

Proposed Redevelopment
at Old Mill Lane,
Barnsley

Flood Risk Assessment

Project Ref: 18867/001

December, 2006

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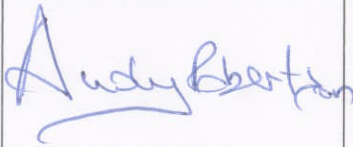
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1 Executive Summary

1.1 Scope and Background

This Flood Risk Assessment (FRA) has been prepared by Peter Brett Associates to support an outline planning application for the redevelopment of a National Grid depot off Old Mill Lane in Barnsley, South Yorkshire.

The proposals are for the erection of a retail unit with a building footprint of approximately 2000 square metres. A total of 67 no. car parking spaces are proposed, together with associated access arrangements for both customers and service vehicles.

The report has been prepared in accordance with the guidance set out in the recently released Planning Policy Statement 25 Development and Flood Risk (PPS25), Annex E and summarises the methodology and results of the assessment.

In considering the proposals the following key principles have been applied:-

- Identification of flood risks.
- Protection of users of the new development.
- No increased flood risk to third parties.

1.2 Consultations

The Environment Agency was consulted during the preparation of this report. Enquiries were also made to the site owner, Barnsley Metropolitan Borough Council and Yorkshire Water.

1.3 Flood Risk

The Environment Agency has provided a flood level for the site from their detailed River Dearne hydraulic modelling. The 1% annual probability (1 in 100-year) flood level is 43.53 AOD.

Following detailed analysis of the Environment Agency flood levels and topographic survey of the site, the existing site is located in the Environment Agency's flood zone

2, medium risk, where the annual probability of flooding is between 0.1% and 1.0%. PPS25 Annex D Table D.1 defines such an area as follows:

Zone 2 Medium Probability

Definition

This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year.

Appropriate uses

The water-compatible, less vulnerable uses of land and essential infrastructure in Table D.2 are appropriate in this zone.

Subject to the Sequential Test being applied, the highly vulnerable uses in Table D.2 are only appropriate in this zone if the Exception Test is passed.

FRA requirements

All development proposals in this zone should be accompanied by a FRA. See Annex E for minimum requirements.

Policy aims

In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage techniques.

1.4 Mitigation

1.4.1 Design

Current Environment Agency guidance recommends that the minimum ground floor levels of residential developments are set at:

- 300mm above the 1% annual probability (1 in 100 year) + 20% allowance for climate change, flood level (if it is available), or if there is only a 1% annual probability (1 in 100 year) flood level then,
- 600mm above the 1% annual probability (1 in 100 year) flood level

In this instance, the climate change level is not available for comparison. The layout drawing by the architect, Nichol Thomas, (included in Appendix 3) confirms that the proposed minimum ground floor level is 44.50m AOD. This is 970mm above the 1% annual probability flood level and will therefore exceed the EA guidance by 370mm.

The final ground floor levels should also provide a suitable freeboard above the surrounding landscaped ground level to allow for the risk of flooding associated with localised surface water runoff.

The freeboard allows for hydrological and climate change uncertainty and the residual risks associated with flood events significantly rarer than the 1.0% annual probability fluvial flood event (i.e. significantly greater than the 1 in 100-year fluvial event).

1.4.2 Access

Old Mill Lane, running to the west of the site, is at a level of approximately 45.4m AOD at the existing site entrance (1.87 metres above the 1% annual probability flood level).

The proposals for the redevelopment of the site included in Appendix 3 indicate that the proposed access to the site will be via the proposed new road layout to the north-east of the site. The minimum existing ground level at this point is 44.46m AOD (930mm above the 1% annual probability flood level), and the proposed layout plan in Appendix 3 shows that the proposed road to the north-east rises to a level of 50.3m AOD approximately 150 metres from the site.

Figure 2 in Appendix 1 also confirms that, beyond the immediate surrounding area, Old Mill Lane rises steeply to the north of the site, reaching a level of 51m AOD approximately 200 metres from the site.

The proposals are for a commercial development at the site, and therefore access is not a critical aspect (as the site would be evacuated if flood risk became an issue). However, the above confirms that continuous pedestrian dry access to the site is achievable at the 1% annual probability flood event.

1.5 Conclusion

The proposed freeboard, construction, and mitigation arrangements demonstrate a robust solution that will minimize the risk of flooding to the proposed building, its occupants, and to the surrounding area. As such, the precautionary principle to the uncertainties, that PPS25 advocates, has been addressed satisfactorily.

2 Introduction

Government policy with respect to development in flood risk areas is contained within the Department of Communities and Local Government Planning Policy Statement 25 (PPS25) 'Development and Flood Risk' which was issued on 7th December 2006.

PPS25 builds on the previous guidance contained in the Planning Policy Guidance Note 25 (PPG25) 'Development and Flood Risk' which was issued on July 17, 2001, itself based on the DoE Circular 30/92 (MAFF Circular FD 1/92).

Peter Brett Associates have prepared this flood risk assessment in line with the guidance in Planning Policy Statement 25 (PPS25).

This Flood Risk Assessment has been prepared to support the planning application for the erection of a retail unit with a building footprint of approximately 2000 square metres. A total of 67 no. car parking spaces are proposed, together with associated access arrangements for both customers and service vehicles.

The Local Planning Authority (LPA), Barnsley Metropolitan Borough Council, will make the final decision with regard to any planning application. PPS25, paragraph 26, confirms that *'Following the coming into force, on 1st October 2006, of the amendment to Article 10 of The Town and Country Planning (General Development Procedure) Order 1995 (the "GDPO"), LPAs are required to consult the Environment Agency on all applications for development in flood risk areas *except minor development), including those in areas with critical drainage problems and for any development on land exceeding 1 hectare outside flood risk areas.'*

Peter Brett Associates, Consulting Engineers are specialists in, amongst other areas, hydrology, flood defence and river engineering. Peter Brett Associates are one of the Environment Agency's National Framework Consultants for Flood Risk Mapping.

3 Proposed Development Site

3.1 Site Location and Plan

The existing site is located in the Old Mill area, north-east of the centre of Barnsley, South Yorkshire. The OS grid reference for the site is 435140m E, 407315m N. The site location is shown on the plans included in Appendix 1.

Photo 1: View looking north-west across site



The application site is a brownfield area, consisting of the northern part of an area formerly utilised as a National Grid depot (note the larger land ownership boundary compared to the application boundary on the Nichol Thomas plan in Appendix 1). This area is bounded by the car park of a Wickes DIY store to the north and east, whilst Old Mill Lane runs north-south on the western boundary of the site.

The River Dearne, flowing south-east through the centre of Barnsley, passes under Old Mill Bridge to the south-west of the depot site before flowing along its southern boundary (separating the area from the gas holder to the south, access to which is via a concrete bridge over the watercourse).

The site consists of a hard surface area to the north-west (see photo 1), over which was formerly located the main brick building of the depot, together with smaller buildings (all of which have been demolished). The south-eastern half of the site consists of an area of scrubland, covered in small trees and vegetation.

Photo 2: View looking south-east across site



The overall area of the site is approximately 6,500 square metres.

Access to the area is via Old Mill Lane to the west of the site.

3.1.1 Survey Data

A topographic level survey of the site was undertaken by White Young Green Environmental in August 2006, (a copy of survey drawing 102 is provided in Appendix 2).

Although the survey does not indicate the datum used, telephone discussions have verbally confirmed that the levels relate to the local Ordnance Survey benchmark.

It is appreciated that the current Environment Agency guidance states that topographic surveys should be carried out to OS determined by GPS. However, in

PBA's experience of OSBM/ GPS validation exercises for previous FRAs, there is typically a difference of up to 100mm between the local OS benchmarks and GPS datum. In this instance it was considered that the relatively small anticipated difference between GPS and local OSBM datum would be inconsequential compared to the significant freeboard afforded to the existing site above the EA provided flood level (itself a conservative estimate as it has been provided from the upstream face of Old Mill Lane Bridge).

3.1.2 Site Levels

Analysis of the topographic survey indicates that ground levels within the extent of the proposed development (the survey covers a much wider area, particularly to the south of the application site, as per the Nichol Thomas plan in Appendix 1) are between 44.37m, on the northern boundary, and 45.24m AOD in the area covered with trees.

3.1.3 Access Levels

In general there is a slight fall in levels from the western side of the site, where the buildings were formerly located, to the vegetated area to the east of the site.

Old Mill Lane, running to the west of the site, is at a level of approximately 45.4m AOD at the existing site entrance. Figure 2 in Appendix 1 shows that Old Mill Lane rises steeply to the north of the site, reaching a level of 51m AOD approximately 200 metres from the site.

3.2 Development Proposals

The client is seeking to secure an outline planning consent to redevelop the site for a development of warden-assisted apartments at the site. Details of the Nichol Thomas proposals have been provided by the Client and are included in Appendix 3.

The proposed development is to comprise the following:

- The erection of a retail unit with a building footprint of approximately 2000 square metres.
- A total of 67 no. car parking spaces

- Associated access arrangements for both customers and service vehicles, off the proposed new road to the north-east of the site.

3.3 Existing Flood Defences

The River Dearne flows south-east through the centre of Barnsley, passing under Old Mill Bridge and flowing a short distance south of the National Grid site.

Photo 2: View of River Dearne, south-east of site



The online Environment Agency flood zone map indicates that this reach of the River Dearne benefits from flood defences (designated by the dashed purple line on the map, a copy of which is included in Appendix 4). It is unclear to what this refers to, as no formal flood defences were evident from a site visit on the northern side of the riverbank at the National Grid site, where the bank rises steeply up to the existing ground levels.

The detailed flood zone map provided with the EA letter dated 30th November 2006 (a copy of which is included in Appendix 6) confirms that 'The Agency has no record of flood alleviation measures in this area', although it is possible that Old Mill Bridge, immediately upstream of the site, may cause a constriction to flow and provide an informal defence to the site.

4 Flood Risk Assessment

The level of detail entered into in any flood risk assessment is dependent upon the scale and potential impact of the proposed development (PPS25 Annex E). In this case the Client is seeking to obtain an outline planning consent for the erection of a retail unit with a building footprint of approximately 2000 square metres, together with associated parking provisions and access arrangements for both customers and service vehicles.

4.1 Existing Information on Flood Risk

The main risk of flooding to the area is from the River Dearne, which runs south-east in a channel to the south of the site (see Figure 2 in Appendix 1).

Photo 3: View upstream of River Dearne, south of site



Requests for information were made to a number of organisations, and their responses were as follows:

4.1.1 Information from Environment Agency

Information was obtained from a number of sources at the Environment Agency, as detailed below:

1. Flood zone Maps

The initial phase in identifying whether a site is potentially at risk of flooding is to consult the Environment Agency's Flood Zone maps, available on the Environment Agency's website. However, these are (often) based on coarse scale modelling and provide only an initial indication of the flood risk to a site.

The Flood Zones divide the floodplain into three categories of flood risk, and do not take flood defences into account. PPS25 defines the Flood Zones as:-

- Flood Zone 1 – little or no risk, with annual probability of flooding from rivers and the sea of less than 0.1% (1 in 1000)
- Flood Zone 2 – low to medium risk, with annual probability of flooding of 0.1 to 1.0% from rivers and 0.1 to 0.5% from the sea
- Flood Zone 3 – high risk of flooding with an annual probability of flooding of 1.0% or greater from rivers, and 0.5% or greater from the sea.

A copy of the online Environment Agency Flood Zone map for the site is provided in Appendix 4.

The Environment Agency Flood Zone Map shows that the southern part of the application site lies within Flood Zone 3 (within the 1% annual probability, 1 in 100-year, flood extent), which the map shows as running through the location of the now demolished depot building at the site. When the map is queried in the location of the site, it indicated that the chance of flooding is 'moderate' (i.e. 1.3% (1 in 75) or less, but greater than 0.5% (1 in 200)).

The online map also shows that the site is within an area benefiting from flood defences, as indicated by the dashed red lines on the map. However, this is contradicted by the detailed flood zone map provided with the EA letter dated 30th November 2006 (a copy of which is included in Appendix 6), which indicates that there are no formal flood defences at the vicinity of the site.

PPS25 Annex D Table D.1 defines flood zone 3a as follows:

Table 4.1: Extract of PPS25 Table D.1**Zone 3a High Probability****Definition**

This zone comprises land assessed as having a 1 in 100 or greater probability of river flooding (>1%) or a 1 in 200 or greater annual probability of sea flooding (>0.5%) in any year.

Appropriate uses

The water-compatible and less vulnerable uses of land and essential infrastructure in Table D.2 are appropriate in this zone.

