

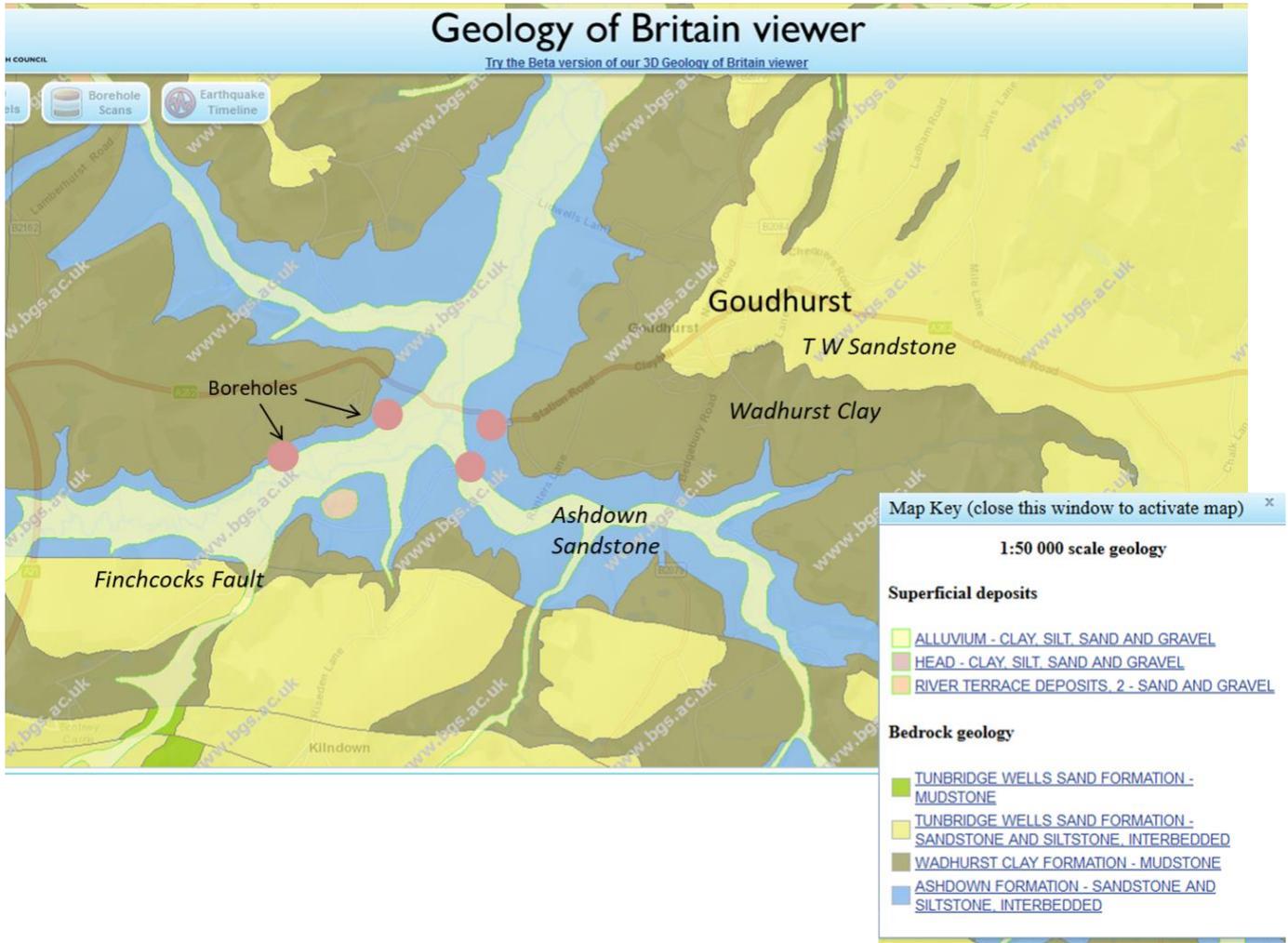
Goudhurst Neighbourhood Plan , Environmental Character Assessment of Goudhurst

Geology, Water, Flora and Fauna commentary

1. This short note sets out the geological, hydrogeological, flora and fauna background to the village which make the Goudhurst parish setting unique in the Weald region
2. As noted in previous documents, the quality of the landscape around Goudhurst is very high with national importance. The unique and varied landscape is a result of the underlying geology giving rise to a variety of soils, topography, natural vegetation and therefore historic land use. It supports a wide range of natural habitats resulting from this richly varied and diverse collection of flora and fauna. As further indication of this, it is worthwhile highlighting that these unique features allowed the village to develop, and maintain, its own groundwater abstraction pumping station which now serves other villages. It is one of the only villages in the Weald with such a site and forms a vital part of the water supply for the region providing up to 10 Million litres per day.

