APPENDIX A

01. Further to **Background** set out in the preceding document, this section sets out the initial detailed recording of the fabric and structure of the building as opened up, so as to inform the detailed constructional changes needed to achieve both fire and acoustic compartmentation/separation of the additional guest accommodation which is to be formed for the current unused attic ranges.

Andrew Shepherd, Dip. Arch (Manc.), Dip. Cons. (A.A.), R.I.B.A., I.H.B.C., F.R.S.A. carried out a visit on 6th December 2017 to survey the existing floors now they had been opened up, so as to devise a methodology of producing the necessary fire precautions and acoustic separations required for the residential use of the rooms.

The scope of those studies is shown on the attached drawing P/06.

02. PROPOSED BEDROOM 5

In general terms, the existing floor decking has been stripped out. This shows existing lime ash pugging over lath between the **joists** spanning between substantial floor **beams** which span North to South. There is a void, and then to the underside of the substantial beams, is a further set of **joists** (also spanning East to West) supporting the ceiling below. The pugging has been broken out in places, normally where there have been services installations. Otherwise, it appears to be generally in sound condition. There are a number of panels where it has gone completely and others where it is partly damaged.

The two roof trusses within the space are built down to corbels which are then built into the external North and South walls. Previously, the walls have been rendered, so presumably they were originally part of the space which subsequently then got "cupboarded out" during the Victorian works in this area.

The **partitions** into the proposed additional bedroom space and bathroom space to the West side of the main part of the room have been stripped exposing the layout of the studs and the collars of the formerly enclosed roof truss. Detailed rather differently to the other two trusses running across the room.

The **ceiling** lining has been taken down, exposing rather ad hoc construction of the roof. There is now what appears to be 'Monarflex' impermeable felt underneath the roof slating.

There are very substantial baulk **purlins** on the outer South slope and another roof covered over by the dormer extension, presumably at the time of the Victorian reorganisation of this space on the North side of the store. There is substantial evidence of water penetration around that dormer from which all the underdrawing has now also been stripped.

A **rainwater pipe** from the bottom of the pediment to the South side running along the South wall is going to need to be boxed in and insulated.

The **roof structure** shows signs of previous change with what appears to be the strut of a former truss being cut out and replaced with a bodged system leaving a post.

The Easternmost **floor beam** is 300 x 200 mm wide and from the masonry wall partition back to Bedroom 4 to the approximate centre line of the beam is 1865 mm.

The centre line of the next Westerly **beam** is 1590 mm from that.

The next beam is some 1750 mm from that to its centre. This is an archaic beam with some evidence of beetle infestation, not sawn like the other two, but probably adzed. It has a shake to it. It was not possible to obtain access to find out its depth because of infilled debris. It, in turn, is 900mm from the similarly 300 x 200 mm collar to the truss which was formerly the wall partition to the West of the space. The joists between those two beams are again older 100 x 70 mm but laid over on their side so they are only 70 mm deep but they are at 330 mm centres. They are part morticed over the truss collar.

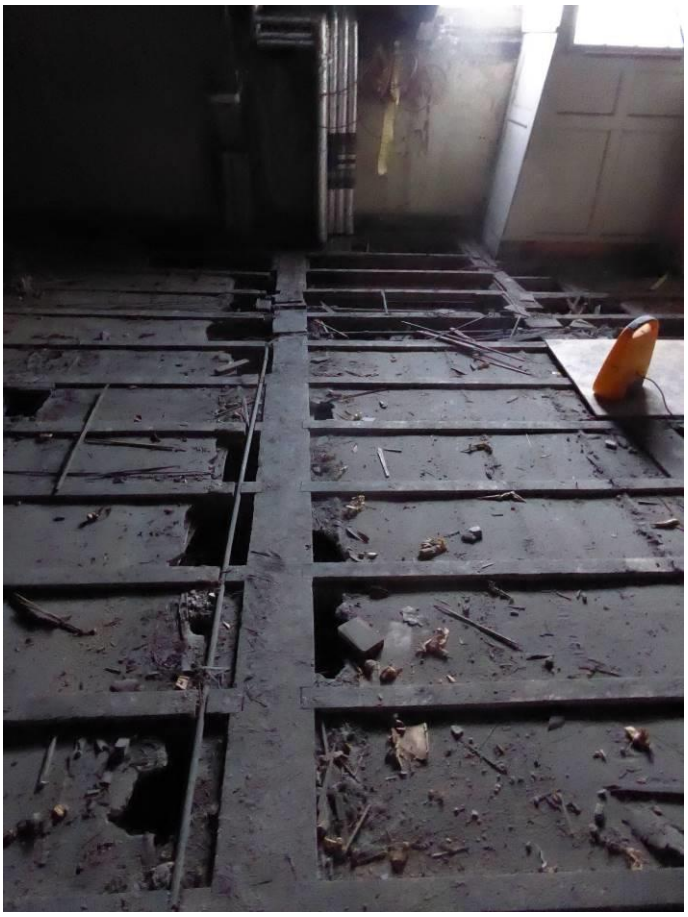
The existing floor joists of the space are 100 mm deep x 75 mm wide timber (oak/deal?) at approximately 420/430 mm centres.

The pugging laths are fixed to battens set down 55/60 mm from the top surface of the joists, substantially nail fixed into the sides of the joists with those battens being 50 x 30 mm. The lime ash itself is some 30 mm thick and, as stated previously, its top surface is set down some 25 mm from the top surface of the joists. This seems fairly consistent throughout the space. A sample of the material shows it to be lime ash pugging with considerable amounts of lime and cinder in it. A sample was taken for possible future analysis if required.

