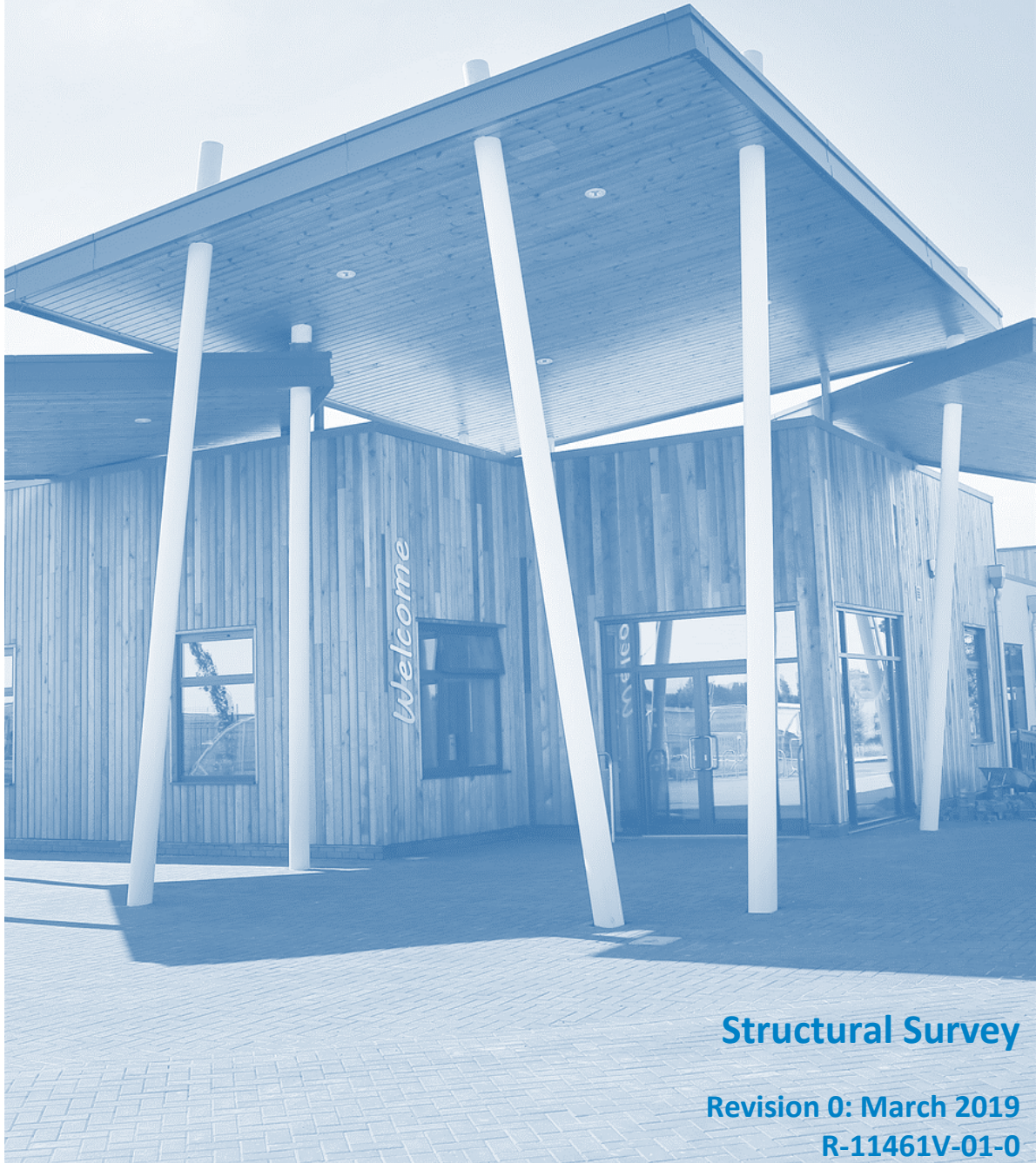


- Structural Engineering
- Professional Advice
- Geotechnical & Environmental
- Infrastructure Design
- Planning Services
- Surveying



**The Springfield Public House
Springfield Boulevard
Milton Keynes
MK6 3HR**



Structural Survey

Revision 0: March 2019

R-11461V-01-0

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Report Reference R-11461V-01-0
Date Revision 0: March 2019

Report Originators

Prepared by



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Revision	Date	Description	Prepared	Reviewed
0	12/03/2019	Initial issue	db	



Contents

1.0 Introduction and Brief 1

2.0 Description of Survey 1

3.0 Description of Property and Local Geology 2

4.0 Observations 2

5.0 Conclusions 7

6.0 Recommendations 8

7.0 Sketch Plans 10

8.0 Photographs 11

9.0 Schedule of Limitations 21

1.0 Introduction and Brief

- 1.1 This report describes the general visual Structural Survey carried out on the Springfield Public House acting on instructions received from Dominic Warner of Campbell Park Parish Council under order number 112-18/19.
- 1.2 We understand that neither existing or proposed drawings were available at the time of our visit, but that broadly proposals are likely to include structural remodelling at first and ground floor levels and possibly the installation of solar panels on the roof.
- 1.3 Where required to inform our conclusions dimensional survey measurements were also undertaken.
- 1.4 The survey was undertaken on 5th March 2019 and the report produced by Mr D Biddulph of JPP Consulting. The weather conditions were dry and bright.
- 1.5 This report is to be read in conjunction with our “Limitations of Structural Inspection” a copy of which is enclosed.

