RACE
RESIDENTIAL & COMMERCIAL ENGINEERING

Flood Risk Assessment and Drainage Strategy

Proposed Residential Development at Rebecca Road, Pershore

Written on behalf of Lioncourt Homes & Touch Developments Limited

Flood Risk

Transportation

Engineering

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1 EXECUTIVE SUMMARY

1.1.1 Residential and Commercial Engineering Ltd (**RACE**) have been requested to carry out a Flood Risk Assessment and Drainage Strategy (**FRA**) by Lioncourt Homes & Touch Developments Limited to support an outline application for the erection of up to 115 dwellings with all matters reserved with the exception of access, including open space, landscaping, drainage and associated works.

1.1.2 This report discusses the risk of flooding to the site and the potential consequences. It then assesses the development proposals and the impact of potential flooding based on these. Future ground levels and drainage proposals are also considered as part of the assessment.

1.1.3 Methodology - A comprehensive assessment including the review of the surface water drainage hierarchy was carried out in accordance with the requirements of the NPPF, Planning Practice Guidance, and EA advice notes, to ensure compliance with all these relevant guidance and that it results in a minimal risk of flooding, whilst providing a drainage strategy to inform any future detailed engineering designs. The general methodology of this report (including outflow rates & SuDS strategies) should be adhered to during any subsequent detailed engineering designs.

1.1.4 The report has been compiled with regard to all relevant national and local legislation, guidance and advice.

1.1.5 This report also considers the latest update to the 'National Planning Policy Framework' which was published in December 2023, along with South Worcestershire Development Plan policy SWDP29.

CONCLUSIONS

1.1.6 This assessment shows that the proposed development can be accommodated in its proposed location with low risk of flooding to the development site and no increase in risk of flooding to adjacent properties, whilst maintaining the existing Greenfield flow rates from the proposed site to the downstream network. This will result in significant reductions in flows for all storm events when measured against existing greenfield run-off, and will be a benefit of the development.

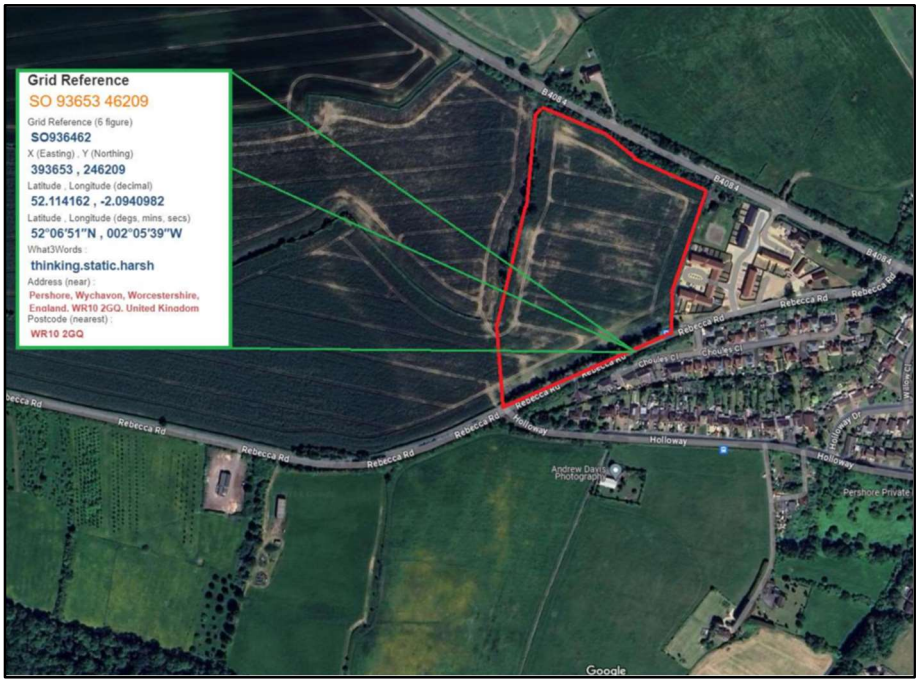
1.1.7 The proposed drainage strategy has taken into consideration the mitigation measures mentioned within this FRA, including the appropriate use of SuDS [and their long-term maintenance].

1.1.8 This report concludes that there will be no increase in flood risk due to the construction of the proposed development, and that it is in accordance with SWDP29 and there should be no reason to refuse the planning application on the grounds of flood risk.

2 EXISTING SITE

2.1.1 The existing site outline comprises of an agricultural field, which is approximately 4.96 Ha in area.

Figure 2.1 Site Location



2.1.2 Looking at the Topographical Survey in **Appendix A**, the site falls generally from the East to the Western boundary of the site from the highest level of around 55.3m AOD to the lowest level of 46.0m AOD.

2.1.3 A Site Location Plan is shown above and the relevant Lead Local Flood Authority (**LLFA**) is the Worcestershire County Council, the relevant local Environment Agency Office (**EA**) is Tewkesbury. The relevant Local Planning Authority (**LPA**) is the Wychavon District Council and the site is within the Severn Trent Water (**STW**) company area.

2.1.4 This existing site is bordered by the following;

- **North** – The North of the proposed development is bound by Allesborough Hill (B4084).
- **East** – The proposed development is bound by existing residential properties served off Rebecca Road.

- **South** – The proposed development is bound to the South by Rebecca Road.
- **West** – The proposed development is bound by hedgerow and an open agricultural field.

2.1.5 The nearest watercourse is the Bow Brook, approximately 830m to the west. The Brook is classified as Main River and is the responsibility of the Environment Agency. The hedgerows in and around the site have shallow ditches in places. The ditch running along the southern boundary link seems to indicate that it flows west to Bow Brook.

2.1.6 OS mapping of the vicinity of the site indicates that the general topography falls to the west of the site with any overland flows running towards the ditch running along the northern side of Rebecca Road.

Figure 2.2 General topography

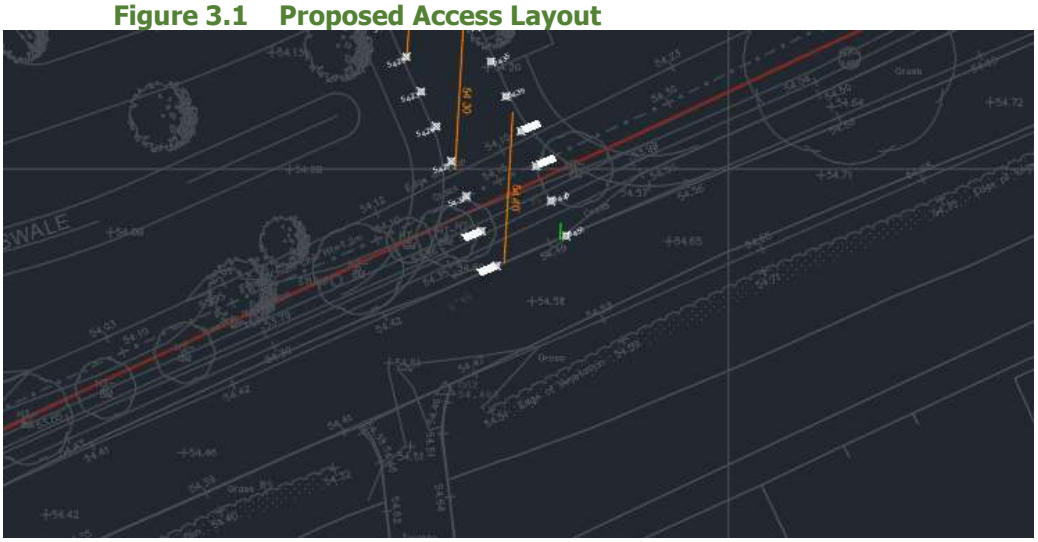
2.1.7 The Phase 1 Desk Study undertaken by Georisk Management in May 2024 identified the existing ground conditions that the site was located in as an area of the Charmouth Mudstone formation of the Lias Group (see Georisk Report section 6.1 in **Appendix B**). From the information available it was concluded that infiltration is not a suitable solution for the disposal of surface water run-off from the proposed site (see Georisk report section 8.6).

3 PROPOSED SITE

3.1.1 The proposed development is for the erection of up to 115 dwellings with all matters reserved with the exception of access, including open space, landscaping, drainage and associated works. See **Appendix C**.

3.1.2 The proposed site will gain access from Rebecca Road on the Southern boundary of the development. This can be seen in the below figure;

Figure 3.1 Proposed Access Layout



4 POLICY FRAMEWORK

4.1 NATIONAL PLANNING POLICY FRAMEWORK

4.1.1 The National Planning Policy Framework (**NPPF**), published in December 2023, provides an assessment and management of flood risk for proposed developments within England. This is not specific to just residential developments however is used when completing new development as a guide. Within the NPPF there is associated Planning Practice Guidance which should also be considered when developing any new development.

4.1.2 Within the NPPF there is a section specific to "Planning and flood risk" which identifies the below;

PLANNING AND FLOOD RISK

165. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

166. Strategic policies should be informed by a strategic flood risk assessment and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.

167. All plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by:

a) applying the sequential test and then, if necessary, the exception test as set out below;

b) safeguarding land from development that is required, or likely to be required, for current or future flood management;

c) using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding, (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and

d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.

168. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.

169. If it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.

170. The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that:

a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

171. Both elements of the exception test should be satisfied for development to be allocated or permitted.

172. Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again. However, the exception test may need to be reapplied if relevant aspects of the proposal had not been considered when the test was applied at the plan-making stage, or if more recent information about existing or potential flood risk should be taken into account.

173. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;

b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;

c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

d) any residual risk can be safely managed; and

e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

174. Applications for some minor development and changes of use60 should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 59.

175. Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems used should:

a) take account of advice from the lead local flood authority;

b) have appropriate proposed minimum operational standards;

c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and

d) where possible, provide multifunctional benefits.

4.1.3 The NPPF has been reviewed and considered when completing this FRA and drainage strategy.

4.2 PLANNING PRACTICE GUIDANCE: 2014 (UPDATED 2022)

4.2.1 The Section 'Site-Specific Flood Risk Assessment' (August 2022): The National Planning Policy Framework sets strict tests to protect people and property from flooding which all local planning authorities are expected to follow. Where these tests are not met, national policy is clear that new development should not be allowed. The main steps to be followed are set out in the guidance which, in summary, are designed to ensure that if there are better sites in terms of flood risk, or a proposed development cannot be made safe, it should not be permitted.

4.2.2 The section 'Climate Change' advises on how planning can identify suitable mitigation and adaptation measures in plan-making and the application process to address the potential impacts of climate change. Detailed guidance on climate change allowances for fluvial flows and rainfall intensity over the lifetime of development is included in the document 'Flood Risk Assessments: Climate Change Allowances' issued by the Environment Agency.

4.3 WYCHAVON DC FLOOD & WATER MANAGEMENT SPD

4.3.1 This Supplementary Planning Document (SPD) for South Worcestershire, which includes Wychavon, was completed in July 2018 and aims too 'to provide guidance on the approach that should be taken to manage flood risk and the water management as part of new development proposals.'

4.3.2 The SPD outlines key legislation, both national and local, that needs to be considered as well as detailing local stakeholders (Such as EA, LLFA, IDB, Sewage Undertakers etc.).

4.3.3 The SPD describes the requirements of the FRA, the most salient being as follows:

Ensure only appropriate new development is located in areas at risk of flooding through:

- *Ensuring that Site Specific FRA's are undertaken where required with relevant incorporation of Climate Change.'*
- *Requiring provision of floodplain compensation where necessary.*
- *Ensuring 'vulnerable uses' are not permitted in inappropriate areas.*

Prevent flood exacerbation for all development proposals through:

- *The inclusion of Sustainable Drainage Systems (SuDS) including permeable paving, planted roofs, filter drains, swales, basins and ponds wherever appropriate.*
- *The provision of on-site storage capacity for surface water attenuation for storm events up to the 1 in 100 years (1%) probability event including an appropriate allowance for climate change.*
- *The use of porous materials to reduce surface water run-off in new developments and applications for changes of use.*
- *The provision of Green Infrastructure, where necessary, to reduce surface water run-off within developments.*
- *Requiring, as a minimum, for Greenfield and Brownfield sites, that the post-development surface water run-off rate will not increase.*

Promote effective water management through:

- *The installation of water efficiency devices in new developments including water harvesting, saving and recycling in any new built scheme wherever practical/ viable.*

Maintain water quality through:

- *Appropriate water management techniques to, at the very least, maintain existing hydrological conditions and prevent adverse effects on the natural water cycle caused by surface water pollution and discharges into watercourses and groundwater.*
- *Reducing negative impacts on, and maximising biodiversity gain and amenity interest*

Reduce negative impacts on and maximise biodiversity gain and amenity interest through:

- *Establishing coherent ecological networks.*
- *Requiring developers to demonstrate that SUDs schemes will benefit water habitat and biodiversity.*

4.3.4 The drainage strategy will need to demonstrate that run off is restricted for events from the 1:1 year up to the 1:100 year with a suitable allowance for climate change with attenuation provided in 'Surface SuDS Elements' wherever possible, such as a Pond, Basin or Swale.

4.4 CIRIA C753 – THE SUDS MANUAL.

4.4.1 Ciria C753 'The SuDS Manual' published in 2015 (latest v6 2019) provides comprehensive guidance on the implementation of Sustainable Drainage Systems (SuDS) in the UK. C753 guidance should be used to help develop the strategy and design of the SuDS.

4.4.2 SuDS techniques are believed to be critical for the future delivery of managed runoff from new and re-developed sites.

5 CURRENT FLOOD RISK

5.1 FLOOD MAP FOR PLANNING

5.1.1 According to the EA's indicative Flood maps for planning, (which are a guide to the extent of the existing significant flood plains), the site lies within flood zone 1, which is an area with a low probability of Flooding. All the proposed properties within the site will be located within this flood Zone 1.

5.1.2 All of the EA Flood Plain maps are shown in **Appendix D**.

5.2 FLOODING FROM MAIN RIVERS & SEA

5.2.1 There are four categories of flood risk from Main Rivers & Seas:-

- ***Very low risk*** *means that each year this area has a chance of flooding of less than 0.1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped or fail.*
- ***Low risk*** *means that each year this area has a chance of flooding of between 0.1% and 1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped or fail.*
- ***Medium risk*** *means that each year this area has a chance of flooding of between 1% and 3.3%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped or fail.*
- ***High risk*** *means that each year this area has a chance of flooding of greater than 3.3%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped or fail.*

5.2.2 According to the EA's indicative Flood Plain maps for Long Term Flood Risk, the site lies within a **very low risk** area, falling within the EA category of 0.1% (1 in 1,000) or less. It should be noted that the proposed development is outside any flood extents generated by either rivers or the sea.

5.3 FLOODING FROM SURFACE WATER

5.3.1 The mapping for surface water by the Environment Agency is created by dropping a volume of rainfall on the land for three different storm events (0.1%, 1% & 3.3%) and modelling where it flows , and also the depth and velocity of the flow. This modelling doesn't include for smaller bridges, culverts etc. and is only intended to provide guidance on areas where flood risk from surface water needs to be considered in more detail.

5.3.2 The EA's Flood Map for Surface Water shows that the proposed development is showed to have a Low Risk (between 0.1% and 1%, or 1:1,000 to 1:100) of being affected by surface water flooding, with only a very minor amount of flooding at the central point along the western boundary with the flooding running west away from the site.

5.3.3 In addition the mapping reveal that the depth of this flooding is less than 300mm, with a high flow velocity running away from the site. Taking into account its location within the site this flooding is likely to be eliminated once the development has been constructed, as any overland surface water flows will be directed into the new sewer system for the site, thus ensuring that the development is not at risk from surface water

5.3.4 Based on the above it is considered that the risk of flooding from surface water flooding is considered to be **low**.

5.4 FLOODING FROM RESERVOIRS AND CANALS

5.4.1 The site is not affected by reservoir flooding, with the nearest flooding being in excess of 800m to the west associated with Bow Brook.

5.4.2 Based on this the risk from reservoir & canals flooding is considered to be **low**.

5.5 GROUNDWATER FLOODING

5.5.1 Groundwater flooding occurs where water levels build up and rise above the ground level in low areas, resulting in flooding.

5.5.2 The Georisk report concluded that the soils on this site are generally impermeable clays with limited capacity for groundwater movement.

5.5.3 There is no records of any incidents of groundwater flooding within the vicinity of the site.

5.5.4 The resultant risk of flooding from groundwater is **Low**.

5.6 SEWER FLOODING

5.6.1 STW records identify that there are several sewers in the vicinity of the site;

- There is a 150mm diameter Sever Trent Water foul sewer within Choules Close [on the opposite side of Rebecca Road to the site]. The capacity of the sewer is greater than the likely peak flows so flood risk from it is low.
- There is also a Surface water sewer in Choules Close [pipe size unknown].
- There are foul and surface water sewers in the adjacent development to the east. The sewers and development levels will be designed to ensure that there is no risk of flooding to its development or the surrounding area.

5.6.2 Flood risk from the sewers in Choules Close, and those within the adjacent development to the east are very low, and there are no formal records of previous flooding from sewers.

5.6.3 The risk of flooding from Sewers is therefore **Low**.

5.7 SUMMARY TABLE

Table 5.1 Risk of Flooding

Fluvial Flooding (Rivers and Sea)	**Flood Risk Rating**	**Very Low**
The Environment Agency (EA) Fluvial Flood Map shows the site is within Flood Zone 1. Zone 1 indicates an Annual Exceedance Probability (AEP) of not greater than 0.1% (Probability 1 in 1,000 year) flood risk – Low Probability. Residential developments are classified as "more vulnerable" developments in the current National Planning Policy Framework (NPPF). Developments of this "more vulnerable" nature are considered appropriate in Flood Zone 1. As the access is situated within EA Flood Zone 1 and there is no history of flooding at the site, it is considered all access and egress routes to the site are safe.		
Groundwater Flooding	**Flood Risk Rating**	**Low**
The SFRA or Georisk report didn't highlight any groundwater flooding concerns. Based on the above it is considered that the risk of flooding from groundwater is low.		
Pluvial Flooding (Surface Water)	**Flood Risk Rating**	**Low**
EA Updated Flood Map for Surface Water (1,000-year event) only shows some areas of shallow surface water flooding associated with the low point on the western boundary of the site. Based on these being kept within the drainage strategy for overland flows it considered this is a low risk for the site. Based on the above it is considered that the risk of flooding from surface water is low.		
Sewer Flooding	**Flood Risk Rating**	**Low**
At the stage of completing this report there were no records available to suggest the site would be affected by sewer flooding. Based on the above it is considered that the potential risk of flooding from existing and proposed sewers is low.		
Flooding from Other Sources	**Flood Risk Rating**	**Low**
Based on a review of the EA Reservoir Inundation maps and the Ordnance Survey mapping of the area around the site it is considered that the site is not at significant risk of flooding from artificial sources such as reservoirs and canals. Based on the above it is considered the risk of flooding from other sources is low.		

6 MITIGATING FUTURE FLOOD RISK

6.1 RISK FROM SITE SEWERAGE SYSTEMS & FLOODING FROM OTHER SOURCES

6.1.1 Site sewerage will be designed so as not to cause flooding on the site itself or to increase the risk of flooding to adjacent properties. In addition, the site sewerage will be designed to Greenfield run off rates and incorporate an allowance for climate control and any necessary urban creep.

6.1.2 In addition, the following mitigation measures highlighted within this FRA should be noted and adhered to;

- *Safe dry access/egress will be provided to all dwellings.*
- *The external ground levels adjacent to the dwellings will be generally set 150mm below the finished floor levels in order to reduce the risk of overland flows entering the property. Where flush thresholds are required, these must be ramped up to the finished floor level to maintain the required level difference.*
- *Wherever possible, the external ground profile around buildings will ensure that surface water is directed away from the building.*
- *An increase of **10%** should be applied to any impermeable area to allow for future development/extensions etc [urban creep]. Dependant on the final density of the development this value could be reduced.*

6.1.3 Based on current guidance the allowance for climate change is calculated based on river catchment. The site is located within the River Avon Warwickshire Management Catchment. The allowance to use is the upper value for a development life of 2080's. Table 6.1 below shows that an allowance of **59%** should be applied when the design of the surface water attention is undertaken.

Table 6.1 Allowance for Climate Change

Avon Warwickshire Management Catchment peak river flow allowances

	Central	Higher	Upper
2020s	7%	12%	22%
2050s	8%	14%	31%
2080s	21%	32%	59%

This map contains information generated by UK Centre for Ecology and Hydrology using UK Climate projections.

6.1.4 It is considered that the measures described above provide adequate protection against flooding.

6.1.5 Table 6.2 below identifies the future vulnerability to flood risk for the development.

Table 6.2 Flood Risk Vulnerability of the Development

Sources of Flooding	Potential			Comments
	High	Medium	Low	
Fluvial (Rivers)			✓	The built development is located within Flood Zone 1 (Low probability).
Tidal / Coastal			✓	The site is located within flood zone 1 based on the rivers and sea's EA flood maps.
Pluvial (Drainage Systems)			✓	Low probability as the drainage will be designed to accommodate 100year storm event + 59% for climate change without flooding.
Surface Run-off			✓	The site has some SW flooding however this will be mitigated through positively draining the site at an agreed restricted rate.
Ponding			✓	Proposed site levels will prevent and avoid any potential ponding issues
Groundwater			✓	No apparent groundwater flood risk. No existing/proposed basements
Infrastructure			✓	Reservoir flooding does not affect site.

6.1.6 The proposed development, taking into account the assessment of both existing and future mitigated flood risk, indicates that this site has a low risk of flooding.

7 PLANNING

7.1 GENERAL

7.1.1 Under the NPPF it is a requirement to locate development proposals in an area of lowest risk. Within the guidelines, various types of development have been classified as to their vulnerability, and annex of the NPPF sets out the type of development that is acceptable within each of the risk zones. Due care is however to be given to ensure that the proposals do not result in an increase in flood risk to surrounding properties.

7.1.2 NPPF (Paras. 165 – 175) guidelines use the sequential test and the risk-based approach to flood risk and development.

7.2 SEQUENTIAL TEST

7.2.1 Paragraph 168 of the NPPF states that:

The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.

7.2.2 The application site is located almost entirely in Flood Zone 1. All dwellings will be located in Flood Zone 1; the proposals are therefore considered to be in accordance with the NPPF sequential approach to locate development in areas of lowest flood risk, thus no further action is required as the Sequential test is passed.

7.3 FLOOD RISK VULNERABILITY CLASSIFICATION

7.3.1 Under NPPF Annex 3: Flood Risk Vulnerability Classification the proposed development is identified as 'More Vulnerable' as its prime purpose is to provide *Buildings used for dwelling houses…*

7.3.2 Table 7.1 below indicates the Flood Risk vulnerability and flood zone 'incompatibility' of a development. It shows, based on which flood zone a proposed development is located, as to whether it can be permitted, requires an exception test, or can be permitted without a test.

Table 7.1 Risk of Flooding

Table 2: Flood Risk Vulnerability and flood zone 'incompatibility'					
Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	**Highly Vulnerable**	**More Vulnerable**	**Less Vulnerable**	**Water Compatible**
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception test required	✓	✓	✓
Zone 3a	Exception Test Required	×	Exception Test Required	✓	✓
Zone 3b	Exception Test Required	×	×	×	✓
✓ Development is appropriate × Development should not be permitted					

7.3.3 As the proposed development is only situated within the area of Flood Zone 1, this is what has been used against the selection criteria.

7.4 EXCEPTION TEST

7.4.1 Paragraph 169 of the NPPF states that:

169. If it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.

7.4.2 Paragraph 170 of the NPPF states that:

170. The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that:

a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

7.4.3 Using the Flood Risk Vulnerability classification of 'More Vulnerable' and Flood Zone 'Compatibility' Table 3 within 7.3 (with the whole development being in Flood Zone 1) it clearly indicates that the proposed development is appropriate, compatible and therefore an exception test is not required.

8 CONSULTATIONS WITH AUTHORITIES

8.1 THE ENVIRONMENT AGENCY

8.1.1 The Environment Agency is a statutory consultee for all major planning applications and will provide comments and recommendations to planning authorities for any development over 1 Ha or within their mapped floodplain.

8.1.2 According to the EA's indicative Flood Plain maps, (which are a guide to the extent of the existing significant flood plains), the site lies within a very low risk area, falling within the EA category of 0.1% (1 in 1,000) or less.

8.2 WORCESTERSHIRE CC LLFA

8.2.1 Worcestershire County Council, acting as Local Lead Flood Authority (LLFA) are a statutory consultee for all major planning applications within their area and will provide comments and recommendations to planning authorities for any development.

8.2.2 The Council's validation checklist requires a Water Management Statement to be submitted with the planning application. This requires the following:

The level of information required will depend upon the development proposed. However, the Statement should demonstrate that site drainage and runoff will be managed in a sustainable and co-ordinated way that mimics natural drainage network. Also information should be provided on how drainage system will protect water quality and secure long term maintenance of drainage schemes (see SWDP policy SWDP29).

8.2.3 This FRA, along with the Drainage Strategy plan, forms the Water Management Statement.

8.3 SEVERN TRENT WATER

8.3.1 Severn Trent Water (STW) are also a statutory consultee for all major planning applications within their area and will provide comments and recommendations to planning authorities for any development.

8.3.2 A copy of the STW's developer Enquiry response can be found in **Appendix E**.

8.3.3 A summary of the STW's response is that they have no objection to the proposed development and have indicated potential foul and surface water outfalls. There is also no indication that there are any current capacity or flooding problems within their sewer network.

9 DRAINAGE HIERARCHY

9.1.1 Generally, the aim should be to discharge surface water runoff as high up the following hierarchy of drainage options as reasonably practicable:

- Into the ground (infiltration);
- To a surface water body (e.g. ditch, watercourse, river);
- To a surface water sewer, highway drain, or another drainage system;

9.1.2 Following the hierarchy, using infiltration as a method of surface water disposal should be investigated. As discussed in the Georisk report, it was concluded that infiltration would not be viable due to the site strata.

9.1.3 Based on this not being viable then the next method of discharge should be investigated which is via a surface water body.

9.1.4 The nearest surface water body is Bow Brook, approximately 800m west of the site. Although this is a significant distance the general topography does indicate that overland flows would travel to this outfall. In addition, initial investigations seem to identify that there are land drainage ditches running alongside both Rebecca Road and Allesborough Hill (B4084), with both potentially outfalling into Bow Brook.

9.1.5 Taking the above into account, and subject to relative levels of the site and its outfalls, it is proposed to outfall the surface run-off from the proposed development into the land drainage ditch that runs along Rebecca Road, thus there is a viable option to drain to an open watercourse. This option also mimics the current overland flows, across the western field, with those discharging into the land drainage system and eventually outfalling into Bow Brook.

9.1.6 Finally, when there is no option to discharge via infiltration or via watercourses then a connection to an existing sewer should be investigated. As discussed in the above section there is a viable option for outfalling via means of a watercourse, be it via a secondary land drainage ditch downstream, connection to a sewer doesn't need to be considered.

9.1.7 Therefore it is proposed that the surface water from the proposed site will discharge into the existing watercourse Bow Brook, via the ditch located next to Rebecca Road to the South of the development.

10 STORM WATER DRAINAGE

10.1 RUN-OFF RATE FROM EXISTING SITE

10.1.1 In **Appendix A** there is a copy of the existing Topographical information for the development site and the Site Layout can be found in **Appendix B** The overall developable site red line boundary area is 4.96 Ha, which is Greenfield.

10.1.2 Using the IH124 approach, based on the existing greenfield run-off for the site has been calculated as **7.66 l/s** (Q_{BAR}). This has been calculated using only the proposed impermeable area for the site. This calculation can be found in **Appendix F** with a summary of the results in Figure 10.1 below.

Figure 10.1 Summary of Greenfield Rates

Qbar (l/s)	7.66	7.66
Greenfield runoff rates		
1 in 1 year (l/s)	6.36	6.36
1 in 30 years (l/s)	15.33	15.33
1 in 100 years (l/s)	19.7	19.7
1 in 200 years (l/s)	23.3	23.3

10.1.3 In accordance with Worcestershire CC (WCC) Standing Advice and Development Guidance the peak flow from any new greenfield development, for storms up to and including 100-year (+ an allowance for climate change), should not exceed the peak greenfield run-off rate for the same event.

10.1.4 Based on Figure 10.1 above the greenfield run-off rates for 1-year; 30-year; 100-yea;r & 200-year storm events are 6.36 l/s; 15.33 l/s; 19.70/s & 23.30 l/s. It is proposed that for all storm events (up to 100-year + CC%) the flows from the development will actually be restricted to **7.66 l/s** (Q_{BAR}).

10.1.5 Using the value of Q_{BAR} as the maximum flow for all storm events actually will provide a significant benefits compared to current flows from the site. Table 10.2 below shows the percentage betterment for each storm event.

Table 10.2 Existing/Proposed Flow Comparison.

Storm Event	Current Greenfield Flows (l/s)	Proposed Discharge (l/s)	Betterment
30-year	15.33	7.66	50.0 %
100-year	19.70	7.66	61.2 %
100-year +59%	31.32	7.66	75.6 %

10.1.6 The above drainage strategy used within the drainage design, of restricting all flows to a maximum of Q_{BAR}.

10.1.7 As discussed, the above-agreed methodology used within this report and has been used within the attached drainage strategy.

