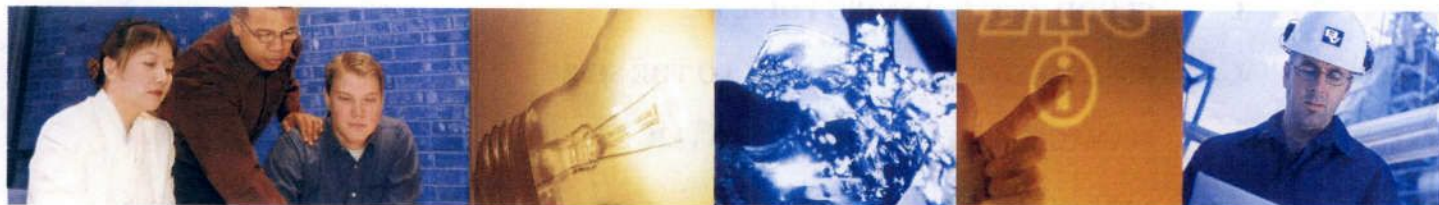


P G Ridgley Will Trust



**Land at Barnaby Mead Gillingham
Site Allocation & Flood Risk
Review**

May 2010

Land at Barnaby Mead, Gillingham
Site Allocation & Flood Risk Review

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Appendix A – Information from the Environment Agency

Figures:

Figure 1: Location Plan

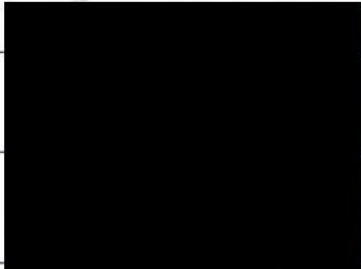
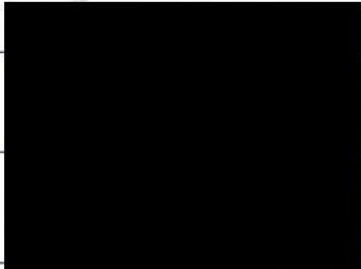
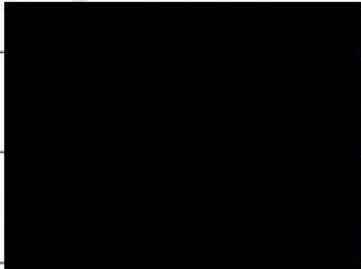
Figure 2: Existing Site and Floodplain

Figure 3: Outline Site Proposals

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	Name	Signature	Date
Prepared	J Mason		5 May 2010
Checked	A Wallis		5 May 2010
Approved	C Bown		5 May 2010

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Whilst all reasonable care has been taken in this assessment we cannot guarantee that during the lifetime of this development water levels may not exceed those stated in this report. This report has identified the risk of flooding to the site from the Shreen Water, and the conclusions stated in it are based on our best estimate using available data with a precautionary approach taken where possible. We have not assessed flood risks from other sources. We must make it clear that the assessment of weather generated flooding is inexact and that analysis is limited by the accuracy and availability of recorded data. Higher water levels may occur in the future due to the actions or omissions of third parties, or to poor maintenance, blockage, storm events in excess of the design standard quoted, inaccuracy or unavailability of data. Flooding beyond that estimated in this report may also occur due to climate change.

1. BACKGROUND

- 1.1 Black & Veatch Ltd. (B&V) have been appointed by Farnfield & Nicholls (on behalf of the P G Ridgley Will Trust) to advise on the flood risk issues in connection with the land at Barnaby in Gillingham, Dorset. The location of the site is shown in Figure 1 (figures are located at the end of the report).
- 1.2 The principal purpose of the review is to consider the suitability of the land for development and to consider what type of development could be appropriate taking into account flood risk constraints. The document aims to inform decisions being made within the preparation of the North Dorset District Council Local Development Framework (LDF). This report also considers the key flood management measures necessary to facilitate development.
- 1.3 This document has been prepared to provide information to inform the allocation of land for future development. For the avoidance of doubt the report is not a Flood Risk Assessment (FRA) as defined in Planning Policy Statement 25: Development and Flood Risk, and it is essential that a detailed FRA is prepared to support any future development proposals.

