

**CROWMARSH LOCAL
NEIGHBOURHOOD PLAN
ENVIRONMENT AND
HERITAGE SUPPORTING
EVIDENCE**



CROWMARSH PARISH NEIGHBOURHOOD PLAN

ENVIRONMENT AND HERITAGE SUPPORTING EVIDENCE

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OBJECTIVE

This document provides supporting evidence for the Policy Statements presented in the Draft Parish Neighbourhood Plan. The evidence is drawn either from information presented by Government and its various agencies responsible for regulating and for setting guidelines for the appropriate management of countryside within England or from a professional consultancy document prepared for Crowmarsh Parish Council (Robins, 2014). Collectively they provide valuable background information on the rural structure of Crowmarsh Parish and underpin the land allocation Policy Statements arrived at by the neighbourhoods within the Parish that are supported also by discussion with selected local farmers. The document draws also from the Emerging South Oxfordshire Local Plan 2033 and the Core Strategy.

The countryside within the Parish is managed as arable land and pasture for grazing. Most of it lies within the Chilterns Area of Outstanding Natural Beauty and agricultural land classification is 2 (very good) and 3 (good to moderate). It is home to a variety of protected species including, for example, adders, barn owls and stag beetles in the field east of Benson Lane in Crowmarsh Gifford. Low-lying land is liable to flooding by the river, exacerbated by spring discharges from the base of the permeable chalk where it overlies marly chalk. The Parish is rich in artefacts that reflect its important heritage. Grim's Ditch, which forms part of the Ridgeway National Trail, is a scheduled ancient monument. Guidelines and policy statements from the various guardians of the countryside protect the land primarily for agricultural use and recreation.

Relevant Guidelines and Policies:

Emerging South Oxfordshire Local Plan 2033

- Policy STRaT1: The Overall Strategy Proposals for development in South Oxfordshire should be consistent with the overall strategy of:
- Focusing major new development in Science Vale including Didcot Garden Town and Culham so that this area can play an enhanced role in providing homes, jobs and services with improved transport connectivity
- Providing for major development at Chalgrove and Berinsfield, including necessary infrastructure and community facilities
- Supporting and enhancing the economic and social dependencies between our towns and villages
- Supporting the roles of Henley, Thame and Wallingford by maintaining and improving the attractiveness of their town centres through measures that

include environmental improvements and mixed-use developments and by providing new homes, jobs, services and infrastructure

- Supporting and enhancing the roles of the larger villages Benson, Berinsfield, Chalgrove, Chinnor, Cholsey, Crowmarsh Gifford, Goring, Nettlebed, Sonning Common, Watlington, Wheatley and Woodcote as local service centres
- Supporting other villages by allowing for limited amounts of housing and employment to help secure the provision and retention of services
- Protecting and enhancing the countryside and particularly those areas within the AONBs and Oxford Green Belt by ensuring that outside towns and villages any change relates to very specific needs such as those of the agricultural industry or enhancement of the environment.

TOPOGRAPHY

The Riverside meadows area below Wallingford Bridge lies at an elevation of 49 m above Ordnance Datum (aOD). The highest land in the Parish is at Oakley Wood which is 101 m aOD. In general the land rises from the river eastwards into the Chiltern Downs attaining an elevation of 99 m aOD west of Cart Gap on the Ridgeway (Grim's Ditch) and above Coldharbour Farm. The land is at a lower elevation in the south eastern part of the Parish with a maximum elevation of 85 m aOD at White Hill, east of North Stoke.

Relevant Guidelines and Policies:

South Oxfordshire Core Strategy

Policy CSEN1 Landscape The district's distinct landscape character and key features will be protected against inappropriate development and where possible enhanced.

- (i) Where development is acceptable in principle, measures will be sought to integrate it into the landscape character of the area.
- (ii) High priority will be given to conservation and enhancement of the Chilterns and North Wessex Downs Areas of Outstanding Natural Beauty (AONBs) and planning decisions will have regard to their setting. Proposals which support the economies and social well-being of the AONBs and their communities, including affordable housing schemes, will be encouraged provided they do not conflict with the aims of conservation and enhancement.
- (iii) The landscapes and waterscapes of the River Thames corridor will be maintained and where possible enhanced as will the setting and heritage of the river for its overall amenity and recreation use.

CLIMATE AND CLIMATE CHANGE

Crowmarsh Parish enjoys a cool maritime climate. The long term average annual rainfall (1981-2012) recorded at RAF Benson is 611 mm with more than 1 mm falling on an average 111 days of the year. Long term average annual evapotranspiration accounts for much of this rainfall input especially during the dryer and warmer summer months. Rainfall that is not evaporated back into the air is available for runoff to rivers and streams or to percolate into the ground to become groundwater. Crowmarsh suffers on still clear winter nights from temperature inversion in the Thames valley when air temperature can fall below -5 °C. It is also prone to winter mists and fog. In summer, however, typical maximum July day temperature is 22 °C and occasional brief hot spells send afternoon temperatures up to 30 °C and more.

Climate change is a large-scale, long-term shift in the global weather patterns and average temperatures. Earth has had tropical climates and ice ages many times over the last 4.5 billion years. However, since the last ice age, which ended about 11 000 years ago, Earth's climate has been relatively stable at about 14 °C. However, in recent years, the average global temperature has been increasing with consequent effects on storm frequency, drought occurrence and extremes. The main impact on the Parish is storm intensity and frequency, with high rainfall events predicted over short time scales becoming an increasing threat. When the ground is already wet much of this input will run-off overland to ditches and the river. Maintenance of ditches is therefore increasingly important in order to clear the water and avoid localised flooding.