Geology

3. The topography of Goudhurst has been sculptured by the unusual underlying geology and geological processes of the district. The geology of the village and surrounds is reproduced below. The geology underlying the village appears as layers in a cake: The hard Tunbridge Wells Sandstone (TWS) outcrop forms the top layer (coloured yellow). Below this is the impervious Wadhurst Clay (brown colour) and the lowest layer are the Ashdown sandstone formation (blue colour). Naturally, the hard TWS forms the ridge on which the church and village heights are sited. The steep sides of the ridge to the south, west and north are created by the Wadhurst Clay eroding down into the river valleys. The rivers run over the Ashdown Formation with the River Teise turning towards the north eventually linking with the Beult and the Medway Rivers.
4. The value of the sandstones which Ashdown Formation as a water bearing aquifer is indicated by the location of a few of the boreholes (red circles) which have been drilled into the formation. This is further discussed later.
5. The geology has resulted in a range of landscape characters which have been described in previous reports by TWBC, but are reproduced briefly in terms of the geology. The area is part of the High Weald, again usefully reported on by Natural England in a recent publication which is again used in this summary assessment. It is the geology which gives rise to the High Weald character, providing the necessary features for ridge top settlements like Goudhurst. This is shared with the northern part of the Isle of Wight and parts of Boulonnais and Pays de Bray in France. It provides an intimate, hidden and small-scale landscape with glimpses of far-reaching views, giving a sense of remoteness and tranquillity yet concealing the highest density of timber-framed buildings anywhere in Europe.



Key Characteristics

- The Key Characteristic Features from the Borough Landscape Assessment, (Second Edition, Adopted October 2011) for Goudhurst are presented below:
- High sandstone ridge landscape that rises steeply from the Teise Valley and provides a dramatic location for Goudhurst village, which is a familiar and visible feature over a wide area. [This represents the Tunbridge Wells Sandstone outcrop]**
- The village of Goudhurst is located at the highest point of the ridge, about 120m. The sandstone ridge is cut into to the north and south by small tributaries of the Teise on the Wadhurst Clay, while to the west the Teise valley physically separates and divides Goudhurst. The physical landform, visual dominance of the village of Goudhurst, and a more varied land cover, including a concentration of hops, are the key characteristics which distinguish the area from the wider Matfield-Brenchley Fruit Belt which lies to the west.
- The sandstone is exposed in outcrop at a few locations around the parish, most notably in Kilndown and Bedgebury areas, along wooded gills. These provide nationally rare habitat and support a rich community of

