

**REPORT AND
DIAGNOSIS OF DAMP OVER
CEMETERY BUNGALOW
BEECH AVENUE
WINKLEIGH
DEVON EX19 8HZ**

For and on behalf of:

**Winkleigh Parish Council
C/O The Bungalow
Hatherleigh Road
WINKLEIGH
Devon EX19 8AP**

Instruction

I refer to your written instruction dated 26 March 2010 to carry out an inspection over the property known as Cemetery Bungalow, Winkleigh EX19 8HZ to establish the reasons for dampness. I have carried out my inspection during Wednesday 31 March 2010 the weather at that time being heavy rain/sleet and windy.

Description and Background

The property comprises a detached bungalow set back approximately 30 metres from the main road; it occupies an almost level to gently south sloping site with overall dimensions of approximately 22 metres x 9 metres which includes a garage section to the north. To the front is a small open porch and to the south side is a further open porch; also to the south side is a former water tower. The bungalow has an enclosed area of garden with post and rail fencing front and rear with sections of concrete pathing giving access on three sides. The approach from the road is via wrought iron gates hung on brick piers with a maximum opening of 9 feet. There is a concrete driveway and 'T' parking/turning area and to the north is the Winkleigh Parish Cemetery.

I believe the property was built during the early 1940's forming part of the wartime airfield complex. The original purpose of the building is unknown to me but was undoubtedly for military associated purposes and not constructed specifically as a dwelling. The building faces approximately east at the front.

Construction

The property is constructed principally of cavity brick with the exception of the garage section which is single skin brick. The walls incorporate nine brick piers east and west which support steel framed roof trusses covered with metal profile sheeting lined with felt on the underside; all of the external walls are cement rendered and are probably supported over a concrete raft. To the east and south are open porches of brick construction also rendered and colourwashed beneath pre cast concrete slab flat roofs. Guttering is half round PVC attached to timber fascia boards. Windows are PVCu double glazed units set over original concrete cills, some of the windows incorporate trickle vents and others do not. The front door is PVCu double glazed; the south side door is timber. Windows serving the garage section are original metal crittall and the garage is served with a metal up and over door.

Internally the floors are concrete/screed. The internal dividing walls are single skin brick with render and plaster facings and the majority of the ceilings are fibreboard.

The property is connected to mains water and mains electricity. Drainage is to a private off lying receptacle. Domestic hot water and heating is oil fired.

There is approximately 200/250mm fibreglass quilt laid over the fibreboard ceilings and I believe cavity wall insulation has been added at some stage in the past.

There is a brick dividing wall forming the division between the dwelling and the garage.

Limitations

My inspection and conclusions have been drawn from a visual inspection of the visible surfaces both externally and internally, I have not however carried out any destructive or invasive investigations and the property was occupied by the current tenant at the time of my inspection. Floors throughout had fitted carpets/coverings and the property was furnished. The garage was also full of stored items.

The Accommodation

One step up to:

HALL EAST 'L' SHAPED with fixed carpet, radiator. From the hall, panelled door to:

SITTING ROOM EAST AND SOUTH with fixed carpet, radiator, brick fireplace and tiled hearth (currently sealed).

From the hall, shallow step down to:

DINING ROOM WEST with fixed carpet, brick fireplace and tiled hearth (currently sealed), radiator, panelled door to:

WALK-IN PANTRY/BOILER ROOM WEST with oil fired boiler.

From the dining room, panelled door to:

KITCHEN SOUTH with door to porch, stuck vinyl over flooring, radiator, kitchen units, trap to south roof space area, high level electricity meter and consumer unit.

From the hall, panelled door to:

STORAGE CUPBOARD

From the hall, panelled door to:

BATHROOM WEST with stuck vinyl over the floor, radiator, pedestal wash basin, close coupled WC, acrylic panelled bath, trap to central roof space.

From the hall, panelled door to:

BEDROOM ONE EAST FRONT with radiator.

From the hall, panelled door to:

BEDROOM TWO WEST REAR with radiator.

From the hall, panelled door to:

BEDROOM THREE EAST FRONT with radiator.

The Main Chimney Stack

This is constructed of unrendered brick sealed to the roof covering with lead flashing; a TV mast is attached with the usual wrap around cable. The head of the chimney has been capped with a concrete slab and air bricks incorporated just underneath this.