10.2 PROPOSED DRAINAGE STRATEGY

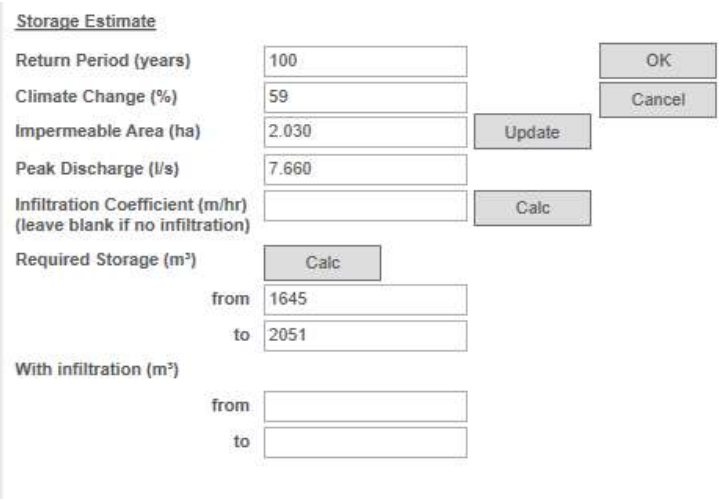
10.2.1 As outlined above and detailed in **Drainage Strategy Plan** (Dwg. **RRP-P_ENG_001** – see **Appendix G**) the surface water drainage strategy is to restrict the flows from the development to **7.66 l/s** (Q_{BAR}) for all storm events up to and including the **100-year + 59%**. The flow will be restricted using a Vortex control device (Hydro-brake or similar approved), located downstream of the attenuation and at the point that surface water flows leave the site.

10.2.2 The attenuated flows will be stored within both the surface water sewer system as well as within the proposed pond. This attenuation pond is as detailed in Section 12 below. Surface water flows will discharge into the ponds via precast concrete headwalls (designed to adoptable standards).

10.2.3 It is proposed that the surface water sewer system will be adopted under a Section 104 Agreement by either Severn Trent Water, or other approved water/sewerage company.

10.2.4 Based on quick storage estimate calculations (using FLOW), the total volume of attenuation required for storm events up to and including 100-year + 59% is approximately (1645 +2051)/2 = 1,848 m^3. See figure 10.3 below.

Figure 10.3 Flow Quick Storage Calculation



10.2.5 The surface water design for the site should ensure that the discharge does not exceed the approved 7.66 l/s for any storm events up to and including the 100-year + 59% (percentage allowance for climate change for the relevant catchment). Any open pond design should be based on the maximum attenuation depth is 1.0m and the freeboard is never less than 300mm and provides up to 1,848m^3 of storage including that of which the adoptable sewerage and manholes will provide.

11 SUSTAINABLE DRAINAGE

11.1 SUDS FEATURES

11.1.1 The use of Sustainable drainage systems is a requirement on all major development. Sustainable drainage systems are designed to control surface water run off close to where it falls and mimic natural drainage as closely as possible. They provide opportunities to:

- Reduce the causes and impacts of flooding;
- Remove pollutants from urban run-off at source;
- Utilise water management within green spaces with benefits for amenity, recreation and wildlife.

11.1.2 The site wide drainage strategy incorporates SuDs for the development. It is proposed to utilise the following SuDS features:

- A detention pond
- Swales

11.1.3 Both the swales and the pond has been designed to provide treatment to the surface water run-off from the development and remove pollutants prior to discharge to the downstream receiving watercourses.

11.1.4 The on-site pond has been designed with bank slopes of 1 in 3 for safety purposes and in accordance with the SuDS Manual. The ponds will have a shallow zone (aquatic bench) along the edge of the permanent pool to support wetland planting which will act as a biological filter. The pond will also have a low flow channel with associated aquatic planting to act as a biological filter. This pond will provide ecology, amenity and biodiversity benefits.

11.1.5 The swales will also act as a biological filet whilst also conveying flows across the site and into the pond.

11.2 WATER QUALITY

11.2.1 As consideration of any type of SuDS within a development, one of the main functions is to ensure that water quality is maintained. Any SuDS feature incorporated into a design will need to sufficient mitigation as to offset any increase in potential pollutant hazards as a result of the development.

11.2.2 A detailed water quality assessment, in accordance with the principles set out in C753 The SuDS Manual, will inform the SuDS principles to be utilised during the detailed drainage design which forms part of the reserved matters application.

11.2.3 Based on the current layout and the SuDS features proposed, A Simple Index approach to assess whether the proposed SuDS features provide the necessary mitigation for the potential hazard levels generated from this type of site.

11.2.4 Table 4.3 from C753 The SuDS Manual classifies the land use of the site in terms of Pollution Hazard Level as '**very low**' for residential roofs and '**low**' for external paved areas. This hazard level requires that the Simple Index approach be followed to formulate the appropriate drainage solution for the site, as indicated in **Table 26.2** below:

TABLE 26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]	High	0.8[2]	0.8[2]	0.9[2]

11.2.5 The pollution hazard indices relevant to the site are therefore **0.2, 0.2 & 0.05** for roof areas and **0.5, 0.4 & 0.4** for external paved areas. This gives combined indices of **0.7, 0.6 & 0.45** for pollution hazards.

11.2.6 It is therefore necessary to select SuDS which provides a mitigation index at least equal to those indicated above. Typical mitigation indices are provided in **Table 26.3** of C753 (The SuDS Manual)

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

Type of SuDS component	Mitigation indices[1] TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

11.2.7 The use of swales and a pond will provide a two-stage treatment train to all areas of the site. This will provide adequate mitigation as follows:

Total SuDS mitigation Index = mitigation index$_1$ + 0.5 x (mitigation index$_2$)

For roads and parking areas: mitigation index =	Swale [1.0] + Pond [0.5] =	0.50 0.70 **0.85**	0.60 0.70 **0.95**	0.60 0.50 **0.75**
Pollution combined index =		0.70	0.60	0.45

11.2.8 The combined mitigation indices exceed the potential hazard indices and therefore will provide a satisfactory solution to pollution control.

11.2.9 As the combined mitigation indices for swales & a pond [**0.85, 0.95 & 0.75**] exceed the combined potential hazard indices referred to in 9.2.4 above [**0.7, 0.6 & 0.45**] the use of swales and a pond will provide sufficient treatment to offset the potential hazards, therefore water quality is maintained.

11.2.10 In addition to the above trapped gullies will also be used for all access roads, drives and parking areas which will remove sediments and debris, prior to it entering the surface water drainage system.

11.2.11 During construction there is an increased risk of pollution, particularly in the form of silt and sediment. Temporary pre-treatment to remove silt, and other pollutants, may be required in accordance with current guidance and good practice.

11.2.12 Higher concentrations of pollutants occur in the early stages of a storm event known as the 'first flush' and are due to higher initial rainfall intensities, greater erosion potential, and to greater solids and pollutants that have built up on urban surfaces during preceding dry weather. To remove pollutants and improve water quality Ciria C753 'The SuDS Manual' recommends that a Treatment Volume is provided in suitable SuDS features such as ponds, filter trenches, permeable paving, etc. The treatment volume is calculated using the fixed rainfall depth method. Ciria C753 recommends that the first flush is retained for treatment (5-10mm for at source filtration, >10mm if treatment is in a pond).

11.2.13 Assuming a 10mm fixed rainfall depth over the impermeable area of 2.03 Ha, the minimum treatment volume required would be approximately 203m^3. For 5mm rainfall depth the volume required would be 101.5m^3.

11.2.14 The treatment volume will be provided within the attenuation pond in the form of a permanent pool with a water depth of 0.50m. The treatment volume available in the pond is approx. 168m^3, the equivalent of 8.2mm of rainfall.

11.3 LANDSCAPING

11.3.1 The landscaping and aquatic planting for the on-site pond will be designed by the Landscape Architect to ensure the provision of a diversity of planting species to provide a variety of wildlife habitats, thus enhancing the visual interest and potentially biodiversity. Due to the depth of the pond the landscaping should also barrier planting to discourage public access into the pond.

11.4 POND ACCESS

11.4.1 Access to the pond will be made via the proposed roads within the new development, allowing inspections and routine maintenance to be undertaken.

12 FOUL SEWAGE

12.1.1 This FRA identified that there was an existing 150mm diameter adopted foul sewer within Choules Close [on the opposite side of Rebecca Road to the site, approximately 50m from the proposed site entrance]. There is also an existing 150mm foul sewer within Worcester Road, which is approximately 350m from the north-east corner of the site. The sewer records do indicate a new sewer at the junction of Worcester Road and Rebecca Road, but this is subject to a S104 Agreement and therefore cannot be utilised until it has been adopted by STW.

12.1.2 In accordance with current guidance for this development of 115 plots would have a peak discharge of **5.32l/s.**

12.1.3 Based on the STW developer response, there is little capacity in the sewer within Choules Close and any discharge from the site will need to be restricted to **1.7l/s**. Therefore may be more viable connect to the sewer in Worcester Road via a pumped rising main at a rate of **3.8l/s**. As no clear level data is available for either outfall, along with the flow restrictions identified by STW [which are subject to further modelling], it is assumed that an adoptable pumping station and rising main would be required for either outfall option.

12.1.4 Either outfall option will require additional attenuation on the site to contain flows whilst the discharge is reduced from 5.32 l/s to either 3.8 or 1.7 l/s. Based on current guidance, the storage required on site [either within the on-site sewer network upstream of the pumping station, or an adjacent storage structure] equates to 1**8.40m³** [or 160 litres per property].

12.1.5 Therefore in designing a compliant drainage strategy, an adoptable foul water pumping station and ring main, in association with suitable emergency storage of 18.40m^3, will need to be provided.

13 WHOLE LIFE MAINTENANCE

13.1 MAINTENANCE

13.1.1 The future management of any SuDS feature needs to be considered, as to whether they will be adopted by the Water Authority (STW), the Local Authority or maintained privately by a suitably employed management company. Based on the current design, it is proposed that most of the elements will be offered initially to Severn Trent Water. If adoption by STW is not possible, it is proposed that a private management company would maintain those elements that they do not. Adequate access for maintenance will be provided according to the requirements of the future maintainer, currently via the proposed estate roads and a grassed verge around the pond area.

13.1.2 The engineering design will be submitted to and approved by WCC land drainage team (as Lead Local Flood Authority), to ensure the proposals are in accordance with this, and the previously approved Flood Risk Assessment, via the reserved matters planning application.

13.1.3 It is proposed that any maintenance is in accordance with the standards detailed within CIRIA C753 'The SuDS Manual'. For ponds the operational and maintenance requirements are summarised in Table 13.1, swales in table 13.2 (see below):

Table 13.1 Operation and Maintenance requirements for Ponds

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Remove Litter and debris	Monthly (or as required)
	Cut grass – public areas	Monthly (during growing season)
	Cut the meadow grass	Half-yearly (Spring, [before nesting season], and Autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc. for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May to October)
	Inspect silt accumulation rates in any forebay and in main body of pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Check any mechanical devices, e.g. penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1m above pond base; include max 25% of pond surface)	Annually

Table 13.1 (Cont.)

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Remove 25% of bank vegetation from water's edge to minimum of 1.0m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (NOTE: Tree maintenance is usually part of overall landscape management contract).	Annually
	Remove sediment from any forebay	Every 1 to 5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays	Every 5 years, or as required
Occasional maintenance	Remove sediment from the main body of big ponds when water volume is reduced by 20%	With effective pre-treatment (via trapped gullies) this will only be required rarely, e.g. every 25 years
Remedial Actions	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Repair/rehabilitate inlet, outlets and overflows	As required

Table 13.2 Operation and Maintenance requirements for Swales

Maintenance Schedule	Required Action	Typical frequency
Regular Maintenance	Remove Litter and debris	Monthly (or as required)
	Cut grass – to retain grass height within specified ranges	Monthly (during growing season)
	Manage other vegetation and remove nuisance plants	Monthly (or as required)
	Inspect inlets, outlets, and overflows for evidence of blockage and clear if required	Monthly
	Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for >48hours	Monthly (or as required)
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then Half yearly
	Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	Half yearly
Occasional maintenance	Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required or if base soil is exposed over 105 or more of swale treatment area.
Remedial Actions	Repair erosion or other damage by re-turfing or re-seeding	As required
	Re-level uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of soil surface.	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices.	As required

14 CONSTRUCTION

14.1 POLLUTION PREVENTION DURING CONSTRUCTION WORKS

14.1.1 Advice is available from CIRIA "Guidance on the Construction of SuDS C768" on the control of soils, silt and erosion during construction works. "The SuDS Manual C753" also has advice on pollution prevention in Chapter 31.

14.1.2 The EA's Pollution Prevention Guidelines give advice for avoiding pollution issues from constructions sites. They are currently under review but the old guidance PPG6 and PPG5 (withdrawn in 2015) can be found through these links:

https://www.gov.uk/government/publications/construction-and-demolition-sites-ppg6-prevent-pollution

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/485199/pmho1107bnkg-e-e.pdf

14.2 BEFORE & DURING CONSTRUCTION

14.2.1 When starting and completing construction works it is important to ensure that adequate build orders are followed in order to prevent flooding the proposed development or anything downstream. Based on the current drainage strategy it is stated that the attenuation basin should be constructed first along with a wrapped land drain along the Western boundary which would direct water into the pond. Temporary debris screens should also be installed to ensure water quality into the received ditch along Rebecca Road.

14.2.2 By constructing the attenuation basin and wrapped land drains, this would ensure that the development doesn't increase the risk of flooding during the site build process.

14.2.3 It is recommended during construction that the attenuation basin and debris screens are monitored and cleaned/cleared when required to avoid build-ups of silts.

14.3 SUDS SPECIFIC ADVICE

14.3.1 More detailed advice is available from "The SuDS Manual C753" and also the document "Guidance on the Construction of SuDS C768" both published by CIRIA on the construction of specific types of SuDS.

15 CONCLUSIONS

15.1 ASSESSMENT OF DEVELOPMENT SITE

15.1.1 During the planning process an assessment of why the proposed site should be developed is required, to support the planning application. Therefore, the following items assisted in supporting the proposed development and consequently provided the reasoning to pursue the development of the proposed site:-

- The proposed building area of the site will only be located in Flood Zone 1, therefore should not be constrained for any attached issues.
- Flows from the proposed site will be controlled to the site-specific calculated rate for Qbar, based on the proposed impermeable area, for all storm events up to and including 100-year plus a percentage allowance for climate change [which for this river catchment is 59%]. This provides a betterment against the equivalent Greenfield runoff rate for each mean annual event, providing significant downstream betterment of up to 75.6%.
- SuDS are included as part of the overall scheme providing sufficient water quality mitigation for this type of development.
- It is proposed that the drainage system on this site will be offered for adoption to STW, or a NAV; however, if the on-site system remains private the maintenance will be transferred to a management company. The operation and maintenance will be in accordance with CIRIA C753 "The SuDS Manual" and the "Design and Construction Guidance for foul and surface water sewers …" [version 2.0].

15.2 SUMMARY AND RECOMMENDATIONS

15.2.1 As the proposed residential proposals lie within flood zone 1, the site is no constrained by flood risk.

15.2.2 Finished floor levels should be raised a minimum 150mm above existing ground levels during the detailed design when a fixed layout is provided.

15.2.3 Wherever possible, levels around buildings will be designed so that water flows away from the building.

15.2.4 All run-off from drives, parking areas and roads will pass through trapped gullies before draining into the surface water sewer system.

15.2.5 The proposed drainage strategy should include the use of a new pond on the site, along with swales and all surface water flows from the site will then pass through these before exiting the site and connecting to the wider land drainage network, and subsequently discharge into Bow Brook. This strategy mimics the current natural drainage network.

15.2.6 Runoff rates will be restricted to that of the agreed rates of 7.66 l/s for all storm event up to and including the 100-year + 59% (allowance for climate change).

15.2.7 The foul flows from the site of 115 plots will discharge at a specified restricted rate via an adoptable foul pumping station into the existing STW sewer either in Choules Close, or Worcester Road. Suitable emergency storage will be provided in accordance with current guidance.

15.2.8 Based on the discussions within this report, the proposals would ensure that the site itself will not flood and there will be no impact on the surrounding area and are also in accordance with South Worcestershire Development Plan policy SWDP29.

END OF REPORT

APPENDIX A – Topographical Survey

Key

AV	Air Vent	f	Frame Measurement
B	Bollard	s	Structural Measurement
I.B	Illuminated Bollard	IC	Inspection Cover
BD	Back Drop level	IL	Invert Level
BH	Bore Hole	KO	Kerb Outlet
BT	British Telecom Cover	LP	Lamp Post
CD	Cable Duct	MC	Miscellaneous Cover
CL	Cover Level	MH	Manhole
CM	Cable Marker	MKR	Marker
CP	Catch Pit	NB	Notice Board
DK	Drop Kerb	SNP	Name Plate
DP	Down Pipe	OHC	Overhead Cable
EC	Electricity Cover	OSBM	Ordnance Survey Bench Mark
EOT	Extent of Trace	P	Post
EP	Electricity Pole	PGM	Permanent Ground Marker
FBW	Barbed Wire Fence	PEAV	Eaves Point
FCB	Close Boarded Fence	PRI	Ridge Point
FCL	Chain Link Fence	RE	Rodding Eye
FCP	Chestnut Paling Fence	RS	Road Sign
FFL	Finished Floor Level	RW	Retaining Wall
FH	Fire Hydrant	RWP	Rain Water Pipe
FHM	Fire Hydrant Marker	S=	Spread
FH+M	Hit and miss fence	SC	Stop Cock
FIR	Iron Railings	SV	Stop Valve
FIW	Interwoven Fence	SW	Storm Water Manhole
FL	Floor Level	TBM	Temporary Bench Mark
FMR	Metal Railings	TL	Traffic Light
FOL	Overlap Fence	TP	Telephone Post
FPR	Post and Rail Fence	TPAV	Tactile Paving
FPW	Post and Wire Fence	UTL	Unable to lift
FW	Foul Water Manhole	UTT	Unable to trace
FWM	Wire Mesh Fence	W	Wall
FSWM	Solid Wire Mesh Fence	WM	Water Meter
FP	Palisade Fence	WV	Water Valve
G=	Girth		HT- = Tree Height 5M
GY	Gulley		Survey Station
GV	Gas Vent		
IB	Illuminated Bollard		
+	Spot Level		

Service Lines

Storm Sewer	>>>150>>>	Gas Trace	Gas
Foul Sewer	>>>150>>>	Water Trace	Water
Combined Sewer	>>>150>>>		
Overhead Cable	Overhead Cable		
Electricity Trace	Electric		
Radio/BT Trace	Radio		

Station	Eastings	Northings	Level
OS1	393726.086	246233.506	55.081
OS2	393631.342	246185.433	54.469
OS3	393540.536	246141.153	53.425

NOTES

The survey is fixed to the Ordnance Survey National Grid (OSGB36) using Global Navigation Satellite System (GNSS) equipment.

Chilcote Engineering Services accepts no liability if this drawing is passed to a third party or used for a purpose other than originally intended.

All dimensions should be checked on site prior to proposed construction.

Whilst every effort has been made to survey all above ground features, there may have been items obscured/covered at the time of survey.

ISSUE	REVISION	DATE

PROJECT

Land off Rebecca Road, Pershore

TITLE

Topographical Survey

CLIENT

Touch Developments

TO BE READ IN CONJUNCTION WITH

SCALE - 1:500	DRAWING NUMBER - 24178-J	
DRAWN - HB / OS	DATE - 08/04/24	CHECKED - BT

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APPENDIX B – Georisk Report

geo risk MANAGEMENT



Innovative Land Development Solutions

PHASE I DESK STUDY

LAND TO THE NORTH OF REBECCA ROAD
PERSHORE

Report No: 24135/1
Date: May 2024

Prepared for

LIONCOURT HOMES LIMITED

PROJECT QUALITY ASSURANCE
INFORMATION SHEET

PHASE I DESK STUDY

LAND TO THE NORTH OF REBECCA ROAD
PERSHORE

Report Status:	**Final**
Report No:	**24135/1**
Issue Date:	**May 2024**
Prepared For:	**Lioncourt Homes Limited** **Lioncourt House** **3 Apex Park** **Wainwright Road** **Warndon** **WORCESTER** **WR4 9FA**
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FOREWORD

This report has been prepared for the sole internal use and reliance of the Client(s) named on the Project Quality Assurance Information Sheet. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Georisk Management Ltd (Georisk). If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The report should be read in its entirety, including all associated drawings and appendices. Georisk cannot be held responsible for any misinterpretations arising from the use of extracts that are taken out of context.

The findings and opinions conveyed in this report are based on information obtained from a variety of sources as detailed within this report and which Georisk believes is reliable. All reasonable care and skill has been applied in examining the information obtained, nevertheless, Georisk cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

The report represents the findings and opinions of experienced geoenvironmental consultants. Georisk does not provide legal advice and the advice of lawyers may also be required.

Any recommendations made or opinions expressed in the Report are based on the exploratory hole records, an examination of samples and the results of the site and laboratory tests. No liability can be accepted for conditions not revealed by the exploratory holes particularly between positions. Whilst every effort is made to ensure accuracy of data supplied any opinion expressed as to the possible configuration of strata between or below investigation locations is for guidance only and no responsibility is accepted as to its accuracy.

Unless otherwise specifically stated, this report assumes that ground levels will not change significantly from those existing at present and that the proposed development will be of two to three storey construction. If this is not to be the case, some modifications to this report may be required.

The groundwater conditions entered on the borehole records and from any monitoring programme are those observed at the time of the investigation. Groundwater levels are susceptible to seasonal fluctuations and may be higher during wetter periods than those encountered during this investigation.

Where the report refers to the potential presence of invasive plant species, such as Japanese Knotweed, or the presence of possible asbestos containing materials, it should be noted that the observations are for information purposes only and should be verified by a suitably qualified expert.

Georisk reserves the right to amend the conclusions and recommendations made in this report in the light of any further or more detailed information that may become available.

PHASE I DESK STUDY

LAND TO THE NORTH OF REBECCA ROAD
PERSHORE

1. INTRODUCTION

1.1 Georisk Management Limited (Georisk) has been instructed by Lioncourt Homes Limited (Lioncourt) to carry out a Phase I Desk Study of the proposed development site to the north of Rebecca Road in Pershore, Worcestershire. The scope of work is set out in Georisk letter reference 24135/LO.001/AMG dated 9 May 2024, which was accepted by Lioncourt in their email of the same date and purchase order number PO/00-LAND/0276.

1.2 It is understood that the site is to be considered for residential development and the principal aims of this report are as follows:

- to carry out Phase I hazard identification and assessment (desk study) including determination of an initial conceptual model based on '*source-pathway-receptor*' principles;
- to identify any potential geoenvironmental constraints associated with the development of the site for the proposed end use.

1.3 This report presents the findings of the desk study research together with an initial conceptual site model and assessment of potential geoenvironmental constraints that would need consideration for the proposed development.

2. INFORMATION SOURCES

2.1 The information sources used in the production of this report were as follows:

- site walkover to appraise current layout and conditions;
- review of British Geological Survey (BGS) maps and publications;
- review of '*Radon Report*' by BGS, reference BGS_338268/54001 dated May 2024;
- review of information contained within environmental databases maintained by the Environment Agency (EA) and other regulatory bodies provided in an Envirocheck report by Landmark Information Group dated May 2024 – supporting information is presented in Appendix D;
- drawing entitled '*Topographical Survey*' by Chilcote Engineering Services, reference 24178-J dated April 2024.

3. REFERENCE SOURCES

3.1 This report has been prepared with regard to the following sources of reference and guidance, supplemented with experience of similar sites:

- *National Planning Policy Framework: Chapters 11 and 15. Ministry of Housing, Communities and Local Government (2019);*
- *Investigation of Potentially Contaminated Sites – Code of Practice. British Standards Institute BS10175 (2001+A2:2017);*
- *Code of Practice for Site Investigations. BS5930 (2015+A1:2020);*
- *Land Contamination Risk Management. EA (2020);*

- *Guidance for the Safe Development of Housing on Land Affected by Contamination. R & D Publication 66, NHBC, Environment Agency and CIEH (2008);*
- *Radon: guidance on protective measures for new dwellings. BRE Report BR211 (2015) – supplemented by information published by the BGS in 2022;*
- *Code of practice for the characterization and remediation from ground gas in affected developments. BS8485 (2015+A1:2019);*
- *Hazardous Ground Gas. NF94, NHBC (2023);*
- *Guidance on Evaluation of Development Proposals on sites where Methane and Carbon Dioxide are Present. NHBC report Edition No. 4 (2007).*

4. THE SITE

4.1 The site is situated to the north of Rebecca Road in Pershore, Worcestershire and can be located approximately by National Grid Reference 393640, 246330, as shown on the drawing entitled '*Topographical Survey*' included in Appendix A.

4.2 It covers an area of approximately 4.9 hectares and comprises undeveloped arable farmland:

View looking towards eastern boundary of the site

View looking north-west across the site

4.3 Site levels around the northern, eastern and southern boundaries are relatively level at 54 to 55 m OD and there is a shallow valley in the west of the site where levels drop to approximately 49 m OD. To the west of the site, ground levels drop down into the valley of Bow Brook.

4.4 Surrounding land use is agricultural to the north and west with the southern boundary formed by Rebecca Road and the northern boundary by Worcester Road. There is existing housing to the south and west of the site.

4.5 No visual evidence of potential significant contamination was noted during the site walkover.

5. SITE HISTORY

5.1 The history of the site and the surrounding area has been assessed by reviewing available historical County Series and Ordnance Survey maps. The maps studied are included in Appendix B of this report and a summary is presented in Table 1.

Year	Site	Surrounding Area
1885	The site comprises undeveloped farmland with a small pond towards the centre of the site.	Rebecca Road and Worcester Road form the southern and northern boundaries and Allesborough Farm is immediately to the east. The surrounding area is largely farmland/orchards with Allesborough Hill to the north.
1904	No significant changes are mapped.	No significant changes are mapped.
1938	The small pond is longer mapped.	A covered reservoir has been built at Allesborough Farm close to the eastern site boundary and initial housing development is mapped to the south.
1954-55	No significant changes are mapped.	No significant changes are mapped.
1970	No significant changes are mapped.	No significant changes are mapped.
1983	No significant changes are mapped.	No significant changes are mapped.
1994	No significant changes are mapped.	Further residential development is shown to the south-east.
2000	No significant changes are mapped.	No significant changes are mapped.
2006	No significant changes are mapped.	No significant changes are mapped.
2023	No significant changes are mapped.	Allesborough Farm has been redeveloped for housing and further housing is mapped to the south-east.

Table 1: Summary of Historical Land Usage

6. GEOENVIRONMENTAL SETTING

6.1 Geology

6.1.1 The geology of the site has appraised from information published by the BGS and is shown to comprise the Charmouth Mudstone Formation of the Lias Group of Jurassic age.

6.1.2 No superficial/drift deposits are mapped beneath the site; however, the Pershore Sand and Gravel Member is mapped immediately to the east of the site.

6.2 Mining

6.2.1 The '*Interactive Map Viewer*' on The Coal Authority website indicates the site is not within a '*Coal Mining Reporting Area*' and; therefore, no further assessment of this potential development constraint is required.

6.3 Hydrology

6.3.1 There are no surface watercourses (rivers/streams) within 250 m of the site.

6.3.2 The EA has no records of any licensed surface water abstractions within 250 m of the site.

6.3.3 The EA has no records of any licensed discharge consents within 250 m of the site.

6.3.4 Based on current information provided by the EA, included in the Envirocheck Report, the site is not mapped in an area likely to be at risk of river flooding.

6.4 Hydrogeology

6.4.1 The Charmouth Mudstone Formation is classified by the EA as a '*Secondary Undifferentiated*' aquifer, which are '*assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type'*.

6.4.2 The EA has records of 2 No. licensed groundwater abstractions within 250 m of the site:

- F W Knight is permitted to abstract groundwater for '*general farming and domestic use*' from a borehole (Well 1) at unnamed site approximately 127 m to the south of the site;
- F W Knight is permitted to abstract groundwater for '*general farming and domestic use*' from a borehole (Well 2) at unnamed site approximately 197 m to the south of the site.

6.4.3 The site is not mapped by the EA to be within a groundwater Source Protection Zone.

6.5 Waste Management

6.5.1 The EA has no records of any active landfills within 250 m of the site.

6.5.2 The EA and Local Authority (LA) have no records of any historic landfills within 250 m of the site.

6.6 Pollution

6.6.1 The EA has no records of any significant or major pollution incident to controlled waters within 250 m of the site.

6.6.2 The EA has no records of any sites within 250 m of the study area that are potential pollution hazards or potential sources of industrial pollution and regulated under the EC Integrated Pollution Prevention and Control Directive (IPPC).

6.6.3 The Local Authority has no records of any sites within 250 m of the study area that operate under Local Authority Pollution Prevention and Control regulations (PPC).

6.7 Radon

6.7.1 Information contained in a '*Radon Report*' provided by the BGS, included in Appendix C, indicates that basic radon protection measures may be required for new housing built along the western side of the site. This should be assessed further following finalisation of the development layout to establish plot-specific requirements.

7. INITIAL CONCEPTUAL SITE MODEL

7.1 Environmental Setting

7.1.1 On the basis of the findings of the Phase I Desk Study presented in Sections 4 to 6 of this report, the environmental setting of the site can be summarised as follows:

- the site is situated to the north of Rebecca Road in Pershore, Worcestershire and can be located approximately by National Grid Reference 393640, 246330;
- it covers an area of approximately 4.9 hectares and comprises undeveloped arable farmland;
- site levels around the northern, eastern and southern boundaries are relatively level at 54 to 55 m OD and there is a shallow valley in the west of the site where levels drop to approximately 49 m OD. To the west of the site, ground levels drop down into the valley of Bow Brook;
- surrounding land use is agricultural to the north and west with the southern boundary formed by Rebecca Road and the northern boundary by Worcester Road. There is existing housing to the south and west of the site;
- no visual evidence of potential significant contamination was noted during the site walkover;
- historical maps show that the site has comprised undeveloped farmland since at least 1885;
- there was a small pond towards the centre of the site but this either dried up or was infilled between 1904 and 1938;
- surrounding land use has been predominantly agricultural/orchards to the north and west with housing development to the south and east from the 1938's onwards. Allesborough Farm was immediately to the east of the site but this was redeveloped for housing between 2006 and 2024;
- the geology of the site has appraised from information published by the BGS and is shown to comprise the Charmouth Mudstone Formation of the Lias Group of Jurassic age;
- no superficial/drift deposits are mapped beneath the site; however, the Pershore Sand and Gravel Member is mapped immediately to the east of the site;
- the site is not in an area affected by past coal mining activities;
- there are no surface watercourses (rivers/streams) within 250 m of the site;
- the EA has no records of any licensed surface water abstractions within 250 m of the site;
- the EA has no records of any licensed discharge consents within 250 m of the site;
- based on current information provided by the EA, included in the Envirocheck Report, the site is not mapped in an area likely to be at risk of river flooding;
- the Charmouth Mudstone Formation is classified by the EA as a '*Secondary Undifferentiated*' aquifer;
- the EA has records of 2 No. licensed groundwater abstractions within 250 m of the site: F W Knight is permitted to abstract groundwater for '*general farming and domestic use*' from a borehole (Well 1) approximately 127 m to the south of the site and from a borehole (Well 2) approximately 197 m to the south of the site;
- the site is not mapped by the EA to be within a groundwater Source Protection Zone;
- the EA has no records of any active landfills within 250 m of the site;
- the EA/LA have no records of any historic landfills within 250 m of the site;
- the EA has no records of any significant or major pollution incidents to controlled waters within 250 m of the site;
- the EA has no records of any sites within 250 m of the study area that are potential pollution hazards or potential sources of industrial pollution and regulated under the EC Integrated Pollution Prevention and Control Directive (IPPC);
- the Local Authority has no records of any sites within 250 m of the study area that operate under Local Authority Pollution Prevention and Control regulations (PPC);
- information provided by the BGS indicates that basic radon protection measures may be required for new housing built along the western side of the site. This should be assessed further following finalisation of the development layout to establish plot-specific requirements.