The highly vulnerable uses in Table D.2 should not be permitted in this zone.

The more vulnerable and essential infrastructure uses in Table D.2 should only be permitted in this zone if the Exception Test is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.

FRA requirements

All development proposals in this zone should be accompanied by a FRA. See Annex E for minimum requirements.

Policy aims

In this zone, developers and local authorities should seek opportunities to

- (i) reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage techniques;
- (ii) relocate existing development to land in zones with a lower probability of flooding; and
- (iii) create space for flooding to occur by restoring functional floodplain and flood flow pathways and by identifying, allocating and safeguarding open space for flood storage.

The Environment Agency Flood Zone maps were developed using a very coarse Digital Elevation Map (DEM), and are superseded by a more detailed analysis of modelled flood levels and topographic survey levels.

2. Modelled Flood Levels

The Environment Agency has provided a flood level for the site from their detailed River Dearne hydraulic modelling, as detailed in the Environment Agency email dated 7th November 2006 (a copy of which is included in Appendix 6).

The 1% annual probability (1 in 100-year) flood level is 43.53 AOD (GPS).

3. Historic Flood Data

The EA letter of 30th November 2006 (a copy of which is included in Appendix 6) confirms that the EA are not aware of any flooding at the proposed development site. The letter does provide the following historic flood levels for the area:

- Flood level of 43.91m AOD recorded 20 metres upstream of Old Mill Bridge in May 1967
- Flood level of 44.69m AOD recorded on upstream face of Old Mill Bridge in April 1970

4.1.2 Information from Barnsley Metropolitan Borough Council

A request for information was made to Barnsley Metropolitan Borough Council (BMBC), as the highways and land drainage authority for the area.

A response was received from BMBC dated 17th November 2006 (a copy of which is included in Appendix 6). However, whilst this provided supplementary guidance on the production of FRAs it did not provide any information with regard to the site itself.

4.1.3 Information from Yorkshire Water

A request for flooding information was made to Yorkshire Water, as the water company for the area, in the PBA letter dated 16th November 2006 (a copy of which is included in Appendix 6).

At the time of issue of the report, no response had been received from Yorkshire Water.

4.1.4 Information from Site Owner

National Grid Property confirmed in the email dated 20th November 2006 (a copy of which is included in Appendix 5) that the Estates Manager for the property *'has no knowledge of any flooding events occurring on the site.'*

4.2 Climate Change

Annex B of PPS25 confirms that *'there is an increasing body of scientific evidence that the global climate is changing as a result of human activity.'*

Annex B, paragraph B9, continues to state that *'In making an assessment of the impacts of climate change on flooding from the land, rivers and sea as part of a flood risk assessment, the sensitivity ranges in Table B.2 may provide an appropriate precautionary response to the uncertainty about climate change impacts on rainfall intensities, river flow, wave height and wind speed.'*

Extract from Table B.2 Recommended national precautionary sensitivity ranges for peak rainfall intensities, peak river flows, offshore wind speeds and wave heights

Parameter	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
<i>Peak rainfall intensity</i>	+5%	+10%	+20%	+30%
<i>Peak river flow</i>	+10%	+20%		

Recent research by the Centre for Ecology and Hydrology (CEH) published by the Royal Society (July 2002) concludes that, from analysis of long term records (60-120 years) there is little evidence of any long term trends in the UK flood frequency. Analysis of the last 30-50 years of records does show some upward trend but comparison with historical climate change variability suggests that the changes over this period could reasonably be part of natural climate variation and need not be a climate change effect.

The key factor is to ensure that any building floor levels are set at a height to give adequate protection should the flood risk alter as a result of climate change. The potential for increased flood risk as the result of possible climate change are addressed in terms of the recommended mitigation measures that are discussed in Section 4.6.

4.3 Impact of Proposed Development

The 1% annual probability (1 in 100-year) modelled flood level has been confirmed as 43.53m AOD by the Environment Agency in the email dated 7th November 2006 (a copy of which is included in Appendix 6).

The implications of the provided flood levels are detailed in the following sections:

4.3.1 Impact of Flood Level on Site

The enclosed topographic survey (which covers a larger area than the application site alone) indicates that the existing ground levels over the site are between 44.37m AOD and 45.24m AOD, which provides a minimum freeboard of 840mm above the provided 1% annual probability flood level.

Consequently, the site is located outside the 1% annual probability floodplain.

4.3.2 Impact of Flood Level on Access

Old Mill Lane, running to the west of the site, is at a level of approximately 45.4m AOD at the existing site entrance (1.87 metres above the 1% annual probability flood level).

The proposals for the redevelopment of the site included in Appendix 3 indicate that the proposed access to the site will be via the proposed new road layout to the north-east of the site. The minimum existing ground level at this point is 44.46m AOD (930mm above the 1% annual probability flood level), and the proposed layout plan in Appendix 3 shows that the proposed road to the north-east rises to a level of 50.3m AOD approximately 150 metres from the site.

Figure 2 in Appendix 1 also confirms that, beyond the immediate surrounding area, Old Mill Lane rises steeply to the north of the site, reaching a level of 51m AOD approximately 200 metres from the site.

Therefore, continuous pedestrian dry access to the site is achievable at the 1% annual probability flood event.

4.3.3 Impact of Development on Floodplain Storage and Flood Flow Routes

The proposed development site is located outside of the 1% annual probability, 1 in 100-year, floodplain. The proposed development will therefore have no effect on the floodplain storage up to this event.

Any new development located in the vicinity of a watercourse should be constructed such that it does not act as an obstruction to the flow routes over the area. Causing such an obstruction would potentially have the effect of reducing the flow rate of the floodwater, and would consequently cause an increase in flood levels.

As the proposed area of development lies outside of the 1% annual probability, 1 in 100-year floodplain, there will be no impact on the flood flow routes.

4.3.4 Impact of Development on Site Permeability

Any increase in the impermeable surfacing over an area would represent an increased risk of flooding by increasing the runoff potential and the rate at which surface water rainfall enters watercourses. This in turn could give rise to an increase in flood risk downstream of the site, which would be inappropriate in terms of PPS25.

The site is a brownfield area, consisting of a number of (now demolished) buildings to the west, surrounded by hard surfacing. The rest of the site to the east consists of a scrub area covered in trees and bushes. At present the total impermeable surface area has been estimated as 2,600m², i.e. 40% of the total site area.

National Grid have provided a layout of the existing drainage over the site in the email dated 7th December 2006, a copy of which is included in Appendix 5. This confirms that surface water over the hard surfaced area of the site drains into a piped drainage network which discharges into the River Dearne via an outfall to the immediate south of the site (immediately upstream of the concrete access bridge over the watercourse).

The proposed layout provided by Nichol Thomas and included in Appendix 3 indicates an increase in impermeable area over the site. As an outline planning application, a detailed surface water drainage design has not been produced at this stage. However, discussion with the EA's development control officer for the area confirmed that the EA would wish to see the surface water drainage design for the proposed development which demonstrates a reduction to the brownfield runoff rate generated by the existing site by 20%.

Discussion of surface water drainage methods and requirements are discussed further in section 4.4, 'Consideration of SUDS'.

4.4 Consideration of SUDS

PPS25 Annex F paragraph F5 states that *'The effective disposal of surface water from development is a material planning consideration in determining proposals for the development and use of land.'*

PPS25 Annex F paragraph F6 states that *'Surface water arising from a developed area should, as far as practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development, while reducing the flood risk to the site itself and elsewhere, taking climate change into account. This should be demonstrated as part of the flood risk assessment.'*

The Building Regulations Requirement H3 stipulates that rainwater from roofs and paved areas is carried away from the surface to discharge to one of the following, listed in order of priority:

- a) an adequate soakaway or some other adequate infiltration system,
- b) a watercourse, or where that is not practicable,
- c) a sewer.

PPS25 recognises that flood risk and other environmental damage can be managed by minimising changes in the volume and rate of surface runoff from development sites through the use of sustainable drainage systems (SUDS), this being complementary to the control of development within the floodplain.

SUDS will not alleviate flooding in an area prone to flooding; however, properly designed SUDS have the potential to prevent the surface water runoff from new development worsening the flood risk.

As mentioned previously, discussion with the EA's development control officer for the area confirmed that the EA would wish to see a surface water drainage design for the proposed development which demonstrates a reduction to the brownfield runoff rate generated by the existing site by 20%.

Since little detail is available on the existing drainage network (in terms of pipe sizes, gradients etc.), a simple analysis was carried out in Microdrainage to assess the existing discharge from the 2,600m² hard surfaced area of the site through a single, pipe system, automatically sized by the software. This generated a flow of 105l/s for the 1% annual probability event. Therefore, the discharge of the proposed development would need to be reduced to 84l/s (to be confirmed following a more detailed analysis of the existing surface water drainage at the site).

As an outline planning application, a detailed surface water drainage design has not been produced at this stage. Details relating to the development site have been

provided by White Young Green in the email dated 7th December 2006, a copy of which is included in Appendix 5. The salient points from the email are as follows:

- Risk assessments have been carried out for the whole National Grid site (i.e. the application site and the area to the south, up to the River Dearne), which identified the application site as a historical contamination source. As such, infiltration into this area is not considered feasible.
- The area to the south of the proposed new road (to the south of the application site between the proposed road and the River Dearne) is to being remediated for a final end use as soft landscaping.

In order to meet the EA's target surface water discharge rate for the application site, it is likely to be necessary to incorporate an outlet control limiting the flow rate from the site, together with temporary surface water storage facilities (under the car parks, for example). Alternatively, it may be possible to incorporate infiltration drainage in the landscaped area to the south of the site.

4.5 Mitigation Measures

4.5.1 Flood Zone

The Environment Agency's email dated 7th November 2006 states that the 1% annual probability flood level is 43.53m AOD.

The enclosed topographic survey (which covers a larger area than the application site alone) indicates that the existing ground levels over the site are between 44.37m AOD and 45.24m AOD, which provides a minimum freeboard of 840mm above the provided 1% annual probability flood level.

As such, the site falls within flood zone 2 as defined in PPS25 Annex D Table D.1.

PPS25 Annex D Table D.2: Flood Risk Vulnerability Classification' confirms that the proposed development, as a commercial development, falls into the 'Less Vulnerable' classification.

Subsequent reference to PPS25 Annex D Table D.3: Flood Risk Vulnerability and Flood Zone 'Compatibility' confirms that less vulnerable development in flood zone 2 is appropriate, in flood risk terms.

PPS25 Annex D confirms that *'The risk-based Sequential Test should be applied at all stages of planning. Its aim is to steer new development to areas at the lowest probability of flooding.....Within each Flood Zone, new development should be directed first to sites at the lowest probability of flooding and the flood vulnerability of the intended use matched to the flood risk of the site, e.g. higher vulnerability uses located on parts of the site at lowest probability of flooding.'*

In this instance, the site is located a significant freeboard above the 1% annual probability level. Furthermore, the proposed development is located to the north of the former National Grid depot site, with the proposed landscaped area to the south providing a buffer between the site and the River Dearne.

We do not know whether BMBC has carried out a sequential test for the site, as no information relating to this was obtained from BMBC. The proposed development is considered appropriate for a number of reasons:

- The site provides wider sustainability benefits to the community, as it involves development of a derelict brownfield site for commercial use (together with the wider link road development).
- The proposed development will ensure there is no increase in flood risk elsewhere.

4.5.2 Proposed Development Ground Floor Level

Current Environment Agency guidance recommends that the minimum ground floor levels of residential developments are set at:

- 300mm above the 1% annual probability (1 in 100 year) + 20% allowance for climate change, flood level (if it is available), or if there is only a 1% annual probability (1 in 100 year) flood level then,
- 600mm above the 1% annual probability (1 in 100 year) flood level

In this instance, no climate change level is available, so the latter of the above points applies, inferring a minimum ground floor level of 44.13m AOD.

The layout drawing by Nichol Thomas included in Appendix 3 confirms that the proposed minimum floor level is 44.50m AOD. This is 970mm above the 1% annual probability flood level and will therefore exceed the EA guidance by 370mm.

As mentioned in section 3.1.1, it is appreciated that the current Environment Agency guidance states that topographic surveys should be carried out to OS determined by GPS, whereas it is understood that the provided survey has been carried out to local OSBM. However, it is anticipated that the significant freeboard discussed above would make any relatively small difference between GPS and local OSBM datum relatively inconsequential.

4.6 Residual Risks

It is impossible to completely guard against flooding since extreme events greater than the design standard event are always possible, however it is possible to minimise the risk by allowing a substantial freeboard and by using suitable construction techniques.

