Composite cladding on al. windows
+ insulated render on
The face of the towers.

Other 4 block fine -

In Garnock -

Concierge for 2001/2

—

Chris x [redacted]

Ian Scaife Strathclyde
Re Irvine fire 11/12 June
[redacted]

NOTE:- Martin on contacts.

Brian has spoken to Strathclyde + Proc. fiscal may want help or wish. Dougal has been taken on by P. Fiscal.

Dave Berry - requesting approval for poster. cleared.

Mr McGlennan Proc. Fiscal [redacted]

Digest 385

Plant wh. he treats timber -

fire treatment - /

Pressels for timber - . David Glover

THE IRVINE FIRE - Friday 11 Jun 1999.

An internal Briefing

CONTENTS

Background

An elderly man (Alexander Linton, 55) died and five other people were slightly injured when fire spread through a 14-storey block of flats in Ayrshire. Nine floors of the building in Irvine were damaged in the fire, which broke out about 1245 on Friday 11 Jun 1999.

A turntable ladder was used to rescue four adults and a 15-month-old child. Eyewitnesses said the tower block ignited like matchwood, prompting concerns about materials used in the construction of the external windows and cladding.

North Ayrshire Council has been quoted as saying it has ordered the removal of plastic cladding and PVC window frames as a precaution "at whatever cost".

MPs on the Commons Environment Sub-Committee have asked for an investigation into the use of certain building materials in tower blocks following Mr. Linton's death.

Regulations in Scotland

In scotland he technical and procedural regulations are somewhat different to those in England & Wales.

controls similar to those sumarised above on the materials used in or on external walls exist in the Scottish Technical Standards, however the height at which these controls are invoked is 15m rather than the 20m used in the Approved Document B.

Revisions to the Approved Document

The provisions in Approved Document B are currently under review. A new edition is expected to be published by the end of 1999.

The controls contained in the current edition remain largely unchanged in the draft , however the height at which these controls are invoked is 18m rather than the 20m used in the Approved Document B. This being part of a general rationalisation of dimensions within the document.

Cladding fires.

Knowsley Hts - 5.4.91 - Estates Action rainscreen - debris fire at base spd up in behind.

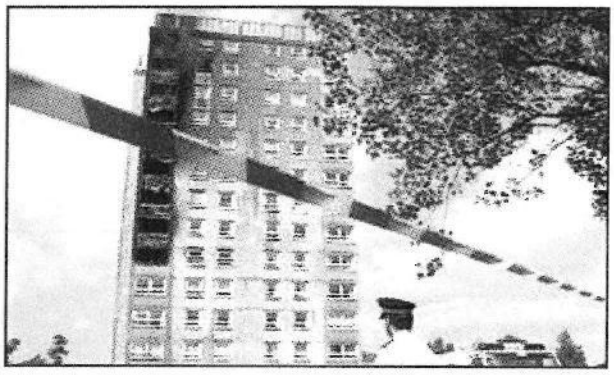
Mercantile Ct. 3.5.91 - Oxd spd up behind glass curtain walling.

Milton Keynes. 13.3.95.

Hugh Adie [redacted]

Wednesday, June 16, 1999 Published at 18:25 GMT 19:25 UK

UK Politics
Tower block fire safety fears



The block of flats where the disabled man died

A council has ordered the removal of certain building materials from all its properties after a tower block fire in which an elderly disabled man died.

North Ayrshire Council says it has ordered the removal of plastic cladding and PVC window frames as a precaution "at whatever cost".

Alexander Linton, 55, died on Friday when fire swept through a 14-storey block of flats in Irvine.

Chief Executive Bernard Devine: "Tenants' safety is our foremost concern"

A turntable ladder was used to rescue four adults and a 15-month-old child. Eyewitnesses said the tower block ignited like matchwood, prompting concerns about materials used in the construction.

Strathclyde Fire Brigade is continuing its investigation into the cause of the blaze.

The council is commissioning independent consultants to investigate the safety of the building materials used in the construction of the flats.

Chief Executive Bernard Devine said it had now ordered the removal of the materials and the introduction of 24-hour security at its flats.

"We've put on 24-hour security and taken the decision, at whatever cost, to remove the cladding and put other cladding in its place."

Mr Devine stressed the council was taking the steps

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Fire hits tower block

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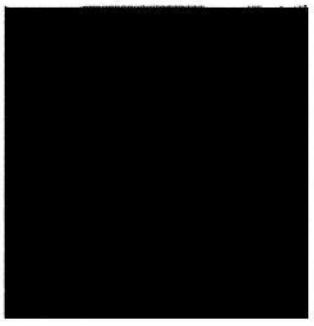
Blair sets sights on second term

Labour unveils its new star

Blair denies interest in GM

Unionist rules out policy change



Brian Donohoe: Welcomed investigation

to allay concerns of tenants and said it had not been established that the cladding was to blame for the fatal fire.

But he said the council could not wait for the results of the fire brigade investigation and its own research findings.

"We've not got time to wait for that to come through, we've had to act and we've acted today in order to reassure tenants that their safety is our foremost concern.

"We will take action even if it turns out to be wrong and it may very well be."

MPs on the Commons Environment Sub-Committee have asked for an investigation into the use of certain building materials in tower blocks following Mr Linton's death.

Brian Donohoe MP: "If there is a risk it's got to be dealt with"

They want to know if there have been similar fire incidents in other high-rise buildings.

Welcoming the move, Cunninghame South MP Brian Donohoe said: "Clearly on the basis of the evidence that I saw at first hand it would give the impression that there is something quite wrong in the use of this cladding.

"But it's far too early to speculate and I wouldn't want to raise fears in anybody's minds in terms of the use of this cladding and whether or not it's dangerous."