2. LOCATION AND EXISTING SITE

- 2.1 The site is shown in Figure 2. The site is situated south east of the Shreen Water, which flows in a southerly direction and joins the River Stour in Gillingam. The Shreen Water in this area is main river.
- 2.2 The site is currently open pasture. Photograph 1 shows the lower (northern) part of the site. The existing Barnaby Mead development is shown in the background.



Photograph 1: The existing site with the recently constructed Barnaby Mead development in the background and the Shreen Water to the right.

- 2.3 As shown in Figure 2, the site ground levels rise from the banks of the Shreen Water at approximately 70.8m, to the south of the site at a level of 80m.

3. FLOOD RISK PLANNING POLICY

3.1 Planning Policy Statement 25: Development and Flood Risk (PPS25) sets out the Government's approach to land use planning and the strategic approach to flood risks. In particular local planning authorities (LPAs) are required to implement planning strategies that:

- Appraise Risk
- Manage Risk – by avoiding risk where possible
- Reduce Risk

3.2 PPS25 requires that the LPA prepares a Strategic Flood Risk Assessment (SFRA) to inform the preparation of the relevant Local Development Documents (LDDs). The relevant SFRA in this location is the Bournemouth, Christchurch, East Dorset, North Dorset and Salisbury Strategic SFRA, Level 1 February 2008 (2008 SFRA). It is understood that there is not a Level 2 (or more detailed) SFRA for this area.

3.3 PPS25 states that LPAs allocating land in LDDs for development should apply the Sequential Test to ensure that low flood risk areas are developed in preference to higher flood risk areas. In particular it is necessary to demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate for the type of development proposed. Such an approach ensures that lower risk sites are developed before higher risk sites, although other planning constraints may also have a bearing on the areas proposed for development.

4. ASSESSMENT OF FLOOD RISK TO THE SITE

4.1 The assessment of flood risk has taken into account the data contained within the 2008 SFRA. However a direct request was also made to the Environment Agency for more recent flood risk information.

4.2 Gillingham has a long history of flooding, and the Environment Agency and its predecessors have undertaken works to reduce the risk from flooding in the town. However in many areas a significant flood risk remains which provides a constraint to development in the town. The areas shown at flood risk in Gillingham are summarised in the EA Output below, taken from the Environment Agency's online flood maps.



EA Output: Extent of flooding in Gillingham (site shown in red)
(dark blue high risk and light blue medium risk)

- 4.3 Despite many areas of Gillingham being at high flood risk, an assessment of the detailed information from the Environment Agency in relation to flood risk from the Shreen Water shows that 90% of the existing site is shown in Flood Zone 1 (Low probability of flooding) as illustrated in Figure 2. This zone comprises land assessed as having a less frequent than 1 in 1000 probability of flooding in any one year. The information from the Environment Agency is broadly consistent with the 2008 SFRA. Figure 2, where the Environment Agency data has been overlaid in the topographic survey, confirms that the 1 in 100 annual probability of flooding level for the site is 71.71m and the 1 in 1000 annual probability of flooding level is 72.24m. These levels are based on a mathematically modelled assessment of the Shreen Water, and further details of the information received from the Environment Agency is included in Appendix A.
- 4.4 PPS25 confirms for the areas of the site at low flood risk all uses of the land are appropriate. Therefore dwelling houses (as included in Table D.2 of PPS25) are an appropriate use. Because the site is essentially low risk (with the exception of the land immediately adjacent to the Shreen Water discussed below), this site is sequentially preferable in terms of flood risk for this type of use to any other site in the North Dorset area at a medium or high probability of flooding.
- 4.5 A small area of the site shown in Figure 2 is at medium or high flood risk. This area is immediately adjacent to the Shreen Water. This area should be retained as 'green infrastructure'. Whilst a planning application would consider options for this area in detail options are likely to include:
- Wildlife corridor
 - Recreational area
 - Footpath
 - Environment Agency access to river

- 4.6 All the options described above for green infrastructure build upon the approach adopted in the draft core strategy. From a flood risk perspective these uses are 'water-compatible' and are appropriate for areas which flood occasionally. No homes would be permitted in these areas.