The ceiling joists to below are not set out in as regular a fashion and certainly do not coincide with the floor joists to the Attic space above. The depth of the void is something in the order of 330 mm. Those ceiling joists are something in the order of 75 mm deep x 50 mm at about 400 mm centres. They appear to be fixed, half rebated under the substantial beams.

The floor rafters are similarly rebated into those beams, some with birdsmouth joists and others just with simple squared mortices.

There has been some damage to the top of joists with services chases made in them, but they do not generally exceed 25 mm and are generally close to the beam fixings of the joists rather than midspan.



The space for a **door opening into the Bathroom** could be formed relatively easily by removing two of the studs above the upper collar to create an opening 900 mm wide and then to brace the cut ends of that truss down onto the beam below. Headroom would be adequate but it would need to be a purpose made door. The other door opening into the proposed additional Bedroom space will similarly require the removal and relocation, or removal, of one strut above and one strut below, and the relocation of one, probably to the right hand side. The existing opening is only 800 mm wide. That is the clear face to face dimension between the studs. The studs themselves are set onto the East face of the upper collar and morticed in something in the order of 30 mm. (Since the survey was carried out, the openings have been made in accordance with the proposals of Capstone Consulting Structural Engineers. (See Appendix C).

The solid hearth to the **fireplace** still remains in situ, probably in the same pugging material, but taken up higher to be flush with the original boards rather than recessed . There is no reason not to leave it as it is nor, similarly, the fireplace itself.

There is collapse of the flooring joists in the South West corner of the space which will need to be investigated and presumably joist hangers or replacement timbers.

There is a run of service pipes and modern installations with insulation which will need to be dealt with in the centre of the North wall of the main space be built in.

Fireproofing of the stairhead enclosure is to be properly considered.

In the **Roof Void** beyond this truss to the West, the floor structure comprises **joists** to a lower ceiling being 200 deep x 100 mm wide at approximately 1000 mm centres. The **joists** running North South across those are 85 x 75 mm at 400 mm centres. The **ceiling joists** to below (defining a void from the top of the floor joists to the top side of the plaster of 360 mm) are 75 x 50 mm at 300 mm centres. In the space there is also a section of substantial beam which looks like a composite of some sort about midspan. The **floor joists** are 1 third/2 thirds morticed bearing onto some of the substantial timbers. The principal beams run East/West.

The existing rainwater disposal pipe running through the space needs to be rerouted.

There is, what is presumed to be, a vent stack from below which will need a proper Durgo valve putting on it or alternatively a vent taking out through the roof.

Debris will need to be cleared from the void. There is no pugging or anything of this nature here. Certainly there is parging debris from the underside of the roof slates which has been just left in the void.

The walls are rendered, which suggests the space was always "inhabited", albeit through the access trap which existed in the truss.

Upgrading Strategy:

Clear all debris, then over the back/top surface of the laths supporting the ceiling plaster to the room/space below, shape and fit Karma TMF70. Stone fibre batts between the joists, sealing the joists between the batts and sides of the joists (as possible) with Karma EX240 sealant.

Over the retained top surfaces of the joists lay new floor decking system to lag. Lag over the joists 100 mm wide strips of resilient foam, and then overboard complete, spanning across the joists with 40 mm thick Karma Masspanel available from SIG or CMS Danskin Refurbishment. Rebate underside over joists to achieve floor level as existing.

All materials available from SIG or CMS Danskin Refurbishment.

03. PROPOSED BEDROOM 4

The existing ceiling plaster have been ripped out unfortunately already, including the lath. There is much less headroom. Cupboards along the South wall have all been removed and similarly on the North wall. Timberwork generally is more ancient though the timbers to the **roof** are sawn, rather than adzed. There is some beetle infestation. There are substantial purlins which are trenched. Timber is pegged and fairly substantially so. A collar has been removed to create headroom and raised, presumably at the time of the Victorian works.

A dormer or similar has been formed into the roof space, I think over the top of the trusses, for the whole bay width.

The void underneath the flat roof outside is exposed. It will need to be insulated very substantially as this is now an external wall underneath the slates.

The South roof slope, including over the pediment of the principal elevation, has got sarking felt to the West side, but not to the East. Very substantial water penetration has occurred though the under sarking boarding which is leached with salts, but in fact through a hole, it can be seen that there is in fact sarking felt above. This presumably is therefore all historic decay.

As a result of that damp, there is beetle infestation in a number of these timbers but no evidence of any deathwatch beetle infestation can be seen. They will all need to be cleared and cleaned.

It is believed that the roof structure is all going to be retained with space underneath used for cupboards.

Headroom is very much an issue in this space as there is a bare two metres underneath the existing, already raised collar, of the truss. It is supposed it could be raised a bit further if it was required. The central truss could be raised as well or replaced with perhaps a metal tie/brace at a higher level.

The roof rafters here 125 x 50 mm at 460 mm centres. The roof/ceiling joists above are 125 mm deep to the underside on the South slope but only 80 mm on the North side but beyond that they go back to 125 mm with fillets on top.

The standard kingpost trusses are reinforced with metal fairly crudely. I suspect it may be earlier work, rather than Victorian.

The two roof trusses line up with the sides of the dormer window on the North elevation. There is a further truss which is going to form a part of the dividing wall at the change of levels down to Bedroom 3.

The chimney is exposed with stonework built into the brickwork. There is some salting. There has obviously been water penetration as the plaster below is damaged.