2.0 Description of Survey

- 2.1 The survey generally comprised the following elements:
 - a) Inspection of grounds surrounding buildings on the property recording appropriate details considered relevant including carrying out an approximate dimensional survey to locate positions of trees, estimate their height and attempting to identify species. It should be noted we are not able to guarantee the accuracy of identification of tree species and we may recommend an Arboriculturists report.
 - b) Inspection of the exterior of the building from ground levels recording the current extent of any observed crack and movement damage.
 - c) Inspection of the building internally, recording the current extent of any observed crack and movement damage.
 - d) Recording details of surface and sub-surface drainage systems close to the property where access would allow.
 - f) Photographic records.
 - h) Brief examination of available Geological data.
- 2.2 Our “Schedule of Limitations” is presented in Appendix D and forms part of our report.

3.0 Description of Property and Local Geology

- 3.1 The building comprises a purpose built public house of two stories, generally 'T' shaped in plan of traditional brick and block load bearing masonry and isolated steel beams under an interlocking concrete tiled hipped roof. The first floor is formed within the roof space with a number of recessed windows and louvered gables to each hip. The roof has a substantial overhang to the perimeter eaves with concealed guttering behind a deep timber board clad fascia. There is also a basement covering a substantial area of the building with common stairwell access through to the first floor.
- 3.2 The front entrance is orientated to face south west and the building occupies a sloping site with ground levels falling from north to south providing split level access to the basement entrance doors and elevated patio paving supported by brick faced retaining walls extending above paving levels to provide parapet brickwork.
- 3.3 There are a number of mature trees, bushes and shrubs growing within the gardens of the subject property and located on public grounds outside the boundary hoarding. There are a number of manhole covers on the site, although the covers could not be lifted.
- 3.4 Inspection of the British Geological Survey Map of the area suggests the topography local to the area to be formed in deposits of Oadby Member overlying Mudstone. These deposits typically comprise gravels and plastic (shrinkable) clays that are prone to volume change with variations in moisture content.

4.0 Observations

- 4.1 General schematic layout plans also indicating areas of crack and movement damage noted are shown on drawing numbers 11461V/SK01 to SK04 in Appendix A with photographic records presented in Appendix B.
- 4.2 Externally, we identify the elevations as walls 1 to 12, also refer to drawing number 11461V/SK02.
- 4.3 We estimate the building was constructed circa.1980's, its recent history is unknown except that we understand it has been empty for approximately 18 months.
- 4.4 Inspection of old ordnance survey maps of the area suggest the building occupies a site intersected by previous field boundaries with a number of the remaining trees observed during our survey.
- 4.5 We observed through isolated areas of ceiling removal that the ground floor comprises a pre-stressed concrete plank construction, the first floor is similar with perimeter voids within the timber truss and rafter roof construction.

4.6 With reference to drawing number 11461V/SK02 and SK03, we comment as follows.

4.6.1 **Wall 1**

There is evidence of longstanding crack and movement damage to the northern end of this elevation suggesting a downward movement in foundations has occurred. Crack patterns include diagonal stepped and horizontal bed joint displacements with magnitudes up to 3mm. There is evidence of previous mortar repairs and in particular adjacent to a mastic vertical joint.

Internally, within the disabled toilet and old boiler room and adjacent rooms to the north eastern corner, there is evidence of a rotational movement having taken place towards wall 1, with tapering vertical fractures of 15mm at the top, diminishing towards the floor. Adjacent door frames have dropped, such that the top of the door binds on the frame.

There are Avonguard crack monitoring gauges fitted across some of the fractures, also indicating the origin of the crack and movement damage to be longstanding. The gauges were typically fixed with the red cross hairs aligned on the 0-0 axis. You will note that vertical movement in the order of 4mm has taken place since fitting.

We also noted the downpipe to the right hand end of the elevation is at an angle.

4.6.2 **Wall 2**

No significant structural defects observed.

4.6.3 **Wall 3**

Evidence of some repointed brickwork and an infilled vent, otherwise no significant structural defects observed. This elevation also has a mastic movement joint.

4.6.4 **Wall 4**

There is some evidence of stepped fracturing to this elevation, typically of magnitude 1.5mm tapering diminishing to hairline below the windows.

The fracture extends at high level adjacent to the front corner.

The eaves soffit overhang boarding is locally missing at this point. This reveals evidence of water damage to the roof and soffit support timbers, with the later exhibiting decay.

4.6.5 **Wall 5**

No significant structural defects observed.

4.6.6 **Wall 6**

No significant structural defects observed.

4.6.7 **Wall 7**

This elevation increases in height from damp proof course as ground levels slope down to the basement entrance doors, from 1.9 metres to 2.55m. There are two vertical fractures seemingly emanating from damp proof course level one extending down 525mm through bricks, the other extending down 975mm, again cracking the bricks. Both fractures are very slight in magnitude and in our opinion most likely the result of thermal movements.