5. MANAGEMENT OF SURFACE WATER

- 5.1 Section 4 confirms that the site is essentially in Flood Zone 1, and is at low risk of flooding. However the effect of development is generally to reduce permeability of the site, which can result in increased peak runoff from the site and potentially increase flooding to third parties downstream. A subsequent Flood Risk Assessment would need to discuss in detail how surface water arising from development would be managed in a sustainable manner to mimic the current runoff response.
- 5.2 It is important not to prejudge what sustainable drainage system (SuDS) would be appropriate. Available soil information indicates that the soils in this area are likely to be clay and only slowly permeable. Figure 3 illustrates the approximate scale of detention basin that may be a valid approach in this location. Whilst it is essential that these areas are outside of high flood risk areas, careful design can ensure good integration with an adjacent wildlife corridor and footpath. The detention basin is shown outside of Flood Zone 3 and 2. Further work may suggest that locating the detention basin in Flood zone 2 could be acceptable, particularly if better integration with other green infrastructure could be achieved.
- 5.3 A small ditch runs along the eastern boundary of the site. This ditch is understood to drain school tennis courts to the south of the site. Any flood risks from the ditch would have to be considered in a subsequent Flood Risk Assessment, although there is no evidence that this would cause any significant problem, as the area drained is small. The ditch would probably be integrated into the SUDS solution adopted for the whole site. There are no other significant watercourses on the site.
- 5.4 Effective maintenance of SuDS are essential to ensure that they operate effectively over the lifetime of the development. The recently enacted Flood and Water Management Act 2010 should help to ensure that appropriate adoption and maintenance is achieved in the future.
- 5.5 Available information confirms that a sustainable approach to surface water management is possible, consistent with the requirements of PPS25.

6. SAFE EGRESS AND ACCESS

- 6.1 It is envisaged that main access will be provided through the adjacent existing Barnaby Mead Development which links to the High Street and the wider road network. The risks associated with this route (or alternative routes as required for highway/traffic reasons) would be considered during the detailed FRA. In the event that further dry safe access routes were required, it is likely that additional access could be constructed to link towards the Gillingham School to the south of the site, building on existing paths and access routes. This approach would help promote school travel plans as well as providing additional security in the event of fluvial or surface water flooding of the wider road network.

7. CLIMATE CHANGE

- 7.1 Climate change is likely to increase flood flows in the future and therefore increase flood levels and flood risks. A subsequent Flood Risk Assessment would need to consider how development could be constructed to minimise future flood risk on this site. Fortunately this site rises quickly from the river and detailed modelling is likely to show that the plan extent of flooding is unlikely to extend significantly in the future in this location. The site will be broadly robust against future changes in flood risk due to climate change.

8. CONCLUSIONS

- 8.1 The majority of the existing site is in Flood Zone 1: low risk of flooding as defined by PPS25. Residential development would be limited to this area only. The small area at high or medium flood risk would be retained as green infrastructure. This approach builds upon the emerging Local Development Core Strategy.
- 8.2 Sustainable drainage systems can be adopted to ensure that the developed site mimics the existing site drainage as far as is practicable. An indicative design has been shown although the full range of options would need to be considered as part of a subsequent planning application.
- 8.3 Safe egress and access can be provided to and from the adjacent existing Barnaby Mead Development, and other alternative routes are available or could be constructed if necessary.
- 8.4 Because of the existing topography, the site will be broadly robust against future changes in flood risk due to climate change.
- 8.5 Whilst this report has not identified any insurmountable issues in terms of flood risk, a full Flood Risk assessment will be required to support any subsequent planning application.

APPENDIX A

Information from the Environment Agency

Extracts from emails received 22 and 27 April 2010 in response to our letter of enquiry dated 6 April 2010 to Chris Doyle External Relations Officer, Environment Agency, Blandford Office.