A cupboard broken out in the North East corner of the space shows the **double floor construction** to below. There is another trap in the middle of the floor but this is less instructive. A hole has been broken under the roof void area which shows the same 32 mm lime ash flooring though, again, it is not possible to see any lath here as yet.

There are a couple of what are presumed to be service traps in the floor. There are no floor joists exposed except in the roof void area, but these offer an understanding of depths and frequency/spacing.

The lime ash floor finish itself does bow and dip about a bit and there is a substantial cracked area which has previously been repaired with cement running from an infilled service trench. This material appears to have been overlaid on the original work below, so presumably this is actually some sort of Victorian insertion of sand screed cement very much like that in Bedroom 3. The original work in the South side of the room is broken up where it comes to the wall and presumably there has been damp and when it has been enclosed behind plaster in the modern era.

The walls behind it are coursed stonework which have been given a worked finish, presumably for an original exposure or the limewashing of the walls.

In the former cupboard space in the North East corner, where the cupboards have been broken out and the floor structure is exposed, it can be seen there are substantial **beams** though not collars to the trusses which have a sort of cantilevered detail. They seem to be in the order of 300 x 100 mm but as it is not possible to see the one next to it, they will be set out at very large centres.

The **floor joists** above are at approximately 1 m centres. The depth of them is indeed 250 x 100 mm.

The **ceiling joists** below, also spanning East/West, as do the floor joists, are the same 75 x 100 mm at 320 mm centres. Only the top side of the plaster soffits can be seen.

Inspection of the opposite void in the South West corner shows **floor joists** also approximately 75 x 100mm at 500 mm centres. There is no similar setting out of the ceiling joists below something like 300 mm.

We did not investigate the formerly enclosed space in the extreme South West corner as we believed the floor is unsafe there, as it is considerably broken up. It seems to show the same construction but with 125 x 50 mm joists on their sides spanning with lath over them.

Upgrading Strategy:

All as Bedroom 5, and additionally reparging the timber floor structure and on a like for like basis as required.

04. BEDROOM 3

it was thought initially that the lime ash **floor** was in generally adequate condition. It is believed to be Victorian overlaying of the original floor pugging. When the room was cleared it could be seen that the two "generations" of floor "screeding" were damaged in a number of places, and there were part of the floor which could be "bounced", presumably denoting some failure of the subfloor structure.

The **roof** timbers are generally all enclosed with lath and plaster over the mid-span purlin. On the South side there is an area, now stripped out, exposing the rafters and undersarking boarding. There is deathwatch beetle infestation in these areas. We presume the **truss** members are the same as in the adjacent Bedroom 5 with the plastered collars not actually supporting the truss but a corbel in the wall does the task. This cannot be proven until some more casing is taken out.

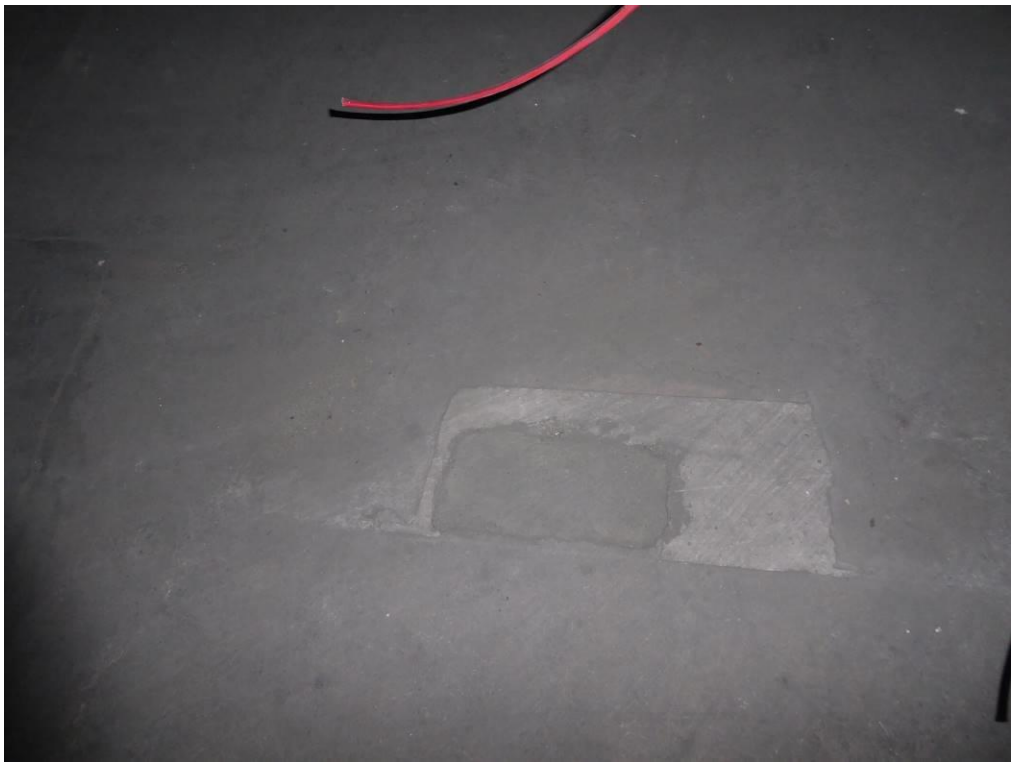
There is an awkward service pipe on the North wall which will require more than a bit of trouble.

There is sufficient headroom under the two collars to achieve fire/acoustic overboarding over the top of the existing floor.

A problem then arises with necessary sloping of the floorboarding level back to the corridor access outside, presumably with a hardwood shaped fillet under the anticipated carpet finish.

