



Northern Ireland
Fire & Rescue Service

Protecting Our Community

THE PROBLEMS WITH MODERN BUILDING CONSTRUCTION FOR PUBLIC SAFETY

The Obel Tower - A Case Study

Presentation by: AGC Geoff Somerville, NIFRS

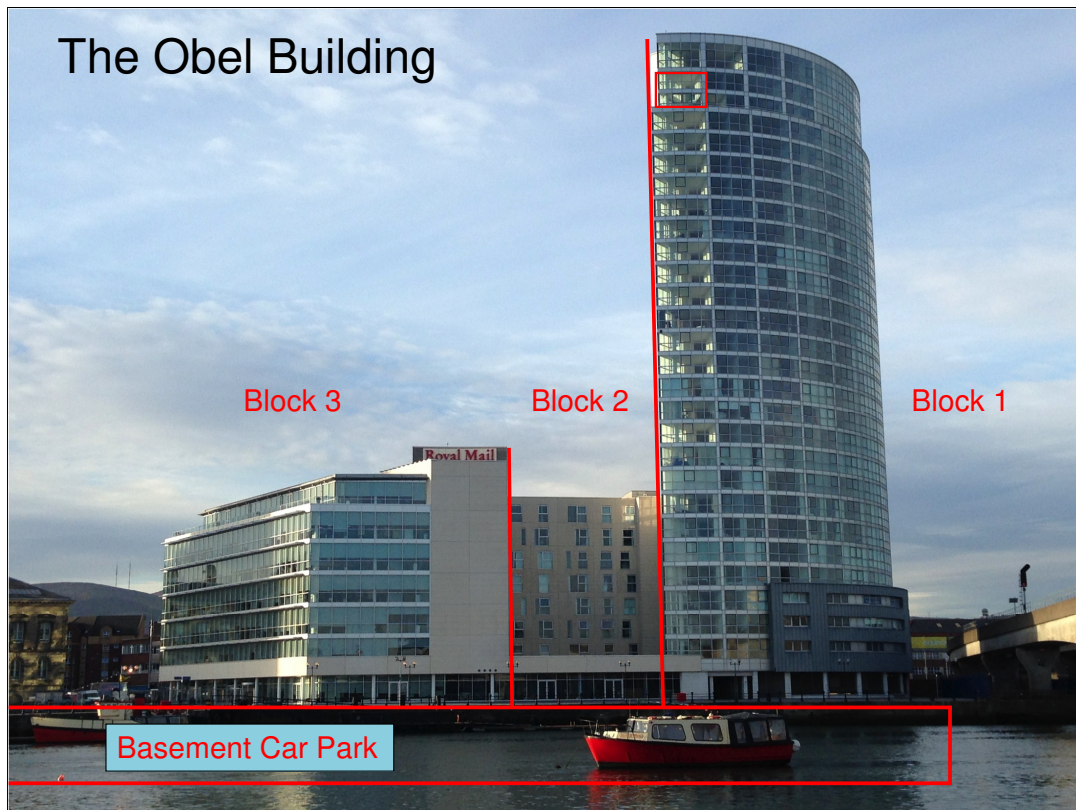
Thank you to the Fire Safety Liaison Panel for this opportunity to deliver what I hope will be a thought provoking presentation.

Firstly I want to first reassure you all that **The Obel Tower** is a very safe building, designed to a high standard of fire protection and that while the presentation will use **The Obel Tower** as a Case Study, the problems encountered by Northern Ireland Fire & Rescue Service are similar in many new buildings.

The Obel Tower has been used as a case study due to a fire, which occurred there on 13 May 2013.

You will be glad to hear, I will not go into any depth about FF tactics for a High Rise Incident, but will focus on the Fire Safety aspects of the building.

Next slide - Picture and overview of Obel Building



The Obel Building

Completed in Spring 2011 at a cost of £60m.

Build by the Karl Group (who I just happened to work for as a Civil Engineer, prior to joining the Fire & Rescue Service)

Owned and managed by Obel Ltd, Obel Offices Ltd and Donegal Quay Ltd, who is the main firm.