- a) the latest flood outline at a scale 1:1250 – Attached - However, as discussed previously, we can only supply floodplain maps at a scale of 1:10,000
- b) the latest modelled flood levels within the red line - Node Points and Levels Spreadsheet
- c) any historic flood levels recorded during recent significant flood events, up or downstream. None
- d) any known environmental constraints, designations, etc. within 250m radius. None
- e) any existing Flood Defence Consents within 250m radius. None
- f) any abstraction or discharge licenses within 250m radius. None
- g) any Flood Defence concerns, e.g. existing access arrangements. The site is next to a small section of the River Shreen watercourse. At this location there are no flood defences or structures on the watercourse. However, the Environment Agency does own and maintain a flood wall, pedestrian access points and flapped outfalls to the south of the site. Our Operations Delivery team occasionally accesses the watercourse from this location for tree removal.
- h) the current flood warning parameters for this reach of Shreen Water. We have a Flood Watch (Upper Stour and Tributaries) and 2 Warnings (Shreen Water from Colesbrook to Gillingham War Memorial, Shreen Water at Gillingham) which we issue for this area
- i) a confirmation that the watercourse is designated main river. Shreen Water is classified as A Main River watercourse at this point

The information you have requested is provided subject to the attached notice (*Notice - Commercial.pdf*). Please let me know if you require any further information.

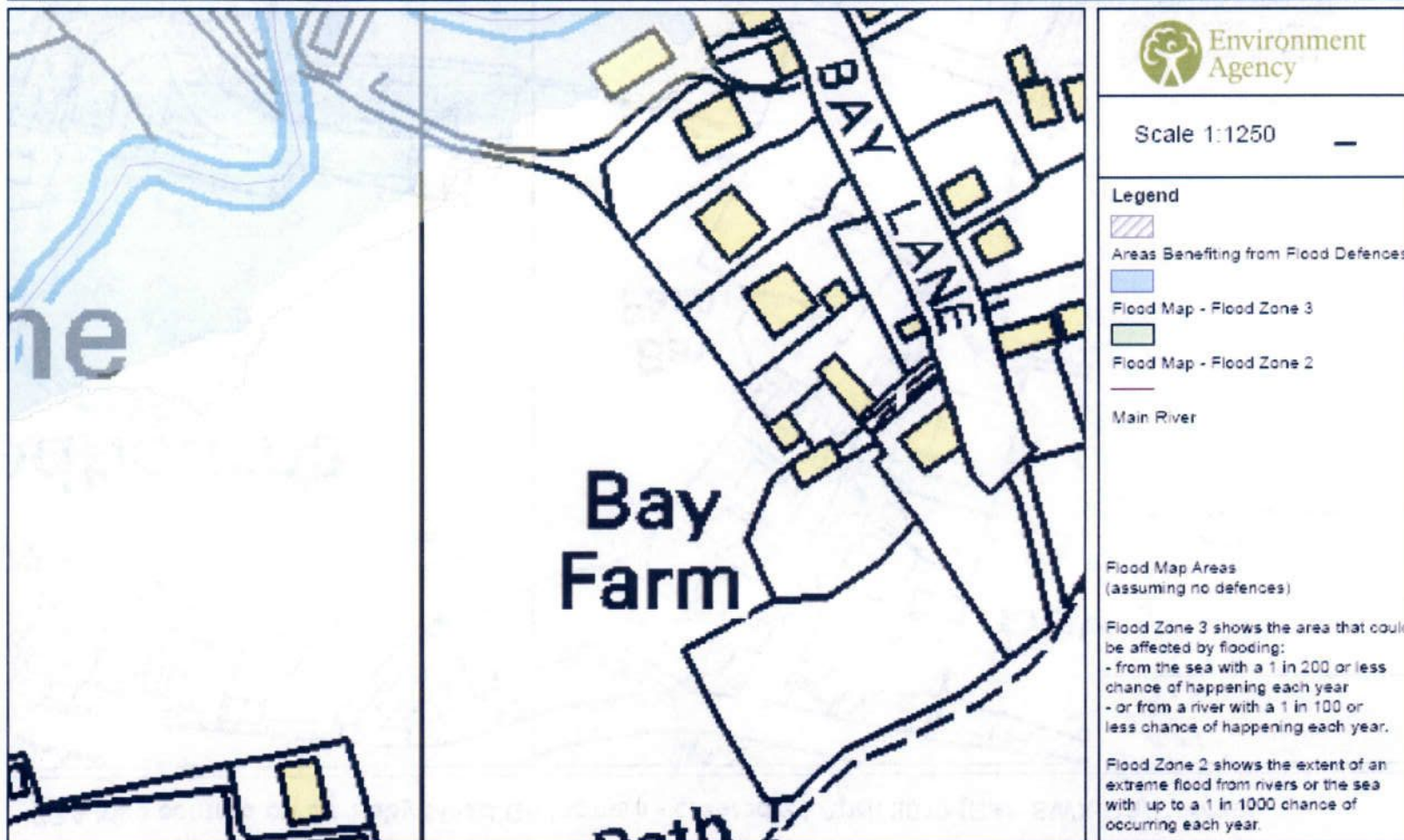
Chris Doyle
Environment Agency
External Relations Officer