4.6.8 **Wall 8**

This elevation houses a double door entrance to the basement. There appears to be a concrete lintel with a steel plate supporting the outer leaf. The steel plate exhibits a very slight sag and appears to have tilted forward slightly. The bed joints in the brick courses immediately above have been repointed we suggest due to the deflection in the lintel. The panel above the opening has an area of repointed masonry particularly beneath the upper level window and there is a very slight diagonal stepped fracture above and to the right of the opening, possibly reflecting the very slight sag in the lintel.

4.6.9 **Wall 9**

No significant structural defects observed.

4.6.10 **Wall 10**

No significant structural defects observed.

4.6.11 **Wall 11**

A localised patch of longstanding repointed brickwork adjacent to a movement joint, otherwise, no significant structural defects observed.

4.6.12 **Wall 12**

Inspection of this elevation behind the external boundary wall was restricted as access to this area is prevented by security boarding. We did however observe some minor stepped fracturing beneath the window to the right of the door, not considered structurally significant.

The ground levels fall adjacent to this elevation, such that from our measurements we estimate the basement wall at the south eastern corner will be retaining in the order of 1.3 metres.

There is a vertical fracture extending below the right hand sill of the northern set of three windows. It is slightly tapering from approximately 1mm wide at the top diminishing to hairline at ground level.

4.7 **Roof slopes**

4.7.1 All roof slopes observed did not highlight any obvious deformations or defects, although there is evidence of some locally rotten/missing timber cladding to the recessed window cheeks and evidence of isolated replacement roof tiles.

4.8 External Walls/Retaining Walls

4.8.1 Refer to drawing numbered 11461V/SK01 for Retaining Wall references.

4.8.2 Wall A

This wall comprises 1 metre high brickwork above the upper patio level and measures 280mm thickness. The wall extends a further 1.2m to 1.65m below the patio as a retaining structure to the adjacent ground levels. The wall has rotated away from its abutment with the building, our measurements suggest the retained element to be approximately 25mm out of vertical at its base with a generally curved profile. There are a number of vegetation clusters growing within 1.5 metres of the wall.

There is a 5mm lateral displacement at the damp proof course level in the brickwork below.

We also note the retaining wall does not have any weep holes to relieve water pressure build up behind the wall. There is also moss and damp staining to the wall at low level.

4.8.3 Wall B

This wall again extends above the patio level by 1 metre and is elevated by around 1.8 metres above the lower ground level. The wall is tied to Wall A and to a short return at the right hand end, but exhibits a curvature profile in plan in between of up to 50mm out of vertical at mid-span. A wall is generally considered to be stable provided its centroid falls within its middle third. Thus for a 280mm thick wall it can be up to 46mm out of vertical before its stability is theoretically compromised.

The retaining section of the wall is approximately 30mm out of vertical at its base.

We also note the retaining wall does not have any weep holes to relieve water pressure build up behind the wall. There are also a number of open mortar joints.

Adjacent to this wall is dense vegetation including brambles. Due to the time of year we are less able to offer suggestions as to their species, suffice to say they appear reasonably established.

4.8.4 Wall C

This wall has similar construction to the above, varying from 1.1 metres above ground level to 1.9 metres. At approximately 3.5 metres from the south western end there is a vertical stepped fracture of slightly tapering magnitude from 5mm to 3mm at the base. The wall also falls along its length from this fracture at 1 in 80, having broken its back. The wall also leans out of vertical at 1 in 53, but is still within its middle third.

4.8.5

Wall D

This is a 215mm thick generally freestanding wall, but becoming retaining towards its southern end. The wall has three buttress piers along its length. We noted that the wall leans out of vertical in the order of 35mm, which is on the limit of its stability. The buttress piers will enhance its stability, they appear to be consistent with the age of the wall itself and we therefore consider the whole structure to be leaning out of vertical. This is corroborated by a wide tapering mortar fillet at the southern return vertical abutment with the main building of approximately 65mm diminishing to 50mm.

4.9

Internal First floor

No significant structural defects generally, although a significant sag in the ceiling boarding to Bedroom 1, shown on drawing number 11461V/SK04. The sag in the ceiling appears to have created lateral displacement of the plaster finishes along the wall junctions.

5.0 Conclusions

- 5.1 From our visual observations we conclude the following.
- 5.2 Our measurements indicate that the front section of the building housing the Disabled WC, Boiler room and adjacent rooms are outside the extent of the basement structure and therefore most likely founded on shallower foundations resulting in some differential movement. Similarly, crack and movement damage to wall 4 and 12 is also potentially foundation related movement due to vegetation influences.
- 5.3 The nature of the crack and movement damage to this area is, in our opinion indicative of a rotational downward movement in the foundations. The potential variation in founding depths will have likely resulted in initial differential settlement shortly following construction, with tree root influence potentially exacerbating the normal seasonal variations in moisture content.
- 5.4 Based on a desk study of the site, the sub-soils are considered likely to be cohesive and thus susceptible to volume changes.
- 5.5 Generally foundations taken down beyond 1.0m depth are regarded as being beyond the zone of shrinkage and swelling caused by seasonal variations in moisture content in cohesive (plastic) soils. Tree root systems tend to extend this zone and magnify its effects with the depth dependent upon the plasticity of the soils, tree type, size and location of the tree from the point of interest.
- 5.6 We consider that various of the trees and vegetation will be potentially extending root systems beneath foundation level. Taking the Oak tree for example, in accordance with the NHBC guidelines chapter 4.2 'Building near trees', a high water demand species the tree is located 9 metres away from the building and in theory will be extending roots to a radius of 1.25 x its height. Considering Ash trees to the south eastern corner outside the site boundaries. These are a moderate water demand species growing within 8 metres of the rear corner. In theory they will be extending roots to a distance of 0.75 x their height. Clearly, there are other sources of vegetation growing in closer proximity around the building.
- 5.7 We are of the opinion the crack and movement damage to the north eastern corner is of longstanding origin and it is apparent that the cracks have been formally monitored, although the history on who and when this was carried out, any conclusions drawn and any recommendations are unknown.
- 5.8 It should also be noted that from our desk study it is possible that a number of trees were removed/root systems severed to facilitate the construction of the building and that some of the damage is indicative of heave/inadequate anti-heave measures, where the soils rehydrate and swell, lifting the foundation.