Relevant Guidelines and Policies

Chilterns Area of Outstanding Natural Beauty Management Plan 2014-1019:

Policy L13: The management of the landscape to enable it to adapt to climate change and to help mitigate the causes should be promoted.

GEOLOGY AND GROUNDWATER

The Chiltern Hills are an expression of the erosion resistant Cretaceous Chalk Supergroup which dips gently to the east with a steep scarp slope locally overlooking the Thames valley. The Upper Chalk and Middle Chalk are characterised by flinty chalks with occasional hard beds. The Lower Chalk passes from fractured chalk with fewer flint bands down into an increasingly marl dominated sequence. At the base of the Chalk is the Glauconitic Marl, an impervious unit that hydraulically separates the groundwater in the Chalk from the deeper artesian Greensand aquifer below. The weakly permeable base of the Chalk aquifer creates a distinct spring line adjacent to the outcrop of the basal chalk marls and Glauconitic Marl.

The Glauconitic Marl forms a band (concealed beneath the Thames gravels) roughly between the Thames Water pumping station at the eastern end of Wallingford Bridge [SU61358950] and Crowmarsh Parish Church [SU61458935], with Lower Chalk to the east giving way to Middle Chalk roughly at the entrance to the Oakley Wood Recycling Yard [SU64208900] above Coldharbour Farm.

Superficial strata comprise the silt and clay-bound gravels of the First Terrace and an alluvial strip along and adjacent to the River Thames. The gravels vary in thickness up to 4.3 m (penetrated by a borehole in the north eastern quadrant of the Centre for Ecology and Hydrology site [SU61728970]). The gravels vary in thickness from 2 to 3 m towards Benson Lane where they are partly replaced by grey lacustrine clay at a depth of 2.5 m below ground, to a feather edge to the east towards the line of the A4074 road.

There are no minerals within the Parish which could be economically won from the ground. In the past bell shaped flint mines, widening towards the bottom, provided flints for building and construction and remains of these pits are known in the Chiltern Hills. Chalk has been used as a crushed medium for application to acid land and for cement production. However, there is no evidence that either activity ever took place in the Parish. The riverine gravels are interbedded with clays and silts and trial test drilling by the British Geological Survey (see interactive map on BGS web site) shows that there are few areas with workable and clean gravel deposits of more than 3 m thickness. The Oxfordshire Coal Field underlies the parish at a depth of about 550 m. This will one day be exploited by in-situ-degasification, a process that will have little impact on the Parish or surrounding district.

The Middle and Upper Chalk collectively form part of a 'Major Aquifer' under current Environment Agency classification. The groundwater is unconfined and the water table follows a subdued version of the topography. The water table is highest along a groundwater divide beneath the scarp ridge roughly through Nuffield and Stoke Row. From here groundwater flows both eastward towards Nettlebed and Henley and westward towards Crowmarsh. There is no runoff except under exceptional and prolonged wet weather. As the groundwater flow is pinched out towards the base of the Chalk aquifer to the west of the scarp by the weakly permeable Lower Chalk marls, so it flows to surface as springs or discharges into the overlying gravel deposits (Figure 1).

Major spring discharges occur along this spring line at Marsh Wood Spring, Mongewell Spring and at North Stoke (Figure 2). There are several ephemeral wet weather spring discharges, notably at the gateway to 119 The Street in Crowmarsh Gifford (Figure 3).

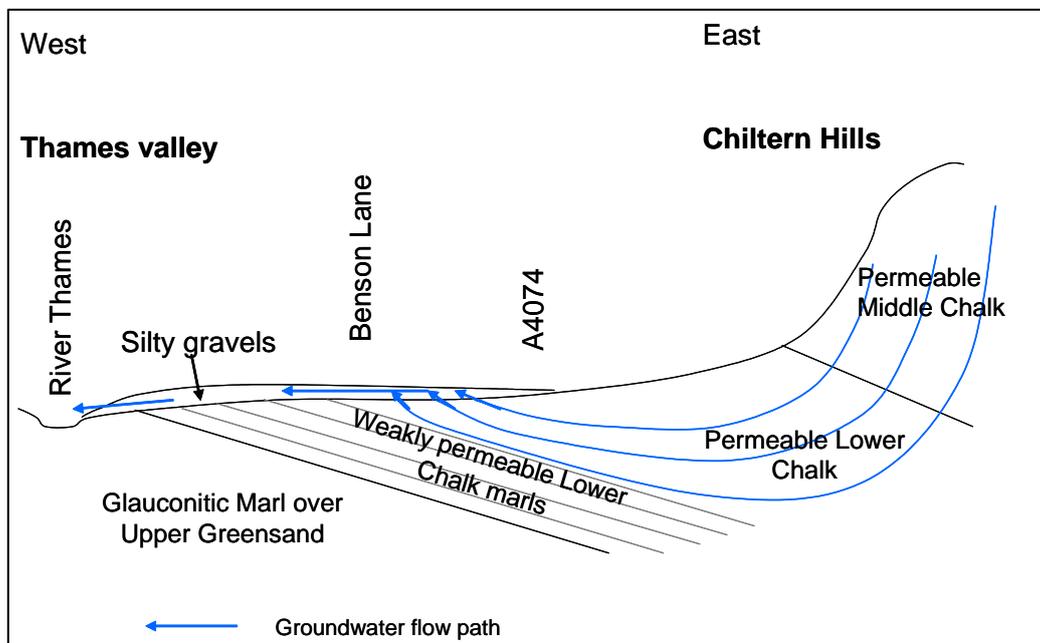


Figure 1 Schematic cross-section of groundwater flow system through Crowmarsh Gifford



