



Victorian Property

67 Strand Street, Isle of Man

UPGRADING TO MODERN STANDARDS AND ENERGY EFFICIENCY

| Ideas Competition | 5th November 2019

The project

This is a project that has been undertaken on the Isle of man and was completed in September 2019. Originally this was a Victorian built property with retail on the ground floor and residential above. In recent years the above floors had been uses as offices and have now been converted back to residential having four large flats above, all flats are approximately 850 sq ft.

Historically building have a lifespan of 30 years and at this point they either require a complete overhaul as their current use or as a different use all together. The building in this project in the last 30 years has gone from retail with residential above to banking hall with offices above to retail with offices above to today where it is now back to retail with residential. There are many very similar properties in and around Douglas as well as many other areas of the island. Many of these were hotels/ guest houses and when tourism declined on the island these were converted to residential apartments and we are, in my opinion now at the point that many of these properties do not meet modern requirements as listed below:

- Fire regulations- Modern requirements would specify that ceilings need to be double fire boarded, Sprinkler system installed and a zoned fire alarm system.
- Sound proofing- none of these properties are fitted with acoustic matting which dampens/ reduces the sound transfer, this matting also adds to the insulation on the property.
- Insulation- very little if any insulation within
- Damp/ condensation- many of these properties suffer from damp/condensation which can be prevented if correct measures are taken.
- Electrics – these properties do not conform with modern requirements.

I have listed the above to highlight the fact that although there are simple measures that can be taken to improve the energy efficiency of a property such as stud out all of the walls and insulate between the studs with 50mm foil backed insulation. There is little point in doing this without renovating the property as a whole.

KEY DESIGN PRINCIPLES

- **Strip and replace roof-** this is an area where many damp problems are caused and add insulation to the roof space. Building control requires 270mm of insulation but if possible 350mm is a much better level and is one of the cheapest ways to reduce heat loss. Many people think you have to put 270 mm in because

building control say but educating people that this is a minimum and it is good to put more in would be a good thing to do. With many of these buildings they have flat roofs to the rear. We enhanced the strength of this roof so that in the future solar panels can be added without any major internal works.

- **External walls**-these need to be stripped of the old render and re rendered. Many of the damp issues are caused from water penetrating the property via crack. This is a major problem on the island and in particular in rented property with management companies and lack of maintenance. I prefer to keep the outside as concrete/stone and keep the insulation internally as the heat loss stops when it meets the insulation. Insulation and render to the exterior of a building is not a long term sustainable path in my opinion. The render will crack with time and become porous and then the insulation will take the water in and hold it creating a lot of work in the future.
- **Internal walls**- All walls should be studded out and 50 mm insulation inserted. Where it is an external wall being studded a damp proof course should be used so that if damp does come through it hits the plastic and stops, very similar to a cavity wall. This is what we did to the entire property at 67 Strand Street and leading up to September when we were completing the apartments the temperatures within were 22 degrees without heating.



Picture of insulation used between the stud work



Above is foil bubble wrap insulation, this can be used in areas where it is not possible to stud out 50mm in areas such as narrow walkways. This product was designed by NASA and has an incredibly high insulating value.

- **Flooring-** All floors had a 10 mm soundproof matting put down, this not only significantly reduces sound travel it also provides insulation and is made of a fireproof material so it will slow down the spread of fire. Picture below of acoustic matting



- **Heating-** Within these flats we decided to go for electric heating which there has been a big push for being more energy efficient and cleaner. These boilers have a heated water tank inside, so we decided to locate these in a cupboard in the bathroom. The reason for this is that bathrooms are an area of concern for condensation however as the hot water tank heats up it heats up the bathroom and significantly reduces the forming of any condensation. This is a great way to use the stored heat rather than placing the boiler in an area where you receive no benefit from it. The new occupants of the apartments have been really happy with this as it saves having to put the heating on to heat the bathroom on cold mornings/nights. We also used uprated extractors and not just the minimum requirement, to circulate the air and remove moisture and give a better living

environment. At some point with the use of solar power we should be able to run these boilers from them or partially from solar.

- **Lighting-** LED lighting is a great way to improve not only the quality of light but also reduce electricity consumption.

- **Windows-** All windows were replaced with UPVC Double glazed and ventilated. Windows were also fitted with the most energy efficient blind you can buy, the Duo shade blind will keep your home insulated all year round and drastically reduce your energy bills. Aluminum lined with honeycomb pockets helps keep rooms warm in the winter and cool in the summer. What's more they're blackout and water-resistant too making them as practical as they are pretty. This is a cheap way to insulate your home and is very often overlooked. A normal blind that would cost £10.00 would cost £16.00.

- **Garage door-**insulated and sealed garage door

- **Foundations-** many old Manx properties have inadequate foundations and this is the cause of many damp issues and is a must to do the groundwork to keep the damp out and this may include digging the floor away internally adding a damp-proof membrane, insulating and pouring concrete.

Benefits to property owner:

The benefits to the property owner and occupier are vast. These apartments were never advertised. A company had heard that these were being done and we were approached to rent them all. A typical one bedroom apartment rents from £575.00 to £800 for good quality. These achieved £800pcm because of the quality and also the cost savings on heating them. Tenants today are more concerned than ever at the cost of heating a property so by doing this to a high standard makes it attractive to tenants. Another benefit of doing the property as whole is it reduces/eliminates complaints such as damp patches, condensation, breezes coming through the windows ect. Also by providing electric boilers for heating and hot water means that they only have one utility bill to pay and very importantly for them only one deposit.