Environment Agency, Rivers House, Sunrise Business Park, Higher Shaftesbury Road, Blandford, Dorset, DT11 8ST

 Before printing, think about the environment

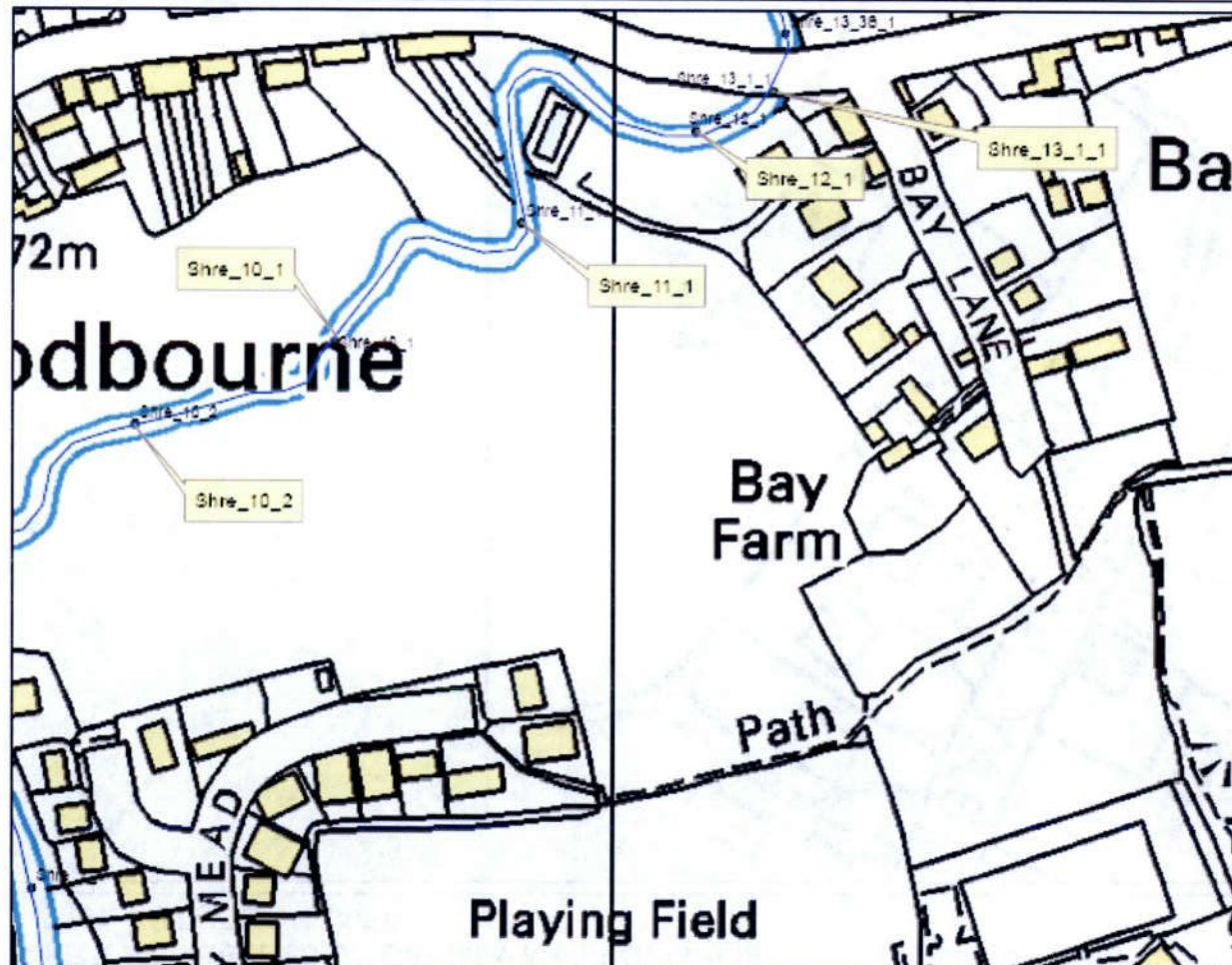
The Environment Agency has updated the way it responds to requests for flood risk information, including Flood Risk Assessment (FRA). If you are conducting a Flood Risk Assessment (FRA) please check the ["New Flood Risk Standing Advice for England – PPS25 National Version 2.0"](#) web pages for the FRA 'product' you require.

