be expected, discussions have been detailed, wide-ranging and at times robust, and I am pleased that we have produced a unanimous report. I am also grateful to members of the Housing Executive Secretariat team Kim Smyth, Stefanie Winter and Jean Frazer (Ulster University). I am indebted to all of the group members who contributed to this report.

I trust that the report and its recommendations will make an effective contribution to ensuring the continuing safety of residents in Housing Executive high rise residential buildings.

Yours

Professor Alastair Adair
Deputy Vice-Chancellor
Ulster University
Chair of the Independent Reference Group

EXECUTIVE SUMMARY

The **Rationale** for the establishment of the Independent Reference Group on Fire Safety in Housing Executive tower blocks was in response to the tragedy of the horrific Grenfell fire on 14 June 2017.

The fire occurred at the 24-storey Grenfell tower block of public housing flats in North Kensington, Royal Borough of Kensington and Chelsea, West London. As of 16 November 2017, 71 victims had been identified by the Metropolitan Police and Coroner. Occupants of 23 of the 129 flats died and around 255 people survived yet the colossal scale of the tragedy has impacted many lives.

Police and fire services believe the fire started accidentally in a fridge-freezer on the fourth floor. The rapid growth of the fire is thought to have been accelerated by the building's exterior cladding, comprising **Aluminium Composite Material rainscreen cladding with a combustible polyethylene core**. The use of these materials which did not meet the limited combustibility requirements of building regulations guidance has led to a national programme of extensive testing of the cladding on other high-rise buildings including the structural design and installation of the cladding. In addition, an independent review of building regulations and fire safety is in progress as well as a Public Inquiry.

Following the Grenfell fire the Interim Chair of the Housing Executive requested that an investigation be undertaken to explore and analyse precautionary measures in relation to fire safety in order to assure tower blocks residents of their safety.

The primary focus was on four tower blocks in which cladding systems were already installed (Cúchulainn House and Eithné House (Carlisle Multis) in North Belfast) or in the process of being installed (Carnet House (Dundonald) and Whincroft House (Braniel) in East Belfast). The initial aim of the review was to determine if there were any fire safety issues with regard to the cladding installations on the four tower blocks.

The cladding of such blocks is used to provide building protection, thermal insulation and weather resistance, and to improve the appearance of the buildings. The UK and Europe have set challenging goals in the areas of energy saving, carbon reduction and building resilience, and it is now clear that there is a need to understand better how cladding/façade systems behave in situ, during fires and how the combination of decoration and insulation materials, and joints within such systems influence the fire behaviour of the entire system (from material to system fire performance).

It is important to note that none of the Housing Executive tower blocks have Aluminium Composite Material rainscreen cladding similar to that used in the Grenfell Tower.

The Independent Reference Group review was further widened to encompass Fire Risk Assessments of all 33 Housing Executive tower blocks in order to identify any potential fire risks associated with these in light of the Grenfell tragedy. This review sought to ensure all the issues identified are documented and actioned as a priority in line with the Housing Executive's statutory and landlord obligations, to offer confidence and assurance to the residents living in the tower blocks and to demonstrate the ongoing commitment to residents' health and safety requirements.

The Housing Executive asked its contractors to put a temporary hold on the work they are carrying out to the Whincroft and Carnet tower blocks in order to examine anything further that needs addressing before completing the schemes.

There are four main **Objectives** of the Independent Reference Group as follows:

1. To explore in detail with colleagues in Building Control and Northern Ireland Fire and Rescue Service (NIFRS), the make-up of the cladding systems, along with the robust and stringent testing of these systems.
2. To undertake joint detailed site appraisal visits with Building Control and NIFRS to all four tower blocks, to provide assurance that the systems have been installed in accordance with Building Regulations and best practice.
3. To identify any early learning outcomes from Grenfell and identify any appropriate action required. This will include:
    a. A desk top review of methods used to indicate compliance with external fire spread requirements in the UK;
    b. Correspondence with BRE, to identify if the Housing Executive is required to undertake any further tests;
    c. Liaise with colleagues in Department for Communities to gauge what actions are required from the Department for Communities and Local Government (DCLG) in England;
    d. Identification of relevant literature and current thinking post Grenfell that might inform the work of the Independent Reference Group drawn from other sources i.e. BRE, BBA, RIBA, RICS, etc.;
    e. The maintenance and condition of fire safety measures in tower blocks;
    f. Role of communication with tenants and measures for safe evacuation of tenants in the event of a fire outbreak.
4. To discuss any potential consequences which may arise from the findings of Grenfell in terms of legislation changes or amended regulations which may apply retrospectively.

Membership of the Independent Reference Group was drawn from the principal departments and statutory agencies responsible for housing, fire safety and building control and are outlined within the Terms of Reference (Appendix 1). Observer status was granted to attendees who were not in a position to authorise the conclusions or recommendations of this report.

Declaration of potential conflicts of interest was a standing item on the agenda at the start of each meeting and was recorded in the minutes together with details of any action taken where appropriate. In the event there were no conflicts of interest declared.

In relation to **Timeframe and Working Method**, the objective was to progress the investigation in a systematic manner and as quickly as possible in order to assure the Housing Executive tenants and other residents that the cladding systems and fire precaution measures are robust and that the Independent Reference Group should incorporate any associated fire safety recommendations that emerge.

In terms of its working method, the investigation undertaken by the Independent Reference Group was objective, analytical, in-depth and wide ranging including:

- review of cladding materials;
- installation and additional works;
- compliance with Building Regulations, (in terms of external fire spread, internal fire spread in both the insulation and cavity where applicable);
- noting the stated observation in regard to the mechanical performance of the Vinylit System. (para 1.7)
- review of fire safety inspections for each of the 33 tower blocks (fire detection and suppression measures, operation of fire doors, compartmentation relative to vertical stairwell/shafts);
- identification of best fire safety practice following the Grenfell fire; and
- review of communications with tower blocks residents on fire safety procedures including the role of each tower block concierge in promoting good fire safety practice;

The role of the Chair was to ensure that all evidence presented was benchmarked against best practice and met all statutory and regulatory requirements.

The original working method envisaged the Independent Reference Group meeting no more than on two occasions with the bulk of the work being undertaken by Housing Executive officers and group members between the meetings.

The Independent Reference Group met on six occasions between August and November 2017 and once in January 2018. This was done in order to evaluate the evidence collected in support of each of the stated

objectives on the previous page and to interrogate this evidence in an objective, analytical and rigorous manner holding each member to account for the evidence brought forward, its source, validation and verification.

The principal findings were presented to the Board of the Northern Ireland Housing Executive at its meeting on 29 November 2017.

The **Principal Findings** of the investigation are:

In relation to **Objective 1**, the cladding systems used in Cúchulainn House, Eithné House and Whincroft House (Vinylit cladding and Rockwool insulation, para 1.1 and Carnet House (StoTherm Vario External Wall insulation, para 1.4) were tested by BRE Global Ltd. (2013 and 2009 respectively). The Housing Executive ensured that both systems had been subject to the **full scale fire test approach**, testing the "composite (entire) system" to demonstrate compliance with Building Regulation 36 (Appendix 2).

The two systems were subject to full scale fire tests to BS 8414-1 'Fire performance of external cladding systems - test methods for non-loadbearing external cladding systems applied to the face of the building' and each was given a classification of fire performance in accordance with BR 135 fire performance of external thermal insulation for walls of multi-storey buildings (para 1.6).

The fire tests of the system used on Cúchulainn House, Eithné House and Whincroft House were sponsored by the refurbishment contractor Piperhill specifically for use on these buildings.

The Housing Executive in pursuit of a full-scale testing of the composite system has chosen this alternative way of complying with the current recommendation contained in Technical Booklet E to demonstrate (para 1.8) that the cladding systems comply with the Building Regulations.

However, the Independent Reference Group recognises that post Grenfell the adequacy and fitness for purpose of the building and fire safety regulations is under review (para 1.10-1.12).

To complete **Objective 2** comprehensive detailed site appraisal visits and fire safety assessments of the four refurbished Housing Executive tower blocks were undertaken by staff from the Housing Executive, Building Control and NIFRS in June with further visits in July 2017 (para 2.2, 2.7).

The assessments were extended to all 33 Housing Executive tower blocks and included all landlord common parts including lift plant rooms, roof access, lift lobbies and all landlord and resident store areas for each block. A review as to the suitability and sufficiency of existing fire measures together with current maintenance regime in respect of fire doors, compartmentation, signage, emergency lighting, fire alarm systems was conducted as well as how fire safety is managed within each individual building (para 2.3).

The findings of these visits resulted in reports of remedial action required by Building Control and NIFRS (Appendices 3 and 4). This has led to the development by the Housing Executive of a Tower Blocks Fire Safety Matrix (para 2.18) outlining areas where further attention is required and also best practice which, in a number of blocks, exceeds minimum requirements in terms of fire safety. The latter is being addressed through a Fire Risk Assessment Action Plan (Table 1 - para 2.22) with each significant finding given a priority classification for immediate remedial action.

In relation to **Objective 3**, a desk top review was undertaken of methods used to indicate compliance with fire safety requirements for external fire spread in tower blocks throughout the UK. Particular focus is on the requirements and guidance to prevent fire spread over the external walls of a building (para 3.2).

The study found that the regulations (requirements) relating to the prevention of external fire spread over the façade of a building are almost identical across the UK with some minor variation in wording (para 3.5). In terms of guidance issued under regulations there are two main approaches (Full Scale Fire Test Approach and Elemental Approach) to ensuring adequate resistance to fire spread over the external walls of a building (para 3.6-3.8) is provided. Both approaches may provide a means of demonstrating compliance with the Building Regulations across all parts of the UK (para 3.9).

The full range of literature included in the desk top review is outlined in (para 3.10).

Communication with residents and listening to their concerns is a key aspect of best fire safety practice with particular reference to ensuring there are measures for safe evacuation in the event of a fire outbreak.