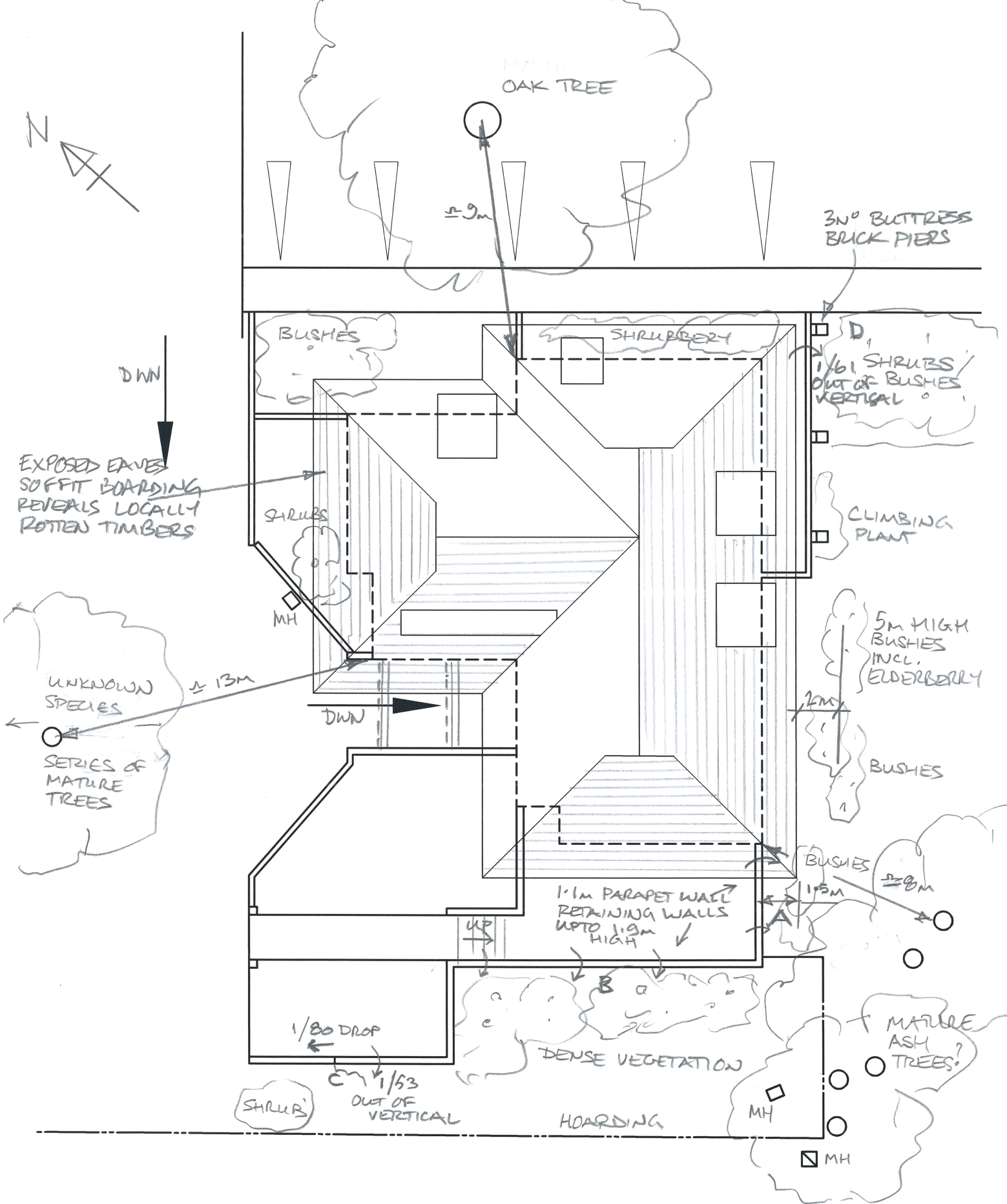
6.0 Recommendations

- 6.1 Unless confirmation from the owners can be obtained to the contrary, we consider, due to the potential external influencing factors, it to be unlikely that the movement has ceased and therefore recommend the following measures are implemented to determine the cause of the crack and movement damage.
- Undertake intrusive investigations to establish the depth and nature of the foundations and sub-soils and to sample the soils and any tree root presence. This shall also include the foundations to the retaining walls and locally excavation to the rear face to establish the likely overall thickness.
 - Due to the number and variety of trees and bushes in close proximity, that are a potential source of damage to the property we recommend a qualified Arboriculturist be appointed to advise on the most effective tree management scheme, in particular given their age in relation to the building.
 - Fit crack monitoring studs in accordance with BRE Digest 343 and carry out regular monitor readings with digital Vernier callipers to establish the rate and magnitude of the damage. This will be required should it be possible to remove any vegetation.
 - It would also be advisable to undertake a condition check on the sub-surface drainage system to verify its integrity and layout.
 - We are able to arrange the above recommended investigations and provide a supplementary report upon receipt of your further instructions.