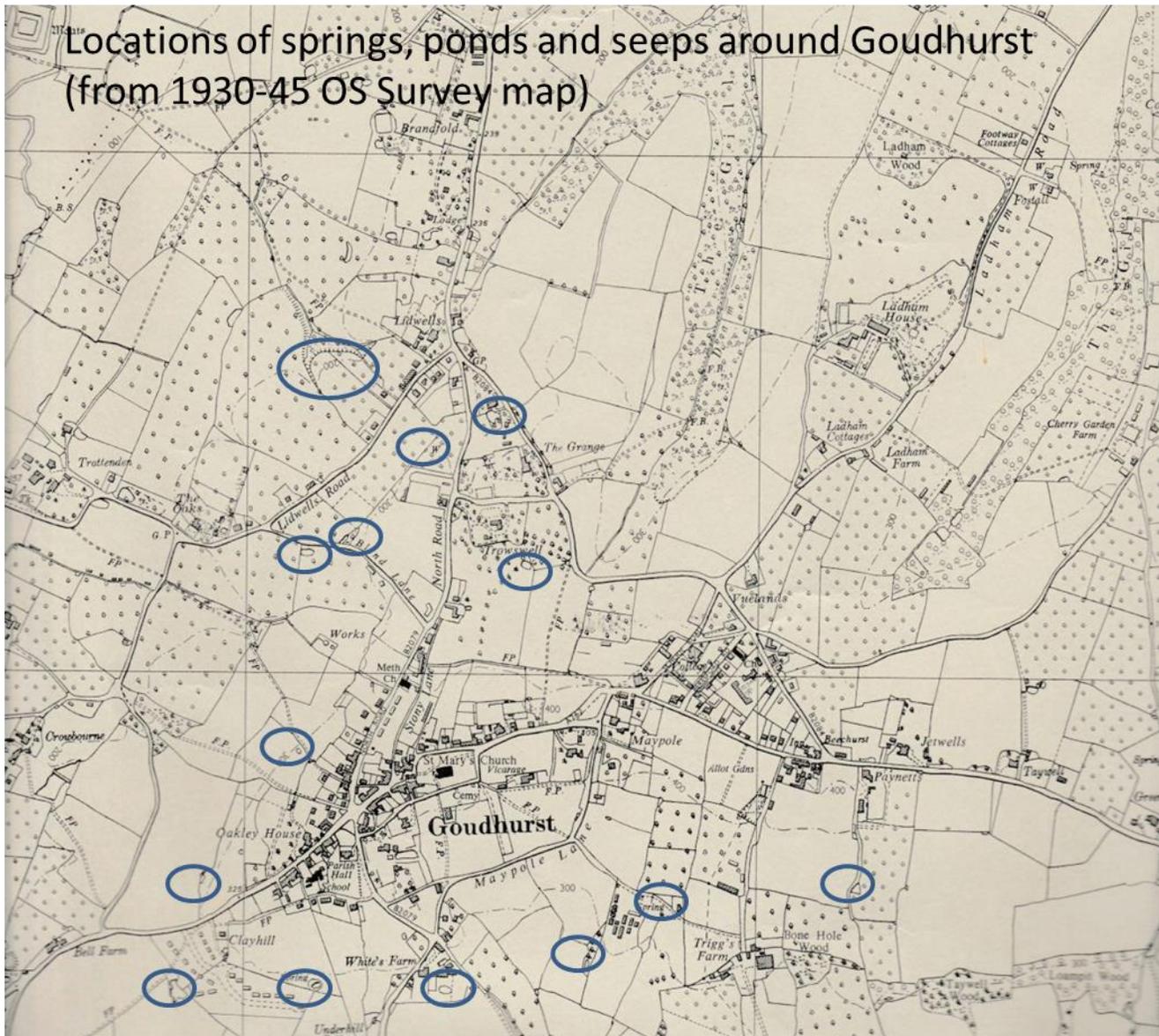
flora and fauna including: ferns, bryophytes and lichens. The moist microclimate in these sites is vulnerable to climate change and over development.

