



MARGARET'S COTTAGE SANDHURST GLOUCESTER GL2 9NF TEL/FAX 01452 730418 email: david@three-counties-flood-risk-assessment.co.uk

20/0253

FLOOD RISK ASSESSMENT

THREE RIVERS D.C.
RECEIVED
- 3 MAR 2009
PLANNING DEPT.

THREE RIVERS D.C.
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17 MAR 2009
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Proposed Development Location:

331 Exbridge Road
Rickmansworth WD3 8DS

Dated : 24 February 2009

09 253

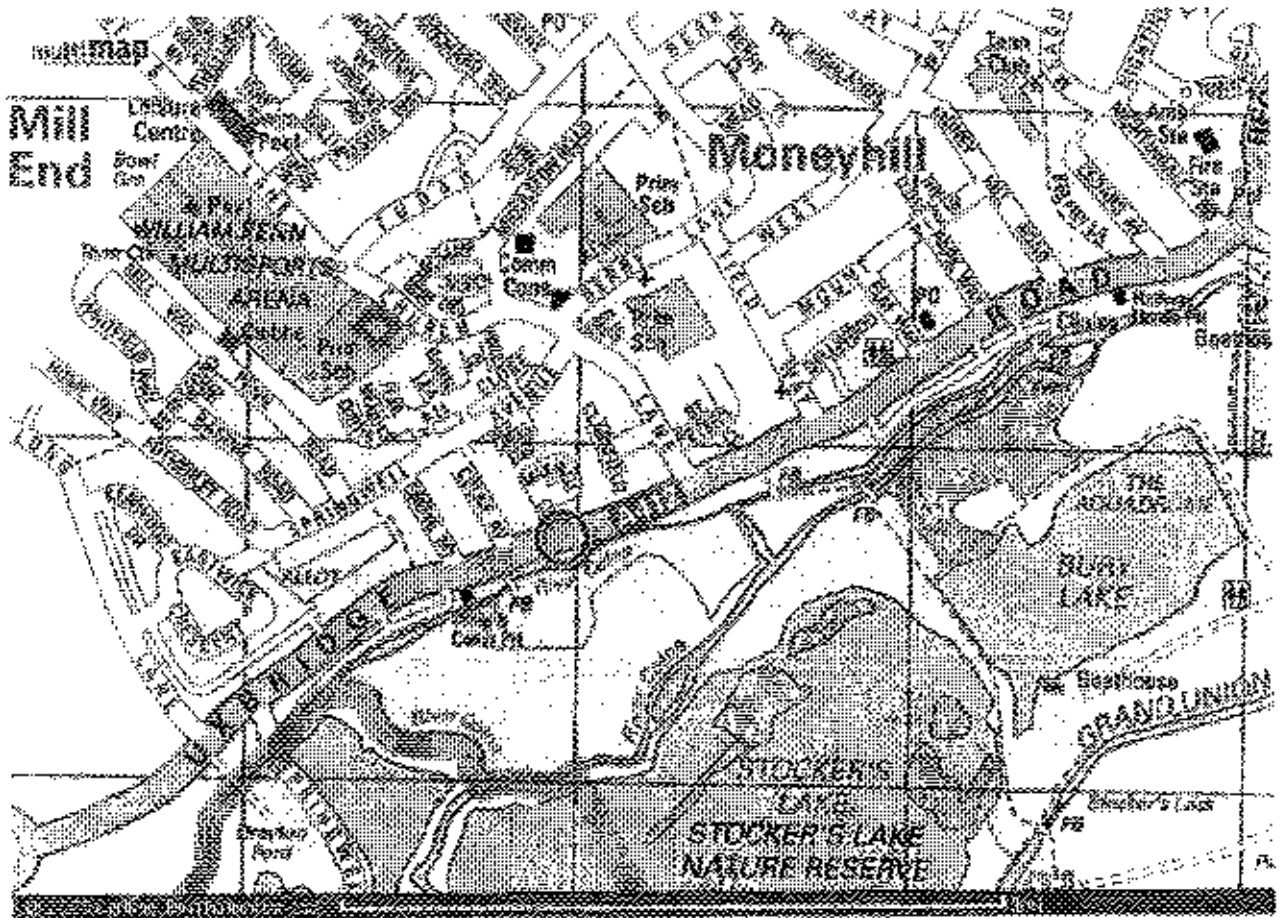
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17 MAR 2009

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Map of Rickmansworth, United Kingdom



Geographical location

- There follows :
- Location plan
 - Aerial image
 - Existing and proposed plans
 - View of proposed development
 - Levels survey to OD(GPS)
 - Flood Risk Assessment Report
 - EA Flood information/mapping
 - Evacuation Procedure
 - Flood Resilience Measures