Protests greet Labour in Bournemouth

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Morgan, Penny

From: stephen.whitmore@lfcda.org.uk

Sent: 24 June 1999 13:07

To: andrew.barnett@lfcda.org.uk; mick.beasley@lfcda.org.uk; mick.bell@lfcda.org.uk; CRAIG.BOWDEN@lfcda.org.uk; norman.brice@lfcda.org.uk; keith.brown@lfcda.org.uk; dennis.burke@lfcda.org.uk; n.carey@lfcda.org.uk; john.crowley@lfcda.org.uk; nigel.davison@lfcda.org.uk; MAXIM.DISSANAYAKE@lfcda.org.uk; john.gaffney@lfcda.org.uk; JOHN.GALVIN@lfcda.org.uk; mick.hetherington@lfcda.org.uk; terry.hodgens@lfcda.org.uk; steve.janes@lfcda.org.uk; roy.jarrett@lfcda.org.uk; anthony.laver@lfcda.org.uk; alan.lowe@lfcda.org.uk; pat.lyon@lfcda.org.uk; mick.maddox@lfcda.org.uk; john.marshall@lfcda.org.uk; JASON.MARSHALL-SMITH@lfcda.org.uk; barry.pilkington@lfcda.org.uk; RICHARDSONJ@lfcda.org.uk; gordon.rolfe@lfcda.org.uk; keith.sefton@lfcda.org.uk; bob.shefford@lfcda.org.uk; ian.smith@lfcda.org.uk; paul.spencer@lfcda.org.uk; dave.townsend@lfcda.org.uk; steve.treadaway@lfcda.org.uk; anthony.tribe@lfcda.org.uk; andrew.vaughandavies@lfcda.org.uk; sam.winder@lfcda.org.uk

Cc: morganp@bre.co.uk

Subject: fire spread

Penny has asked if any of you have attended a fire where PVC window/door frames or PVC cladding has been instrumental in spreading fire up a high rise building.

Penny is looking at this matter for the DTI and would appreciate any help you can give her.

Please phone her on [redacted] or email her at morganp@bre.co.uk

stephen whitmore

cc: Clapham by faxmail.

Morgan, Penny

From: Morgan, Penny
Sent: 24 June 1999 16:24
To: 'AnthonyBurd@detr.gsi.gov.uk'
Cc: Shipp, Martin
Subject: Cladding fires

Brian,

Knowsley Heights, Liverpool 5.4.91 Deliberate fire outside building spread up and behind rainscreen cladding and in at all 11 floors - Estates Action refurb.scheme.

[Mercantile Credit building Basingstoke 3.5.91 Fire on 8th floor spread up building behind glass curtain walling]

Three storey block with add on roof in Milton Keynes 13.3.95 Fire in middle floor spread up into add-on roof which was destroyed by fire.

Alpha House Coventry 31.1.97 flames travelled up the outside of the block from the 13th to 17th floor. No penetration of flats above - wind assisted fire penetration of adjacent flat ie horizontal spread. No mention of cladding.

Butler House Grays Essex 14.7.97 Fire on top floor flat of 14-storey No Fines concrete block caused uPVC window frames to melt and drip causing some damage to cladding. Building undergoing refurb - huge concerns that cladding had assisted spread. It did not.

That's all I have. Requests for info are currently with major brigades known for high rises. Reactions are to the effect that yes they get smoke penetration up the block but fire/ flame very rare or not at all. London, Mersyside, Tyne and Wear, Greater Manchester and West Mids all contacted.

Chic Stirling of Scotlab recalls one in Royston, Glasgow but damage to cladding was only local to the window of the fire flat. He was talking to a cladding man recently who recalls not getting the job to upgrade the Irvine block. Firm called Sunlight (sic) got it. Chic suspects that the block is No Fines concrete. This could mean that attaching cladding to the building would have been difficult as the material is notoriously awkward to drill.

Dougal Drysdale has visited on behalf of the Procurator Fiscal and is sending me some photos. He tells me that the cladding at Irvine appeared to overlap the window pod so any flames may have acted on both sides of the exposed edge of the cladding.

Home Office stats here at Garston have been asked to do a search - John Gamble is in tomorrow and believe that Des rang you about it earlier today.

regards

P.

Fire Brigade Observations

Notes on a conversation with Div Officer John Russell, Strathclyde Fire Service. (B martin FRS. 24/06/99 22/06/99)

DO Russell attended the fire as an observer his comments relate to his initial impressions of the incident and subsequent discussions with fire fighters on the scene.

1. The fire started by the Living Room window of a fifth floor flat. One fatality occurred within the room (now the subject of an inquiry).

2. The Fire broke out through the window.

3. The windows of the flats are one above the other constructed from UPVC. Between each window is a GRP (or similar) decorative panel. in effect a continuous column of GRP & PVC extended up the height of the block.

4. Flame spread rapidly up the face of the cladding and several of the rooms above the flat of origin caught fire. Fire fighters had to be committed at several floors simultaneously (this is unusual)

5. Before the fire was brought under control it had spread form the 5th floor to the top (13th) floor where it was particularly severe. It was noted that the fire had hit the top of the building and turned in.

6. A turntable ladder was used to rescue four adults and a 15-month-old Child.

7. more than 60 firefighters were involved and the fire took about two hours to bring under control.

8. The reasons for the fire finding its way back into the block have not been established but they could be linked to the following factors

    - many of the windows were open (it was a warm day)

    - the UPVC frames had softened and created a path for fire spread.

    - The detailing of the junction between cladding & windows created a path for fire spread.

9. Investigations by the local authority & the fire service are ongoing.

Building Regulations

A review of Current Guidance in Approved Document B with regard to the control of materials used for cladding tall buildings.

The Guidance in approved document B recognizes the problems associated with the use of combustible cladding & insulation materials. As such provisions are included in the document to control these materials. these are summarized below;

Surface Flame Spread

The speed of flame spread across the surface of materials used on the external face of buildings exceeding 20m high is restricted. (B4 -12.5)

This requirement becomes more onerous where the building is close to its boundary (& therefore other buildings)

The speed of flame spread across the surface of materials used on the internal face of a ventilated cavity for buildings exceeding 20m high is restricted. (B4 -12.6)

Combustibility of Materials

Except in the case of masonry cavity walls designed to prevent fire entering or escaping from the cavity. The combustibility of insulation materials contained in the external walls of buildings exceeding 20m high (in a ventilated cavity or otherwise) is restricted. (B4 12.7)

Subdivision Of Cavities

In flats, maisonettes and certain institutional buildings cavity barriers designed to prevent the passage of fire through continuous voids in the cladding are required (B3 9.2 - 9.11)

In buildings of less than 20m in height combustible materials are permitted subject to the provision of barriers as described above.