Consists of 3 Blocks and a Basement Car Park

Block 1 - The Obel Tower and the focus of my presentation today. 85m high, consists of 28 floors, (ground and 27 storeys above), 233 apartments, single storey accommodation, except for duplex apartments on the 25 and 26 floor. The penthouse apartments on the 27 floor can be seen to have a taller internal roof height. There is a 24/7 concierge reception on the ground floor.

Block 2 - 8 floors, 7 storeys residential consisting of 49 apartments, retail on the ground floor.

Block 3 - 7 floor office block, occupied by the London law firm **Allen & Overy**, and a coffee shop on the ground floor.

Basement Car Park - 2 floors below ground, parking for 250 cars.

[Next Slide: View of Obel Tower](#)

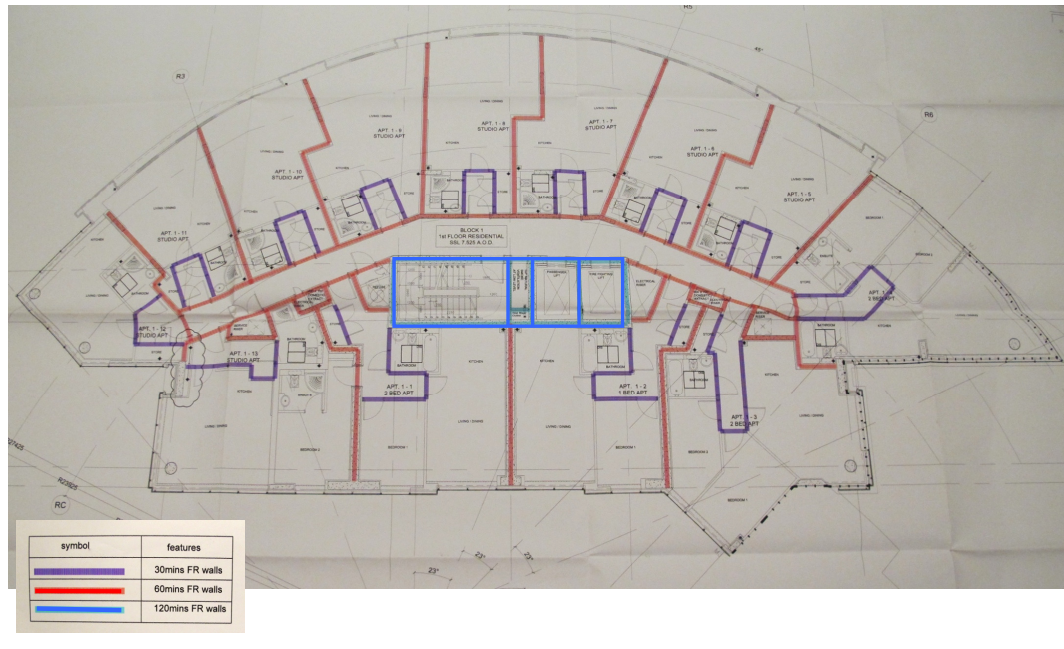


Next Slide: View of Obel Tower



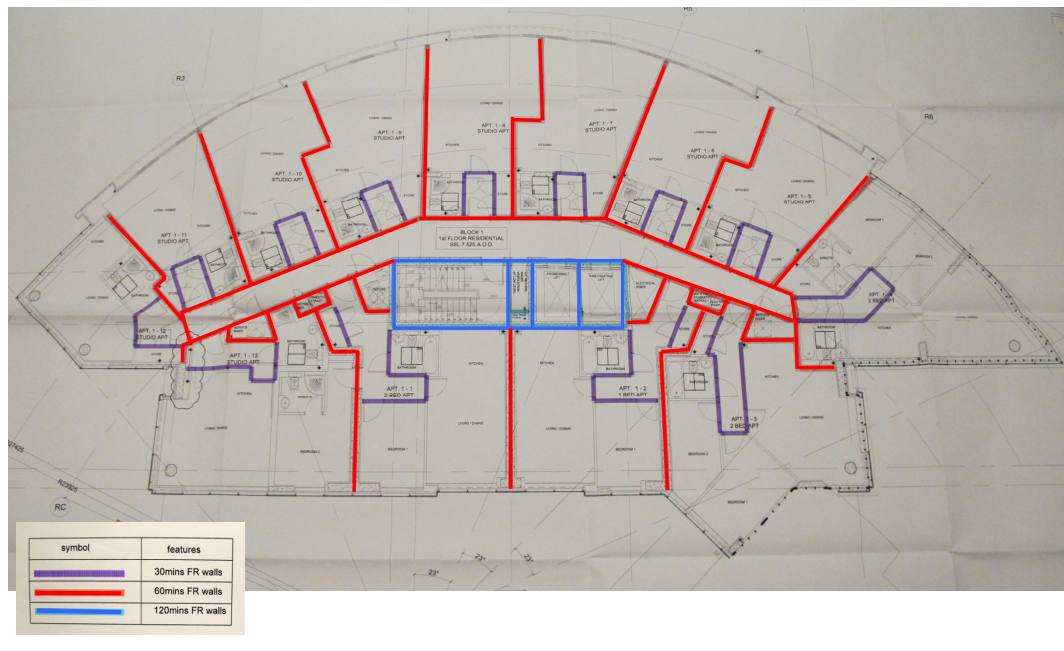
Next Slide: Fire Safety Design of Obel Tower