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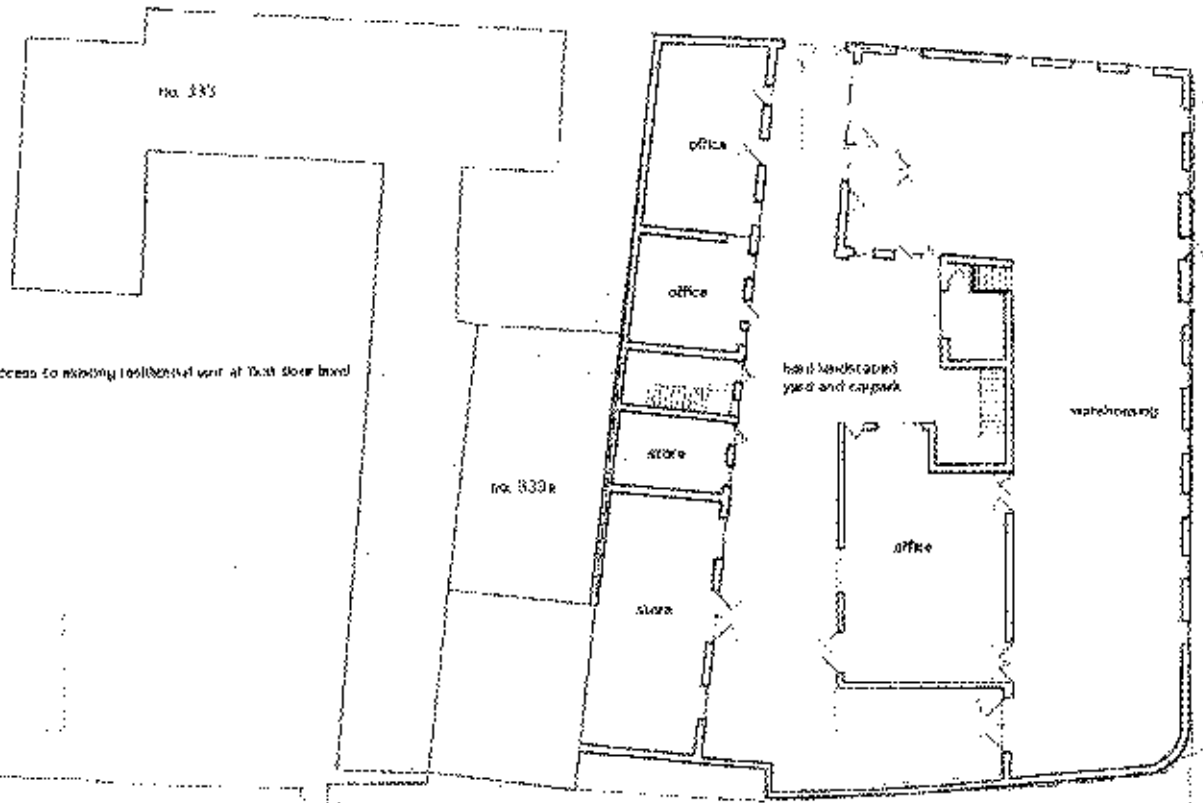
AERIAL IMAGE

Captured from Google Earth

001/253



bridge road
existing vehicles and residential entrance



private access road to residential

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at The Hive Gallery
Tax Shading
Electoral Green Road
London E1 6AA

T: 020 7333 1930
F: 020 7333 1930

PH+

Plot:
051 Ladbroke Road
Highgate North
Three Rivers
Hertfordshire

Plan:
Existing Ground Floor Plan

Scale of Plan 1:250	Date June 2006
Plot Number 051/038	Working No. 70760
Drawn by AFL/MS	Checked by

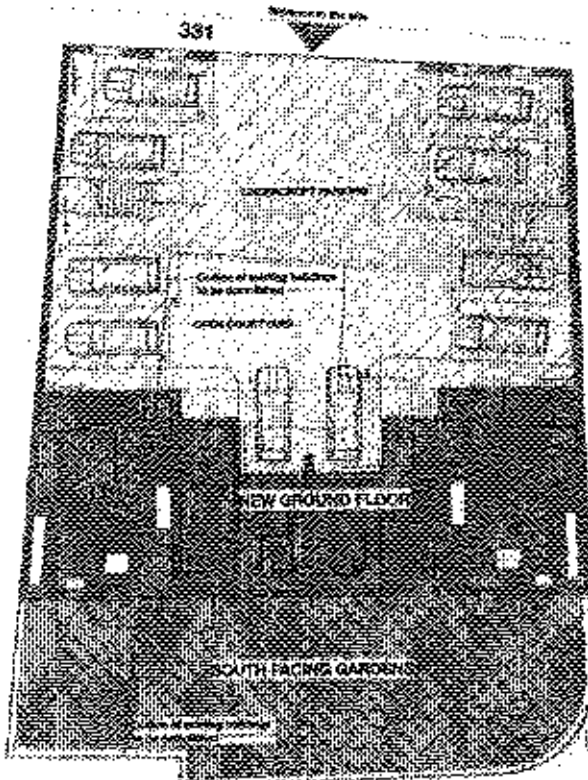
Dept:
PLANNING

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COLNE RIVER

FARRING STANDARD
14th March 2009

SITE PLAN 1:100 @ A1 (1:200 @ A3)

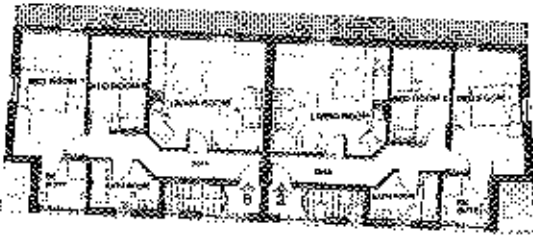
TRICANON DESIGN LIMITED
100, COLNE ROAD, COLNE, WEST YORKSHIRE, LS27 7LQ
01937 546464

VALERIE HENRIE P. MESSING
ARCHITECT WITH REGISTERED OFFICE
15, GLEN LANE
01937 546464

SITE & LOCATION PLAN
DATE: 15/03/09
SCALE: 1:100 @ A1 (1:200 @ A3)

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 17 MAR 2009
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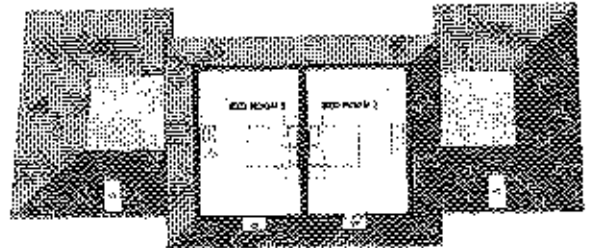
LEGEND
 ■ ROOM
 ○ DOOR
 □ WINDOW
 ▭ WALL
 ▭ CLOSET
 ▭ BATHROOM
 ▭ KITCHEN
 ▭ LIVING ROOM
 ▭ BED ROOM
 ▭ UTILITY
 ▭ GARAGE



LEGEND
 ■ ROOM
 ○ DOOR
 □ WINDOW
 ▭ WALL
 ▭ CLOSET
 ▭ BATHROOM
 ▭ KITCHEN
 ▭ LIVING ROOM
 ▭ BED ROOM
 ▭ UTILITY
 ▭ GARAGE