In the past the probability is that the chimney has been capped because water ingress has been occurring and there are some internal historic water stains to support this, and indeed some inherent damp content within the brickwork to the lower level where passing through the roof space. This is due I believe to porosity to the brickwork and the somewhat exposed nature of the building generally.

The chimney serves brick fireplaces within the sitting room and the dining room and I notice the hearths which are tiled do not project to today's requirement of 500mm. Obviously if the chimney was ever opened up for re-use the hearths would need to be extended to comply.

The Former Water Tower South Side

This forms an integral part of the structure; it is of brick construction with a concrete slab at the head rendered and colourwashed but with severe cracking and deterioration to the rendering generally and adjacent to this on the left hand side is an almost flat concrete shuttered slab forming the roof over the porch. There is some degree of porosity to the concrete and also the south west prevailing weather is allowing water to penetrate the cavity resulting in staining and some softening of the corresponding unrendered brickwork within the kitchen. The dampness here is in close proximity to the electricity meter and consumer unit.

The Main Roof

The main roof is pitched design comprising a series of steel framed trusses with a shallow pitch of approximately 22 degrees which are supported on integral brick piers forming part of the construction of the main walls. There are three sawn timber purlins per pitch which support metal profile sheeting lined on the underside with felt which is supported on galvanised wire mesh to prevent the felt from sagging. There is a purpose ridge capping and verge cappings and the roof extends in the same material over the garage section.

Some years ago the roof covering was replaced under an insurance claim after storm damage.

I have gained access to the underside of the main roof from the ceiling trap within the kitchen and the ceiling trap within the bathroom as the roof space is divided by an internal brick wall and a further brick wall which extends through the roof space area forming the division between the accommodation and the garage. Extreme caution needs to be taken when entering the roof space because approximately 200/250mm fibreglass quilt is laid over the ceilings and the joists.

Upon entering the roof space areas it is immediately apparent that there is a build up of condensation on the underside of the roofing felt and undoubtedly on the underside of the metal profile sheets. The condensation will vary in its intensity depending upon the weather conditions; the likelihood is that it will be extreme during very cold or frosty weather where condensing (into water droplets) will occur. This has been causing staining in various places to the timber purlins and also the droplets fall onto the fibreglass quilt insulation. During certain weather conditions it is my opinion that the water droplets track on the underside of the felt and drip over the head of the main walls and the edges of the ceilings and there are certainly several places within the bungalow where there is dampness and water staining to the corresponding areas to substantiate this.

Although not visible because of the insulation material, one must bear in mind there will inevitably be electrical cables and junction boxes running over the ceilings which are also potentially in contact with the general condensation/humidity within the roof space area, and in particular an electrical spur box attached directly to one of the purlins on the eastern roof slope which serves a unit within the roof space added at some time in the past in an attempt to try and control condensation.

Guttering and Rainwater Ware

Guttering to the front and rear is half round PVC with purpose brackets attached to timber fascia boards. There are PVC rainwater pipes which discharge into gullies and I notice that some of the kerbs are cracked/defective and are partially obstructed. I believe these are in part connected to soakaways and I believe in part connected to the foul drainage system which currently would not comply but would not necessarily have been a regulation at the time the property was constructed. The guttering has been repaired in the past with a somewhat mismatch of materials. The guttering is very poorly aligned and undulates and sags.

Proper and adequate gutter installation has always been an inherent problem because the integral piers within the construction of the building that support the roof trusses, by nature of their purpose, rises to the height where the trusses rest front and rear of the building. The height of these piers prevents the ability to properly align the guttering with a sufficient fall and as a result water spillage/overflowing can easily occur particularly during heavy rain

conditions. In addition to this various gutter joints leak all allowing spillage against the fabric; this spillage also occurs against the base plinth of the building which projects slightly from the line of each elevation.

To the north eastern corner a rainwater tub has been introduced filled by a rainwater pipe which once discharged into a gully in close proximity. There is a back-fall on this rainwater tub and no overflow pipe therefore water spills against the fabric of the garage and the corresponding plinth and I notice that the corresponding gully is in any event obstructed.