The above recommendations for minimum ground floor level include a freeboard of 600mm above the 1% annual probability (1 in 100-year) flood level to allow for residual risks such as climate change and other uncertainties, in line with current Environment Agency guidance.

As mentioned previously, the Client proposes a minimum floor level of 44.50m AOD. This is 970mm above the 1% annual probability flood level and will therefore exceed the EA guidance by 370mm.

Due to the sensitive location of the site close to the River Dearne, consideration will be given to the incorporation of flood resistant techniques in the construction of the proposed development as a whole in line with the current recommendations from the ODPM (now Department of Communities and Local Government) '*Preparing for Floods*' guidance document. Examples of these include:

- Concrete floors with waterproof membranes
- Sealed service ducts
- Locate electrical and other plant at a raised level
- High level electrical sockets
- Optimise security of supplies

5 Summary & Conclusions

Analysis of the available data indicates that the proposed redevelopment site off Old Mill Lane in Barnsley is located outside the Environment Agency's 1% annual probability (1 in 100-year) fluvial floodplain of the River Dearne.

As such, the site falls within the Environment Agency's flood zone 2, medium risk, where the annual probability of flooding is between 0.1% and 1.0%. PPS25 Annex D Table D.1 defines such an area as follows:

Zone 2 Medium Probability

Definition

This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year.

Appropriate uses

The water-compatible, less vulnerable uses of land and essential infrastructure in Table D.2 are appropriate in this zone.

Subject to the Sequential Test being applied, the highly vulnerable uses in Table D.2 are only appropriate in this zone if the Exception Test is passed.

FRA requirements

All development proposals in this zone should be accompanied by a FRA. See Annex E for minimum requirements.

Policy aims

In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage techniques.

- The Environment Agency has provided a 1% annual probability (1 in 100-year) flood level across the site which vary between 43.53m AOD GPS.
- The proposed floor level of the development will be set at a minimum of 44.50m AOD GPS (i.e. a minimum of 970mm above the advised 1% annual probability flood level), which is in excess of the current Environment Agency guidance.
- Pedestrian dry access at the site will be achievable at the 1% annual probability flood level.

- No details of surface water drainage are currently available, as the planning application is outline. However, the drainage will incorporate suitable measures to ensure a 20% reduction in the brownfield surface water runoff rate from the site, as requested by the Environment Agency.

APPENDICES

Appendix 1

Site Location Plans

Figure 1
1:50,000 Location Plan

Figure 2
1:10,000 Location Plan

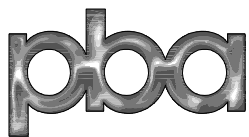
Nichol Thomas location plan showing application site within National Grid ownership



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Utilities Note

The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.



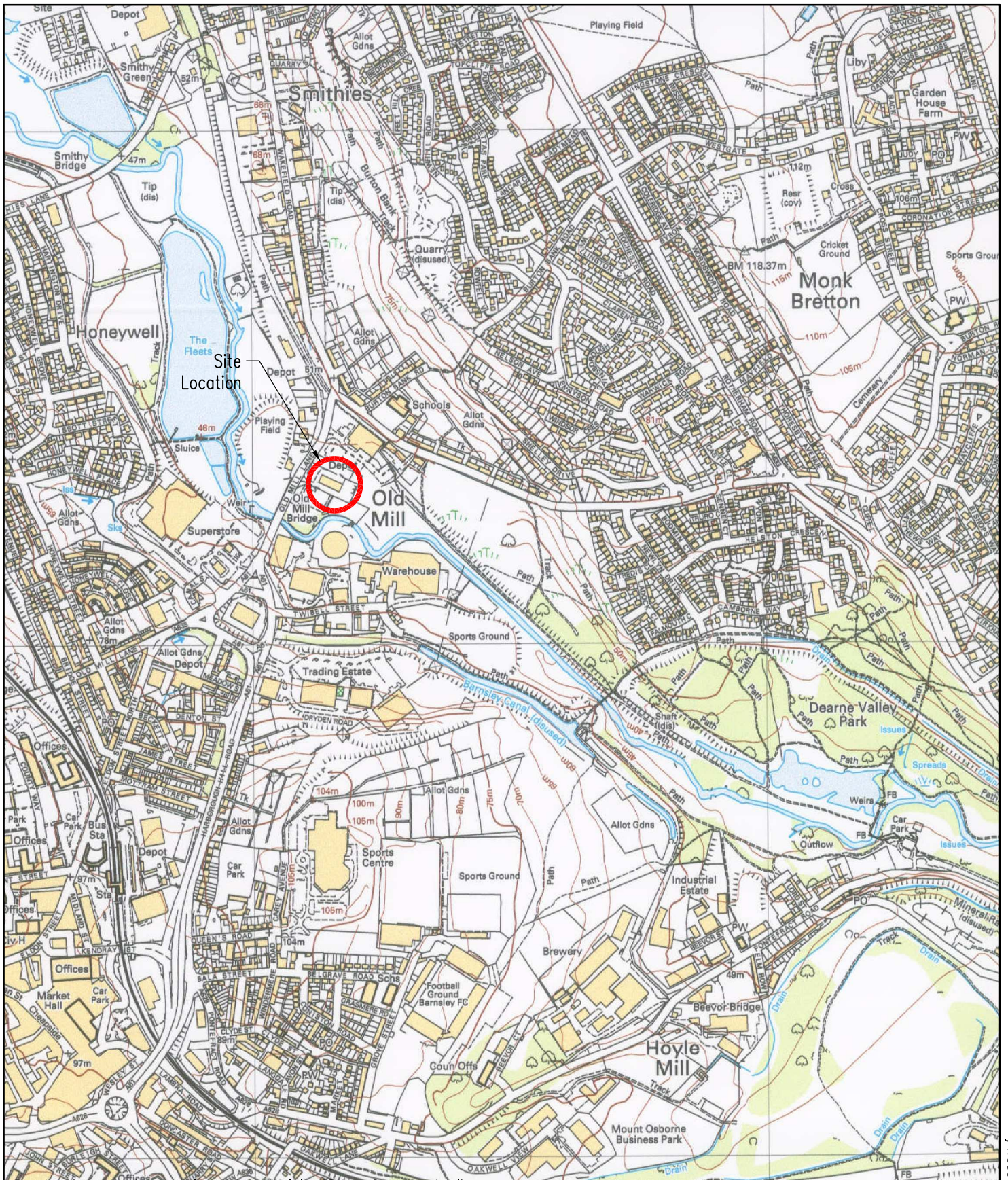
Client
**National Grid
Property Holdings Ltd**

PETER BRETT ASSOCIATES

CAVERSHAM BRIDGE HOUSE WATERMAN PLACE READING BERKSHIRE RG1 8DN

Tel: 0118 950 0761 Fax: 0118 959 7498 E-mail: reading@pba.co.uk Website: www.pba.co.uk © Peter Brett Associates

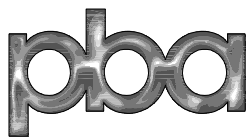
Mark	Revision	Drawn	Date	Chkd
Drawing Status				
FOR INFORMATION				
OLD MILL LANE BARNSELEY SITE LOCATION PLAN				
Date	14.11.06	Drawing Number		Revision
A4 Scale	1:50,000	FIGURE 1		-
Drawn	san			
Checked	MS			



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Utilities Note

The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.



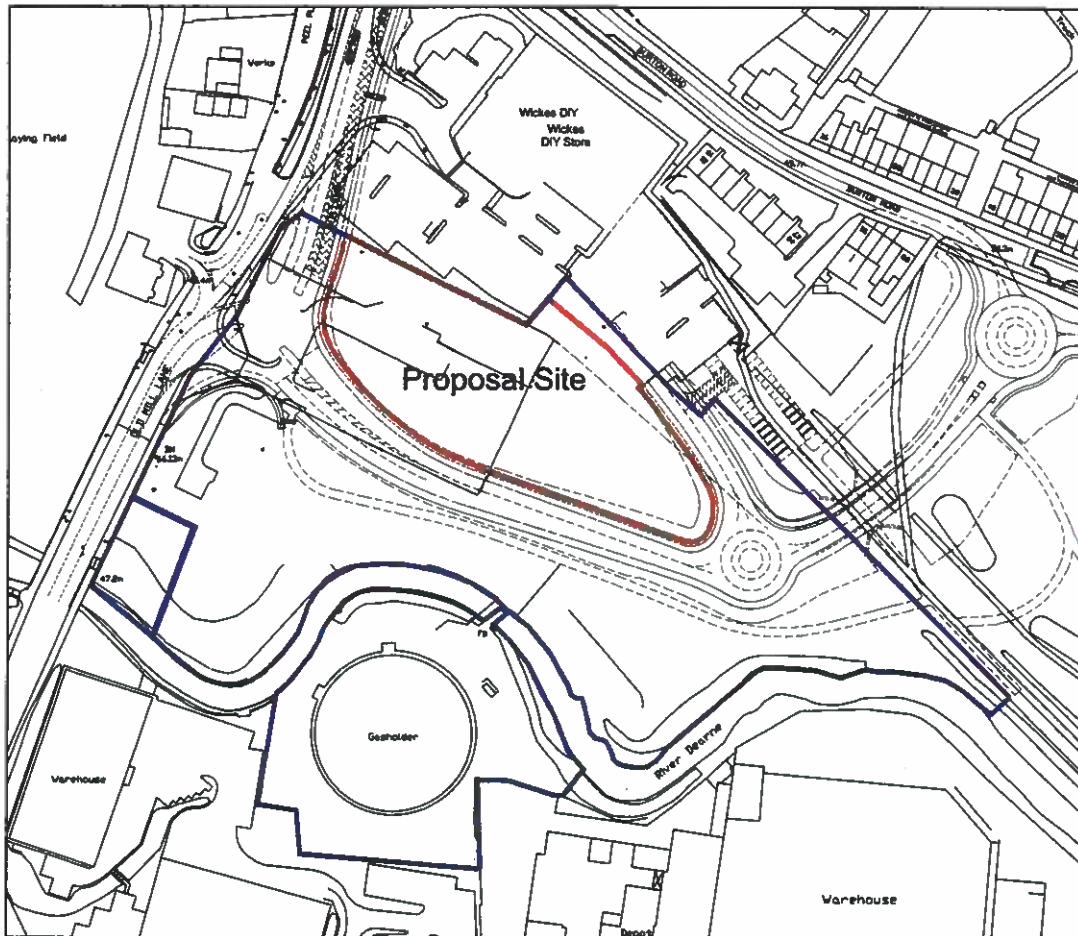
Client
**National Grid
Property Holdings Ltd**

PETER BRETT ASSOCIATES

CAVERSHAM BRIDGE HOUSE WATERMAN PLACE READING BERKSHIRE RG1 8DN

Tel: 0118 950 0761 Fax: 0118 959 7498 E-mail: reading@pba.co.uk Website: www.pba.co.uk © Peter Brett Associates

Mark	Revision	Drawn	Date	Chkd
Drawing Status				
FOR INFORMATION				
OLD MILL LANE BARNSELEY SITE LOCATION PLAN				
Date	14.11.06	Drawing Number		Revision
A4 Scale	1:10,000	FIGURE 2		-
Drawn	san			
Checked	MS			



Proposed road indicated in broken line
Adjacent Ownership edged in Blue

ARCHITECTS, PLANNING and DESIGN CONSULTANTS

nicol thomas

Heyside House, Blackshaw Lane,
Heyside, Royton, Oldham OL2 6NS
Tel: 01706 290088 Fax: 01706 290099
e-mail: info@nicolthomas.com
also in Birmingham

Nicol Thomas Ltd
Registered office Gateway House 53 High Street Birmingham
Registered in England Reg. No. 2140339
Quality Assured to BS EN ISO 9001:1994 Certificate Number GB 4723

Date 24.02.06
Scale 1:1250

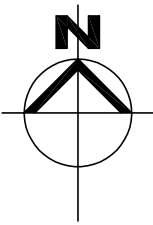
Client National Grid
Job Title Old Mill Lane Barnsley