Figure 2 Location of spring line and main springs [OS data reproduced under licence]

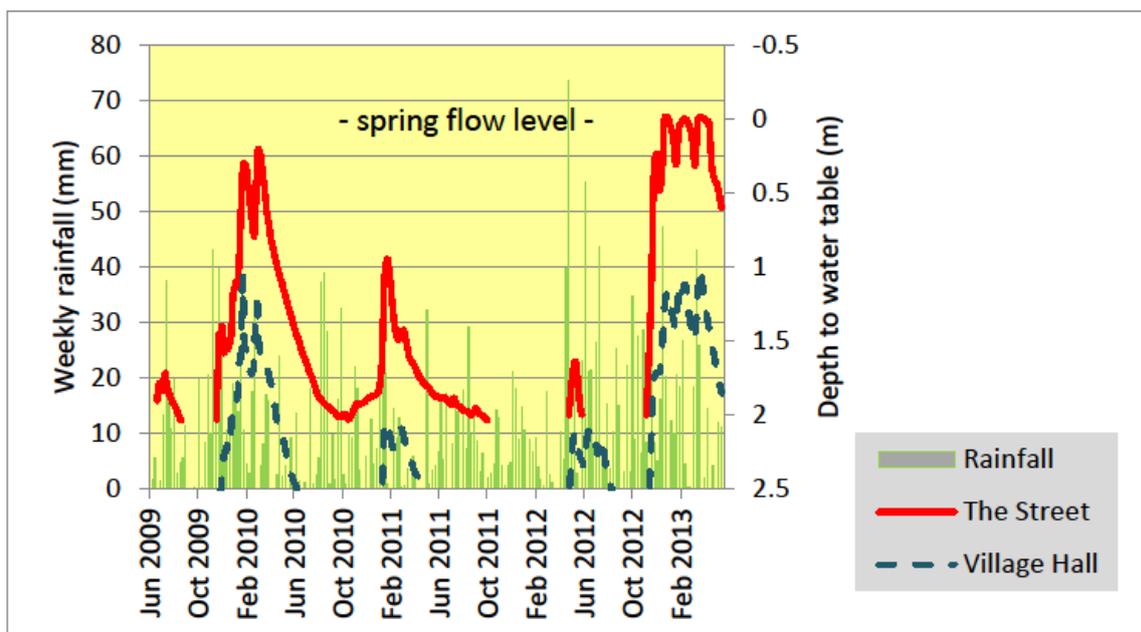


Figure 3 Groundwater level hydrographs for the ephemeral spring in The Street and the Village Hall dipwells showing intermittent spring flow between late December 2012 and May 2013, accompanied by weekly rainfall values from the CEH Wallingford Meteorological Station (Figures 1, 2 and 3 after Robins (2014))

FLOOD RISK

The Environment Agency Flood Risk map shows an area of low land adjacent to the river that has a serious flood hazard. However, this land is protected as flood plain and contains little damageable infrastructure. The river in this area is allowed overbank in preference to lower stretches of river where infrastructure and housing are at risk. Otherwise the zonation as shown in Figure 4 is divided into three zones, Zone 2 and more particularly Zone 3 being the critical ones.

Zone 1 Low Probability	Land having a less than 1 in 1000 annual probability of river flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1000 annual probability of river flooding. (Land shown in light blue on the Flood Map)
Zone 3 High Probability	Land having a 1 in 100 or greater annual probability of river flooding. (Land shown in dark blue on the Flood Map)

There are no areas in the Parish liable to groundwater flooding. However, the flood plain surface water flood is exacerbated by groundwater discharge as groundwater backs up against the elevated river stage (see Figure 1). This was last seen at Crowmarsh Gifford in January 2003 when the Pavilion in the recreation ground was surrounded by water. At the same time ground floor properties in Retreat Gardens suffered flood damage and now have protective sluices that can be fitted across the doorways. No other property was damaged in Crowmarsh Gifford although many of the buildings at the former and now abandoned Carmel College site at Mongewell were inundated.