7.2 Initial Conceptual Model and Preliminary Risk Assessment

General

7.2.1 The initial conceptual model and preliminary risk assessment are based on information derived from the desk study to provide a qualitative assessment of risk posed to human health and environmental receptors from potential on and off-site sources of contamination as defined within Part IIA of the Environmental Protection Act (1990). For a significant risk to exist, it must be established that contamination has the potential to cause harm to susceptible receptors. This is known as '*pollutant linkage'* and requires three criteria to be identified at a significant level:

- the presence of substances that may cause harm (SOURCE);
- the presence of a receptor which may be harmed (RECEPTOR);
- the existence of a plausible pollutant linkage between the source and the target (PATHWAY).

7.2.2 EA R&D66 (2008) includes a risk classification system based on classification of consequence and probability. Table 2 shows a risk matrix, in which the likelihood or probability of each pollutant linkage being realised is ranked against the severity of the consequences. The result is the risk classification, based upon which risk management actions can be implemented. The individual sources, pathways and receptors identified are assessed against this risk matrix; potential pollutant linkages and associated risks are recorded.

		Severity of Consequence			
		Severe	**Medium**	**Mild**	**Minor**
Probability of pollutant linkage	**High Likelihood**	Very high risk	High risk	Moderate risk	Moderate / low risk
	Likely	High risk	Moderate risk	Moderate / low risk	Low risk
	Low Likelihood	Moderate risk	Moderate / low risk	Low risk	Very low risk
	Unlikely	Moderate / low risk	Low risk	Very low risk	Very low risk

Table 2: Risk Matrix

7.2.3 Definitions of risk terminology are as follows.

7.2.4 **Very high risk:** there is a probability that severe harm could arise to a designated receptor from an identified source, or there is evidence that severe harm to a designated receptor is currently occurring.

7.2.5 **High risk:** harm is likely to arise to a designated receptor from an identified source.

7.2.6 **Moderate risk:** it is possible that harm could arise to a designated receptor from an identified source. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.

7.2.7 **Low risk:** it is possible that harm could arise to a designated receptor from an identified source, but it is likely that this harm, if realised, would at worst normally be mild.

7.2.8 **Very low risk:** there is a low possibility that harm could arise to the receptor. In the event of such harm being realised it is not likely to be severe.

7.2.9 Professional judgement and experience has been used to estimate the combination of probability and consequence of the harm posed by the pollutant linkages identified. This allows the risk to be evaluated on a qualitative basis. The risk category is used to prioritise/target the site investigation. Using this matrix and the available screening limits it has been possible to carry out a semi-quantitative risk assessment for the sources, pathways and receptors which have been identified at the site.

7.2.10 The initial conceptual model also illustrates the contaminants of concern identified from the contamination assessment and demonstrates the potential pathways and receptors which are considered likely to exist at the site.

7.2.11 Risk is based on a consideration of both:

- the likelihood of an event (probability); and
- the severity of the potential consequences.

7.2.12 A pollutant linkage must be established before tests for probability and consequence are applied. If there is no pollutant linkage then there is no potential risk and there is no need to apply tests for probability and consequence. The risk assessment needs to include a logical and transparent system to define categories of severity of consequence and probability of occurrence. The initial conceptual model and preliminary risk assessment are discussed below.

Proposed Development

7.2.13 It is understood the proposed development is to comprise housing with private gardens together with hard-surfaced access roads and parking areas and woodland in the west of the site.

Potential On-Site Sources of Contamination

7.2.14 Based on the Phase I Desk Study information presented above, no potential significant and site-wide sources of contamination have been identified; however, as this area is to developed for a sensitive end-use, contamination testing of the near-surface soil profile and existing topsoil should form part of a Phase II investigation.

7.2.15 Historical maps show a small pond towards the centre of the site, which either dried up or was infilled between 1904 and 1938. This feature should be targeted in a Phase II investigation but is considered unlikely to represent a significant risk to the proposed development in terms of human health contamination or soil-gas risk.

Potential Off-Site Sources of Contamination

7.2.16 Based on the Phase I Desk Study information presented above, no plausible significant off-site sources of contamination have been identified that could affect the proposed development.

Potential Sources of Ground Gas

7.2.17 Potential sources of ground gas are discussed as follows:

- *Landfill Sites*: there are no landfill sites within 250 m of the site and this potential source can be discounted;

- *Made Ground*: it is unlikely that any site-wide Made Ground is present at the site but there was a small pond towards the centre of the site, which either dried up or was infilled between 1904 and 1938. Made Ground is not inherently a significant source of hazardous ground gas unless substantial proportions of putrescible materials, such as vegetation, food waste, paper, cardboard and wood are present. Any pond infill dating from the early 20th Century is likely to predominantly comprise reworked natural soil and making reference to NF94 (2023), Made Ground comprising reworked natural soils are 'very unlikely to be a significant source of ground gas';
- *Other Anthropogenic Sources*: there are no anthropogenic sources of ground gas that could affect the proposed development;
- *Natural Sources of Methane: Bacteriogenic Processes*: methane can be produced by the microbial decay of organic material under anaerobic conditions. The main sources of such methane are from peat, bogs and other waterlogged vegetation and no such features have been identified on the site;
- *Natural Sources of Methane: Thermogenic Processes*: the site is not in an area of shallow coal mining and; therefore, the proposed developed will not be affected by thermogenic methane.

Receptors

7.2.18 The following site-specific receptors need to be considered:

- long term site users – residents;
- site workers - construction personnel involved in development works;
- building fabric and foundations;
- plant life – gardens and soft landscaped amenity areas;
- controlled waters – licensed groundwater abstractions approximately 127 and 197 m to the south of the site.

Pathways

7.2.19 The potential pathways that are considered relevant to this site are as follows:

- direct contact with and/or incidental ingestion of any contaminated soil;
- direct contact with, incidental ingestion or inhalation of dust derived from any contaminated soil;
- consumption of home-grown produce;
- migration of hazardous soil-gases via permeable strata or via ducts/drains into confined spaces – only potentially associated with infilled pond;
- direct contact between contaminated soils and building substructures;
- migration of contaminants into controlled waters receptors via shallow groundwater beneath the site.

Pollutant Linkages

7.2.20 On the basis of the 'source-pathway-receptor' information presented above, the following potential pollutant linkages have been identified at the site:

Source	Pathway	Target	Consequence	Probability	Risk
Possible contamination within near-surface soils	Dermal contact	Site user: female child 0-6 years	Medium	Unlikely	Low
		Site construction worker	Minor	Unlikely	Very low
	Ingestion	Site user: female child 0-6 years	Medium	Unlikely	Low
		Site construction worker	Minor	Unlikely	Very low
	Consumption of home-grown vegetables	Site user: female child 0-6 years	Medium	Unlikely	Low
	Ingestion of soil attached to home-grown vegetables	Site user: female child 0-6 years	Medium	Unlikely	Low
	Dermal contact with dust derived from contaminated soil	Site user: female child 0-6 years	Medium	Unlikely	Low
		Site construction worker	Minor	Unlikely	Very low
	Ingestion of dust derived from contaminated soil	Site user: female child 0-6 years	Medium	Unlikely	Low
		Site construction worker	Minor	Unlikely	Very low
	Inhalation of dust derived from contaminated soil	Site user: female child 0-6 years	Medium	Unlikely	Low
		Site construction worker	Minor	Unlikely	Very low
	Soil-gases derived from Made Ground migrating into buildings via services/foundations.	Site user: female child 0-6 years	Medium	Unlikely	Low
	Migration via shallow groundwater	Controlled waters	Minor	Unlikely	Very low
	Direct contact	Buildings	Minor	Unlikely	Very low
	Direct contact	Water supply pipework	Minor	Unlikely	Very low

Table 3: Pollutant Linkages

7.2.21 Based on the known previous land usage of the site and surrounding area, absence of any identified potential sources of contamination at the site and its geological setting, it is considered that the site represents a **very low** risk to controlled waters. No further assessment of risk to controlled waters is considered necessary.

7.2.22 Based on the proposed end use of the site, the site is considered to present a **very low to low** risk to human health, which should be assessed through a programme of routine chemical testing, soil-gas monitoring (only if Made Ground identified) and risk assessment in accordance with current guidance.

8. DEVELOPMENT ISSUES

Based on the findings of the desk study presented in Sections 4 to 6 of this report, and the resultant Initial Conceptual Site Model that has been designed (Section 7), the following comments are made in respect of typical ground related issues that will need consideration as part of the proposed redevelopment of the site.

8.1 Preparatory Works

8.1.1 Site preparatory works will need to be carried out to facilitate development and are likely to include:

- diversion and relocation of any existing services as applicable;
- topsoil strip and stockpiling for later re-use in gardens and soft landscaped open spaces;
- reprofiling of site levels to achieve a suitable development platform (the extent of which will depend on agreed levels) – retaining features may be required to accommodate changes in ground levels across the site.

8.2 Foundations

8.2.1 The key factors that will dictate foundation design are:

- competence of near-surface natural soil;
- groundwater levels.

8.2.2 The near-surface geology is anticipated to comprise weathered Charmouth Mudstone Formation and; therefore, it would be anticipated that competent natural soil should be present at shallow depth and the use of strip/trench fill foundations should be viable for the proposed development.

8.2.3 The near-surface Charmouth Mudstone Formation is likely to be a shrinkable soil and; therefore, a minimum founding depth of 0.75/0.9/1.0 m would need to be adopted dependent upon the volume change potential of the soil and foundations may need to be deepened near any trees or hedgerows in accordance with NHBC Standards Chapter 4.2 '*Building near Trees*'.

8.2.4 If; however, the near-surface natural geology comprises low bearing capacity near-surface soils or founding depths exceed 2.5 m due to tree influence, consideration may need to be given to an alternative solution, such as vibro-improvement or piling.

8.2.5 Where new build development is located within the zone of influence of trees or hedgerows and founded in shrinkable soil, a suspended floor slab with underfloor void would be required, otherwise, a cast in situ suspended floor slab design or ground bearing slab (if ground conditions permit) could be adopted.

8.2.6 A detailed intrusive ground investigation will be required to determine ground conditions at the site and provide design parameters for foundation design.

8.3 Contamination – Human Health Risk

8.3.1 The Phase II investigation should include sampling and chemical testing of near-surface soils to provide general coverage across the site, together with an assessment of human health risk using the CLEA framework to meet the likely requirements of the Local Authority and/or warranty provider.

8.3.2 The level of risk posed to human health is considered very low to low. In the event that any contamination is encountered on site, it is considered that this could be mitigated by adopting a suitable remedial strategy, such as the localised removal of the contaminated soil or provision of clean topsoil in gardens or soft landscaped amenity areas, to achieve safe redevelopment of the site.

8.3.3 Based on the past usage of the site but subject to ground investigation, it is considered that standard PE/PVC pipe laid in trenches with clean gravel surround should be suitable for the proposed development.

8.4 Contamination – Controlled Waters

8.4.1 The Initial Conceptual Site Model has not identified any potential significant contamination risks to controlled waters.

8.5 Soil-Gas

8.5.1 No site-wide potential significant sources of hazardous soil-gas (methane and carbon dioxide) have been identified that could affect the proposed development; however, the area of the small pond that used to be present will need investigation and, if necessary, soil-gas monitoring.

8.5.2 Information provided by the BGS indicates that basic radon protection measures may be required for new housing built along the western side of the site. This should be assessed further following finalisation of the development layout to establish plot-specific requirements.

8.6 Soakaways

8.6.1 As the near-surface geology is likely to comprise weathered clay soil, it is considered that the use of soakaway drainage will not be viable at the site and an alternative drainage solution will need to be adopted.

9. FURTHER WORK

9.1 This Phase I Desk Study has not identified any significant geoenvironmental constraints at the site that would either preclude development or warrant significant remedial/further action; however, a Phase II Ground Investigation is considered necessary for design purposes and should address the following issues:

- characterise nature of near-surface natural soil/groundwater across the site;
- assess soil contamination and include a site-specific assessment of risk to human health;
- soil-gas monitoring if Made Ground identified on site in area of former small pond;
- provide geotechnical design parameters for foundation design purposes.

9.2 The Phase II report would need to include a site specific generic quantitative assessment of human health risk using CLEA, together with recommendations for any remediation and/or further work considered necessary.

9.3 The requirement for radon protection to new housing will need to be confirmed.

APPENDIX A
DRAWING

Drawing No.	Drawing Title
24178-J	Topographical Survey (by Chilcote Engineering Services)

Key

AV	Air Vent	f	Frame Measurement
B	Bollard	s	Structural Measurement
I.B	Illuminated Bollard	IC	Inspection Cover
BD	Back Drop level	IL	Invert Level
BH	Bore Hole	KO	Kerb Outlet
BT	British Telecom Cover	LP	Lamp Post
CD	Cable Duct	MC	Miscellaneous Cover
CL	Cover Level	MH	Manhole
CM	Cable Marker	MKR	Marker
CP	Catch Pit	NB	Notice Board
DK	Drop Kerb	SNP	Name Plate
DP	Down Pipe	OHC	Overhead Cable
EC	Electricity Cover	OSBM	Ordnance Survey Bench Mark
EOT	Extent of Trace	P	Post
EP	Electricity Pole	PGM	Permanent Ground Marker
FBW	Barbed Wire Fence	PEAV	Eaves Point
FCB	Close Boarded Fence	PRI	Ridge Point
FCL	Chain Link Fence	RE	Rodding Eye
FCP	Chestnut Paling Fence	RS	Road Sign
FFL	Finished Floor Level	RW	Retaining Wall
FH	Fire Hydrant	RWP	Rain Water Pipe
FHM	Fire Hydrant Marker	S=	Spread
FH+M	Hit and miss fence	SC	Stop Cock
FIR	Iron Railings	SV	Stop Valve
FIW	Interwoven Fence	SW	Storm Water Manhole
FL	Floor Level	TBM	Temporary Bench Mark
FMR	Metal Railings	TL	Traffic Light
FOL	Overlap Fence	TP	Telephone Post
FPR	Post and Rail Fence	TPAV	Tactile Paving
FPW	Post and Wire Fence	UTL	Unable to lift
FW	Foul Water Manhole	UTT	Unable to trace
FWM	Wire Mesh Fence	W	Wall
FSWM	Solid Wire Mesh Fence	WM	Water Meter
FP	Palisade Fence	WV	Water Valve
G=	Girth		HT- = Tree Height 5M
GY	Gulley		Survey Station
GV	Gas Vent		
IB	Illuminated Bollard		
+	Spot Level		

Service Lines

Storm Sewer	>>>150>>>	Gas Trace	Gas
Foul Sewer	>>>150>>>	Water Trace	Water
Combined Sewer	>>>150>>>		
Overhead Cable	Overhead Cable		
Electricity Trace	Electric		
Radio/BT Trace	Radio		

Station	Eastings	Northings	Level
OS1	393726.086	246233.506	55.081
OS2	393631.342	246185.433	54.469
OS3	393540.536	246141.153	53.425

NOTES

The survey is fixed to the Ordnance Survey National Grid (OSGB36) using Global Navigation Satellite System (GNSS) equipment.

Chilcote Engineering Services accepts no liability if this drawing is passed to a third party or used for a purpose other than originally intended.

All dimensions should be checked on site prior to proposed construction.

Whilst every effort has been made to survey all above ground features, there may have been items obscured/covered at the time of survey.

ISSUE	REVISION	DATE

PROJECT

Land off Rebecca Road, Pershore

TITLE

Topographical Survey

CLIENT

Touch Developments

TO BE READ IN CONJUNCTION WITH

SCALE - 1:500	DRAWING NUMBER - 24178-J	
DRAWN - HB / OS	DATE - 08/04/24	CHECKED - BT

CHILCOTE ENGINEERING SERVICES

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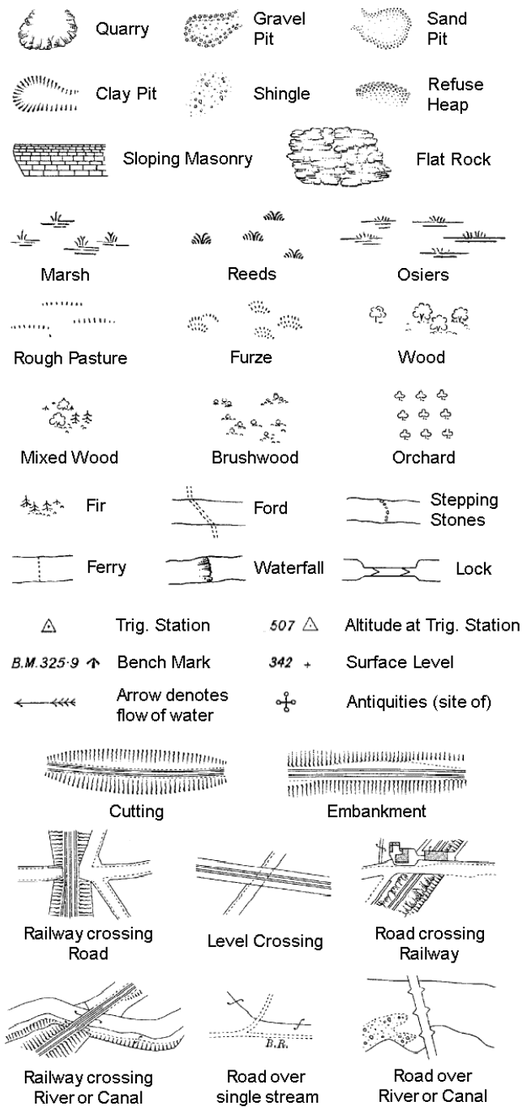
A0

APPENDIX B
HISTORICAL MAP EXTRACTS

Historical Mapping Legends

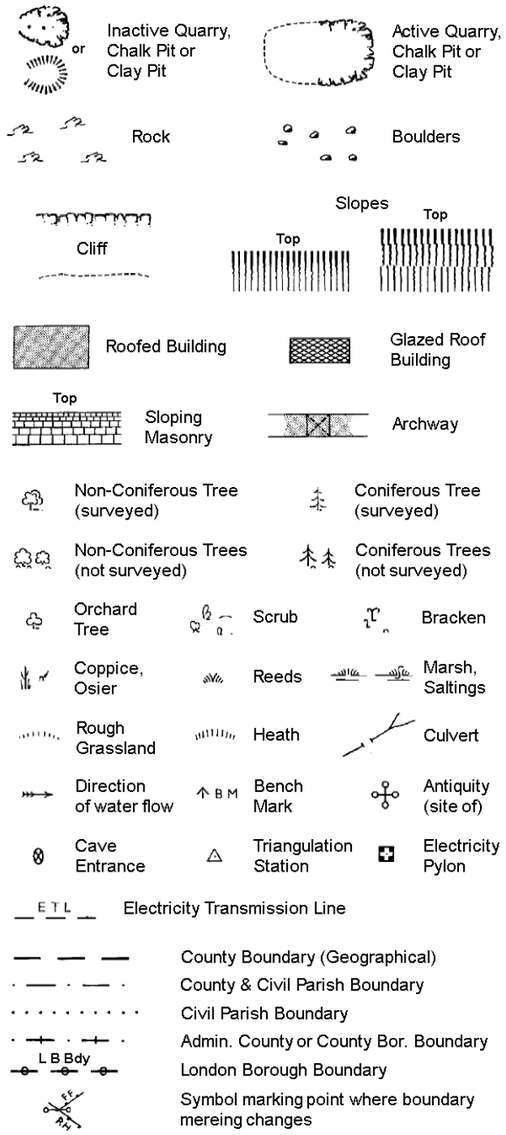
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



	County Boundary (Geographical)
	County & Civil Parish Boundary
	Administrative County & Civil Parish Boundary
Co. Boro. Bdy.	County Borough Boundary (England)
Co. Burgh Bdy.	County Burgh Boundary (Scotland)

BP BS	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

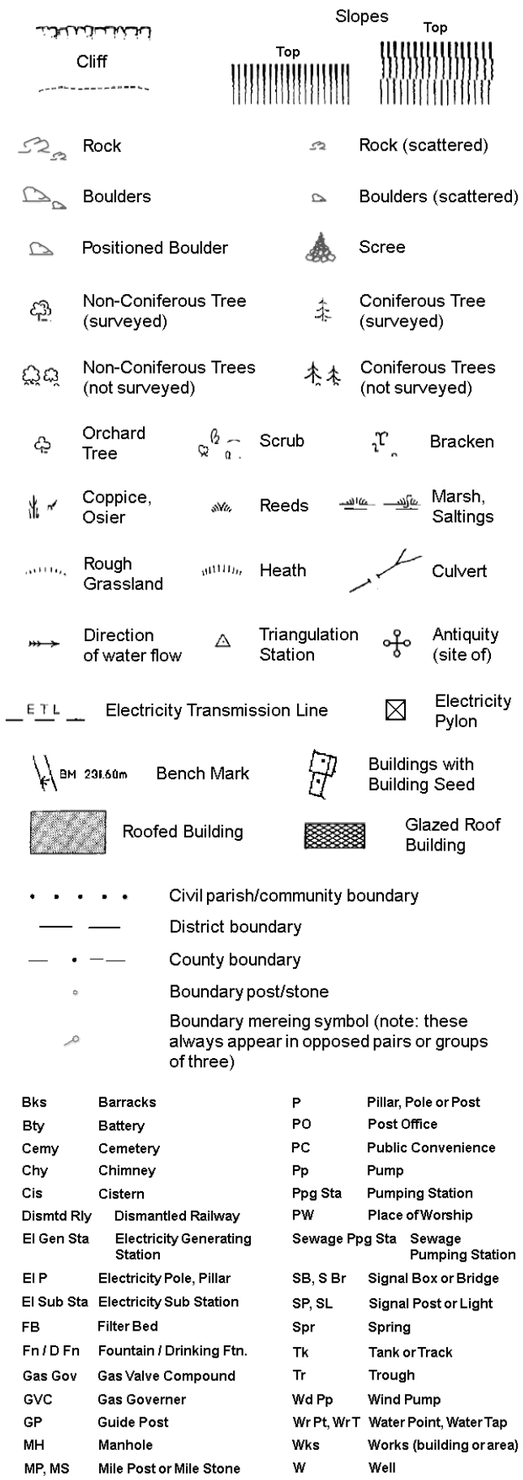
Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



	County Boundary (Geographical)
	County & Civil Parish Boundary
	Civil Parish Boundary
	Admin. County or County Bor. Boundary
L B Bdy	London Borough Boundary
	Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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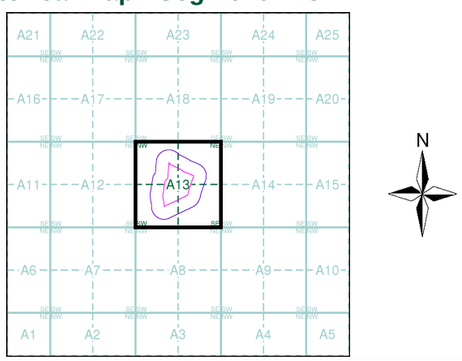
Historical Mapping & Photography included:

Historical Map - Segment A13



Order Details

Order Number:	346173013_1_1
Customer Ref:	24135
National Grid Reference:	393640, 246330
Slice:	A
Site Area (Ha):	4.94
Search Buffer (m):	100

Site Details

Rebecca Road, PERSHORE

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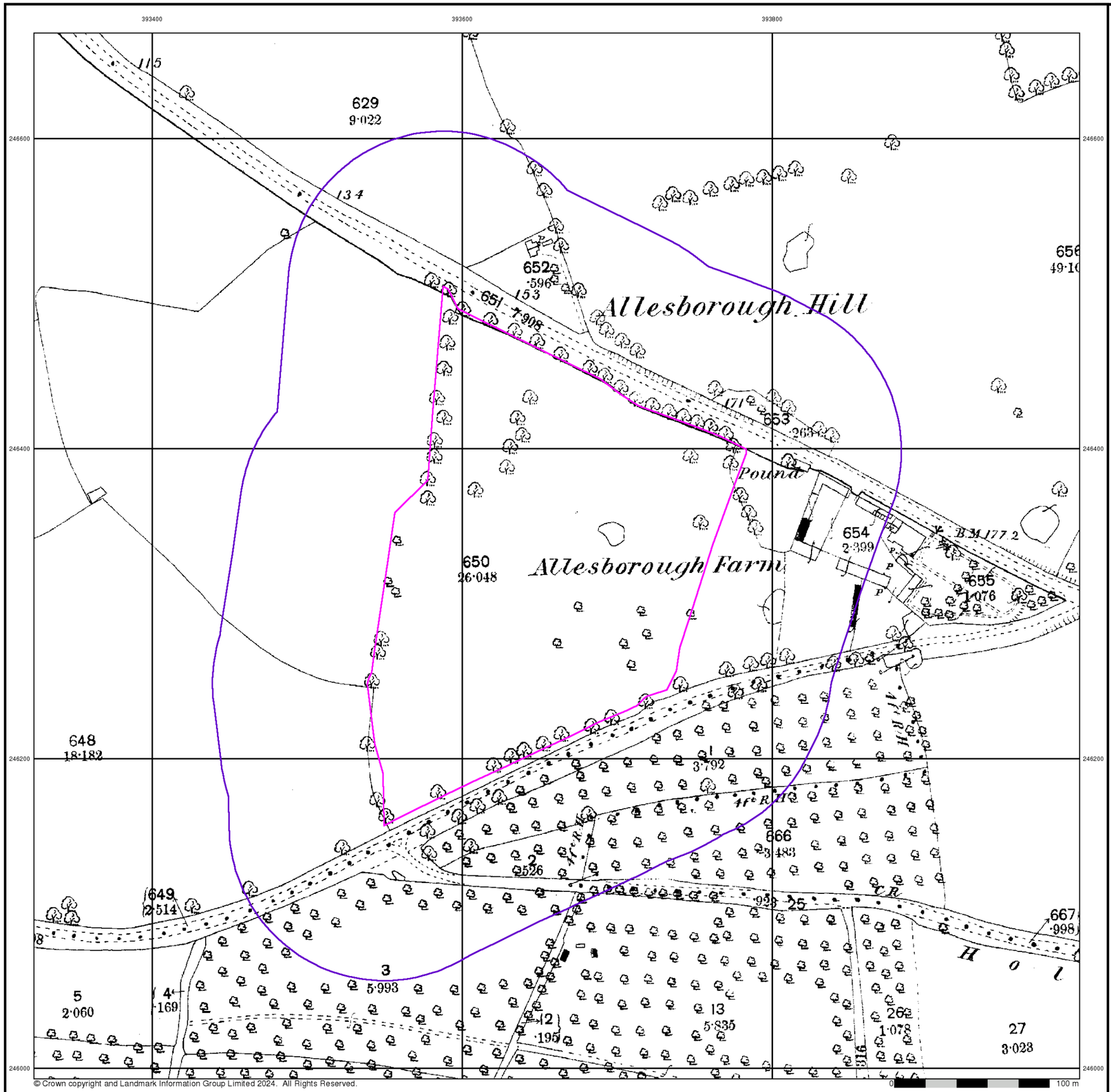

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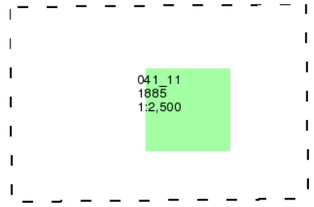
Worcestershire

Published 1885

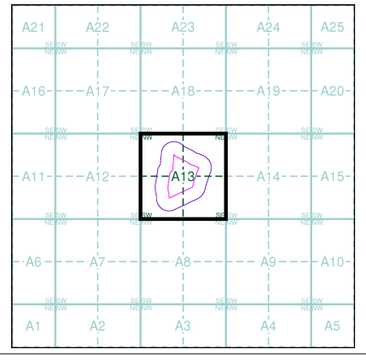
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