Following the Grenfell Tower tragedy, the Housing Executive immediately sought to reassure residents

of high rise accommodation through a number of communications channels. These included:

- delivering a fire safety procedures leaflet to all residents on the days following the fire;
- issuing statements to the press;
- undertaking media appearances; and
- attending public meetings with residents.

Following individual inspections of each tower block the Housing Executive has developed a Fire Safety Matrix that sets out the contributions made to each block and the current issues pertaining given the Fire Risk Assessment reviews. There will be a number of documents published by the Housing Executive which form the basis of communications regarding fire safety in high rise blocks.

In terms of **Objective 4**, the Independent Reference Group recommends that any learning outcomes from interim and final reports of the Grenfell Public Inquiry and the Independent Review of Building Regulations and Fire Safety are considered and implemented as appropriate by the Housing Executive and the statutory authorities. In this regard, the Housing Executive will continue to work in collaboration with the local statutory authorities on any emerging issues that may arise to improve fire safety.

The interim report of Dame Judith Hackitt's ongoing Independent Review of Building Regulations and Fire Safety is scathing in their finding that the current regulatory system for ensuring fire safety in high-rise buildings is not fit for purpose leaving room for those who want to take shortcuts to do so. Individual cladding elements are being used as part of compound systems that are not being fully tested as complete systems. The widespread use of desktop studies to assess equivalence of products and systems is not properly controlled.

The findings emphasise an important qualification that they should not be interpreted as meaning that high rise buildings are unsafe as there are many contractors and building owners who accept their responsibilities and do the right thing. Changes to the regulatory regime on their own will not be sufficient unless there is a culture change away from one of doing the minimum required for compliance.

The review also covers behavioural aspects capturing and addressing residents' concerns, for example, propping open of fire doors or obstructions in access ways very quickly becomes a fire risk and requires proactive management by the building owner.

The Independent Reference Group reached the following **Conclusions**:

The investigation of fire safety interventions, procedures and risk assessments across all 33 Housing Executive tower blocks has been undertaken to ensure residents are safe and remedial measures set in place to offer confidence, assurance and an ongoing commitment to their health and safety.

The cladding systems installed on the four Housing Executive tower blocks meet current Building Regulation standards but due to the compromised smoke ventilation/extraction it will not be fully compliant until all remediation measures have been completed. Both cladding systems had been subject to a **full scale fire test approach**, testing the composite (entire) system.

While compliance with the regulations confirms that the buildings are safe this is predicated on the regulations being applied correctly and the integrity of the buildings is not compromised.

The fire safety inspections and comprehensive fire risk assessments of all 33 Housing Executive tower blocks has identified areas where further attention is required through a Fire Risk Assessment Action Plan with each significant finding given a priority classification for immediate remedial action.

Following individual inspections of each tower block the Housing Executive has developed a Fire Safety Matrix that sets out the contributions made to each block and areas for further work arising from the risk assessment reviews. There will be a number of documents published by the Housing Executive which form the basis of communications to residents regarding fire safety in high rise blocks.

The Fire Risk Assessment Action Plans are based on **effective compartmentation** as a first principle measure of fire protection. The Independent Reference Group considers the **installation of sprinklers** as a fire suppression measure may give greater confidence to residents.

Any learning outcomes from the interim and final reports of the Grenfell Public Inquiry and the Independent Review of Building Regulations and Fire Safety should be considered and implemented as appropriate by the Housing Executive and the statutory authorities. Potential legislative changes arising from the final report of Dame Judith Hackitt's Independent Review of Building Regulations and Fire Safety to be published in spring 2018 is particularly important.

The Independent Reference Group makes the following **Recommendations**:

- the work identified in the Fire Risk Assessment Action Plan is carried through to completion as a priority;
- the cladding systems utilised on the four Housing Executive tower blocks are assessed against any new regulatory standards;
- the Housing Executive consider installing sprinkler systems within its high-rise accommodation;
- the Housing Executive enhances the resources within the existing compliance team to ensure a robust inspection, testing and maintenance regime is in place;
- the use of non-combustible facades is considered for any future cladding systems;
- that future learning outcomes or recommendations from the Grenfell Public Inquiry and the Independent Review of Building Regulations and Fire Safety are considered and implemented where necessary by the Housing Executive as soon as practically possible;
- all residents are updated through a further Housing Executive communication that sets out key findings for each block and what actions are being undertaken by way of mitigation.

Addendum: The fire at Coolmoyne House on 15 November 2017 occurred after the November meeting of the Independent Reference Group and is outside of the scope of this report. The Independent Reference Group recommends:

- any learning outcomes from the Coolmoyne fire are implemented by the Housing Executive as soon as practically possible;
- the 'Stay Put' strategy relating to this tower block is recognised to have operated successfully, remains good practice and should continue to be implemented pending any further update to British Standard guidance;
- communications with residents in tower blocks be enhanced to ensure fire safety procedures are clearly understood and identification of those residents in each block potentially requiring assistance.

Finally, the Independent Reference Group commends the Housing Executive and representatives of the contributing statutory agencies on the proactive manner in which it carried out the robust and stringent checks on the cladding and related systems to provide assurance on fire safety. These checks were undertaken without having a statutory obligation to do so and highlighted the benefits of an inter-agency collaborative approach to review the construction of the cladding and fire safety systems and to ultimately ensure they are fit for purpose.

INTRODUCTION

Following the tragic event at Grenfell Tower, I decided to establish an 'Independent Reference Group on Fire Safety in Housing Executive Tower Blocks'. I invited Professor Alastair Adair, Deputy Vice-Chancellor of Ulster University, to Chair the group and also invited representatives of all interested organisations to join the group.

The Independent Reference Group was empowered to call upon Housing Executive staff and contractors to provide relevant information and expertise, and some staff and Board Members have attended its meetings as observers. Over the past six months the group has been able to assemble a comprehensive and authoritative body of knowledge on the safety of the Housing Executive's tower blocks. This material draws upon the initial findings of the investigations into the causes and consequences of the Grenfell fire, including a wide range of other sources. It also reflects the current condition of our tower blocks, both those with cladding and those without.

We owe a considerable debt of gratitude to Professor Adair and other members of the Independent Reference Group who have devoted considerable time and energy into producing this report.

I also wish to thank the residents of our tower blocks, our staff and all our contractors for their efforts and willingness to share their knowledge and understanding of the circumstances pertaining to our properties.

As ever, the safety and welfare of our tower block residents are paramount and this report, the first of what I suspect will be a series of documents, offers lessons on the safety of tower blocks. Even though there is more to learn, I am keen to ensure that the findings of the Independent Reference Group are the subject of early implementation.

Any comments that you might have on this report are most welcome. It is essential that we work together in order to ensure that we anticipate and take early action to avoid any repetition of the circumstances that led to the Grenfell fire.

Professor Peter Roberts
Interim Chair
Northern Ireland Housing Executive

STATEMENTS

The scale of the loss of life in the Grenfell Tower disaster was horrific and we continue to see the impact on the families and communities that have been affected. Understandably, in the light of these events, the safety of those living in high rise buildings within our local social housing sector has come under intense scrutiny.

I have been hugely impressed by the response in terms of close working and cooperation across the public sector in Northern Ireland that has been evident since the tragedy. This has ensured that prompt action has been taken where necessary to provide reassurance and safeguard the health and safety of the people who live in high rise social accommodation.

We also must recognise that this tragedy and the concerns that have been raised in its aftermath have shaken people's confidence in government and public services. All of us in positions of responsibility in the public sector must respond to this by being willing to examine critically what we do to ensure the safety of the public and to do this in an open and transparent way. That is why I welcome the proactive approach of the Northern Ireland Housing Executive in creating the Independent Reference Group. In my view, the group has been critically important in providing an invaluable and impartial view on the fire safety of our high rise social housing.

By setting up the group, the Housing Executive has demonstrated its ongoing commitment to safeguarding its tenants' health and safety and is ensuring there is prompt and transparent implementation of any findings.

I would like to take this opportunity to thank all those who have given their time, knowledge and expertise to the Independent Reference Group. In particular I would offer my thanks to Professor Alastair Adair of Ulster University, who in his role as Chair, has played a crucial role in ensuring the group has been successful in meeting its objectives.

Leo O'Reilly
Permanent Secretary
Department for Communities (DfC)

I wish to take this opportunity to thank the Housing Executive for the invitation to sit on the Independent Reference Group to review fire safety arrangements in relation to the tower blocks following the Grenfell tragedy on 14 June 2017. It was clear from the outset that the safety of residents was the primary focus which was demonstrated throughout by openness and transparency in all matters. The site visits were of considerable benefit to see first-hand arrangements in each of the four tower blocks fitted with cladding.

As would be expected in any review of fire safety matters, shortfalls were identified. NIFRS focus was to provide advice and encourage the Housing Executive to prioritise remedial actions starting at items that in the first instance would keep people safe in their individual flats, and then work away from the flats to the other parts of the tower blocks. Prior to the Grenfell tragedy, the replacement of all front doors in properties to fully rated FD30S fire doors, was a considerable upgrade to enhance the fire safety of residents and demonstrates significant commitment in this regard.

In domestic tower blocks, NIFRS can legislatively enforce measures for the protection of firefighters. NIFRS took a rigorous approach to inspecting each of the 33 tower blocks and serving notices where remedial actions were required. Each of these are followed up by NIFRS until all items are remedied.

For each tower block, the Housing Executive has developed an action plan to document work required and NIFRS would continue to encourage the Housing Executive to maintain focus on prioritising actions based on what will keep individuals safe in their flats, before working on items required elsewhere in each building. This work will take time to complete and NIFRS remains available to advise and support should this be required as resolutions are developed and matters are progressed.

Geoff Somerville
Group Commander
Northern Ireland Fire & Rescue Service (NIFRS)

STATEMENTS CONTINUED

Since the tragic events at Grenfell Tower, where many residents lost their lives, Belfast Building Control Service and Building Control NI (BCNI) have been working closely with colleagues in the Housing Executive to assist in providing advice and guidance in relation to building regulations compliance.

Specifically, we have been liaising with the Housing Executive in relation to issues around external fire spread and have reviewed cladding systems employed on four recently refurbished tower blocks in Belfast. In addition, we have also provided advice on staircase and lobby smoke ventilation in these four high rise blocks.