Drawing Location and Ownership Plan
Drawing No. m2598 - 03

Appendix 2

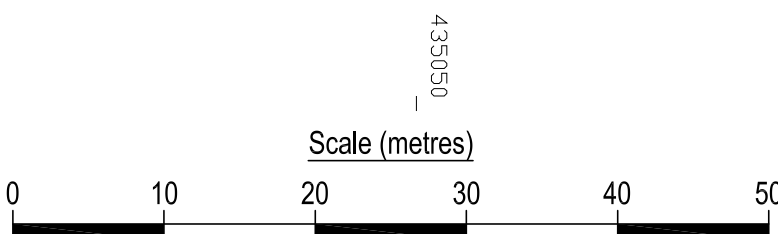
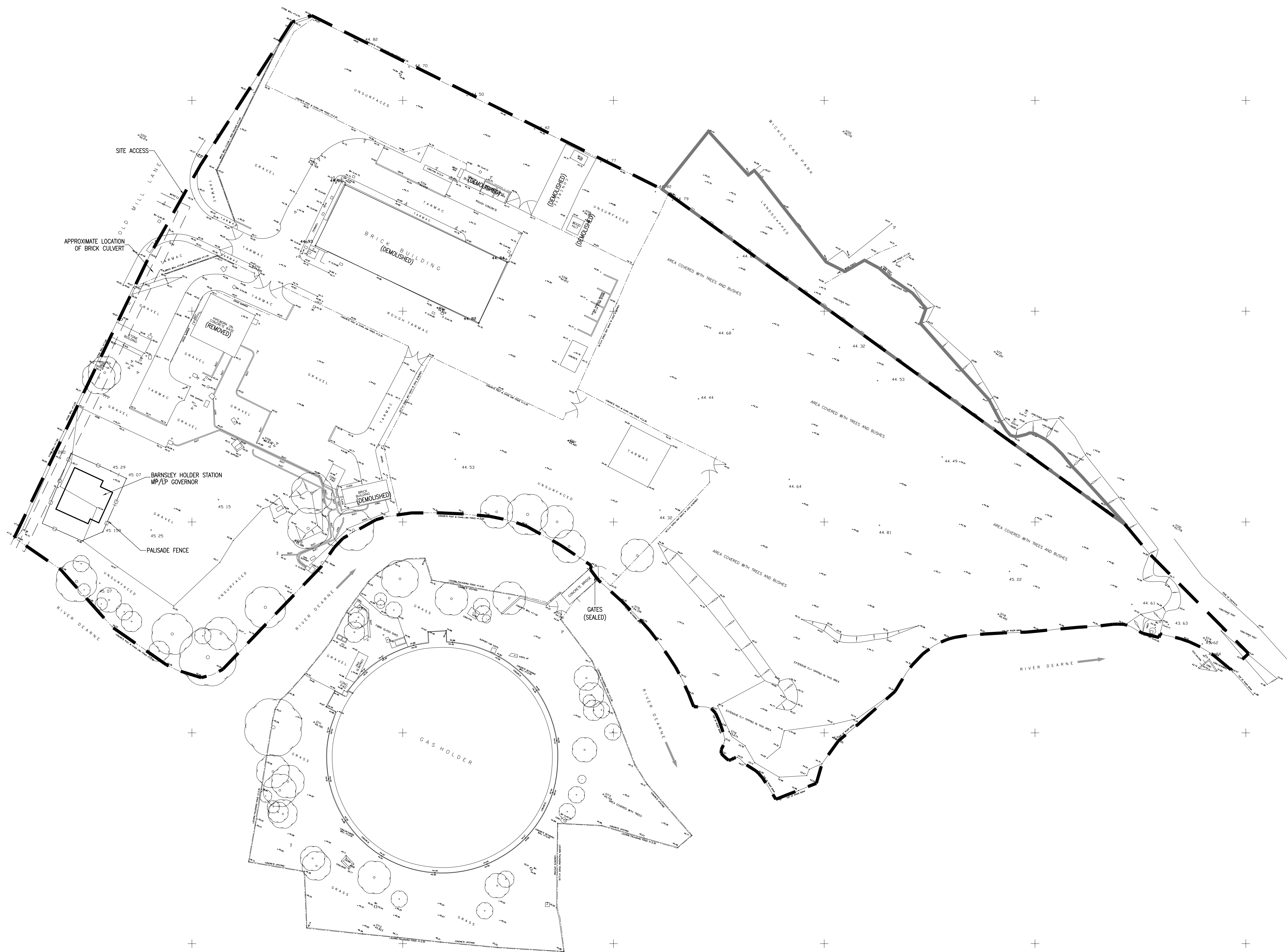
Topographic Survey

WYG Environmental Job No. E7773, Drawing No: 102, November 2006



DO NOT SCALE: Contractor to check all dimensions and report any omissions or errors

KEY
SITE BOUNDARY
NGPH BOUNDARY



Rev	Description	By	Chk	App	Date
-----	-------------	----	-----	-----	------

Client:
NATIONAL GRID PROPERTY HOLDINGS LTD

Arndale Court
Headingley
Leeds
LS6 2UJ

Tel: 0113 278 7111
Fax: 0113 275 0623
e-mail: enviro.leeds@wyg.com

White
Young
Green

Environmental

Oil Electrical Environmental Health & Safety Highways Management Services Mechanical Rail Structural Town Planning Transportation
Project: E7773

OLD MILL LANE
BARNSELY

Drawing Title:
SITE LAYOUT PLAN

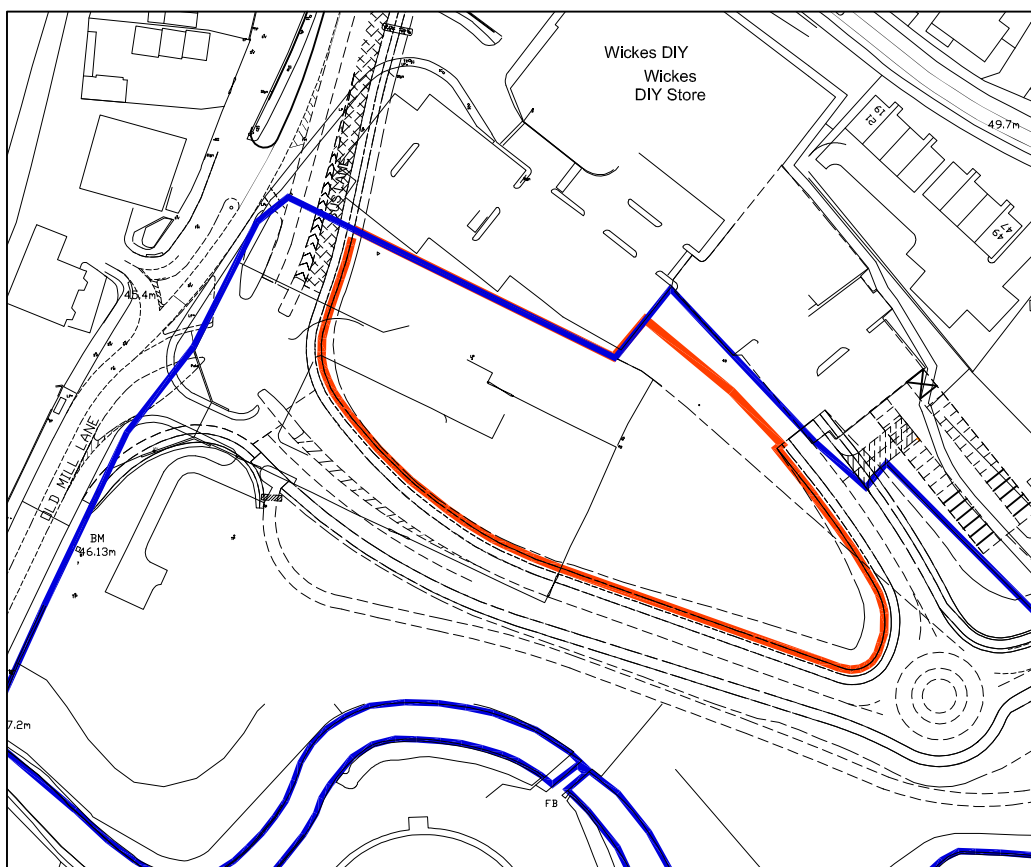
Scale at A1	Drawn By	Date	Checked By	Date	Approved By	Date
1:500	CM	21.08.06	MJM	02.11.06	MKD	02.11.06
Project No.	Office	Type	Drawing No.	Revision		
E7773	4104	ENV	102			

APPROVAL ☐ INFORMATION ☒ TENDER ☐ CONTRACT ☐ CONSTRUCTION ☐

Appendix 3

Redevelopment Proposals

Nichol Thomas drawing m2598 – 04 rev A, November 2006



Location and ownership plan
scale 1:1250

Proposed road indicated in broken line
Adjacent Ownership edged in Blue

Schedule of areas
site area 6,482m²
Proposed Retail Unit - 1960m²
Parking
Total 67 spaces including 1 operational disabled
4No customer disabled and 3 parent and child
12No staff parking spaces

NB Landscape indicative only

Finished floor level of proposed
unit not less than 44.500m A.O.D.

OLD MILL LANE BARNSELEY

Appendix 4

Environment Agency Online Flood Zone Map

Text Only Cymraeg 22 November 2006

HOME

ABOUT US

OUR VIEWS

CONTACT US

HELP

Search for...

Environment
Agencycreating a better place 199
2006

You are in: Maps > Flood Map

I'm looking for...

Maps

Maps

[How to use the flood map](#)[What to do in a flood](#)[Current flood warnings](#)[Flood risk and home insurance](#)[Your questions answered](#)

Search for another location:

Search for:

☒ Placename☐ Postcode

Overview map:



See also...

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Interactive Map :

Click on [Learn more](#), then click the symbol or area on the map to see more information.

Click on the map to ...

☒ Zoom ☐ [Learn more](#)

Current map scale: 1:20,000



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What's on the map

1. Tick the boxes.
2. Click the name next to the box to find out more.

Flood maps

- ☒ **Flood maps** [Click \[Learn more\]\(#\) to see details.](#)

Flooding from rivers or sea without defences

Extent of extreme flood

Flood defences

Areas benefiting from flood defences

[Click here to find out what else is in your backyard.](#)

[Anglian](#) | [Midlands](#) | [North East](#) | [North West](#) | [South West](#) | [Southern](#) | [Thames](#) | [Wales](#)



Environment
Agency

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199
2006

You are in: Maps > Flood map

I'm looking for...

Maps

Maps

Current Flood
Warnings

Flood risk and
home insurance

How to use the
Flood Map

What to do in a
flood

Your questions
answered

See also...

Terms and
conditions of use

ABI - flooding
insurance

Find your nearest
Agency office

Met Office

We are not responsible
for the content of other
web sites.

Be prepared

The information below provides an indication of the likelihood of flooding in your area. This came from a national flood risk assessment completed in 2005, which used ground levels, predicted flood levels, information on flood defences, and our local knowledge. The likelihood is described in one of three categories, low, moderate or significant, as used by the insurance industry.

The Environment Agency has provided this information to the financial services industry, as required by Government to ensure that as many people in flood risk areas are able to access flood insurance for their home. For more information, follow the link to **Flood risk and home insurance** on the left of the page.

What is the likelihood of flooding from rivers or the sea in my area?

Moderate

View current flood warnings in this area

What does 'moderate' mean for me?

The location you have selected is in an area that has a moderate chance of flooding. The chance of flooding each year is 1.3% (1 in 75) or less, but greater than 0.5% (1 in 200). This takes into account the effect of any flood defences that may be in this area, whether or not these are currently illustrated on the Flood Map.

Flood defences reduce but do not completely remove the likelihood of flooding and can be over topped or fail in extreme weather conditions.

Do not use this information on likelihood of flooding when applying for planning permission. To find out how the Flood Map can help when planning a new development, please click [here](#).

For a fuller explanation of flood likelihood, click [here](#).

Important. Be prepared!

- To find out if you can get advance flood warnings for this location, click [here](#).
- To find out how to be prepared for all types of flooding go to our [Floodline](#) pages or call Floodline on tel: 0845 988 1188.
- For further guides and information on flood risk and home insurance, click [here](#)
- Our maps only cover flooding from rivers and the sea. Flooding can occur at any time and in any place from sources such as rising ground water levels, burst water mains, road drains, run-off from hillsides, sewer overflows etc. Click [here](#) to find out more.



High flood levels



[Anglian](#) | [Midlands](#) | [North East](#) | [North West](#) | [South West](#) | [Southern](#) | [Thames](#) | [Wales](#)

Appendix 5

Surface Water Drainage information

- National Grid email dated 7th December 2006 providing existing drainage layout
- White Young Green email dated 7th December 2006

Richard Fisher

From: Andy Robertson
Sent: 07 December 2006 17:36
To: Richard Fisher
Subject: FW: Old Mill Lane, Barnsley

Attachments: Barnsley Drainage.TIF



Barnsley
ainage.TIF (310 KB)

Regards,
Andy

-----Original Message-----

From: Mark.Allcock@uk.ngrid.com [mailto:Mark.Allcock@uk.ngrid.com]
Sent: 07 December 2006 11:21
To: Andy Robertson
Subject: Re: Old Mill Lane, Barnsley

Andy

Here is the existing drainage situation. Please pass to Richard.