 - Should it be determined that the movement is related to subsidence, it may be recommended that a claim is submitted to the Buildings Insurers for their due consideration.
- 6.2 Additionally, the ceiling in the first floor bedroom requires replacement.
- 6.3 Due to apparent roof/gutter leakage, remove all fascia cladding to allow inspection of the timber condition and replace/supplement decayed timber.
- 6.4 The brickwork over the double door opening to the basement in Wall 8 has been repointed but there is evidence of reopening. We suggest this is due to an over spanned lintel and recommend this is addressed. It may be possible to reinforce the brick panel above, this can be assessed and carried out by a specialist remedial repair company such as Helifx.
- 6.5 Finally, should you require structural engineering advice once it is known how the internal layout is to be remodelled, we would be pleased to provide a separate fee proposal for your consideration.



In the meantime, we trust this initial report is of assistance, however should you have any points requiring clarification please do not hesitate to contact our office.

7.0 Sketch Plans



Rev - Description

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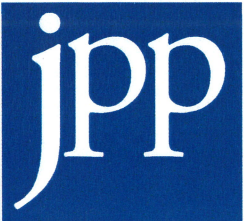
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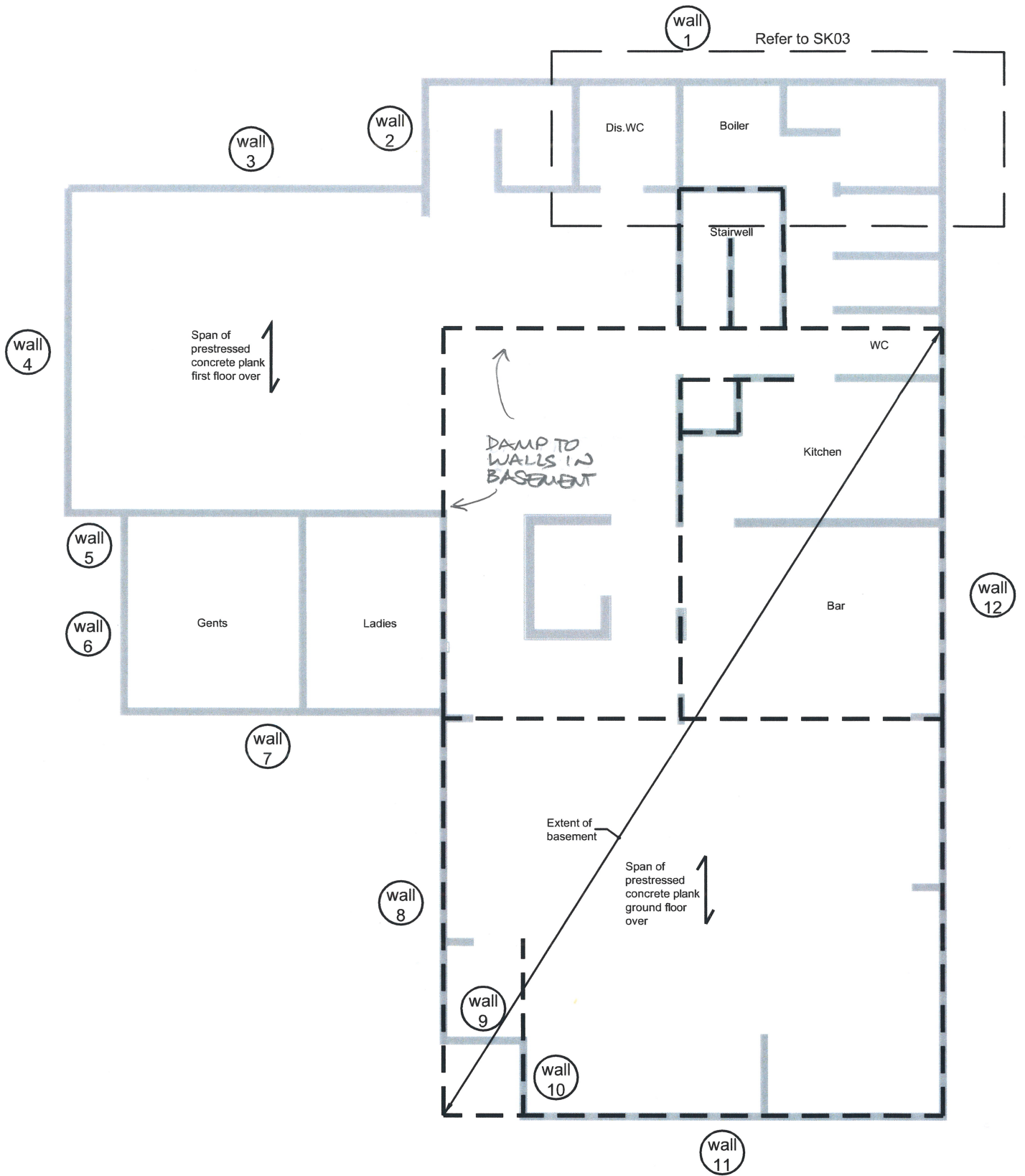
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<input type="checkbox"/>	Manchester T: 0161 6822927	
<input checked="" type="checkbox"/>	Milton Keynes T: 01908 889433	