Fire Safety Design



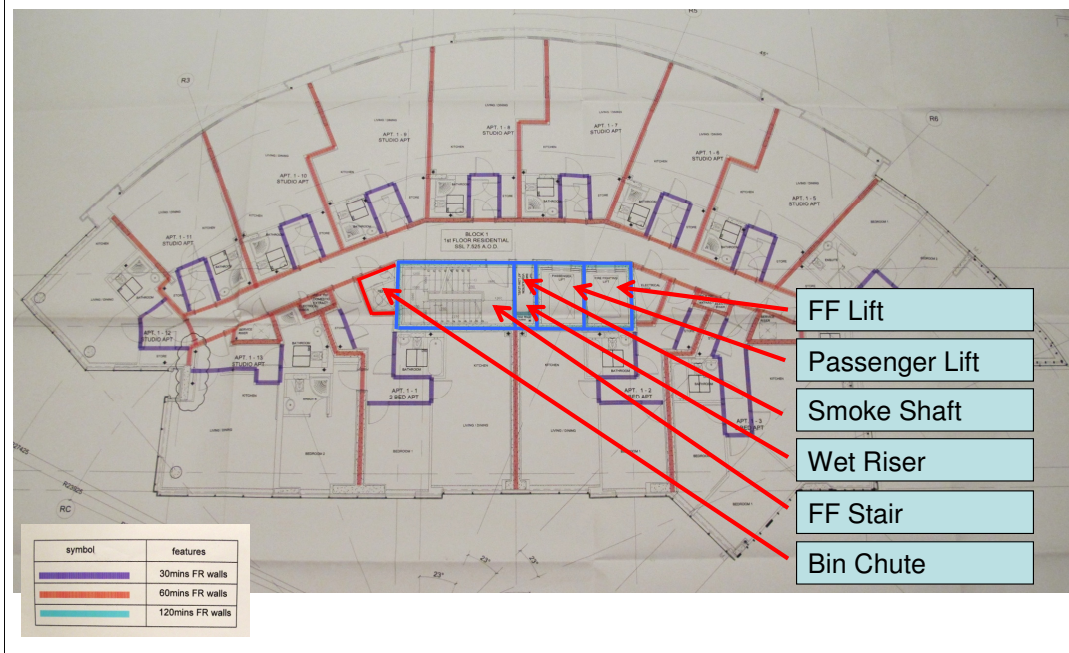
Next Slide: Fire Safety Design

Fire Safety Design



Next Slide: View of Obel Tower

Fire Safety Facilities



1. FF Lift
2. Passenger Lift
3. Smoke Shaft - opened by AFD on the Fire Floor, NIFRS Procedures is to set into riser 2 floors below. As a result NIFRS requested an over ride facility.
4. Wet Riser
 - Not built in accordance with the proposed Fire Strategy
 - Discovered by NIFRS on commissioning in July 2010.
 - Deviation from Technical Bulletin E, BS 5588 Part 5, BS5306 Part 1 (in place in 2004, both now replaced by: BS9999 Section 6 and BS9990:2006)
 - TBE E - The fire main should be located in the firefighting lobbies of the firefighting shaft.
 - BS 5306 Part 1 (or as it is now BS9990:200) - requires the riser to be provided with landing valves sited in a stair, ventilated lobby or any other position agreed with the fire authority
 - Lobbies to basement levels only.
5. FF Stair
6. Bin Chute

