

Report on Remedial Works & Inspection of Residential Dwellings at Dolphin House, Dublin 8

January 2011

TOBIN CONSULTING ENGINEERS



REPORT

PROJECT:

**Report on Remedial Work and Inspection of
Residential Dwellings at Dolphin House,
Dublin 8**

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DOCUMENT AMENDMENT RECORD**Client:** Rialto Rights In Action Group**Project:** 6072**Title:** Report on Remedial Work and Inspection of Residential Dwellings at Dolphin House, Dublin 8

PROJECT NUMBER: 6072				DOCUMENT REF: 6072 – 04 – 01			
0	Final	TC	21/01/2011	ST	24/01/11	SF	24/01/11
Revision	Description & Rationale	Originated	Date	Checked	Date	Authorised	Date
TOBIN Consulting Engineers							

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1 INTRODUCTION

TOBIN Consulting Engineers (hereafter referred to as TOBIN) were engaged by Rialto Rights in Action Group in conjunction with Dublin City Council to attend at and observe works to mitigate and eliminate existing problems experienced by residents within the Dolphin House Complex. These problems include wastewater backing up and discharging through the sinks and baths and associated problems including odour.

Dublin City Council has committed to undertake a programme of inspections and jet cleaning wastewater stacks where appropriate. This programme commenced on 20th January 2011 on the collection system serving Units 16, 20, 24 and 28. In attendance was Mr. Brian Curran (Dublin City Council), Mr. Tony Curran (TOBIN), Mr. Rory Hearne (Rialto Rights in Action Group) and Ms. Sarah O'Keeffe (Rialto Rights in Action Group).

It is provisionally agreed that Dublin City Council will continue with a programme of CCTV and jetting the affected collection stacks with a representative from TOBIN in attendance as required (this is possibly a site visit in the morning and evening on any day operations are ongoing).

During the course of inspections and supervision works on the 20th January 2011, additional concerns were raised both by Rialto Rights in Action Group staff and residents with regards to various other concerns associated with the complex. These concerns referred to problems associated with the growth of mould within the units, odour problems and a particular problem associated with a leak.

The following report details the finding of the supervision and inspection of the various units throughout the day.

2 WASTEWATER BACKFLOW

The TOBIN Report “Assessment of Wastewater Backup into Residential Dwellings at Dolphin House, Dublin 8”, August 2010, details the findings of an assessment based on a site visit and analysis of water samples within the Dolphin House Complex. Due to the sporadic nature of these events it is difficult to determine when and within which unit these events may occur at any given time.

Dublin City Council proposes to systematically inspect and remedy all affected units in collaboration with the Dolphin House residents and Rialto Rights in Action Group. In order to facilitate this system, Dublin City Council proposes the following method: -

- Rialto Rights in Action Group to propose a set of units to be inspected.
Generally 4 units dispose wastewater through the same outlet connection stack. It is possible that 3 to 4 connection stacks could be surveyed and cleaned within a single day. However, as this may be dependant on time spent setting up and moving, it would be more efficient if the sets of units to be inspected and cleaned are as close as is possible (preferably within the same block). It would also be favourable if the residents of the units were available in order to mitigate against backflow while jetting or potential consequences of the collection stack fracturing or breaking.
- Prior to commencement all connections to be examined to eliminate the possibility of cross connections with foul drainage.
Visual inspection only is possible and this may be hindered by the collection stack being boxed in by plasterboards and / or tiled.
- The Collection Stack to be CCTV'd prior to jetting and cleaning.
- All baths and sinks within the bathroom to be filled with water.
Ideally the tenant should be present to accommodate this and to reduce the impact should the collection stack be fractured.
- The Collection Stack to be CCTV'd following jetting and cleaning.
- CCTV footage to be issued to TOBIN for inspection.

TOBIN is in agreement that this is a suitable method to establish the cause of the backflow, to eliminate the possibility of reduced capacity of the collection stack being the main cause and to eliminate the problems associated with this.

This method was generally used on the sample case of Units 16, 20, 24 and 28. The inspection prior to CCTV could not rule out cross connection of pipes (between the Foul Drainage and the Wastewater Drainage) as connections within a number of units were boxed in. This is likely to be the case throughout the development however it appears unlikely that cross connections will be commonplace (due primarily to the location of the collection stacks). The CCTV was restricted to approximately 2m in length due a blockage (at approximately the floor level of No. 28). This may be an uncharted connection. The baths and bathroom sinks of all units were partially filled with water and the jetting of the collection stack commenced with observers present in each unit. As

expected, a small amount of backflow was produced at each unit as the jetting proceeded past each unit. The following photographs illustrate the amount of backflow produced as a result of this operation. The CCTV following the cleaning operation could not proceed past approximately 2m, which may indicate the blockage is indeed due to an uncharted connection in this case.