FRA Map centred on Barnaby Mead Gillingham - created 21 April 2010
[Ref: SWX/CSC/14469]



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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

FRA Map centred on Barnaby Mead Gillingham - created 21 April 2010 [Ref: SWX/CSC/14469]



Scale 1:2,000

Legend

- Main River
- Node Points - Levels

Please see spreadsheet
'SWX - CSC - 14469
Levels Spreadsheet'
for model measurements
for each Node Point.

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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 508 508 (Mon-Fri 8-8). Email: enquiries@environment-agency.gov.uk



Node Point Name	X	Y	Datum	Level (mAOD)									
				2 year	5 year	10 year	25 year	50 year	75 year	100 year	200 year	500 year	1000 year
Shre_10_1	380858.8	126880.4	OD Newlyn	70.830	71.100	71.290	71.390	71.500	71.580	71.650	71.810	72.000	72.210
Shre_10_2	380828.3	126880.4	OD Newlyn	70.750	71.010	71.170	71.320	71.420	71.510	71.590	71.760	71.950	72.170
Shre_11_1	380966.1	126922.8	OD Newlyn	70.920	71.200	71.330	71.470	71.570	71.640	71.710	71.850	72.040	72.240
Shre_12_1	381027.7	126955.6	OD Newlyn	71.030	71.330	71.460	71.600	71.690	71.760	71.810	71.940	72.120	72.310
Shre_13_1_1	381055.0	126969.9	OD Newlyn	71.060	71.370	71.490	71.620	71.710	71.770	71.820	71.950	72.120	72.310

Our Ref SWX/CSD/14468
Name Mr Jack Mason
Organisation Black & Veatch Ltd
Details Land off Barnaby Mead, Gillingham, Dorset
NGR ST 81030 26680

All Levels are DEFENDED

Environment Agency Flood Level Data

Figures

Inquiry into the North Dorset District Council's

Draft Core Strategy

An Appraisal of the Highways and Access to a Site off Barnaby Mead, Gillingham

Support For The Proposed Residential Development of the Site

For:

**The Ridgley Will Trust
C/O Farnfield & Nicholls
The Square
GILLINGHAM
Dorset SP8 4AX**

By:

**C D Jones C.Eng MICE FCIHT
5 Lodge Close
YATTON
Bristol
BS 49 4DX**

1 Introduction.

- 1.1 This statement is written by Mr C D Jones. I am a Chartered civil and highways engineer with more than 50 years relevant experience. I have been trained by the Planning Inspectorate in matters related to the operation of the planning system.
- 1.2 I have advised in hundreds of cases of planning proposals, mainly but not exclusively for developers over the past 17 years. I am familiar with the relevant policies for highways and access, both nationally and those locally.
- 1.3 In this assessment I have been instructed to consider the access to the land in question, which lies at the terminal length of Barnaby Mead, in relation to the proposal to use the land for residential development that I understand may comprise some 50 or 60 dwellings.
- 1.4 I visited the site on 27th April 2010 when I surveyed the access, measured the volume of traffic using the junction of Barnaby Mead with the High Street, with a view to assessing the potential for any greater use. The results of that survey are at Appendix A hereto. I comment below on the relationship of those findings with established standards.