Regards

Mark

Mark Allcock
Planning Manager
National Grid Property Ltd
Altrincham Office
Tel: 0161 925 5064
Mob: 07823 326 000
Fax: 0161 925 5075

----- Forwarded by Mark Allcock/Property on 07/12/2006 11:20 -----

John M Collins

To: Mark Allcock/Property@Secondsite-Property
07/12/2006 11:11 **cc:**
Subject: Re: Old Mill Lane, Barnsley(Document link: Mark Allcock)

Mark,

Please see site services drawings attached.

The original is likely to be within the SI.

(See attached file: Barnsley Drainage.TIF)

Regards

John

John M Collins
Estates Manager, National Grid Property Ltd National Grid
0161 925 5060
07774 159517

Mark Allcock

To: John M Collins/Property@Secondsite-Property
06/12/2006 15:27 cc:
Subject: Old Mill Lane, Barnsley

John

Wonder if you can help with this enquiry.

As part of the Flood Risk Assessment, the consultant has to formulate a Drainage Strategy for the site. This includes dealing with surface water attenuation matters once the site is developed.

The consultant therefore needs to know how the surface water on the site is dealt with at the current time. Is this something that you know or can find out for me?

Kind regards

Mark

Mark Allcock
Planning Manager
National Grid Property Ltd
Altrincham Office
Tel: 0161 925 5064
Mob: 07823 326 000
Fax: 0161 925 5075

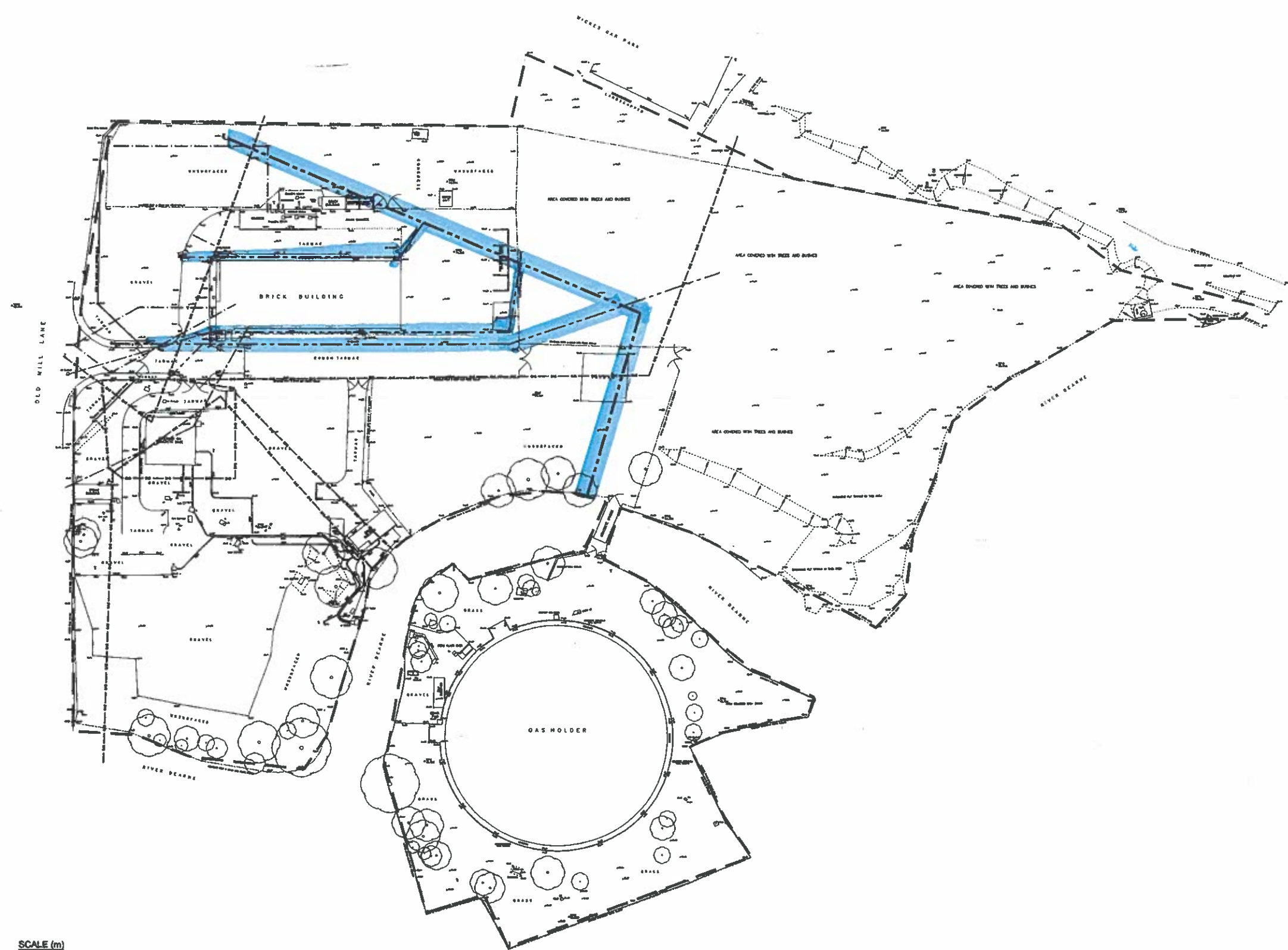
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KEY

- SITE BOUNDARY
- GAS
- DRAINAGE
- WATER
- BT/ELECTRICITY

NOTES:
SERVICE LOCATIONS ARE APPROXIMATE
AND SHOULD BE READ IN CONJUNCTION
WITH SERVICE PLANS PROVIDED.

THE CONTRACTOR IS TO ESTABLISH THE
EXACT LOCATION OF SERVICES PRIOR TO
COMMENCEMENT OF WORKS.

Rev Dr Ch Ap Date

Site Address:
OLD MILL LANE
BARNLEY
SOUTH YORKSHIRE
S71 1LS

National Grid Reference:
SE 3620 0730

Area of Site:
Hectares: 0.07
Acres: 1.70

Scale:	1:500	Drawn:	TS	10.98
Checked:	1/3/01	Approved:	TS	10.98

Andale Court
Huddersley
Leeds LS9 2LJ
Tel: 0115 2787111
Fax: 0115 2783487
E-mail:
enquiries@whiteyounggreen.co.uk

White
Young
Green

Environmental Consultancy

Project: 2130
BG plc - PROPERTY DIVISION
OLD MILL LANE
BARNLEY

Title:
SITE SERVICES PLAN

Drawing No.:
21306/102

Revision

MENTOR No. 005604_013-A

ISSUE	REMARKS	DATE DRAWN
A	MENTOR No. ADDED	05.12.01 S.W.(TD)

APPROVAL ☐ INFORMATION ☐ TENDER ☐ CONTRACT ☐ CONSTRUCTION ☐

Richard Fisher

From: patricia.gill [patricia.gill@wyg.com]
Sent: 07 December 2006 17:32
To: Andy Robertson
Cc: Ellen Philcox; marc.davies; Mark Underwood; mark.allcock@uk.ngrid.com; Richard Fisher
Subject: Barnsley Gasworks - SUDS

Andy,

Following our conversation a couple of weeks ago, I concluded that we would be able to summarise the current situation on site with regards to the potential to use SUDS, as follows.

The current remediation proposals are based upon both visual assessment and Detailed Quantitative Risk Assessment (DQRA). The DQRA considers that the northern two thirds of the site, incorporating the commercial area and the road, will comprise hardstanding. It is in this area that the main historical contaminant sources have been identified. The southernmost area proposed as open space is considered to be soft landscaping for the DQRA modelling. The use of infiltration rates associated with soft landscaping results in very low site specific remediation target levels, particularly due to the proximity of the site to the River Dearne, the main contaminant receptor. The use of hardstanding in the DQRA model results in the generation of more practically achievable site specific remediation target levels in the more contaminated parts of the site.

It is considered very unlikely that it will be practically achievable to remediate the area currently proposed as hardstanding to remediation target levels which take account of increased infiltration levels required for the use of SUDS incorporating infiltration directly into the ground in that area. However, it may be feasible to consider SUDS where infiltration would be within the southern part of the site which is being remediated for a final end use incorporating soft landscaping. If this is considered as an option then it would be prudent that we take account of such proposals when discussing the site specific remediation target levels with the Environment Agency. Hence please keep WYGE updated with any such proposals.

If you require any further information please give me a call.

Regards

Patricia Gill
Principal Engineer

WHITE YOUNG GREEN ENVIRONMENTAL
Arndale Court, Headingley, Leeds, LS6 2UJ
☎ + 44 (0)113 219 2218
☎ + 44 (0)7803 617909
🌐 www.wyg.com

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11/12/2006

Appendix 6

Correspondence

- Environment Agency email dated 7th November 2006
- Environment Agency EA letter dated 30th November 2006
- PBA letter to Yorkshire Water dated 16th November 2006
- Barnsley Metropolitan Borough Council letter dated 17th November 2006
- National Grid Property email dated 20th November 2006



"Mark Underwood"
<MarkUnderwood@dri
versjonas.com>

07/11/2006 17:35

To: <Mark.Allcock@secondsite-property.com>
cc:
Subject: FW: Application for Retail Warehouse, Old Mill Lane, Barnsley

Mark

I attach an email from the EA regarding the flooding issue.

I will call you to discuss.

Regards
Mark

-----Original Message-----

From: Ellen Philcox
Sent: 07 November 2006 14:46
To: Mark Underwood
Subject: FW: Application for Retail Warehouse, Old Mill Lane, Barnsley

Ellen Philcox
Graduate Surveyor
Planning
Drivers Jonas, 26 York Street, Manchester, M1 4JB Direct Line +44 (0)161
247 7355 Fax: +44 (0)161 236 8420 www.driversjonas.com/disclaimer
CarbonNeutral(r)company

-----Original Message-----

From: Roger Dixon [mailto:DixonR.Leeds7.NE@environment-agency.gov.uk]
Sent: 07 November 2006 14:43
To: Ellen Philcox
Subject: Re: Application for Retail Warehouse, Old Mill Lane, Barnsley

Ellen,

Thanks for your e-mail of 02/11/06.

Barnsley MBC's development was, as you state, for a road. Your application is for a building.
The Environment Agency "Flood Zone Maps" show the southern most part of your site to be within PPG25 zones 2 and 3 and as such a Flood Risk Assessment (FRA) is required. It should be noted that these plans are indicative and also that they do not include any allowance for the possible effects of climate change.
This site is at the upper extent of the Agency's River Dearne flood modelling. The modelling work predicts a 1 in 100 year flood level of 43.53m A.O.D. at the upstream face of Old Mill Lane bridge.
Unfortunately the Agency does not have any modelled flood levels that include an allowance for climate change. Predictions included in PPG25 and the soon to be published PPS25 indicate a possible 20% increase in fluvial flows over the next 50 to 100 years.
I would suggest that in the first instance a FRA for this proposal should include site levels, related to Ordnance Datum, and proposed building slab level. This will determine which PPG25 zone the site is in. If the site and/or the building slab level are sufficiently higher than the 1 in 100 year flood level the Agency would remove its previous objection on flood risk grounds to this proposal.

regards

creating a better place

Peter Brett Associates
18867
SCD
01 DEC 2006
Scott
Authorised
Distribution



Environment
Agency

Peter Brett Associates
Caversham Bridge House
Waterman Place
Reading
Berkshire
RG1 8DN

Our Ref : RFI/2006/338
Your Ref : 18867/CBH/SCD/ASR/SN

Date : 30 November 2006

Dear Scott

**Information for Flood Risk Assessment
Old Mill Lane, Barnsley**

Thank you for your enquiry, which was received on 16 November 2006.

Development Control

The Agency has no record of any flood alleviation measures in this area. The Agency's plans show that the limit to any flooding would be rising ground levels.

The Agency's records show the following historic flood level information:-

20m Upstream of Old Mill Bridge, May 1967 - 43.91m A.O.D.

Upstream face of Old Mill Bridge, April 1970 - 44.69m A.O.D.

Primary source of flooding - from the River Dearne

Secondary source - from overland flow from higher ground and the drainage system.

Copy of Flood Zone Map enclosed.

Flood Risk Management

1. Flood Alleviation Measures

There are no flood defences maintained by the Environment Agency in proximity to the site. The Agency's plans show that the limit to any flooding would be rising ground levels.