- 10. An intensively managed and intricate rural landscape– a complex patchwork of orchards, hop gardens, pasture, but increasingly also with areas of arable fields.** [*This represents the Teise Valley area, including the Ashdown Sandstone outcrop and the river deposits*]
11. Land cover is very varied and includes orchards, mainly dwarf root stock, bound by tall poplar or conifer shelter hedges on the mid-slopes mixed with improved grassland pasture and areas of arable land on the flatter ridge top with linear strips of ghyll woodland hidden in the deep valleys. Hop gardens are also a common feature, particularly on the land rising up from the Teise valley, forming a very locally characteristic landscape with their stark rows of poles and wires wreathed by the bright green hop vines. The jumbled, chaotic mix of land cover creates a patchwork chequer board effect in views across the steep slopes, where the eye is drawn in by the intersecting lines of the tall shelter hedges and regular criss-crossed rows and stripes of dwarf fruit trees.
12. To the south of Goudhurst village, the landscape is different again and large arable fields occupy the gentler slopes rolling down to the intersecting clay vale, with coniferous ridges terminating the view. Overall, it appears as a busy, productive working landscape although there are some derelict orchards, infested by brambles, or areas where tall hedges shelter improved grasslands, suggesting that fruit trees have recently been removed. This indicates that the traditional ‘orchard’ landscape is under pressure.
13. Field boundaries are also particularly varied; the tall Lombardy poplar and coniferous hedges which shelter the orchards are the most visually distinctive, while the medium-sized pasture and arable fields are generally bound by flailed hawthorn hedges with a scatter of mature hedgerow oak trees.
- 14. On the steep slopes surrounding Goudhurst semi-improved pastures are an important feature both visually and as a biodiversity resource.** [*This represents the Wadhurst Clay slopes around the village*]
15. The steeper hill slopes immediately surrounding the village of Goudhurst are covered by semi-improved pasture and stand out from the more intensively managed surrounding land. The fields contain a wide variety of grasses and herbs and include birds foot trefoil, burnt saxifrage and salad burnet, with moisture loving plants such as water mint and ragged robin common at the base of the slope. These grasslands are an extremely important feature although they are vulnerable to encroaching and infill development.
- 16. Long thin strips of linear ghyll woodland remain hidden from view on the steep valley sides between the ridges.**
17. Travelling across the area reveals an even greater variety in land cover than is immediately apparent in views across the landscape. Where the lanes dip down into the valleys, the tree lined edges, wooded banks and glimpses of the incised ghyll woodland create a much more intimate feel, in contrast with the patterned landscape of orchards on the mid slopes.
18. The extensive woodlands are fairly ancient with carpets of bluebells and wood anemone in the spring. Many of the woods were managed in the past as coppice with standard trees. The drier sandy soils were found suitable

for pine plantations, such as Bedgebury, which persist within a patchwork of lowland heath and birch woodland. Wild flower meadows are increasingly rare but the medieval pattern of small fields with sinuous edges surrounded by thick hedgerows and shaws (the narrow remains of woodlands cleared to form fields) survives. These retain some permanent or semi-improved grassland, which in turn supports common invertebrates and small mammals. Buzzards and sparrow hawks have been sighted in the vicinity, and even barn owls, but these are in decline due to the conversion of farmstead buildings.

The Spring Line of Goudhurst

19. The geological setting provides a number of advantages for the village, most obviously the relative height and subsequent views, but also disadvantages. As can be imagined, water can percolate relatively easily through the overlying TWS strata at the top of the “cake layer”, but on reaching the impervious clay in the second layer, it is forced sideways and appears around the junction as springs.
20. An extract of an old OS map is reproduced below and shows the presence of the spring line around the Goudhurst hill, essentially marking out the perimeter “Clayhill” on which Goudhurst is sited. The survey appears to be carried out during the 1930-45 period and marks locations of ponds, seeps, springs, marshes and bogs which are either on or just below the sandstone – clay boundary.
21. The significance of this boundary, for planning and development purposes is as follows:
 - a. Building on the spring line is costly and challenging as it interrupts the natural underground water movements and requires considerable groundworks to reorder the flows and stabilise the ground. In the long run, such developments will, almost certainly, be subject to landslip and ground movement. This is due to the soils becoming saturated in heavy rain seasons and ,as clay does, expanding resulting in ground heave. Furthermore, during long dry seasons, which are likely to be more frequent in the future, the clays shrink with further impact on ground heave. Overall, this area is not suitable for heavy development.
 - b. In addition to ground movement, heavy rainfall is likely to result in the reactivation of the older underground discharge routes with the potential appearance of sudden water flows at surface, or “into the kitchen!” or similar.
 - c. Finally, any contamination arising from the top of the village, whether run-off from a road or site, or subsurface pollution, is highly likely to simply arise along this margin and run overground down the clay slopes into the valley (with consequences as discussed below). There is no simply downward percolation of discharge from the village as it is underlain by this Wadhurst Clay, and therefore needs to consider water migration pathways in any development on the hill or on the clay slopes with due caution.



Locations of springs, ponds and seeps around Goudhurst
(from 1930-45 OS Survey map)

22. The geological setting of Goudhurst, Kildown and surrounds has therefore provided a very diverse range of soil conditions, with consequent impact on the types of farming practices in the parish. In particular, the exposure of the Ashdown Sandstone in the valley is unusual in area and provides excellent soil for hop gardens and similar, especially in conjunction with the river deposits in the flood plain. This should be treasured and protected given its unique geological setting and character.

