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**Flooding Assessment
REPORT
(Amended rev A)
AT**

**St Johns ambulance
Park Road
Rhosmedre
Wrexham
LL11 3EF**

FOR

**Mr J Harrison
J20 rock Hill
Cefn Mawr
Wrexham
LL4 3AW**

**DATED Feb 2014
REF/N812a/AH1F**

1.0 INTRODUCTION

- 1.1a This is a revised and amended FCA based upon the NRW's comments and subsequent meetings; Also we've been given a copy of following report, prepared by JBA consulting;

Cefn Mawr & Acrefair Flood Risk Study
Hydraulic Modelling Report
Final, May 2013, Natural Resources Wales

- 1.1 H A Structures was commissioned to prepare a flood risk assessment and flood consequences assessment for the proposed change of use of the existing building known as "St John's Ambulance, Park Road Rhosmedre Wrexham" to a habitable dwelling.

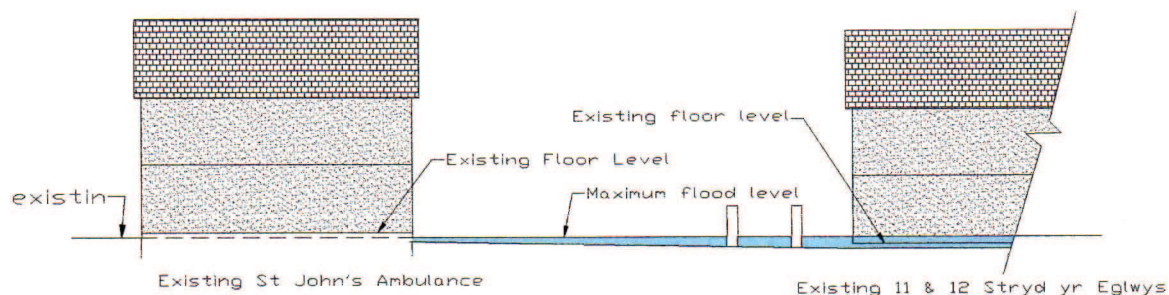
- 1.2 We were given copy of letter from Wrexham Council Ref. ENQ/2013/0344
10/10/2013
Philip Forster
A pre application planning consultation, in which the following comment regarding flooding is made;

Part of the footprint of the dwelling also falls within a C2 flood zone. These are flood zones which are not protected by any significant flood defence infrastructure. Technical Advice Note 15 – Development and Flood Risk identifies this type of development as highly vulnerable and is not normally considered appropriate in such locations. However, given that the site is not wholly within this zone, a flood consequence assessment may identify that the risk of flooding to this property and the subsequent consequences are will be low. Mitigation measures may also reduce this risk.

- 1.2 We visited the site to make a visual assessment of the location of the proposed building and it's relation to the surrounding buildings, fields and roads
- 1.3 We also investigated the Environment Agency's flood maps for the area and related this to ordinance survey maps of the area, see appendix "A"

2 ASSESSMENTS

- 2.1 The locality near by the proposed building is shown to be in flood zone. The flooding is not tidal, nor in fact it is fluvial, as the site level is considerably higher than the riverbanks some distance away. However, the area is within catchments of the river Dee. Rainwater naturally drains (over ground AND underground) through the narrow gully to the east of Park Road. However, this gully is restricted under Park Road and during a heavy storm rainwater “ponds” to the north west of Park Road in this locality. It is this affect that is shown in the EA’s maps as “Flood Plain”
- 2.2 A close inspection of the maps show that although the “Flood Water” extends to the boundary of the building, it has not in fact entered the building, the reason for this is shown in the schematic below;-
- 2.2a *Extensive desktop study and hydraulic modelling has been carried out, by JBA consulting, considering various scenario due to theoretical blockage of the culvert under the railway and under the main road.*



As can be seen the land to the left of the St John's Ambulance, although 120 mm below the existing floor level, is not shown as flood plain.