Representation from Belfast Building Control Service and BCNI was included on the Independent Reference Group to further provide advice and guidance relative to various aspects of fire safety under building regulations. Part of this work involved a review of the building regulations requirements and guidance across the UK in relation to external fire spread over the surface of a building to better inform the Housing Executive regarding the suitability of cladding systems used in Belfast.

Alan Mayrs
Assistant Building Control Manager
Belfast City Council

BACKGROUND

The Housing Executive's cladding programme for its tower blocks originated in a condition report for the Carlisle Multi-Storey Flat Blocks that noted concrete spalling in a number of the blocks.

Following appraisal, it was decided that a cladding system represented the best solution to protecting the structural works that needed to be carried out and, in addition, would address the blocks' poor thermal performance; Cúchulainn House was selected as the first block to be addressed.

However, given the end of the Housing Executive's capital improvement programme in 2008/09 the review of its Maintenance Investment Strategy in 2011 decided that further cladding schemes would only proceed if funding could be made available.

In 2014 Savills inspected all of the Housing Executive's tower blocks as part of the stock condition survey being carried out for the DfC/Housing Executive Joint Asset Commission and recommended that in line with practice elsewhere in the UK the Housing Executive should install cladding on its tower blocks for reasons of structural protection, thermal improvements and enhanced aesthetics.

The introduction of the Interim Investment Priorities (IIP) capital improvement programme in 2015 provided an opportunity to install cladding on a further three blocks, and Eithné House, Carnet House and Whincroft House were selected.

The continuation of the cladding programme for the Housing Executive's tower blocks will be considered as part of the further development of the Housing Executive's Tower Block Strategy and Action Plan.

OBJECTIVE 1

TO EXPLORE IN DETAIL WITH COLLEAGUES IN BUILDING CONTROL (BC) AND NIFRS, THE MAKE-UP OF THE CLADDING SYSTEMS, ALONG WITH THE ROBUST AND STRINGENT TESTING OF THESE SYSTEMS.

1.0 Overcladding and Make-up of Cladding Systems

Cúchulainn House, Eithné House and Whincroft House

1.1 A Vinylit VinyTherm rainscreen system which has non-combustible Rockwool as the insulation material has been used to clad the three multi-storey blocks at Cúchulainn House, Eithné House and Whincroft House. The vertical rockwool cavity barriers and horizontal galvanized steel cavity barriers, along with the air cavity and the cladding rails and Vinylit cladding panels can be seen in the photograph overleaf.

1.2 This system was tested by BRE Global to BS 8414 Part 1 on 8 August 2013 and was classified in accordance with BR 135:2013:

- BS 8414-1:2002 - See Appendix 2;
- Classification of fire performance in accordance with BR 135:2013 Annex A - See Appendix 2;

The system described above and the classification report met the performance criteria set out in Annex A of BR 135:2013 for internal and external fire spread within the cladding system. A further weather tightness test of overcladding and window assembly was also carried out.

1.3 The Vinylit cladding panel has a fire classification B-s3, d2 which is a European Standard and under the elemental approach would have complied with the requirements of Table 5.1 of Part E of the Building Regulations (NI): see Appendix 2 - Vinylit Classification Report. The insulation used in Cúchulainn House and Eithné House is 50mm "Rockwool RW3" insulation. The insulation used in Whincroft House is Duoslab 100mm Rockwool insulation which provides an improved thermal standard.

Carnet House

1.4 The cladding system used at Carnet House is a StoTherm Vario External Wall Insulation (EWI) System made up of 120mm Expanded Polystyrene Grade EPS70E Grey Bead finished with an average of 9mm of reinforced plaster render. All products supplied contain the fire retardant additive and are therefore classified as FRA grade material. Again, the vertical and horizontal fire stops use Rockwool as can be seen in the photographs overleaf.

- International Fire Consultants Field of Application Report PAR/10811/01 Revision A - See Appendix 2;

Cladding System - Fire Testing Regime and Performance Criteria

1.5 Before any cladding installation the Housing Executive, together with the Contractor (Piperhill Construction), ensured that both systems employed had been subject to a fire testing regime through BRE Global. Each system has been tested to BS 8414 Part 1 with the Sto-Vario system having been previously tested by BRE (7 April 2009) on behalf of the system supplier with the Vinylit system tested by BRE specifically for use on the Housing Executive schemes on behalf of the contractor Piperhill (8 August 2013). Each system has been given a classification of fire performance in accordance with BR 135.

1.6 For each system, a representative test specimen was constructed at BRE Global that represented **the composite (entire) system and with all the necessary firebreaks**. BR 135 contains three performance criteria and a classification method to evaluate the cladding system against testing to BS 8414-1. This performance criteria includes internal fire spread, external fire spread and mechanical performance. On page 16 is a summary of the test results from the respective reports with regard to each system for internal and external fire spread.

Vinylit Rainscreen

Vinylit Rainscreen at Whincroft House

StoTherm Vario External Wall Insulation (EWI)

StoTherm Vario External Wall Insulation (EWI) at Carnet House

TEST	PARAMETER	TEST RESULT	COMPLIANCE WITH BR 135
VINYLIT SYSTEM			
BS 8414-1	External Fire Spread	>15 mins	COMPLIANT
	Internal Fire Spread (Insulation)	>15 mins	COMPLIANT
	Internal Fire Spread (Cavity)	>15 mins	COMPLIANT
STO-VARIO SYSTEM (EWI)			
BS 8414-1	External Fire Spread	>15 mins	COMPLIANT
	Internal Fire Spread (Insulation)	>15 mins	COMPLIANT
	Internal Fire Spread (Cavity)	>15 mins	COMPLIANT

1.7 No failure criteria have been set for mechanical performance. However details of any system collapse, spalling, delamination or flaming debris should be included in any test report. The nature of the mechanical failure should be considered as part of the overall risk assessment when specifying the system. For the Vinylit System test, there was significant melting and delamination of the external Vinylit Panel resulting in flaming droplets. This stated observation did not impact on compliance with the relevant BR 135 parameters. The current Fire Risk Assessments reflect in detail both the fire testing regime and the system components. A further desktop review of Cúchulainn, Eithné and Whincroft Houses makes reference to the 'flaming droplets'. The FRA's advise that current mitigation is afforded by ensuring the immediate area at base of block is sterile. The projecting entrance lobby to Cúchulainn and Eithné has a non combustable surface.

1.8 From a regulatory perspective, the Building Regulations in Northern Ireland (specifically the supporting guidance document 'Technical Booklet E') requires an evaluation of individual components within the wall in buildings over 18m high and the application of minimum standards to the various materials employed regarding specific combustibility of insulation including cladding support materials and surface spread of flame classifications to external surfaces. **The full scale fire test approach to BS 8414 - 1 and BR 135 is not detailed in Technical Booklet E as an option as in other parts of the UK for compliance with Building Regulations;** however, it is noted that a cladding system based on this approach with its large scale fire test, provides an evaluation of potential performance more akin to a real fire scenario, rather than basing the assessment purely on individual product characteristics.

1.9 The Housing Executive, therefore, in pursuit of this **full scale fire test approach and testing the "composite (entire) system"** has used this alternative way of complying with the current recommendation contained in Technical Booklet E to demonstrate compliance with 'Building Regulation 36 - External Fire Spread' using BS 8414 -1 and BR 135.

1.10 The Independent Reference Group recognises that post Grenfell the adequacy and fitness for purpose of the building and fire safety regulations is under review in England as announced by the Department for Communities and Local Government and led by Dame Judith Hackitt. The Terms of Reference of this review can be found at:

https://www.gov.uk/government/news/independent-review-of-building-regulations-and-fire-safety-publication-of-terms-of-reference

1.11 The Independent Reference Group recognises the importance of awaiting the outcome of the final report of the Independent Review of Building Regulations and Fire Safety in England undertaken by Dame Judith Hackitt.

1.12 Subject to the outcome of the review, a decision should be taken by the Housing Executive to assess the cladding systems on the four tower blocks against any new regulatory standards.

OBJECTIVE 2

TO UNDERTAKE JOINT DETAILED SITE APPRAISAL VISITS WITH BUILDING CONTROL AND NIFRS TO ALL FOUR TOWER BLOCKS AND TO PROVIDE ASSURANCE THAT THE SYSTEMS HAVE BEEN INSTALLED IN ACCORDANCE WITH BUILDING REGULATIONS AND BEST PRACTICE.

2.0 Fire Risk Assessments Finding and Actions

2.1 The narrative below makes reference to British Standards where applicable.

2.2 The Housing Executive's Fire Safety and Health & Safety Teams carried out a comprehensive fire safety assessment to all 33 tower blocks between 14 and 16 June 2017. This was to identify any immediate fire safety issues requiring attention.

2.3 These assessments extended to all landlord common parts including lift plant rooms, roof access, lift lobbies and all landlord and resident store areas for each block. A review as to the suitability and sufficiency of existing fire measures together with current maintenance regime in respect of fire doors, compartmentation, signage, emergency lighting, fire alarm systems was conducted as well as how fire safety is managed within the blocks.

Cladding system detail and installation to recently refurbished four tower blocks

2.4 Of the 33 assessments, four of these related to the tower blocks in receipt of cladding (as table below). The type of cladding system adopted, the status of the installation and any additional works are noted in each case.

2.5 The Vinylit rain-screen cladding system application is made up of an outer PVCu cladding panel mechanically fixed to Vinylit battens which in turn are supported by metal brackets. The insulation used in Cúchulainn House and Eithné House is 50mm "Rockwool RW3" insulation. The insulation used in Whincroft House is Duoslab 100mm Rockwool insulation which provides an improved thermal standard.

A small "ventilation" air gap exists between the insulation and outer cladding panel. Horizontal and vertical cavity barriers are applied on each elevation and at every change of occupancy floor level including the landlord common parts.

These cavity barriers limit the development of any fire and smoke within the cavity and linked to the system.