Clay Hill

23. In addition to forming the spring line surrounding the village, the thick Wadhurst clay horizon has important implications in the establishment of groundworks for buildings. There is a geological reason that has historically constrained buildings on the western and southern slopes of the village: the underlying clay is highly mobile and plastic, and difficult to drain. Properties constructed on these slopes typically require deep foundations and are often subject to ground movements and the consequent cracking and fracturing of wall structures.

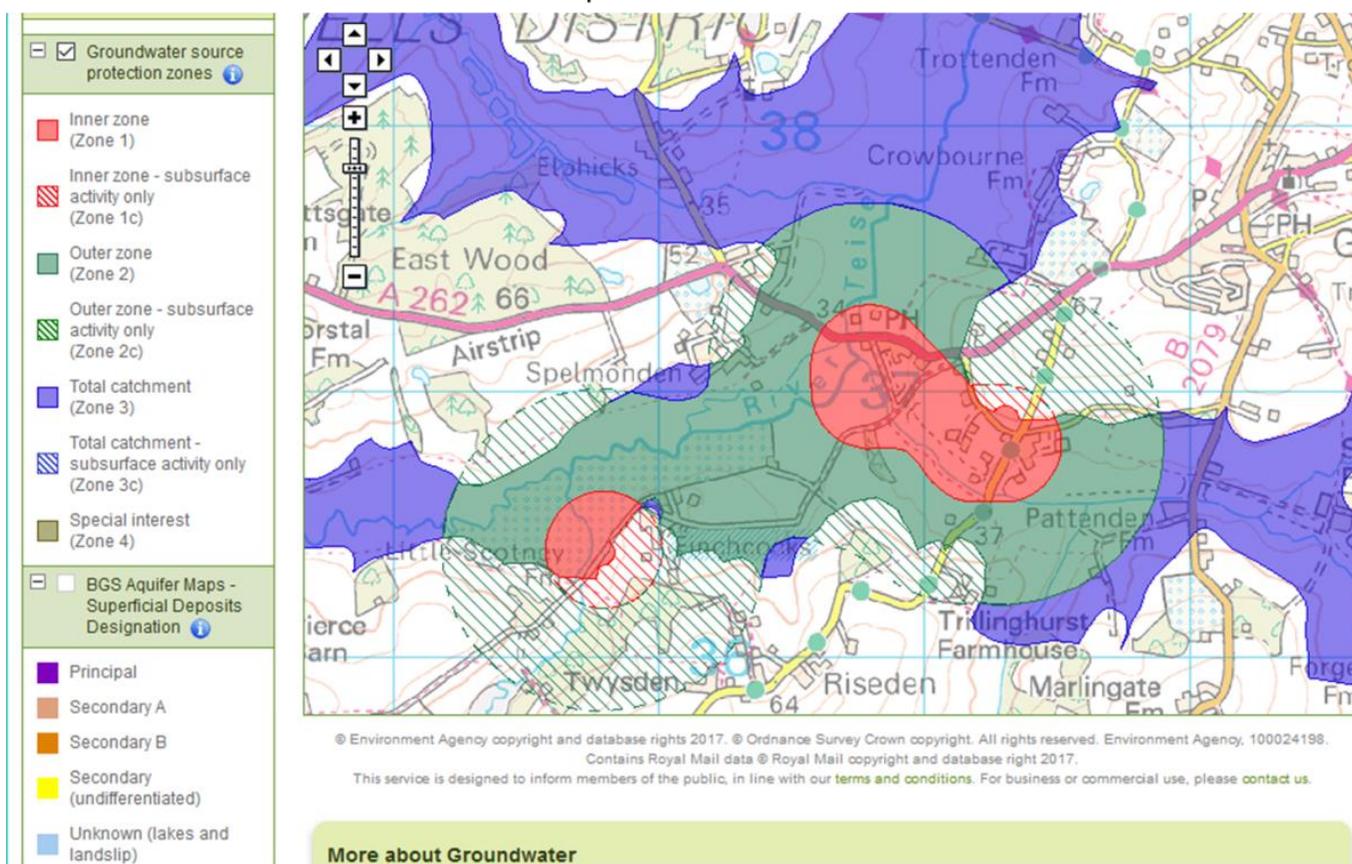
24. Furthermore, the drainage needed to direct surface water emanating from the higher TWS can be costly and difficult to engineer. There are reports of water appearing in the kitchen, or cellar or coming through the door of properties between the current village border and the river valley, and this can be directly traced to the siting of the properties on clay and poor drainage.
25. Any extension of the village into these fields will require extensive engineering to stabilise the ground and install drainage networks, and is likely to threaten over-ground water movement in periods of high intensity rainfall, and slope slippage.