The fireplace to be retained, presumably with its hearth, which is now integrated at the same floor level as the lime ash.

Floor to ceiling from the underside of the truss collars to the top of the existing lime ash is only 2070 mm. Where the plaster casing has been removed at one end, it can be seen that the lath and plaster there is probably of an overall thickness of something like 20 mm, so if that was removed it would give clear height of 2090 mm.



Upgrading Strategy:

The floor finish is to be taken up complete to allow for the same new fireproofing and acoustic separation system as Bedroom 5.

05. BEDROOM 2

This is certainly a part of the original earliest phase of the construction of the house. The fabric in very poor condition following a lot of water penetration in the South East corner leading to deathwatch beetle infestation of the timbers. There is decay of the original plaster which had been limewashed. The wallplate is in poor condition. The wall is directly underneath a gutter. There is deathwatch beetle infestation around the existing rooflight. Part of the ceiling is still underdrawn. The sagging ceilings need underboarding. New rooflights are to be introduced.

The **floor** construction with its lime ash finish is not in better condition than initially believed. There is a lot of debris from reroofing presumably in the North area. A decayed dragon tie now not supported any more. The collar onto a post is to come down to create level access and to remove part of the canopy there.

The floor is set down something in the order of 50 mm from the timber floor of the corridor adjacent.

There is a solid **masonry wall** to the Bedroom 3 adjacent. Framing of the **partition wall** onto the corridor is fairly cursory with single lath and plaster to both faces with hair, something like 18 mm thick inner face and less it would seem to the outer face. There is a hole bashed through!! The importance of keeping the studs and to overboarding them on the corridor side to increase the fire resistance and acoustic separation as previously specified needs to be stressed to the contractor.

A new door access is to be formed from the corridor. It is suggested that the flat ceiling is retained.

Inspection of the floor void could only be made by "hidden" photographs taken into openings, as the pugging is mostly still in position. The lime ash is in bad condition, with cracks in it, historic services installations causing trenches through it, and defective subfloor support all requiring its complete removal.

There is a large heating pipe around the perimeter to be dealt with.

Upgrading Strategy:

The floor finish is to be taken up complete to allow for the same new fireproofing and acoustic separation system as Bedroom 5.

06. BEDROOM 1

The existing lime ash **floor** in this room had been overboarded with plywood. After the removal of that overboarding it was very apparent why it had been introduced! The lime ash (and subfloor) were raddled with holes and "soft spots" where the subfloor structure had obviously failed.

A small trap on the North side against the studwork partition to the void against the eaves of the roof there shows it to be the same lime ash 32 mm over lath, but it is not possible to obtain access to inspect/measure the joists.

The pincipal issue in this room is the floor to ceiling height underneath the central truss collar which at present time is 1825 mm. This is a problem. If the beam casing is removed to expose the timber it is going to be something in the order of 1840 mm. This is to be retained "as existing".

The step up to the threshold of the hatch through to the proposed Bathroom in the existing adjacent roof void is 540 mm.

There is a hole in the **ceiling** underdrawing of the roof plane, showing it is fixed directly to lath and plaster directly to the underside of the timber sarking board to the roof cladding.

In that present Roof void, (proposed Bathroom), there are floor joists running North to South which are 50 x 75 mm at approx. 460 centres. These span something in the order of 1960 mm from beams to beams running East/West, from the solid partition wall to the collar of the first truss around the back of the curved chimney stack, and these are 120 x

200 mm deep. There are no floor joists. These will presumably go over those larger beams.

The space between the top of the ceiling joists below and the top of the beams/floor joists here at present is 140 mm.

Upgrading Strategy:

The floor finish is to be taken up complete to allow for the same new fireproofing and acoustic separation system as Bedroom 5.

Additionally: On site discussions with representatives of the Building Control body suggested that the entrance door from the access corridor be relocated, and that fire breaks be established in floor voids under existing partition walls, which were also to have their fire resistance improved by the application of fireproof boarding and skim on their "room" faces.

Bathroom: Establish new floor, all as Bedroom 5, where a new floor is to be established in the existing Roof Void.

A.D.W. SHEPHERD, Dip. Arch (Manc.), Dip. Cons. (A.A.), R.I.B.A., I.H.B.C., F.R.S.A.
ANDREW SHEPHERD, ARCHITECT
CHARTERED ARCHITECT, SURVEYOR,
453 GLOSSOP ROAD,
SHEFFIELD
S10 2PT
Telephone: 0114 266 2458
E-mail: info@andrewshepherdarchitect.co.uk