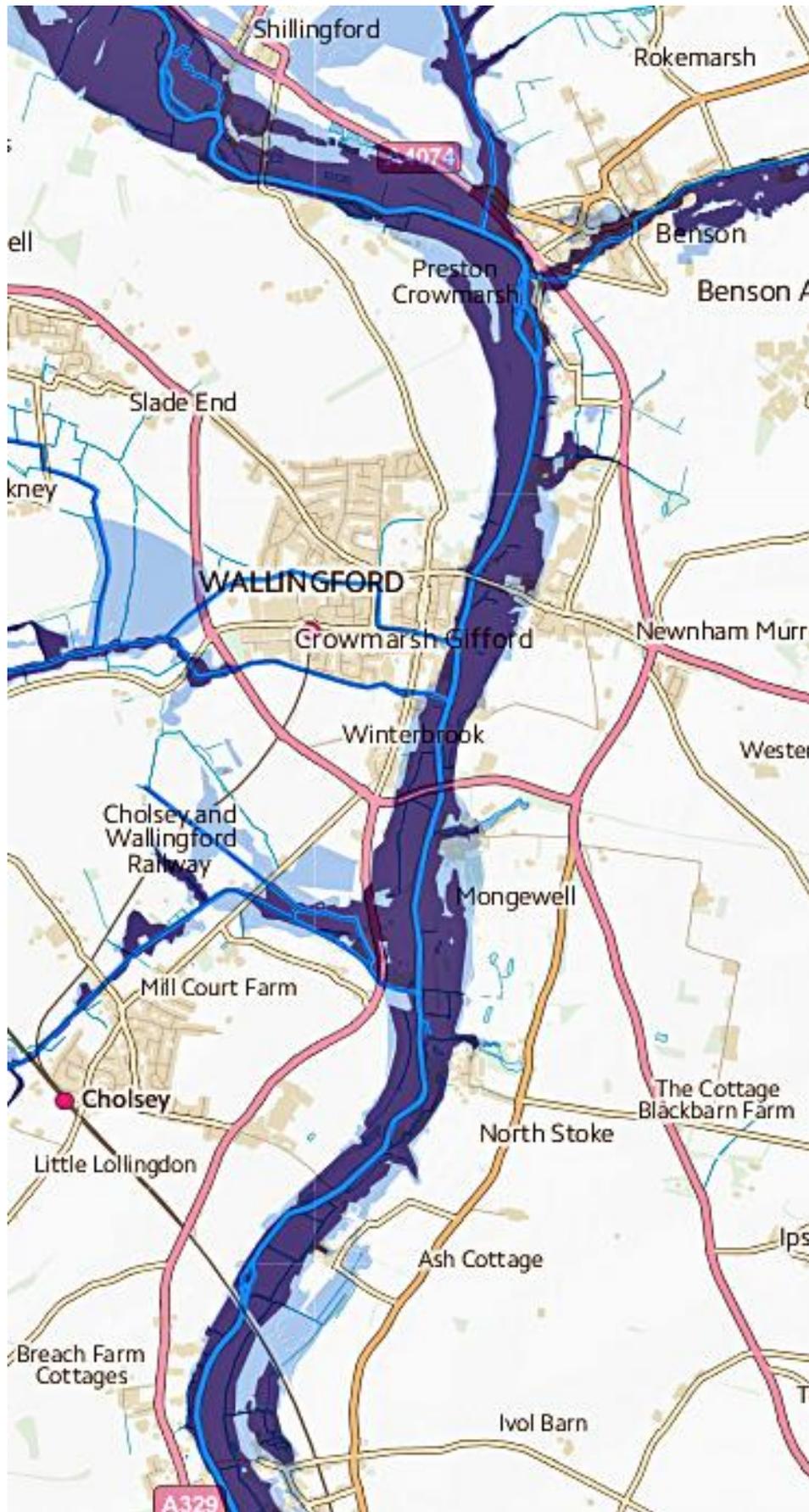


Figure 4 Environment Agency Flood risk map [Open Government Licence]

Relevant Guidelines and Policies

Guidance: Flood Risk Assessment: Local planning Authorities

What you need to check in an assessment

When reviewing flood risk assessments, you should look at:

- how flood risk affects the proposed development
- whether the development type is appropriate for the proposed location
- whether the site's flood risk is too great for the development
- whether the proposed development will increase flood risk elsewhere

For developments in zones 2 and 3 you must also check that the applicant has:

- carried out the sequential test and the exception test where necessary
- met the additional flood resistance and resilience requirements where necessary

The sequential and the exception tests

Check whether the sequential test and the exception test should have been applied or not.

The applicant needs to do a sequential test if both of the following apply:

- the development is in flood zone 2 or 3
- a sequential test hasn't already been done for a development of the type the applicant plans to carry out on their proposed site

Sites allocated in the local plan don't need to have had a sequential test carried out.

The exception test should have been carried out for developments that are:

- highly vulnerable in flood zone 2
- more vulnerable in flood zone 3 or essential infrastructure in flood zone 3

You must refuse to grant planning application if either the sequential test or the exception test hasn't been carried out when they should have been.

LAND USE DESIGNATIONS

1. Area of Outstanding Natural Beauty

A large part of the Parish is contained within the Chilterns Area of Outstanding Natural Beauty. An Area of Outstanding Natural Beauty (AONB) is an area of countryside in England, Wales or Northern Ireland which has been designated for conservation due to its significant landscape value. Areas are designated in recognition of their national importance, by the relevant public body which, in this case, is Natural England. Areas of Outstanding Natural Beauty enjoy levels of protection from development similar to those of UK National Parks, but unlike National Parks the responsible bodies do not have their own planning powers. They also differ from National Parks in that they have more limited opportunities for extensive outdoor recreation. The Chilterns AONB, which extends into a large number of local authority areas, has its own statutory body, the Chilterns Conservation Board. Protection from unsightly development extends beyond the AONB wherever that land overlooks a potential development site.