Conclusion

The above project was completed, and the cost of the project was £50.00 per sq ft to a high quality. This could be reduced to approximately £35.00 per sq ft using lower quality products. I think the main thing to take away having completed such a building is corners cannot be cut. To give a property a new lease of life all elements have to be done and each area compliments each other by increasing the R Value of the whole property providing safe, comfortable living accommodation.

Cheaper Alternative

A cheaper alternative that could be done by the average person that cant afford to renovate the entire property can do a number of cheaper alternatives that will help achieve the near zero emissions. I have placed these into a table for ease.

Upgrade	Average saving per annum (kg)	Average saving per year (£)	Approximate cost	Average payback (Years)
LF Shower Rose	95	£30.00	£25.00	0.8
Lighting	365	£50.00	£280	4.1
Draught sealing	496	£80.00	£536	6.6
Ceiling insulation	111	£215	£400	2
Washing machine	12	£13	£100	7.7
Heating energy efficient boiler	411	£65	£1600	8.2
Fridge	365	£49	£580	11.8
Reduce sub floor ventilation	36	£8	£87	14.9
TV	273	£28	£507	17.8
Underfloor insulation	102	£18	£413	24.3
Wall insulation	331	£160	£6000	37.5
Double Glazing	146	£70	£6400	91

The above are all home improvements that can be done individually and will all reduce the emissions made by a property. I have given an approximate cost of implementing these on an average home as well as the number of years to pay itself back. As you can see one of the items many people don't think about is the appliances, they purchase for their homes. Although the better-quality products cost more the better energy rating saves them money and cut down on the overall emissions. This is again more of a case of educating people and the differences between products available.

The only way to meet our near zero target is to meet in the middle and by this, I mean we need to reduce consumption and use ways to generate electricity such as solar power.

Implementation

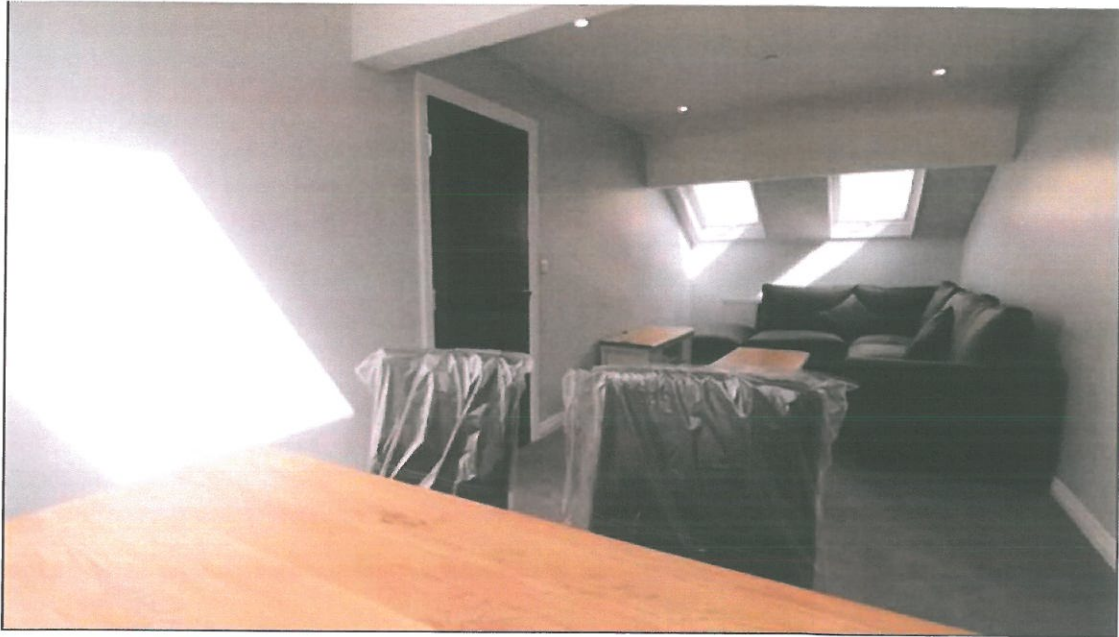
Having been in the property industry and investment management for many years this is something I have thought about and discussed with many professionals and in my opinion it is completely realistic to achieve the objective of near zero by 2050 and this is in part helped by the demographic of the island. At this moment in time the younger generation are a lot more conscious about being environmentally friendly thus new property sells very well. This is in part due to the fact the younger generation haven't got the money/finance, time or the desire to buy an older property and renovate. If we take that thought the "boom years on the Isle of Man we built a maximum of 400 units in one year, a unit can be a one bedroom flat or a mansion. Currently we have 20,000 old aged pensioners that retire at 65 and the current trend demonstrates most won't live past 84. If all passed away on an average basis we would have approximately 500 homes come on the market per annum and I believe it will be at this point the new build industry would suffer and to survive they would have to adapt and turn to renovation of existing housing stock. Unless we grow the population on the Island as highlighted by numerous reports our population will decline. This is the time when older homes will get updated to meet the modern user requirements of the millennial generation.

I believe also where the Island lacks at this current moment in time is with the electricity generation buy back price of electricity. With it being approximately half of what the purchase price is it doesn't make sense financially unless it's a commercial property and you can consume all of the electricity yourself throughout the daytime.

Below are some pictures of the finished product we have recently done.



Good quality kitchen fitted with energy efficient appliances



Large hallway benefiting from natural light. There are 10 roof windows fitted with electric solar blinds.



Rear of Property fitted with insulated garage door