Phoenix House, Global Avenue, Leeds, LS11 8PG
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk



2. Flood History – None available

To the best of our knowledge there is no known flood history for this site.

The Agency's records show the following historic flood level information:

20m Upstream of Old Mill Bridge, May 1967 - 43.91m A.O.D.

Upstream face of Old Mill Bridge, April 1970 - 44.69m A.O.D.

At Barnsley Gauging Station (grid reference SE3499 0726): June 1982: 44.71mAOD
- November 2000: 44.99mAOD.

3. Sources of potential flooding

Primary source of flooding - from the River Dearne

Secondary source - from overland flow from higher ground and the drainage system.

4. The Flood Map (flood zone map)

The Environment Agency has recently published the Flood Map (see enclosed extract).

What is the Flood Map?

The Flood Map is a new multi-layered map, which provides information on flooding from rivers and the sea for England and Wales. The Flood Map also has information on flood defences and the areas benefiting from those flood defences.

The Flood Map consists of the following layers of information:

1. Flooding from rivers or sea without defences - the natural flood plain area that could be affected in the event of flooding from rivers and the sea - Flood Zone 3 on the enclosed map.
 - For flooding from rivers the map indicates the extent of a flood with a 1% (1 in 100) chance of happening each year
 - For flooding from the sea the map shows the extent of a flood with a 0.5% (1 in 200) chance of happening each year
2. Extent of extreme flood - the extent of a flood with a 0.1% (1 in 1000) chance of happening each year - Flood Zone 2 on the enclosed map.
3. Flood defences - flood defences built to a certain standard in the last five years.
4. Areas benefiting from flood defences - areas that benefit from the flood defences shown, in the event of a river flood with a 1% (1 in 100) chance of happening each year, or a flood from the sea with a 0.5% (1 in 200) chance of happening each year. If the defences were not there, these areas would flood.

5. Other information

Climate Change

See attached DEFRA's Supplementary note on Climate Change considerations for flood and coastal management.

LIDAR Data

Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. This technique results in the production of an accurate, cost-effective terrain model suitable for assessing flood risk and other environmental applications.

The Environment Agency owns two LIDAR systems, which are installed in a survey aircraft along with its other operational remote sensing instruments. The aircraft is positioned and navigated using Global Positioning System (GPS) corrected to known ground reference points. The aircraft typically flies at a height of about 800 metres above ground level and a scanning mirror allows a swath width of about 600 metres to be surveyed during a flight.

To get a license for the data you will need to contact our Science Group, stating the area you are interested in (preferably an OS Grid Reference, or a map with the area outlined).

The Data is usually returned as an ASCII grid, which can be converted to a surface model for use in most GIS applications, and is provided in 2km x 2km tiles (see included map), at a resolution of 2m.

To obtain the license agreement and data, please contact:

Science Group
Lower Bristol Road
Bath
BA2 9ES
Tel: 01225 444066

Hydrological Data

Level data is available for this watercourse. Level Recording Site: Barnsley Gauging Station. To request this information, please contact the External Relations Department; via telephone 08708 506506 or internet: <http://www.environment-agency.gov.uk/contactus>.

Flood Warning

A Flood Warning does not cover the site.

The information provided is based on that currently available to the Agency. The Agency and its officers accept no liability whatsoever for any loss or damage arising from the interpretation or use of the information.

I can advise that the interpretation of the information is your own responsibility however, should you have any queries regarding this letter, please contact this office at the address given below.

This information is provided subject to the enclosed notice, which you should read.

Yours sincerely



CHERYL HOWE
EXTERNAL RELATIONS OFFICER

Encs

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4. The Environment Agency cannot ensure and therefore gives no promise that the Data in its possession will always be accurate, complete, up to date or valid.
5. The Environment Agency will take reasonable precautions to ensure that we provide you with an accurate copy of the Data from our records.
6. If we have specified that you must pay us for supply of the Data you must pay us before we respond to your request. You will only be able to cancel and request your fee back up to the point when we start work on providing the requested information.
7. If you have asked for the Data to be supplied in an electronic format we cannot guarantee that either the disk or the data file is free of any defects and you should check it for viruses and other items that may affect your computer.
8. Third Party Data use, including copying, must be limited to statutory rights. This generally means that you will need to seek permission to copy. Third Party Data may include information from our public registers which has been supplied to us by a third party, for example the information provided in an application form.

Permitted Use Of Agency Data

9. You may use Agency Data for your own use provided that the use is not for or related to any commercial, business, professional or other income generating activity and provided that usage is not detrimental to the Environment Agency, its activities or the environment. This does not stop you from charging if you fall under the obligations of the Freedom of Information Act and you are applying an authorised charge in response to a request for information. For more detail on what we regard as commercial please see the Freedom of Information section of our website or contact us. As long as you comply with these restrictions you may:
 - take copies for use by yourself (non-commercial as-is internal use) or
 - give copies to others or publish copies (including putting them on a website or distributing multiple copies) provided you copy the Data exactly as it is (but this does not restrict re-sizing, typeface or file format). You must either attach a copy of this notice and tell recipients that they too must comply with this notice or you must acknowledge the Environment Agency's ownership of its Data by adding the words "© Environment Agency copyright and/or database right 20xx. All rights reserved" using the year you receive the data from us if we have not indicated what year to use (non-commercial as-is external use) or
 - include in another document for your own use: copies of photographs, tables, diagrams (other than text extracts) taken from the Data provided that the photograph etc is not changed or manipulated in any way other than resizing; and/or text extracts from Agency Data provided that the text extract is a complete piece of information in its own right. Use of such copies and extracts must not be out of context or in any other way misleading (non-commercial derivative internal use).
10. If you have paid us our standard charges for the costs of making the information available to you and our internal commercial usage charge, you may take copies of Agency Data (exactly as it is) for the internal purposes of your business provided that you ensure that all copies are attributed to the Environment Agency and you do not amend or alter the Data, or merge it with other data, or supply the Data or any data or information derived from or based on usage of the Data to others. (commercial as-is internal use).
1. If you have paid us our standard charge for the costs of making the information available to you and our internal commercial usage charge and you are a professional adviser you may give unamended and unadapted copies of Agency Data to your client, and any other person who reasonably requires a copy in connection with the specific transaction or matter in respect of which you obtained the Data from the Environment Agency. You may do this provided that you make no charge for supplying the Data other than for your actual costs and time incurred. You must attach a copy of this Standard Notice and require all recipients to comply with it (professional use).

It is important that you also read any additional information or warning we give you about specific Data.

Supplementary note on Climate Change considerations for flood and coastal management

It is recognised that some aspects of expected climate change will have an impact on flood and coastal management. Chapter 6 in FCDPAG1¹ set out the basis for consideration of climate change and detailed sea level rise allowances were recommended in FCDPAG3². This note summarises the results of new work to review recent climate change scenarios and consider their impact on flood and coastal management.

Research led by HR Wallingford³ has reviewed the previous recommendations in the light of new climate change scenarios developed by the Defra-sponsored UK Climate Impacts Programme (UKCIP) for 2020's and 2080's which were published in April 2002. The research suggests that current allowances for sea level rise and sensitivity allowances for increased river flow are still appropriate. It also recommends that sensitivity allowances should be added for increases in offshore waves. These recommendations are endorsed by Defra and the Environment Agency and should be applied to all future applications for grant aided flood and coastal defence projects. The recommendations are summarised in the table below.

Parameter	Recommendation	Comment
Mean and extreme sea levels		
EA Regions – Anglian, Thames, Southern and North East (South of Flamborough Head)	6 mm / year	As previously – however, extreme levels should be reviewed if higher extreme values, especially around the Thames Estuary are supported by future modelling
EA Regions – North West and North East (North of Flamborough Head)	4 mm / year	
South West and Wales	5 mm / year	
High and extreme rainfall and river flow	Test sensitivity to additional 20% in peak flow or volume over 50 years	No change though further research currently in progress
High and extreme wind speeds	Test sensitivity to 10% increase in offshore wind speeds and wave heights by 2080s (and 5% increase in wave periods)	New recommendation – needs to be considered in relation to depth limited conditions inshore

¹ Flood and Coastal Defence Project Appraisal Guidance, Volume 1, Overview (including general guidance), 2001, Defra publications ref. PB5518

² Flood and Coastal Defence Project Appraisal Guidance, Volume 3, Economic appraisal, 1999, Defra publications ref. PB 4650

³ UK Climate Impacts Programme 2002 Climate Change Scenarios: Implementation for Flood and Coastal Defence: Guidance for users, R&D Technical Report W5B-029/TR, available from April 2003 on the Environment Agency Web Site (see 'Risk' Theme pages in www.environment-agency.gov.uk/floodresearch)

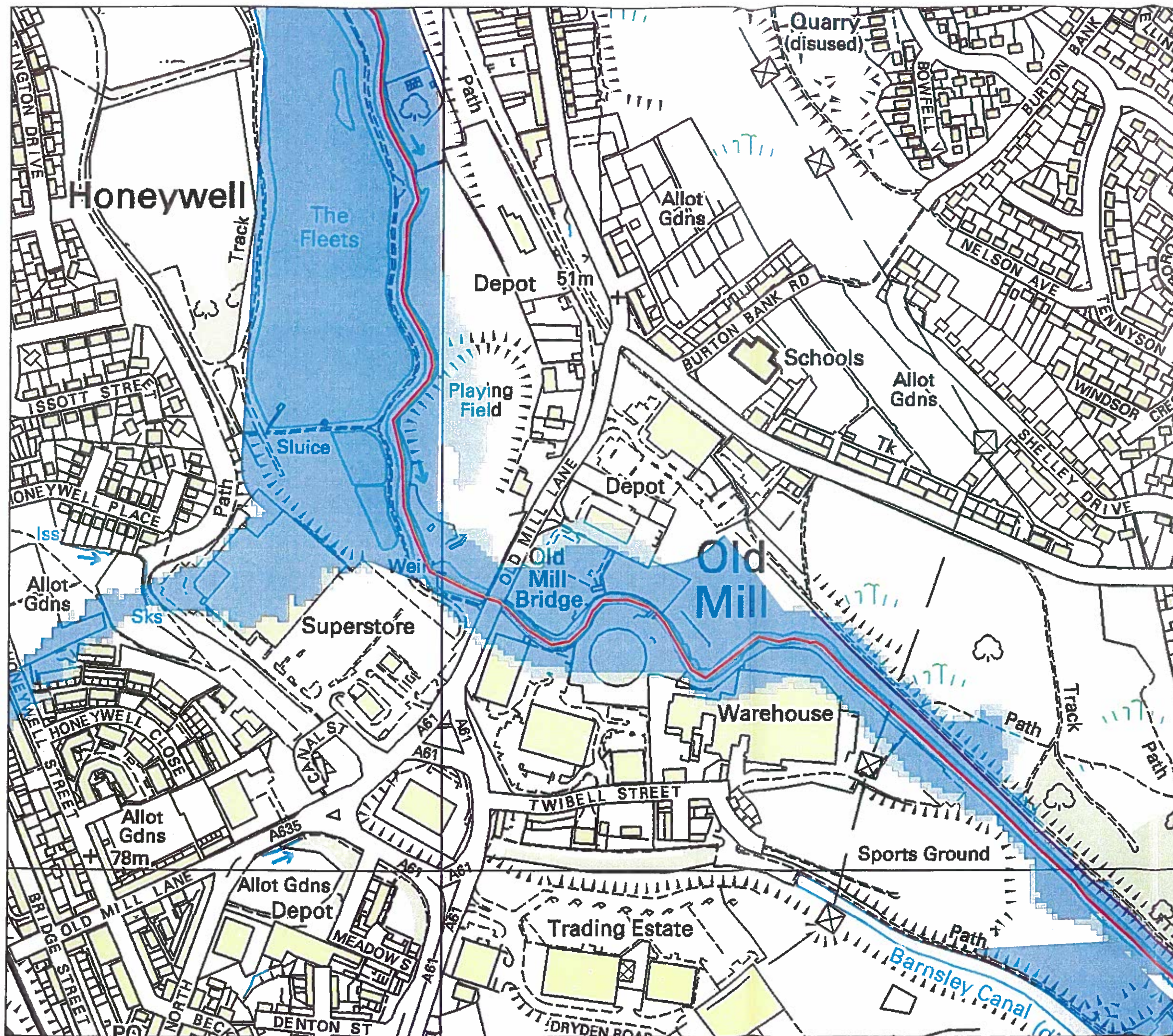
The research report³ provides more details and examples of application to a variety of different analyses and decision making situations. The complete report will be available on the Environment Agency web site from May 2003.