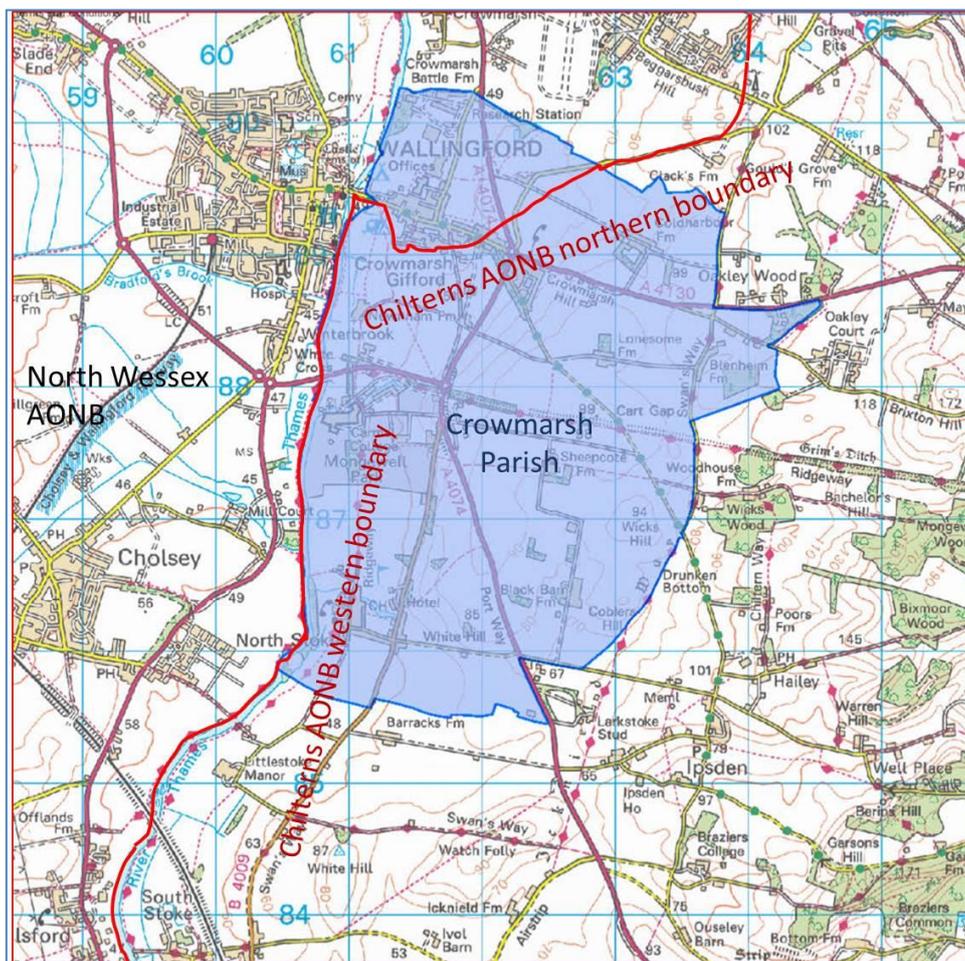


Figure 5 Parish boundary and extent of Chilterns Area of Outstanding Natural Beauty redrawn from Chilterns Conservation Board data [OS data reproduced under licence]

Relevant Guidelines and Policies:

National Planning Policy Framework (2012)

Paragraph 115: Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. The conservation of wildlife and cultural heritage are important. Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system. Achieving sustainable development considerations in all these areas, and should be given great weight in National Parks and the Broads.

Paragraph 116: Planning permission should be refused for major developments in these designated areas except in exceptional circumstances and where it can be demonstrated they are in the public interest. Consideration of such applications should include an assessment of:

- the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;
- the cost of, and scope for, developing elsewhere outside the designated area, or meeting the need for it in some other way; and
- any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.

Chilterns Area of Outstanding Natural Beauty Management Plan 2014-2019:

Policy D5: Appropriate development should be encouraged, particularly on previously developed land, if it will improve the economics, social and environmental well-being of the area whilst having regard to the special qualities of the AONB.

Policy L7: The quality of the setting of the AONB should be conserved by ensuring the impact of adjacent development is sympathetic to the character of the Chilterns.

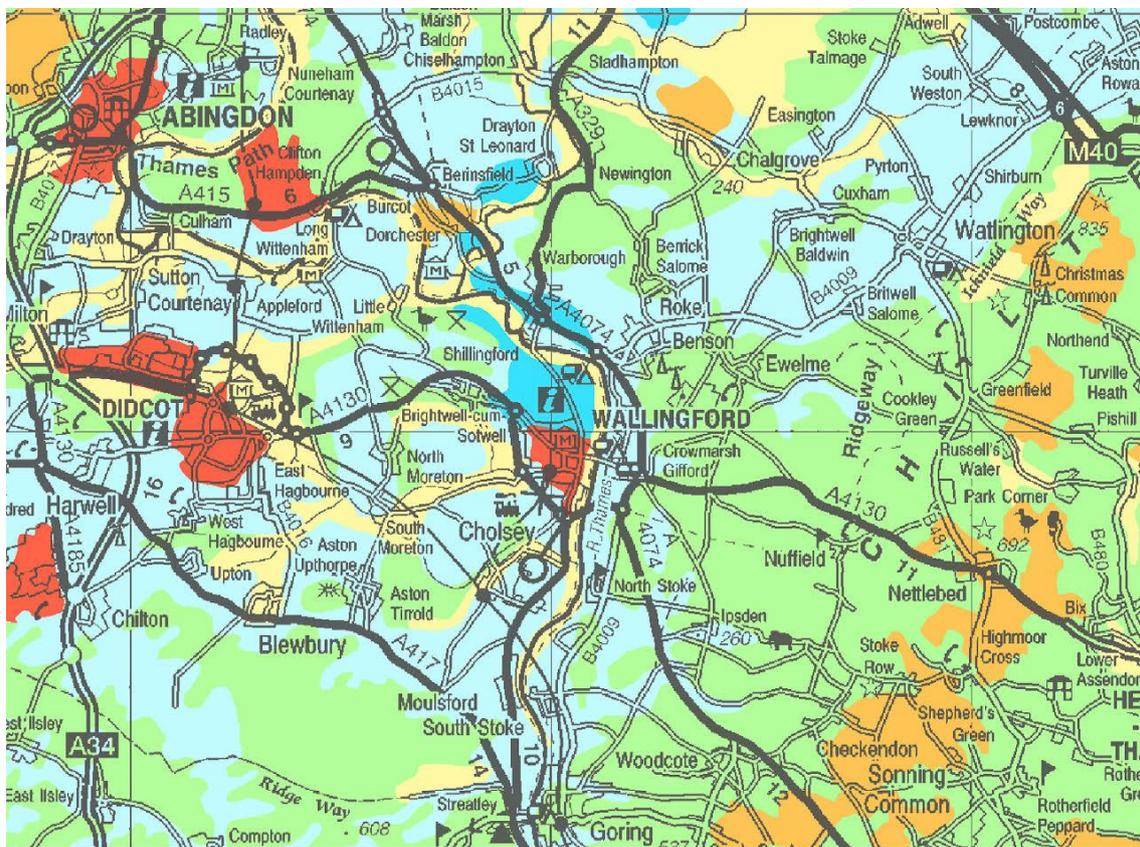
Policy FF7: The AONB should remain a predominantly, actively farmed landscape.