Cladding fires generally

More background

Brian Martin

Penny to visit

[redacted]

H[redacted]

DO J[redacted] attended fire

[redacted] ... Procurator Fiscal

McLENNAN [redacted]

Procurator Fiscal

IRVINE

Block of flats Cladding concern. GRP facing

Plant

× Ian Scade

+ Brian Martin

+ Procurator Fiscal

BRE00035379/15

30 June.

Will Ball BAUFMA rang to ask
about fire. Gave him unconfirmed
outline - fatality in room of origin.
Fyi old refurb. PVC windows + GRP pod or ?
window curtain walling - cosmetic.
Not aware of any insulation

Morgan, Penny

From: Morgan, Penny
Sent: 30 June 1999 16:48
To: Stirling, Charles
Subject: FW: not protectively marked - cladding fire


CLAD.DOC

Chic,

May I formally request your assistance in gathering information on the fatal fire at Irvine on 11 June at 12.45 h. Please contact Hugh Adie on [redacted] Strathclyde Fire Brigade, he was kind enough to get DO John Russell to brief Brian Martin, new man at FRS. (Brian is currently standing in for Anthony Burd, our DETR customer. He is using his desk and email, the summary of info he got is attcahed to this note)

My other brigade contact is Ian Scade Head of Fire Investigation on [redacted] but he may be at a conference this week. The general number for the brigade is [redacted] - I'll contat them as well.

Please use FG2824 which is my project on Fire Investigation.

I received copies of photos that Dougal Drysdale, Prof at Edinburgh sent to the Procurator Fiscal which I believe you have got too from Sarah Colwell..

Many thanks

Penny

-----Original Message-----
From: ANTHONY BURD [mailto:Anthony_Burd@detr.gsi.gov.uk]
Sent: 24 June 1999 11:25
To: morganp@bre.co.uk
Subject: not protectively marked - cladding fire

Penny

My notes so far

Morgan, Penny

From: Morgan, Penny
Sent: 30 June 1999 17:14
To: Stirling, Charles
Subject: Irvine fire

Chic,

no sooner had I sent you my last email than Martin Shipp was on the phone to ask me to contact the Procurator Fiscal, Mr McGlennan. He's on [redacted]. He will contact you tomorrow, Thursday and organise the police to take you round the building. He appreciates our interest is in the B Regs context and has asked that any report is copied to him. As the fire may result in a Fatal Accident Inquiry he has asked that you be willing to present your findings to the inquiry. Is this OK with you?

Mr McGlennan is delighted that we will not be charging him for our work as DETR are paying. I stressed that our interest is in how the fire spread vertically and less in the particulars of the fatal fire itself. From the photos we suspect that the timber studding if that is what it is may have played a crucial role in promoting the spread. He confirmed that thgere are 5 blocks.

I have left a message for Hugh Adie saying that you will be going to look and that Mr McGlennan is arranging it. I'll try and talk to him in the morning.

Penny

1/7 [redacted]

Strathclyde

Hugh - Adie; - he's going on leave

Rem - dec. something

@ ext^n of Sn - det^n

Dr. John Russell - can answer

any further ?s - -

Tom Orr is the Direct

of Prop^y Services

for North Ayrshire -

[redacted]

2/7 Chris [redacted]

Been & had an unofficial look.
- fire around all the window pods -
DS Stuart Ferguson - v helpful & co-ording the
reports - Dougal asking for same info as us.
Dougal wants to collect stuff he's left behind.
Tom Orr very edgy re interest - happy to
give - g contact c police -
Flats details - official request

Look very odd -

Masonry interlocked -
c window panels - not a familiar -
aren't void behind windows water tight
but a loose cladding -
- can't see any drip marks. DS a Hsing Pan
- he'll go & take m. photos. No molten
Marks - I mst 40 Tomm Church not
much there - min prod - so
to be smashed in.

② ✓ sooty - on spot to the side -

? video -

many criteria [illegible].

[Kilwinning VFO above IRVINE]
switchbd —
living room @ end of hallway ~~near~~ front door. -

Why the [illegible] —

DS. concierge system being put in -

purely cosmetic
masonry spandrel panel below the window
- to prev. fire getting out -
a [illegible] outside -
+ window of origin

Tony -

Material alteration

Still need LXB comb[n] over a certain ht.
(5) Class 0. A Cavity barrier
looked 135 - every other floor.
BRE rept c pv L doc. avoiding
risk quoted in submission to
ctee.
x Flag. may need to look at 135
needs updating -
← We will write after the enquiry.

More was SSF acti[illegible]

Any ans? ? of Ltd constr[illegible]

Where was free stopping

Submission have gone to Minister

- shd go to cttee -

to brief someone of nec or

attend — Paul Everall - or

John Hobson.

BRE00035379/23
BRE00035379_0023

Tom Orr
Director of Prop & Services
N Ayrshire Council
Cunningham House
IRVINE
KA12 8EE

Fax No.

Pre-fiscal

20 July

1. Dave Townsend - VRC minutes -
- Come to see me Monday am -

Dave Townsend

RC. Heathlough Ltd
1-13 Spa Rd
SE16. 3RB.

[redacted]

Needs a revisit - at least one
Proper anchoring into the brick-
work has been omitted.

Dave T ✓ 2pm

15.03.96

36 Glasgow House. Maida Vale W9.

~~C25171/8~~.

~~/1~~

/21

/15

/19

/20.

/17

25168/9

/5

/7

/1 ext view

~~1 or 3 front door~~] carbon smut smoke

window or door wd

5 min till windows breached

[illegible]

BRE00035379/27

BRE00035379_0027

1 July

1. St off. Gordon Roffe East Ham.

[redacted]

ref

(1) Fspd inwards - 2 storey old people's home bottom panels acrylic c foam infill & that spd the downwards. softer mat. dipped or smeared -

(2) Flat file in flat - came out & outside over concrete - & PVC vent inwards. Green tube - - Double glazing meant Lower needed retro fitted 4" tube - & spd into loom - smoke into flat - closed windows - & fire into chair

Chingford 2 yrs ago -

Dougal -

Irvine - fireman should inspect the remains of the window-frame.