Hydrogeology and water resources

26. It has always been part of local planning objectives to
 - d. Protect and enhance the quality and quantity of groundwater.
 - e. Ensure that new development has an adequate means of water supply and sufficient foul and surface water drainage.

These have been directly derived from the statutory responsibilities of the Environment Agency (EA) and are included in the planned constraints.

Groundwater source protection zones for Goudhurst



<http://maps.environment-agency.gov.uk>

27. As background, around 80% of Kent's public water supply is obtained from groundwater, the remaining 20% is almost entirely from pumped water storage, such as Bewl Reservoir. While the county as a whole is self-sufficient in water supply, Tunbridge Wells Borough is a net exporter of water, primarily from the sources at Pembury, Bewl Bridge and Goudhurst Pumping Station. A high proportion of water from Bewl reservoir and from Goudhurst actually is directed eastwards towards Ashford to support the growing demand in that area.
28. However, over the years the EA has noted instances of localised environmental impact and over-abstraction which threatens the sustainability of water supplies and which might hard wetland and surface water habitats. Evidence from climate change research, coupled with recent drought experience, points to an increasing mismatch between the replenishment of water supplies and demand for abstraction. Consequently, it is important that development is only permitted in locations where an adequate means of supply can be made without harming groundwater resources.
29. As part of its statutory obligations, therefore, the EA has produced plans which map the protection zones around each water source. The shape and size of a zone depends on the condition of the ground, the geology, how the groundwater is removed, and other environmental factors. The zone is defined as how the groundwater behaves in that area, and is based upon a model which describes these movements.
30. The relevant zones for the Goudhurst Pumping Station are presented in the map above. Groundwater source catchments are divided into three zones as follows:
- f. Inner zone (Zone 1): RED. Defined as the 50 day travel time from any point below the water table to the source. This zone has a minimum radius of 50 meters. It can be observed that this includes the area around Risebridge, Bluecoats Lane, Green Cross and Finchcocks.
The shaded Zone 1 relates to the extension of Zone 1 where the aquifer is confined and may be impacted by deep drilling activities or deep groundworks.
 - g. Outer zone (Zone 2): GREEN. Defined as the 400 day travel time from a point below the water table. This zone includes much of area from Spelmonden to Riseden, Pattenden Farm, and Ranter's Lane
The shaded Zone 2 extends the zone where the aquifer is confined and may be impacted by deep drilling activities or groundworks.
 - h. Total catchment (Zone 3): PURPLE. Defined as the area around a source within which all the groundwater recharge is presumed to be discharged at the source. On the Goudhurst map it includes almost all the area of the Ashdown Formation outcrop.
31. The importance of these zones is that they are used in conjunction with the Groundwater Protection Policy to prevent pollution, to control development, and to monitor the activities of potential polluters. Their Groundwater Protection policy is set out in their latest guidelines of March 2017 (*The EA's approach to groundwater protection*).
32. Key to this current paper is their comment that: *"The EA may object in principle to, or refuse to permit, some activities or developments if they have potential to adversely affect groundwater. The SPZs ...are used as generic indicators of risk. Developers ...may need to supply site specific information to demonstrate that the risks are acceptable and can be mitigated. SPZs..are zones where certain activities cannot take place."*