ADWS/TJC/TAM/03.22.15-16
13th February 2018
Rev 1 22nd May 2018

APPENDIX B

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APPENDIX C

Structural Engineer's Proposals

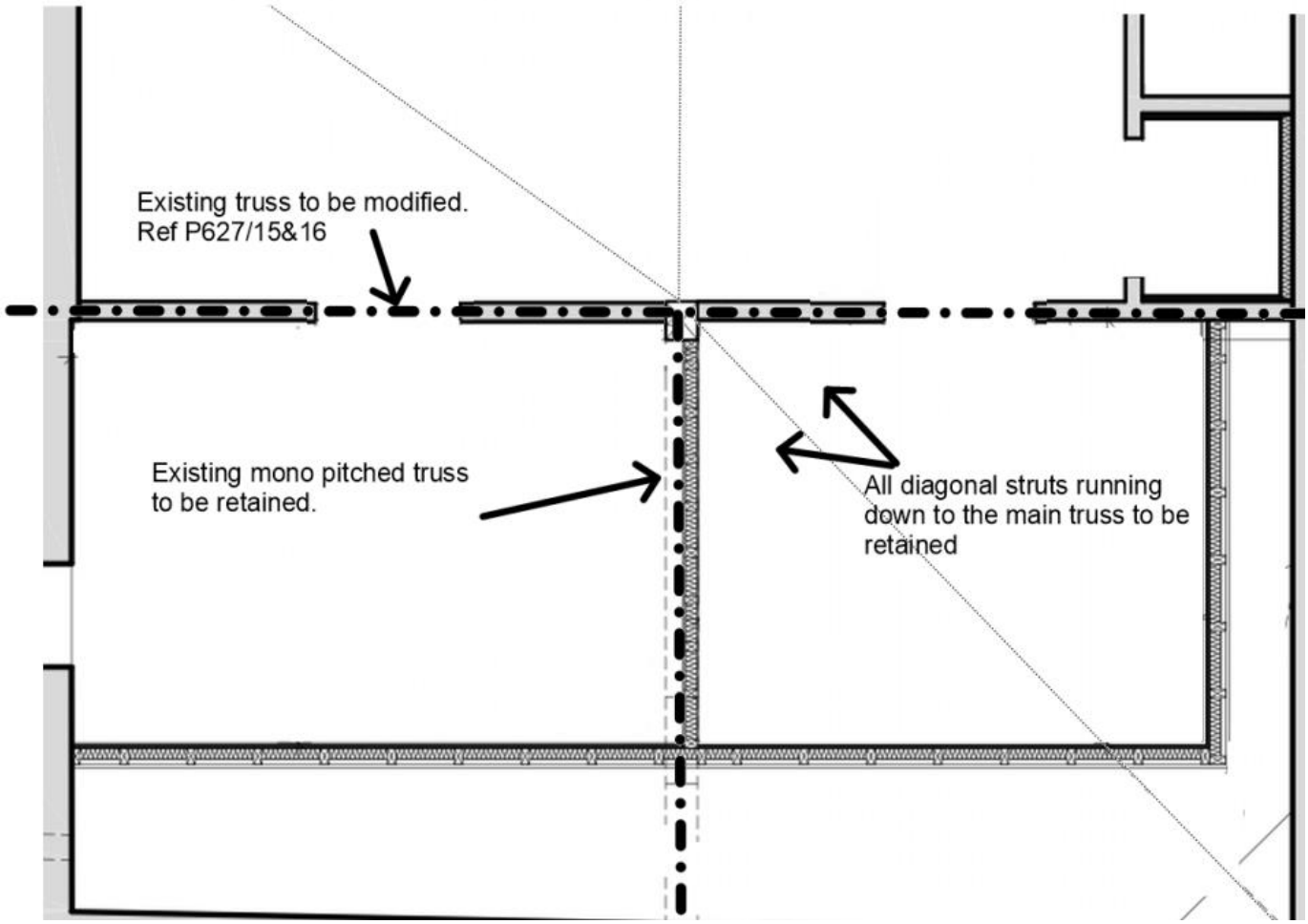
CAPSTONE
CONSULTING ENGINEERS

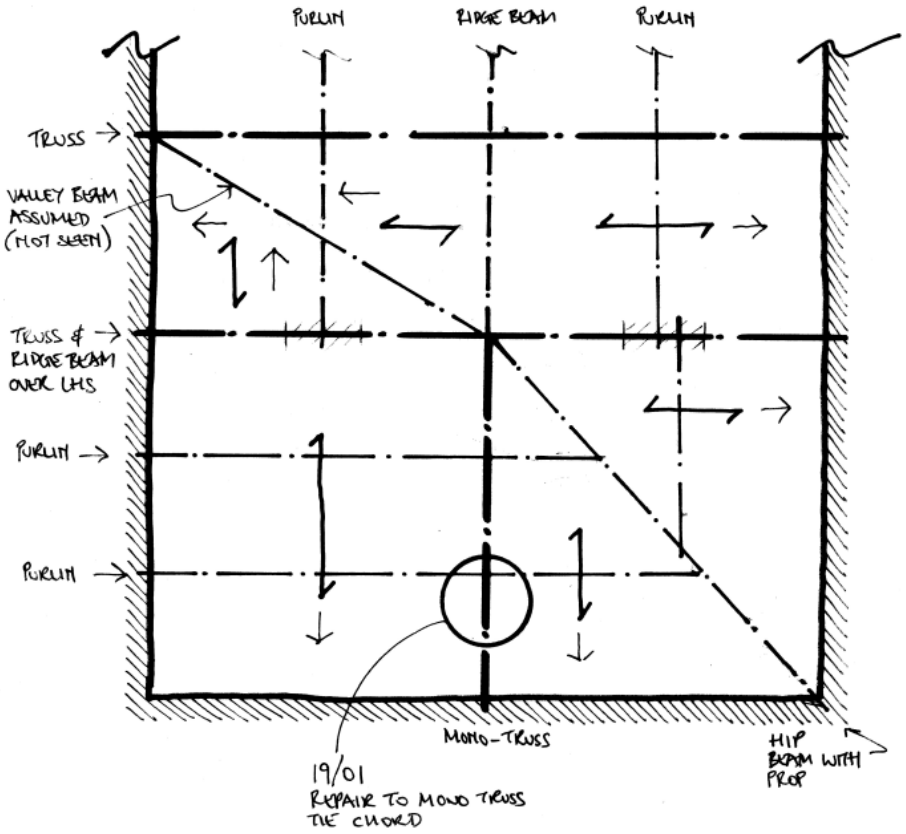
Project		
Wortley Hall Attic Alterations		
Drg. Title		
Bedroom 5 Truss Alteration		
	Date NOV 2017	Drawn JR
Drg. **P627/15**		Revision