2 Overall View of The Proposal

- 2.1 The proposal is for a measure of residential development within the ambit of the confines of the built environment of Gillingham, where such would normally be appropriate.
- 2.2 In terms of the quantity of dwellings proposed, guidance for the need for assessment exists within the document "Guidance for Transport Assessment" by the Department for Transport, March 2007. Appendix B of that document informs that for schemes within the 50 to 80 dwelling range a Transport Statement (TS) only is required. A TS is an abbreviated form of assessment that is intended for sites that are likely to have a lesser impact on the highway network. This reflects the relatively small generative capacity to be expected from this proposal.

- 2.3 Current government guidance seeks to maximise the use of urban land such as this site, so to limit the need for journeys, particularly those by private car. This site, being in the central part of the Town is ideally located in that regard.
- 2.4 Gillingham is fortunate in having good connections to both bus and rail transport. The bus stop is opposite the entrance to Barnaby Mead and the railway station is at the southern end of Station Road Lower, about 700m from the site. Both these locations are set within a convenient walking distance from the site over reasonably level ground. In this respect PPG 13 sets 2 km as a reasonable distance that walkers might undertake, and this radius would encompass the essential services offered in Gillingham.
- 2.5 In addition, access to the retail centre shops and services in the Town centre are at a convenient walking distance from the site. Gillingham School is a good secondary school located in Harding's Lane, a short distance off Newbury at the end of the High Street to the south of the site. I estimate that this is 700m from the proposal site via the main public roads, but there is the potential for a more convenient and shorter footpath access, as the school's land abuts the proposal site's southern boundary. Accordingly, pupils could reasonably be expected to obtain access by walking or cycling. There is a Junior school at Deane Lane in Wyke, to the west of the site about 1.1km away.
- 2.6 Access to the site is obtained through a stub leg of the existing highway network of Barnaby Mead and Bay Fields at the north eastern edge of the existing development. This access provides a full width road with footways at each side leading directly into the proposed site and is about 350m from the junction with the High Street.
- 2.7 The site is well located in terms of the advice in PPG 13.

3 The Existing Traffic

- 3.1 I measured the flow of traffic as described in Table A/1 at Appendix hereto. This showed that at a typical pm peak time the flows are relatively low. The flows at the am peak might typically be the reverse.

- 3.2 There is established design guidance¹ that assesses the likely trip generation per dwelling at peak times at 0.7. That would derive a peak flow from the 80 No dwellings at this site at 56 trips. The maximum recorded hourly flow of 69 is higher than that estimation but not materially so.
- 3.3 I noted that the radii of entry to Barnaby Mead are each about 8m. That is an adequate radius for normal residential use and would not normally induce undue slowing to negotiate the turn in or out. That feature is not volume sensitive.
- 3.4 During the survey I saw no congestive effects in Barnaby Mead, and indeed for considerable periods of the time the leg at the junction was entirely empty. I also noted that the out turn to the left and that in to the left, were generally easily accommodated as was the right turn in. The least easy was the right turn out, which is quite normal, as it requires clearance in both of the entry lanes. Nonetheless the nature and density of the High Street traffic allowed entry and exit without any major, or indeed any congestive effects.

4 The Projected Traffic Conditions

The junction with High Street

- 4.1 The existing traffic flows may be taken as the indicator for flows from the projected development of the additional say 55 dwellings. The development would probably increment flows by 69% based on that increment over the existing 80 dwellings. That would result in a peak usage of the junction of $69 \times 1.69 = 116$, of which, using the existing relationship of inward to outward, 79 might be outward and 37 inward in the am, and the reverse during the pm peak.
- 4.2 Broken down to the time for each exit that would allow $3600 / 79 = 45$ seconds for each departure. I noted that at present traffic entering the High Street can do so with a typical recorded delay of effectively zero up to just 15 seconds. I therefore believe that the junction would not be particularly overstressed by the additional flows and there would be unlikely to be undue queuing to exit.
- 4.3 In respect to exit turns, although drivers would tend to opt for a left or right turn, depending upon local factors and destinations, there is a potential to turn in either

direction to make one's way to Le Neuborg Way, the main ring road to the west giving access to the north via the B3092, or to the south and west via the B3081. Thus if a particular exit is seen to be temporarily blocked along the High Street, or seems slow moving, a driver can opt to take the alternative directional turn with little local disadvantage, or increment in trip length.