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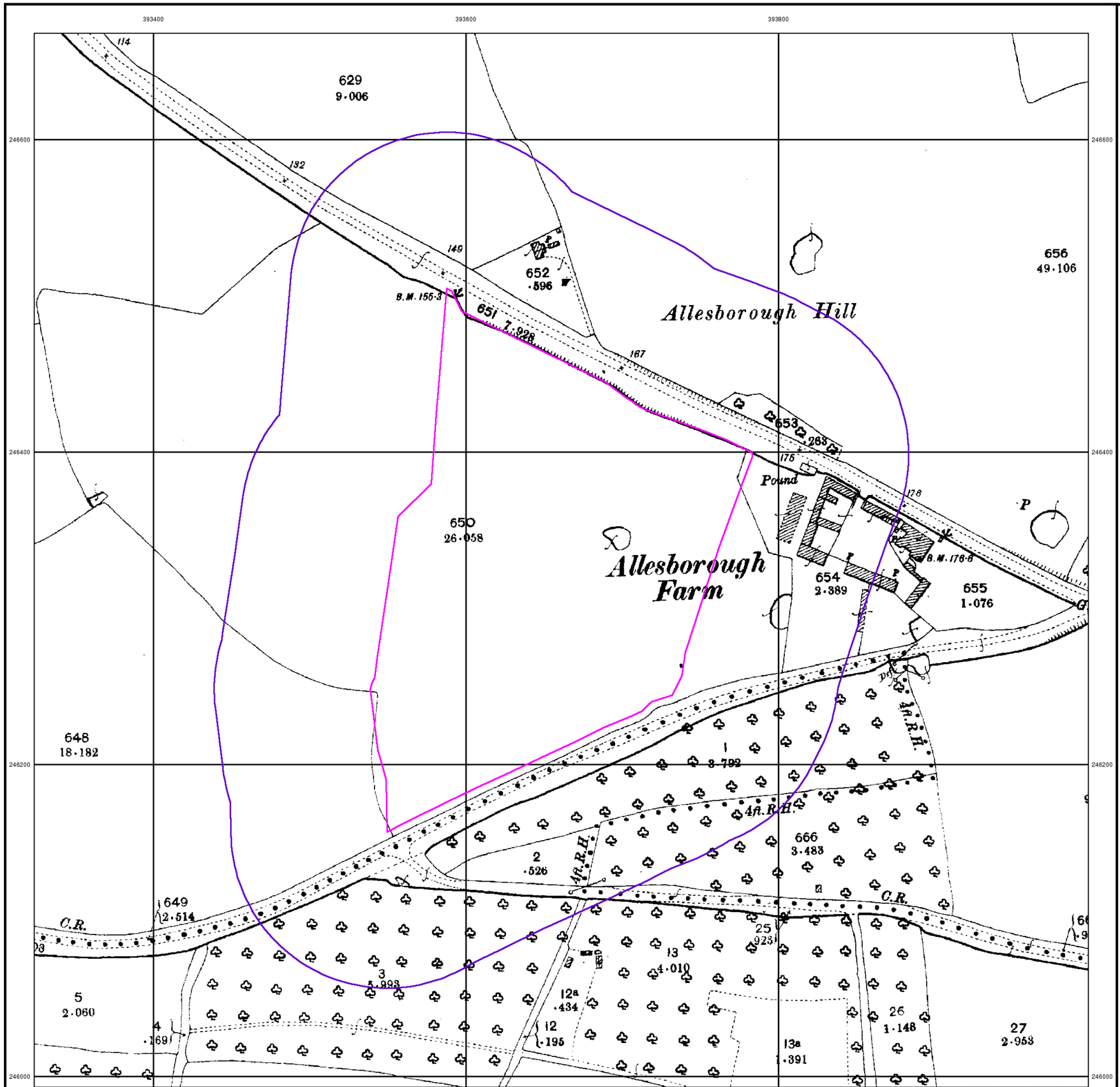

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Worcestershire

Published 1904

Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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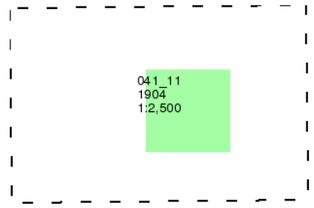
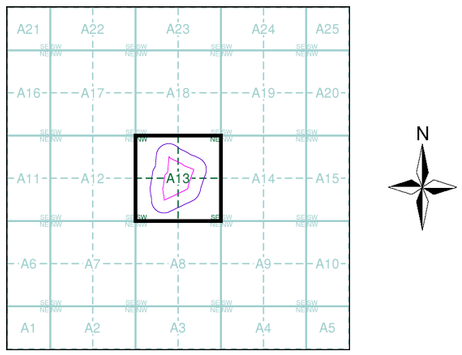


Historical Map - Segment A13



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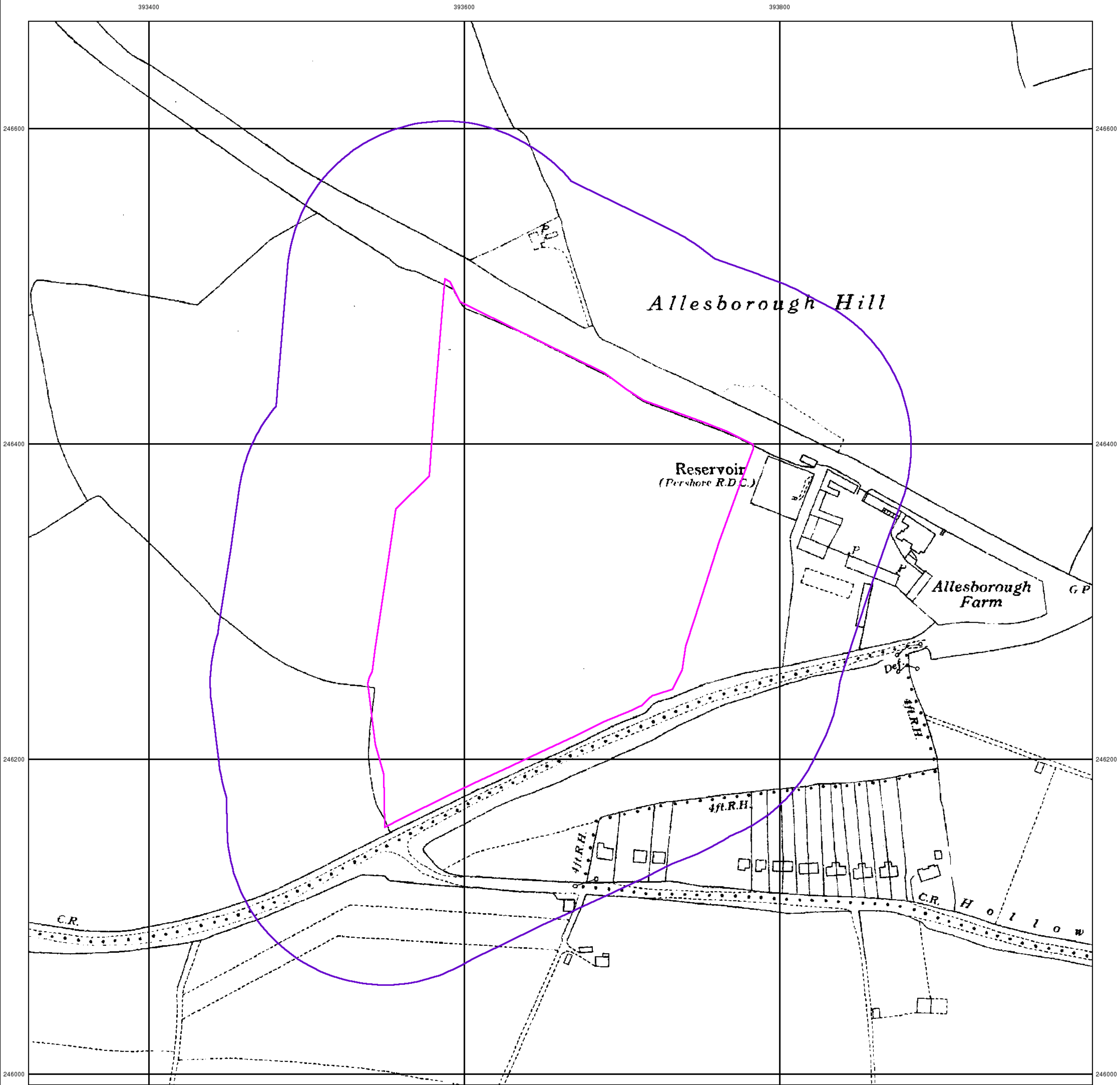

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Worcestershire

Published 1938

Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

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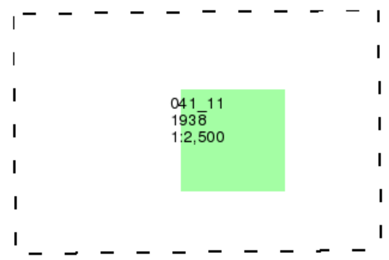
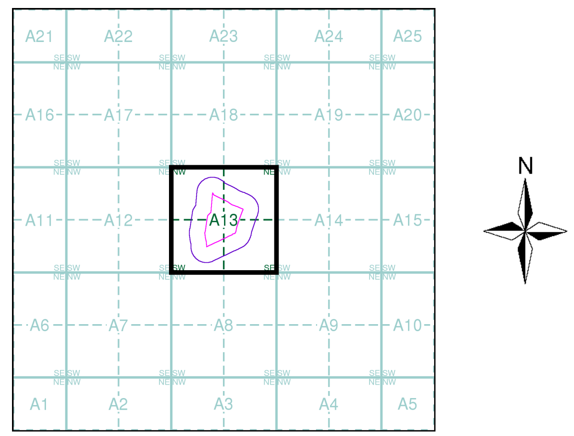


Historical Map - Segment A13



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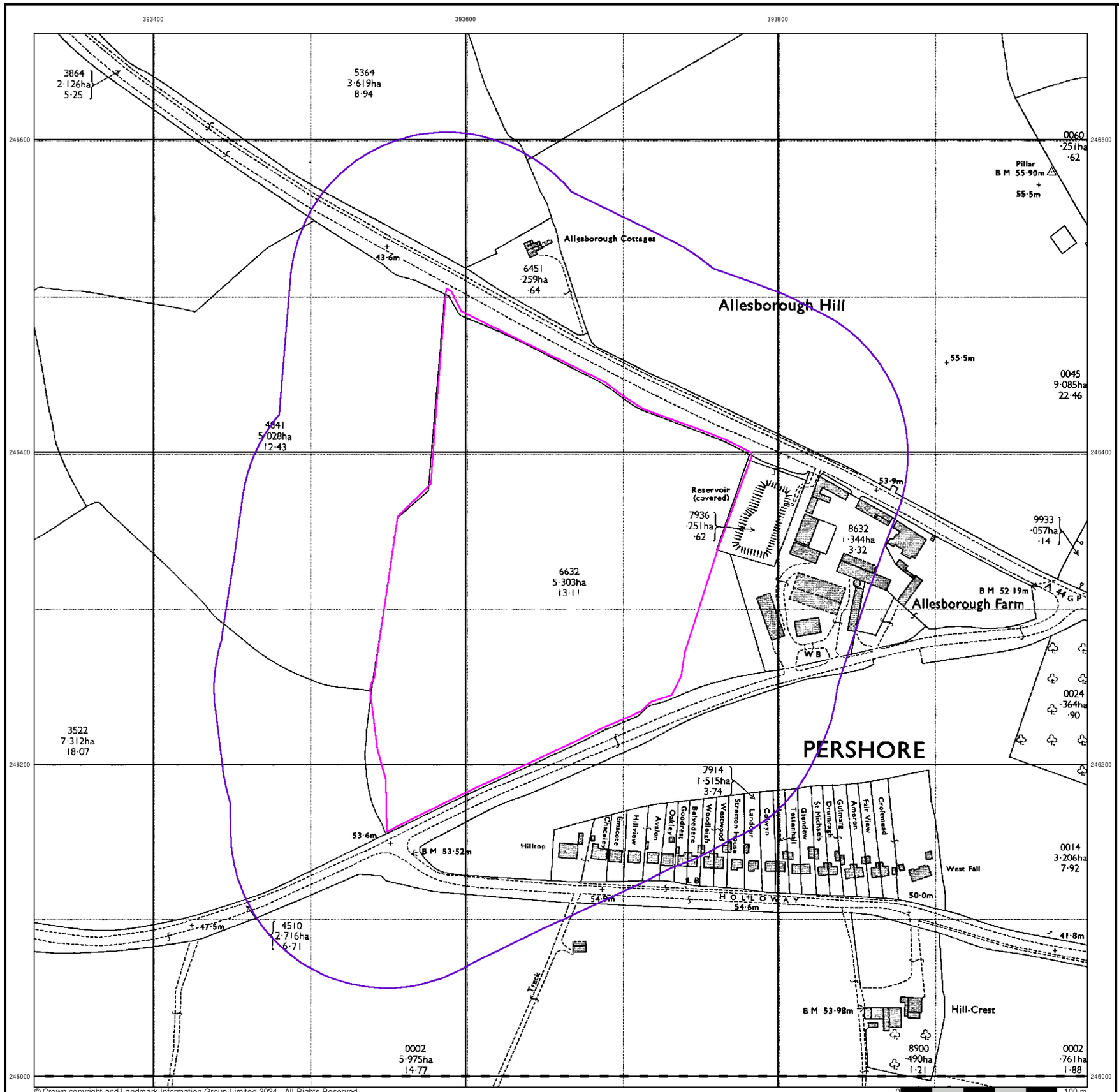

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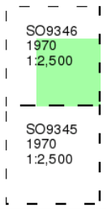
Ordnance Survey Plan

Published 1970

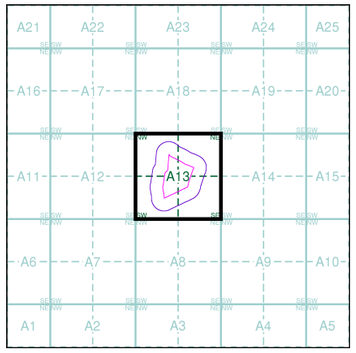
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



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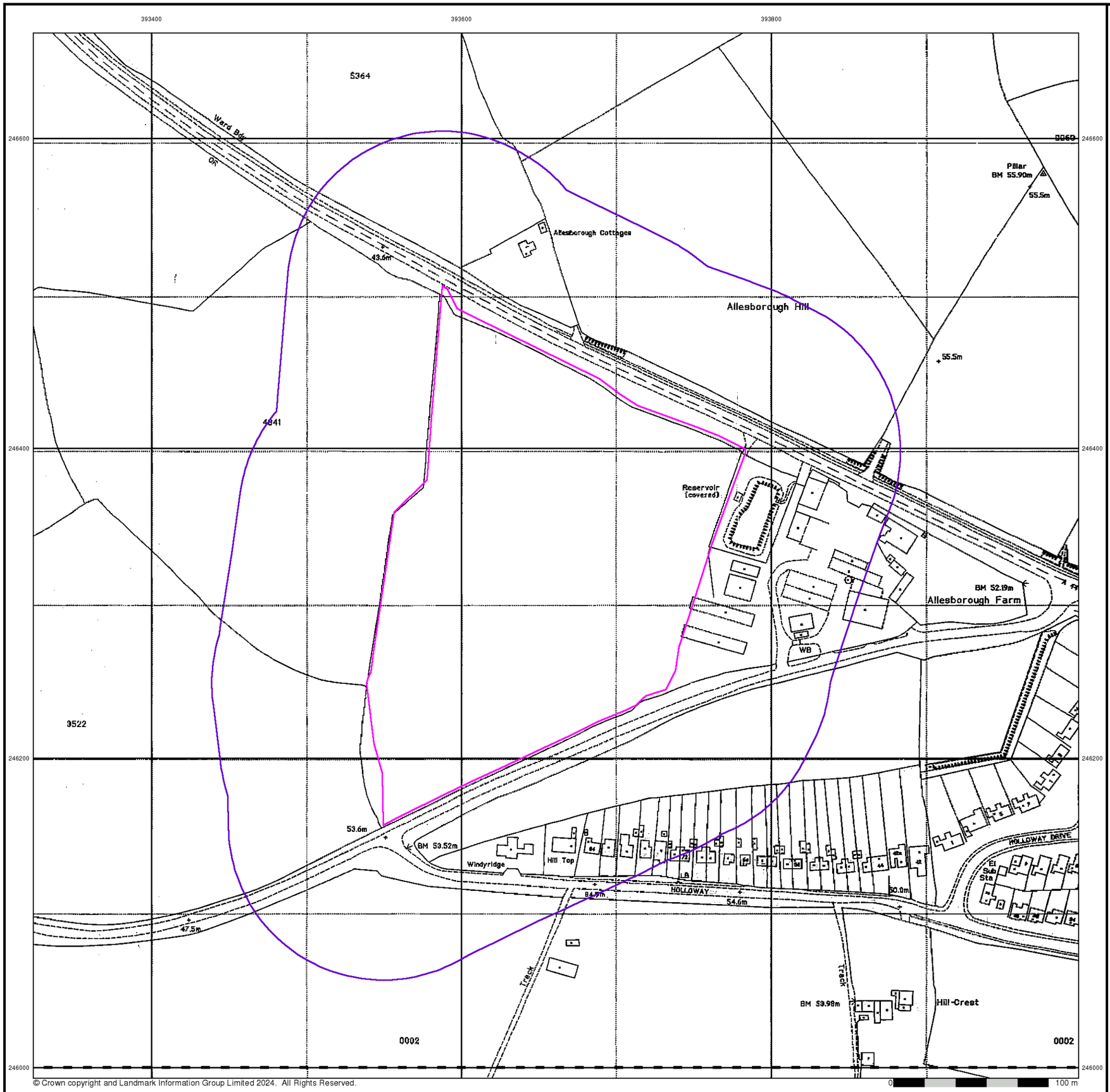

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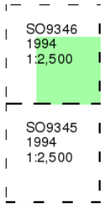
Large-Scale National Grid Data

Published 1994

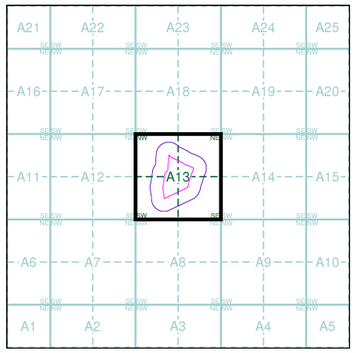
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



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Site Details

Rebecca Road, PERSHORE

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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy.
County Borough Boundary (England)
Co. Burgh Bdy.
County Burgh Boundary (Scotland)
R.D. Bdy.
Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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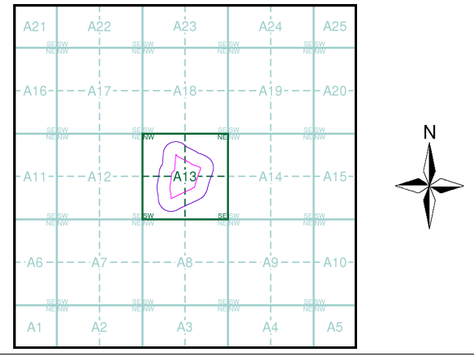
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Worcestershire	1:10,560	1884	2
Worcestershire	1:10,560	1905	3
Worcestershire	1:10,560	1938	4
Historical Aerial Photography	1:10,560	1948 - 1949	5
Ordnance Survey Plan	1:10,000	1954 - 1955	6
Ordnance Survey Plan	1:10,000	1970 - 1972	7
Ordnance Survey Plan	1:10,000	1972	8
Ordnance Survey Plan	1:10,000	1983	9
Ordnance Survey Plan	1:10,000	1992 - 1993	10
10K Raster Mapping	1:10,000	2000	11
10K Raster Mapping	1:10,000	2006	12
VectorMap Local	1:10,000	2024	13

Historical Map - Slice A



Order Details

Order Number:	346173013_1_1
Customer Ref:	24135
National Grid Reference:	393640, 246330
Slice:	A
Site Area (Ha):	4.94
Search Buffer (m):	1000

Site Details

Rebecca Road, PERSHORE

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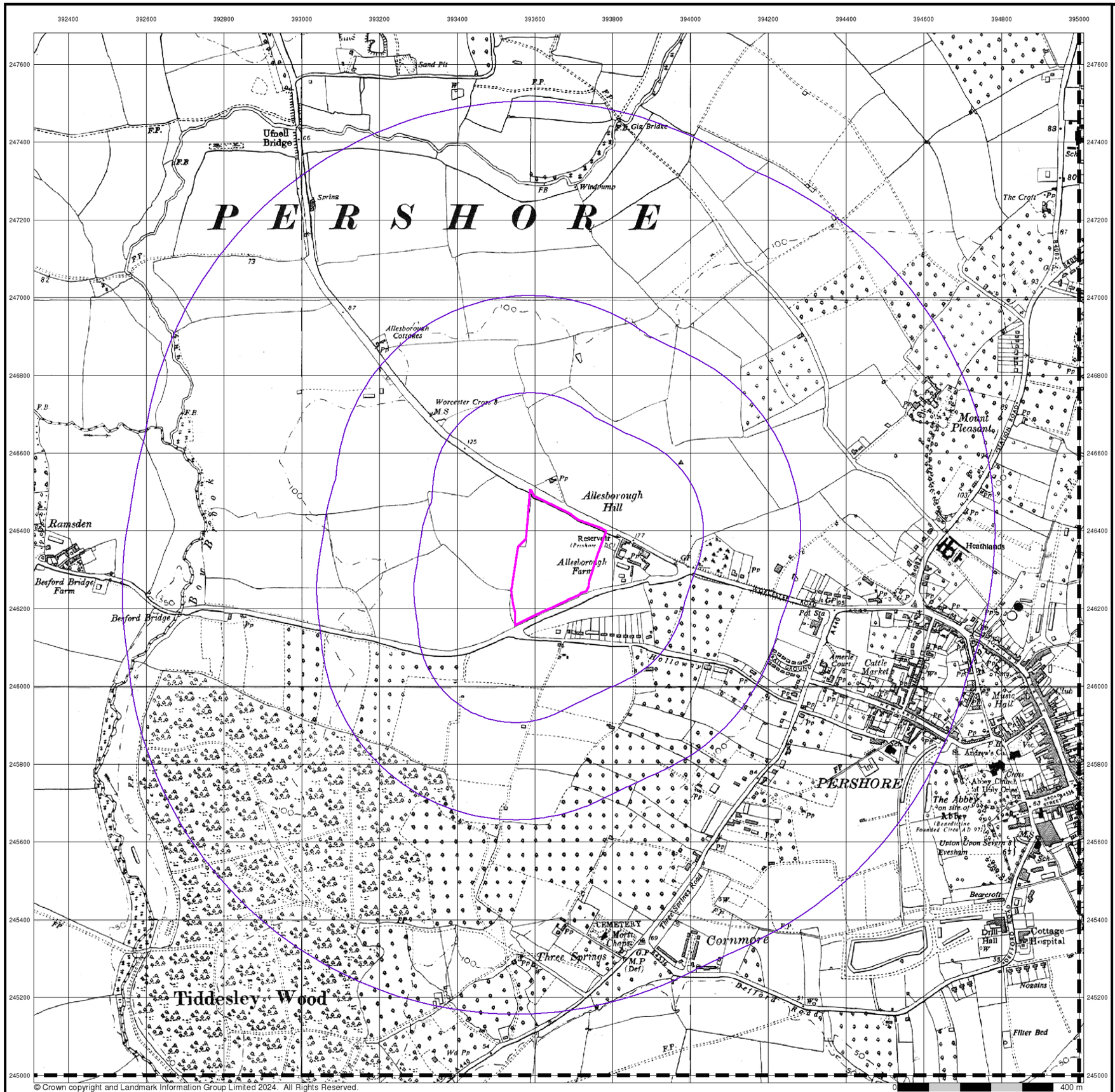

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Ordnance Survey Plan

Published 1954 - 1955

Source map scale - 1:10,000

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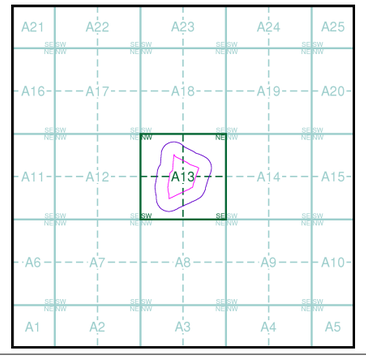
Map Name(s) and Date(s)

SO94NW 1954 1:10,560	SO94NE 1955 1:10,560
SO94SW 1955 1:10,560	SO94SE 1954 1:10,560

Historical Map - Slice A



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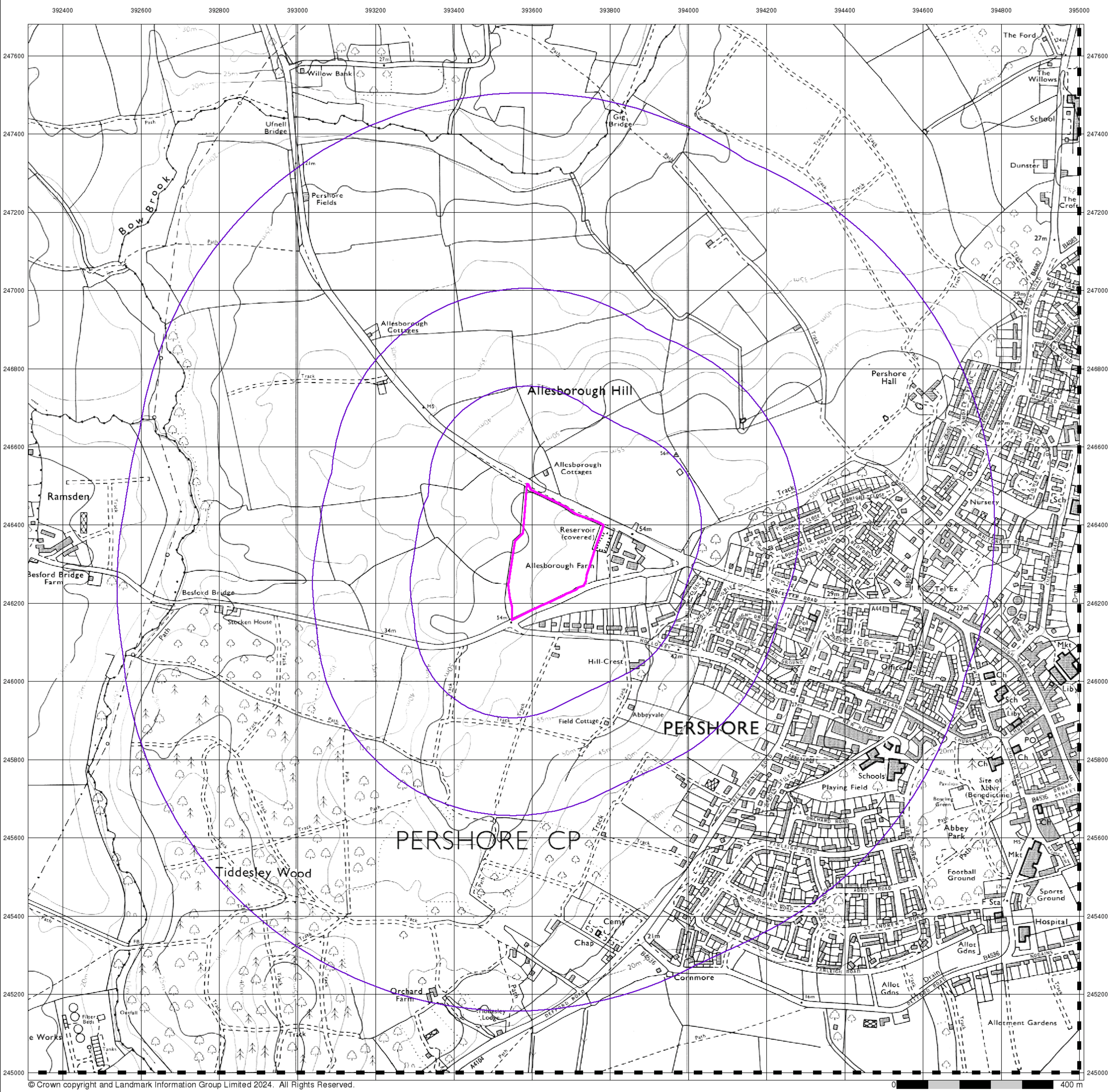

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Ordnance Survey Plan

Published 1983

Source map scale - 1:10,000

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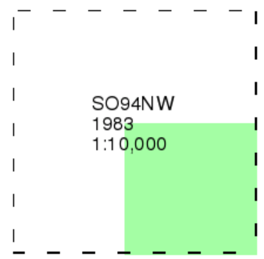
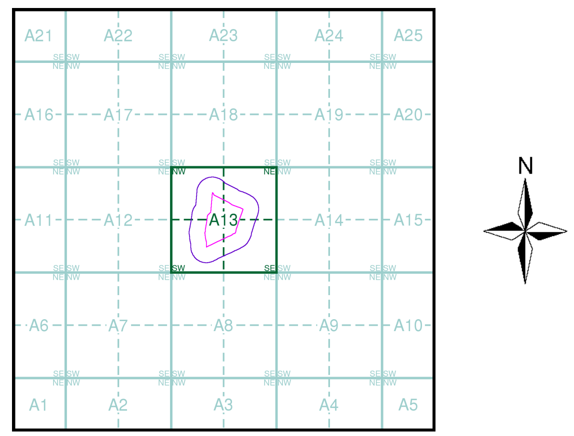