BRE

BRE Scottish Laboratory, Kelvin Road, East Kilbride, Glasgow G75 0RZ
Telephone: [redacted] Fax: [redacted]

3/7/99

Direct Telephone

Local Fax

E-mail

Penny
hard copy + photos.
Regards
Chic

With Compliments

2 July 1999

GARNOCK COURT, IRVINE

Investigation of fire damage to external fabric

Introduction

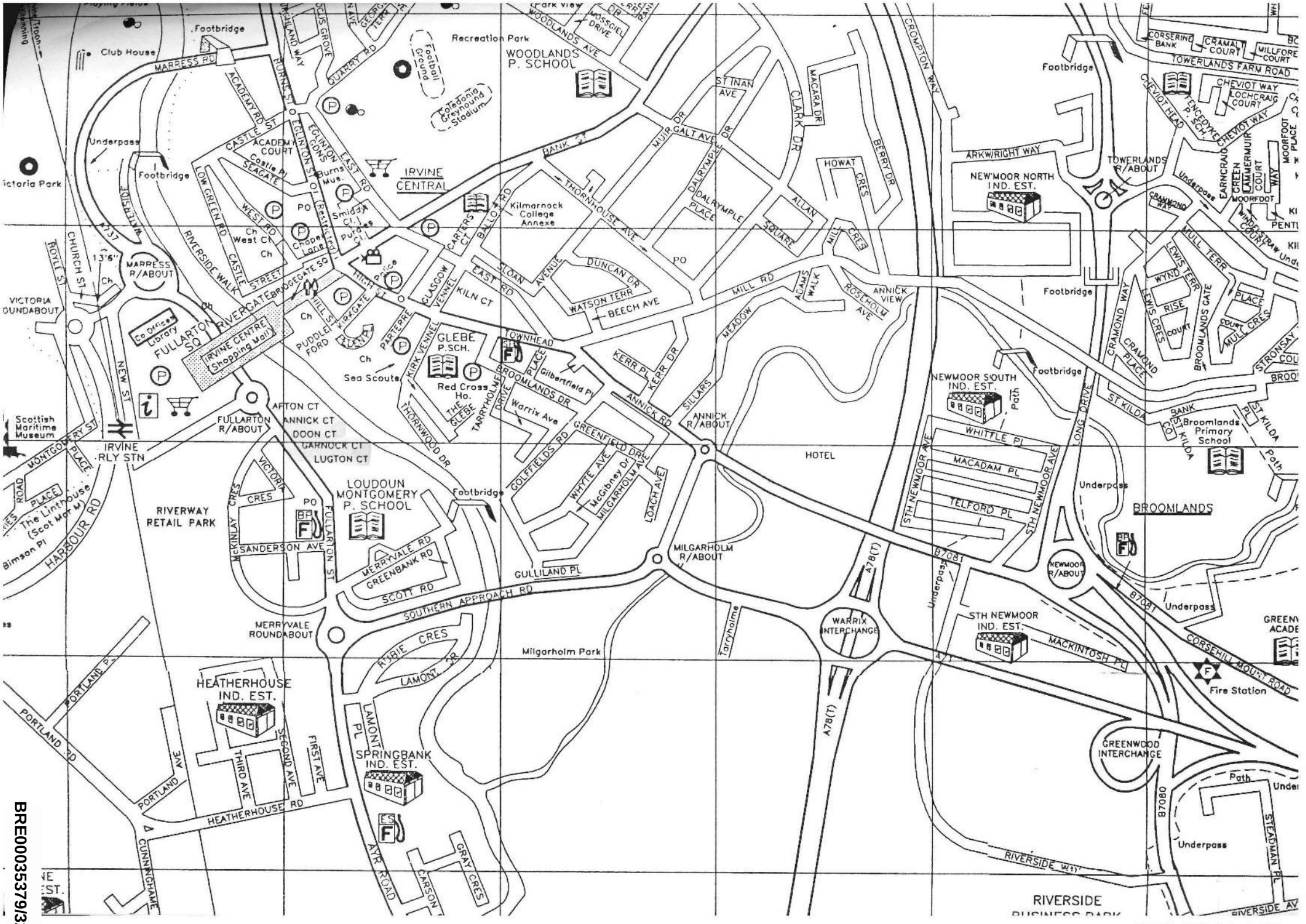
Following a report of a fire associated with a fourteen storey block of flats in Irvine, south Ayrshire, which occurred on Friday 11 June 1999, Charles Stirling from BRE Scottish Laboratory was requested to visit and investigate the subsequent fire damage.

A visit to the site was made on the morning of 2 July 1999, where photographs and visual observations of the external damage were taken. South Ayrshire Council denied access to the fire damaged flats until a formal request had been received.

Observations

These observations were made from ground level during a relatively short visit to the site, constructional details and materials specifications have not been confirmed.

- Garnock Court is one of five, fourteen storey blocks situated close to the River Irvine, in Irvine town centre. In appearance they look similar to 1970's no-fines blocks common across the central belt of Scotland. A considerable amount of no-fines construction was undertaken in Irvine (New Town) during the 1970 – 80's. The blocks have an almost north, south line, with the fire affected façade having a south, south westerly aspect.
- The 'plastics' pod or cladding to the upvc windows appears to have been applied in two parts : around the window and to the spandrel panel. We understand this was carried out as part of the window refurbishment (8 years ago). The cladding is mechanically fixed back to the masonry substrate (exact details are unclear) and is sealed to the masonry and to adjoining panels by mastic. There is no obvious ventilation up behind the cladding, however, at some horizontal joints there are obvious small (5-10mm) gaps.
- From the observed fire damage (sooting to the masonry) it is clear that the fire having exited from the source window spread vertically a further eight floors. From the surface sooting it would appear that the fire spread up behind the cladding. There are no obvious areas which are 'unsooted' and which may have been protected by (say) mineral wool insulation or timber battens. Horizontal spread of the sooting is limited suggesting the fire spread rapidly up the building face. In only two instances is there soot staining above windows not directly above the fire window, ie on the second top floor above an adjacent window and on an adjacent elevation on the same floor as the fire source flat. There is a distinctive line below which there is no sooting, this line corresponds to the window sill of the fire source window. There is no obvious fire damage to this sill and there is no obvious indication of molten plastics material(s) having dripped onto the windows or walling below this fire source window.
- Some remedial works have been carried out, ie the windows openings have been temporarily framed and boarded out, however, there is no evidence of any of the original, undamaged cladding left attached to the building. There are severely burnt remains, of what appears to be pod or panel surrounds, at the head of windows and around spandrel panels.