The Main Walls

As previously mentioned I consider the property was probably constructed over a concrete raft. This is difficult to confirm categorically without excavation or destructive investigation but certainly I know of other buildings associated with the same wartime installation (some of these now demolished) that were definitely built over concrete rafts. The construction of the walls is cavity brick which incorporates nine integral brick piers to both the front and rear elevations including the garage section and there is a projected base plinth. The upper section of the south gable wall as viewed from within the corresponding roof space has an inner leaf of concrete block. As mentioned the former water tower to the south is also constructed of solid brickwork and there is single skin brickwork forming the two small open porches and the garage section. All of the external walls are cement rendered and colourwashed.

As far as I can determine concrete lintels form the spans over the various apertures; certainly this is the case within the small boiler room and the kitchen because these are clearly visible as the walls internally to these areas have never been rendered or plastered merely paint applied over the brickwork.

For some inexplicable reason when the property was constructed the integral piers that support the roof trusses were built into the cavity so the inner face of these form the inner face within the building itself therefore although the walls are of cavity construction the walls are solid taking the line of each of the piers. To have achieved a continuous cavity the piers would need to have been constructed into the outer leaf brickwork only.

The condition of the external rendering to the main outer walls and the rendering over each of the piers and the projected base plinth is extremely poor; there is very considerable cracking crazing and some areas of detachment to the rendering. I believe this has become progressive over many years and as a result the high damp content within the rendering has resulted in frost action and deterioration and breakdown of the rendering generally. Once the rendering becomes cracked hollow and porous water ingress occurs into the brickwork. Further water ingress occurs where water overflows from the poor and ill-aligned guttering and also on to the head of the integral piers.

Upon careful examination of the external walls there are a number of drill holes that have been infilled/made good. This indicates to me that at some stage in the past cavity wall insulation has been injected into the walls and while under normal circumstances this is beneficial from the point of view of thermal insulation in this case I consider it is proving a detriment because the insulation material can become affected by the dampness transmitted into the inner leaf of the cavity. Also the cavity wall insulation can allow dampness to be drawn by capillary at the base of the walls where I believe there to be failure of the original damp proof course; and also one could not rule out the possibility of there being cement droppings at the base of the cavity from the time of construction forming a bridge between the outer and inner leaf.

I understand from the tenant that some time ago a section of the cavity wall within the western bedroom was opened and a sample of insulation material removed which was saturated. Parish Council members may have some further knowledge regarding the circumstances.

There is considerable damp penetration to the north western side of the western bedroom two from the dividing brick wall between the garage and I notice from the garage side that there are two full height fracture cracks within the brickwork forming this division.

One of the rear concrete window cills is cracked potentially allowing further damp ingress.

When the property was built the criteria for the wall ties which form the bond between the outer and inner cavity leaves was inferior to modern day design so there is a strong possibility that this component is failing due to corrosion particularly with the high damp content into the walls.

Damp Proof Course

Although not visible it is my opinion that a bitumen or bitumen felt damp proof course would have been incorporated at the time of construction. It is my opinion that the damp proof course has now become largely ineffective by breakdown of the material and in any event the likelihood is that the damp proof course has been bridged where external dampness has been drawn by capillary where the external rendering/base plinth touches the ground level and the general failure and cracking of the external rendering.

Windows and External Joinery

All of the windows have been replaced with PVCu double glazed units set over the original concrete cills. Some of the windows incorporate trickle vents although not all. At the time of my inspection there was a general build-up of condensation on the inner face of the double glazed units because of the high humidity within the building. The front door is PVCu double glazed. The south door between the kitchen and the open porch is timber and has deteriorated. There is deterioration to the original metal crittoll windows serving the garage although this is not affecting the dwelling as such.

External Decorations

The externally rendered walls have been painted with an acrylic/emulsion based paint which has now become badly weathered and as previously outlined there is extensive failure of the external rendering.

Internal Inspection Room by Room (General Comments Only)

Step up to front door with broken/fractured step.

HALL

With fixed carpet over concrete/screed floor and single skin brick dividing walls between each of the rooms. High damp content to the inner face of the external wall.

SITTING ROOM

With fixed carpet over concrete/screed floor. Incidents of high damp content to the inner face of the external walls and also at high level underneath the ceiling. Particularly high damp content to the inner face of the integral piers.

DINING ROOM

With fixed carpet over concrete/screed floor. Some historic staining to the underside of the chimney breast. Damp staining and high damp content underneath the ceiling and the window lintel area. The inner face of the external wall from skirting level to approximately window cill level has in the past been dry lined; the beginning of some damp seepage is occurring at the low level just above the skirting. I have been able to raise a section of the carpet within this room and notice there is some sporadic dampness within the screed floor.