Historical Map - Slice A



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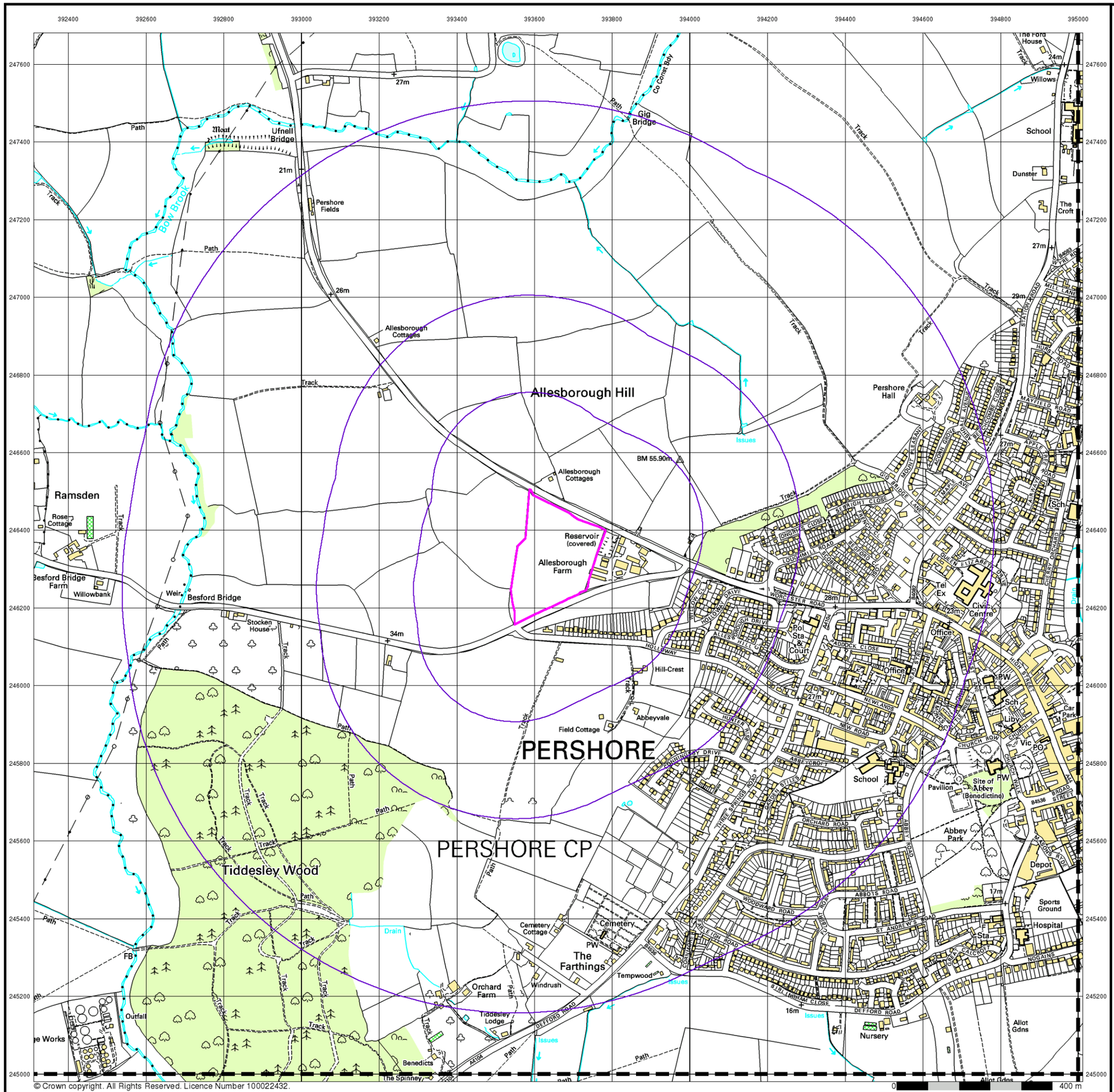

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10k Raster Mapping

Published 2000

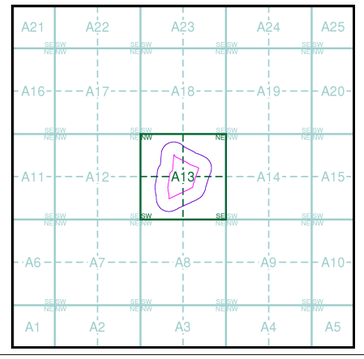
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SO94NW 2000 1:10,000	SO94NE 2000 1:10,000
SO94SW 2000 1:10,000	SO94SE 2000 1:10,000

Historical Map - Slice A



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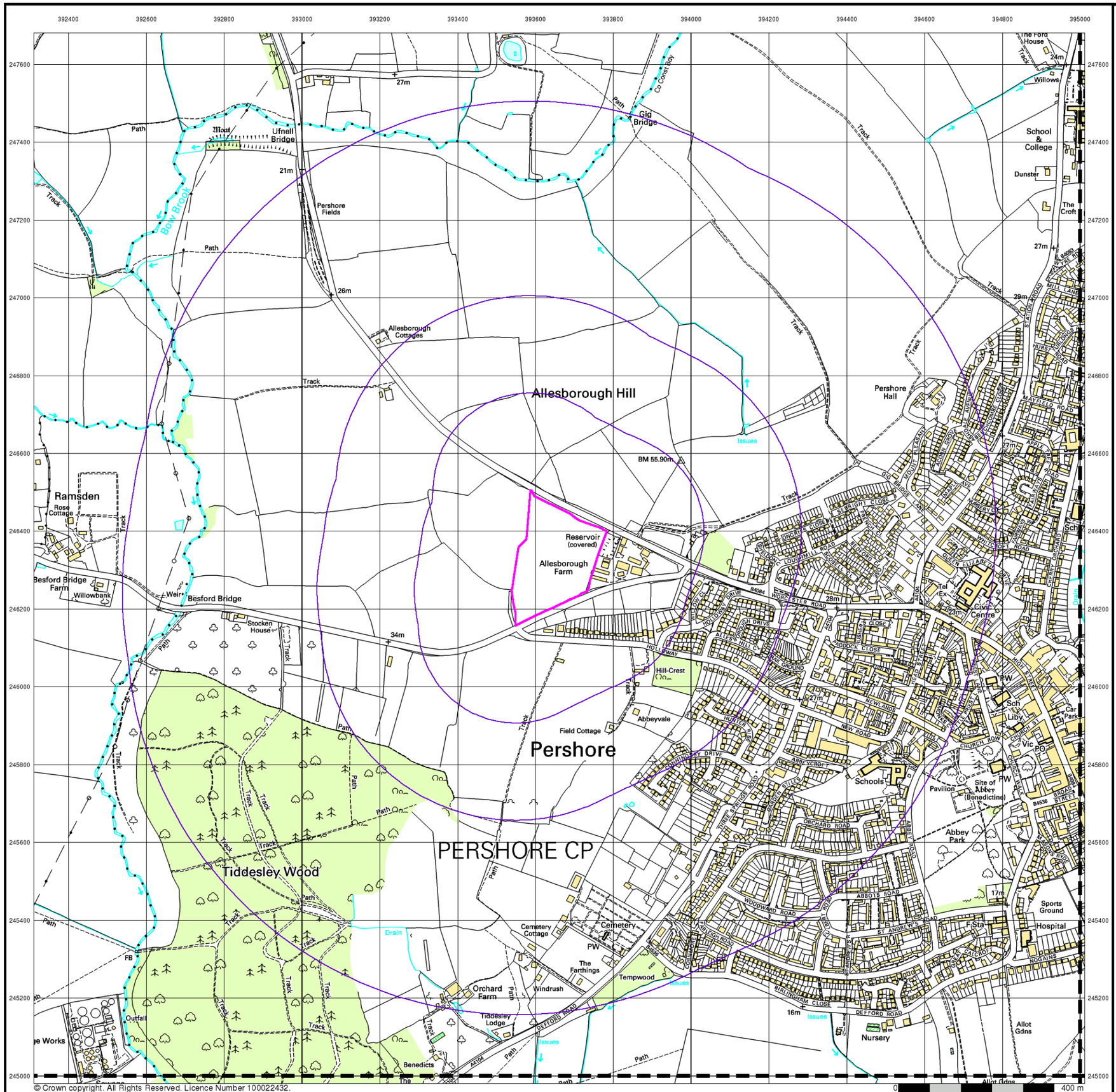

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10k Raster Mapping

Published 2006

Source map scale - 1:10,000

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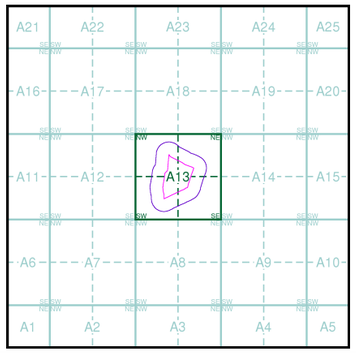
Map Name(s) and Date(s)

SO94NW 2006 1:10,000	SO94NE 2006 1:10,000
SO94SW 2006 1:10,000	SO94SE 2006 1:10,000

Historical Map - Slice A



Order Details

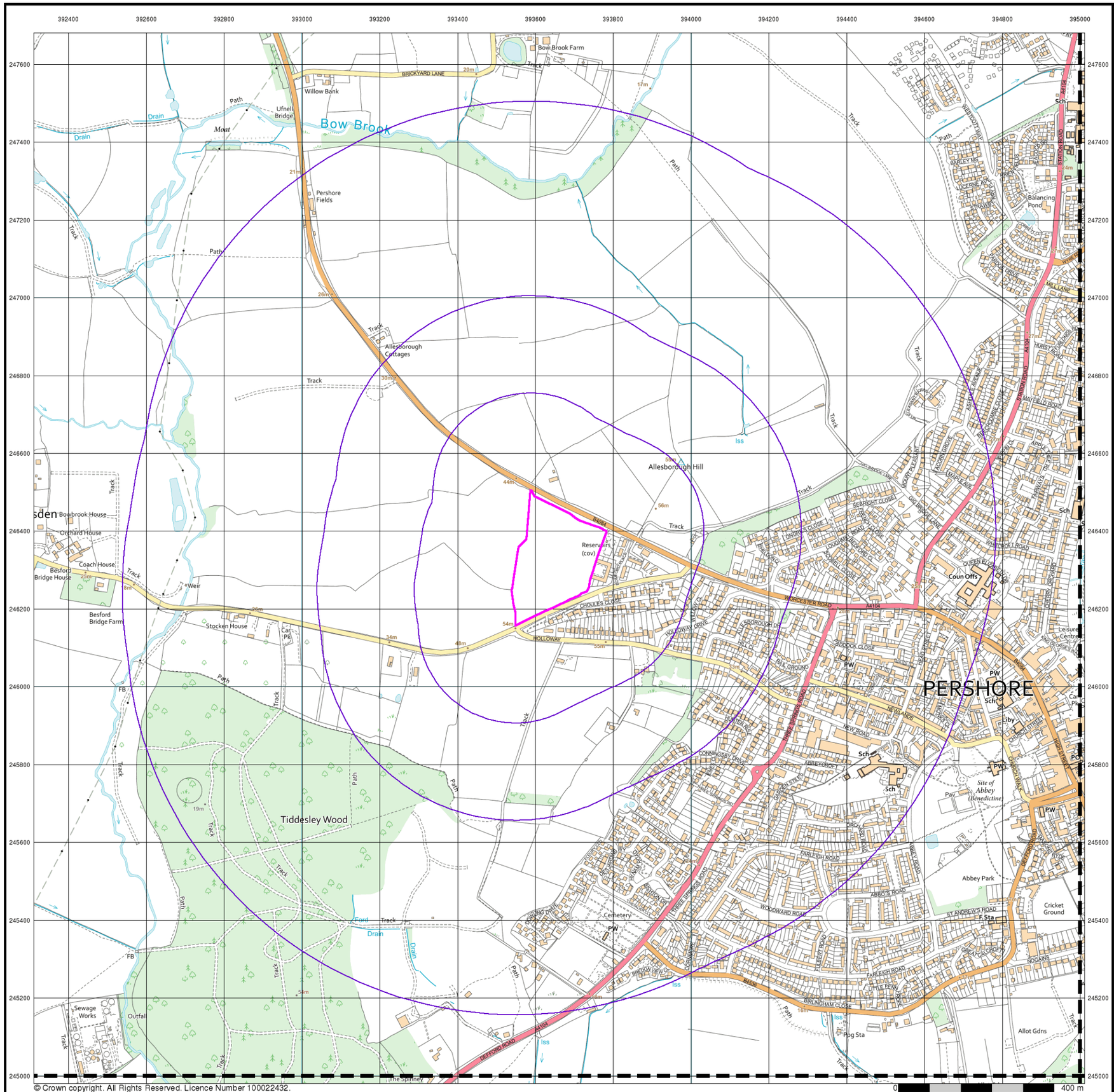
Order Number:	346173013_1_1
Customer Ref:	24135
National Grid Reference:	393640, 246330
Slice:	A
Site Area (Ha):	4.94
Search Buffer (m):	1000

Site Details

Rebecca Road, PERSHORE

Landmark® INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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VectorMap Local

Published 2024

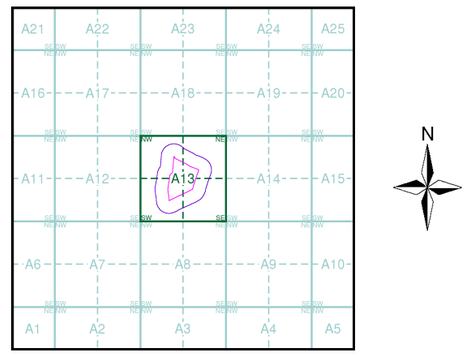
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SO94NW 2024 Variable	SO94NE 2024 Variable
SO94SW 2024 Variable	SO94SE 2024 Variable

Historical Map - Slice A



Order Details

Order Number:	346173013_1_1
Customer Ref:	24135
National Grid Reference:	393640, 246330
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Site Area (Ha):	4.94
Search Buffer (m):	1000

Site Details

Rebecca Road, PERSHORE

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APPENDIX C
BGS RADON REPORT

GeoReports

British Geological Survey

Mark Gill
Woolley Pritchard & Co
Varney House
91 Spon Lane
West Bromwich
B70 6AB

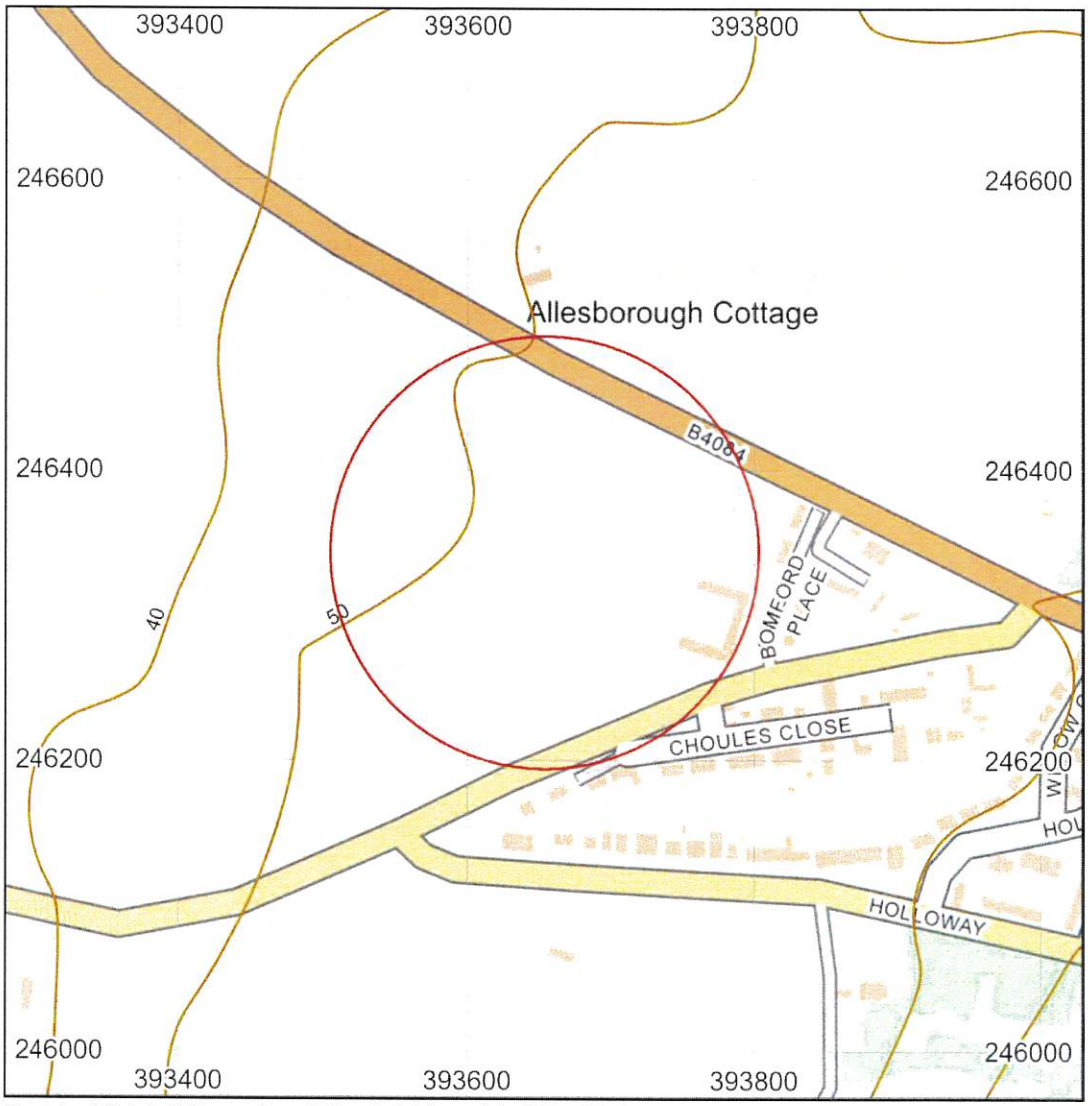
Radon Report

Advisory report on the requirement for radon protective measures in new buildings, conversions and extensions to existing buildings. The report also indicates whether a site is located within a radon Affected Area

Report Id: *BGS_338268/54001*

Client reference: 24135

Search location



Contains OS data © Crown Copyright and database right 2024. OS OpenMap Local: Scale: 1:5 000 (1cm = 50 m)
Search location indicated in red

Area centred at: 393654,246343
Radius of site area: 149 metres

Radon Report: UK

When extensions are made to existing buildings in high radon areas, or new buildings are constructed in these areas, the Building Regulations for England, Wales, Scotland and Northern Ireland require that protective measures are taken against radon entering the building.

This report provides information on whether radon protective measures are required. Depending on the probability of buildings having high radon levels, the Regulations may require either:

1. No protective measures
2. Basic protective measures
3. Full protective measures

This is an advisory report on the requirement for radon protective measures in new buildings, conversions and extensions. The report also indicates whether a site is located within a radon Affected Area

Requirement for radon protective measures

The determination below follows advice in *BR211 Radon: Guidance on protective measures for new buildings (2023 edition), which also provides guidance on what to do if the* result *indicates that protective measures are required.*

Is the property in an area where radon protective measures are required for new buildings or extensions to existing ones as described in publication BR211 (2023 edition) Radon: Guidance on protective measures for new buildings?

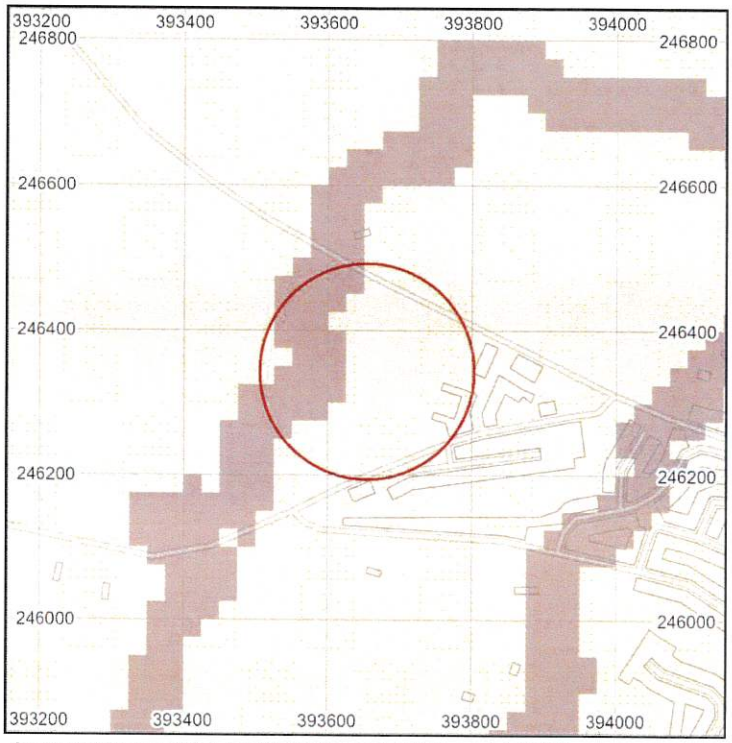
BASIC RADON PROTECTIVE MEASURES ARE REQUIRED FOR THE REPORT AREA.

More details of the protective measures required are available in *BR211 Radon: Guidance on protective measures for new buildings (2023 Edition).*

Whether or not the radon level in a building is above or below the radon Action Level can only be established by having the building tested. The UKHSA provides a radon testing service which can be accessed at www.ukradon.org or by telephone (01235 822622).

If you require further information or guidance, you should contact your local authority building control officer or approved inspector.

Radon Affected Area



	% Homes estimated to be at or above the action level
	0-1%
	1-3%
	3-5%
	5-10%
	10-30%
	30-100%

Scale: 1:10 000 (1cm = 100 m)
Search area indicated in red

Is the property in a radon Affected Area as defined by the UK Health Security Agency (UKHSA) and if so what percentage of homes are estimated to be at or above the Action Level? YES

Additional Information

THE PROPERTY IS IN A RADON AFFECTED AREA WHERE 3 TO 5% OF HOMES ARE ESTIMATED TO BE AT OR ABOVE THE ACTION LEVEL.

The UKHSA recommends a radon 'Action Level' of 200 Becquerels per cubic metre of air (Bq m^{-3}) for the annual average of the radon gas concentration in a home. Where 1% or more of homes are estimated to be at or above the Action Level the area should be regarded as a radon Affected Area.

This report informs you whether the property is in a radon Affected Area and the percentage of homes that are estimated to be at or above the radon Action Level at this location. Being in an Affected Area does not necessarily mean there is a high radon level within the property; the only way to determine the radon level is to carry out a radon measurement.

The UKHSA advises that radon gas should be measured in all properties within radon Affected Areas and that homes with radon levels at or above the Action Level (200 Bq m^{-3}) should be remediated. Householders with levels between the Target Level (100 Bq m^{-3}) and Action Level should seriously consider reducing their radon level, especially if they are at greater risk, such as if they are current or ex smokers. Whether or not a home is in fact above or below the Action Level or Target Level can only be established by having the building tested. The UKHSA provides a validated radon testing service which can be accessed at www.ukradon.org.

The information in this report provides an answer to one of the standard legal enquiries on house purchase in England and Wales, known as Law Society CON29 Enquiries of the Local Authority (2016); 3.14 Radon Gas: Do records indicate that the property is in a "Radon Affected Area" as identified by the UKHSA. The data can also be used to advise house buyers and sellers in Scotland and Northern Ireland.

If you are buying a new build property in a Radon Affected Area, you should ask the builder whether radon protective measures were incorporated in the construction of the property.

If you are buying a currently occupied property in a radon Affected Area, you should ask the present owner whether radon levels have been measured in the property. If they have, ask whether the results were at or above the radon Action Level and if so, whether remedial measures were installed, radon levels were re-tested, and if the results of re-testing confirmed the effectiveness of the measures.

Further information on radon is available from the UKHSA at www.ukradon.org.

What is radon?

Radon is a naturally occurring radioactive gas, which is produced by the radioactive decay of radium which, in turn, is derived from the radioactive decay of uranium. Uranium is found in small quantities in all soils and rocks, although the amount varies from place to place. Radon released from rocks and soils is quickly diluted in the atmosphere. Concentrations in the open air are normally very low and do not present a hazard. Radon that enters enclosed spaces such as some buildings (particularly basements), caves, mines, and tunnels may reach high concentrations in some circumstances. The construction method and degree of ventilation will influence radon levels in individual buildings. A person's exposure to radon will also vary according to how particular buildings and spaces are used.

Inhalation of the radioactive decay products of radon gas increases the chance of developing lung cancer. If individuals are exposed to high concentrations for significant periods of time, there may be cause for concern. In order to limit the risk to individuals, the Government has adopted an Action Level for radon in homes of 200 becquerels per cubic metre (Bq m^{-3}). The Government advises householders that, where the radon level is at or above the Action Level, measures should be taken to reduce the concentration.

Radon in workplaces

The Ionising Radiation Regulations 2017 require employers to take action when radon is present above a defined level in the workplace. Advice may be obtained from your local Health and Safety Executive Area Office or the Environmental Health Department of your local authority. The BRE publishes a guide (BR293)**: Radon in the workplace.** BRE publications may be obtained from the BRE Bookshop, Tel: 01923 664262, email: bookshop@bre.co.uk website: www.brebookshop.com

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Research Avenue South
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Terms and Conditions

General Terms & Conditions

This Report is supplied in accordance with the GeoReports Terms & Conditions available on the BGS website at https://shop.bgs.ac.uk/georeports and also available from the BGS Enquiry Service at the above address.

Important notes about this Report

- The data, information and related records supplied in this Report by BGS can only be indicative and should not be taken as a substitute for specialist interpretations, professional advice and/or detailed site investigations. You must seek professional advice before making technical interpretations on the basis of the materials provided.
- Geological observations and interpretations are made according to the prevailing understanding of the subject at the time. The quality of such observations and interpretations may be affected by the availability of new data, by subsequent advances in knowledge, improved methods of interpretation, and better access to sampling locations.
- Raw data may have been transcribed from analogue to digital format, or may have been acquired by means of automated measuring techniques. Although such processes are subjected to quality control to ensure reliability where possible, some raw data may have been processed without human intervention and may in consequence contain undetected errors.
- Detail, which is clearly defined and accurately depicted on large-scale maps, may be lost when small-scale maps are derived from them.
- Although samples and records are maintained with all reasonable care, there may be some deterioration in the long term.
- The most appropriate techniques for copying original records are used, but there may be some loss of detail and dimensional distortion when such records are copied.
- Data may be compiled from the disparate sources of information at BGS's disposal, including material donated to BGS by third parties, and may not originally have been subject to any verification or other quality control process.
- Data, information and related records, which have been donated to BGS, have been produced for a specific purpose, and that may affect the type and completeness of the data recorded and any interpretation. The nature and purpose of data collection, and the age of the resultant material may render it unsuitable for certain applications/uses. You must verify the suitability of the material for your intended usage.
- If a report or other output is produced for you on the basis of data you have provided to BGS, or your own data input into a BGS system, please do not rely on it as a source of information about other areas or geological features, as the report may omit important details.
- The topography shown on any map extracts is based on the latest OS mapping and is not necessarily the same as that used in the original compilation of the BGS geological map, and to which the geological linework available at that time was fitted.
- Note that for some sites, the latest available records may be historical in nature, and while every effort is made to place the analysis in a modern geological context, it is possible in some cases that the detailed geology at a site may differ from that described.