- 2.2b *Looking at the report by JBA consulting, it appears that the main focus of the report is concentrated on the area upstream to the railway culvert. However, the figures 4.5 to 4.11 all indicate under various conditions, different sensitivities and scenarios and predicted increase in rain fall intensity/flows, the site to be clear from flood water.*
- 2.2c *It is stated that the "flood Zone" extent has been deduced using JFLOW perdition. This method uses a flyover grid levelling, ignoring buildings, we accept that the "flood Zone" thus predicted could be very rough and a function of actual ground levels. However, the ground levels in the vicinity of this site are fairly flat and a visual inspection actually concurs with the flood maps relating to the very small variation in ground levels.*
- 2.2d *Although a level survey has not been carried out, (we consider due to the building being existing, the proposed is an infill in a residential area it is an out of proportion unnecessary expense!), it can easily be seen on site that any rising flood water due to blockage of the culvert under the road will fall back to the railway line before it could rise above the floor level of the proposed house.*
- 2.3 It can therefore be argued that the building is at the boundary of the flood zone but not surrounded by it nor wholly or partially within it.
- 2.4 Table 9, Tan 15 recommends Highly Vulnerable development (e.g. dwelling) should not be permitted within flood zone C2. Flood zone C2 is described as flood area with no defence etc.
- 2.5 *Based on the above fact, although we point out that due to the finite catchment area and, ignoring run off rate during a heavy rain and ground work at up, the flood level is directly related to down fall in this very locality only. Therefore claimed in future rise or rate of flood rise etc. are not relevant to build on flood zone C2. (Tan 15 is not relevant) (Although we still are of the opinion that the site is not C2 but we understand that NRW is not going to accept this, therefore propose mitigating circumstances!!)*
- 2.6 *We, instead conclude that the building is outside flood zone. (omitted)*
- 2.7 *Also clause 11.20 TAN 15 change of use requires to change from a lower vulnerability to a higher vulnerability. However, in this case the reverse is used (now Accepted change of use is from office to dwelling, therefore increase in vulnerability)*

3.0 FLOODING CONSEQUANCES

- 3.1 The flooding does not affect the building directly. There is a back entrance to the building from the driveway of the adjacent, construction in progress development; which is out side flood zone.
- 3.2 The flood plain area is limited and the site is very close to main "A" road, with pedestrian access, there is no additional load on emergency services during a flood.
- 3.3 The building is "existing" with existing drains etc. therefore there is no additional affect on the flood plain.

4.0 CONCLUSIONS

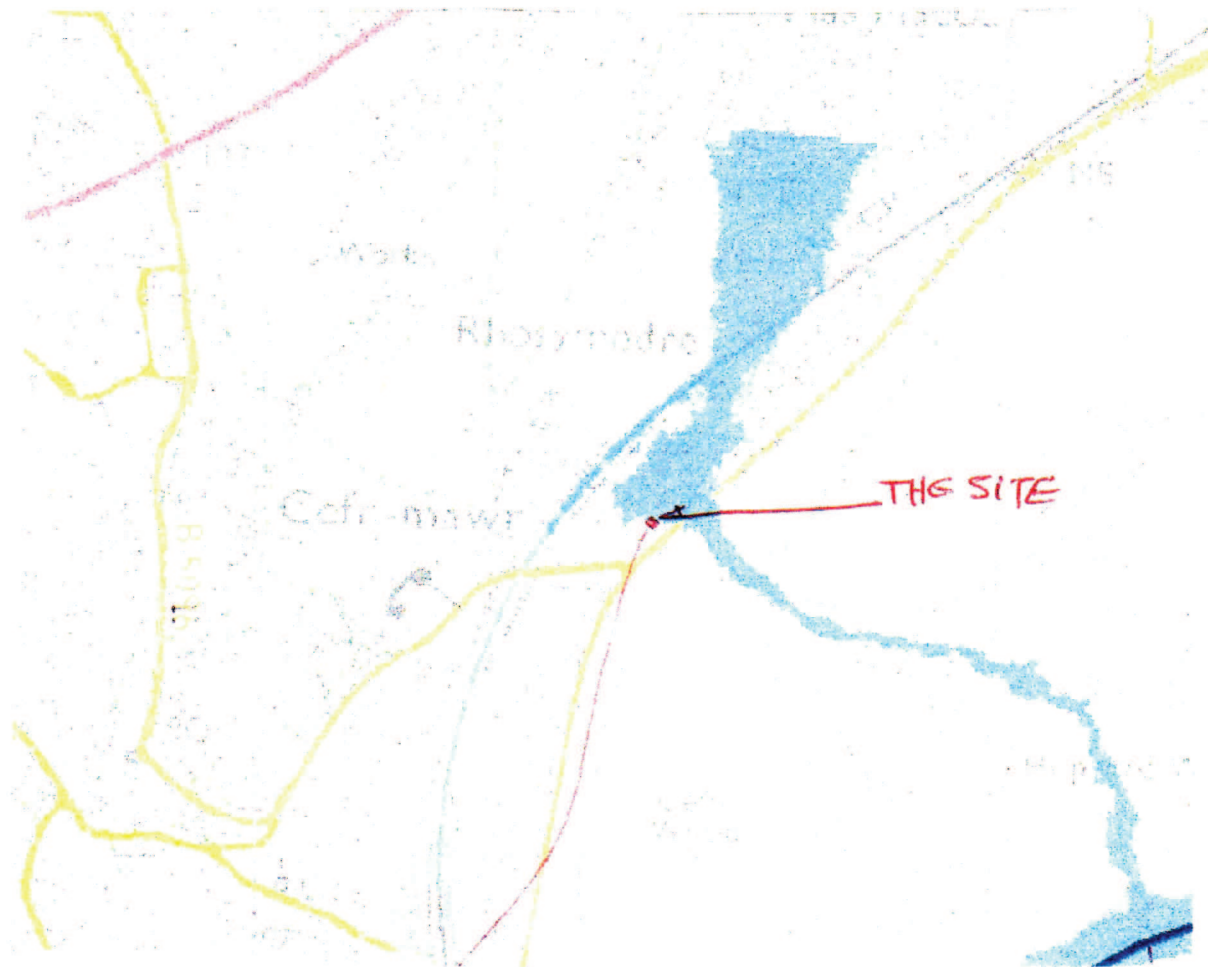
- 4.1 Based upon the above, *(one would conclude that the building is outside flood zone and the change of use does not make it more vulnerable in any way omitted) we would conclude that although the site is at the verge of the NRW's flood zone C2, the actual existing ground level is above predicted maximum flood level.*
- 4.2 And mitigating circumstances like;
 - 4.2.1 Flood free access
 - 4.2.2 Solid masonry wall construction
 - 4.2.3 Solid slab ground floor construction
 - 4.2.4 Being within settlement boundary
 - 4.2.5 Being close to main "A" road
- 4.3 *And the following measures;*
 - 4.3.1 *Raise the ground floor by 250 mm using cementitious material and ground floor finishes to be cementitious, e.g. concrete, or stone/ceramic tiles or similar.*
 - 4.3.2 *Other precaution measures, e.g. electric wiring and plugs etc to be 750 mm above ground level.*
 - 4.3.3 Other measures to be specified by the architect.
- 4.4 **We would therefore conclude that this planning application should be considered justified with regards to TAN15**