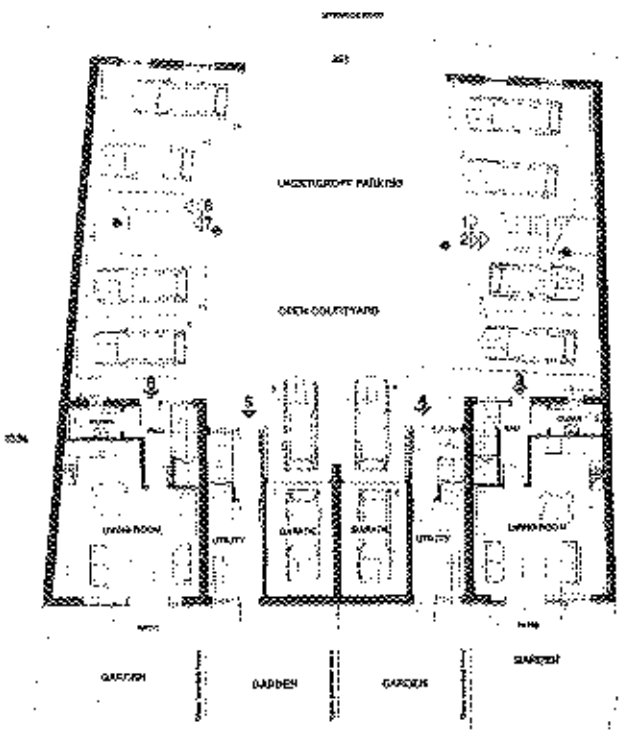
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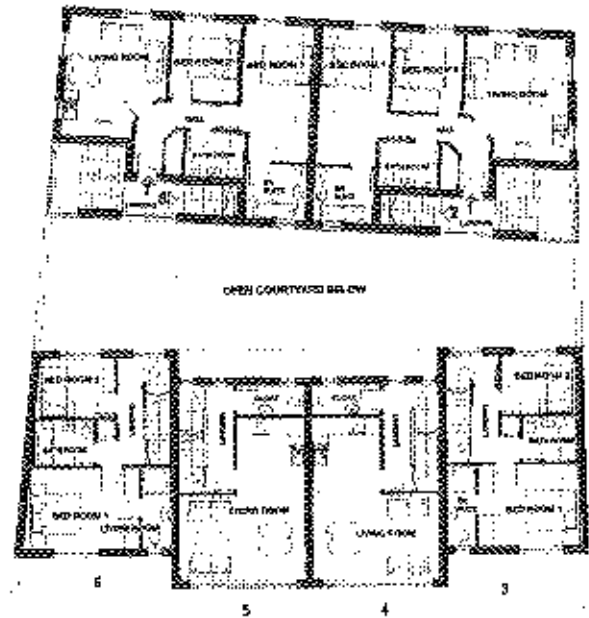
5 4 3

SECOND FLOOR PLAN 1:100 @ A1 (1:200 @ A3)

THIRD FLOOR PLAN 1:100 @ A1 (1:200 @ A3)



GROUND FLOOR PLAN 1:100 @ A1 (1:200 @ A3)



FIRST FLOOR PLAN 1:100 @ A1 (1:200 @ A3)



TRIPLEBAR DESIGN LIMITED
 100-110-120-130-140-150-160-170-180-190-200-210-220-230-240-250-260-270-280-290-300-310-320-330-340-350-360-370-380-390-400-410-420-430-440-450-460-470-480-490-500-510-520-530-540-550-560-570-580-590-600-610-620-630-640-650-660-670-680-690-700-710-720-730-740-750-760-770-780-790-800-810-820-830-840-850-860-870-880-890-900-910-920-930-940-950-960-970-980-990-1000

Valentines Homes (I.P.) Warwickshire
 All Councils and Local Authorities
 02-015 000

FLOOR PLANS
 05-015-011

20092537



ZONE	AREA	As a % of the site
EXISTING SITE	0.068 ha	
Existing ground floor coverage area	487 m ²	73 %
Existing undercroft access and parking	24 m ²	4 %
Existing hard standing (non permeable)	156 m ²	23 %
TOTAL	666 m²	100 %
PROPOSED		
New ground floor coverage area	161 m ²	24 %
New undercroft access and parking	171 m ²	26 %
New exposed hard standing (permeable)	130 m ²	20 %
New paved patios	19 m ²	3 %
New lawned and planted area	186 m ²	28 %
TOTAL	668 m²	100 %
Decrease in GCA	326 m ²	67 %
Increase in permeable surfaces	180 m ²	102 %