Drawn By:	db
Chkd By:	
Scale @A4:	nts
Date:	Mar 2019
Status:	FOR INFORMATION
Project No.:	11461V

Client	Campbell Park Parish Council
Project	The Springfield Public House Springfield Boulevard, MK6 3HR
Title	Sketch site plan showing observed external features
Drawing No:	SK01
Rev:	0





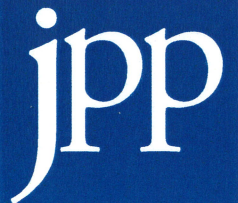
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Chkd By:	
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Date:	Mar. 2019
Status:	FOR INFORMATION
Project No.:	11461V

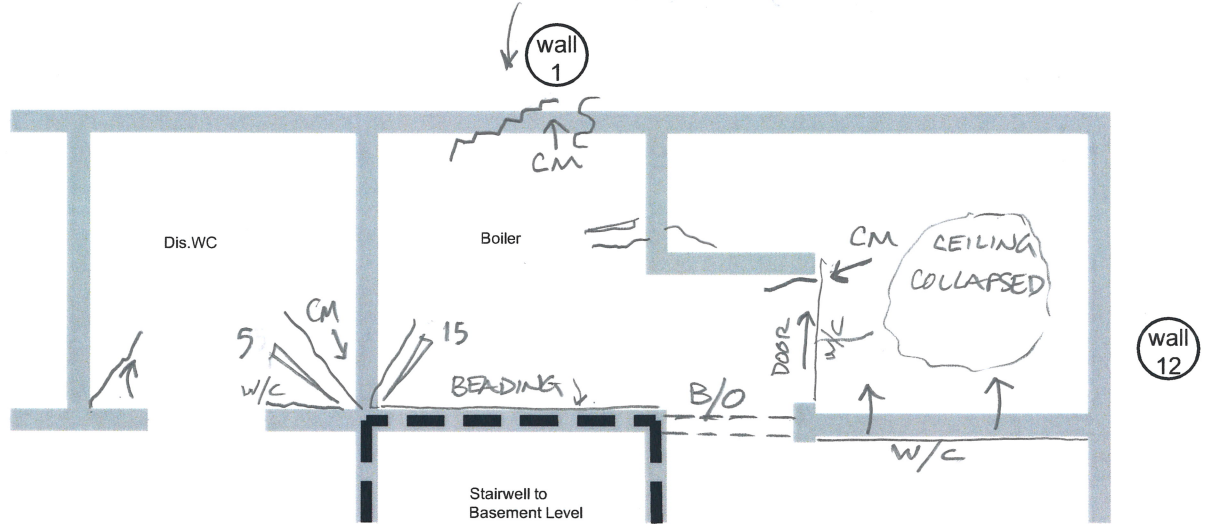
Client	Campbell Park Parish Council
Project	The Springfield Public House Springfield Boulevard, MK6 3HR
Title	Sketch Ground Floor Layout showing observed crack damage
Drawing No:	SK02
Rev:	0

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AVANCEGUARD
 CRACK MONITOR (CM)
 ACROSS EXTERNAL
 RETRO CONSTRUCTED VERTICAL JOINT