Next Slide: Fire Safety Elements



Fire Safety Elements

- all structural elements 120 minutes FR
- single direction travel exceeded by 1.5m Block 1
- smoke ventilation common corridors 1.5m²
- door to smoke vent opened by AOVs
- duplex apartments provided with sprinkler protection
- stair head vented by 1.5m² AOV
- no ventilation at head of bin chute, or service shafts

Next Slide: Fire Alarm and Detection Systems



Fire Alarm and Detection Systems

Obel Fire Strategy stated:

- each apartment an independent fire alarm and detection system in accordance with BS5839: Part 1 to at least L3 standard, or BS5839: Part 6 to at least a Grade E type LD3
- smoke detection in the common corridors detection linked to AOV
- no fire alarm sounders in common corridors

NIFRS recommended:

- each apartment - Grade D type LD2 with heat detector in kitchen and smoke detector in principle rooms

Next slide: Fire Safety Legislation



Fire Safety Legislation

The Fire and Rescue Services (Northern Ireland) Order 2006 and The Fire Safety Regulations (Northern Ireland) 2010 does not apply to "domestic premises" which includes their common areas.

The only exception is that in common area where facilities are provided for the protection of fire fighters, these must be maintained. In this case the:

- Wet Riser
- Firefighting Lift
- Firefighting Shaft (the internal staircase)
- Automatic Opening Vents (AOVs)

Next Slide: High Rise Firefighting



High Rise Firefighting

Recent fatalities:

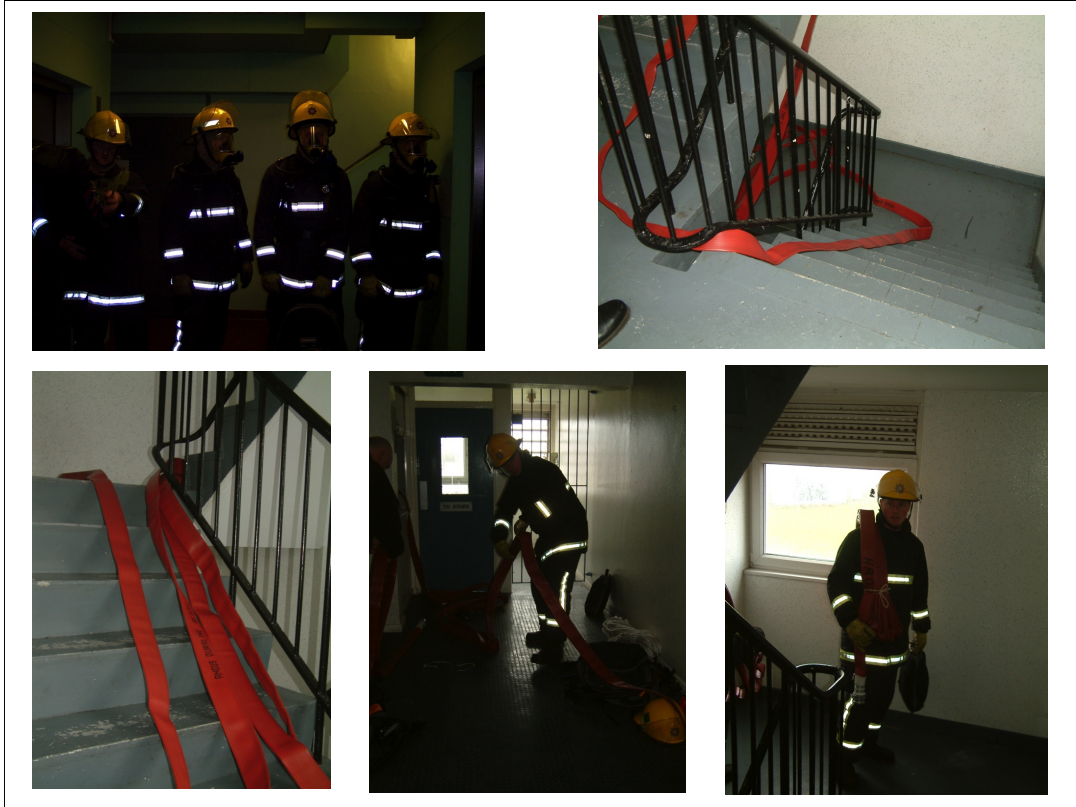
In July 2009, 6 people died in a fire at Lakanal House, South London