1 VIEW OF EASTERN END OF BUILDING 1 - FROM EASTERN END OF THE FIRST YARD



2 ELEVATED VIEW INTO THE COURTYARD TO THE WEST



3 VIEWING VIEW OF THE NORTH ELEVATION - FROM THE WEST



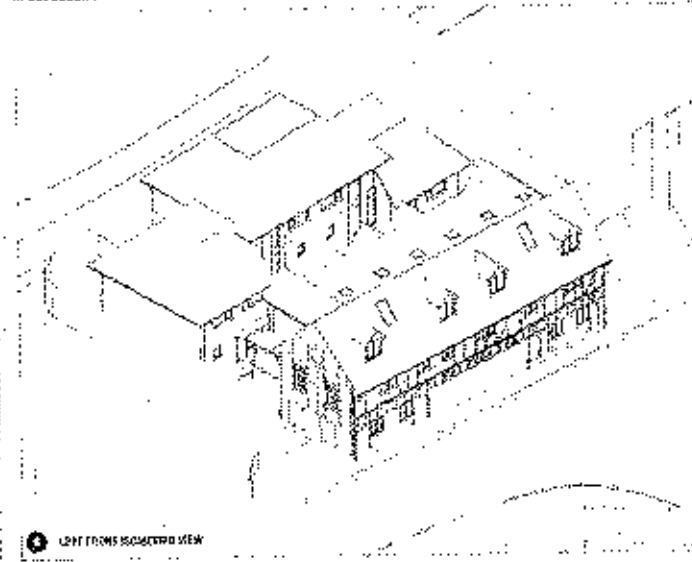
4 VIEW OF THE SOUTH ELEVATION OF BUILDING 2 - FROM THE OPPOSITE FIRST YARD



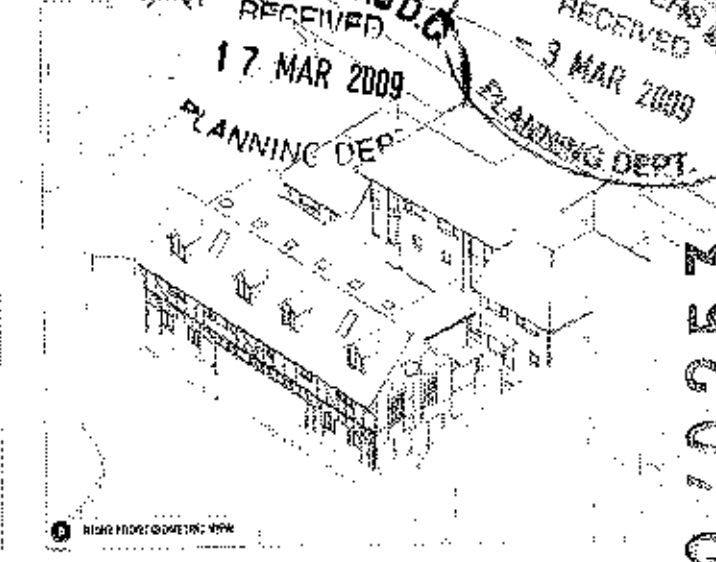
5 ENTRANCES OF HOUSES 1 AND 2 - FROM BREATH SPACE/TROTT PATHING



6 NORTH ELEVATION OF BUILDING 1 - FROM OPPOSITE END OF THE FIRST YARD



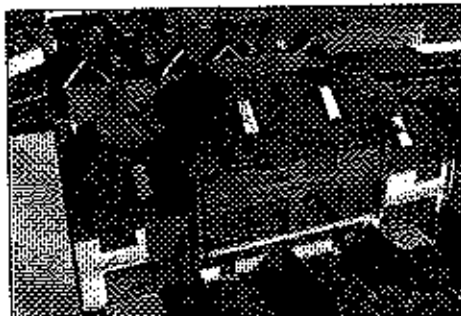
7 LEFT ISOMETRIC VIEW



8 RIGHT ISOMETRIC VIEW

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9 ELEVATED VIEW OF SOUTH ELEVATION OF BUILDING 3 - FROM THE SOUTH EAST



10 ELEVATED VIEW OF THE SOUTH ELEVATION OF BUILDING 7 - FROM THE SOUTH



11 NORTH ELEVATION FROM ENTRANCE TO DRIVEWAY CLOSE APPROXIMATE



12 VIEW OF NORTH ELEVATION FROM NORTH NORTH EAST - REPORT IN EXISTING VIEWS/DRAS

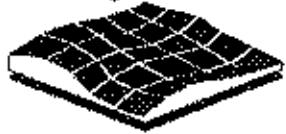


13 ELEVATED VIEW OF THE NORTH ELEVATION FROM NORTH EAST - ELEVATED VIEW



14 STREET LEVEL VIEW FROM THE NORTH YARD (ADJACENT TO THE BIG STAFFS)

BRANDON



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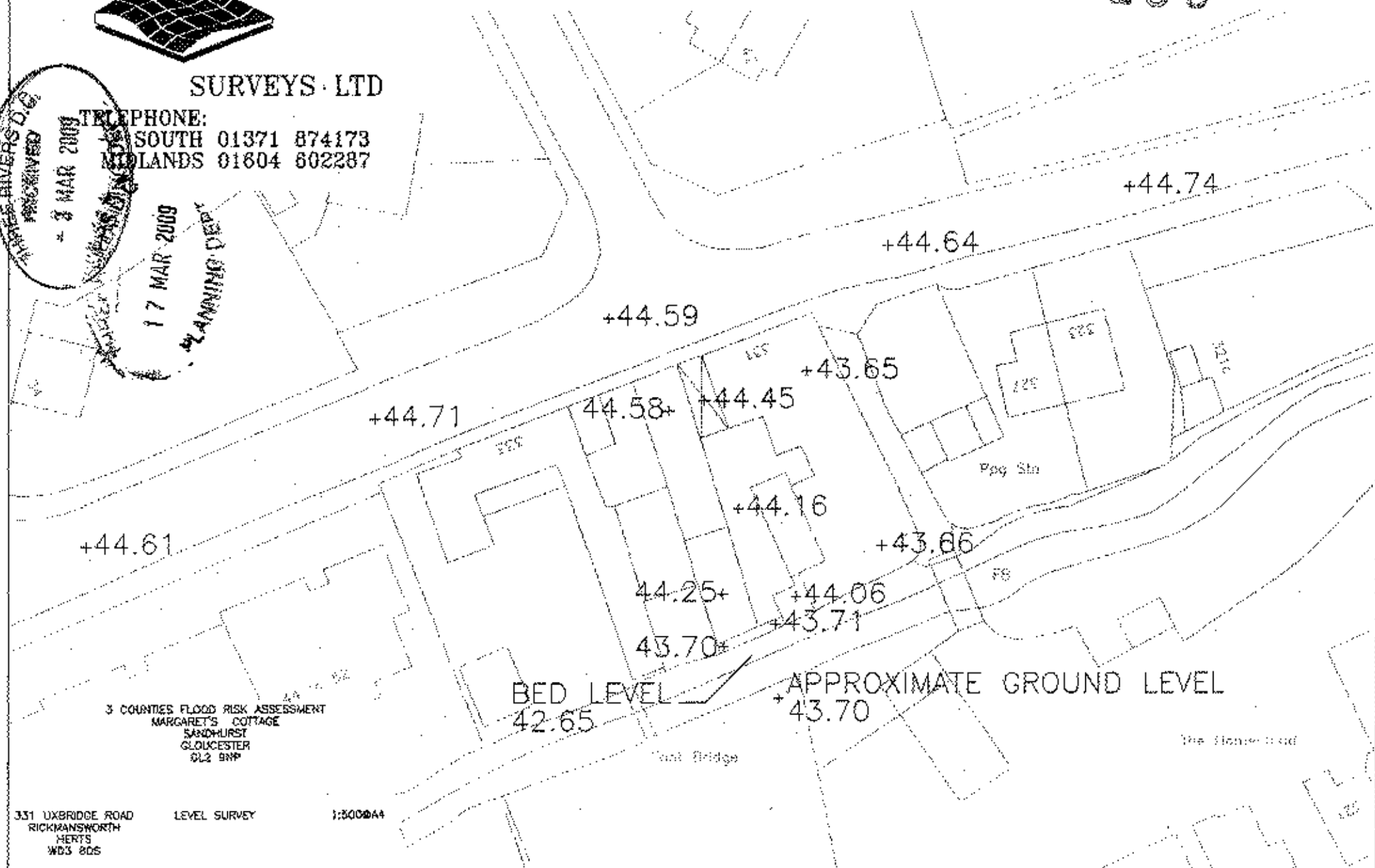
SURVEYS LTD