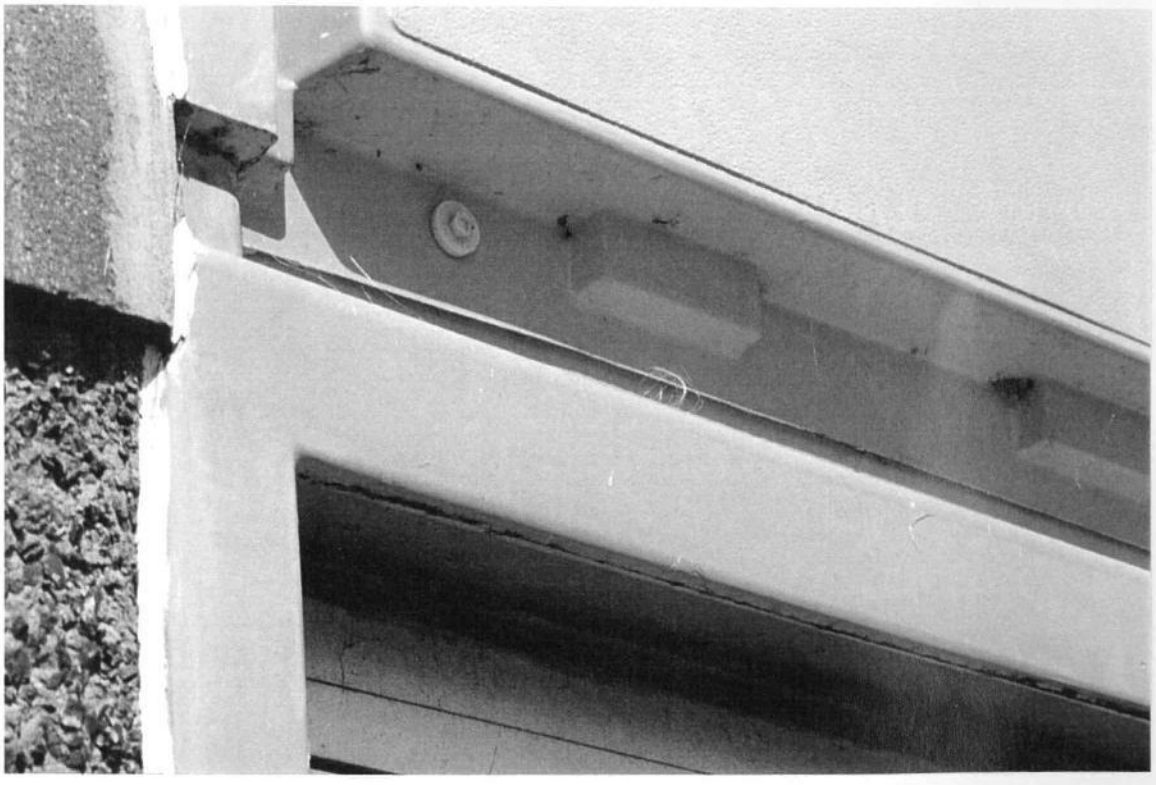
BRE00035379/32

BRE00035379_0032

Photograph 1. South Elevation of Garnock Court, showing the external fire damage on the SW side. The lowest level of damage is the fifth floor.

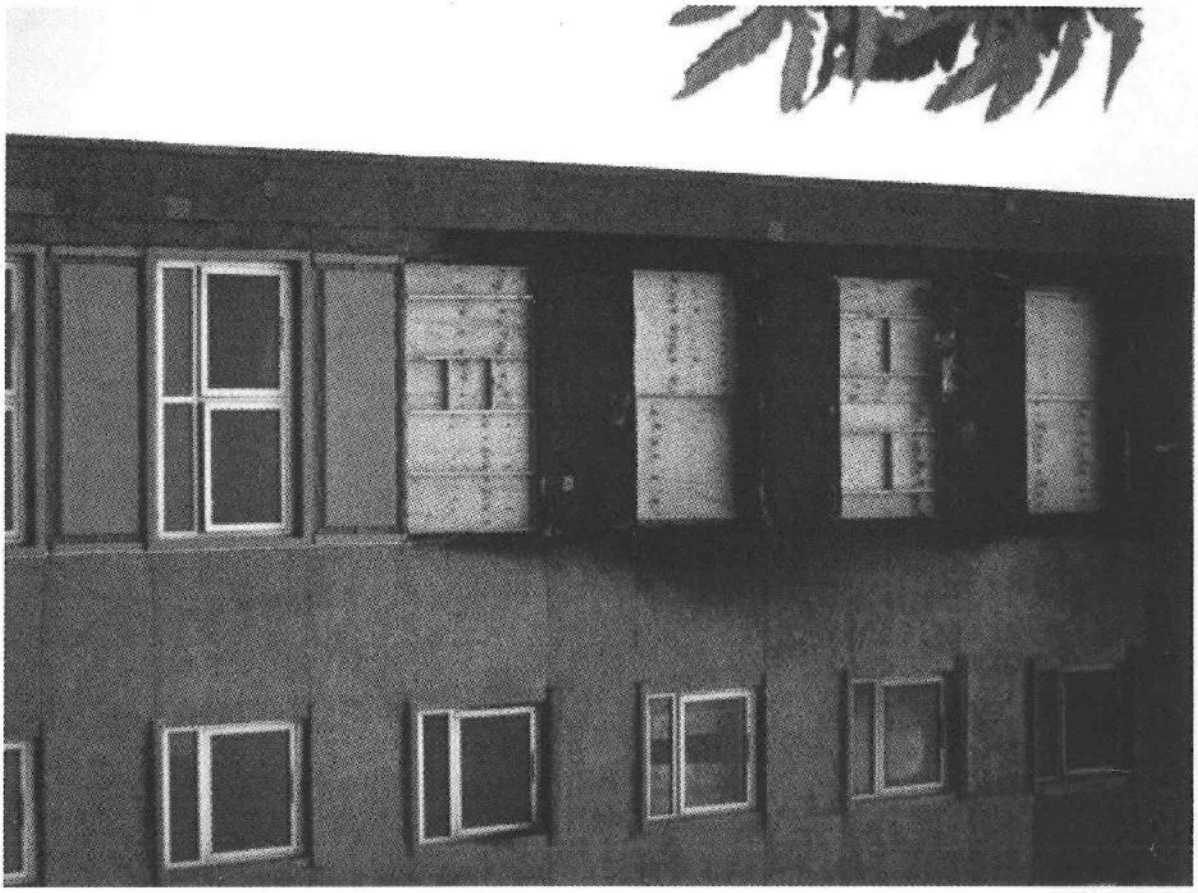
Photograph 2. Detail of the windows on 2nd and 3rd floors, directly below the fire damaged section. Note the open window, and the overlapping panel just above the second floor window.