WALK-IN PANTRY/BOILER ROOM

Within this area the inner face of the cavity walls are unrendered painted brick with some incidents of dampness and high condensation staining.

KITCHEN

With stuck vinyl over concrete/screed floor. Again unrendered brickwork with painted finish to the inner cavity leaf. High damp content and perishing of the brickwork in various places and also at high level in close proximity to the electricity meter/consumer unit and its association to the former water tower and flat concrete shuttered roof.

BATHROOM

With stuck vinyl over concrete/screed floor. High levels of damp penetration to the inner face of the external walls and at the head of the walls and penetrating into the ceiling.

BEDROOM ONE

With fixed carpet over concrete/screed floor. Incidents of high damp and condensation staining to the inner face of the external wall and to the line of the integral pier.

BEDROOM TWO

With fixed carpet over concrete/screed floor. High damp and staining to wall plaster inner face of the external wall and high damp content into the floor screed and the inner face of the integral pier. The dampness also returns to the north side into the dividing brick wall between the garage. There is rot to the skirting boards.

BEDROOM THREE

With fixed carpet over concrete/screed floor. Incidents of high damp content to the inner face of the external wall and the integral pier.

Summary

My inspection has confirmed that the property is suffering from very extensive dampness and I feel it should be stated that the high dampness and condensation/humidity is beyond the control of the current tenant. Examination of each of the elements of the building identifies why the dampness is occurring; the problems are mainly inherent:

- 1 The nature of the roofing material where condensation can form.
- 2 Inadequate poor and leaking guttering and the inability to properly align the guttering because of its relationship to the integral piers which support the main roof trusses.
- 3 The fact that the integral piers are constructed of solid brickwork and form the inner face of the internal walls and by today's criteria incorrectly constructed as each one bridges the cavity.
- 4 Extensive failure of the external rendering to the walls and the integral piers and the projected base plinth and general failure/deterioration to gully/kerbs around the building accepting rainwater pipes.
- 5 The introduction of cavity wall insulation almost certainly forming a bridge and source of dampness between the outer cavity leaf and inner cavity leaf.

- 6 Dampness being transmitted from the defective rendering etc associated with the former water tower and the concrete shuttered flat roof adjacent to the kitchen.
- 7 The probability is that the raft/concrete screed floors are unlikely to contain a membrane.
- 8 The lack of mechanical extraction facility to serve the steam environments of the property (the kitchen and bathroom).
- 9 The general humidity build up within the property because of the high levels of dampness.
- 10 The lack of trickle vents to many of the windows.

Having identified the various sources of dampness into the fabric of the building the dilemma arises regarding remedial action. The difficulty is that obviously one cannot alter the inherent deficiencies. Dealing with the matters individually it is not in my opinion a viable option to consider complete replacement of the roof frame and covering for a traditional type not least the engineering and costs involved. Further roof ventilation might help but this is going to be difficult to achieve and may ultimately have little real effect particularly in extreme conditions.

The inadequate guttering situation is also a matter that is not straight forward. To achieve an adequate guttering/rainwater system one needs correct falls to allow the guttering to operate in a satisfactory manner. The height of the integral piers is currently determining how the guttering can be fitted. Some slight adaption may be able to be undertaken to the head of the piers but without opening up the structure I cannot see exactly where the feet of the trusses sit onto the piers or how far the steelwork projects. In any event one would need to be extremely cautious of cutting the head of the piers which might potentially crack and loosen the area where the roof trusses are anchored.

The external rendering to the walls and the integral piers and the base plinth is in particularly poor cracked hollow and deteriorated condition. As outlined within the report this has now become largely perished and porous. This poses another difficulty, on the one hand the defective rendering needs to be stripped but from a practical stand point it is my opinion that some of the rendering may deface or damage the brickwork during the process of trying to remove it. Clearly it cannot remain in its present deteriorated condition and there is no possibility of considering any form of rendering over the existing poor rendering. There are purpose external claddings that under some circumstances might be an option however in this case the overhang of the roof is particularly shallow and there is the complexity of working around the projection of all of the external piers.

The rainwater gullies/kerbs are a relatively easy matter to remedy by simply clearing and re-building the kerbs in brick; and the rear cracked window cill

can easily be sealed. It is also a relatively simple matter to introduce mechanical extraction facility to the steam environments of the property.