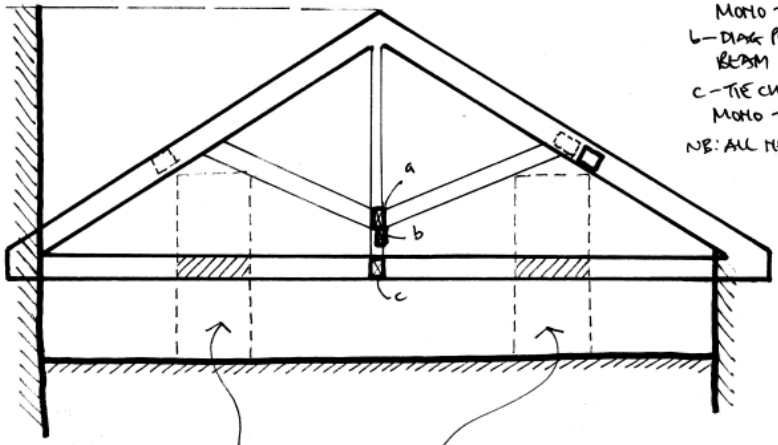
Home Farm Hollinsclough, BUXTON SK17 0RH Tel: 01298 83151
www.capstone-uk.com

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND WITH THE SPECIFICATION

Notes - i) Assessing existing floor sttucture is beyond Capstone's scope. 2) Roof structure to remain unaltered other than for alterations as shown on the proposed drawings. 3) Temporary works - new steel support beams and all posts/braces, and associated brackets to be fully installed to the truss/below the truss prior to forming the door openings by cutting through the truss tie chord. 4) NB - in the structural design it is assumed that a contractor experienced with truss alterations will be undertaking this work. If not, the contractor is to seek assistance from an experienced contractor as requried.







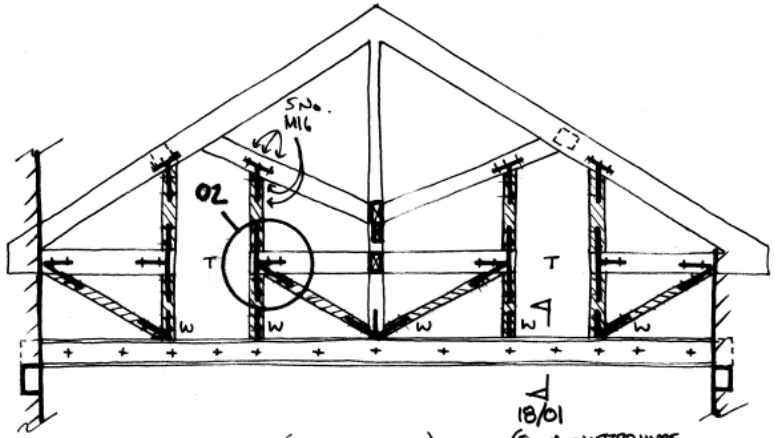
a – DIAG PROP TO MONO TRUSS
b – DIAG PROP TO HIP BEAM
c – TIE CHORD TO MONO TRUSS.
NB: ALL NEED TO REMAIN

PROPOSED DOOR OPENINGS MUST BE POSITIONED TO AVOID DIAGONAL STRUTS AS SHOWN. ENSURE ALL STRENGTHENING WORK UNDERTAKEN TO TRUSS/FLOOR PRIOR TO CUTTING THROUGH TIE CHORD IN THE 2 LOCATIONS SHOWN. REF THE PROPOSED DRAWINGS.

Rev.	Date	Amendment

CAPSTONE CONSULTING ENGINEERS
Capstone Consulting Engineers Ltd
Structural and Civil Engineers
Historic Building Specialists
Home Farm · Hollinsclough
BUXTON · SK17 0RH
01298 83151 www.capstone-uk.com

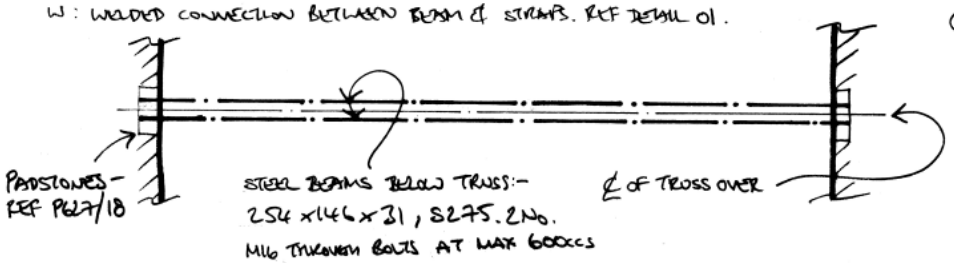
Project:	Scale:	Date:	Drawn:
WORTLEY HALL ATTIC ALTERATIONS	1:50	Nov'17	JR
Drg. Title: BEDROOM 5 TRUSS ALTS – EXISTING	**Drg:** P627/16		**Revision:**