TELEPHONE:

SOUTH 01371 874173
MIDLANDS 01604 602287

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17 MAR 2009
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3 COUNTIES FLOOD RISK ASSESSMENT
MARGARET'S COTTAGE
SANDHURST
GLOUCESTER
GL2 9NP

BED LEVEL 42.65 APPROXIMATE GROUND LEVEL +43.70

331 UXBRIDGE ROAD
RICKMANSWORTH
HERTS
WD3 8DS

LEVEL SURVEY

1:500@A4

DRAWN BY: CJC
DRAWING NUMBER: MS-3223

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09'0253

PROPOSED REDEVELOPMENT AND ERECTION OF NEW RESIDENTIAL DWELLINGS ON LAND AT 331 UXBRIDGE ROAD, RICKMANSWORTH, HERTS; WD3 8DS.

DESK TOP STUDY ON FLOOD RISK ASSESSMENT

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THREE RIVERS DISTRICT COUNCIL
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9 MAR 2009
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The proposal the subject of this study comprises the reinstatement of the existing flood building as 4 two bed dwellings and the development of 4 three bed town houses in a terrace to the rear, in lieu of 6 two bedroom apartments approved previously, together with associated under croft street parking

Definition of Flood Hazard

The site of the proposed development lies principally within Flood Zone 1 - **low probability**- which is defined as land having less than a 1 in 1000 annual probability of river flooding in any one year, bordered by Flood Zone 3 **high probability** (with an annual probability of flooding of 1% or greater from rivers) and as indicated in The Environment Agency's (EA) Flood Zones. Accordingly the Agency would consider the site and any buildings would be at a low/high risk of flooding as set out in detail in PPS 25. The land would therefore be appropriate for all uses in this zone of existing development, as would be expected for an area of mature development.

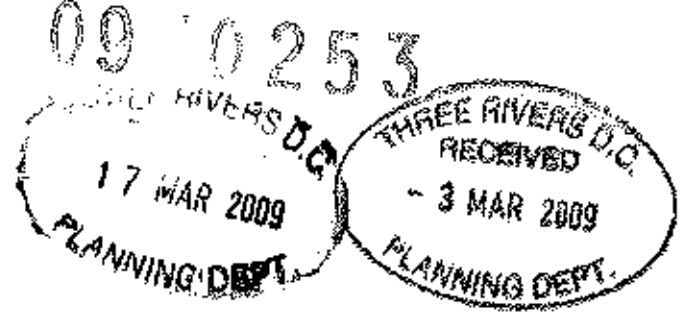
This flood map includes terrestrial levels obtained by what is called a "sonar fly-over", which is a computerised aerial assessment devised only as a general guide to flood conditions in a particular area. It gives a "broad brush sweep" only and the EA are committed by policy to help all enquirers over ways and means of meeting their criteria, based on the fact that the flood map is for guidance only. The EA admits that the category of modelling is "low confidence"

It is because of this scenario that consideration is also given to historical evidence of flooding, based on previous worst flood conditions, together with an allowance as mentioned later in this assessment. This rationale gives a far more meaningful flood datum than a general "broad brush" interpretation particularly as it is based on fact, as against the modelled methodology and the inevitable surmise element.

Likelihood of Flooding

The EA have advised the site is in an area, which falls outside the extent of the extreme flood at the time of their assessment of the likelihood of flooding. Further they have indicated that the site has not previously flooded and this is confirmed by the local authority and anecdotally locally.

The EA have supplied data taken from the Upper Colne Strategy Model (Halcrow 2004) where the relevant node label of RD049A applies and which gives a modelled flood level for a 1 in 100 year return period of 44.08 AOD. The confidence level given to this figure is defined as **low**. The River Colne runs to the south of the application site



Development details

A comparison of the footprints and permeable areas is provided within the existing/proposed plans within this report. This shows a decrease in the footprints and hard standing of 67% , a total of 326m² less. There is an increase of permeable surfaces of 102% which is 160m² less .

Levels

The application site has an area of approximately 0.06 Ha. The on site levels range from 43.65 AOD to the east and 44.16 AOD to the west, 43.71 AOD to the south and 44.58 AOD to the north. The level of the fronting Uxbridge Road is 44.59 AOD.

The floor levels of the new building within the development should be set at a minimum of 0.300m above the modelled flood level which will equate to 44.08 + 0.300m = 44.38 AOD, which achieves a level above the climate change allowance datum and is some 0.300m above the general ground level. This aspect will require the agreement of the local authority.

Offsite Impacts

The matter of sustainable drainage has been considered and it would be recommended that a SUDS scheme be appropriate for this site using the permeable paving technique or similar to achieve an attenuated run-off. This would comprise permeable paving to the access and parking areas, to drain into either an agreed watercourse or surface water sewer. On site investigation will determine whether an infiltration or tanked system is appropriate. The whole of this aspect will require the agreement of the local authority and should be the condition of any consent.