33. The Guidelines go on to present position statements on a range of activities from landfill, cemeteries, discharge, etc..
34. For the purposes of this paper, the important activities which are likely to affect the local plan are issues such as car parking (a point source of potential pollution), major roadways, industrial parks, commercial parking, other infrastructure, large-scale agricultural developments, etc. Development of these activities should be directed towards less sensitive groundwater locations.
35. The Guidelines state: *“There is no specific position statement in relation to car park location, but the Environment Agency encourages the use of sustainable drainage systems as the best means of managing the quality and quantity of run-off. However, it remains vital to pay close attention to commercial parking and hard standing areas where contaminated run-off could cause pollution of soils, surface or groundwater.”*
36. The importance of this specific statement is that it is not merely developments in Zones 1,2 and 3 which are of interest, but also any development in neighbouring areas which might allow run-off into these zones, thereby impacting the quality of water in the catchment zones. For Goudhurst, this means that any development even outside the Zones but on the top or sides of the hill which might give rise to run-off down the clay sides into the river valley is highly likely to threaten the aquifer water quality and is therefore also of interest to the EA and could be challenged.
37. The impact of this will also be on the design and maximum capacity option for any additional sewage treatment facility which an enlarged Goudhurst or Kilndown village might require. As it will require further regulation and permitting for any additional discharge, it is likely to be significantly challenged by the EA given that such discharge will necessarily be directly into the Zone 1 or Zone 2 of the protection zones. Currently the majority of small treated sewage discharges (SSDs) of up to 2 m³/day do not require an environmental permit if they comply with certain qualifying conditions (called general binding rules). Although a permit is required for all SSDs in source protection zone 1. It is likely that any significant expansion to the current treatment plants could exceed this capacity and would therefore require a much higher standard of controls which could render them unacceptable to the operator. This should be further explored with Southern Water, the current operator.
38. In addition to foul water discharge controls, there are further controls on clean water runoff to the protection zones, and also sustainable drainage systems (SuDS). This is where infiltration is used for surface run-off from roads, car parking, and public or amenity areas, but requires suitable design and standards.
39. Goudhurst Parish, which includes all the source protection zones for the pumping station in the Kilndown and Finchcocks valley, effectively holds and manages the long term viability of the precious water resource in trust for future generations. The EA and South East Water obviously control and operate the source and catchment, but the Parish collectively has a responsibility for ensuring the sustainable future for this resource. Developments which might allow contamination to build up in the system, run-off from the road carrying oils and pollutants into the Zone 1, will over time degrade the quality and potential quantity of water available. Consequently developments should be controlled in a sensitive manner for future generations to continue enjoying the remarkable resource on our doorstep.

Detail on local site designations

Landscape

40. Almost the entire parish of Goudhurst and Kilndown lies within the AONB for the High Weald. It is only the north-easterly portion beyond Iden Green to Curtisden Green which is outside the designation, although there is a strong case for this to be included given the ancient woodlands of Old Park Wood estate.

Countryside Stewardship

41. There are no Ramsar Sites or proposed Ramsar Sites within the parish.
42. There are the following Sites of Special Scientific Interest in the parish which will impact planning decisions:
- a. Combwell Wood. Ref 1062208. Unfavourable Recovering.
 - b. Combwell Wood. Ref 1062207. Favourable.
 - c. Combwell Wood. Ref 1062206. Favourable.
 - d. Scotney Castle. Ref 1062206. Favourable.
 - e. Scotney Castle. Ref 1062657. Unfavourable Recovering.

Habitats and Species

43. A Priority Habitat Inventory Site of 2.7 ha is located near Forge Farm in the parish. It is noted as Good quality semi-improved grassland (Non-priority) and is recorded with FEP/HLS features and options. (Farm Environment Plan, Higher Level Stewardship).
44. The parish has an unusually high proportion designed as Ancient Woodland sites, and Deciduous Woodland. In addition, much of the old Bedgebury School estate is marked as Woodpasture and Parkland BAP Priority Habitat while Bedgebury Pinetum is part of the Ancient Woodland and National Forest Inventory.
45. The lower meadows below Kilndown Wood adjacent the River Bawl are designed as a Priority Habitat where there no main habitat but “additional habitat exists”. This pasture and meadow land hosts popular walking trails for visits to the Scotney Castle NT estate and has clearly been identified as sufficiently important to require protection.

Land Based Schemes

46. The entire parish falls within the Higher Level Stewardship Target Area for England, as part of the High Weald and Associated Valleys region.
47. Around Smugley Farm and Furnace Farm there are Environmental Stewardship Agreements in Place covering 666ha. West of Kilndown the ESA covers nearly 300ha for Organic Entry Level farming plus Higher Level Stewardship. Further ESAs cover 95ha on Riseden Farm.