Policy D9 Full account should be taken of the likely impacts of developments on the setting of the AONB.

Policy UE1 The management of countryside suitable for recreation should be promoted and supported whilst conserving its environmental quality.

2. Agricultural Land Classification

Agricultural Land Classification is a means of ascribing an agricultural value to land in five categories ranging from ‘Excellent’ to ‘Very Poor’. Much of Crowmarsh Parish is Grade 3 land ‘Good to Moderate’ although the land adjacent to the river and a triangular shaped area from the river at Crowmarsh east to Coldharbour Farm is Grade 2 ‘Very Good’ as also is a lozenge-shaped area north of North Stoke. The land east of Benson Lane is Grade 2 and this was reaffirmed in the post 1988 reclassification of agricultural land, a process that is ongoing. Towards the top of the Chalk scarp the soil is thin and the ridge area is designated Grade 4, ‘Poor’. The Grade 2 land is used for arable crops for human consumption while the land liable to periodic flooding is given over largely to pasture for cattle. All the Grade 2 land is highly productive.



Grade	Description
1	Excellent
2	Very Good
3	Good to Moderate
4	Poor
5	Very Poor
Non-Agricultural Land	
	Other land primarily in non-agricultural use
	Land predominantly in urban use

Figure 6 Natural England Agricultural Land Classification [Open Government Licence]

Relevant Guidelines and Policies:

National Planning Policy Framework (2012)

Paragraph 112: Local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality.

HERITAGE

Crowmarsh Gifford village and Crowmarsh Parish share a long and proud heritage (Victoria County History; Pedgley & Pedgley 1990). Numerous archaeological findings, artefacts and fine buildings are evidence of that heritage and the long and fascinating history of Crowmarsh Gifford, Newnham Murren, Mongewell and North Stoke.

The distribution of listed buildings (Figure 7) partly reflects the wealth of Wallingford compared with that of Crowmarsh. Nevertheless Crowmarsh has some distinctive historic buildings including Howbery Park, Newnham Manor, its Norman church St Mary Magdalene, the Dower House in Benson Lane as well as the farm cottages on the upper part of The Street, one with a Blue Plaque commemorating the former home of inventor Jethro Tull, and the Queen's Head Public House. North Stoke has ten listed buildings while the former Carmel College site includes another four. There is also St Mary's Church at Newnham Murren. Each of these buildings illustrates facets of the Parish history and each illustrates a part of that history; nowadays safeguarded from significant architectural modification as heritage artefacts.