Rising dampness as a result of the failed/failing damp proof course could be rectified with the introduction of a modern silicone injection damp proof course but this in isolation would in my opinion be pointless and without massive opening up it is difficult to see how the cavity wall insulation can now be effectively removed (where this is forming a bridge between the damp outer walls and the inner cavity leaf). Much of the internal plasterwork has become perished and stained as a result of the dampness which would need to be hacked off and reinstated and any sections of decayed skirting board replaced.

One must also consider the fact that it is extremely unlikely there is a damp proof membrane underneath the solid concrete/screed floors. Given the current circumstances with the fitted carpets and the furnishings in the property I cannot give an accurate assessment of the levels of dampness within the floors but to those areas where I have been able to raise the carpet edges there are certainly high incidents of damp content indicating this may be more widespread and not necessarily localised. This being the case there are bitumen floor lays or tanking systems but this would need to be carried out in conjunction and prior to other damp proofing to the walls and the re-plastering work.

Also the dampness within the property from the underside of the roof and guttering spillage etc at high level has resulted in some deterioration to many of the ceilings. The ceilings themselves are fibreboard (a composite board widely used in the 1940's up until the 1970's). The fibreboard here has deflected quite considerably over the years because of the relatively wide spacing of the ceiling joists and the nature of the material. I would also mention fibreboard is a non-fire retardant material which would not comply with today's building regulations although did not comply at the time of construction.

The internal dividing walls between each of the rooms do not show signs of dampness to any extent so it would appear that when the building was constructed these also incorporated a damp proof course which because of its protective nature continues to be effective.

My conclusion is there is no real effective way that all of the failures and dampness can be fully and effectively rectified. One of the difficulties I would anticipate is that any contractors asked to carry out remedial works would be very reluctant to provide any form of long term guarantee for work they are undertaking to a building which incorporates inherent design deficiencies because of the potential liability they may later attract. The building has given nearly 70 years of service but by today's standard must be deemed as a sub standard building for a dwelling by today's criteria. Therefore any capital expenditure is being introduced into a building of this status.

No doubt the Parish Council will give very careful consideration to the viability of the very considerable capital expenditure that is required to make any real impact upon the problems, always bearing in mind that the inherent deficiencies cannot be rectified. Various photographs are annexed to this report to show the effects of the deficiencies.

I trust my report and annexed photographs provide you with a clear picture of the failures and provide a platform for the Parish Council to make an informed decision regarding the future viability of the building.

Should you require any further information or assistance please do not hesitate to contact me.

Yours sincerely

**N W REYNOLDS MRICS FCIQB FBEng
CHARTERED BUILDING SURVEYOR
PARSONAGE WARD & CO**

Mrs Nicki Bullen
Clerk to Winkleigh Parish Council
The Bungalow
Hatherleigh Road
WINKLEIGH
Devon EX19 8AP

Date: 1 April 2010

Dear Nicki

RE: CEMETERY BUNGALOW, WINKLEIGH

Further to your written instruction 26 March 2010 to carry out a report relating to the dampness at the above property I have pleasure in enclosing my findings for the Parish Council's consideration. I enclose two copies of the report for the Parish Council's convenience and also a copy of my firm's account for your kind attention in due course please.

Kind regards.

Yours sincerely

**N W REYNOLDS MRICS FCIQB FBEng
CHARTERED BUILDING SURVEYOR
PARSONAGE WARD & CO**

Winkleigh Parish Council
C/O Mrs Nicki Bullen
The Bungalow
Hatherleigh Road
WINKLEIGH
Devon EX19 8AP

Date: 6 April 2010

INVOICE NO: 2722

Site visit and report over damp issues
Cemetery Bungalow, Winkleigh
Fee as per quotation:

£350.00

TOTAL:

£350.00

RECEIVED CHEQUE WITH THANKS

Mrs N Bullen
The Bungalow
Hatherleigh Road
WINKLEIGH
Devon EX19 8AP

Date: 24 April 2010

Dear Nicki

RE: CEMETERY BUNGALOW, WINKLEIGH

Thank you for your letter of 22 April and cheque in full settlement, my firm's receipted account is enclosed.

Kind regards.

Yours sincerely

**N W REYNOLDS MRICS FCIQB FBEng
CHARTERED BUILDING SURVEYOR
PARSONAGE WARD & CO**