Signed



Hassan Arya-Manesh
For H A Structures Ltd. Consulting Engineers

H.A. Structures Ltd. ... **C**ONSULTING **E**NGINEERS
Appendix "A"



**The environment Agency's Flood plain area, the proposed site is at
the edge of the flood plain**

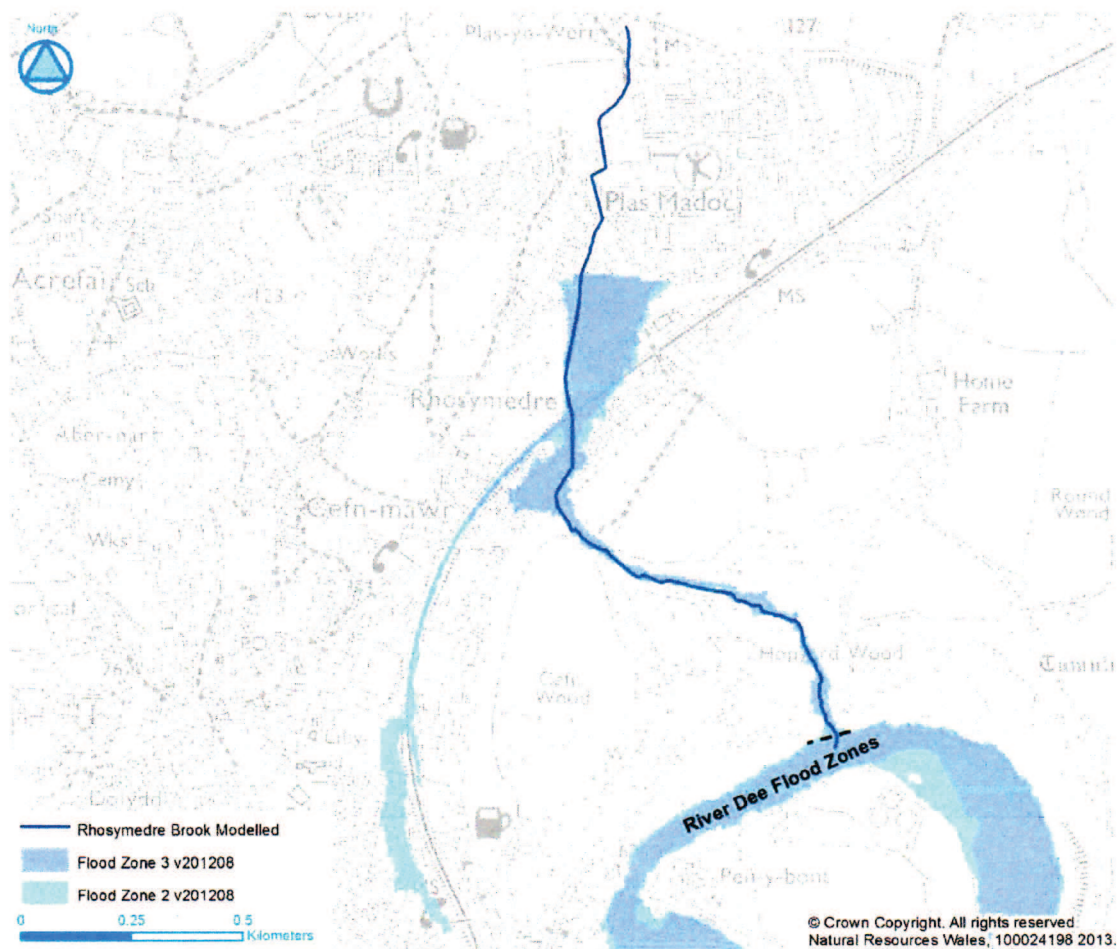
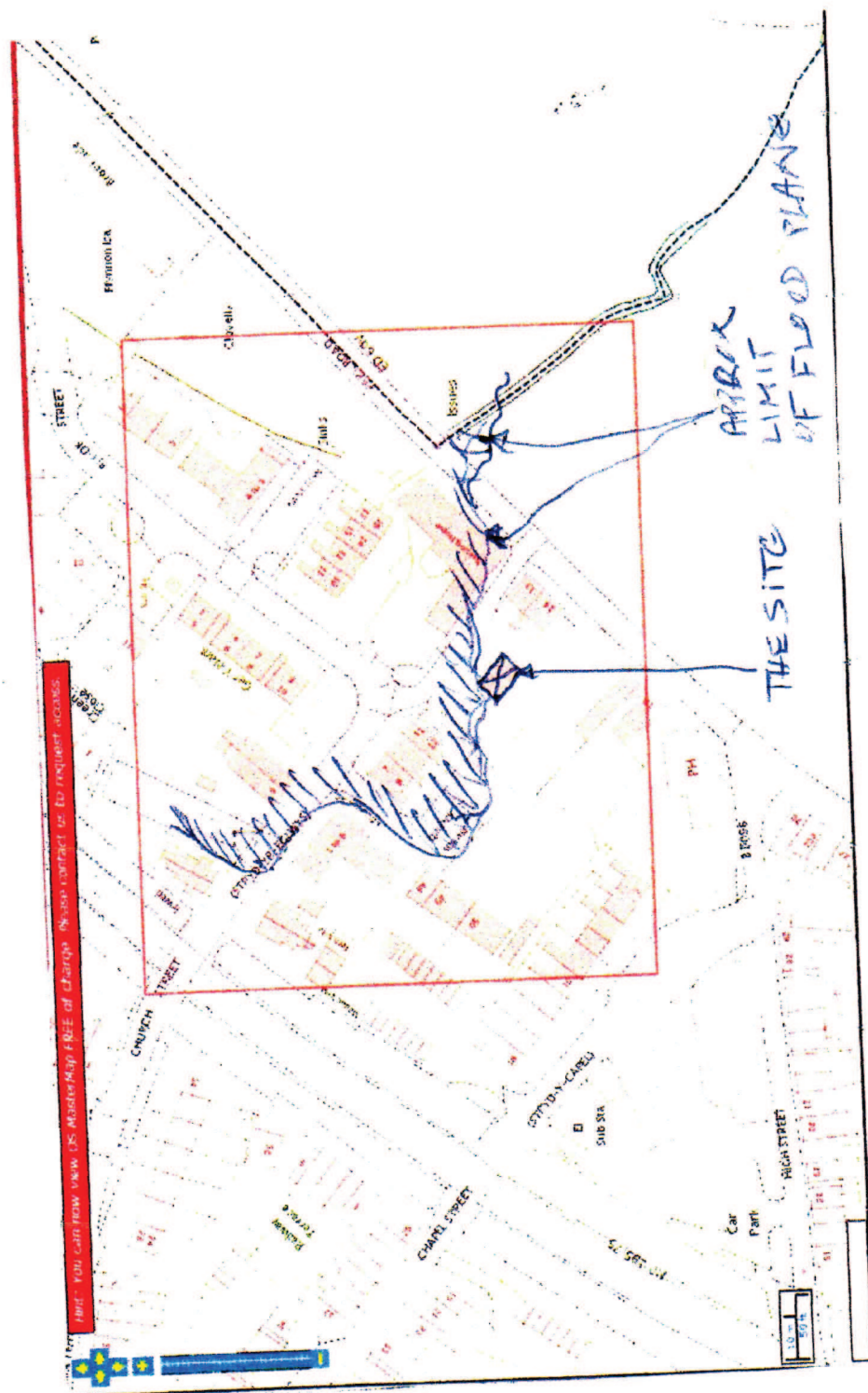


Fig 4.11 from the JBA consulting report which indicates the site is free from flooding at the worst scenario.



Block plan showing the site on the edge of the flood plain and surrounding dwellings