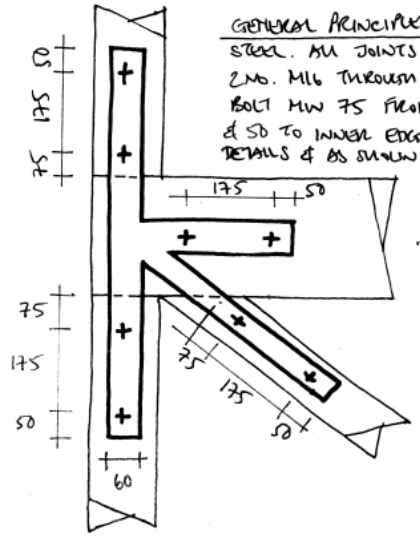
NEW DENSE PITCH PINE MEMBER (TO MATCH TRUSS)
VERTICAL: 200x150. DIAGONAL: 200x100. C24

T: SECTION OF THE CHORD TO BE REMOVED ONLY ONCE
i) STEEL BEAMS INSTALLED, ii) ALL NEW TIMBERS & STRAPPING INSTALLED

W: WELDED CONNECTION BETWEEN BEAM & STRAPS. REF DETAIL 01.

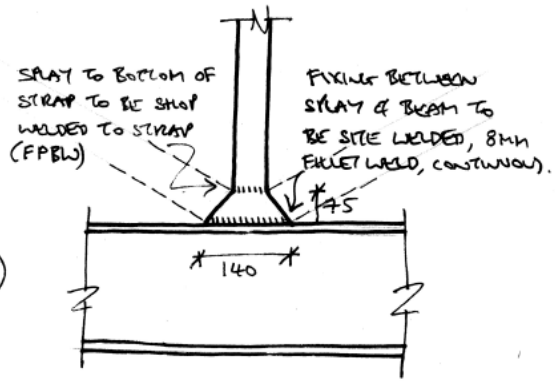


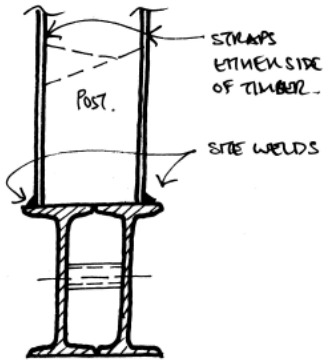
GENERAL PRINCIPLES OF THE STRAPS: 60x8 S275 STEEL. ALL JOINTS: FULL PENETRATION BUTT WELDS. 2No. M16 THROUGH BOLTS PER MEMBER END. OUTER BOLT MIN 75 FROM MEMBER END. 175 TO 2ND BOLT & 50 TO INNER EDGE OF STRAP. OTHERWISE TO FABRICATOR'S DETAILS & AS SHOWN IN GENERAL ON 1:50 ELEVATION.



DETAIL 02 (1:10)

ALL OTHER STRAPS TO BE SIMILAR, TO FABRICATOR'S DETAILS BASED ON SITE MEASUREMENTS.





NOTE - ALL NEW TIMBERS TO BE TIGHT FITTING. TIMBERS TO BE KILN DRIED.

Rev.	Date	Amendment

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Capstone Consulting Engineers Ltd
Structural and Civil Engineers
Historic Building Specialists
Home Farm · Hollinsclough
BUXTON · SK17 0RH
01298 83151 www.capstone-uk.com

Project:	Scale:	Date:	Drawn:
WORTLEY HALL ATTIC ALTERATIONS	1:50	NOV'17	JR
Drg. Title: BED 5 TRUSS ALTERATIONS - PROPOSED	Drg: P627/17		Revision:

CAPSTONE
CONSULTING ENGINEERS

Project		
Wortley Hall Attic Alterations		
Drg. Title		
Bedroom 5 Truss Alteration		
	Date NOV 2017	Drawn JR
Drg. **P627/18**		Revision A