2.6 Carnet House uses a StoTherm Vario EWI (External Wall Insulation) cladding system. This uses a high quality Expanded Polystyrene Block (EPS) complete with a fire retardant and an external plaster render three coat slab system. Horizontal and vertical firebreaks again are incorporated within this arrangement and at the same depth as the EPS block. These firebreaks similarly frame up both horizontally and vertically at every change of occupancy including the landlord common parts. In this system, there is no cavity provision.

TOWER BLOCKS	CLADDING SYSTEM	STATUS OF INSTALLATION	ADDITIONAL WORKS
Cúchulainn House (New Lodge)	Vinylit System	Complete	Pyramidal Roof
Eithné House (New Lodge)	Vinylit System	Complete	Pyramidal Roof
Whincroft House (Braniel)	Vinylit System	Complete	Pyramidal Roof
Carnet House (Dundonald)	StoTherm Vario EWI System External Wall Insulation	Complete	None

Fire Risk Assessments - Critical Assessment(s) of Four Cladding Blocks and Summary of Report Findings in relation to Joint Site Appraisal Visits

2.7 An initial appraisal visit of these four blocks was conducted by the Housing Executive's Fire Safety Manager & Quality Improvement Manager on 4 July 2017. The intent was to pursue a number of issues established relative to the cladding installations from the earlier assessments. Of particular interest, were concerns for Cúchulainn House and Eithné House relating to ventilation and smoke extraction provision following the completion of the refurbishment work with specific reference to lift lobby and drying areas and the addition of a pyramidal roof. Whincroft House had a similar issue with the enclosed pyramidal roof. Carnet House, using the EWI system is viewed as being currently compliant in terms of cladding installation.

2.8 The above findings were noted in a Technical Report in early July 2017 as a means of further demonstrating that critical assessment had taken place and in the context of a Fire Risk Assessment. This report acknowledged that with the application of any cladding system to tower blocks, that a "material change" has taken place - in Fire Risk Assessment terms that is regarded as a significant finding. At this stage, a series of conversations commenced with both Building Control (Belfast) and NIFRS. They were both asked by the Housing Executive to comment on and review the preliminary findings in terms of compliance with Building Regulations and the likely impact on fire-fighting operations. This draft report was tabled at the Independent Reference Group Meeting on 23 August 2017.

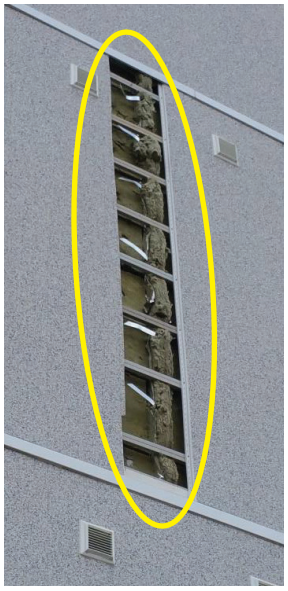
2.9 On 27 July 2017, the Housing Executive Fire Safety Manager & Quality Improvement Manager in conjunction with representatives from NIFRS and Building Control (Belfast) carried out a further critical assessment of all four recently clad tower blocks in line with Objective 2 requirements. This visit was aimed at both determining and confirming any potential variations to the systems and relative to the fire test reports.

2.10 This collaborative visit involved the "opening up" as below of the completed cladding system in the Carlisle multi tower blocks in several key areas such as drying areas and around window pods to seek assurance on presence of vertical cavity barriers and also Rockwool insulation how the material abutted the window pod typically at all levels. When assessing Cúchulainn House, we took the opportunity to assess the internal layout of one flat.

This allowed the domestic detection provision to be assessed and checked for operation and also the internal vertical shaft within the bathroom to be accessed and assessed for breaches in compartmentation. In summary, the following findings were established:

- Vertical cavity barriers were present at drying areas;
- The method employed around windows in terms of insulation was considered appropriate by Building Control and NIFRS;
- There was an absence of Rockwool insulation backing to cladding system within drying areas;
- Inlet ventilation arrangements previously existing within drying and refuse chute area and lift lobbies (lobby vents) at each level had been removed - this led to a less than satisfactory situation for smoke ventilation/ clearance facilities and an impact on fire-fighting operations;
- Domestic detection within the flat met minimum standards, but in this case not operational in one flat;
- A number of breaches of structure compartmentation within the vertical services riser shaft (internal to flat).

Evidence of 'opening up' and presence of vertical firebreaks in regard to Cúchulainn and Whincroft House tower blocks



2.11 The provision of the pyramidal roof to three of the four blocks (para 2.7 above) was noted as a further issue of concern as it impacted on the ventilation provision and in regard to internal shunt ducts, refuse chutes, soil and ventilating pipes and most importantly smoke ventilation provision at uppermost level of the stair used for firefighting purposes. All of these service provisions previously vented to external air. In summary, the following findings were established:

- All services previously terminating above the flat roof surface and to external air are now terminating within an enclosed roof void and reliant wholly on eaves ventilation;
- Smoke ventilation and clearance were similarly compromised and there was no suitable containment for fire spread (or chimney effect) within vertical shafts such as the refuse chutes and shunt ducts;
- The absence of any form of cavity closers at the top walling to cladding installation.

Review of Building Regulation Matters in relation to Cladding Works, including Joint Site Appraisal Visits

2.12 In terms of the application of Building Regulations the applicable legislation is the Building Regulations (NI) 2012. These regulations cannot be applied to the existing building unless alterations are carried out as they do not apply retrospectively.

In relation to the four tower blocks that have had insulated cladding systems and new roofs installed the Building Regulations (NI) 2012 are applicable to the works and in this regard Building Regulations applications were submitted for the works as follows: detail pertaining to each application is attached at Appendix 3 -

Carnet House
Application reference FP/2017/0115
Insulated cladding system to exterior façade;

Eithné House
Application reference BN/2016/2674
Insulated cladding system to exterior façade and new pitched roof;

Cúchulainn House
Application reference BN/2015/2563
Insulated cladding system to exterior façade and new pitched roof;

Whincroft House
Application reference FP/2017/0116
Insulated cladding system to exterior façade and new pitched roof.

Following the desk top review and site inspections at all four tower blocks as part of this independent review there were a number of issues that were identified both administratively in terms of the application process and technical compliance issues.

These have been summarised as follows:

SUMMARY OF FINDINGS

2.13 Below are the findings identified

a. The Building Control service did not identify any contraventions of Building Regulations in relation to the works carried out to Carnet House.

b. In relation to the Building Regulations applications submitted for Eithné House and Cúchulainn House these were submitted as building notice applications which is at variance with regulation 9 of Building Regulations (NI) 2012. The type of application submitted should have been a full plans type application.

c. Contraventions of the Building Regulations were identified in relation to the works carried out to Eithné House, Cúchulainn House and Whincroft House. The most significant issue was in relation to the provision of a pitched roof over all three blocks which had enclosed various services including natural stairwell smoke vents provided for smoke clearance in a fire situation. Other services such as soil vent pipes and building ventilation outlets also discharged into the new roof void. In addition, the issue of fire separation in relation to the services discharging into the roof had not been considered (See Appendix 4).

d. In relation to works at Eithné House and Cúchulainn House the cladding system which had been installed had compromised the ability for smoke clearance of stairwell lobbies and fireman's stair. This alteration could be considered as having caused a greater contravention of the regulations in this regard.

e. The plans associated with the application for Whincroft House did not provide any details in relation to the services being enclosed by the new pitched roof. The information provided with the building notice applications at Eithné House and Cúchulainn House did not provide any details of the services enclosed by the new pitched roof.

f. The inspections carried out at Eithné House by the Building Control Service in their enforcement role did not identify the issues identified as part of this review and a completion certificate was issued. The responsibility for compliance with Building Regulations rests with the Housing Executive and their nominated agents and contractors.

g. The Building Control Service do not appear to have been provided with the necessary commencement and completion notifications in relation to the works at Cúchulainn House and as such the works were not inspected under Building Regulations at the time the works were carried out.

In response to these findings, Belfast Building Control Service issued written advice to the Housing Executive on 2 August 2017 outlining where they considered contraventions of the Building Regulations to have occurred as a result of the cladding works.

Building Control correspondence and the Housing Executive response is attached at Appendix 4.

Following the identification of these issues a number of meetings took place to agree the remedial work required to ensure compliance with the Building Regulations. These meetings are detailed in the Housing Executive action plans and agreed solutions were developed.

NIFRS Formal Response to Joint Site Appraisal Visit and Findings

2.14 NIFRS similarly responded regarding the above contraventions findings on 1 August 2017. They made a series of recommendations based on the above, which are summarised as follows:

- A Fire Risk Assessment is prepared for each block and that the significant findings are summarised and noted in a "prioritised Action Plan";
- Ensure that the smoke alarm in each flat is working, and if not, then repair;
- Ensure compartmentation between each flat, common area and floor is checked and is re-instated on a systematic risk based approach;
- Reinstate the smoke control measures to the previous standards installed prior to the cladding installation for public safety and to facilitate fire-fighting operations. This applied to both fireman's stair and each lift lobby.

2.15 In regard to the above, the Housing Executive issued a formal response to NIFRS and offered assurances that all of the above issues within the respective tower blocks are being addressed.

2.16 For findings listed in 2.13(d) and the recommendations in 2.14 above, with regard to the reinstatement of the smoke control measures, NIFRS has since confirmed that they have in the interim put suitable mitigations in place to minimise the risks identified. These mitigation measures have been recorded on their internal systems and will be conveyed to their crews in the event of a fire occurrence in any of these tower blocks. The remediation works will be completed six months after commencement (para 2.26).

2.17 NIFRS correspondence and the Housing Executive response is attached at Appendix 4.

Fire Risk Assessments & Prioritised Action Plans - Housing Executive Fire Safety Manager

2.18 Fire Risk Assessments (FRAs) for all 33 tower blocks have now been reviewed and documented in full by the Housing Executive Fire Safety Manager. These reflect comprehensive and in-depth assessments of each tower block in line with the requirements of a BS PAS 79 Fire Risk Assessment template. From this exercise, a tower block Fire Safety "matrix" has been developed. The matrix highlights those tower blocks where attention needs to be focused in terms of fire safety remediation works in the short to medium term. The matrix also highlights the positive contributions that have been made to the tower blocks generally over the years and from a fire safety perspective - notably, the fire provisions in a number of tower blocks that exceed minimum requirements.