Climate change is just one of many uncertainties that need to be taken into account. To ensure efficient use of resources the level of analysis must be appropriate to the decision being made. Larger strategic studies and those involving very significant levels of investment will often need a detailed assessment of present and future risks for each decision using the published UKCIP scenarios and relevant local information. However, for routine flood and coastal erosion projects such a detailed assessment would require a disproportionate resource and involve different assumptions preventing direct comparison of projects.

Most routine projects should use the recommended allowances, this will ensure that different projects make provision for future changes in a consistent way and provide a valid basis for comparing investments. Even where detailed studies are carried out it will normally be desirable to use the recommended allowances as a baseline scenario for comparison with other projects. These allowances are also generally applicable to other activities including flood mapping and development planning and control (for example, PPG25 refers to the need for climate change assessments in planning decisions).

Further information and advice on application of this supplementary guidance is available from the Environment Agency Risk and Forecasting Team or Defra Regional Engineers.

Defra, Flood Management Division
Environment Agency
April 2003



FLOOD ZONE DATA FOR ENGLAND

Information - User Note

The Flood Zones have been produced in accordance with the requirements of government planning Policy on Development and Flood Risk (Planning Policy Guidance PPG25 in England dated July 2001 and the Draft Technical Advice Note TAN15 in Wales dated July 03). The Flood Zones are for planning consultations.

The Flood Zones are based on information available at that time and will benefit from updates as better information becomes available. For example changes in hydrological river response, observations following flood events or improved modelling techniques. No consideration has been given to climate change at this time.

It should be noted that locations adjacent to rivers, not included at this stage of the survey, maybe at risk of flooding. When in doubt the Environment Agency should be consulted.

These maps may also be used by Local Authority Emergency Planners when producing Major Incident Flood Response Plans. The extents of any Flood Warning Service provided by the Agency is contained within the Local Flood Warning Plan

Zone 3 (England) and Zone C (Wales) is the Agency's best estimate of the areas of land with a 100 to 1 (1%) chance or greater of flooding each year from rivers in catchments greater than 3 sq.km or with 200 to 1 (0.5%) chance or greater of flooding each year from the sea, without the presence of any defences.

Zone 2 (England) and Zone B (Wales) is the Agency's best estimate of the areas of land that could flood under extreme conditions with a 1000 to 1 or (0.1%) chance of flooding each year from rivers and the sea without the presence of defences.

Legend

- Main River
- Flood Map Flood Defences
- Flood Zone 3
- Flood Zone 2
- Areas benefiting from defences

Ridings Area
Flood Risk Mapping and Data Management

16/11/2006



Your ref:

Our ref: 18867/CBH/ASR/SC-D/RF/SN

16 November 2006

Peter Golightly
Yorkshire Water
Waste Water - Sewerage
New Development Team
Knostrup WWTW
Knowsthorpe Lane
Leeds
LS9 0PJ



peter brett associates

Caversham Bridge House
Waterman Place
Reading
Berkshire
RG1 8DN

Tel: +44 (0)118 950 0761

Fax: +44 (0)118 959 7498

Website: www.pba.co.uk

E-mail: reading@pba.co.uk

Dear Peter,

**RE: REQUEST FOR INFORMATION FOR A FLOOD RISK ASSESSMENT -
OLD MILL LANE BARNLEY**

Peter Brett Associates have been commissioned to undertake a Flood Risk Assessment for the above site. As part of an eventual planning application submission the Flood Risk Assessment will be reviewed by the Environment Agency as part of the planning authority's consultation and liaison process.

In your role of Water Authority for the area in which the development is situated would you please advise us if you have any record, and the details, of flooding, both that has already occurred and that which may be a potential source from any source of potential flooding. Please could you also advise us of any particular guidance you may have with regards to flood risk in the area of the site. A cheque for £150 has been attached to this letter and has been made out to Yorkshire Water, this is so that you can carry out with the System Flood Assessment.

The grid reference of the site is 435140E, 407315N and we enclose A4 location plans of the area.

Finally we should mention that we are also contacting the Environment Agency and Barnsley Metropolitan Borough Council for their records of flooding and potential sources.

Yours faithfully,

Scott Nicholson
For and on behalf of
PETER BRETT ASSOCIATES

Encls.

J:\18867 Old Mill Lane, Barnsley\WP\Letters\Yorkshire Water 16.11.06.doc

Partners: Stephen Capel-Davies BSc CEng FICE FCIWEM - Senior Partner, Malcolm Cleaver BSc CEng MICE - Managing Partner,
Francis Connolly KSG FICE FCIWEM MIFireE MCIARB FIHT FConsE, Nigel Brown DipEng BSc DIC MSc CEng MICE CMILT, John Rushton BEng MSc CEng MICE MStructE, Keith Mitchell BSc MSc MIHT CMILT,
David Atherton BSc MSc CEng CGeol FICE FIMMM FCIWEM MCIWM FGS, Iain Gibb BSc CEng FICE FConsE, Anthony Russell BTP MSc MRTPI MIHT, Richard Puttock BSc MSc FGS,
Eur Ing Mark Anderson-Hammersley BEng MA CEng MICE MIHT MCMI, Benjamin Mitchell BSc CEng MICE MCIWEM, Richard Swinden BSc CEng MICE MIHT, Scott Witchesalls MSc MIHT CMILT,
Michael Parkinson BSc CEng MICE MIHT MIRS, Paul Jenkin BEng MSc CEng MCIWEM, Robert Pinkett BA FCIT, Ing. Henk Gelens BSc MIHT, Martin Brady IEng CMILT MIHT MICE,
Gregory Callaghan BSc MRTPI CMILT MIHT, Dr Clive Edmonds BSc MSc DIC PhD FGS CGeol EurGeol CSci, Robert Groves IEng FIHE MIHT, Anthony Sheach CEng MICE CMILT MIHT,

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BARNLSLEY

Metropolitan Borough Council

Planning and Transportation Service

Assistant Director : Ruth Middleton BA (Hons), MRTPI, Dip Surv

Development Control Section

Central Offices, Kendray Street, Barnsley, S70 2TN

Tel: (01226) 770770 Fax: (01226) 772591

Email Address : DevelopmentControl@barnsley.gov.uk

My Ref. DC/MB/2006/1616

Your Ref.

Date 17 November 2006

Enquiries to Mrs M Barnes

Dial Direct (01226) 772588

Dear Mr Nicholson

PLANNING APPLICATION NO. 2006/1616

ERECTION OF RETAIL WAREHOUSE WITH ASSOCIATED CAR PARKING AND ACCESS (OUTLINE) AT LAND OFF OLD MILL LANE, BARNLSLEY

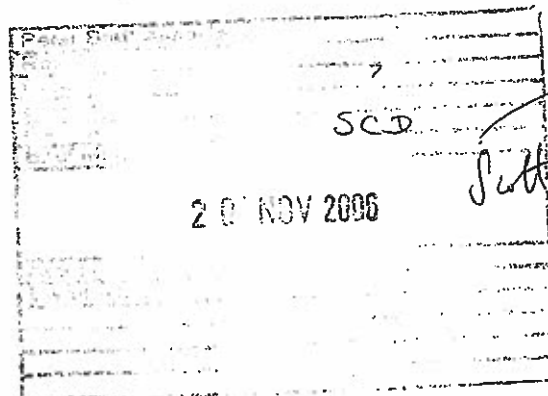
I refer to your letter dated 16 November requesting information in respect of the Flood Risk Assessment required for the above application.

I would advise that you contact the Environment Agency for their records of flooding and potential sources. I enclose a copy of the Council's Supplementary Planning Guidance.

Yours faithfully,

M. Barnes

for and on behalf of
Assistant Director, Planning & Transportation



Mr Scott Nicholson
Peter Brett Associates
Caversham Bridge House
Waterman Place
Reading
Berkshire
RG1 8DN

Please address all correspondence to the Development Control Manager



Awarded for excellence

FLOOD RISK AND DEVELOPMENT

SUPPLEMENTARY PLANNING GUIDANCE 29

May 2003

ABOUT THIS GUIDANCE

PPG 12 advises that supplementary planning guidance can be taken into account as a material consideration in deciding planning applications which can be given substantial weight. PPG 1 advises that applicants should be able to demonstrate that they have had regard to development plan policies and supplementary planning guidance.

In accordance with PPG 12 this guidance has been prepared in consultation with all those who might use it. A statement of the consultations undertaken, representations received and the Council's response to those representations is available on request. The Explanatory Note that accompanies the SPG series contains a summary list of consultees.

INTRODUCTION

This advice note offers guidance to developers, architects, agents and landowners considering submitting a planning application in an area of potential flood risk.

Flooding from rivers, watercourses and groundwater is a natural process and the damage that results to people and property occurs as a result of previous decisions about the location and nature of settlement and land use. Whilst flood damage cannot be prevented entirely the effects can be reduced, and the Council will play its part in ensuring the risk of flooding is taken into account in the planning of developments. It is important to remember that the threat of flood is there at all times.

This guidance supplements policy ES4 of the Council's Unitary Development Plan and explains how the Council intends to implement aspects of government guidance contained in Planning Policy Guidance Note 25: Development and Flood Risk (Department of Transport Local Government and the Regions 2001) which was published after the UDP was prepared.



BARNSLEY
Metropolitan Borough Council

UNITARY DEVELOPMENT PLAN

UDP

PPG25: Development and Flood Risk, requires a precautionary approach to ensure that new development is safe and not exposed unnecessarily to flooding. It also requires that run-off from development should not increase flood risk elsewhere in the catchment, and must not constrain the natural function of the flood plain, either by impeding flood flow or reducing storage capacity.

This advice note sets out the need to:-

- ensure development does not proceed that will have an adverse impact on the capacity of washlands and functional floodplain areas to store flood water
- reduce the amount of development that will have an adverse impact on the floodplains;
- ensure new development is not in an area of flood risk, and if so that any potential risk is mitigated;
- ensure the amount of 'run off' from new development does not increase the risk of flood elsewhere.

Flood Risk and Development

As a first step you should establish whether the site you propose to develop lies within either an area of washland or a flood plain. The following guidance explains the implications should your site fall within one or both of these areas, and what steps you will need to take should you wish to pursue development.

Washlands

Washlands are areas designated to store flood water, and are a vital component of flood control. The ability of washland to accept and store floodwater determines the extent to which risk from flood damage occurs elsewhere, particularly in built up areas. Washlands are shown on the Unitary Development Plan (UDP) proposals maps.

No development will be permitted within areas shown as washlands on the UDP proposals maps, unless those proposing the development can demonstrate the proposal will not adversely affect the washland and accords with criteria A and B of UDP policy ES4 shown below. Advice from the Environment Agency is that the washland areas have not changed since the preparation of the UDP, and therefore are accurately represented.

ES4

DEVELOPMENT WILL NOT BE PERMITTED IN AREAS DESIGNATED AS WASHLANDS ON THE PROPOSALS MAPS EXCEPT WHERE:-

- A) THE PROPOSED DEVELOPMENT WOULD NOT SIGNIFICANTLY AFFECT THE FUNCTION OF THE WASHLAND, OR IT INCORPORATES ADEQUATE ALTERNATIVE FLOODWATER STORAGE CAPACITY, AND
- B) THERE WOULD BE NO SERIOUS RISK TO THE DEVELOPMENT FROM FLOOD DEBRIS OR POLLUTION

In broad terms built development is only likely to be acceptable in the washlands in very rare circumstances. However, some development which does not affect the washland function (e.g. playing fields or public open space) or which is for an agricultural use may be acceptable.

Flood Plains

A floodplain is the overspill area where a river would flow naturally in the event of a flood, were it not for the presence of flood defences.

In 100 year Flood plain.

The Environment Agency has produced 'indicative flood plain maps' (these are sometimes known as 1 in 100 year maps and referred to as Zone 3 of PPG25). Areas coloured blue on these maps are those with a 1% chance of flooding from rivers each year. It is important to note the areas covered are more extensive than the washlands shown in the UDP. It is impractical to show the extent of the indicative flood plain maps on the UDP proposals maps as they are continually refined and can therefore change on an annual basis. The section below explains how you can view the 1 in 100 year maps.

Please note that if a site lies within the indicative flood plain it is likely to lie within the Dearne and Dove Internal Drainage Board district. The Board's consent may be required for any works affecting a watercourse. The Board also has byelaws which restrict the proximity of any new development to the bank top of a watercourse. It is recommended that you consult the Board on your proposals to establish if their consent is required.

The Council will consult the Environment Agency on any relevant planning applications for developments that lie within the 1 in 100 year indicative flood plain.