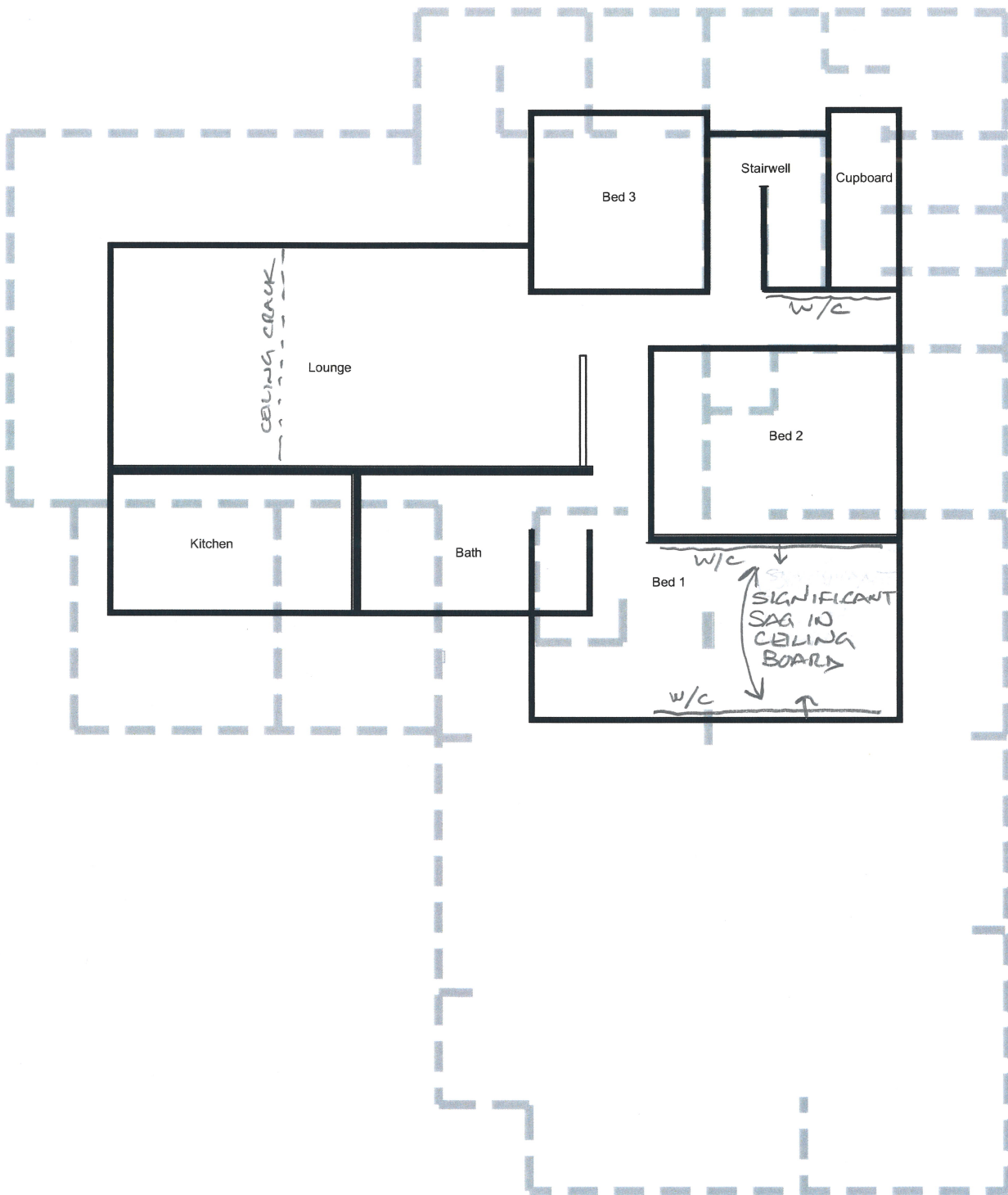
Rev - Description

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<input type="checkbox"/> Northampton T: 01604 781811 <input type="checkbox"/> Manchester T: 0161 6822927 <input checked="" type="checkbox"/> Milton Keynes T: 01908 889433	<ul style="list-style-type: none"> • Infrastructure Design • Structural Engineering • Planning Services • Geotechnical & Environmental • Surveying • Professional Advice 	Drawn By:	db	Client	Campbell Park Parish Council					
		Chkd By:		Project	The Springfield Public House Springfield Boulevard, MK6 3HR					
		Scale @A4:	nts	Title	Sketch Part Ground Floor Layout showing observed crack damage					
		Date:	Mar. 2019	Project No.:	11461V		Drawing No:	SK03	Rev:	0
		Status:	FOR INFORMATION							



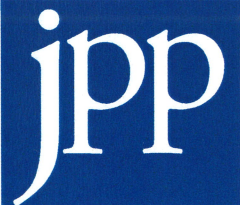
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		Chkd By:		Project	The Springfield Public House Springfield Boulevard, MK6 3HR
		Scale @A4:	nts	Title	Sketch First Floor Layout showing observed crack damage
		Date:	Mar. 2019	Status:	FOR INFORMATION
		Project No.:	11461V	Drawing No:	SK04
				Rev:	0



8.0 Photographs

Photographic Record



1. General View



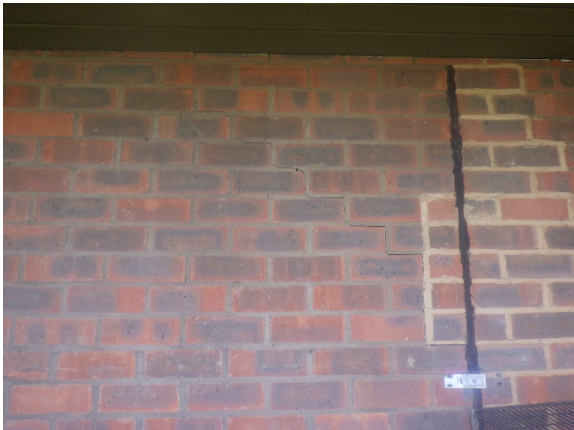
2. Wall 1 brickwork repairs adjacent to joint



3. Wall 1 horizontal and diagonal stepped fracturing and adjacent shrubs



4. Wall 1 horizontal and diagonal stepped fracturing and adjacent shrubs



5. Wall 1 Stepped fracturing at high level adjacent to joint



6. Wall 1 Stepped fracturing above vent grill

Photographic Record



7. Wall 1 Crack monitoring gauge suggesting 4mm vertical movement



8. Fracture to corner of Disabled WC dividing wall with Boiler room



9. Fracture to corner of Disabled WC dividing wall with Boiler room indicating the wall to the left has lifted in the region of 4mm



10. Fracture reflected within Boiler room dividing wall with Disabled WC at rear of stairwell, also showing beading at ceiling junction.