2.19 Each FRA, as required, has a detailed action plan with each significant finding given a "priority classification". In particular, all of the above issues linked to the cladding tower blocks are listed as part of their respective action plan and given "high priority". Each finding is also assigned to either a person or a team for action. Briefings of all those assignees have since taken place.

2.20 In line with NIFRS recommendations, each FRA Action Plan requires an internal survey of each flat (within each tower block) and to assess the current domestic detection, its operation and the compartmentation relative to the vertical shaft. Undertaking this survey extends the Fire Risk Assessment consideration of all landlord common parts to include the flats' vertical services riser shaft also.

2.21 Validation of the Progressive FRA Action plan for all 33 tower blocks is being overseen by the Housing Executive Fire Safety Manager and their team. (Appendix 5).

2.22 Immediate Fire Risk Assessment Action Plan Issues (Table 1) is included overleaf.

TABLE 1: IMMEDIATE FIRE RISK ASSESSMENT ACTION PLAN

TOWER BLOCK ACTIONS	ACTION TAKEN TO DATE	STATUS OF ACTION	TIMELINE TO COMPLETION
Undertake a Fire Risk Assessment for each tower block with a prioritised Action Plan	Fire Risk Assessments undertaken between 14 - 16 June 2017 Fire Risk Assessments all fully documented and briefing to all Action Plan assignees	Complete Complete	- -
FRA Action Plans - Address Primary Issues: Internal Survey of Flats and Domestic Detection Upgrade Outstanding Fire Doors to be addressed Breaches in compartmentation M&E Facilities (fire provisions) Management of Fire Safety	Cúchulainn, Eithné, Whincroft & Carnet Houses Quantified in terms of all blocks; mop-up scheme to be actioned • Immediate issues to be addressed with Cúchulainnn, Eithné, Whincroft & Carnet Houses • Briefing Meeting held with Project Manager • Briefing Meeting(s) held with Area Managers • Update/Progress Meetings	Ongoing Ongoing Jobs raised to action Complete Complete Complete	August 2018 August 2018 Review - December 2017 Review undertaken - December 2017
NIFRS Remedial Actions - 24/07/17 for each tower block	Dry Riser issues addressed Identified Fire Door issues addressed Smoke Ventilation service/maintenance records	Complete Complete Complete	- - -
Reinstatement of Smoke Ventilation provisions and extension of services from within Roof Void to external air	Meetings held with NIFRS, Building Control (Belfast), Project Managers, Consultant and Contractor as of: 03/08/17 - Briefing on issues to all parties 16/08/17 - Technical solution meeting 24/08/17 - Technical solution meeting 13/09/17 - Technical solution site meeting 03/10/17 - Technical solution meeting 29/11/17 - Site meeting to agree credible solution	Ongoing	Completion of the works will be six months after commencement
Review of all Fire Risk Assessment in regard to Action Plans	Desktop Review & Site Assessments scheduled for December 2017 and thereafter as further technical guidance emerges	Complete	December 2017

Pursuit of Credible Technical Solutions for Cladding Blocks with Statutory Bodies and Remediation Works

2.23 The Housing Executive Fire Safety & Quality Improvement Managers previously tasked with oversight of the technical solutions to remedy the smoke ventilation and services issues within the new roof voids of three recently clad tower blocks (Cúchulainn, Eithné, Whincroft) noted in para 2.11 above can confirm that a credible solution has been agreed with NIFRS, Building Control (Belfast), Housing Executive project managers, consultant and contractor. This did not affect the fourth block at Carnet House as the existing flat roof was retained and refurbished.

2.24 With all three tower blocks, there continues to be both proactive and positive engagement on the above mentioned issues with NIFRS, Building Control (Belfast), Housing Executive project managers, consultant and contractor.

2.25 At the most recent meeting on 29 November 2017 all of the above parties were represented and broad agreement on technical solutions and methodology for moving forward was received. The validation process within Building Control is urgently being pursued to overcome the earlier stated contraventions.

2.26 These remediation works will be completed six months after commencement.

Information Note - Department of Finance (NI) relative to Building Regulations and Cladding or Re-Cladding of Buildings

2.27 As of September 2017, the Department of Finance issued an Information Note to flag common Building Regulations issues to consider when reviewing cladding work particularly on tall buildings (>18m in height).

2.28 The fire safety issues raised as part of this note have each been considered and discussed independently with Building Control (Belfast). In each case, the fire related issues are accounted for in terms of the Housing Executive's Fire Risk Assessments and particularly in regard to compliance with BR 135 and full scale test data from BS 8414-1.

OBJECTIVE 3

TO IDENTIFY ANY LEARNING OUTCOMES FROM GRENFELL AND IDENTIFY ANY APPROPRIATE ACTION REQUIRED

The Independent Reference Group recommends that any learning outcomes from the interim and final reports of the Grenfell Public Inquiry and the Independent Review of Building Regulations and Fire Safety are considered and implemented as appropriate by the Housing Executive and the statutory authorities. In this regard, the Housing Executive will continue to work in collaboration with the local statutory authorities on any emerging issues that may arise to improve fire safety.

The first issue to be addressed under this objective was to carry out a desk top review of methods used to indicate compliance in the UK as below.

Objective 3(a) - Review of requirements and guidance in UK in relation to external fire spread.

Introduction

3.0 The following information has been produced to inform the Independent Reference Group regarding fire safety in Housing Executive tower blocks of the fire safety requirements in relation to the external wall construction of buildings contained in National Building Regulations throughout the UK.

3.1 Building Regulations currently contain requirements to limit fire spread over the walls and roof of a building and to prevent fire spread between buildings.

3.2 This section is specifically related to requirements and guidance to prevent fire spread over the external walls of a building. The issue is currently under much scrutiny following the Grenfell Tower fire and should not be confused with the requirements and guidance to prevent fire spread between buildings which are a separate requirement.

3.3 The requirements and guidance in Northern Ireland, England, Scotland and Wales are summarised in detail in Appendix 6.

Requirements

3.4 The requirements under Building Regulations across the UK are generally functional based standards that are backed up by the provision of technical guidance documentation. The functional requirements outline how a building should perform in respect to areas such as structural safety, fire safety and sound transfer, for example. Compliance with the detail in technical guidance should in the majority of situations, offer a suitable solution which will satisfy the functional requirements of the regulations.

When reviewing the Building Regulations, it is useful to consider both the regulations commonly referred to as the 'requirement' and the technical guidance documentation commonly referred to as the 'guidance'. The relevant requirements and guidance across the UK are outlined in Appendix 6.

Summary

3.5 The regulations (requirements) relating to the prevention of external fire spread over the façade of a building are almost identical across the UK with some minor variation in wording.

3.6 In terms of guidance issued under regulations there are two main approaches to ensuring adequate resistance to fire spread over the external walls of a building.

3.7 **Full scale fire test approach** - for cladding systems it is acceptable to test the whole system and measure against a performance criteria given in the BRE Report Fire Performance of External Thermal Insulation of Multi-storey Buildings (BR 135) using full scale test data from BS 8414-1:2002 or BS 8414-2:2005.

3.8 **Elemental approach** - to evaluate each individual component within the wall and apply minimum standards to all materials in terms of their combustibility. In addition to apply minimum fire classification standards to external surfaces

depending on building height, type and proximity to a boundary.

3.9 Both these approaches may provide a means of demonstrating compliance with the Building Regulations across all parts of the UK albeit the full scale fire test approach is not an option within Technical Booklet E in Northern Ireland. However Building Control Northern Ireland (BCNI) sought the views of the Department of Finance and the following provided (See Appendix 8 - Department of Finance Information Note 'Cladding or Re-cladding of Buildings' paragraph 1 - Alternatives to the guidance in Technical Booklet E).

3.10 Key literature examined under the following objectives:

Objective 3 (b) - Correspondence with BRE, to identify if the Housing Executive is required to undertake any further tests (See Appendix 7).

- Letter from Department for Communities and Local Government (Page 163);
- Letter from BRE Global (Page 164);
- Reply email from Piperhill Construction Ltd to BRE (Page 165).

Objective 3 (c) - Liaise with colleagues in Department for Communities and Local Communities (DCLG) to gauge what actions are required (See Appendix 8).

- DCLG - 18 June 2017 (Page 167);
- DCLG - 22 June 2017 (Page 171);
- The Executive Office - 3 July 2017 (Page 183);
- DCLG - 13 July 2017 (Page 203);
- Department of Finance - (Information Note) - 27 September 2017 (Page 207);
- DCLG - Advice Note 13/111217 (Page 214);
- DCLG - Advice Note 14/111217 (Page 222).

Objective 3 (d) - Literature review from other sources i.e. BRE, BBA, RIBA, RICS etc. (See Appendix 9).

- RIBA Statement on Design for Fire safety; and the submission by RIBA Expert Advisory Group on Fire Safety (Page 226).
- Aluminum composite cladding - understanding the role of BBA Certificates (Page 230);
- Report to the Secretary of State by the Chief Fire and Rescue Adviser on the emerging issues arising from the fatal fire at Lakanal House, Camberwell on 3 July 2009 and associated documents (Page 236);
- "Fire Risks from External Cladding Panels - A Perspective from the UK." (Page 268) and;
- Written submission received from Dr Tom Woolley (Page 286).

3.11 Post Grenfell a large number of issues have been raised in the literature relating to fire safety and the utilisation of cladding systems in tower blocks. A few of the more salient issues are highlighted.

3.12 The need for an urgent review of the Building Regulations in England and Wales relating to fire safety in residential blocks over 18m and in particular greater clarity in the interpretation of Part B. On 30 August 2017, the Westminster Government published the terms of reference for the Independent Review of Building Regulations and Fire Safety to be led by Dame Judith Hackitt, the interim report was published in December 2017 and is included in Appendix 11. The principal issues from the interim findings are considered in para 4.12 below.