Report issued by
BGS Enquiry Service

APPENDIX D
ENVIROCHECK SUPPORTING INFORMATION

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
346173013_1_1

Customer Reference:
24135

National Grid Reference:
393640, 246330

Slice:
A

Site Area (Ha):
4.94

Search Buffer (m):
1000

Site Details:

Rebecca Road
PERSHORE

Client Details:

Mr M Gill
Georisk Management Limited
Varney House
91 Spon Lane
West Bromwich
B70 6AB

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LANDMARK INFORMATION GROUP®

Contents

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 2			11	1
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls	pg 5				1
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 5				4
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 6			Yes	
Pollution Incidents to Controlled Waters	pg 6				3
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality	pg 6				2
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points	pg 7				1
Substantiated Pollution Incident Register					
Water Abstractions	pg 7		2		14 (*37)
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 21	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk			n/a	n/a	n/a
Groundwater Vulnerability - Local Information			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 21	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 21	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 21			7	24

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 26	2	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)					
Potentially Infilled Land (Water)	pg 26	1	5	2	1
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 27	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 27	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites					
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 30	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 30	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 30	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 30	Yes		n/a	n/a
Radon Potential - Radon Affected Areas	pg 31	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures	pg 31	Yes	n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 32			3	36
Fuel Station Entries	pg 35				2
Points of Interest - Commercial Services	pg 35			2	12
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 36		1		9
Points of Interest - Public Infrastructure	pg 37				18
Points of Interest - Recreational and Environmental	pg 39				1
Gas Pipelines					
Underground Electrical Cables					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland	pg 40			1	1
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 40	1			
Ramsar Sites					
Sites of Special Scientific Interest	pg 40			1	
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	0	1	393700 246300
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (N)	0	1	393637 246450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (W)	0	1	393600 246330
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	39	1	393500 246250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (N)	114	1	393650 246600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	115	1	393450 246100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (N)	212	1	393750 246650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	217	1	393400 246000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	222	1	393900 246100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (NE)	234	1	393800 246650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (SE)	237	1	393950 246150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SW (E)	268	1	394000 246200
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SW (E)	284	1	394050 246300
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SE (NE)	321	1	393900 246700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SW (E)	321	1	394100 246330
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SE (N)	323	1	393800 246750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (SE)	339	1	393900 245950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A12NE (NW)	351	1	393250 246600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (SW)	366	1	393350 245850
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (E)	367	1	394150 246350
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A19SW (NE)	371	1	394000 246700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (W)	384	1	393200 246500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (SE)	407	1	393850 245850
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (S)	409	1	393750 245800
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (S)	434	1	393700 245750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (NE)	445	1	394150 246650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (E)	467	1	394250 246400
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (S)	468	1	393650 245700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (W)	478	1	393100 246500
1	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Undefined Or Other Location: Littleworth, Norton, Upton Snodsbury, Whittington, Drakes, Broughton, Defford - Hodge Hill,, Stoulton - Hawbridge, Wick,, Kington, Nogains Pumping Station Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S/17/04268/O Permit Version: 1 Effective Date: 12th March 1957 Issued Date: 12th March 1957 Revocation Date: 5th February 2007 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Not Defined **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	357	2	394000 246009
1	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Undefined Or Other Location: Littleworth, Norton, Upton Snodsbury, Whittington, Drakes, Broughton, Defford - Hodge Hill,, Stoulton - Hawbridge, Wick,, Kington, Nogains Pumping Station Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S/17/04268/O Permit Version: 1 Effective Date: 12th March 1957 Issued Date: 12th March 1957 Revocation Date: 5th February 2007 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Not Defined **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	358	2	394000 246007

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Undefined Or Other Location: Littleworth, Norton, Upton Snodsbury, Whittington, Drakes, Broughton, Defford - Hodge Hill,, Stoulton - Hawbridge, Wick,, Kington, Nogains Pumping Station Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S/17/04268/O Permit Version: 1 Effective Date: 12th March 1957 Issued Date: 12th March 1957 Revocation Date: 5th February 2007 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Not Defined **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	358	2	394000 246008
1	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Undefined Or Other Location: Littleworth, Norton, Upton Snodsbury, Whittington, Drakes, Broughton, Defford - Hodge Hill,, Stoulton - Hawbridge, Wick,, Kington, Nogains Pumping Station Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S/17/04268/O Permit Version: 1 Effective Date: 12th March 1957 Issued Date: 12th March 1957 Revocation Date: 5th February 2007 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Not Defined **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	359	2	394000 246006
1	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Undefined Or Other Location: Littleworth, Norton, Upton Snodsbury, Whittington, Drakes, Broughton, Defford - Hodge Hill,, Stoulton - Hawbridge, Wick,, Kington, Nogains Pumping Station Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S/17/04268/O Permit Version: 1 Effective Date: 12th March 1957 Issued Date: 12th March 1957 Revocation Date: 5th February 2007 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Not Defined **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	360	2	394000 246004
1	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Undefined Or Other Location: Littleworth, Norton, Upton Snodsbury, Whittington, Drakes, Broughton, Defford - Hodge Hill,, Stoulton - Hawbridge, Wick,, Kington, Nogains Pumping Station Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S/17/04268/O Permit Version: 1 Effective Date: 12th March 1957 Issued Date: 12th March 1957 Revocation Date: 5th February 2007 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Not Defined **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	360	2	394000 246005

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Undefined Or Other Location: Littleworth, Norton, Upton Snodsbury, Whittington, Drakes, Broughton, Defford - Hodge Hill,, Stoulton - Hawbridge, Wick,, Kington, Nogains Pumping Station Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S/17/04268/O Permit Version: 1 Effective Date: 12th March 1957 Issued Date: 12th March 1957 Revocation Date: 5th February 2007 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Not Defined **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	361	2	394000 246003
1	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Undefined Or Other Location: Littleworth, Norton, Upton Snodsbury, Whittington, Drakes, Broughton, Defford - Hodge Hill,, Stoulton - Hawbridge, Wick,, Kington, Nogains Pumping Station Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S/17/04268/O Permit Version: 1 Effective Date: 12th March 1957 Issued Date: 12th March 1957 Revocation Date: 5th February 2007 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Not Defined **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	362	2	394000 246001
1	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Undefined Or Other Location: Littleworth, Norton, Upton Snodsbury, Whittington, Drakes, Broughton, Defford - Hodge Hill,, Stoulton - Hawbridge, Wick,, Kington, Nogains Pumping Station Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S/17/04268/O Permit Version: 1 Effective Date: 12th March 1957 Issued Date: 12th March 1957 Revocation Date: 5th February 2007 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Not Defined **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	362	2	394000 246002
1	**Discharge Consents** Operator: Pershore Investments Ltd Property Type: Undefined Or Other Location: Pershore Trading Estate, Pershore, Worcestershire Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S182/2 Permit Version: 1 Effective Date: 28th September 1960 Issued Date: 28th September 1960 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Piddle Brook (Tributary) **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Approximate location provided by supplier	A14SW (SE)	363	2	394000 246000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Severn Trent Water Limited Property Type: Undefined Or Other Location: Littleworth, Norton, Upton Snodsbury, Whittington, Drakes, Broughton, Defford - Hodge Hill,, Stoulton - Hawbridge, Wick,, Kington, Nogains Pumping Station Authority: Environment Agency, Midlands Region Catchment Area: Lower Avon Reference: S/17/04268/O Permit Version: 1 Effective Date: 12th March 1957 Issued Date: 12th March 1957 Revocation Date: 5th February 2007 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Not Defined **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	364	2	394001 246000
2	**Discharge Consents** Operator: Runwell Developments Limited Property Type: WWTW (NOT WATER CO) (NOT STP AT A PRIVATE PREMISES) Location: Wrights Farm, Besford Bridge, Pershore, Worcestershire Authority: Environment Agency, Midlands Region Catchment Area: Bow Brook Catchment Reference: S/19/25545/S Permit Version: 1 Effective Date: 25th October 1999 Issued Date: 25th October 1999 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Bow Brook **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12NW (W)	823	2	392740 246460
3	**Integrated Pollution Controls** Name: Schloetter Company Ltd Location: New Road, PERSHORE, Worcestershire, WR10 1BY Authority: Environment Agency, Midlands Region Permit Reference: AL3132 Dated: 26th November 1993 Process Type: Application since found to be exempt from IPC Description: 4.5 A (C) Inorganic Chemical processes within the Chemical Industry **Status: Application since found to be exempt from IPC** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	689	2	394321 245887
4	**Local Authority Pollution Prevention and Controls** Name: Three Springs Filling Station Location: Three Springs Road, Pershore, Worcestershire, WR10 1HH Authority: Wychavon District Council, Environmental Health Department Permit Reference: WD/E/02/02699/AP Dated: 1st February 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A14SE (E)	623	3	394336 246081
4	**Local Authority Pollution Prevention and Controls** Name: Kcr Garage Location: Three Springs Road, Pershore Authority: Wychavon District Council, Environmental Health Department Permit Reference: WYC/PPC/98/1/10 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A14SE (E)	638	3	394347 246068
5	**Local Authority Pollution Prevention and Controls** Name: Cox's Cars Ltd Location: 33 Three Springs Road, PERSHORE, Worcestershire, WR10 1HR Authority: Wychavon District Council, Environmental Health Department Permit Reference: WD/E/02/02704/AP Dated: 1st February 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A9NW (SE)	674	3	394219 245779

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
6	**Local Authority Pollution Prevention and Controls** Name: Elite Dry Cleaning Location: 134 High Street, Pershore, Wr10 1ea Authority: Wychavon District Council, Environmental Health Department Permit Reference: WYC/PPC/82/1/06 Dated: 1st July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A15SW (E)	985	3	394725 246111
	Nearest Surface Water Feature	A7NE (SW)	346	-	393253 245978
7	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewage Treatment Works Location: Treatment Plant At , Stonebow House , Worcester Road; Peoplet Authority: Environment Agency, Midlands Region Pollutant: Sewage - Septic Tank Effluent Note: Bow Brook; Due To Flood Tank Leaking Solids To Brook; Wildlife Effected; Public Water Supply Effected; Amenity Effected; Other Adverse Effects Incident Date: 11th April 1998 Incident Reference: 2602856 Catchment Area: Severn Catchment : Bow Brook Receiving Water: Watercourse Cause of Incident: Weather Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SW (W)	741	2	392800 246300
8	**Pollution Incidents to Controlled Waters** Property Type: Miscellaneous Premises: Unknown Location: Location Details Not Specified Authority: Environment Agency, Midlands Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Amenity Affected Incident Date: 3rd March 1996 Incident Reference: 2600483 Catchment Area: Severn Catchment : Lower Avon (Below Bidford) Receiving Water: Watercourse Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NE (S)	969	2	393700 245200
9	**Pollution Incidents to Controlled Waters** Property Type: Horticultural Location: Location Details Not Specified Authority: Environment Agency, Midlands Region Pollutant: Miscellaneous - Inert Suspended Solids Note: Amenity Affected Incident Date: 27th July 1996 Incident Reference: 2601645 Catchment Area: Severn Catchment : Bow Brook Receiving Water: Watercourse Cause of Incident: Land Runoff Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A23SW (N)	996	2	393600 247500
	River Quality Name: Bow Bk GQA Grade: River Quality B Reach: A422 Upton Snodsbury To Pershore Stw Estimated Distance (km): 15.4 Flow Rate: Flow less than 1.25 cumecs Flow Type: River Year: 2000	A12NW (W)	842	2	392715 246506
	River Quality Name: Stoulton Bk GQA Grade: River Quality B Reach: Fb At Stoulton To Conf. Bow Bk Estimated Distance (km): 5 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A12NW (W)	936	2	392663 246647

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**River Quality Chemistry Sampling Points** Name: Bow Beck Reach: A422 Upton Snodsbury To Pershore Stw Estimated Distance: 15.40 Objective: Not Supplied Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1993 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1994 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1995 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1996 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1997 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1998 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1999 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2000 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2001 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2002 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2003 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2004 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2005 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2006 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2007 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2008 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2009 GQA Grade: River Quality Chemistry GQA Grade A - Very Good Compliance: Not Supplied	A12SW (W)	861	2	392680 246200
11	**Water Abstractions** Operator: Mr F W Knight Licence Number: 18/54/17/0222 Permit Version: 100 Location: Land At Pershore - Well (1) Authority: Environment Agency, Midlands Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Pershore Authorised Start: 01 March Authorised End: 30 September Permit Start Date: 11th November 1970 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A13SE (S)	127	2	393680 246080

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
12	**Water Abstractions** Operator: Mr F W Knight Licence Number: 18/54/17/0222 Permit Version: 100 Location: Land At Pershore - Well (2) Authority: Environment Agency, Midlands Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Pershore Authorised Start: 01 March Authorised End: 30 September Permit Start Date: 11th November 1970 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8NW (S)	197	2	393560 245960
13	**Water Abstractions** Operator: Mr T J Dufty Licence Number: 18/54/17/03421 Permit Version: Not Supplied Location: Land At Pershore Authority: Environment Agency, Midlands Region Abstraction: Spray Irrigation Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 14 Yearly Rate (m3): 273 Details: Two Wells Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A8SE (SE)	640	2	393930 245630
14	**Water Abstractions** Operator: Mr F W Knight Licence Number: 18/54/17/0221 Permit Version: 100 Location: Land At Pershore - Well Authority: Environment Agency, Midlands Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Pershore Authorised Start: 01 October Authorised End: 31 May Permit Start Date: 22nd June 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A14SE (E)	764	2	394530 246240
15	**Water Abstractions** Operator: M & D Maertens Licence Number: 18/54/19/0139 Permit Version: 102 Location: Walcot Farm, Drake Broughton, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Walcot Farm, Drake Broughton, Worcestershire Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 14th June 2011 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NW (N)	796	2	393590 247300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	**Water Abstractions** Operator: M & D Maertens Licence Number: 18/54/19/0139 Permit Version: 102 Location: Walcot Farm, Drake Broughton, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Walcot Farm, Drake Broughton, Worcestershire Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 14th June 2011 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NW (N)	796	2	393590 247300
15	**Water Abstractions** Operator: M & D Maertens Licence Number: 18/54/19/0139 Permit Version: 101 Location: Walcot Farm, Drake Broughton, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Walcot Farm, Drake Broughton, Worcestershire Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 22nd April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NW (N)	796	2	393590 247300
15	**Water Abstractions** Operator: M & D Maertens Licence Number: 18/54/19/0139 Permit Version: 101 Location: Walcot Farm, Drake Broughton, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Walcot Farm, Drake Broughton, Worcestershire Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 22nd April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NW (N)	796	2	393590 247300
15	**Water Abstractions** Operator: L & A Proctor Licence Number: 18/54/19/0139 Permit Version: 100 Location: Walcot Farm, Drake Broughton, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Walcot Farm, Drake Broughton, Worcestershire Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 28th July 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18NW (N)	796	2	393590 247300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	**Water Abstractions** Operator: L & A Proctor Licence Number: 18/54/19/0139 Permit Version: 100 Location: Walcot Farm, Drake Broughton, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Walcot Farm, Drake Broughton, Worcestershire Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 28th July 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NW (N)	796	2	393590 247300
16	**Water Abstractions** Operator: Sirs Sj & Icke Licence Number: 18/54/19/0050 Permit Version: 102 Location: Drakes Broughton, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Drakes Broughton, Worcestershire Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 31st July 2018 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A23SW (N)	922	2	393370 247400
16	**Water Abstractions** Operator: D J Bury Licence Number: 18/54/19/0050 Permit Version: 101 Location: Drakes Broughton, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Drakes Broughton, Worcestershire Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 23rd January 2018 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A23SW (N)	922	2	393370 247400
16	**Water Abstractions** Operator: W & M Bury Licence Number: 18/54/19/0050 Permit Version: 100 Location: Drakes Broughton, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Drakes Broughton, Worcestershire Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 27th November 1984 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A23SW (N)	922	2	393370 247400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
17	**Water Abstractions** Operator: M & A Evans Licence Number: 18/54/17/0685 Permit Version: 103 Location: Three Springs Nursery, Pershore - Drainage Ditch Authority: Environment Agency, Midlands Region Abstraction: Horticulture And Nurseries: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Three Springs Nursery, Defford Road, Pershore Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 12th July 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A3NE (S)	985	2	393780 245200
17	**Water Abstractions** Operator: A J Trainor & P M Farry Licence Number: 18/54/17/0685 Permit Version: 102 Location: Three Springs Nursery, Pershore - Drainage Ditch Authority: Environment Agency, Midlands Region Abstraction: Horticulture And Nurseries: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Three Springs Nursery, Defford Road, Pershore Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 7th January 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A3NE (S)	985	2	393780 245200
17	**Water Abstractions** Operator: Ms E A Hughes Licence Number: 18/54/17/0685 Permit Version: 101 Location: Three Springs Nursery, Pershore - Drainage Ditch Authority: Environment Agency, Midlands Region Abstraction: Horticulture And Nurseries: Spray Irrigation - Storage Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Three Springs Nursery, Defford Road, Pershore Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 14th May 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A3NE (S)	985	2	393780 245200
	Water Abstractions Operator: P D And D R Barratt Licence Number: 18/54/19/0138 Permit Version: Not Supplied Location: Land Near Pershore Authority: Environment Agency, Midlands Region Abstraction: Spray Irrigation Abstraction Type: Not Supplied Source: Brook Daily Rate (m3): 59 Yearly Rate (m3): 4217 Details: Bow Brook; Status: Revoked; Lapsed Or Cancelled Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11SE (W)	1040	2	392520 246010

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Pershore Bowling Club Licence Number: 18/54/17/0533 /1 Permit Version: Not Supplied Location: Abbey Park Bowling Greens Authority: Environment Agency, Midlands Region Abstraction: Spray Irrigation Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 18 Yearly Rate (m3): 514 Details: Status: Revoked; Lapsed Or Cancelled Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A10NW (SE)	1083	2	394690 245740
	Water Abstractions Operator: Mr Dg Griffin Licence Number: 18/54/19/0134 Permit Version: 103 Location: Besford Bridge Farm, Besford, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Besford Bridge Farm, Besford, Worcestershire Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 17th June 2014 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SE (W)	1271	2	392330 246690
	Water Abstractions Operator: Mr Dg Griffin Licence Number: 18/54/19/0134 Permit Version: 103 Location: Besford Bridge Farm, Besford, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: Agricultural Vegetable Wash Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Besford Bridge Farm Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 17th June 2014 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SE (W)	1271	2	392330 246690
	Water Abstractions Operator: G & G Mauro Licence Number: 18/54/19/0134 Permit Version: 101 Location: Besford Bridge Farm, Besford, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Besford Bridge Farm, Besford, Worcestershire Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 1st April 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SE (W)	1271	2	392330 246690

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: G & G Mauro Licence Number: 18/54/19/0134 Permit Version: 101 Location: Besford Bridge Farm, Besford, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: Agricultural Vegetable Wash Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Besford Bridge Farm Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SE (W)	1271	2	392330 246690
	Water Abstractions Operator: Dmc Salads Licence Number: 18/54/19/0134 Permit Version: 102 Location: Besford Bridge Farm, Besford, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Besford Bridge Farm, Besford, Worcestershire Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SE (W)	1271	2	392330 246690
	Water Abstractions Operator: Dmc Salads Licence Number: 18/54/19/0134 Permit Version: 102 Location: Besford Bridge Farm, Besford, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: Agricultural Vegetable Wash Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Besford Bridge Farm Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2001 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SE (W)	1271	2	392330 246690
	Water Abstractions Operator: G & G Mauro Licence Number: 18/54/19/0134 Permit Version: 100 Location: Besford Bridge Farm, Besford, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Besford Bridge Farm, Besford, Worcestershire Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 14th January 1992 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A16SE (W)	1271	2	392330 246690

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: G & G Mauro Licence Number: 18/54/19/0134 Permit Version: 100 Location: Besford Bridge Farm, Besford, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Besford Bridge Farm, Besford, Worcestershire Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 14th January 1992 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A16SE (W)	1271	2	392330 246690
	Water Abstractions Operator: Mr G A G Perry Licence Number: 18/54/17/0305 Permit Version: 100 Location: Land At Pershore - Well Authority: Environment Agency, Midlands Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Pershore Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 2nd August 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A4NE (SE)	1379	2	394500 245100
	Water Abstractions Operator: Pershore Sports Club Licence Number: 18/54/17/0232 Permit Version: 100 Location: Pershore Sports Club, Pershore - Well Authority: Environment Agency, Midlands Region Abstraction: Sports Grounds/Facilities: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Pershore Sports Club, Pershore Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 27th June 1994 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A10SW (SE)	1386	2	394860 245440
	Water Abstractions Operator: H & R Hudson Licence Number: 18/54/17/0521 Permit Version: 101 Location: Pensham, Pershore, Worcestershire - River Avon Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Manor Farm, Pensham, Pershore, Worcestershire Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 20th June 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A3SE (S)	1402	2	393900 244800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Ryall House Ltd Licence Number: 18/54/17/0521 Permit Version: 100 Location: Pensham, Pershore, Worcestershire - River Avon Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Manor Farm, Pensham, Pershore, Worcestershire Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 31st August 1997 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A3SE (S)	1402	2	393900 244800
	Water Abstractions Operator: Pershore Town Football Club 88 Licence Number: 18/54/17/0678 Permit Version: 100 Location: Pershore Football Club, Worcestershire - River Avon Authority: Environment Agency, Midlands Region Abstraction: Sports Grounds/Facilities: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Pershore Football Club, King Georges Field, Pershore Authorised Start: 01 March Authorised End: 31 October Permit Start Date: 13th September 1991 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A15SE (E)	1464	2	395220 246120
	Water Abstractions Operator: Mrs M-J Bennett Licence Number: 18/54/19/0155 Permit Version: 3 Location: Pershore, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Tyddesley Wood Rifle Range, Pershore. Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 3rd September 2020 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A1NE (SW)	1466	2	392600 245040
	Water Abstractions Operator: Mrs M J Derbyshire Licence Number: 18/54/19/0155 Permit Version: 2 Location: Pershore, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Tyddesley Wood Rifle Range, Pershore. Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 3rd September 2010 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A1NE (SW)	1466	2	392600 245040

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: A J Bennett & Son Licence Number: 18/54/19/0155 Permit Version: 1 Location: Pershore, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Tyddesley Wood Rifle Range, Pershore. Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 20th December 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A1NE (SW)	1466	2	392600 245040
	Water Abstractions Operator: A J Bennett & Son Licence Number: 18/54/17/0647 Permit Version: 100 Location: Pershore, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Tyddesley Wood Rifle Range, Pershore, Worcestershire Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 22nd June 1984 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A1NE (SW)	1466	2	392600 245040
	Water Abstractions Operator: Pershore Town Council Licence Number: 18/54/17/0719/1 Permit Version: 1 Location: King George'S Field, Pershore - River Avon Authority: Environment Agency, Midlands Region Abstraction: Municipal Grounds: Lake And Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At King George'S Field,Pershore - River Avon Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 7th December 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A15SE (E)	1472	2	395200 246000
	Water Abstractions Operator: Pershore Town Council Licence Number: 18/54/17/0719 Permit Version: 1 Location: King George'S Field, Pershore - River Avon Authority: Environment Agency, Midlands Region Abstraction: Municipal Grounds: Lake And Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At King George'S Field,Pershore - River Avon Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 1st April 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A15SE (E)	1472	2	395200 246000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Pershore Town Council Licence Number: Md/054/0017/019 Permit Version: 1 Location: King George'S Field, Pershore - River Avon Authority: Environment Agency, Midlands Region Abstraction: Municipal Grounds: Lake And Pond Throughflow Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At King George'S Field,Pershore - River Avon Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 18th April 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A15SE (E)	1480	2	395209 246002
	Water Abstractions Operator: W & M Bury Licence Number: 18/54/17/0607 Permit Version: 100 Location: Pensham, Pershore, Worcestershire - River Avon Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Manor Farm (Part Of), Pensham, Pershore, Worcestershire Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 13th April 1981 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A4SW (S)	1525	2	394000 244700
	Water Abstractions Operator: K & M Barber Licence Number: 18/54/19/0147 Permit Version: 100 Location: Walcot Farm, Drakes Broughton, Worcestershire-Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Walcot Farm, Drakes Broughton, Worcestershire Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 16th January 1995 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A24NW (N)	1534	2	394040 247970
	Water Abstractions Operator: H & R Hudson Licence Number: Md/054/0017/001 Permit Version: 2 Location: Intake At Pershore Authority: Environment Agency, Midlands Region Abstraction: Production Of Energy: Hydroelectric Power Generation Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 9th November 2015 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A10NE (E)	1553	2	395215 245778

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: H & R Hudson Licence Number: Md/054/0017/001 Permit Version: 1 Location: Intake At Pershore Authority: Environment Agency, Midlands Region Abstraction: Production Of Energy: Hydroelectric Power Generation Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 23rd July 2010 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A10NE (E)	1554	2	395212 245765
	Water Abstractions Operator: Mr G A G Perry Licence Number: 18/54/17/03041 Permit Version: Not Supplied Location: Land At Pershore Authority: Environment Agency, Midlands Region Abstraction: Spray Irrigation Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 175 Yearly Rate (m3): 4705 Details: River Avon Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A4SE (SE)	1607	2	394530 244850
	Water Abstractions Operator: I & W Yates Licence Number: 18/54/19/0071 Permit Version: 101 Location: Lower Farm, Birlingham, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Lower Farm, Birlingham, Worcestershire Authorised Start: 01 March Authorised End: 30 September Permit Start Date: 26th April 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A1SE (SW)	1731	2	392570 244730
	Water Abstractions Operator: Mr A P Palmer Licence Number: 18/54/19/0071 Permit Version: 100 Location: Lower Farm, Birlingham, Worcestershire - Bow Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Lower Farm, Birlingham, Worcestershire Authorised Start: 01 March Authorised End: 30 September Permit Start Date: 18th November 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A1SE (SW)	1731	2	392570 244730

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: H & R Hudson Licence Number: 18/54/17/0278 Permit Version: 100 Location: Wicklands Farm - River Avon Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Wicklands Farm Authorised Start: 01 March Authorised End: 31 October Permit Start Date: 1st September 1992 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(E)	1828	2	395600 246600
	Water Abstractions Operator: H & R Hudson Licence Number: 18/54/17/0151 Permit Version: 100 Location: Wick - River Avon Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Wick Authorised Start: 01 March Authorised End: 31 October Permit Start Date: 4th June 1973 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SE)	1870	2	395400 245400
	Water Abstractions Operator: Pershore Group Of Colleges Licence Number: 18/54/17/0207 Permit Version: 101 Location: Pershore Institute Of Horticulture - River Avon Authority: Environment Agency, Midlands Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Pershore Institute. Of Horticulture Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 27th September 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A5NE (SE)	1925	2	395200 245000
	Water Abstractions Operator: Pershore Group Of Colleges Licence Number: 18/54/17/0207 Permit Version: 101 Location: Pershore Institute Of Horticulture - River Avon Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Pershore Institute Of Horticulture Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 27th September 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A5NE (SE)	1925	2	395200 245000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Pershore & Hindlip College Licence Number: 18/54/17/0207 Permit Version: 100 Location: Pershore Institute Of Horticulture - River Avon Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Pershore Institute Of Horticulture Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 10th May 1997 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5NE (SE)	1925	2	395200 245000
	Water Abstractions Operator: Pershore & Hindlip College Licence Number: 18/54/17/0207 Permit Version: 100 Location: Pershore Institute Of Horticulture - River Avon Authority: Environment Agency, Midlands Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Pershore Institute. Of Horticulture Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 10th May 1997 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5NE (SE)	1925	2	395200 245000
	Water Abstractions Operator: Mr S Dimarco Licence Number: 18/54/17/0648 Permit Version: 100 Location: Pershore, Worcestershire - Piddle Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Wyre Road, Pershore, Worcestershire Authorised Start: 01 March Authorised End: 30 September Permit Start Date: 29th November 1984 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(NE)	1932	2	395550 247180
	Water Abstractions Operator: J & M Keetley Licence Number: 18/54/17/0477 Permit Version: 100 Location: Wyre Piddle, Pershore, Worcestershire - Piddle Brook Authority: Environment Agency, Midlands Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Hurst Farm, Pershore, Worcestershire Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 5th July 1982 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(NE)	1986	2	395600 247200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Combined Classification: Secondary Bedrock Aquifer - Medium Vulnerability Combined Vulnerability: Medium Combined Aquifer: Productive Bedrock Aquifer, No Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Poorly Connected Fractures Dilution: <300 mm/year Baseflow Index: 40-70% Superficial Patchiness: <90% Superficial Thickness: <3m Superficial Recharge: No Data	A13SW (SE)	0	4	393637 246330
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Medium Vulnerability Combined Vulnerability: Medium Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Poorly Connected Fractures Dilution: <300 mm/year Baseflow Index: 40-70% Superficial Patchiness: <90% Superficial Thickness: <3m Superficial Recharge: No Data	A13SE (SE)	0	4	393727 246284
	Groundwater Vulnerability - Soluble Rock Risk None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated	A13SW (SE)	0	4	393637 246330
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13SE (SE)	0	4	393727 246284
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
18	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A14NW (NE)	426	5	394129 246647
19	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A14NW (NE)	434	5	394138 246649

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
20	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A14NW (NE)	436	5	394137 246652
21	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 4.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A14NW (NE)	443	5	394137 246665
22	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 7.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A19SW (NE)	446	5	394138 246669
23	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 10.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A19SW (NE)	446	5	394138 246669
24	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 284.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A19SW (NE)	448	5	394136 246675
25	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 423.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A18SE (NE)	565	5	393974 246933
26	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.1 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A19SW (NE)	576	5	394040 246915
27	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A18NE (N)	701	5	393743 247187
28	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 101.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A18NE (N)	703	5	393742 247190

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
29	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A18NE (N)	792	5	393711 247286
30	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A18NE (N)	793	5	393710 247288
31	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 332.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Bow Brook Catchment Name: Severn Primacy: 1	A18NW (N)	795	5	393623 247299
32	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A18NE (N)	796	5	393681 247295
33	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Bow Brook Catchment Name: Severn Primacy: 1	A18NE (N)	801	5	393691 247298
34	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1550.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Bow Brook Catchment Name: Severn Primacy: 1	A12NW (W)	804	5	392752 246411
35	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1854.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Bow Brook Catchment Name: Severn Primacy: 1	A18NE (N)	805	5	393704 247301
36	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 213.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A7SE (SW)	809	5	393131 245465
37	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 120.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A7SE (S)	827	5	393268 245380

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
38	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A7SE (S)	827	5	393268 245380
39	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 491.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Bow Brook Catchment Name: Severn Primacy: 1	A23SW (N)	909	5	393355 247383
40	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 494.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Bow Brook Catchment Name: Severn Primacy: 1	A12NW (W)	912	5	392669 246628
41	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 64.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A23SW (N)	917	5	393400 247401
42	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.7 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A2NE (S)	921	5	393303 245270
43	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 56.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A2NE (S)	922	5	393304 245269
44	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1238.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A12NW (W)	927	5	392669 246628
45	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A23SW (N)	973	5	393416 247462
46	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 108.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A23SW (N)	978	5	393419 247468

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
47	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A3NW (S)	981	5	393382 245191
48	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 476.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Severn Primacy: 1	A3NE (S)	982	5	393910 245244

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: Wychavon District Council - Has supplied landfill data		0	3	393637 246330
	Local Authority Landfill Coverage Name: Worcestershire County Council - Has supplied landfill data		0	6	393637 246330
49	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A13NE (NE)	0	-	393691 246357
50	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A13SE (E)	46	-	393799 246305
51	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A13SE (E)	132	-	393886 246295
52	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A13NE (NE)	135	-	393816 246533
53	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A13SE (E)	139	-	393885 246269
54	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A13NE (E)	196	-	393975 246358
55	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1954	A18SE (N)	369	-	393711 246852
56	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1954	A14SW (E)	497	-	394267 246285
57	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1905	A14NE (E)	646	-	394427 246449

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Lias Group	A13SW (SE)	0	1	393637 246330
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A13SE (SE)	0	1	393727 246284
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A13SW (SE)	0	1	393637 246330
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (E)	230	1	394000 246321
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A13NE (NE)	241	1	393811 246652
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (SE)	293	1	394000 246127
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A12NE (NW)	363	1	393233 246598

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A9NW (SE)	602	1	394163 245824
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A18NE (N)	611	1	393875 247045
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	717	1	393724 247208
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	732	1	392756 246424
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	768	1	392771 246269
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A17SE (NW)	769	1	393000 247000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NW (N)	790	1	393646 247292
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A12NW (W)	809	1	392747 246411
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	834	1	393796 247312
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A23SW (N)	844	1	393654 247346
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A23SW (N)	869	1	393656 247370
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19NW (NE)	898	1	394250 247166

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A23SE (N)	951	1	393804 247430
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A11NE (W)	978	1	392575 246415
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	393637 246330
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	393637 246330
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	393637 246330
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	393637 246330
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	205	1	393332 246223
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	393637 246330
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	0	1	393727 246284
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	241	1	393811 246652
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	0	1	393603 246336
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	393637 246330
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	111	1	393439 246158

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NE (S)	239	1	393704 245967
	Radon Potential - Radon Affected Areas Affected Area: The property is an Intermediate probability radon area (3 to 5% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	0	1	393625 246330
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	393637 246330
	Radon Potential - Radon Protection Measures Protection Measure: Basic radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	0	1	393625 246330
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	393637 246330