In conclusion, it appeared that this method unblocked the collection stack, thereby increasing the capacity of the stack and decreasing the likelihood of backflow. Although not conclusive, it would appear that backflow is primarily due to blockage of the collection stack (notwithstanding the possibility that there is a blockage towards the top of the collection stack).

It would appear that the operation was a success and that backflow (and corresponding problems such as odour) is likely to be eliminated. TOBIN would recommend that this procedure be continued in this fashion in consultation with the residents.

Although jetting is unlikely to be a permanent solution it should provide a maintenance free solution for the medium term (5 to 10 years). Where uncharted connections are discovered, it is recommended that these be replaced or permanently blocked up.

UNITS 16; 20; 24 & 28 JETTING & CLEANING



3 MOULD GROWTH

On completion of the Jetting and Cleaning operation above, a number of units were inspected in Rialto Rights in Action Group). There is no doubt that mould is indeed present within all units inspected and photographic evidence of attendance with Mr. Brian Curran, Dublin City Council and Mr. Rory Hearne and Ms. Sarah O'Keeffe (the mould within each unit is illustrated on the following pages.

Mould growth in homes is usually the result of damp within the home. However there are a number of causes of damp including rising damp, penetrating damp and condensation. It is likely that damp within the Dolphin House Complex is caused by a combination of these causes and solutions to the problem are likely to be a combination of treatment, prevention and on-going maintenance.

RISING DAMP:

Rising damp is water from the ground that enters a structure by capillary action. Water that enters or affects a building through any other route can move about in various ways but is not rising damp. It is considered unlikely that water is entering the homes in this fashion and it is noted that a Damp Proof Course (DPC) is incorporated into the structure. Rising damp generally only rises to approximately 900 – 1,200mm; therefore this could only affect ground floor units.

PENETRATING DAMP:

Penetrating damp occurs as a result of problems with the fabric of the building that can allow water to leak into the walls or floors. Typical defects leading to penetrating damp are defective guttering or down pipes, faulty flashings, poor pointing, cracked rendering and built up external ground levels. The first sign of damp penetration is often the appearance of damp patches on walls, ceilings or floors. These tend to grow or darken after periods of heavy or prolonged rain.

It is noted that at a number of locations the rendered plinth has been damaged or completely removed over a period of years. This may be a cause of penetrating damp, leading to mould, on ground floor units (but cannot be the cause on floors above ground floor level). It is recommended that all plinths be repaired or replaced as necessary.

CONDENSATION:

Condensation can occur in buildings that have a high level of relative humidity (usually) due to human activity (cooking, drying clothes, breathing and so on). When this water laden air comes into contact with cold surfaces such as windows and cold walls it can condense, causing water to be deposited.

Houses have become more effectively sealed, keeping any moisture produced within the house and providing better conditions for condensation to occur. Ventilation is only effective if consistent throughout the whole envelope of the house. Condensation is encouraged by poor air circulation where stagnant air pockets form (behind furniture and in cupboards) and the first evidence is often the appearance of mould growth.

The usual sequence of events is as follows:

- Cold air enters the building.
- The air is warmed for the comfort of the occupants.
- The warm air takes up moisture.
- The warm, moist air comes into contact with cold surfaces, walls, windows, and is cooled below its dew point.
- Condensation occurs as the excess moisture is released.

The moisture in the air also comes from a number of sources within the house. Water vapour is produced in relatively large quantities from normal day to day activities - a 5 person household puts about 10 kg of water into the air every day (1 kg of water equates to about 1 litre), without taking into account any heating, i.e.

- breathing (asleep) 0.3 kg
- breathing (awake) 0.85 kg
- cooking 3 kg
- personal washing 1.0 kg
- washing and drying clothes 5.5 kg
- heating

Walls in kitchens and bathrooms (where atmospheric moisture levels are usually highest), solid external walls, un-insulated solid floors and cold bridges such as concrete lintels set in cavity walls are commonly the areas in which condensation takes place.

Running water on windows and walls is perhaps the most immediate indication of a condensation problem. If ignored this can lead to deterioration in the decorative condition of the property, stained curtains and decay. The appearance of moulds on the surface of wallpapers and paints in poorly ventilated areas may also occur.

Improved heating and ventilation coupled with specific action in relation to cold spots will usually result in a significant improvement in conditions, although there may be circumstances in which alternative methods are required. A modest but constant background heat is preferable to intermittent heating since this will help to maintain a higher ambient temperature in the fabric of the building.

The installation of a small extractor fan in a kitchen or bathroom will carry away moisture-laden air from the two areas most responsible for condensation with minimal running costs. This is now required by the building regulations in new constructions. Extractor fans are now available which incorporate a humidistat which will control the operation of the fan within certain humidity limits. It is also possible to install fans that have an integrated heat exchanger. These have the advantage of providing effective ventilation while reducing heat loss from the property.

An alternative to heating and ventilation for the control of moisture in the air is a dehumidifier. This is a device which draws in air, cools it to remove moisture which is collected in a reservoir and reheats it to an acceptable temperature before re-circulating it.