In April 2010, 2 firefighters died in a fire at Shirley Towers, Southampton

Hazards:

- travel distance
- increased risk of Flashover
- increased risk of Backdraft
- fatigue
- communications
- dry/wet riser failure
- unusual smoke movement
- failure to secure lifts
- improper use of lifts
- restricted space
- temperature
- blow torch effect if windows fail or are open
- hose management

Next Slide: Photo of Hose Management



Next Slide: Incident Details



Incident Details

1. First 999 call from Fire Alarm Monitoring Organisation (located in Selby, England) at 21:27 hours on 13 May 2013. Inform NIFRS that there is a fire alarm at the Obel, 62 Donegal Quay. NIFRS ask has a key holder been tasked. They have not.

NIFRS mobilise 2 appliances and an officer.

2. Second 999 call shortly afterwards from same organisation, confirming a key holder has been contacted. No further details given as to location, the building, the floor, or that security is on site.

NIFRS mobilise 2 further appliances and a senior officer to bring the attendance up to the PDA for a High Rise Incident.

2 appliances and an officer is an enhanced PDA for The Obel Tower.

Normal response is 1 appliance.

Next slide: In Attendance



In Attendance

1. Officer arrives and checks with concierge security officer.
2. Concierge does not understand the zones on alarm panel and cannot identify where heads have actuated.
3. First day working in the Obel Tower.
4. Officer checks alarm panel, smoke indicated on several floors, 15, 17, 10, 10. Alarm panel difficult to read, many zones, no floor plan.
5. Crews sent to check the lowest floor on floor 10.
6. Bridgehead set up on floor 8.
7. Smoke then confirmed on floor 9, 10 and 11.
8. Bridgehead moved to floor 7.

Next slide: Problems



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9 Problems identified at this incident

Show Photo of Smoke Control Doors

Next Slide: Problem 1 – Responsible Person



Problem 1 - Responsible Person

Concierge

- could not read fire alarm panel
- had no training
- did not know fire strategy
- did not know procedures in the event of fire
- had no knowledge of how to operate AOVs