3.13 It is interesting to note that following the Lakanal House Fire in 2009, in which six people were killed, the All-Party Parliamentary Fire Safety and Rescue Group petitioned for the reform of Part B of the Building Regulations relating to fire safety to include the role of sprinklers in fire suppression and a review of cladding standards. The Lakanal House Fire report queried the suitability and sufficiency of the five-step fire risk assessments in place at that time. It was noted that the review of that process led to the development of the BS PAS 79 Fire Risk Assessment which addressed the queries surrounding the suitability and sufficiency of a fire risk assessment. The 2013 Coroner's report on the Lakanal incident recommended that the Department encourage providers of housing in high rise residential buildings containing multiple domestic premises to consider the retro fitting of sprinkler systems and also called for a review and simplification of the guidance to the English and Welsh Fire Safety Regulations.

3.14 The Independent Reference Group discussed the fitting of sprinkler systems to the Housing Executive tower blocks. The installation of a sprinkler system is often seen as a compensatory measure in lieu of other requirements whereas the Fire Risk Assessment Action Plans look to ensure adequate compartmentation as a first principle measure, to mitigate risk.

3.15 There is currently no statutory requirement for the installation of sprinkler systems in high rise residential buildings however, it is possible that there could be a legislative directive which would require their installation. It was noted that Wales introduced a mandatory regulation on 1 January 2016 to require the provision of automatic fire suppression systems in some residential buildings including flats and dwelling houses whether new or through conversion.

3.16 The Independent Reference Group are aware that prior to the Grenfell Tower tragedy the Housing Executive had developed a strategy for its high-rise blocks. It was considered that an investment (approximately £3M - £4M) would be required to install sprinklers in Housing Executive tower blocks with the need to relocate tenants until works could be carried out. However, surface mounted sprinklers could be installed and there would be no need to relocate tenants.

3.17 The Independent Reference Group also discussed the public perception of the use of sprinklers and acknowledged that whilst they do improve fire safety, consideration needs to be given to what is necessary, practical and value for money. The Independent Reference Group considered that there is a need to consider all the evidence before a decision is made including the costs which could be attributed to leaseholders if a decision was taken to install sprinklers.

An Enforcers View of the Statutory Requirements for Sprinklers in Tower Blocks Contained in Building Regulations - Building Control Northern Ireland (BCNI).

3.18 The following statement has been provided by BCNI and its Fire Safety Panel to feed into the debate on the need to retrospectively fit sprinklers in Housing Executive tower blocks and focuses on Building Control's opinion on the statutory obligations under current Building Regulations for installation in such premises. To obtain a balanced view it would be necessary to seek a range of views on this matter such as the Department of Finance - Building Standards Branch and NIFRS and to take other factors such as public perception, current research on effectiveness of sprinkler systems and cost benefit analysis etc. into consideration.

3.19 There is currently no statutory 'mandatory' requirement to install sprinklers in residential buildings of any height in Northern Ireland under the current Building Regulations.

3.20 It is important to understand that if a requirement was introduced in Northern Ireland to require sprinklers under Building Regulations that this requirement is likely to only apply to newly constructed buildings or when buildings undergo certain material changes of use unless provisions are also introduced that would make the requirement mandatory in existing buildings.

3.21 Whilst the mandatory installation of sprinklers in residential buildings either new or altered is a future possibility it is too early to establish how the regulations in Northern Ireland will change as a result of the Independent Review of Building Regulations and Fire Safety in England post Grenfell. Historically the requirements in Northern Ireland have followed closely those made in England and therefore any changes to the regulations in England are likely to strongly influence any changes made in Northern Ireland.

3.22 It is worth reviewing the position across the rest of the UK in relation to the requirements for the installation of sprinklers in residential flats and dwellings contained in Building Regulations.

3.23 The requirements across the rest of the UK can be summarised as follows:

- In Scotland, there is a mandatory standard requiring an automatic fire suppression system in a number of residential type buildings in order to inhibit fire growth. The Standard applies to residential care buildings, high rise domestic buildings with a floor over 18m in height, and a building which forms the whole or part of a sheltered housing complex.
- In Wales, there is a specific regulation requiring provision of automatic fire

suppression systems in a number of residential type buildings including care homes, halls of residence, boarding houses, HMOs, dwelling houses and flats.

- In England, there is no mandatory requirement to install automatic fire suppression systems in residential buildings. However, there is a functional regulation requiring the installation of suitable automatic fire suppression 'where reasonably necessary to inhibit fire spread within a building'. The guidance to this regulation in Approved Document B Volume 2 (Buildings other than dwelling houses) indicates that a building containing flats with a floor more than 30m above ground level is not permitted without the provision of an automatic sprinkler system to supplement the minimum periods of fire resistance required. It must be noted that the installation is not mandatory and it may be possible to avoid installation provided a sufficient fire safety argument can be provided.
- In Northern Ireland, there is no mandatory requirement to install automatic fire suppression systems in new or altered residential buildings contained in the Building Regulations nor is there a functional regulation referring to their installation. In addition, there is no recommendation to fit as standard automatic fire suppression in flats within the benchmark standards contained in Technical Booklet E and BS 5588 Part 1.

3.24 It should also be noted that for new residential buildings in Northern Ireland in terms of the five functional fire safety related building regulations the benchmark standards are set in guidance in Technical Booklet E (TBE). However, for the regulation on Means of Escape states "The means of escape in a flat should be in accordance with the 'relevant recommendations' of BS 5588 Part 1" - 'Fire precautions in the design, construction and use of buildings - Code of practice for residential buildings. If the guidance in TBE is followed there is generally a presumption of compliance with the regulations unless a particular circumstance is not one of the more common building situations.

3.25 Whilst BS 5588 Part 1 does not recommend the installation of sprinklers it is important to advise that this code of practice has been withdrawn by BSI and superseded by BS 9991 - 'Fire safety in the design, management and use of residential buildings'. The revised document recommends sprinklers for flats with a floor over 30m above ground level but this is not explicitly linked with the relevant recommendations for means of escape. It also recommends sprinklers as a compensatory feature in buildings below 30m in certain situations generally linked to means of escape. Whilst the impact of this change to the guidance stipulated in TBE on Building Regulations requirements in NI is still under review by Building Control it is important that we bring this change to the British Standard to the attention of the Housing Executive. It is also important to note that BS 9991 has no legal status on its own and cannot itself impose requirements unless cited as a requirement in legislation.

3.26 Even with the update, BS 5588 Part 1 which is still cited in TBE the situation remains that there is currently no 'mandatory' requirement in Northern Ireland for the installation of sprinklers in new or existing residential buildings under the Building Regulations. The functional nature of the fire safety requirements under the Building Regulations means there are always alternative options to explore even when the recommendation in BS 9991 is taken into consideration.

3.27 The literature following the Grenfell tragedy has raised questions regarding the following:

- The effectiveness of compartmentation in containing a fire in a flat and in preventing fire spread around and up the outside of the building. In addition, the role of firebreaks installed in cladding systems in preventing the spread of fire.
- The effectiveness of smoke extraction/ pressurisation systems where there is only one stairwell in the tower blocks. Some fire safety professionals have become critical of a reliance on pressurization as the dominant form of smoke control in high rise buildings.
- Criticism of procurement processes that prioritise price over quality and the use of 'desktop' approaches to demonstrating fire safety compliance. Indeed, it is argued that

such value engineering is supporting 'a race to the bottom' and prioritising price over quality that wrecks lives.

3.28 The Independent Reference Group received a written submission (Appendix 9) from Dr Tom Woolley, independent consultant on sustainability, materials and health issues in buildings. Dr Woolley raised a number of points which were followed up in a meeting with him, in particular that synthetic insulation materials pose significant health risks to occupants of buildings as a result of hazardous emissions and smoke toxicity in the event of a fire.

3.29 The adequacy of the current Building Regulations is being considered as part of Dame Judith Hackitt's ongoing Independent Review of Building Regulations and Fire Safety. The interim findings were published in December 2017 and a number of key points are relevant to the current IRG review as outlined in paragraph 4.12.

Objective 3 (e) - The maintenance and condition of fire safety measures in tower blocks

3.30 The Housing Executive has an inspection and maintenance regime in place to ensure that any facilities, equipment and devices provided for fire protection are inspected and maintained in line with all relevant British Standards and best practice procedures.

3.31 The Housing Executive continually reviews these processes and procedures to ensure that they meet its statutory obligations as a landlord.

3.32 The Independent Reference Group was particularly interested in receiving evidence of the quality assurance, checking and signing-off that such processes and procedures.

3.33 In June and July 2017, maintenance inspections (para 2.2, 2.8) identified a number of failures to the fire safety equipment particularly around dry risers.

3.34 The Housing Executive immediately commissioned a specialist contractor to undertake these remedial works (Table 1, para 2.22).

3.35 NIFRS is the enforcing authority for fire safety duties as detailed by The Fire and Rescue Services (Northern Ireland) Order 2006 (See Appendix 4).

3.36 Regulation 24 of The Fire Safety Regulations (Northern Ireland) 2010 requires the maintenance of measures provided in the common areas of private dwellings for protection of firefighters. As part of their responsibilities NIFRS carried out an audit of the 33 tower blocks in the Housing Executive portfolio. NIFRS issued two enforcement notices for works to the dry riser installations at Carnet House and Clarawood House on 26 July 2017. As noted above, these works had already been commissioned and were completed on 28 July 2017. These associated works were inspected and signed off as compliant by NIFRS.

3.37 NIFRS issued action plans for the remaining 31 towers for some remedial works to be undertaken to dry risers, smoke extraction and adjustments to isolated fire doors in landlord lobby areas.

3.38 Works commissioned to carry out action plans for the remaining 31 blocks are now successfully complete. In light of the findings of ongoing reviews and the issues highlighted above the Housing Executive is proposing to establish a fully resourced technically competent compliance team to ensure a fully robust inspection, testing and maintenance regime is in place.