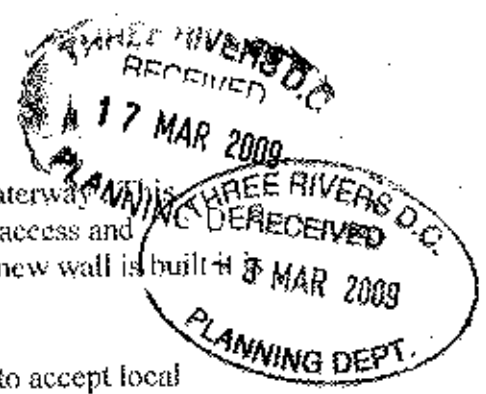
Residual Risk

The question of a dry access has historically been confirmed as being achieved and established and there is no anecdotal evidence of flooding to this site. This is confirmed by the street level adjacent to the application site being above the modelled flood level referred to above

Historically the back and sides of the site have been protected from flooding by a high brick wall being absorbed into the on-site property . This is as high as 3 stories in one part , dropping to 2.4 metres high and finally to 1.5 metres .

Due to the state of this wall and the many years it has been there it is considered that it could offer a danger to occupants on the site should it remain in its present condition and height . Force of water at time of possible flood could underwash it and make it collapse . Because of that it is recommended that a new wall be built at a height of 1.5m using flood resilience techniques as described within this report.

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Also it is noted that part of the wall lies within a metre of the waterway technically offends by-law regulations with regard to waterside access and maintenance . Because of this it is recommended that when the new wall is built at no point less than 8 metres from the bank of the waterway.

The fact that historically this wall has existed is another reason to accept local anecdotal evidence that the site has never flooded because it has always protected the area which might be affected by flood zone 3.

In order to take account of any slight flood risk as described, it would be proposed, subject to the agreement of the local authority, and in view of the circumstances as regards such slight risk, that the residents of the redeveloped site be a subscriber to the EA Flood Watch initiative subject to the agreement of the local authority.

Also for evacuation procedures (to be part of the dwellings operating and general manual advice) generic details of which are supplied by this company and enclosed with the study. The development will also be the subject of the latest appropriate flood resilience building criteria where relevant, with details to be agreed with the local planning authority.

Compensation

Due to the fact that the possible flood area has historically been protected by the wall (as detailed above) it is not considered that compensation is required . Also there is a considerable reduction in impermeable area on site which equates to a betterment under this classification

Sequential/Exception Test

It is considered the provisions of PPS 25 Annex D - The Sequential Test -- are relevant here as we are dealing with appropriate development, but the local authority will rule on this point, and implement an exception procedure if they deem it necessary.

We have discussed design standards under planning regulations with the client and it is apparent that to a great extent the LPA wish the design to reflect historic building features on the site . For that reason it is obvious that the LPA wish this site to be developed in such a way as to reflect its historical significance.

In so doing the LPA are making it an exceptional case under the guide-lines of PPS25 As its recent history has been that of a warehouse the perceived plans for this site would offer betterment both in terms of planning and flood risk . There is no doubt that if this site were allowed to degenerate it could become structurally unsound and so exacerbate flood risk both on and off site . It is worthy of note that a private lane lies next to the site ,another reason for making sure it has safety of passage for pedestrians especially at a time of possible flood risk .

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GREEN RIVERS D.C.
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I am of the opinion therefore that this proposal which involves minor redevelopment in an existing built up area can be considered de minimus as a minor development proposal, and coupled with the measures as outlined can be safely accommodated within the advices contained in PPS 25.

Conclusion

The site is afforded the appropriate protection to flooding as indicated in PPS 25, and it is unlikely that any meaningful inundation will occur to prejudice the proposal. The circumstances as regards a slight flood risk described in this study, incur implementing the Flood Watch provision supplied by the EA, and other measures as described above.

P P FEARNSIDE FICE

19th February 2009

0253



David Eggleton via email

Our ref: NE19300MR

David@three-counties-flood-risk-assessment.co.uk

Date: 12 February 2009

Dear Mr Eggleton

Enquiry regarding FRA data for site at 331 Uxbridge Road, Rickmansworth WD3 8DS

Thank you for your enquiry.

Part of the site in question lies within flood zone 3 of the Colne main river as shown on our Flood Map.

Flood zone 3 has a 1 in 100-year flood return period. This means that a flood event is predicted to occur with an annual probability of 1% (so there is a 1 in 100 chance each year this event will happen)

We have no record of this site having been affected by flooding in the past. The flood zone maps are used by planners to highlight the areas where more detailed investigation of flood risk is required.

We advise you to contact the local water company regarding previous or potential flooding from sewers. You may also wish to contact the local authority regarding flooding from any non-main rivers or surface water runoff.