Fire Alarm Panel

- No plan of zones displayed beside fire alarm panel

Next Slide: Problem 2 – Smoke Control Doors

Problem 2 - Smoke Control Doors Fail

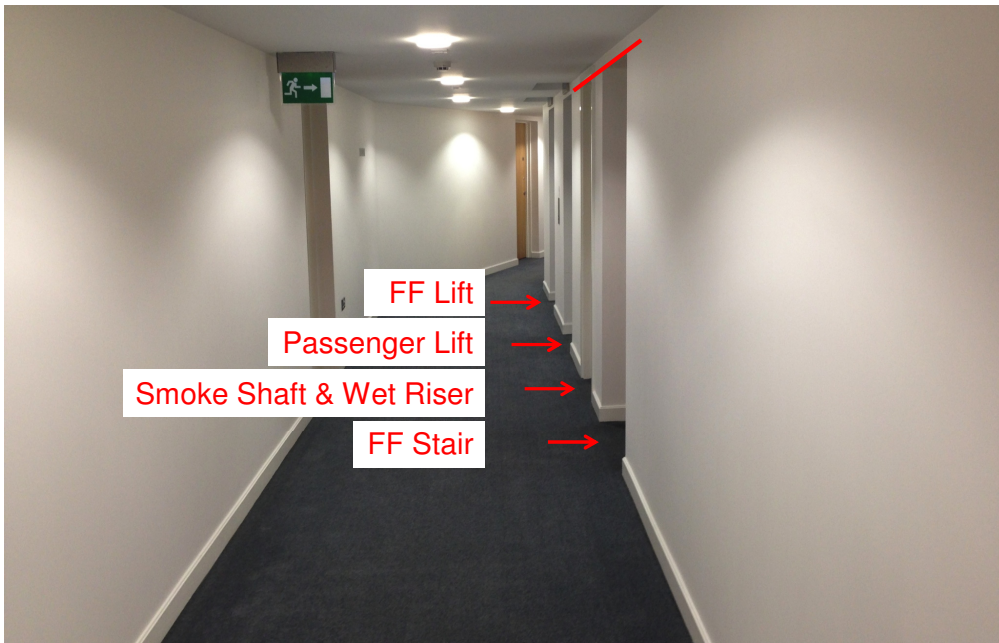


- supposed to open automatically on detection of smoke in corridor on fire floor
- this is also the door to the wet riser
- did not open
- corridors filling with smoke across all affected floors
- no handle on doors
- manual override on ground floor did not work
- Firefighters could not get water

Doors had to be forced to access the wet riser on floors 9, then 8 and 7 to secure water supplies

Next Slide: Door Heights

Problem 3 - Door Heights



Top of smoke control door at same level as door to firefighting stair

Therefore smoke in a corridor will enter the firefighting stair and the smoke shaft

Firefighters bring hose up from stair below and into fire floor corridor, therefore both doors must be opened

Next Slide: Door Heights

Problem 3 - Door Heights



Firefighting solution is to cut a wedge out of the bottom of the stair door to allow the door to be closed. Not easy to do!

Firefighting solution is to cut a wedge out of the bottom of the stair door to allow the door to be closed. Not easy to do!

Next Slide: Problem 3 - Residents Confusion



Problem 4 - Residents Confusion

Residents:

- were not aware of the procedures in the event of Fire
- were not aware of the building design or fire alarm system design
- were not aware of the Stay Put Policy
- were confused: *"Why is the fire alarm not sounding?"*
- didn't realise there were no fire alarm sounders in the corridors
- were not alerted to smoke outside their flats
- were distressed and panicked - some wanted to leave, others did

Next Slide: Photo of 911 - public image of a fire in a high rise building

Public perception of fire in a high rise building



Next Slide: Problem 3 Residents Confusion



Problem 4 - Residents confusion

Residents:

- were not aware of the procedures in the event of Fire
- were not aware of the building design or fire alarm system design
- were not aware of the Stay Put Policy
- were confused: *"Why is the fire alarm not sounding?"*
- were not alerted to smoke outside their flats
- were distressed and panicked - some wanted to leave, others did
- one lady injured - tripped over fire hose

Fire fighters wearing Breathing Apparatus carry out a systematic search from floors 10 upwards, to check for fire and advise residents

Next Slide: Problem 4 - Smoke Issuing from Bin Chutes

Problem 5 - Smoke issuing from Bin Chutes



Fire identified to be in the basement, 2 floors below ground, at the bottom of bin chute.

Smoke issuing from Bin Chutes on upper floors

No self closures on doors

Bin chute hatches do not close automatically

Doors left open by residents

Next Slide: Location of Fire - Industrial Bin at bottom of Bin Chute

Location of Fire - Bin at Base of Bin Chute



2 Floors Below Ground Level

Bin Chute is a vertical shaft that goes up 27 Floors

A bottle put into the bin shoot from upper floors travels so fast that when it hits this bin it is turned into dust!

Bin Chute often blocks when residents stuff large items into chute

Next Slide: Problem 5 - Bin Chute



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Problem 6 - Bin Chute

Issues:

- AFD on bin chute shaft did not operate



Next Slide: Problem 7 - Wet Riser Failure







Problem 6 - Bin Chute

Issues:

- AFD on bin chute shaft did not operate
- no vent at top of bin chute
- smoke escaped onto upper floors, had nowhere else to go
- corridors filled with smoke

Scene of operations moved to basement, fire quickly extinguished

Next Slide: Problem 7 - Wet Riser Failure



Problem 7 - Wet Riser Failure

Issues:

- significant leak in wet riser pipework in basement pump room
- room contains riser and sprinkler pumps and other electrical equipment
- had potential to impact electrical pumps and lift shaft

Thankfully, on this occasion, it did not affect Firefighting Operations

Next Slide: Problem 7 - Poor Housekeeping



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Problem 8 - Poor Housekeeping

Issues:

- build up of combustibles in basement
- large quantities of discarded smoking materials in communal areas between floors 10 and 14

Next Slide: Problem 8 - Financial Problems



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Problem 9 - Financial Problems

Issues:

- on 30 Nov 2010, administrators appointed

Next Slide: BBC Website Screenshot - Obel Tower is Repossessed

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Belfast's Obel building 'is repossessed'

Belfast's tallest building, the Obel, has been effectively repossessed.