3.39 To supplement the inspections and checks carried out by both the specialist contractors and the Housing Executive compliance technical team the Housing Executive has put in place a visual inspection regime for its concierge/caretaker staff. These members of staff carry out daily and weekly visual inspections. All inspections are recorded on the Concierge check list contained in Appendix 10 and any faults or failures are reported to the Tower Block Manager for urgent action by the specialist contractor.

3.40 Examples of the checklist in use and items to be inspected together with the frequency of inspections to be carried out by the concierge/caretakers are included at Appendix 10. Fire Safety Awareness training for all concierge/caretaker staff is taking place between December 2017 - January 2018. Refresher training will be undertaken periodically at suitable intervals as required.

Objective 3 (f) - Role of communication with tenants and measures for safe evacuation of residents in the event of a fire outbreak

Background

3.41 Following the Grenfell Tower tragedy, the Housing Executive immediately sought to reassure residents of high rise accommodation in Northern Ireland, through a number of communication channels. These included delivering a leaflet to all residents on the days following the fire, issuing statements to the press, undertaking media appearances and attending public meetings.

3.42 The objectives of this approach are:

- To reassure residents that the Housing Executive is working to ensure maximum fire safety compliance within their tower blocks;
- To update fire safety advice for residents of high rise blocks;
- To update stakeholders on the Housing Executive's work following the Grenfell Fire.

3.43 The Housing Executive's communication team and officers from the Housing Services and Asset Management divisions have responded to queries from the media, local representatives and other stakeholders. The approach is to be open, thorough and prompt in the responses to all requests for information. Housing Executive staff have also have been proactive in all aspects of communication regarding fire safety.

3.44 Following inspections of each tower block the Housing Executive has developed a matrix that sets out the alterations made to each block and the current issues pertaining given the risk assessment reviews. The Housing Executive intends to provide a Fire Safety update leaflet to each resident relative to their tower block and local political representative, tenant groups and other stakeholders.

Key Stakeholders

- Residents of tower blocks
- Housing Executive tenants
- Local political representatives
- NIFRS
- Local Councils
- Staff
- Departments
- Residents Groups

OBJECTIVE 4

TO DISCUSS ANY POTENTIAL CONSEQUENCES WHICH MAY ARISE FROM THE FINDINGS OF GRENFELL IN TERMS OF LEGISLATION CHANGES OR AMENDED REGULATIONS WHICH MAY APPLY RETROSPECTIVELY

4.0 Information Note - Department of Finance (NI) relative to Building Regulations and Cladding or Re-Cladding of Buildings

4.1 As of September 2017, the Department of Finance has issued an Information Note to flag common Building Regulation issues to consider when reviewing cladding work or installing new cladding, particularly on tall buildings (>18m in height).

4.2 This Information Note on cladding and recladding of buildings has been developed in light of recent concerns raised around issues of external fire spread, wind loading on cladding and in particular external wall insulation.

4.3 In respect of Structural Safety (Regulation 30), there are concerns about potentially inadequate consideration of wind load and design calculations relating to cladding systems.

4.4 This Information Note was discussed by the Independent Reference Group and Belfast Building Control agreed to carry out a review of the structural aspects of the cladding design and installation with respect to wind loads and compliance with Regulation 30 (Stability) of the Building Regulations (NI) 2012. Regulation 30 requires that the cladding systems should be designed and constructed so that the combined dead, imposed and wind loads are sustained and transmitted to the ground, safely.

4.5 This review was undertaken by a consultant structural engineer in conjunction with Belfast Building Control and involved a review of information already available. The information included wind analysis reports, the BBA certificate for Sto render, original pull out test results for fixings, and the drawings and details for the two systems employed on the four Belfast tower blocks. A site visit was also carried out at Carnet House and Whincroft House on 24 October 2017 to review the actual method of installation on site for both systems.

4.6 In relation to the system installed at Carnet House which is the StoTherm Vario External Wall Insulation (EWI) system the review concluded that the system design and installation had adequately considered the max wind loading at top of building in loading zone A which was 2.951KN/m2 and as such was deemed to be compliant with Regulation 30.

4.7 In relation to the system employed at Cúchulainn House, Eithné House and Whincroft House which is the Vinylit cladding system, there were three types of fixings that had to be considered.

- The fixing for the main support bracket to the wall;
- The fixing to connect the cladding support rail to the main support bracket;
- The fixing of the cladding panel to the support rail.

4.8 In relation to the fixing for the main support bracket, reliable test data was available and the capacity of these fixings greatly exceeded the applied wind suction loadings.

4.9 In relation to fixings 2 and 3 the consultant engineer was unable to obtain any reliable data for the actual fixings, so recommended further 'pull out' tests of these fixings which were carried out on 22 November 2017. The results of these tests indicate that the fixings have adequate capacity to resist maximum design wind loads incorporating the appropriate factor of safety.

4.10 The final report in relation to this matter will be provided to the Housing Executive as and when it becomes available.

4.11 The Department of Finance Building Standards Branch have provided the following comment in relation to potential Building Regulation legislation changes post Grenfell.

"The Grenfell Public Inquiry and the Building Regulations and Fire Safety Independent Review are on-going. The Department of Finance continues to liaise with officials in England and the other Devolved Administrations in relation to Building Safety issues post-Grenfell."

4.12 Building a Safer Future - Independent Review of Building Regulations and Fire Safety: Interim Report (Appendix 11)

4.13 The Independent Review of Building Regulations and Fire Safety seeks to provide assurance to residents of high-rise and complex buildings that these buildings are safe to live in and to ensure that there is a sufficiently robust regulatory system in place.

4.14 The review examines the entire regulatory framework, including the roles and responsibilities of people designing, planning and constructing buildings, the various enforcing and standard setting bodies and the wide range of owners and users of such buildings.

4.15 The interim findings indicate that **the current regulatory system for ensuring fire safety in high-rise and complex buildings is not fit for purpose.** This finding applies across the life cycle of a building, during construction and occupation and arises from the culture of the construction industry and the effectiveness of the regulators.

4.16 This finding is based on the following reasons as outlined in the report:

- Current regulations and guidance are too complex and unclear which can lead to confusion and misinterpretation in their application to high-rise and complex buildings.
- Clarity of roles and responsibilities is poor. Even where there are requirements for key activities to take place across design, construction and maintenance, it is not always clear who has responsibility for making it happen.
- Despite many who demonstrate good practice, the means of assessing and ensuring the competency of key people throughout the system is inadequate. There is often no differentiation in competency requirements for those working on high-rise and complex buildings.
- Compliance, enforcement and sanctions processes are too weak. What is being designed is not what is being built and there is a lack of robust change control. The lack of meaningful sanctions does not drive the right behaviours.
- The route for residents to escalate concerns is unclear and inadequate.
- The system of product testing, marketing and quality assurance is not clear.

4.17 Nevertheless, the findings emphasise an important qualification that **they should not be interpreted as meaning that high rise and complex buildings are unsafe.** Rather, the report notes that major building failures, including large-scale fires, are very rare and there are many contractors and building owners who accept their responsibilities and do the right thing.

4.18 In explaining the findings, the review indicates that the regulatory framework, comprising the written regulations/guidance and how they are interpreted in practice, is not fit for purpose, **leaving room for those who want to take shortcuts to do so.**

CONCLUSIONS

THE INDEPENDENT REFERENCE GROUP DRAWS THE FOLLOWING CONCLUSIONS FROM THE REVIEW OF FIRE SAFETY MEASURES ACROSS THE 33 HOUSING EXECUTIVE TOWER BLOCKS:

1. The review of **Objective 1** demonstrates that the cladding systems recently installed on the four Housing Executive tower blocks meet current Building Regulation standards but due to the compromised smoke ventilation/ extraction will not be fully compliant until all remediation measures have been completed. Prior to installation it was established that a fire testing regime had been applied (para 1.6). The Housing Executive in pursuit of ensuring fire safety used two systems that had been subject to a full-scale fire test of the composite system (Appendix 2). The Housing Executive has used an alternative route to compliance than the current recommendation in Building Regulations Technical Booklet E (para 1.9) to demonstrate that the cladding systems comply with Regulation 36 (External fire spread) of the Building Regulations.
2. The fire safety inspections and comprehensive fire risk assessments undertaken in **Objective 2**, to the four Housing Executive tower blocks, resulted in reports of remedial action required by Building Control (Appendix 3) and NIFRS (Appendix 4) and has led to the development by the Housing Executive of a Tower Block Fire Safety Matrix (outlining areas where further attention is required and also best practice which, in a number of blocks, exceeds minimum requirements. The latter is being addressed through an Immediate Fire Risk Assessment Action Plan (Table 1 - para 2.22) with each significant finding given a priority classification for immediate remedial action. A more detailed Progressive Fire Risk Action Plan is included in (Appendix 5).
3. In relation to **Objective 3** communication with residents is a key aspect of best fire safety practice in particular ensuring there are measures for safe evacuation in the event of a fire outbreak. Following inspections of each of the 33 tower blocks the Housing Executive has developed a Communications Matrix that sets out the contributions made to each block and the current issues pertaining, given the risk assessment reviews. There will be a number of documents published which form the basis of communications regarding fire safety in high rise blocks.
4. The Independent Reference Group discussed the use of sprinklers. Consideration needs to be given to what is necessary, practical and value for money. The installation of a sprinkler system is most often seen as a compensatory measure in lieu of other requirements whereas the Fire Risk Assessment Action Plans are ensuring adequate compartmentation as a first principle measure. Nevertheless, the installation of sprinklers as a fire suppression measure may give greater confidence to residents.
5. In terms of **Objective 4**, any learning outcomes from the interim and final reports of the Grenfell Public Inquiry and the Independent Review of Building Regulations and Fire Safety are considered and implemented as appropriate by the Housing Executive and the statutory authorities. In this regard, the Housing Executive will continue to work in collaboration with the local Statutory Authorities on any emerging issues that may arise to improve fire safety.