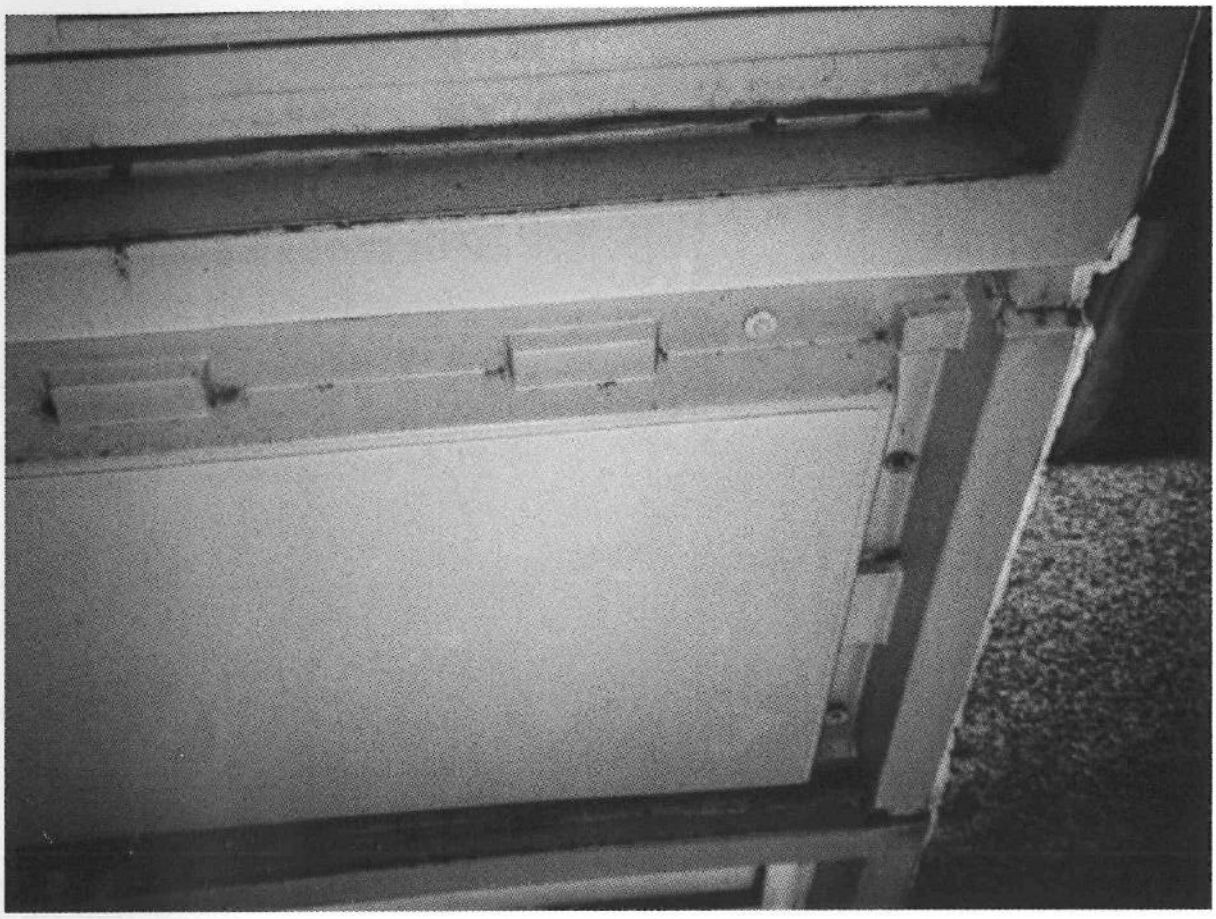
Photograph 3. The living room window of Flat 1. Note the white sealant which has been used to fill the gap at the overlap.



Photograph 4. The living room window of Flat 2. The overlap of the two panels is open with a gap of a few millimeters.

BRE00035379_0034





Morgan, Penny

From: Shaw, Ken
Sent: 05 July 1999 17:50
To: Shipp, Martin; Morgan, Penny
Subject: FW: FW: Pictures

FW: Pictures

As discussed

-----Original Message-----
From: Mercia Gick [mailto:MGick@bpf.co.uk]
Sent: 05 July 1999 16:11
To: Paul_Jervis@Bigfoot.com; shawk@bre.co.uk; ian_fordham@caradon.com; [redacted]; intercomm@dial.pipex.com; CLUKAS@dow.com; [redacted] mike_barnes@evc-int.com; steve_tan@evc-int.com; DAVID_BUSZARD@fmc.com; malcolm.kemp@formica.com; tony.day@hpl.nhp.hydro.com; walmsleya@marleyext.com; rwhitele@raychem.com; Louise_Brown@scottbader.com; marketing@swishbp.co.uk; david.thompsett@vencel.co.uk; peter.briggs@wfrc.co.uk
Subject: Fwd: FW: Pictures

these pictures refer to a recent (June 16) fire in Irvine, Scotland. GRP panels said to spread flame. THis fire was in comnstituency of an MP who is on HoC env. committee. He it was who set up the enquiry the press release for which i sent you recently

best regards
mercia

~~Fatality~~ - disabled in wheelchair

Double glazed units

Caused fire smoking - carpet burning

Corner vertical run of windows

Moulded GRP around each window

On face between windows moulded piece

They - overlap - not sealed

test panels?

Fire goes up - caught on exposed edge

Short report

Morgan, Penny

From: Tony Edwards [Tony_Edwards@detr.gsi.gov.uk]
Sent: 08 July 1999 11:44
To: FieldP@bre.co.uk
Cc: ColwellS@bre.co.uk; MorganP@bre.co.uk; ShawMR@bre.co.uk; ShippM@bre.co.uk; SmithDA@bre.co.uk; SmithiesJN@bre.co.uk
Subject: ENVIRONMENT SUB COMMITTEE INQUIRY not protectively marked

Peter

Thanks, I think this is the right approach.
Brian is at FRS tommorrow (Friday) and I will give him a copy to pass on to you of my final submission that has now been agreed with the Minister.

Tony

>>> "Field, Peter" <FieldP@bre.co.uk> 07/07 3:09 pm >>>
TONY

I was contacted again today by the Secretary of the Environment Sub Committee Inquiry. He asked if BRE intended to submit evidence.