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
58	**Contemporary Trade Directory Entries** Name: L A Lloyd Location: 26, Holloway Drive, Pershore, Worcestershire, WR10 1JL Classification: Refrigerators & Freezers - Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (E)	364	-	394102 246209
59	**Contemporary Trade Directory Entries** Name: Pete'S Motors Location: 1, Hill Close, Pershore, Worcestershire, WR10 1JJ Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (SE)	401	-	394108 246102
60	**Contemporary Trade Directory Entries** Name: Trust-U-Truss Location: 32, Ongrils Close, Pershore, WR10 1QE Classification: Agricultural Merchants **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (E)	486	-	394269 246411
61	**Contemporary Trade Directory Entries** Name: Clarkes Cleaning Co Location: 11, Rail Ground, Pershore, Worcestershire, WR10 1HL Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (SE)	570	-	394274 246064
62	**Contemporary Trade Directory Entries** Name: Lapwing Location: 15, New Road, Pershore, Worcestershire, WR10 1BY Classification: Builders' Merchants **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	630	-	394288 245948
62	**Contemporary Trade Directory Entries** Name: John Knight Location: 15, New Road, Pershore, Worcestershire, WR10 1BY Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	630	-	394288 245948
63	**Contemporary Trade Directory Entries** Name: K C R Garage Ltd Location: Three Springs Road, Pershore, WR10 1HH Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SE (E)	630	-	394336 246059
63	**Contemporary Trade Directory Entries** Name: B P Service Station Location: Three Springs Road, Pershore, Worcestershire, WR10 1HH Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A14SE (E)	633	-	394347 246083
63	**Contemporary Trade Directory Entries** Name: Amerie Garage Location: Three Springs Road, Pershore, Worcestershire, WR10 1HH Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	638	-	394347 246069
63	**Contemporary Trade Directory Entries** Name: B P Service Station Location: Three Springs Filling Station, Three Springs Road, Pershore, Worcestershire, WR10 1HH Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Manually positioned to the address or location	A14SE (E)	641	-	394351 246069
64	**Contemporary Trade Directory Entries** Name: Texaco Location: Three Spring Garage, 33, Three Springs Road, Pershore, Worcestershire, WR10 1HR Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	671	-	394218 245782

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
64	**Contemporary Trade Directory Entries** Name: Select Cars Location: Three Spring Garage, 33, Three Springs Road, Pershore, Worcestershire, WR10 1HR Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	672	-	394206 245769
64	**Contemporary Trade Directory Entries** Name: Chris James Cleaning Location: 2, Garden Stiles, Pershore, Worcestershire, WR10 1JW Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	696	-	394218 245746
65	**Contemporary Trade Directory Entries** Name: Schloetter Co Ltd Location: Abbey Works, New Road, Pershore, Worcestershire, WR10 1BY Classification: Chemical Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	689	-	394321 245887
65	**Contemporary Trade Directory Entries** Name: Schloetter Location: Abbey Works, New Road, Pershore, WR10 1BY Classification: Metal Finishing Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	708	-	394333 245870
65	**Contemporary Trade Directory Entries** Name: Schloetter Company Ltd Location: Abbey Works, New Road, Pershore, WR10 1BY Classification: Chemical Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	708	-	394333 245870
66	**Contemporary Trade Directory Entries** Name: Tuthill Controls Ltd Location: New Road, Pershore, Worcestershire, WR10 1BY Classification: Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	710	-	394368 245930
66	**Contemporary Trade Directory Entries** Name: F U S Industrial Equipment Sales Location: 25, New Road, Pershore, Worcestershire, WR10 1BY Classification: Machinery - Industrial & Commercial **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	748	-	394408 245926
66	**Contemporary Trade Directory Entries** Name: Caring Supplies Location: New Road, Pershore, Worcestershire, WR10 1BY Classification: Disability Equipment - Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	748	-	394408 245926
66	**Contemporary Trade Directory Entries** Name: Mkl Controls Location: New Rd, Pershore, Worcestershire, WR10 1BY Classification: Metal Finishing Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9NE (SE)	770	-	394414 245888
67	**Contemporary Trade Directory Entries** Name: Esso Location: Three Springs Road, Pershore, Worcestershire, WR10 1HR Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A9SW (SE)	743	-	394091 245594
68	**Contemporary Trade Directory Entries** Name: Newlands Cleaning Ltd Location: Newlands, Pershore, Worcestershire, WR10 1BP Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A9NE (SE)	752	-	394440 245988

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
69	**Contemporary Trade Directory Entries** Name: R P Lampshades Location: 22, Abbeycroft, Pershore, WR10 1JQ Classification: Lampshade Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	772	-	394347 245779
70	**Contemporary Trade Directory Entries** Name: Pershore Cemetery Location: Defford Road, Pershore, Worcestershire, WR10 3BX Classification: Cemeteries & Crematoria **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SE (S)	798	-	393815 245405
71	**Contemporary Trade Directory Entries** Name: Broomsticks Cleaning Location: 47a, Newlands, PERSHORE, Worcestershire, WR10 1BP Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	812	-	394486 245940
72	**Contemporary Trade Directory Entries** Name: Normech Services Ltd Location: 2-4, Worcester Road, Pershore, Worcestershire, WR10 1HG Classification: Engineers - General **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	829	-	394584 246183
72	**Contemporary Trade Directory Entries** Name: 16m Llp Location: Bagshaw Ct,Worcester Rd, Pershore, Worcestershire, WR10 1HB Classification: Electrical Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	849	-	394601 246172
72	**Contemporary Trade Directory Entries** Name: T C S Ltd Location: 159, High Street, Pershore, Worcestershire, WR10 1EQ Classification: Cutting Tools & Machinery **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	855	-	394617 246209
73	**Contemporary Trade Directory Entries** Name: Aaid Cleaning Location: 31, Orchard Road, Pershore, Worcestershire, WR10 1LD Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9SW (SE)	835	-	394304 245636
74	**Contemporary Trade Directory Entries** Name: Penn Servicing Location: 33, Farleigh Road, Pershore, Worcestershire, WR10 1LF Classification: Fishing & Angling Equipment - Manufacturers & Distributors **Status: Active** Positional Accuracy: Automatically positioned to the address	A9SW (SE)	861	-	394254 245561
75	**Contemporary Trade Directory Entries** Name: Pershore Conservatory Cleaning Service Location: 67, Farleigh Road, Pershore, Worcestershire, WR10 1JZ Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9SW (SE)	865	-	394079 245451
76	**Contemporary Trade Directory Entries** Name: Acrock Plus Location: New Rd, Pershore, Worcestershire, WR10 1BY Classification: Catering Equipment **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9NE (SE)	865	-	394512 245870
76	**Contemporary Trade Directory Entries** Name: Alan Pattison Location: New Road, Pershore, Worcestershire, WR10 1BY Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	912	-	394549 245842
77	**Contemporary Trade Directory Entries** Name: Hendrys Home Help Location: 16, Orchard Road, Pershore, Worcestershire, WR10 1LD Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (SE)	870	-	394375 245658

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
78	**Contemporary Trade Directory Entries** Name: Pershore Cemetery Location: Cemetery Lodge, Defford Road, Pershore, Worcestershire, WR10 3BX Classification: Cemeteries & Crematoria **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (S)	880	-	393824 245322
79	**Contemporary Trade Directory Entries** Name: Sams Mobile Tyre Services Location: 1, ORCHARD ROAD, PERSHORE, WR10 1LD Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9SE (SE)	960	-	394426 245582
79	**Contemporary Trade Directory Entries** Name: Colin Gardner Services Location: 1, ORCHARD ROAD, PERSHORE, WR10 1LD Classification: Tyre Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A9SE (SE)	960	-	394426 245582
80	**Contemporary Trade Directory Entries** Name: Elite Dry Cleaners Location: 134, High Street, Pershore, Worcestershire, WR10 1EA Classification: Dry Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A15SW (E)	982	-	394723 246115
80	**Contemporary Trade Directory Entries** Name: Hendrick Industrial Equipment Ltd Location: 134, High Street, Pershore, Worcestershire, WR10 1EA Classification: Furnaces **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A15SW (E)	985	-	394725 246111
81	**Fuel Station Entries** Name: Three Springs Filling Station Location: Three Springs Road , , Pershore, Worcestershire, WR10 1HH Brand: BP Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A14SE (E)	633	-	394347 246083
82	**Fuel Station Entries** Name: Three Springs Garage Location: 33, Three Springs Road , , Pershore, Worcestershire, WR10 1HR Brand: Texaco Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A9NW (SE)	674	-	394219 245779
83	**Points of Interest - Commercial Services** Name: Pete's Motors Location: 1 Hill Close, Pershore, WR10 1JJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SW (SE)	401	7	394108 246102
83	**Points of Interest - Commercial Services** Name: Pete's Motors Location: 7 Hill Close, Pershore, WR10 1JJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SW (SE)	447	7	394150 246082
84	**Points of Interest - Commercial Services** Name: Simon Oakey Transport Location: 24 Hunter Rise, Pershore, WR10 1QZ Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A9NW (SE)	506	7	394122 245923
85	**Points of Interest - Commercial Services** Name: K C R Garage Location: Three Springs Road, Pershore, WR10 1HH Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	630	7	394340 246073

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
85	**Points of Interest - Commercial Services** Name: Three Springs Filling Station Location: Three, Springs Road, Pershore, WR10 1HH Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A14SE (E)	633	7	394347 246083
85	**Points of Interest - Commercial Services** Name: B P Car Wash Location: Three Springs Road, Pershore, WR10 1HH Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A14SE (E)	633	7	394347 246083
85	**Points of Interest - Commercial Services** Name: K C R Garage Ltd Location: Three Springs Road, Pershore, WR10 1HH Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	640	7	394349 246066
85	**Points of Interest - Commercial Services** Name: Car Wash Location: Three Springs Road, Pershore, WR10 1HH Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A14SE (E)	641	7	394351 246069
86	**Points of Interest - Commercial Services** Name: Cox's Cars Ltd Location: Three Spring Garage 33, Three Springs Road, Pershore, WR10 1HR Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A9NW (SE)	672	7	394206 245769
86	**Points of Interest - Commercial Services** Name: Cox's Cars Ltd Location: Three Spring Garage 33, Three Springs Road, Pershore, WR10 1HR Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A9NW (SE)	672	7	394206 245769
86	**Points of Interest - Commercial Services** Name: Three Springs Garage Location: Three Springs Filling Station, Three Springs Road, Pershore, WR10 1HH Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A9NW (SE)	674	7	394219 245779
86	**Points of Interest - Commercial Services** Name: Car Wash Location: 33 Three Springs Road, Pershore, WR10 1HR Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A9NW (SE)	674	7	394219 245779
87	**Points of Interest - Commercial Services** Name: Alan Pattison Location: New Road, Pershore, WR10 1BY Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A9NE (SE)	912	7	394549 245842
87	**Points of Interest - Commercial Services** Name: Alan Pattison Location: New Road, Pershore, WR10 1BY Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A9NE (SE)	912	7	394549 245842
88	**Points of Interest - Manufacturing and Production** Name: P J A Bomford Location: Allesborough Farm, Allesborough Hill, Pershore, WR10 2AB Category: Farming Class Code: Livestock Farming Positional Accuracy: Positioned to address or location	A13NE (E)	113	7	393884 246344
89	**Points of Interest - Manufacturing and Production** Name: Factory Location: WR10 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to address or location	A9NW (SE)	684	7	394325 245904

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
89	**Points of Interest - Manufacturing and Production** Name: Factory Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	693	7	394316 245872
90	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A9NE (SE)	744	7	394406 245929
90	**Points of Interest - Manufacturing and Production** Name: Works Location: WR10 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A9NE (SE)	746	7	394408 245928
90	**Points of Interest - Manufacturing and Production** Name: Works Location: WR10 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A9NE (SE)	760	7	394433 245950
91	**Points of Interest - Manufacturing and Production** Name: R Elmes Location: Defford Road, Pershore, WR10 3BX Category: Farming Class Code: Livestock Farming Positional Accuracy: Positioned to address or location	A8SW (S)	797	7	393656 245367
91	**Points of Interest - Manufacturing and Production** Name: P J & R Elmes Location: Cemetery Farm, Defford Road, Pershore, WR10 3BX Category: Farming Class Code: Livestock Farming Positional Accuracy: Positioned to address or location	A8SW (S)	797	7	393658 245368
91	**Points of Interest - Manufacturing and Production** Name: R Elmes Location: Cemetery Farm, Defford Road, Pershore, WR10 3BX Category: Farming Class Code: Livestock Farming Positional Accuracy: Positioned to address or location	A8SW (S)	797	7	393658 245368
92	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A9NE (SE)	905	7	394556 245869
93	**Points of Interest - Public Infrastructure** Name: BP Service Station Location: Three Springs Road, Pershore, WR10 1HH Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14SE (E)	633	7	394347 246083
93	**Points of Interest - Public Infrastructure** Name: Three Springs Filling Station Location: Three Springs Road, Pershore, WR10 1HH Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14SE (E)	633	7	394347 246083
93	**Points of Interest - Public Infrastructure** Name: Three Springs Service Station Location: Three Springs Road, Pershore, WR10 1HH Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14SE (E)	638	7	394347 246068
93	**Points of Interest - Public Infrastructure** Name: BP Service Station Location: Three Springs Road, Pershore, WR10 1HH Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14SE (E)	641	7	394351 246069

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
94	**Points of Interest - Public Infrastructure** Name: Three Springs Filling Station Location: Three Spring Garage, 33, Three Springs Road, Pershore, Worcestershire, WR10 1HR Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A9NW (SE)	672	7	394206 245769
94	**Points of Interest - Public Infrastructure** Name: Coxs Cars Ltd Location: Three Spring Garage 33, Three Springs Road, Pershore, WR10 1HR Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A9NW (SE)	672	7	394206 245769
94	**Points of Interest - Public Infrastructure** Name: Esso Location: Three Springs Filling Station, Three Springs Road, Pershore, WR10 1HH Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A9NW (SE)	674	7	394219 245779
94	**Points of Interest - Public Infrastructure** Name: Coxs Cars Ltd Location: 33 Three Springs Road, Pershore, WR10 1HR Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A9NW (SE)	674	7	394219 245779
95	**Points of Interest - Public Infrastructure** Name: Pershore Cemetery Location: Defford Road, Pershore, WR10 3BX Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to address or location	A8SW (S)	797	7	393656 245367
95	**Points of Interest - Public Infrastructure** Name: Pershore Cemetery Location: Defford Road, Pershore, WR10 3BX Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to address or location	A8SW (S)	797	7	393656 245367
95	**Points of Interest - Public Infrastructure** Name: Cemetery Location: WR10 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A8SE (S)	804	7	393680 245364
96	**Points of Interest - Public Infrastructure** Name: Pershore Cemetery Location: Defford Road, Pershore, WR10 3BX Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to address or location	A8SE (S)	799	7	393815 245404
96	**Points of Interest - Public Infrastructure** Name: Cemetery Location: WR10 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A8SE (S)	807	7	393819 245396
96	**Points of Interest - Public Infrastructure** Name: Cemetery Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A8SE (S)	808	7	393816 245394
97	**Points of Interest - Public Infrastructure** Name: Weir Location: WR10 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12SW (W)	845	7	392694 246246
97	**Points of Interest - Public Infrastructure** Name: Weir Location: WR10 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12SW (W)	845	7	392694 246246

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
98	**Points of Interest - Public Infrastructure** Name: Pershore Cemetery Location: WR10 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A3NE (S)	895	7	393735 245282
99	**Points of Interest - Public Infrastructure** Name: Pershore Police Station Location: Queen Elizabeth Drive, Pershore, WR10 1PT Category: Central and Local Government Class Code: Police Stations Positional Accuracy: Positioned to address or location	A14SE (E)	898	7	394662 246216
100	**Points of Interest - Recreational and Environmental** Name: Play Area Location: WR10 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A8SE (S)	713	7	393880 245526

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
101	**Ancient Woodland** Name: Tyddesley Wood Reference: 1107120 Area(m²): 579077.77 Type: Ancient and Semi-Natural Woodland	A8NW (SW)	419	8	393361 245783
102	**Ancient Woodland** Name: Tyddesley Wood Reference: 1107120 Area(m²): 211502.14 Type: Plantation on Ancient Woodland	A7SE (SW)	846	8	393133 245421
103	**Nitrate Vulnerable Zones** Name: River Avon (To Confluence With River Severn) Nvz Description: Surface Water Source: Environment Agency, Head Office	A13SW (SE)	0	4	393637 246330
104	**Sites of Special Scientific Interest** Name: Tiddesley Wood Multiple Areas: N Total Area (m2): 808595.72 Source: Natural England Reference: 1003066 Designation Details: Site Of Special Scientific Interest Designation Date: 11th July 1986 Date Type: Notified	A8NW (SW)	420	8	393363 245781

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Environment Agency - Head Office	November 2023	Annually
Malvern Hills District Council - Environmental Health Department	October 2017	Annual Rolling Update
Wychavon District Council - Environmental Health Department	September 2017	Annual Rolling Update
Discharge Consents		
Environment Agency - Midlands Region	April 2024	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Midlands Region	March 2013	
Integrated Pollution Controls		
Environment Agency - Midlands Region	January 2009	
Integrated Pollution Prevention And Control		
Environment Agency - Midlands Region	October 2023	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Malvern Hills District Council - Environmental Health Department	December 2020	Variable
Wychavon District Council - Environmental Health Department	December 2020	Variable
Local Authority Pollution Prevention and Controls		
Malvern Hills District Council - Environmental Health Department	December 2020	Annual Rolling Update
Wychavon District Council - Environmental Health Department	December 2020	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Malvern Hills District Council - Environmental Health Department	January 2015	Variable
Wychavon District Council - Environmental Health Department	January 2015	Variable
Nearest Surface Water Feature		
Ordnance Survey	March 2024	
Pollution Incidents to Controlled Waters		
Environment Agency - Midlands Region	December 1999	
Prosecutions Relating to Authorised Processes		
Environment Agency - Midlands Region	July 2015	
Prosecutions Relating to Controlled Waters		
Environment Agency - Midlands Region	March 2013	
Registered Radioactive Substances		
Environment Agency - Midlands Region	June 2016	As notified
Environment Agency - Head Office	May 2023	Quarterly
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	April 2012	
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	April 2012	
Substantiated Pollution Incident Register		
Environment Agency - Midlands Region - Lower Severn Area	April 2024	Quarterly
Environment Agency - Midlands Region - Upper Severn Area	April 2024	Quarterly
Environment Agency - Midlands Region - West Area	April 2024	Quarterly
Water Abstractions		
Environment Agency - Midlands Region	April 2024	Quarterly
Water Industry Act Referrals		
Environment Agency - Midlands Region	October 2017	
Groundwater Vulnerability Map		
Environment Agency - Head Office	June 2018	As notified
Groundwater Vulnerability - Soluble Rock Risk		
Environment Agency - Head Office	June 2018	As notified

Agency & Hydrological	Version	Update Cycle
Bedrock Aquifer Designations Environment Agency - Head Office	January 2018	As notified
Superficial Aquifer Designations Environment Agency - Head Office	January 2018	As notified
Source Protection Zones Environment Agency - Head Office	September 2022	Bi-Annually
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	December 2023	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	December 2023	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	February 2023	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	January 2024	Quarterly
Flood Defences Environment Agency - Head Office	August 2022	Quarterly
OS Water Network Lines Ordnance Survey	April 2024	Quarterly
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	May 2018	Annually
Surface Water Suitability Environment Agency - Head Office	February 2016	Annually
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	November 2002	As notified
Historical Landfill Sites		
Environment Agency - Head Office	July 2023	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Midlands Region	January 2009	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - Midlands Region - Lower Severn Area	January 2024	Quarterly
Environment Agency - Midlands Region - Upper Severn Area	January 2024	Quarterly
Environment Agency - Midlands Region - West Area	January 2024	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - Midlands Region - Lower Severn Area	January 2023	Quarterly
Environment Agency - Midlands Region - Upper Severn Area	January 2023	Quarterly
Environment Agency - Midlands Region - West Area	January 2023	Quarterly
Local Authority Landfill Coverage		
Malvern Hills District Council - Environmental	February 2003	Not Applicable
Worcestershire County Council	February 2003	Not Applicable
Wychavon District Council - Environmental Health Department	February 2003	Not Applicable
Local Authority Recorded Landfill Sites		
Malvern Hills District Council - Environmental	October 2018	
Worcestershire County Council	October 2018	
Wychavon District Council - Environmental Health Department	October 2018	
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	
Registered Landfill Sites		
Environment Agency - Midlands Region - Lower Severn Area	March 2006	Not Applicable
Environment Agency - Midlands Region - Upper Severn Area	March 2006	Not Applicable
Environment Agency - Midlands Region - West Area	March 2006	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - Midlands Region - Lower Severn Area	April 2018	
Environment Agency - Midlands Region - Upper Severn Area	April 2018	
Environment Agency - Midlands Region - West Area	April 2018	
Registered Waste Treatment or Disposal Sites		
Environment Agency - Midlands Region - Lower Severn Area	June 2015	
Environment Agency - Midlands Region - Upper Severn Area	June 2015	
Environment Agency - Midlands Region - West Area	June 2015	

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	January 2024	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	August 2001	
Planning Hazardous Substance Enforcements		
Malvern Hills District Council - Environmental	April 2015	Variable
Worcestershire County Council	February 2016	Variable
Wychavon District Council	March 2023	Variable
Planning Hazardous Substance Consents		
Malvern Hills District Council - Environmental	April 2015	Variable
Worcestershire County Council	February 2016	Variable
Wychavon District Council	February 2016	Variable

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology		
British Geological Survey - National Geoscience Information Service	January 2009	As notified
BGS Estimated Soil Chemistry		
British Geological Survey - National Geoscience Information Service	December 2015	As notified
BGS Recorded Mineral Sites		
British Geological Survey - National Geoscience Information Service	January 2024	Bi-Annually
CBSCB Compensation District		
Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	
Cheshire Brine Subsidence Compensation Board (CBSCB)	November 2020	As notified
Coal Mining Affected Areas		
The Coal Authority - Property Searches	February 2023	Annual Rolling Update
Mining Instability		
Ove Arup & Partners	June 1998	Not Applicable
Non Coal Mining Areas of Great Britain		
British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	January 2019	As notified
Radon Potential - Radon Affected Areas		
British Geological Survey - National Geoscience Information Service	October 2023	Annually
Radon Potential - Radon Protection Measures		
British Geological Survey - National Geoscience Information Service	October 2023	Annually

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	April 2024	Quarterly
Fuel Station Entries Catalist Ltd - Experian	February 2024	Quarterly
Gas Pipelines National Grid	October 2021	Bi-Annually
Points of Interest - Commercial Services PointX	March 2024	Quarterly
Points of Interest - Education and Health PointX	March 2024	Quarterly
Points of Interest - Manufacturing and Production PointX	March 2024	Quarterly
Points of Interest - Public Infrastructure PointX	March 2024	Quarterly
Points of Interest - Recreational and Environmental PointX	March 2024	Quarterly
Underground Electrical Cables National Grid	January 2024	Bi-Annually

Data Currency

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural England	April 2024	Bi-Annually
Areas of Adopted Green Belt		
Malvern Hills District Council	February 2024	Quarterly
Wychavon District Council	February 2024	Quarterly
Areas of Unadopted Green Belt		
Malvern Hills District Council	February 2024	Quarterly
Wychavon District Council	February 2024	Quarterly
Areas of Outstanding Natural Beauty		
Natural England	November 2023	Bi-Annually
Environmentally Sensitive Areas		
Natural England	August 2023	
Forest Parks		
Forestry Commission	May 2023	Not Applicable
Local Nature Reserves		
Natural England	February 2024	Bi-Annually
Marine Nature Reserves		
Natural England	February 2024	Bi-Annually
National Nature Reserves		
Natural England	February 2024	Bi-Annually
National Parks		
Natural England	February 2018	Bi-Annually
Nitrate Sensitive Areas		
Natural England	April 2023	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	April 2016	
Environment Agency - Head Office	April 2024	Bi-Annually
Ramsar Sites		
Natural England	February 2024	Bi-Annually
Sites of Special Scientific Interest		
Natural England	April 2024	Bi-Annually
Special Areas of Conservation		
Natural England	April 2024	Bi-Annually
Special Protection Areas		
Natural England	April 2024	Bi-Annually

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Stantec UK Ltd	

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Wychavon District Council - Environmental Health Department** Civic Centre, Queen Elizabeth Drive, Station Road, Pershore, Worcestershire, WR10 1PT	Telephone: 01386 565000 Fax: 01386 561092 Website: www.wychavon.gov.uk
4	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
5	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
6	**Worcestershire County Council** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 01905 763763 Fax: 01905 763000 Website: www.worcestershire.gov.uk
7	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
8	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

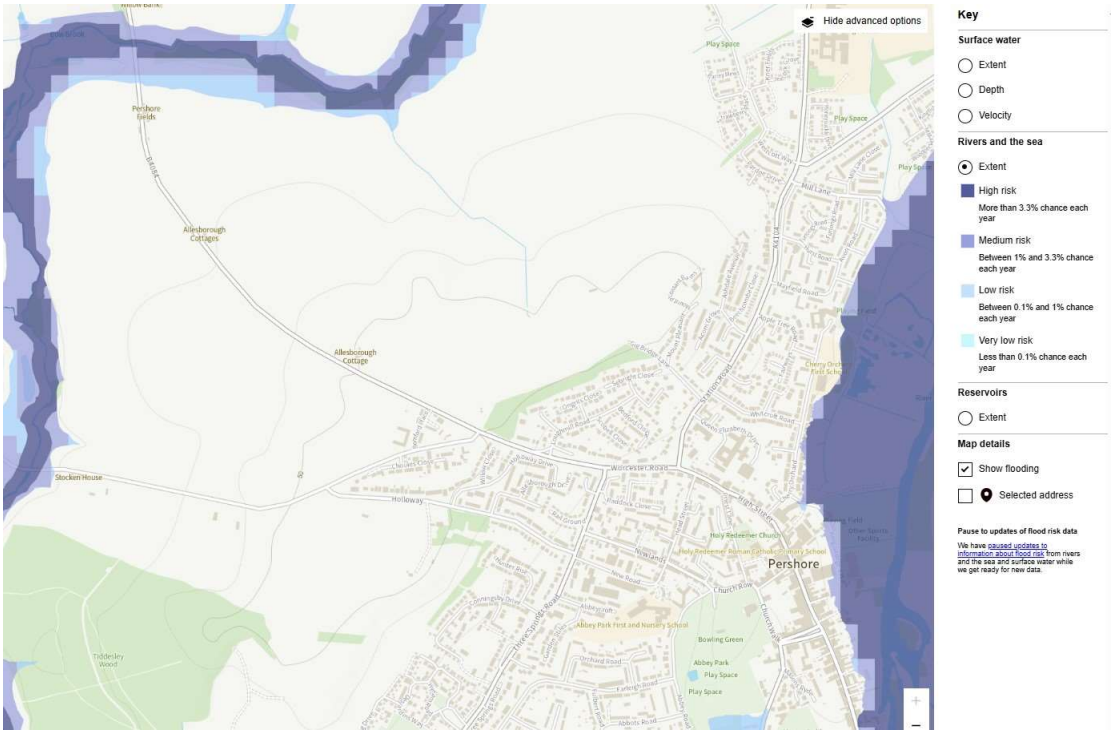
Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.