All proposals for development on sites within areas coloured blue on the Indicative floodplain maps (1 in 100 year flood plain) will require a Flood Risk Assessment (FRA). Such assessments should include:-

- a topographic survey showing existing and proposed levels;
- means of access and egress to the site and associated levels;
- an assessment of the source of flooding;
- proposals to mitigate risk (for example, raised floor levels).

In addition planning applications for new buildings and extensions to commercial properties in such areas should also be accompanied by a detailed and robust flood risk and run-off assessment for the site, to assess the degree of flood risk associated with the site and elsewhere. This assessment must be based on up to date information to establish the likely speed with which flooding may occur, flow rates, water depth, duration and social and environmental impacts.

This information will constitute the first stage of this flood risk assessment (FRA). The Environment Agency in conjunction with the Council will then assess this initial FRA to determine whether the information submitted provides a sufficient assessment of flood risk, or whether the details submitted show that further work or assessment is required prior to determining the application.

Failure to submit the necessary information will delay the processing of your planning application and may lead to its refusal on the grounds of insufficient information. Detailed guidance on how to carry out an assessment is contained in Appendix F of PPG25 (attached to this guidance note as Appendix 1).

1 in 1000 year Flood Plain

The Environment Agency are presently in the process of producing national 1 in 1000 year floodplain maps, which equate to zone 2 in PPG25. These will show areas of low to medium risk, where the annual probability of flooding from rivers is between 0.1 and 1.0 percent. These are due for completion in Summer 2003. These new maps will enable the Environment Agency and the local planning authority to identify where zones 1, 2 and 3 of PPG25 are situated.

Once the maps identifying the 1 in 1000 year floodplain are available, the Council will consult the Environment Agency on sites within the 1 in 1000 year indicative floodplain for particularly large developments or in locations where

there are known flood risk or drainage problems. Planning applications for such developments should be accompanied by the same information detailed above for sites that lie within the 1 in 100 year indicative floodplain.

Other land

and that lies outside the washland and the 1 in 100 or 1 in 1000 year floodplains has little or no risk of flooding (annual probability of less than 0.1%). This relates to Zone 1 in PPG25.

What happens next?

Once you have submitted the necessary information the Environment Agency will advise the Council which of the following approaches are appropriate and should be taken in respect of your development:-

1. It can proceed and no measures to mitigate flood risk are necessary;
2. It can proceed but only with measures to mitigate flood risk such as raised floor levels. Any such measures will be set out in conditions attached to the planning permission.
3. Development cannot be mitigated against flood risk and planning permission will therefore be refused
4. 'Run off' from the development will increase the likelihood of flooding elsewhere in the catchment, and planning permission will therefore be refused

How do I check the indicative flood plain maps and the washlands shown in the UDP?

The UDP proposals maps and the Indicative flood plain maps (paper copies) can be viewed at Planning and Transportation reception. The address is Central Offices, Kendray Street, Barnsley. The reception is open 9.00am to 5.00 pm Mon - Thurs, 9.00am to 4.30pm Friday. Please ask the receptionist for the Indicative Floodplain Maps and for the UDP proposals map for the relevant community area, who will then arrange for you to view them.

If you have access to the Internet you can view the maps on the 'In Your Backyard' section of the Environment Agency's website the address of which is www.environment-agency.gov.uk. To access these maps all you need to do is enter the postcode of the development site or nearest town.

The general principles of flood resistant design for new development are contained in Appendix 2. Further details on measures to reduce flood damage to both new and existing properties is contained in the document 'Preparing for Floods: interim guidance for improving the flood resistance of domestic and small business properties' February 2002 available from:

ODPM Free Literature, PO Box 236, Wetherby, West Yorkshire, LS23 7NB
Tel: (0870) 1226236 Fax: (0870) 1226237.

It is also available on the ODPM website:
www.safety.odpm.gov.uk/bregs/index.htm

FURTHER INFORMATION

For further guidance please contact BMBC Planning Services (01226) 772584 or 772590 in the first instance.

Advice on site-specific queries for example relating to drainage or building design issues can be obtained from:

BMBC Highways and Engineering, Drainage Section (01226) 772116.
BMBC Building Control (01226) 772678

Environment Agency - the address for the office of the North East region is:
Phoenix House, Global Avenue, Millshaw, Beeston Ring Road, Leeds,
West Yorkshire, LS11 8PG.

Tel: (0113) 2134600 Fax: (0113) 2134609,
e-mail enquiries@environment-agency.gov.uk.

Deame and Dove Internal Drainage Board, Grantham Brundell & Farran
Consulting Engineers; Pillar House, 20 South Parade, Doncaster, DN1 2DP
Tel: (01302) 342055 Fax: (01302) 329887, e-mail: gbandf@constructionplus.net.

This guidance has been prepared in consultation with the Environment Agency.

APPENDIX 1: Extract from Planning Policy Guidance Note 25

APPENDIX F

Guidance on requirements for undertaking a flood risk assessment.

- F1. This guidance relates only to the commissioning and undertaking of flood risk assessment studies at particular sites or over particular areas

FLOOD RISK ASSESSMENTS

- F2. Flood risk assessments may be of a relatively minor nature, evaluating a small development on a low risk site with minimal secondary effects, or may comprise major basin-wide studies for significant infrastructure developments. On occasions, preliminary or scoping studies may be undertaken prior to a fuller assessment. Developers should consult the Environment Agency and other relevant operating authorities to determine what information is already available on flood risk potentially affecting or affected by their site and its proposed development. They should also take full account of the local knowledge of flooding in the community.

- F3. The detail and technical complexity of a flood risk report will reflect the scale and potential significance of the study but, in all cases, whenever a flood risk assessment is undertaken for any location, the resulting report should address, as a minimum, the following requirements:-

- 1 A location plan at an appropriate scale that includes geographical features, street names and identifies all watercourses or other bodies of water in the vicinity. This should include drainage outfalls and, if necessary, cross-refer to their operational arrangements in the body of the report.
- 2 A plan of the site showing levels related to Ordnance Datum, both current and following development.
- 3 A more detailed indication, if appropriate, of flood alleviation measures already in place, of their state of maintenance and their performance.
- 4 An assessment of the source of potential flooding - rivers, tidal, coastal, groundwater, surface flow or any combination of these.

- 5 A plan of the site showing any existing information on extent and depth of flood events or on flood predictions. Information may be anecdotal, photographic, survey results or model estimates. The events should be identified with date/time, source of the data and supporting information provided on rainfall and/or return period, or probability of occurrence of the flood or storm surge event, or combination. Recorded data are particularly valuable and, if available, should be highlighted along with evidence of any observed trends in flood occurrence. Any changes that have taken place since the last event should be identified.
- 6 A plan and description of any structures which may influence local hydraulics. This will include bridges, pipes/ducts crossing the watercourse, culverts, screens, embankments or walls, overgrown or collapsing channels and their likelihood to choke with debris.
- 7 An assessment of the probabilities and any observed trends and the extent and depth of floods for the location and in the catchment context and, if appropriate, routes and speed of water flow. At this stage best estimates, based on the most up-to-date findings, should also be made of climate change impacts on probabilities. The assessment should ensure that the development meets an acceptable standard of flood defence for the design life of the development.
- 8 A cross-section of the site showing finished floor levels or road levels, or other relevant levels relative to the source of flooding, and to anticipated water levels and associated probabilities.
- 9 An assessment of the likely rate or speed with which flooding might occur, the order in which various parts of the location or site might flood, the likely duration of flood events and the economic, social and environmental consequences/impacts of flooding.
- 10 An assessment of the hydraulics of any drains or sewers, existing or proposed, on the site during flood events. The methodology for assessment must be clearly stated.
- 11 An estimate of the volume of water which would be displaced from the site for various flood levels following development of the site and of the run-off likely to be generated from the development proposed.

- 12 An assessment of the likely impact of any displaced water on neighbouring or other locations which might be affected subsequent to development. This should address the potential for change of the flooding regime both upstream and downstream of the site due to ground raising or flood embankments.
- 13 An assessment of the potential impact of any development on fluvial or coastal morphology and the likely longer-term stability and sustainability.
- 14 Because of the uncertainties in flood estimation and expected climate change impacts, hydrological analysis of flood flows and definition of defence standards should include the allowances for increased flows and sea-level rise in MAFF's project appraisal guidance for flood defence cited in Appendix A.
- 15 An assessment of the residual risks after the construction of any necessary defences. Where new or modified flood defence arrangements are provided, consideration should always be given to their behaviour in extreme events greater than those for which they are designed and information should be provided on the consideration given to minimising risks to life in such circumstances.

APPENDIX 2

General Principles of Flood Resistant Design for new development

If the Environment Agency and the Council decide to follow approach 2 above and decide that development can go ahead with measures to mitigate flood risk, the following measures should be taken to reduce the impact of flooding.

Ground floor levels

Raising the minimum ground floor level of the property or development above expected flood levels can reduce the impact of flooding. The local planning authority has the power to impose a condition on planning permissions by specifying a minimum ground floor level. There are practical limits to raising ground floor levels to avoid visually obtrusive development, but floor levels must be fully considered in the design process. For example on a sloping site it would be preferable to develop housing on higher parts of the site above projected flood levels and to use lower parts for landscape or open space. For flatter sites it may be possible to raise ground locally to create higher formation levels for new buildings while reducing levels elsewhere on the site in landscape/ garden areas to avoid reducing flood plain storage. Flood defences can be incorporated within the landscaping of the site provided flood storage volumes are not reduced.

Forms of Construction

Some types of construction for example single storey buildings, and buildings with basements present particular problems in areas of flood risk. Innovative designs where living areas are located at first floor level, with the ground floor used as garages or storage areas may be appropriate in some cases, although these may result in access problems when floodwaters rise.

External Walls

For new properties in flood risk areas the materials (bricks, mortars and renders) should be carefully chosen to limit water penetration during flooding. Generally denser materials will provide greater resistance.

Inside face of external walls

Gypsum based plaster on masonry walls is likely to deteriorate following exposure to floodwater. Consideration may be given to replacing gypsum plasters with more flood resistant materials such as:-

- An Internal water-resistant render and lime based plaster finish
- Ceramic tiles: particularly in kitchen areas
- Hydraulic Lime Coatings

Means of Access/ Egress

The developer would need to ensure that there is appropriate means of access and egress to the property in the event of the area flooding.

Sustainable Urban Drainage Systems (SuDS)

The use of SuDS will be supported wherever practicable. Sustainable Urban Drainage is a non-traditional, environmentally friendly way of dealing with surface water run off. SuDS rely on gravity to drain surface water run off from hard surfaces into drainage systems or into ground to recharge aquifers. Run off is collected and stored so that natural cleansing (sedimentation, filtration and biodegradation) occurs prior to infiltration or controlled release to watercourses.

Correct implementation of SuDS can reduce the rate and volume of surface water draining into the public sewer network by allowing the water to drain naturally into the ground or slowing discharge into the public sewer. This in turn protects the public sewer from overload and the environment from pollution. Where surface water would have traditionally drained into a combined foul and surface water sewer, the use of SuDS prevents relatively clean surface water from passing unnecessarily through the wastewater treatment process.

The use of SuDS reduces the amount and rate of surface water entering the sewage system and allows for treatment prior to its discharge to land or watercourse. This may assist with the reduction of risk of flooding in areas in particular form new development.

Some of the above measures to mitigate flood risk have implications for Building Regulations.

Malcolm Smith

From: Mark.Allcock@uk.ngrid.com
Sent: 20 November 2006 11:48
To: Malcolm Smith
Cc: Mark.Rylance@uk.ngrid.com
Subject: Re: Old Mill Lane, Barnsley - Records of Flooding

Malcolm

Thanks for the email.

I have spoken to the Estates Manager responsible for the property who has no knowledge of any flooding events occurring on the site.

Hope this is of assistance.

Kind regards

Mark

Mark Allcock
Planning Manager
National Grid Property Ltd
Altrincham Office
Tel: 0161 925 5064
Mob: 07823 326 000
Fax: 0161 925 5075

"Malcolm Smith"
<msmith@pba.co.uk
<Mark.Allcock@secondsite-property.com>
>

To:

cc:

Subject: Old Mill Lane,

Barnsley - Records of Flooding
20/11/2006 11:34

Mark,

As part of our gathering of information regarding the Flood Risk Assessment for Old Mill Lane site, Barnsley, we are seeking to establish if the existing site owner has any records of flooding that has occurred on this site. Please could you forward this request to the relevant person within National Grid.

In your role of site owner for the area in which the proposed development is located would you please advise if you have any record of flooding, and the details, both that has already occurred from any source of flooding and