I told him that we had been in discussion with yourselves and that it was our view that there would be nothing of substance, relevant to the committee, that we would wish to add to the evidence that you proposed to give.

He was content with that position.

Please let me know of any developments so that we can avoid potential conflicts of interest.

Regards

Peter

Penny Morgan

DETR
ENVIRONMENT
TRANSPORT
REGIONS

DEPARTMENT OF THE ENVIRONMENT,
TRANSPORT AND THE REGIONS

FLOOR
ELAND HOUSE
BRESSENDEN PLACE
LONDON SW1E 5DU

TEL
FAX
GTN [redacted]

Peter.
Further to your 'E' mail.
copy of the final version, now
agreed by the Minister, of my
submission to the Select Com.

Tony
8/7/99.

WITH COMPLIMENTS

ENVIRONMENT, TRANSPORT & REGIONAL AFFAIRS COMMITTEE
Committee Office · House of Commons · 7 Millbank · London · SW1P 3JA
Answerphone [redacted] · Fax [redacted]

PRESS NOTICE

ENVIRONMENT SUB-COMMITTEE

POTENTIAL RISK OF FIRE SPREAD IN BUILDINGS VIA EXTERNAL CLADDING SYSTEMS

The Environment Sub-committee has resolved to conduct a short inquiry into the potential risk of fire spread in buildings via external cladding systems. It will wish to examine:

- whether a risk is posed by such cladding;
- the extent of the use of external cladding systems;
- the adequacy of the regulations pertaining to their use;
- what action may be necessary to counter any risks posed in existing buildings and to avoid any risks in new buildings or alterations to existing buildings;
- other matters which may arise in the course of questioning.

Witnesses are requested to submit memoranda of up to six A4 pages on computer disk in either ASCII or Word Perfect 8 with a single additional hard copy; witnesses without access to a computer are respectfully requested to take particular care that submissions are legible.

Memoranda should be submitted by **Tuesday 6th July** to Huw Yardley (Clerk), Environment Sub-committee, 7 Millbank, London SW1P 3JA. Late submissions will only be accepted by prior agreement with the Committee. **An oral evidence session is expected to be held on Tuesday 20th July.**

The Environment, Transport and Regional Affairs Committee Homepage:
http://www.parliament.uk/commons/selcom/etrahome.htm

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Environment Sub-committee
Enquiries: [redacted]

FINAL VERSION SENT TO SELECT CTTE.

POTENTIAL RISK OF FIRE SPREAD IN BUILDINGS VIA EXTERNAL CLADDING SYSTEMS

The following memoranda is intended to address the issues that the Committee wish to examine.

1. Whether a risk is posed by such cladding

The following points under this section are intended set out the risks associated with external cladding. Some background information is also provided which it is hoped will help explain the philosophy behind the Building Regulations (section 3) that were developed to minimise the risk.

Schedule 1 of the Regulations contain functional requirements which, where relevant, must be complied with. Part B of schedule 1 deals with fire safety and Requirement B4 (1), which has particular relevance to cladding systems, states:

'The external walls of the building shall resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building.'

1.1 External fire spread

External walls or the cladding attached to external walls can contribute to the fire spread both internally and externally if adequate precautions are not taken. The main function of an external wall in the context of external fire spread, is for it to be able to confine the fire to the building. This is intended to restrict the fire from hazarding a nearby building and can also aid fire-fighting. The origins of this requirement lie in the great fire of London. However the extent to which external fire spread needs to be considered is largely dependent on the amount of space that there is around the building. An external wall is considered to be an element of structure if it has a loadbearing function and it should then not collapse prematurely in fire. To achieve this and to help prevent external fire spread it may need to have fire resistance. In tall blocks of flats the loadbearing element is usually the structural frame of the building and the infill walls will only need to have fire resistance if they are located sufficiently close to a boundary. The standard of fire resistance needed depends on the use and

height of the building. If the side of a building is sufficiently removed from the boundary then it need not have any fire resistance. Conversely, where the wall is on or very close to the boundary, then most or all of the wall will need to be fire-resisting.

1.2 Flammability at external wall surfaces

In addition to fire resistance, it is necessary to consider the outside face of the wall in terms of its susceptibility to ignition and subsequent flame spread over its surface. Typically, sources of ignition could be flames issuing out of windows or other openings caused by a fire within the building or alternatively from an external fire source. External fire spread to the cladding can be caused by fire radiation from another building or from a source immediately adjacent to the cladding such as the ignition of refuse caused by arson. The standard of fire precautions that are necessary is affected by:

a) the distance to the boundary;
b) the height of the building, and
c) the use of the building.

Where external fire fighting might be difficult, high standards of performance against fire propagation and spread of flame are needed. Therefore where the external wall of a building is on or very close to a boundary these standards apply. Because of this difficulty in fighting external fire spread in the upper parts of high buildings it is necessary to apply higher standards of fire performance to the upper parts of such buildings regardless of the distance to the boundary. Where a low building is not close to a boundary, there is no restriction on the flammability of external wall claddings. Also a lesser standard of performance is acceptable for the lower parts of a high building unless it is on or close to the boundary.

1.3 Materials of limited combustibility

In high buildings the risk from fire spread is such that the combustibility of materials used in the construction of external walls, including thermal insulation materials, needs to be limited. The exception to this is where both leaves of the cladding are of masonry construction, such as brick or block, in which case the insulating material

need not be of limited combustibility. A material of limited combustibility is a material with a performance specification: this includes non-combustible materials or materials that are defined by reference to a method of test. Typically, plasterboard would be considered as a material of limited combustibility.

1.4 Cavities

Hidden voids in construction can provide a route for fire spread throughout or around the building and this can be particularly relevant in the context of external cladding systems. Any void between the new cladding and the existing building should be closed at regular intervals or at the line of compartmentation. Typically the floor of each flat will form the line of compartmentation, an issue covered in paragraph 3.1.

1.5 Surface Flame Spread

Construction materials and their behaviour in relation to fire are classified using a number of standard tests such that the performance of particular elements of buildings can be specified without reference to specific materials.

The provisions necessary to reduce the spread of flame over the surface of a material are based on the comparison of the results of small scale fire tests with larger scale fire research and experience of real fires. Any guidance that is given must be sufficient to provide a satisfactory level of safety whilst being practical in its application.