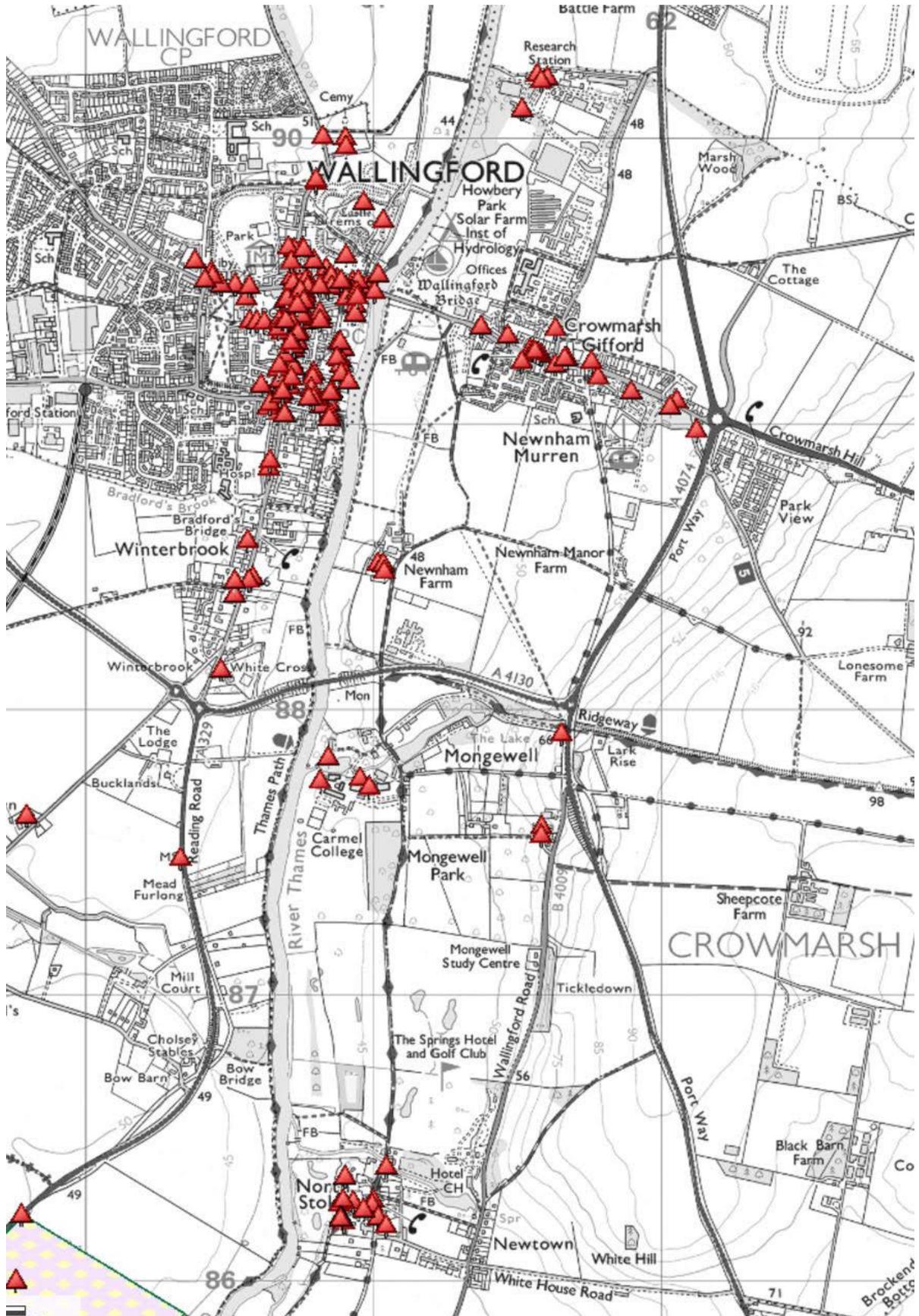


Figure 7 Listed buildings in and around Crowmarsh Parish [OS data reproduced under licence]

Three additional buildings and groups of buildings are candidates to be Locally Listed, although this idea is not pursued within the current Plan Policies: the 'M' shaped gable-ended former Council houses in Benson Lane which are of architectural significance as the first properties to be built to this distinctive design; the former gatehouse to Newnham Park in Old Reading Road which is of historical significance and now the only remaining fabric of the former parkland at the south side of Newnham Manor; and the Village Hall at North Stoke which is of architectural merit, a notable feature on the Ridgway National Trail and an important social hub for the community.

There is extensive evidence of prehistoric activity, from the Palaeolithic onwards, within the Parish. Early Bronze-Age pottery found in association with a narrow driveway at Howbery Park suggests stock-keeping alongside the Thames, possibly by a settled population responsible for nearby monuments including a contemporary round barrow. The site was reoccupied during the Roman period, probably still connected with stock rearing between riverside pastures to the west and arable land to the east. On higher ground near Coldharbour Farm, a late fourth century Roman cemetery containing 25 high-status burials (one of them in a lead coffin) was probably associated with a nearby farmstead or villa set within a ditched enclosure. The only identifiable structure, however, was a corn-drying oven used to process cereal grains for brewing and storage.

Crowmarsh's is an Anglo-Saxon place name. Until the creation of a separate manor with its own agricultural community in (probably) the tenth or eleventh century, the area presumably formed an outlier of Benson's large royal estate, exploited for its pasture, meadow, and wood. How early separate settlement developed is unclear, but by the ninth century the Thames crossing between Crowmarsh and Wallingford was well established, and landmarks along Crowmarsh's southern boundary with Newnham Murren suggest a carefully managed landscape. Features included a 'heathen burial place' (possibly an execution cemetery), from which the boundary followed a ditch to the 'boundary way' or Wallingford–Henley road. Later drainage or boundary ditches and cultivation layers, possibly of Pre-Norman date, have been located alongside the same road some 300 m from the river, while a tenth or eleventh century Anglo-Saxon sword found in the east of the parish suggests high-status occupation somewhere in the vicinity. The place name Howbery (though recorded only from the sixteenth century) is also Anglo-Saxon, and means "a spur of land (hōh) by a defended enclosure (burh)".

The Wallingford–Henley road formed both Crowmarsh's southern boundary and the main village street. It may have originated as a prehistoric trackway from the Thames to the Chilterns, running roughly parallel to the Iron-Age Grim's Ditch further south. The creation of a burh at Wallingford in the ninth century added to the importance of the road, which increased further in the twelfth or thirteenth century when a stone bridge (replacing an earlier timber structure) was built across the Thames. A possible Roman road from Benson to Pangbourne may have passed close to Coldharbour Farm, running parallel to the ancient Icknield Way (which formed a short stretch of the old parish

boundary) a little further east. Another north–south route (called Stockbridge Lane in the fourteenth century and later Benson Lane) subsequently formed the eastern boundary of Howbery Park, but was often waterlogged because drainage ditches were not maintained.