Administrators have been appointed to Obel Ltd, Obel Offices Ltd and Donegall Quay Ltd the three firms which control the office and residential complex.

The main firm, Donegall Quay, owes the former Bank of Scotland Ireland (BoSI) more than £51m according to its last set of accounts filed in 2011.



The Obel is Belfast's tallest building

BoSI has been shut down by its parent company, Lloyds Banking Group. Its loan book is being aggressively wound down.

The Obel consists of a 28-storey residential tower and an adjoining six-storey office block.

It was launched onto the market in 2005 and dozens of apartments were sold off plan, mainly to buy-to-let investors.

However as the property market crashed sales slowed and many of the apartments are still empty.

Most of the office block is let to the international law firm Allen & Overy.

The administration will have no effect on tenants or any owners of apartments in the development.

The Obel project was originally backed by a consortium of developers, but in 2008 the Blackbourne family took full control, buying out their partners with the backing of BoSI.

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Next Slide: Problem 9 - Financial Problems



Problem 9 - Financial Problems

Issues:

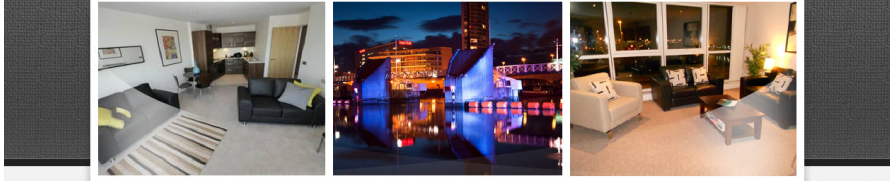
- on 30 Nov 2010, administrators appointed
- according to the BBC, the main firm, Donegal Quay, is unable to pay debts to the former Bank of Scotland Ireland (BoSI)
- believed to be more than £51m
- impact on the ability to manage
- properties not sold
- change of use to self catering apartments to generate income

Next Slide: Screenshot of Self Catering Apartments

Obel Self Catering Apartments Belfast City Centre

www.obelapartmentsbelfast.com

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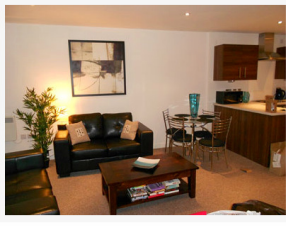


Obel Self Catering Apartments
in the heart of Belfast City Centre

Self Catering Apartments with mullanproperty.com

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Next Slide: Problem 8 Financial Problems



Problem 9 - Financial Problems

Issues:

- on 30 Nov 2010, administrators appointed
- according to the BBC, the main firm, Donegal Quay, is unable to pay debts to the former Bank of Scotland Ireland (BoSI)
- believed to be more than £51m
- possible impact on the capability for maintenance
- properties not sold
- change of use to self catering apartments to generate income
- fire alarm system no longer in accordance with BS5839
- self catering apartments are "relevant premises"
- plus the means of escape from these

Next Slide: Cause of Fire



Cause of Fire

- fire in a grill pan in a residents flat
- possibly on floor 15
- resident took grill pan out of flat
- threw contents down the bin chute
- returned to flat
- did not inform anyone
- fire alarm actuated in the sequence, floor 15, 17, 10, 10, 18, 21, 22, 21, bin store, 5
- approximately 40 detectors actuated

An innocuous fire in a single commercial bin, causing significant impact, confusion and distress to all involved.

Next Slide: Recommendations



Recommendations

1. Design out reliance on management at every opportunity
2. Information must be provided to occupants
 - written procedures
 - signage - "bin chute doors must be kept closed"
3. Avoid deviation from design codes
4. Consult with the Fire & Rescue Service early in building design
5. Listen to Fire & Rescue Service advice
6. Inform Fire & Rescue Service of decisions taken
7. Emphasize that every detail of the fire design must be handed over to the purchaser on completion
8. Emphasize to clients to consider the future use of the building

Next Slide: Thank you

Thank you