REV A – MINOR REVISIONS

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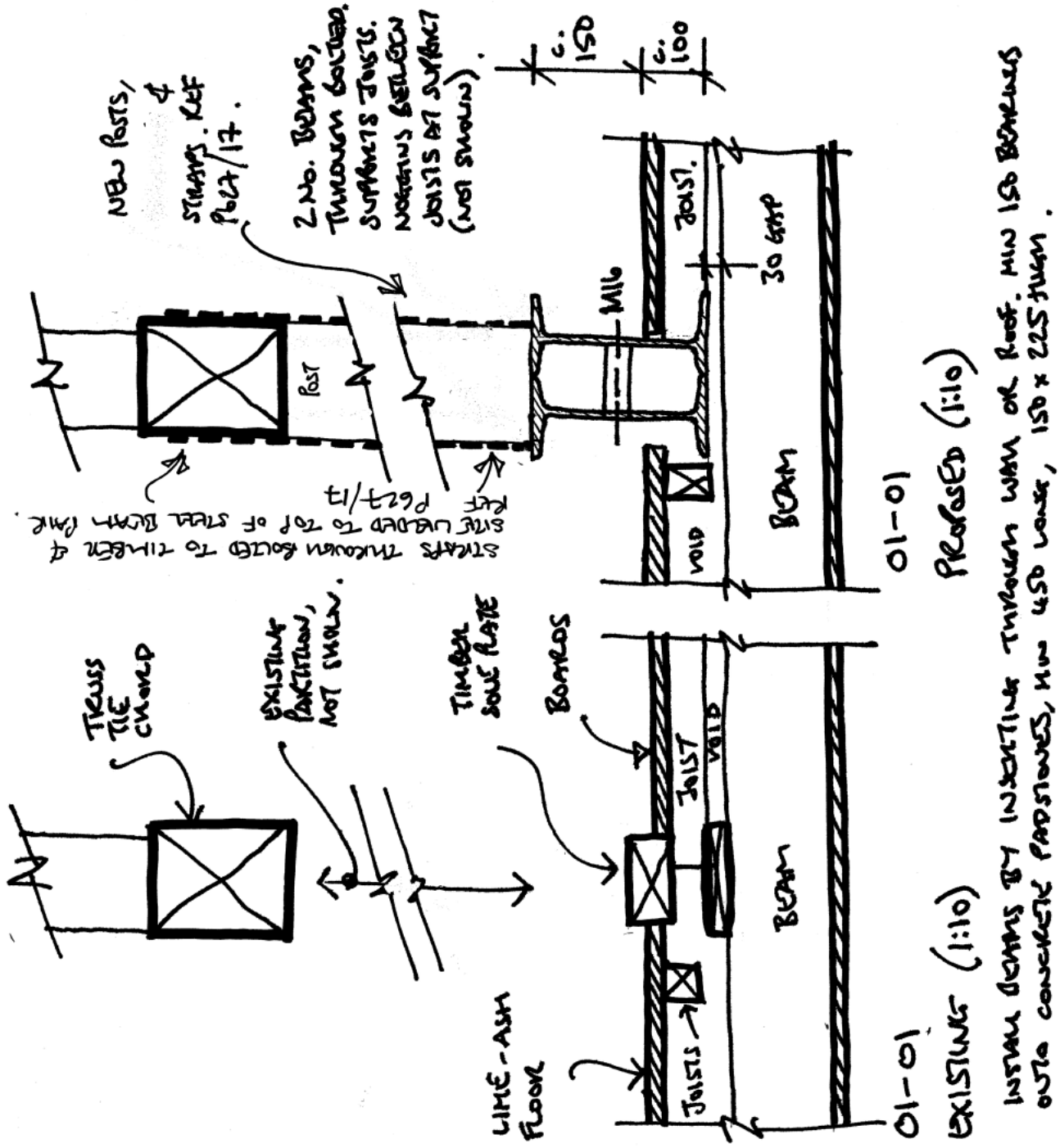


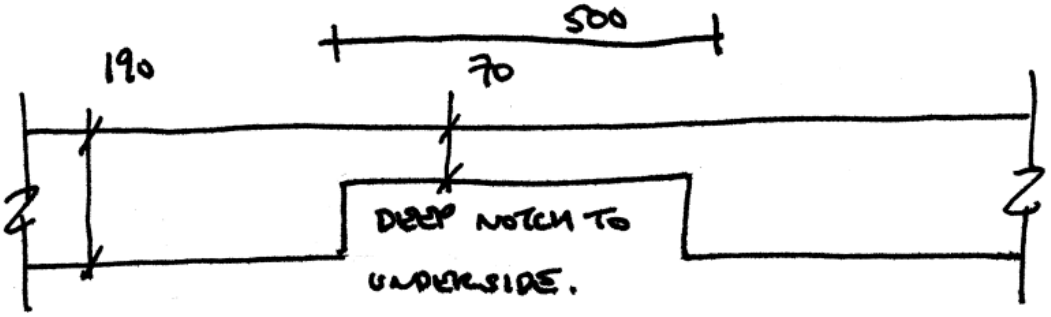
CAPSTONE
CONSULTING ENGINEERS

Project		
Wortley Hall Attic Alterations		
Drg. Title		
Bedroom 5 Truss Alteration		
.	Date NOV 2017	Drawn JR
Drg. **P627/19**		Revision

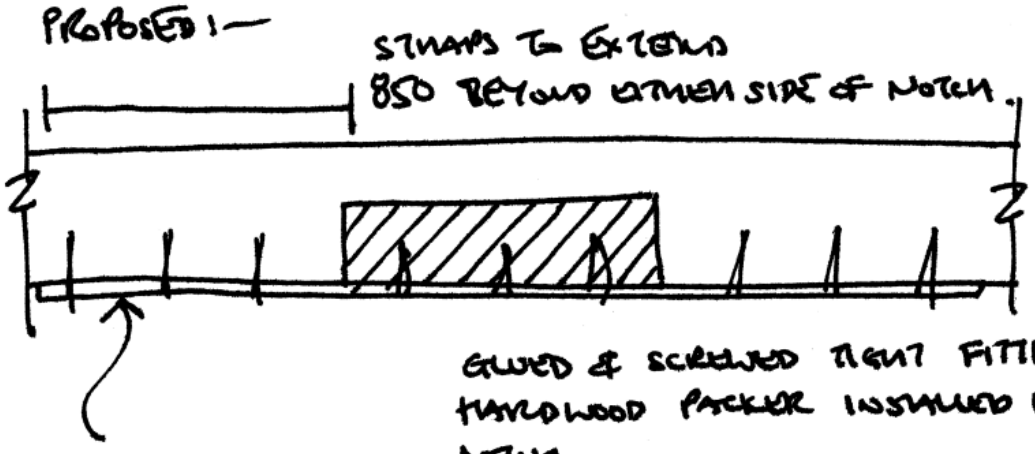
Home Farm Hollinsclough, BUXTON SK17 0RH Tel: 01298 83151
www.capstone-uk.com

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND WITH THE SPECIFICATION

MONO TRUSS TIE CHORD - AS EXISTING :-



PROPOSED :-



3 no. 30 x 5 GALV. STRAPS FIXED UP TO UNDERSIDE, GAUGE 14 WOODSCREWS, MAX 100cc (STAGGERING STRAPS). NOTE - AS SHOWN IS INDICATIVE ONLY. STRAPS TO BE 2.2M LONG & CONTINUOUS.