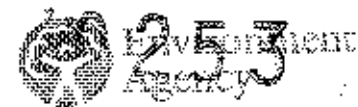
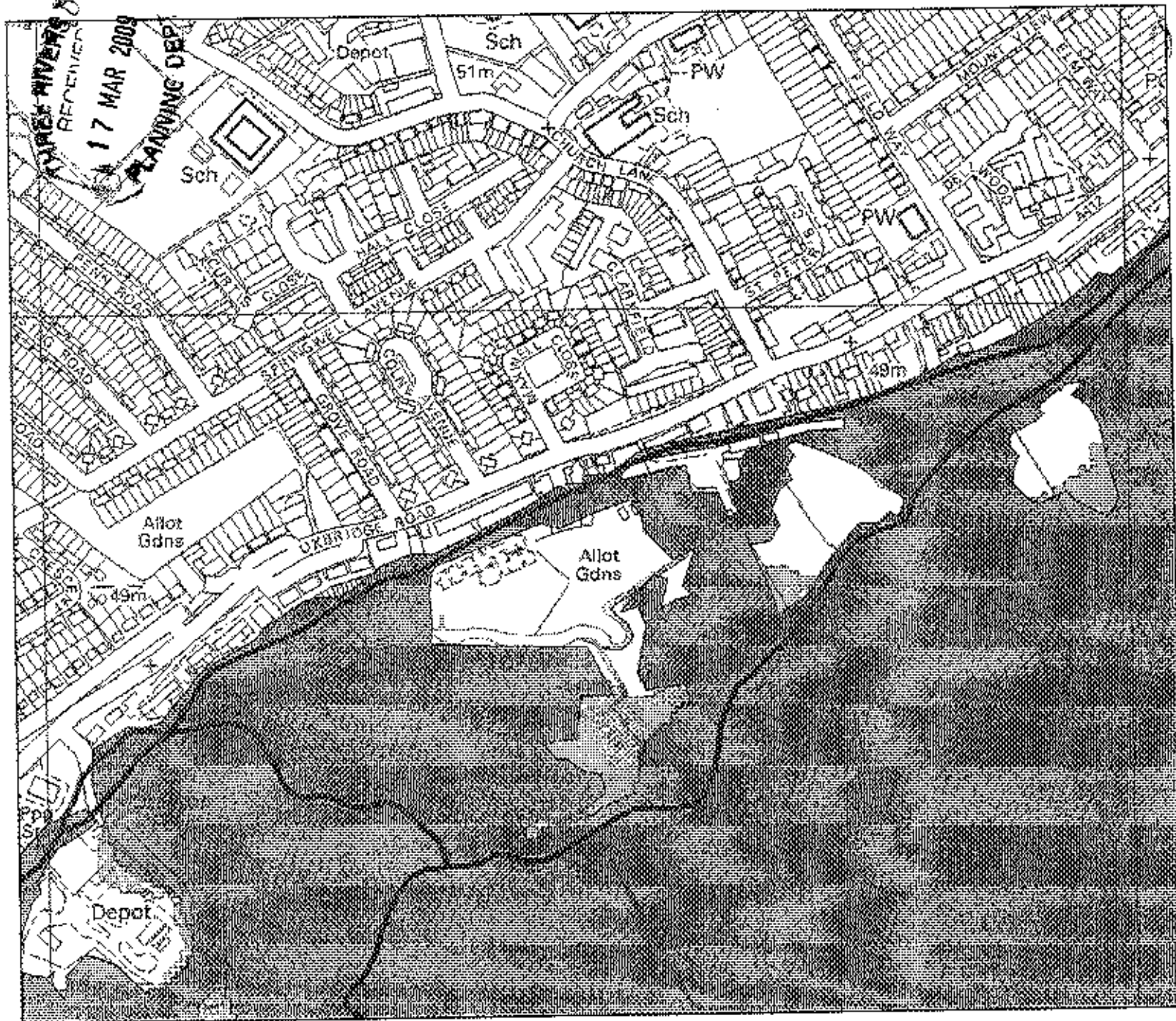
Please find attached modelled flood levels for this site along with a node map.

If I can be of any further help, please contact me.

Yours sincerely

Michelle Robbins
External Relations Officer
Direct dial 01707 632 319
Direct fax 01707 632 610
Direct email thnortheast@environment-agency.gov.uk

Apollo Court, 2 Bishops Square Business Park, St Albans Road West, Hatfield, Herts, AL10 9EX.
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk






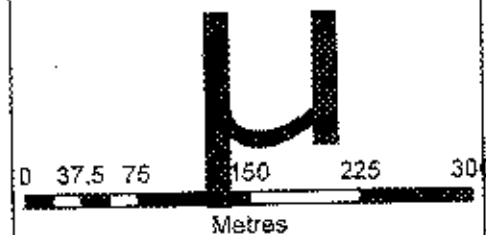
Environment Agency
 2 Bishops Square Business Park
 St Albans Road West
 Hatfield
 Hertfordshire
 AL10 9EX

Flood zone map
 331 Uxbridge Road
 WD3 8DS

12 February 2009
 NE19300MR

Legend

-  Main Rivers
-  Flood Zone 2
-  Flood Zone 3



Produced by:
 External Relations
 Thames Region (North East Area)

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UPPER RIVERS DISTRICT
 PLANNING DEPT.
 17 MAR 2009

09/0253

Environment Agency ref: NE19300MR

The following information has been extracted from the Upper Colne Strategy Model (Halcrow, 2004)

Caution:

This is a strategy model and not designed for looking at the impacts of development at a particular site. To perform this function accurately the model may need extra cross sections added in the location of the development and a possible modification of the hydrology. This model was created by piecing together previous models of different sections of the Upper Colne and so the confidence in the results varies along the length of the model.

All flood levels are given in metres Above Ordnance Datum (mAOD)

All flows are given in cubic metres per second (cumecs)

MODELLED FLOOD LEVEL

Node Label	Easting	Northing	Watercourse	Return Period					Confidence Level
				10 yr	20 yr	50 yr	100 yr	200 yr	
RD044	504933	193925	Colne	44.16	44.21	44.25	44.29	44.33	Low
RD042	504792	193799	Colne	43.91	43.97	44.02	44.06	44.10	Low
RD040	504684	193681	Colne	43.84	43.91	43.95	43.99	44.04	Low
RD039	504611	193553	Colne	43.77	43.83	43.88	43.93	43.97	Low
RD037	504458	193484	Colne	43.68	43.75	43.80	43.84	43.88	Low
RD054A	504962	193981	Colne	45.18	45.24	45.28	45.31	45.33	Low
RD052A	504783	193909	Colne	45.05	45.11	45.15	45.17	45.20	Low
RD051A	504657	193882	Colne	44.82	44.88	44.92	44.95	44.97	Low
RD049A	504560	193860	Colne	43.95	44.01	44.05	44.08	44.12	Low
RD047A	504406	193791	Colne	43.58	43.83	43.67	43.71	43.75	Low
RD045A	504275	193724	Colne	43.45	43.49	43.53	43.57	43.62	Low
RD042A	504047	193546	Colne	43.27	43.29	43.31	43.33	43.34	Low
RD051A	504657	193882	Colne	44.82	44.88	44.92	44.95	44.97	Low



MARGARET'S COTTAGE SANDHURST GLOUCESTER GL2 9NF

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17 MAR 2009
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Flood Evacuation Procedures (for domestic property)

Remember the 3 Bs

Be prepared

Be vigilant





Be careful.

It is recommended that all house-holders who could be threatened by flooding use best practise procedures to protect inhabitants and property from the effects of a possible flood.

Detailed below are the steps we recommend to set up a flood risk evacuation plan.

Subscription to the Environment Agency's flood watch scheme is free and in many cases the EA can warn interested parties of possible flooding up to six hours in advance.