RECOMMENDATIONS

THE INDEPENDENT TOWER BLOCK REFERENCE GROUP MAKES THE FOLLOWING RECOMMENDATIONS:

1. Noting the outcome of this group's review of the cladding systems and fire protection measures within the blocks, the Independent Reference Group recommend that the work identified in the Fire Risk Assessment Action Plan (Table 1 para 2.22) is carried through to completion as a priority.
2. Subject to the eventual outcome of the Independent Review of Building Regulations and Fire Safety in England undertaken by Dame Judith Hackitt, the Independent Reference Group recommends that the cladding systems utilised on the four Housing Executive tower blocks are assessed against any new regulatory standards.
3. The Independent Reference Group recommends that the Housing Executive consider installing sprinkler systems within its high-rise accommodation.
4. The Independent Reference Group recommends that the Housing Executive enhances the resources within the existing compliance team to ensure a robust inspection, testing and maintenance regime is in place.
5. The Independent Reference Group are aware that prior to the Grenfell Tower tragedy the Housing Executive had developed a strategy for its high-rise blocks, and recommend that they take into consideration any changes to the Building Regulations and consider the use of non-combustible facades in the future.
6. The Independent Reference Group recommends that future learning outcomes or recommendations from the Grenfell tragedy are considered and implemented where necessary by the Housing Executive as soon as practically possible.
7. The Independent Reference Group have requested that all residents are updated through a further Housing Executive communication that sets out key findings for each block and what actions are being undertaken by way of mitigation.
8. The Independent Reference Group recommend that, having completed the assigned task, the Board now dissolve the group.

Addendum

9. The Independent Reference Group recommends any learning outcomes from Coolmoyne are implemented by the Housing Executive as soon as practically possible.
10. Arising from the publicity surrounding the Coolmoyne House incident, the Independent Reference Group would suggest:

    10.1 The 'Stay Put' Strategy relating to this Tower Block is reviewed and recognised to have operated successfully. It remains good practice and is reinforced by the Local Government Association (LGA) - Fire Safety in purpose built flats, 2011. This states a 'Stay Put' policy but it must be fully risk assessed and the building deemed suitable for it's implementation. BS 9991:2015 also gives guidance on Stay Put Section 3.58.

    10.2 Communication to residents of the 'Stay Put' statutory guidance is reviewed and enhanced to ensure fire safety evacuation procedures are clearly understood and identification of those residents in each block potentially requiring assistance. Where identified these residents will be consulted and relevant information on any specific requirements should be held in NIFRS Fire Safe in each block.

    10.2 Notwithstanding the above point, that the substance of the report of the Independent Reference Group should be reported to the Board and, where appropriate, action should be taken.

ADDENDUM

FIRE AT COOLMOYNE HOUSE IN DUNMURRY

11.1 A fire on the 9th floor occurred in Flat 9B Coolmoyne High Rise Tower Block on the evening of Wednesday 15 November 2017. The source of the fire was believed to be a defective toaster.

11.2 The configuration of the smoke detection system within the block is that each Housing Executive flat is fitted with three audible smoke alarms (smoke detectors fitted in the hallway and living room and a heat detector fitted in the kitchen). The fire spread through the living room and kitchen areas and into the hallway. The provision of an accredited flat entrance fire door-set to the flat in a 2010 scheme was hugely instrumental in containing the developed fire within the "flat of origin". Externally the fire had limited spread with the window and door arrangement to Flat 10B immediately above compromised. The 'Stay Put' policy was in operation and proved effective in this situation.

11.3 Each communal area has an inaudible smoke detector which opens the automatic air vents on each communal landing. This detector is also linked to a fire panel which is monitored 24 hours a day by an offsite monitoring station. When smoke eventually filtered into the lift lobby at Level 9 serving four flats the automatic opening vent (AOV) operated to permit smoke to escape and allowed fire-fighting operations to be conducted in the normal fashion.

11.4 NIFRS mounted fire-fighting operations both externally by use of a turntable ladder appliance and also internally by means of the single fireman's stair linked to a secondary and lift lobby at each level. NIFRS facilitated rescue of the occupant of Flat 9B. The fire in its totality was extinguished in 40 minutes.

GLOSSARY

ACM	Aluminium Composite Material
BBA	British Board of Agrément
BCNI	Building Control Northern Ireland
BR 135	Classification of the fire performance of the cladding system.
BRE	Building Research Establishment
BS 8414-1	Fire performance of external cladding systems - Part 1: Test method for non-loadbearing external cladding systems applied to the masonry face of a building
BSI	British Standards Institution
DCLG	Department for Communities and Local Communities
DfC	Department for Communities
EPS	Expanded Polystyrene Block
EWI	External Wall Insulation
FRA	Fire Risk Assessment
IRG	Independent Reference Group
NIFRS	Northern Ireland Fire and Rescue Service
PAS	Publicly Available Specification - Published by British Standards.
RIBA	Royal Institute of British Architects
RICS	Royal Institution of Chartered Surveyors
TBE	Building Regulations (NI) 2012 Technical Booklet E

APPENDIX 1 - TERMS OF REFERENCE & MEMBERSHIP

Independent Reference Group on Fire Safety in Housing Executive Tower Blocks

Purpose

The Interim Chair of the Housing Executive Board decided to set up an Independent Reference Group to explore and analyse the precautionary measures they have undertaken on their 33 tower blocks following the Grenfell tragedy.

The principal aim of the Reference Group will be to review the Housing Executive's cladding systems used on four tower blocks and identify any potential fire risks associated with these in light of the Grenfell tragedy. It will also review the recent Fire Risk Assessments of the blocks generally and ensure all the issues identified are documented and actioned as a priority in line with our statutory and landlord obligations.

The aim of the review is to offer confidence and assurance to the residents living in these blocks and to demonstrate our ongoing commitment to their health and safety requirements.

The Housing Executive has asked its contractors to put a temporary hold on the work they are carrying out to the Whincroft and Carnet tower blocks in order to examine anything further that needs addressing before completing the schemes.

Objectives

There are four main objectives of the Reference Group are as follows:

1. To explore in detail with colleagues in Building Control (BC) and Northern Ireland Fire and Rescue Service (NIFRS), the make-up of the cladding systems, along with the robust and stringent testing of these systems.

2. To undertake joint detailed site appraisal visits with Building Control and Northern Ireland Fire and Rescue Service to all four tower blocks, to provide assurance that the systems have been installed in accordance with Building Regulations and best practice.

3. To identify any early learning outcomes from Grenfell and identify any appropriate action required.

   This will include:

   a. A desk top review of methods used to indicate compliance with external fire spread requirements in the UK;

b. Correspondence with BRE, to identify if the Housing Executive is required to undertake any further tests;
c. Liaise with colleagues in Department for Communities to gauge what actions are required from the Department for Communities and Local Government (DCLG) in England;
d. Identification of relevant literature and current thinking post Grenfell that might inform the work of the Reference Group drawn from other sources i.e. BRE, BBA, RIBA, RICS etc.;
e. The maintenance and condition of fire safety measures in Tower Blocks;
f. Role of communication with tenants and measures for safe evacuation of tenants in the event of a fire outbreak.

4. To discuss any potential consequences which may arise from the findings of Grenfell in terms of legislation changes or amended regulations which may apply retrospectively?

Frequency
To be determined by the Chair and as required based on project activity/need. The first meeting to be scheduled for early July, with a target to submit a report to the Board by August 2017.

Chaired by:
Professor Alastair Adair, Deputy Vice-Chancellor, Ulster University

Administrative Support:
Secretariat

Limitation of Scope
The Reference Group may wish to widen its scope to include other issues as information becomes available.

Quorum
The Reference Group quorum is established as Chair, plus five other members, one of which to include administration support from the Secretariat.

Responsibilities
The Reference Group will:

a. Ensure that the appropriate information and documentation is available to all members prior to the meeting.
b. Will report to and provide assurance to the Chief Executive's Business Committee (CXBC) and Board;
c. Provide unified and joint direction and guidance;
d. Ensure effective communication of progress;
e. Knowledge-share of all information and support the Independent Chair;
f. Agree resources (people, money, equipment, accommodation);
g. Monitor progress against plans and agreed objectives.

Membership of the Independent Reference Group

Name	Role	Title
Prof. Alastair Adair	Chair	Deputy Vice Chancellor, Ulster University
Paul Isherwood	Attendee	Director of Asset Management, Housing Executive
Colm McQuillan	Attendee	Director of Housing Services, Housing Executive
Jonny Blease	Attendee	Head of Communications & Secretariat, Housing Executive
John Morrison	Attendee	Compliance Manager, Housing Executive
Adrian Blythe	Attendee	Quality Improvement Manager, Housing Executive
David Adamson	Attendee	Fire Safety Manager, Housing Executive
Geoff Somerville	Attendee	Group Commander, NIFRS
David Harbinson	Attendee	Northern Ireland Fire and Rescue Service
Mark Broadhurst	Attendee	SPTO, Hosing Advisory - DfC
Colm Deery	Attendee	PPTO, Housing Advisory - DfC
Alan Mayrs	Attendee	Assistant Building Control Manager - Belfast
Prof. Peter Roberts	Observer	Interim Chair, Housing Executive
Greg Lomax	Observer	Interim Vice-Chair, Housing Executive
Clark Bailie	Observer	Chief Executive, Housing Executive
Ian Snowden	Observer	DfC Regulation Team
Niall Sheridan	Observer	NIFHA
John Burke	Observer	Building Standards Branch - DoF
John Neely	Observer	Building Standards Branch - DoF
Sean McConville	Observer	BCNI Fire Safety Panel
Admin Support	N/A	Secretariat, Housing Executive

The attendance of deputies is at the discretion of the Chair and will need to be agreed in advance of any meeting.

The Reference Group may call others to attend meetings as appropriate and when required.

Potential Conflicts of Interest
Declaration of Interests will be a standing item on the agenda at the start of each meeting and will be recorded in the minutes together with details of any action taken where appropriate.

breglobal

BS 8414-1:2002 test on a Piperhill Construction External Rainscreen system with Vinylit Cladding

Prepared for:
Piperhill Construction Ltd,
Unit 7, Annagh Business Centre,
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