

From: peter willmott [REDACTED]
Sent: 13 March 2017 13:35
To: Will Pearce

[REDACTED] Peter Willmott

Subject: 56, High Street, Bognor Regis - former Store Twenty One. Structural feasibility study.

Dear Will

Following our studies of the records of the existing building including those supplied by you and those inspected by us at Arun District Council offices and with reference also to my visual inspection of the premises I am pleased to confirm the following.

Our mutual client Matthew Reynolds wishes to develop the above building to convert the existing upper floor to domestic accommodation and to add two further floors also for domestic accommodation. The ground floor usage will be retained as existing for commercial retail. The current stair access from ground to first floor will be removed and stair access to all upper floors will be by way of a new external stair sited to the rear of the building. The indicative arrangement as proposed is shown on your preliminary drawings 4547/3B, 4A and 06. These indicate that front and rear elevations will be lightweight clad and I assume can also be fully lightweight construction of some form. The ground floor storey height to the rear will be retained even if clad with the addition of one personal door opening to the new stair. The existing rear wall at first floor will be removed and at all upper floors the new rear wall will be set inboard so as to afford deck access to the new flats of which there will be 3 Number per floor.

Appraisal

The existing building is a reinforced concrete framed having concrete columns supporting ribbed hollow pot floor and roof constructions via beam elements. The first floor is designed for a Live load of 5.0 KN/Sq Metre plus 1.0 for partitions and the roof for 0.75 KN/Sq Metre. The roof finishes will most probably be set to falls although I only viewed this from the top floor of Reynolds store on the opposite side of the road. The total build up of roof surface finishes including asphalt, screed, insulation and sheathing felt amounts to a load provision of 1.0 KN/Sq Metre.

The foundations are of reinforced concrete spread bases designed for a nett increase in ground bearing pressure of 75KN/Sq Metre. The soils report advised a design ground bearing pressure of 120KN/Sq Metre. The difference is a provision for the extra over weight of concrete versus the weight of soil removed and is conservative.

Considering the building as a whole and on the basis that the existing roof coverings will be removed as indeed they will have to be the weight savings amount to the first floor live and partition loads and roof finishes plus live load totalling 7.75KN/Sq Metre. The add back will be as follows –:

1st, 2nd and 3rd floor live loads plus lightweight partitions totalling 2.0 KN/Sq Metre x 3 Floors equals 6.0 KN/Sq Metre Total.

Roof live load of 0.6 KN/Sq Metre.

Dead weight of new finishes to form the new first floor surface – this will need to be lightweight say at 0.3 KN/Sq Metre.

Dead weight of one new floor assuming timber joisted at say 0.75 KN/Sq Metre (allowing some addition for Party Floor construction).

Dead weight of a new roof which could be metal deck plus insulation and therefore ultra light but say allow 0.5KN/Sq Metre.

i.e. total add back is 8.15 KN/Sq Metre.

Ignoring a new frame for upper floors the the difference in all up weight of the building is minimal and this ignores the benefits of live load reductions we are allowed to take for taller buildings.

Conclusions

I conclude that insofar as the existing frame and foundation components are concerned there is sufficient capacity to permit the addition of two storeys specifically for domestic accommodation. There are further considerations and design provisos as follows –:

Existing 1st floor adequate by inspection since new loads will be less than existing. You will need to develop the specification for this being a party floor and this may involve some further assessment. The existing stairwell needs infilling.

Existing roof structure – there is a small increase of load to this structure estimated currently at 0.05Kn/Sq Metre but only on the basis that we can remove existing roof coverings and replace with lightweight floor surfacing. Given this then in my opinion the roof structure can be retained for use as the second floor. The specification will need to provide for this to be a Party Floor.

New 3rd floor and roof – we need the new floor and roof to be lightweight. The floor could be timber joisted to Party Floor standard and roof preferably metal deck or similar. The whole could potentially be an offsite package in timber or metal frame. All loads must be directed back to the current column positions and this will demand a column and beam frame designed for lateral wind loads.

Building stiffness - there will be an increase of horizontal wind loads to the existing frameworks which we will need to consider. The retention of masonry wall components at ground floor may be necessary for the desired building rigidity but subject of further analysis.

Cold Bridging – potential cold bridging will be introduced at first and second floors where you create the walkways.

Rear wall 1st to 2nd – this will be lightweight but will set up a line load on the existing first floor. This is something we will address as the design is developed but may demand some local enhancement. New upper floor walls will be supported on frameworks but must be lightweight.

Overall then you will see from the above that given the constraints noted on design the addition of two floors as required is in my opinion achievable. Detailed design aspects will need to be addressed as they are identified. There are significant **Party Wall Act** considerations and if the adjoining owner requires to be represented by his own surveyor a need for them to buy into my assessment. The same applies to the

Building Inspector. For both considerations I advise consultations in advance of detailed proposals and submittals and the above will need reshaping for such purposes.

There are matters you will wish to discuss so I have not copied this to Matthew as yet. I have copied this to Neil Stanaway with a request that he checks what I have said and confirms his agreement.

Peter

Peter Willmott CEng;FIStructE
Consultant
Archibald Shaw
One Little London
Chichester
West Sussex PO19 1PP



This email and any attachments are confidential to the intended recipient only and may also be privileged. If you have received it in error please delete it from your system and notify the sender.

The copyrights of all attached files on this email are the property of Archibald Shaw LLP and may only be used in connection with the project for which it was prepared.

Registered in England. Registered Office: Archibald Shaw LLP One Little London, Chichester PO19 1PP. Reg No. 0C310866