The Highway Capacity

a) The Barnaby Mead Sections

- 4.4 There is design guidance ² that suggests that typical road layouts such as that in use here can reasonably support up to 200 dwellings when formed as a cul-de-sac. The proposed number of about 135 therefore falls well within that fairly broad spectrum.
- 4.5 The critical length of highway is that at the approach to the High Street, as it comprises the single route in or out. At 5.5m wide with 2 appropriate width footways that access conforms with the normal expectations for width for access as a collector road to 200 dwellings ². Barnaby Mead is therefore capable of serving the proposed development in terms of the road's capacity.
- 4.6 An alternative way to consider capacity is from TA 79/99 ³, which deals with the capacity of Urban Roads. In Table 2 the least flow capacity for a 6.1m wide road is given as 750 vehicles per hour in the main flow direction assuming a 60/40 split. That infers a whole capacity of $750 \times 1.4 = 1,050$. Now while that is for a wider road than we have here, even if one halved that capacity to 525 v/hr it would greatly exceed any predicted flows on Barnaby Mead.

b) The High Street

- 4.7 I noted that speeds of traffic along the High Street are universally low; less than 20 mph. That tends to promote distinct flow patterns in blocks as traffic is released from other obstructions. In that respect the bus stop and the permitted parking along the west side of High Street form potential filter points that modify and moderate traffic flows. In such circumstances, when as there is here, there is a very good alternative through route, the effects on traffic and the attractions for

use are that some delays are inevitable, and that some users may be attracted elsewhere if so inclined, for instance to the super market and associated uses to the west.

- 4.8 Congestive effects are therefore very much a local effect only, and they do not attract the same degree of importance as for instance on essential through routes. Were that not so, restrictions on parking in the High Street could be initiated to improve flow conditions.
- 4.9 Having said that, at peak use the proposed development might add 47 trips/hour to that presently experienced; 116 – 69. I measured a peak flow along the High Street at 470 v/hr. The notional addition is about 10% of the existing flows and as that would fall within the normal flow variations that are experienced, it would not normally be considered to be such as to be a material addition. In addition, that increased flow of about 517 v/hr would still be below the conservative estimate I have made of the notional capacity established above for the lesser width Barnaby Mead (525 v/hr).

5 Conclusions

- 5.1 The site location accords with the aims and express advice in PPG 13 as being in a highly sustainable location.
- 5.2 The site would generate relatively small volumes of traffic that could be accommodated within the existing highway network without causing undue inconvenience or congestion.

References:

- 1 Estate Roads in Somerset Para 2.1.4
- 2 Estate Roads in Somerset Para 3.3
- 3 Design Manual Roads and Bridges, Traffic Capacity of Urban Roads, May 1999

An Appraisal of the Highways and Access to a Site off Barnaby Mead, Gillingham

Appendix A

Survey Details;

Surveyor: C D Jones
Date; 27/4/'10 Time; 14.30 to 18.05 hrs
Site; Junction of Barnaby Mead and Gillingam High Street
Method: Manual count Weather: Fine and dry

Survey Results

No. of existing dwellings with available access to Barnaby Mead; 80 No

Width of Barnaby Mead is 5.5m (18 ft). Radii of junction is 8m

A large sheltered home and a church also have access, but have limited or no parking capacity and do not appear to contribute significantly to normal weekday daytime traffic.

There are single yellow line restrictions operating 08.00 to 18.00 hrs Monday to Friday over the initial length of about 100m of Barnaby Mead. A 20 mph speed restriction is marked on the High Street and on Barnaby Mead. No delays or congestive effect were note for traffic during the survey.

Table A/1 Results of Traffic Count

Time	Right in	Left in	Right out	Left out	Total in	Total out
15 – 16.00	14	6	5	12	20	17
16 – 17.00	20	2	9	11	22	20
17 – 18.00	17	24	12	16	41	28

NB. Maximum 5 minute flow 17.05 – 17.10 - 7 out, 5 in = 12 no

High Street flow is about 470 v/hr