Crowmarsh village developed mostly along the north side of the Wallingford to Henley road, opposite houses belonging to Newnham Murren Manor and Parish. The twelfth century church lies towards the western end of the village some 450 m from the Thames, while closer to the river is the site of one of King Stephen’s siege castles, raised in the years 1139–53 to besiege Matilda’s garrisons at Wallingford. A second siege castle was probably erected on the riverside meadow 200 m to the south-west, but following the end of the conflict the fortifications were quickly removed and the land reverted to agricultural use. Opposite the castle on the south side of the Wallingford to Henley road Matilda endowed a leper hospital which survived until the Reformation, and which was included in Crowmarsh Parish by a southwards deviation of the boundary. Development of a built-up area presumably along the village street is suggested by a late twelfth century grant of three houses to Thame Abbey, and by the thirteenth century a street-side manor house may have been built between the church and the castle site.

This rich history has led to the discovery of many interesting archaeological findings and ancient artefacts. Grim’s Ditch is of particular interest, a large scale earthwork running from Wallingford to Henley. The earthwork probably dates from the late Iron Age and that part of it in Crowmarsh Parish is a scheduled ancient monument (SM32). An excavation through the bank and ditch was undertaken in the 1980s prior to the construction of Nosworthy Way. It exposed a preserved Neolithic soil layer, late Neolithic or early Bronze Age plough marks and Bronze Age settlement evidence in the form of a series of post-holes forming a circular enclosure and a probable six-post granary structure. Further evidence of Neolithic settlement has been recorded nearby along with evidence of Anglo-Saxon settlement. Rare evidence of Iron Age Cord-Rig cultivation has also been recorded; a feature previously only recorded in Scotland and Northern England.

Relevant Guidelines and Policies:

National Planning Policy Framework (2012)

Paragraph 126: Local planning authorities should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. In doing so, they should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance. In developing this strategy, local planning authorities should take into account:

- the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
- the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;
- the desirability of new development making a positive contribution to local character and distinctiveness; and
- opportunities to draw on the contribution made by the historic environment to the character of a place.

Paragraph 128: In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.

Emerging South Oxfordshire Local Plan 2033

Policy EnV6: The District's heritage assets, both above and below ground, such as:

- Nationally designated assets including listed buildings, historic parks and gardens, historic battlefields and scheduled monuments
- Conservation Areas; and
- their settings

will be conserved and enhanced for their historic significance and their important contribution to local distinctiveness, character and sense of place.

Proposals for development that affects non-designated historic assets will be considered, taking account of the scale of any harm or loss and the significance of the heritage asset.

Policy EnV10: There will be a presumption in favour of physically preserving nationally important archaeological remains and their settings, whether scheduled or not.

Where sites or deposits of archaeological interest are known, or suspected to exist, planning applications must include sufficient information to enable an informed and reasoned planning decision to be made which either includes the results of evaluation by fieldwork or makes provision for it.

Wherever possible, if the existence and significance of deposits is confirmed, planning permission will only be granted where the proposal includes provision to preserve the

archaeological remains in situ by sensitive layout and design (particularly foundations, drainage and hard landscaping). Where demonstrated not to be practicable, the application must make provision for the investigation and recording of any archaeological remains that cannot be preserved, including the publication of results, in accordance with a detailed scheme of investigation approved before the start of the development.

In assessing proposals affecting any non-designated archaeological sites or deposits of significance equal to that of a nationally important monument, great weight will be given to their preservation in the balancing judgement.

In some circumstances, further survey, analysis and recording will be made a condition of consent. This policy contributes towards achieving objectives

KEY DOCUMENTS

National Planning Policy Framework (2012)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

South Oxfordshire Core Strategy, December 2012

http://www.southoxon.gov.uk/sites/default/files/2013-05-01%20Core%20Strategy%20for%20Website%20final_0.pdf

South Oxfordshire Local Plan 2033 Second Preferred Options, March 2007

http://www.southoxon.gov.uk/sites/default/files/SODC%20LP2033%202nd%20preferred%20options%20CHAPTERS_2.pdf

Agricultural Land Classification Map for London and the South East Natural England

<http://publications.naturalengland.org.uk/publication/141047?category=5954148537204736>

British Geological Survey Geology of Britain viewer

<http://mapapps.bgs.ac.uk/geologyofbritain/home.html?location=Wallingford&gobBtn=go>

Flood Risk Map Environment Agency (Open Government Licence) <https://flood-map-for-planning.service.gov.uk/summary/461633/189345>

Guidance Flood Risk Assessment Local planning Authorities

<https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities>

Chilterns Conservation Board Interactive Map (ANOB outline)

<http://www.chilternsaonb.org/explore-enjoy/interactive-map.html>

Listed Buildings Natural England

<http://www.natureonthemap.naturalengland.org.uk/magicmap.aspx>

Robins N S 2014. Groundwater and Crowmarsh Gifford. Report prepared for Crowmarsh Parish Council.

Pedgley B & Pedgley D 1990. Crowmarsh: a history of Crowmarsh Gifford, Newnham Murren, Mongewell and North Stoke. Crowmarsh History Group.

Victoria County History, South Oxfordshire, Crowmarsh Gifford

<https://www.victoriacountyhistory.ac.uk/counties/oxfordshire/work-in-progress/crowmarsh-gifford>