SURVEY AT: Old Dwelling, The Spa, Tralee

FOR: Cathal de Lacy/Katherine Reidy DATED: 12/05/2016


# JIM FITZGERALD CONSULTING ENGINEERS

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## ENGINEER' SURVEY REPORT

**Property: -** **Cahirvalish, the Spa**

**Client: -** **Cathal de Lacy/Katherine Reidy**

**Inspected on: -** **12th of May 2016**

**Inspected by: -** **Jim Fitzgerald**

# GENERAL INFORMATION

## Client Details

Cathal de Lacy and Katherine Reidy

## Address of Property

Cahirvalish, the Spa, Tralee

## Date of Inspection

12th of May 2016

## Clients Brief

Jim Fitzgerald Consulting Engineers were requested to carry out an Engineers Survey of the above mentioned property. This survey was required to record the current condition of the property, to examine its structural integrity and to ascertain whether the property can be made compliant with modern building standards.

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# SURVEY REPORT

## Introduction

The property is located at the Spa, Tralee on a side road off the main Tralee to Fenit road. It consists of a large 3 storey semi-basement detached house with steps leading up to the front door. It is an old property but the glazing and entrance porch were installed relatively recently. The area around the property is quite overgrown with significant growth of mosses around the house indicating water collection/drainage issues. Upon entering the property, there is an entrance hall with a very large room to both the left and right. There is a stairs down to basement level and up to the second floor. Both the stairs and the sole bathroom in the property, which is at a level between the first floor and the basement, are contained within the extension which was not part of the original construction. There are also further additions at the back of the house, where there is a further entrance and these seem to be constructed to a poor standard. There again is significant evidence of dampness and growth of mosses around the back of the property.

The kitchen is contained in the basement where there are also a number of smaller rooms. The first floor contains two rooms which seemed to have been used for sitting rooms and the top floor contains two bedrooms.

## Basement

The basement is in a very poor state of repair and there was extensive flooding here in the winter of 2015-2016 with the water reaching a level of 2 feet above floor level. The floors are laid directly onto the earth base and would need to be dug up completely and re-laid to modern standards. I would have serious concerns about the damage that the flooding would have done to the foundation of the property and even to the walls themselves where it reached a height of 2 feet above floor level. The foundation, if any, and walls would not have been built anywhere near modern standards and modern materials would not have been used to give structural integrity(Please see note further below regarding use of sea gravel/sea sand). There is significant evidence of rising damp and all the walls would have to be stripped, examined thoroughly and at a minimum would need the removal of areas of concern and replacing with modern materials along with significant picking, re-pointing, dubbing out and replastering with dry lining and insulation. There would also be a strong possibility that due to the water damage and the lack of foundation that significant underpinning might be required.

All walls and floors would also need tanking either outside or inside. All doors and windows need replacing as does the stairs. All the building would need to be treated against wet and dry rot and both insect and vermin infestation.

Unfortunately, the basement area is required to maintain a full complement of rooms suitable to a modern house and cannot be abandoned.

Ground Floor

The ground floor consists of two large rooms off a hall. Again all external and partition walls would need to be treated in the same fashion as detailed previously. While the windows on all three levels of the house are manufactured using uPVC they are not of modern standard, seem to be of low quality and poorly installed and would need to be replaced. As already stated the stairs needs replacing on all levels. Upon examining parts of the floor trusses and timbers, there was found to be significant rotting and warping. The floor timbers and supporting trusses in each floor of the property need to be examined thoroughly and it is probable that they would need complete replacement. The chimney flues need to be opened up and flue liners installed along with making good.

All the skirting, architrave, door-framing and all other decorative timbers need replacement. The doors could probably be reused after considerable treatment.

First Floor

Again, the ground floor consists of two large rooms off a hall. All comments relating to the ground floor are relevant to the first floor. In addition the water tank has been installed into a press in the hallway and would need to be relocated. It seems it would have been housed outside previously and was probably not put in the attic due to insufficient space.

Roofing

There is significant evidence of dampness entering the house through the roof and it is likely that the roof would need replacing. The guttering, soffit and fascia are in a poor state and would also need complete replacing. The chimneys would need rebuilding and replastering.

Recent Poor Quality Renovation

A renovation seems to have been attempted in the last 20-30 years. It is probable that the uPVC windows, doors and porch would have been installed at this time and the roof, plastic guttering, fascia, soffit also completed. The shoddy extension which includes the bathroom and relocating of the water tank inside may also have been done around this time. All the work completed was of a low standard.

The walls also seem to have been replastered around this time. Although there are no severe structural cracks showing, I would have concerns about what is hidden behind this plastering particularly when there is substantial cracking with sizeable cracks in places. In addition, the internal walls seem to have been covered in a damp barrier/insulation

comprised of a plastic sheet placed onto the wall and then covered in a styrofoam board which was then wallpapered over. This ensured any water in the walls was held there between the plastic and the wall and has significantly contributed to the prevalence of damp and rot throughout the house. Despite this covering, the damp and mould is so bad that it has managed to penetrate it and is visible on the wallpapered walls. When this plastic/Styrofoam insulation was removed for exploration, the walls were damp to the touch and the mortar between the stones was flaky and powdery.