11. Continuation of fracture in 10. Above.



12. Fracturing to Wall 1 within Boiler room

Photographic Record



13. Wall 1 fracturing within Boiler room



14. Crack monitor to Wall 1 suggesting no significant movement recorded



15. Top edge of door binding where frame has dropped



16. Crack monitor to adjacent room suggesting no significant movement recorded



17. Fracturing above door



18. Sagging ceiling to first floor Bed 1

Photographic Record



19. Laterally displaced plaster due to ceiling sag in Bed 1



20. Laterally displaced plaster due to ceiling sag in Bed 1



21. Wall 4 slightly tapering width vertical fracture



22. Wall 4 High level stepped fracturing adjacent to corner



23. Wall 4 Water damage and decay to timbers



24. Wall 7 Very slightly tapering vertical fracture

Photographic Record



25. Wall 7 Very slightly tapering vertical fracture



26. Wall 8 showing very slight sag to door head



27. Wall 8 Panel over lintel has been repointed



28. Wall 8 Slight lateral displacement in brickwork over



29. Wall 12 Vertical slightly tapering fracture



30. Wall 12 continuation of fracture in photo 29.

Photographic Record



31. Wall A displacement



32. Wall A displacement



33. Wall A No weep holes



34. Wall A Adjacent vegetation



35. Wall A 5mm lateral displacement at dpc level



36. Wall A 6mm out of vertical

Photographic Record



37. Wall B Leaning out of vertical



38. Wall B Rear face also showing dense vegetation



39. Wall B Rear face open joints, no weep holes



40. Wall C Tapering stepped fracture



41. Wall C Top of wall falls at 1 in 80



42. Wall D out of vertical 1 in 61

Photographic Record



43. Wall D Buttresses and vegetation cut down prior to Spring



44. Wall D Wide tapering mortar fillet at abutment with building



45. Oak tree within 9 metres of Wall 1



46. Ground covering shrubs adjacent to Wall 1



47. Bushes adjacent to Wall 3



48. Copse of established trees adjacent to Wall A, B. 11 and 12

Photographic Record



49. Copse of established trees and vegetation adjacent to Wall A, B, 11 and 12



50. Established vegetation adjacent to Wall A and 12



51. Image from internet dated July 2018



52. Image from internet dated August 2012

9.0 Schedule of Limitations

11461V

The Springfield Public House

STRUCTURAL INSPECTION AND INVESTIGATIONS SCHEDULE OF LIMITATIONS

GENERAL

This report is confined to an inspection of the structural elements of the property specified in our introduction and brief only. Therefore, this report excludes any inspection or comment on the presence of Asbestos, Timber Infestation, Methane/Radon, contamination, electrical and mechanical installations, decorative conditions, damp proofing, non structural timber fixings, fittings, mouldings, coverings and all other non structural matters. This report does not constitute a full structural survey but we would be pleased to carry out this if so instructed.

METHOD OF INSPECTION

External inspection of the building has been carried out from ground level by visual sighting. This method means that parts of the structure may be incapable of inspection and we cannot confirm that they are free from defect. Special arrangements (where practically possible) would need to be made before inspection of these areas could take place.

UNEXPOSED PARTS

Internal inspection is made within the limits of ready accessibility. Consequently, we have not been able to inspect woodwork or any other parts of the structure that are unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect. Such unexposed parts may contain problems and you will need to make special arrangements for these areas to be investigated (where practically possible) if you require confirmation about their condition.

FOUNDATIONS

We have not investigated the nature of the foundations.

FOUL AND SURFACE WATER

We have not investigated the nature of the sub-surface drainage systems.

STATUTORY REQUIREMENTS

Enquiries with local or statutory authorities have not been carried out. Whilst attention may be drawn to any apparent breaches of statutory requirements relative to the building or site, the absence of any such comment does not imply compliance with such regulations.

DISCLOSURE TO A THIRD PARTY

A third party may not rely upon this report for any purpose without the written consent of this practice. Furthermore, this report has been prepared and issued specifically for the benefit of the addressee and no liability will be extended to any third party for the whole or any part of its contents.

ASSIGNMENT OF REPORTS

Our report is assigned to our instructing clients. We can re-assign the report at a later stage (subject to written instructions from our original instructing clients) to two other parties only. A charge is made for re-assignment of a report. Third parties, to whom the report is not assigned, cannot rely upon the contents of the report.

Limitation of Liability

Without affecting other limitation or exclusion clauses, the Consultant's liability under or in connection with this Agreement shall be limited to £10,000 in aggregate. This limit shall apply however that liability arises, including, without limitation, any liability arising by breach of contract, arising by tort including, without limitation, the tort of negligence or arising by breach of statutory duty. However, this clause shall not exclude or limit the Consultant's liability for:-

- (a) Death or personal injury caused by the Consultant's negligence; or
- (b) Fraud or fraudulent misrepresentations.

Liability for any claim in relation to asbestos or toxic mould is excluded.