The surfaces of materials (including cladding systems) are classified by reference to two British Standard test methods. These are the spread of flame test which measures the distance a flame will spread across the surface of a sample and the fire propagation test which assesses the contribution that the sample makes to fire development. The spread of flame test has 4 classes. These are class 1 to class 4, with 1 being the highest performance rating. Class 'O' is a further class, defined for the purposes of the Building Regulations, that is used for critical situations where a higher standard of performance than that of Class 1 is appropriate. The Building Regulation issues relating to flame spread are covered in paragraph 3.1.

Whilst non-combustible materials are inherently of the Class 'O' referred to above, many materials that are by definition combustible will also achieve this classification. The intent of this methodology is to identify materials that will have a low risk of fire spread.

2. The extent of the use of external cladding systems

2.1 The Department does not collect statistics on the use of cladding systems but it is believed that external cladding systems are widely used.

2.2 The Department has a call-off contract with the Fire Research Station to investigate real fires and this highlights any areas of concern that affect Building Regulations. The following are fires notified to the Department that involved external fire spread but were not necessarily attributed to the cladding system:

Knowsley Heights, Liverpool, 1991. Deliberate fire spread up and behind rainscreen cladding, extended over 11 floors. Building Regulations were changed as a result of this.

Mercantile credit building, Basingstoke, 1991. Fire on 8th floor spread up the building behind glass curtain walling.

Three storey block in Milton Keynes, 1995. Roof destroyed.

Alpha House Coventry, 1997. Flames travelled up the outside of the block from 13th to 17 floor. No fire penetration of the flats.

Butler House, Grays, Essex, 1997. Fire in top flat of 14 storey block caused uPVC window frames to melt and drip, which in turn caused some damage to cladding.

3. The adequacy of the Regulations pertaining to their use

3.1 In England and Wales (Scotland has a different set of Building Regulations) where new buildings are erected, or existing buildings materially altered, or in certain cases where there is a material change of use, then the work is required to comply with the Building Regulations 1991. As far as fire is concerned, the purpose of the Regulations is to secure reasonable standards of health and safety for persons in or about buildings (and any others who may be affected by buildings, or matters connected with buildings). Schedule 1 of the Regulations contains the functional requirements and Requirement B4 (1), which has particular relevance to cladding systems, is given in paragraph 1.

Guidance on how to comply with the functional Requirements of Part B is given in Approved Document B (fire safety). Approved Document B includes several provisions to restrict the materials used in external walls and cladding by reference to the surface spread of flame rating. These provisions are as follows:

The external surfaces of walls of any building closer than 1 metre to its boundary (and therefore close to other buildings) should be class 'O' in order to reduce the risk of external fire spread from one building to another.

Where a building is 20 metres or more in height, the external surfaces of walls more than 20 metres from ground level should achieve a class 'O' surface spread of flame rating. Below this height timber cladding at least 9mm thick, or some other materials that are less restrictive than class 'O' materials, could be used. This is to reduce the risk of fire spread over the walls of tall buildings whilst allowing certain commonly used materials to be retained in positions where fire fighting operations from the ground could be effective.

In the case of the outer cladding of a wall of 'rainscreen construction', which has a drained and ventilated cavity, the surface of the outer cladding which faces the cavity should also satisfy the provisions detailed above. This is to take account of the specific problems associated with this type of construction.

Approved Document B states that the external envelope of the building should not provide a medium for fire spread if it is likely to be a risk to health or safety. The Document also points out that the use of combustible materials for a cladding framework, or of combustible thermal insulation, may present a risk in tall buildings. Therefore in a building with a storey at more than 20m above ground level any insulation material used in the external wall construction should be a material of limited combustibility.

With regard to fire stopping Approved Document B suggests that a cavity barrier should be provided at the junctions between an external cavity wall that is not of masonry construction and every compartment floor. The BRE guidance on avoiding risks with thermal insulation, which is referenced in the Approved Document that deals with energy efficiency, recommends that to prevent fire spread, cavity barriers should be provided at every floor level. We have asked the Fire Research Station to review and update their report on the fire performance of external thermal insulation for walls of multi-storey buildings, referred to in Approved Document B.

The current Approved Document B is being reviewed but there are no changes proposed that will affect cladding systems other than the 20m height mentioned above is being reduced to 18m to fall in line with other height dimensions relating to fire fighting. In general it is considered that the risk of serious fire spread via external cladding will be minimal if the guidance given in Approved Document B is followed.

The Fire Precautions (Places of Work) Regulations may have a bearing on cladding issues but these Regulations are the responsibility of the Home Office.

4. What action may be necessary to counter any risks posed in existing buildings and to avoid any risks in new buildings or alterations to existing buildings

4.1 The Building Regulations in England and Wales only apply to new building work, and thus cannot be used to require any alterations to existing buildings although the Department is reviewing this in respect of the conservation of energy. The provisions of the Building Regulations as set out in the preceding section do, however, apply when new buildings are erected and thus such work is covered.

The Building Regulations also apply to building work that is classified as a material alteration. An alteration is material if, at any stage of the work, it would result in the building not complying with certain requirements of the Regulations where it previously did. The most pertinent requirement with regard to cladding is external fire spread, but structural requirements could also be an issue.

Thus with regard to the alteration (or replacement) of cladding, if this was the only work being carried out, and if it at no time made the external fire spread or structure any worse that it was already, the work would not be controlled by the Building Regulations. There is therefore the possibility that external cladding installed some time ago, and thus not complying with the current Building Regulations, could be replaced without being controlled by the Regulations as long as the building was not made any worse with regard to these particular requirements in the process. This is a possible problem area and one that the Department may need to review.

The Building Regulations would need amendment to ensure that all such work was covered. It is possible that the Building Act might also need to be extended to support this. Any such amendment would need careful drafting to ensure that an undue burden

was not inadvertently imposed on replacement and repair work. However a balance needs to be struck between construction costs and safety.

5. Other matters which may arise in the course of questioning

5.1 The Department has funded the Fire Research Station (BRE) to produce a method of test for *'Assessing the fire performance of external cladding systems'*. This report will be referenced in the revised Approved Document B and it is proposed that it will become a British Standard.

5.2 Review of Building Research Establishment Report 135 - 1988 'Fire performance of external thermal insulation for walls of multi-storey buildings'. This review is required to give better design guidance for cladding systems, particularly with regard to cavity barriers.