Environment Agency's Flood Warning Codes

	Flood Watch: Flooding is possible. Be aware! Be prepared! Watch Out!
	Flood Warning: Flooding of homes, businesses and main roads is expected. Act now!
	Severe Flood Warning: Severe flooding is expected. Imminent danger to life and property. Act now!
	All Clear: All Clear is issued when flood watches or warnings are no longer in force. Flood water levels receding. Check all is safe to return. Seek advice.

Flood Preparation Plan (Flood Watch)

The Flood Preparation Plan is activated on receipt of the Flood Watch warning from the Environment Agency, or from other sources, e.g. TV, Radio, local contacts. Flooding is possible, and the situation could worsen, so:

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- Watch water levels on nearby roads in case overtopping does occur.
- Ring Floodline on 0845 988 1188 to confirm time and height of predicted flood levels.
- Make sure you have what you need to put your flood evacuation plan into action.
- Consider when to implement Evacuation Plan.
- Be ready to move important equipment, such as computers, above flood level upon receipt of a flood warning.
- Keep a store of plastic bags (grocery bags are fine) to place around the legs of furniture when you receive a flood warning.
- Identify a suitable location for evacuation of vehicles to higher ground.
- Consider the height at which goods are fixed, stored or displayed - the higher the goods, the less chance of damage.
- Copy vital hard copy and electronic records and store them in a safe place. This includes financial and insurance records, product lists, formulas and specifications, staff, customer and supplier databases and staff files.
- Obtain or construct sandbags or other items to protect lower lying entrances to the site.

THREE RIVERS DISTRICT
RECORDS
17 MAR 2009
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Evacuation Plan (Flood Warning)

The flood evacuation plan should be implemented when a Flood Warning is received. Flood Warning means flooding is now expected, so put your flood evacuation plan into action. The actions are as with Flood Watch plus:

- Move vehicles to other locations. Flooding may be expected in less than 2 hours so with a large number of vehicles on site this may have to be implemented sooner, or smaller vehicles (cars, vans) moved before larger vehicles (trucks etc).
- Move valuables and other items to safe locations such as upper floor, attic space or other locations. Put sandbags or flood boards in place.
- Turn off gas and electricity (Figure 3 shows locations).
- Initiate evacuation of the premises.
Follow dry escape routes.

Evacuation Plan (Severe Flood Warning)

The flood evacuation plan should be implemented as a matter of urgency when a Severe Flood Warning is issued. Severe Flood Warning means severe flooding is now expected. The actions are as with Flood Warning plus:

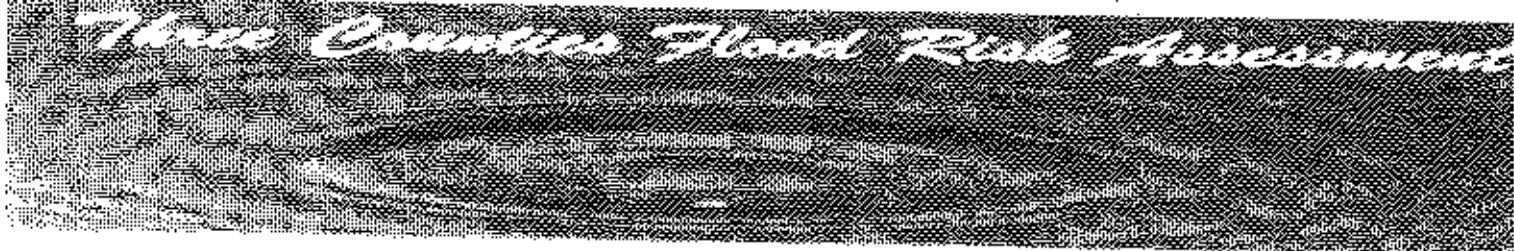
- Be prepared to lose power supplies - gas, electricity, water, telephones
- Power cuts are common during a flood so carry a torch with you if at night (torches to be available).
- Co-operate with emergency services and local authorities
- Security procedures - Lock windows, doors and set the alarm.
- Try to keep calm, and to reassure others, and evacuate the site
- Live electricity and gas can be extremely dangerous. Turn off gas and electrical appliances immediately and always turn off building services before water enters the building.

The local council Emergency Planner and the county's Emergency Planning Department/Civil Protection Unit can help you determine the conditions under which a flood evacuation would be necessary, and offer advice.

All Clear

An all clear will be issued when flood watches or warnings are no longer in force.

- Flood water levels receding.
- Check all is safe to return.
- Seek advice.



MARGARET'S COTTAGE SANDHURST GLOUCESTER GL2 9NP TEL/FAX 01452 730815 email: david@three-rivers-flood-risk-assessment.co.uk

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PROPERTY FLOOD RESILIENCE MEASURES

It is recommended that the following measures should be considered, in consultation with the area building control department:

1. Use of dry-proofing and wet-proofing building materials where appropriate. Lime plaster or cement render rather than conventional gypsum plaster.
2. Water resistant coatings for external walls.
3. Standard moveable flood barriers should be available for doors, windows, air bricks and any other apertures in exterior walls. There should be a regime under health and safety precautions that after flooding all external protectors must be removed at the earliest opportunity. (a) for ventilation to dry out any moisture (b) to make sure that any heating vents are not blocked when the heating is switched back on.
4. In certain cases the question of low level windows should be considered.
5. Non-return valves should be considered for sewers to prevent back-flow.
6. Electrical wiring feeding low level points and switches should drop from the ceiling rather than be fed from floor level. Switches and points may need to be raised.
7. Cracks to doors and render should be repaired to reduce water seepage.
8. Use of concrete floors rather than timber
9. Location of boilers and electrical white goods above the possible flood level
10. No chipboard or MDF, instead using plastic and metal alternatives.

It is recommended that all property owners/developers seek further advice from the government sponsored web-site, www.odpm.gov.uk. This gives comprehensive details on all flood protection provisions which are recommended.

It is vital that before applying for planning permission all aspects of flood protection be discussed with the relevant authorities. This will save time and further expense should these details not be covered within the planning application.