CONCLUSION

It would appear that the main source of damp (and the consequent mould growth) is due primarily to condensation. There may be an element of penetrating damp entering the units but this should be eliminated with the reinstatement of the plinth, in particular to cover the DPC.

At present, it is Dublin City Council's policy that condensation is a Tenants responsibility. It is probably unlikely that condensation can be completely eliminated from the affected units. Therefore, it will be necessary to manage the condensation on an individual unit basis, based on the extent of the problem. It is possible that management of day to day activities will have a greater impact on the levels of condensation than the "engineering" solutions above, although a combination will likely have the greatest affect. Management activities could include the following:-

- After a bath or shower, try to ventilate the room to the outside, not to the rest of the house - just opening a window (and closing the door) will help.
- Dry clothes out of doors or in a cool area of the premises - drying will take longer but less moisture will be held in the air at any one time.
- While drying clothes indoors, ventilate the room.
- When people come in with wet coats, hang them outside the living area to dry.

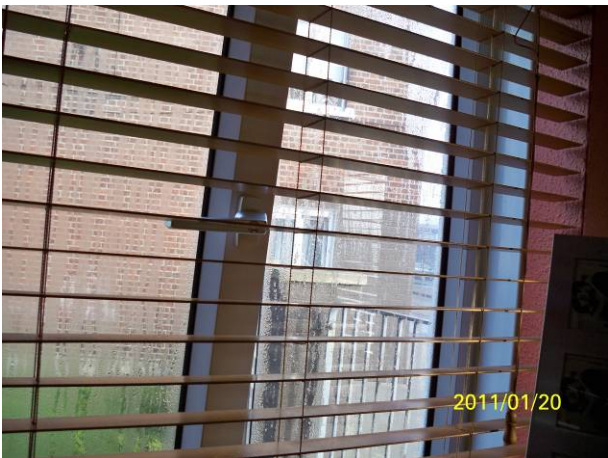
- Existing Mould growth needs to be completely treated prior to any other activity, in particular redecoration. Regular inspection and removal of initial mould growth will prevent the spread of the mould.

Dublin City Council has begun a trial system of forced ventilation within a number of the worst affected units. This may take weeks or even months for significant impact on the damp problem but is unlikely to be successful in isolation. We all should be encouraged to reduce the amount of moisture within our homes (this is a problem within new houses as much as older houses).

MOULD - UNIT 16



MOULD - UNIT 29



MOULD - UNIT 83



MOULD - UNIT 141



4 LEAKING PROBLEMS

Dublin City Council is addressing a leak which had occurred in the property above Unit No. 83. The following photographs illustrate the current progress which consists of removal of all plaster work to the walls and ceilings. As the bathroom has not fully dried out as yet, it is recommended that this be monitored and further plasterwork removed as necessary. Re-plastering of the room should not commence until such time as the room is adequately dried.

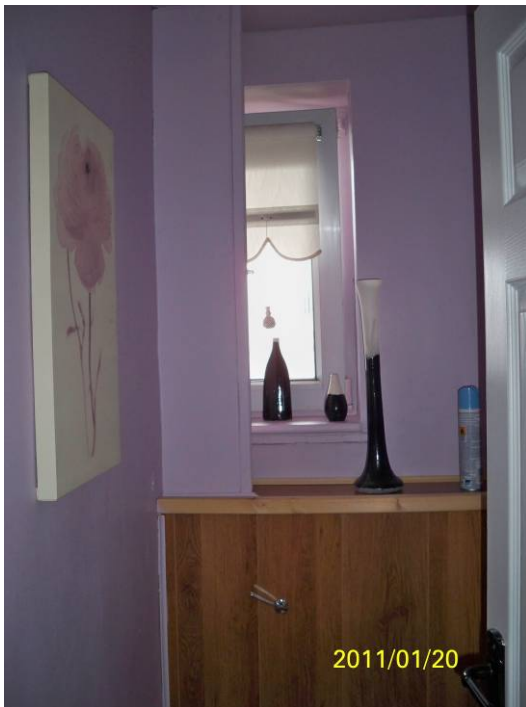
A substantial crack is noted to the side of the sink. It is unknown if this has occurred recently, however it has not extended to the outside blockwork. Dublin City Council has undertaken to monitor this crack.



5 ODOUR PROBLEMS

Odour problems have previously been reported in Unit No 36. This unit has been jet cleaned (the individual unit only and not the 4 units discharging to the collection stack). It is encouraging that the Tenant of this Unit has reported that the odour problems have been greatly reduced, if not completely eliminated. This would suggest that the proposed system of jetting and cleaning should solve the majority of odour problems within the complex.

Odour problems were also reported within Unit 40 (which is located above Unit 36). Although this Unit was inspected, no significant odours were noticed at that time. It is recommended this full collection system (of 4 Units) be included in the jetting process.





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