Note on Sea Gravel/Sea Sand in Construction

I would be reasonably certain that sea gravel/sea sand would have been used extensively in the construction of this house. There is evidence of sea gravel in the walls in the basement where the plaster has been removed and also it is extensively used in the unplastered exterior walls along with a neighbouring derelict house which would have been from a similar period. Finally, the close proximity of a gravel beach would ensure that it would have been a convenient material to use. This is widely accepted as a bad material to use in house construction for the following reasons:

To make good concrete, individual pieces of stone should be bound with a cement paste to produce a mix as dense and nonporous as possible. The aggregate (both the sand and the stone) has to be hard for the concrete to be durable. Good aggregate is so hard that it can only just be scratched by a steel penknife. Concrete made with soft stone is not durable and will disintegrate. Also, pieces of crushed aggregate (from quarries) are angular in shape whereas river or beach gravel is rounded. The angular nature of quarried gravel allows for a better bond between the various construction materials.

When concrete cures, it forms long crystals that grab onto the sand and gravel that forms the rest of the concrete. The inclusion of amounts of organic matter and/or salt as would be found in sea gravel/sea sand will weaken the bonds.

In addition, when salts are applied to concrete, they attract additional water (up to 10% more) into the pore structure of the concrete. This process leaves less room for expansion in the pore structure which, in turn, creates more pressure inside the concrete when it freezes, causing the surface to chip, flake, and pop(typically called

"spalling"). The plastic sheathing over the interior walls in this house would have exacerbated this problem by ensuring any excess moisture was held in the wall. The salt content within the beach sand will dissolve over time thus leaving the mortar joints to turn to powder and create a failure in the bond between two bricks.
For this reason sand and sea gravel containing salt or organic matter needs to be washed repeatedly with fresh water before being used in concrete. For construction purposes, the sand that is used is specified very closely as far as organic matter, salt and other contaminant content is concerned.

## Electrical Work and Plumbing

All the electrical work needs total replacement to bring it in line with modern specifications and regulations.

The plumbing and heating would also have to be completely redone.

## Layout

The layout of the house is not suitable to a modern house layout. The kitchen is contained in a dark dingy basement and each of the other two floors only contain two very large rooms per floor. A redesign of the layout would be essential but this would be very difficult as the inside walls are thick stone walls which are not conducive to layout change. Any change of layout would require the removal of these two large inner walls from basement to roof level.

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## Description of Photos

Photo 1: Front of house with uPVC windows, cracking in wall plaster and rotting fascia/soffit

Photo 2: Basement entrance with significant cracking on wall and growth of mosses

Photos 3 & 4: Rotting Fascia/Soffit, cracks in chimney and bars where water tank was previously

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Photos 5 & 6: Side of house with significant plaster cracking and rotting fascia/soffit

Photos 7 & 8: Poor quality extension and significant crack on wall

Photos 8 & 9: Back of house with poorly quality bathroom extension and significant moss growth

Photos 10 & 11: Use of sea gravel in walls around house

Photos 11 & 12: Sea gravel and remains of sea gravel wall from nearby beach

Photos 13 & 14: Evidence of sea gravel used in mortar, spalling and deterioration in the mortar

Photo 15: Rotting timber trusses and further evidence of deterioration in the walls

Photos 16 & 17: Rotting and warped floor timbers

Photos 18 & 19: Further photos of the basement showing spalling, rising damp and rotten skirting

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Photos 20 & 21: Excavation of floor to show earth foundation and evidence of flooding damage


Photos 22 & 23: Stills taken from video recorded after flooding in December 2015

Photos 24 & 25: Mould and damp in the stairwell

Photos 26 & 27: Mould and damp penetrating the plastic/Styrofoam and wallpaper wall covering and wallpaper peeled back to show Styrofoam covering (ground floor)

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Photos 28 & 29: Basement with significant mould, dampness and water damage


Photos 30 & 31: Further damp and mould in bathroom with growth of fungus


Photos 32 & 33: Further damp and mould on first floor

Photos 34 & 35: Evidence of water ingress and damage through the roof/ceiling

Photos 36, 37 & 38: Exposed plumbing and water tank in a press at top of stairs

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## Conclusion

The house is in a terrible state of repair with innumerable issues. After all demolition works were done with the likely removal of the inner walls, roof and floors, one would be left with only four outer walls stripped back to the bare minimum. I would have concerns about the stability of these outer walls due to the removal of the inner walls both during the removal process and subsequently. More worrisome deficiencies in the structure may be concealed by the relatively recent replastering/renovation. Excavation around the outside of these walls would also be necessary to attempt to stop any future water ingress. I would also have concerns about the structural integrity of these outer walls due to previous flooding and the lack of building standards in foundation construction when constructed along with the use of substandard building materials particularly the sea sand and sea gravel that would reduce the bond between the stone and mortar.

In my opinion, the house is irretrievable and total demolition is necessary.

Regards

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Jim Fitzgerald