APPENDIX C – Illustrative Site Layout

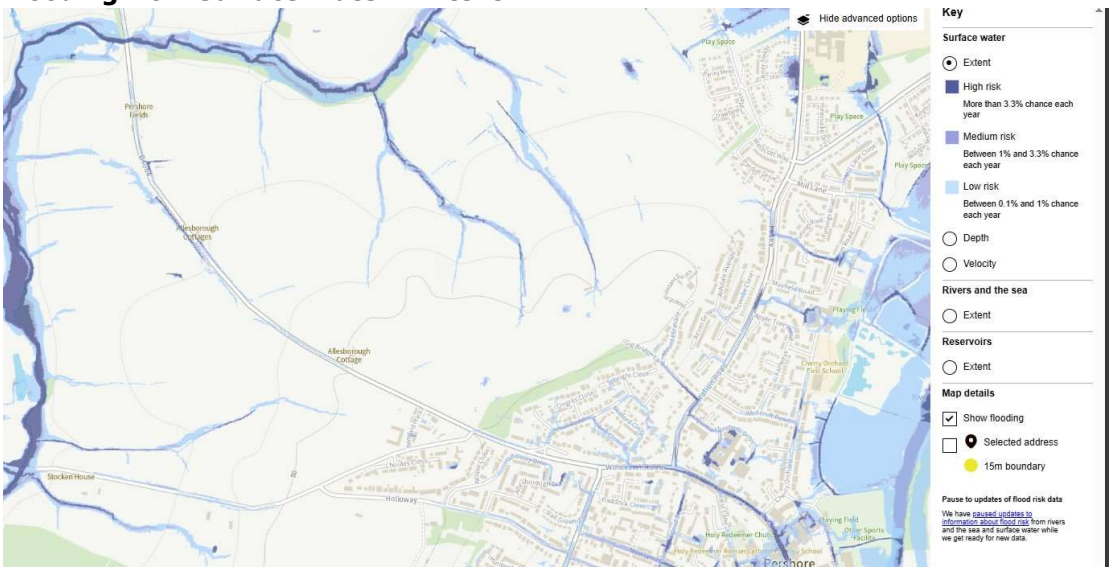

Reservoirs (covered)
Allesborough Court
CHOUL
VIEW THROUGH TO LISTED BUILDING
WOODLAND TRIM TRAIL
SWALE
SWALE
NEW TREE PLANTING WOODLAND
POTENTIAL 30m BADGER OFFSET
NEW TREE / HEDGE PLANTING WOODLAND
33 to 38
LB
53.6m

APPENDIX D – EA Flood Mapping Information

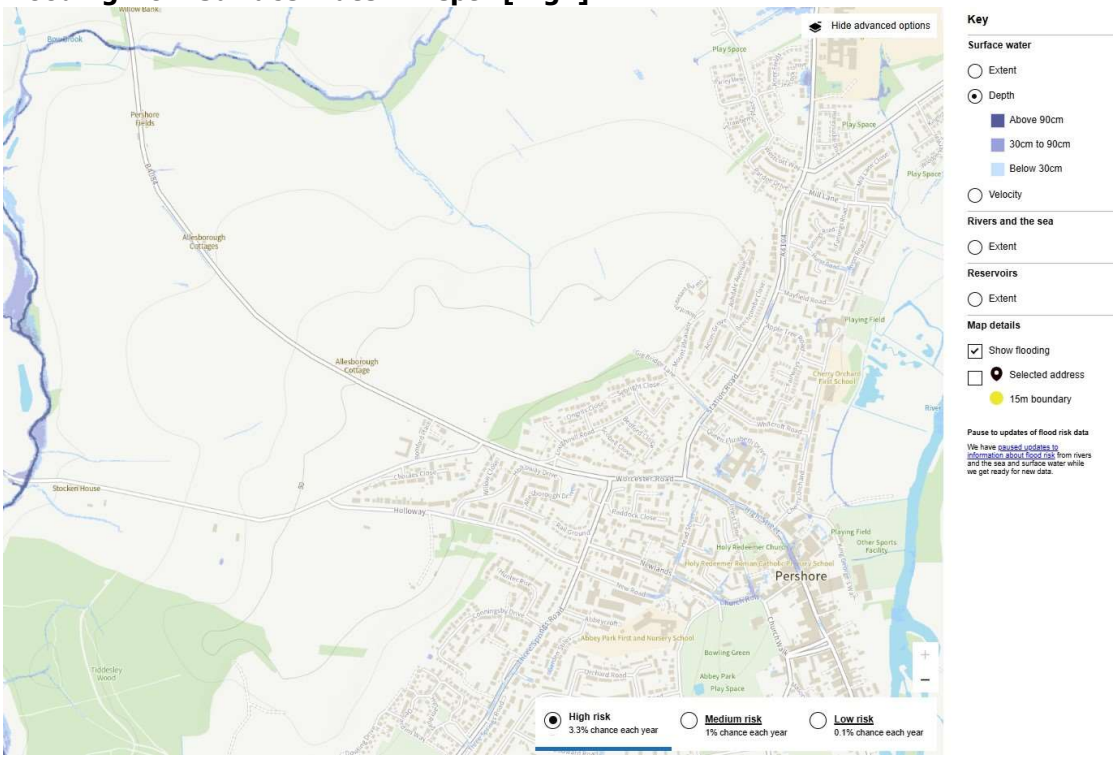
Flooding from Rivers & Seas



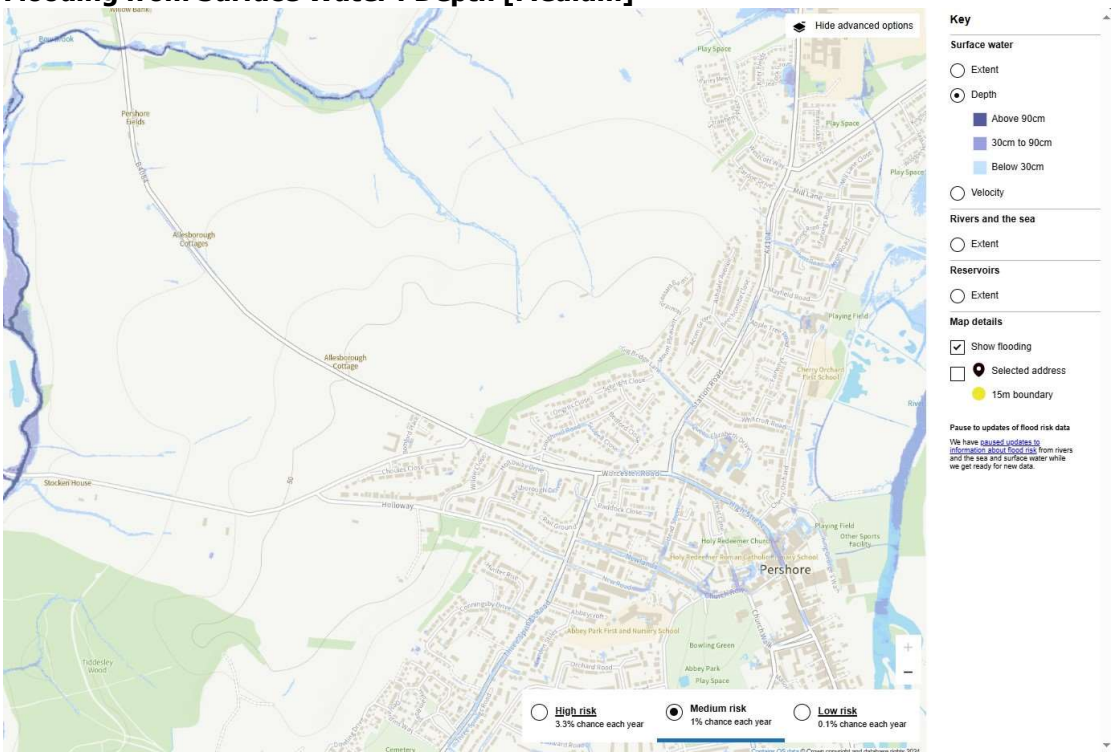
Flooding from Surface Water : Extent



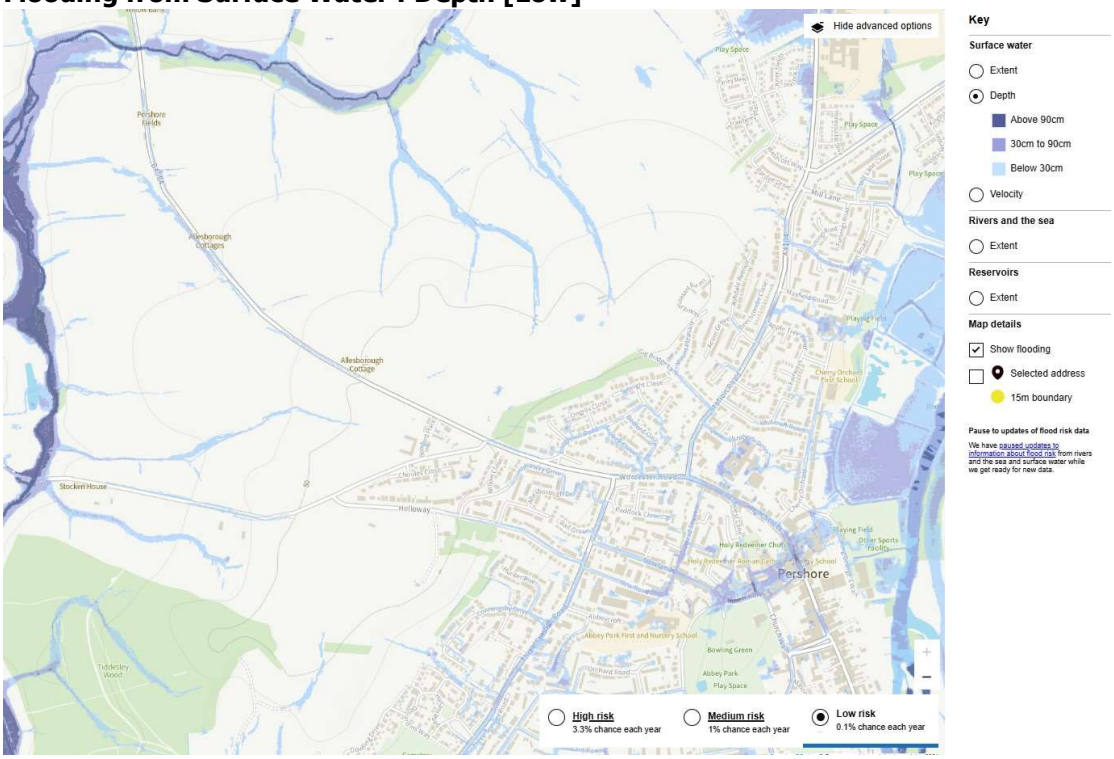
Flooding from Surface Water : Depth [High]



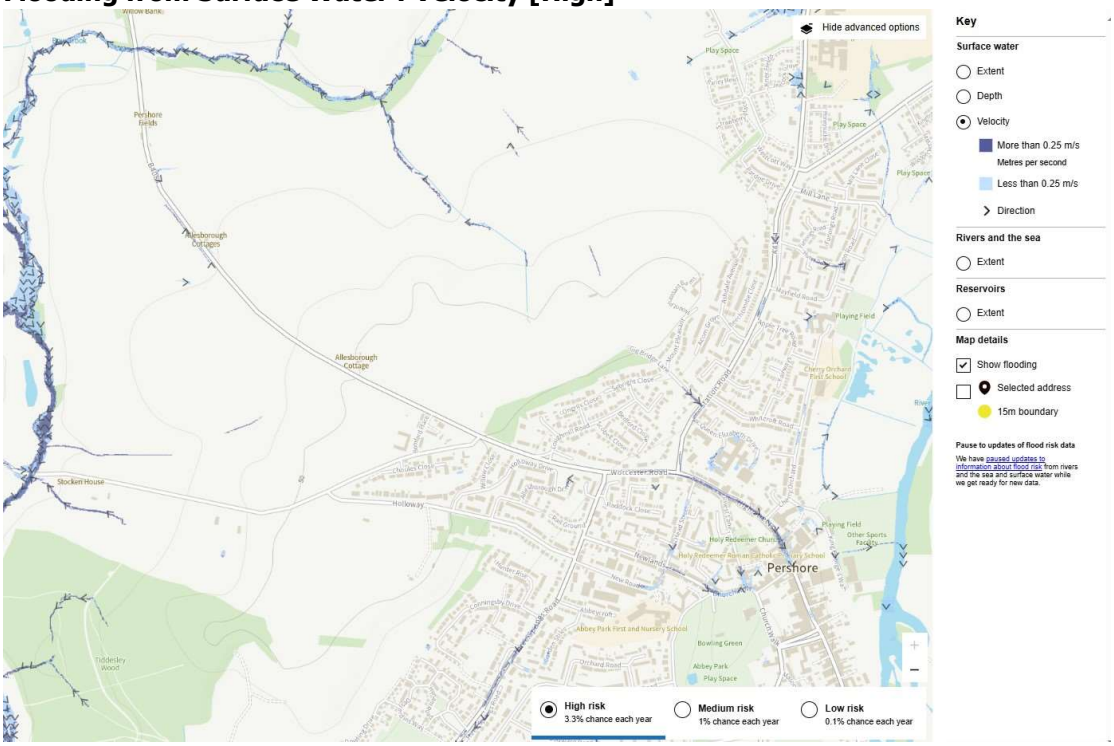
Flooding from Surface Water : Depth [Medium]



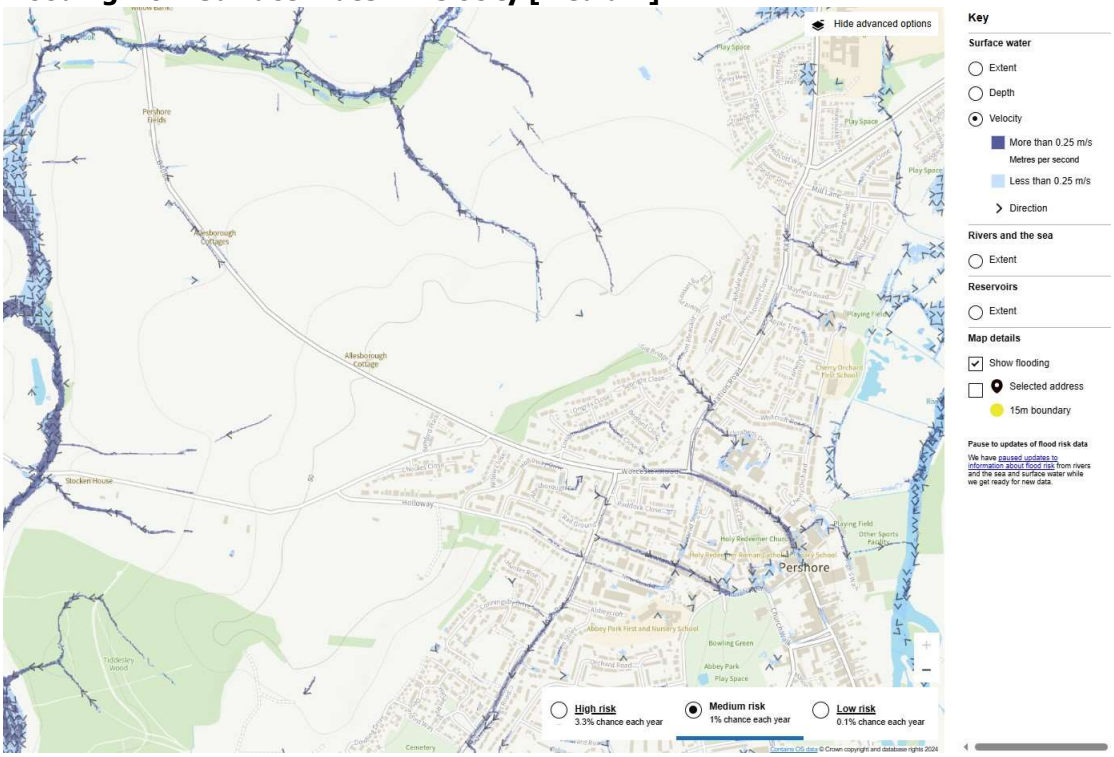
Flooding from Surface Water : Depth [Low]



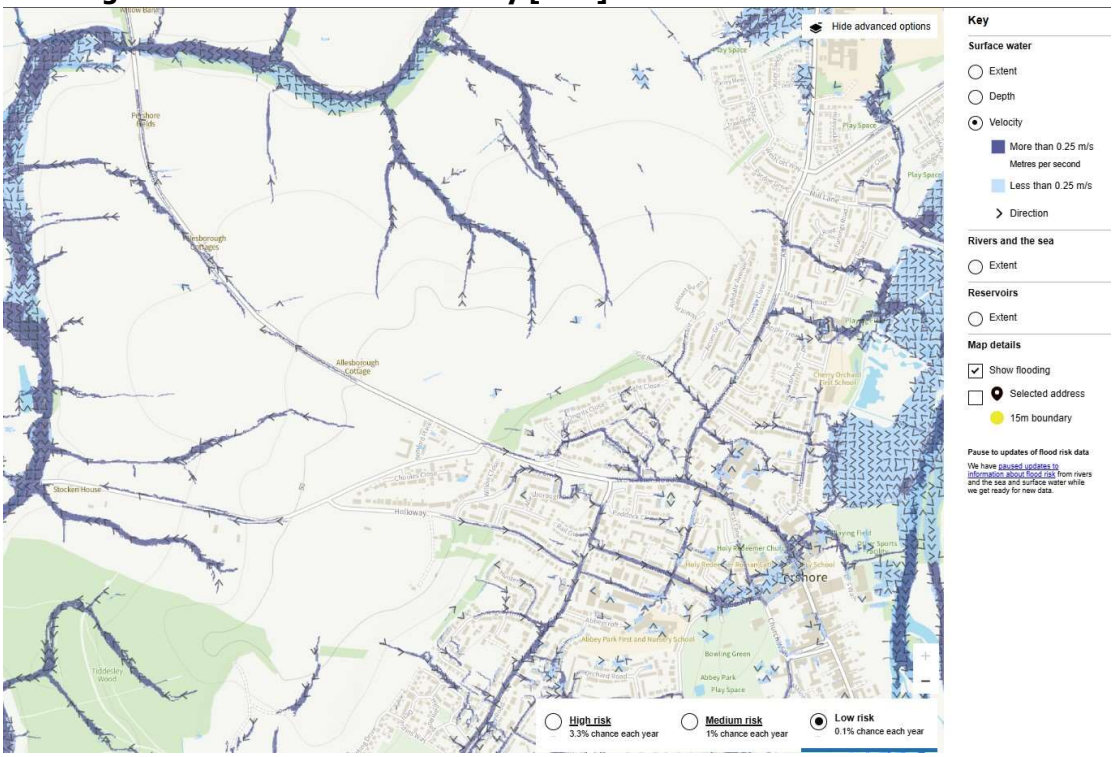
Flooding from Surface Water : Velocity [High]



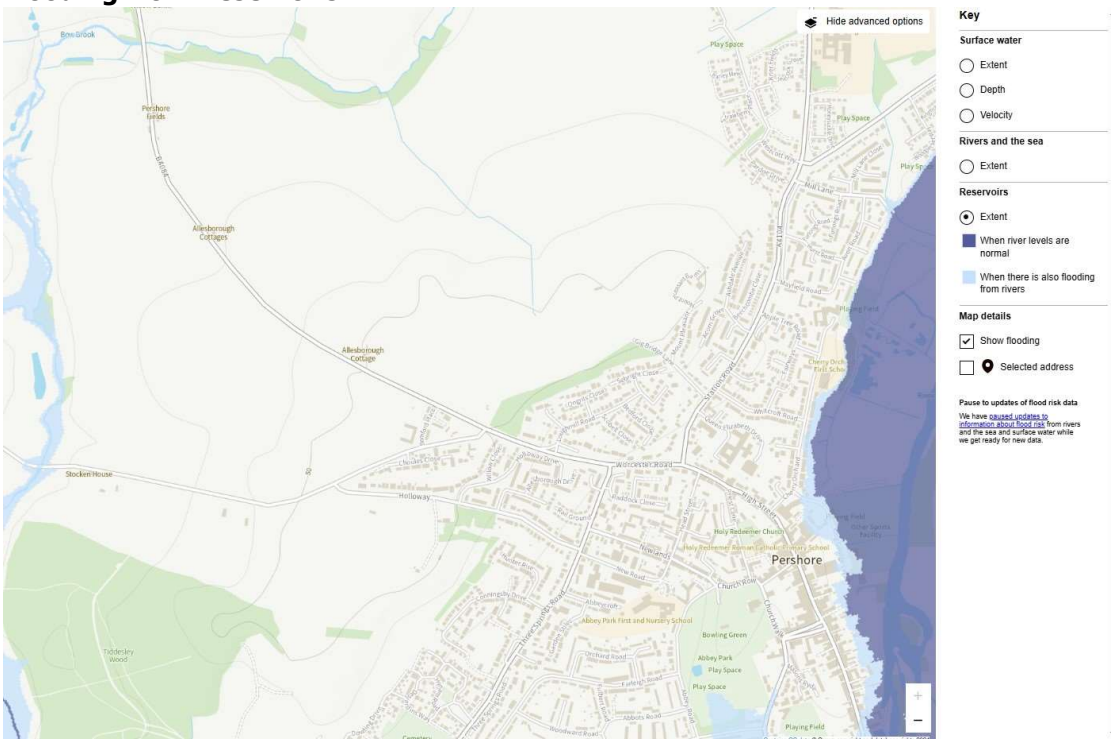
Flooding from Surface Water : Velocity [Medium]



Flooding from Surface Water : Velocity [Low]



Flooding from Reservoirs



APPENDIX E – Sewer Records

WONDERFUL ON TAP

SEVERN TRENT

9th May 2024

Amy Fulloway
Lioncourt Homes Ltd
Unit 3 Apex Park
Wainwright Road
Worcester
WR4 9FN

Severn Trent Water Ltd
Oxley Moor Road
Wolverhampton
WV9 5HN

www.stwater.co.uk

Email:
Network.Solutions@SevernTrent.co.uk

Our ref: 1116108

Dear Amy

Proposed Development: Rebecca Road Pershore

I refer to your 'Development Enquiry Request' of 110 houses, commercial and school sites in respect of the above named site. Please find enclosed the sewer records that are included in the fee together with the Supplementary Guidance Notes (SGN) which refer to surface water disposal from development sites.

Protective Strip

Due to a change in legislation on 1 October 2011, there may be former private sewers on the site which have transferred to the responsibility of Severn Trent Water Ltd, which are not shown on the statutory sewer records, but are located in your client's land. These sewers would also have protective strips that we will not allow to be built over. If such sewers are identified to be present on the site, please contact us for further guidance.
.

Foul Water Drainage

A foul gravity connection into the local foul sewers located in Choules Close , m/h 7200 on the 150mm foul sewer , @ 1.7l/s 2xdwf but due to surcharge levels and the expected additional flows into the network downstream then additional investigation/modelling will be required. Due to site topography then if a pumped solution would be required, due to a slack gradient and capacity within Choules Close this sewer would not be able to accept pumped flows but a pumped solution would have to discharge to the 150mm fws in Worcester Rd m/h 1201, Min pumped flows for an adoptable pump station would be 3.8l/s with a 80mm rising main.
All connections are subject to the required S106 sewer connection applications.

Surface Water Drainage

Under the terms of Section H of the Building Regulations 2000, the disposal of surface water by means of soakaways should be considered as the primary method. If these are found to be unsuitable, satisfactory evidence will need to be submitted. The evidence should be either percolation test results or by the submission of a statement from the SI consultant (extract or a supplementary letter).

Subject to above Severn Trent Water expects all surface water from the development to be drained in a sustainable way to the nearest watercourse or land drainage channel, including highway drainage etc. subject to the developer discussing all aspects of the developments surface water drainage, If these options are proven not possible then a gravity connection to m/h 0203 in Choules Close at greenfield rates 5l/s/ha would be acceptable with agreement with the Local Lead Flood Authority (LLFA). Any discharge rate to a watercourse or drainage ditch will be determined by the LLFA / EA.
.

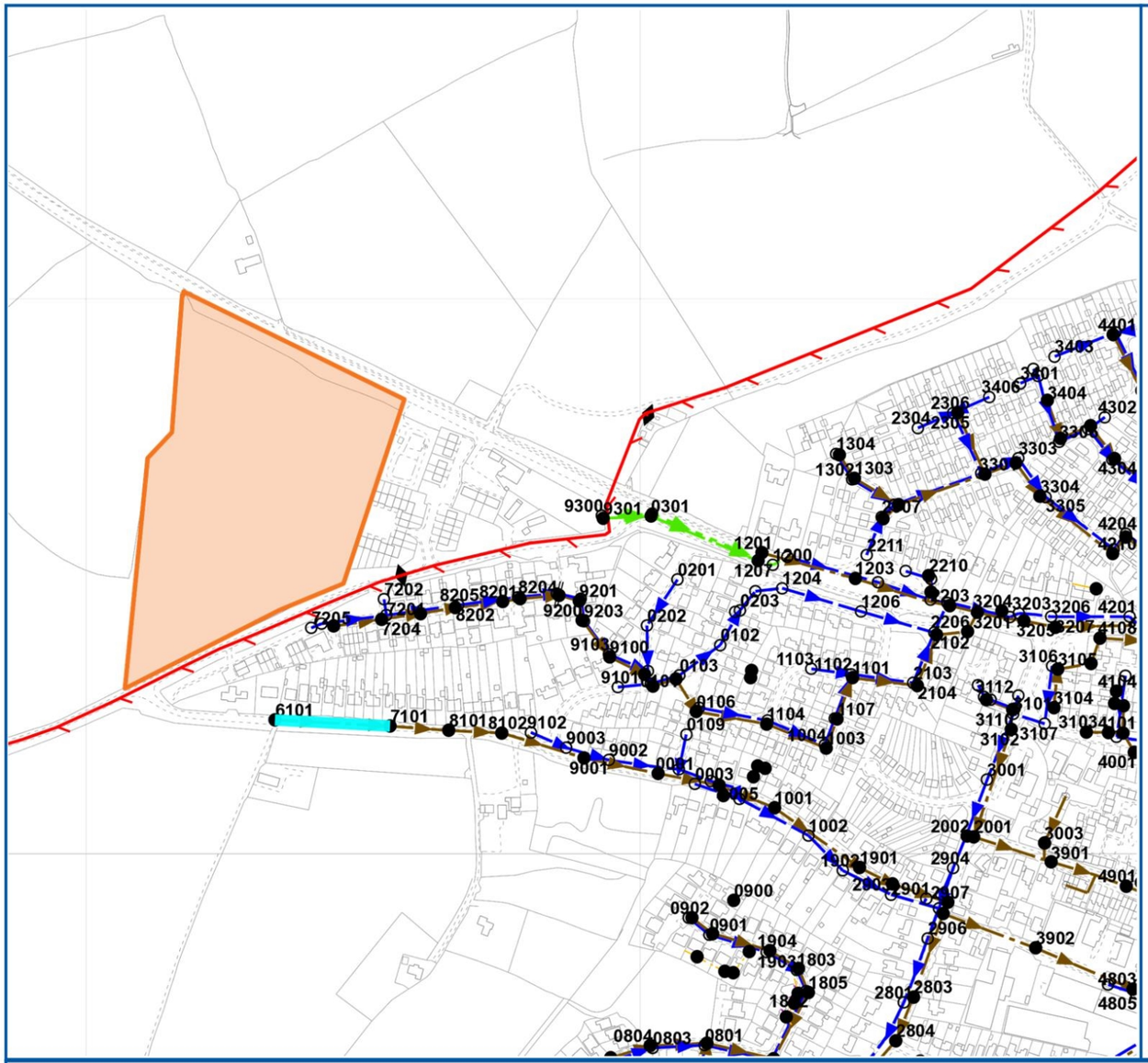
New Connections

For any new connections (including the re-use of existing connections) to the public sewerage system, the developer will need to submit a Section 106 application form. Our Developer Services department are responsible for handling all new connections enquiries and applications. To contact them for an application form and associated guidance notes please call 0800 707 6600 or download from www.stwater.co.uk.

Please quote the reference 1116108 in any future correspondence (including e-mails) with STW Limited. Please note that Developer Enquiry responses are only valid for 6 months from the date of this letter.

Yours sincerely,

Michael Taylor
Network Solutions
Developer Services



Reference	Cover Level	Invert Level Upstream	Invert Level Downstream	Purpose	Material	Pipe Shape	Max Size	Min Size	Gradient	Year Laid
SO94462207	35.6349	34.09	32.79	S	VC	C	150	<UNK>	18.49	31/12/1899 00:00:00
SO94463105	29.4869	27.91	27.61	F	VC	C	150	<UNK>	101.37	31/12/1899 00:00:00
SO93469001	44.54	42.03	35.979	F	VC	C	225	<UNK>	11.31	31/12/1899 00:00:00
SO94451902	29.9599	28.71	27.589	S	VC	C	225	<UNK>	43.53	31/12/1899 00:00:00
SO94462302	36.296	34.18	33.32	S	VC	C	300	<UNK>	97.47	31/12/1899 00:00:00
SO93468205	55.303	51.773	50.568	S	CO	C	1800	<UNK>	44.884	20/04/2016 00:00:00
SO94460102	42.6699	40.72	40.24	S	VC	C	300	<UNK>	74.69	31/12/1899 00:00:00
SO94463306	34.7809	33.21	32.36	S	VC	C	225	<UNK>	33.69	31/12/1899 00:00:00
SO94462205	37.097	35.437	33.04	S	VC	C	300	<UNK>	20.83	31/12/1899 00:00:00
SO94461301	41.769	39.87	37.36	F	VC	C	150	<UNK>	10.39	31/12/1899 00:00:00
SO94452908	26.982	24.362	22.496	F	VC	C	225	<UNK>	47.2	31/12/1899 00:00:00
SO94452908	26.982	24.372	24.192	F	VC	C	225	<UNK>	442.83	31/12/1899 00:00:00
SO94454803	22.5739	20.474	20.056	F	VC	C	225	<UNK>	116.33	31/12/1899 00:00:00
SO94463206	29.3209	25.921	24.826	S	CO	C	675	<UNK>	63.66	31/12/1899 00:00:00
SO94461205	41.347	39.29	37.72	S	VC	C	300	<UNK>	15.41	31/12/1899 00:00:00
SO94451901	29.5709	27.991	26.882	F	VC	C	225	<UNK>	29.84	31/12/1899 00:00:00
SO94450802	30.0699	26.29	25.7	F	U	C	150	0	106.14	31/12/1899 00:00:00
SO93469300	<UNK>	<UNK>	<UNK>	S	UPVC	<UNK>	225	<UNK>	<UNK>	16/02/2022 00:00:00
SO94462303	36.263	33.88	32.97	F	VC	C	150	<UNK>	90.7	31/12/1899 00:00:00
SO94460105	41.2589	38.24	34.48	S	VC	C	225	<UNK>	16.85	31/12/1899 00:00:00
SO93467203	54.935	51.185	50.907	S	CO	C	1800	<UNK>	183.802	20/04/2016 00:00:00
SO94461108	<UNK>	31.82	31.3	S	VC	C	300	<UNK>	130.683	25/07/2016 00:00:00
SO94460106	41.853	38.98	34.55	F	VC	C	150	<UNK>	14.48	31/12/1899 00:00:00
SO94461304	41.846	40.36	37.78	S	VC	C	150	<UNK>	10.97	31/12/1899 00:00:00
SO94454901	23.0119	20.652	<UNK>	F	VC	C	225	0	2.55	31/12/1899 00:00:00
SO94463305	33.4599	31.49	28.7	S	VC	C	300	<UNK>	27.6	31/12/1899 00:00:00
SO94463301	35.2859	32.95	32.64	F	VC	C	150	<UNK>	95.9	31/12/1899 00:00:00
SO94464101	27.485	25.915	25.737	F	VC	C	150	<UNK>	112	31/12/1899 00:00:00
SO94464301	34.5519	32.03	30.7	F	VC	C	150	<UNK>	27.53	31/12/1899 00:00:00

LEGEND

Operational Site
Waste Water Pump
Transferred Asset
S24
S104
S102
Null Private
Null
None
Highway Drain
Adopted Sewer
Storage
Disposal Site
Off-Line Waste Water Storage
On-Line Waste Water Storage
Wet Well
Waste Water Process Structure
Sewage Treatment Point
Sewage Treatment Structure
Sludge Treatment Point
Sludge Treatment Structure
Manhole
Twin Manhole

Foul Manhole
Surface Water Manhole
Combined Manhole
Dual Manhole
UnSurveyed Foul Manhole
UnSurveyed Surface Water Manhole
UnSurveyed Combined Manhole
Unsurveyed Unknown Manhole
Gravity Sewer Pipe
Foul Gravity Sewer
Combined Gravity Sewer
Surface Water Gravity Sewer
S104 Surface Water Gravity Sewer
S104 Combined Gravity Sewer
S104 Foul Gravity Sewer
Private Surface Water Gravity Sewer
Private Combined Gravity Sewer
Private Foul Gravity Sewer
Surface Water Unsurveyed Pipe
Combined Unsurveyed Pipe
Foul Unsurveyed Pipe
Transferred Surface Water Sewer
Transferred Combined Sewer

Transferred Foul Sewer
Disposal Pipe
Overflow Pipe
Culverted Water Course
Waste Internal Site Pipe
Sewer Service Connection
Gravity Sewer Others
Pressure Sewer Pipe
Surface Water Pressure Sewer
Combined Pressure Sewer
Foul Pressure Sewer
S104 Surface Water Pressure Sewer
S104 Combined Pressure Sewer
S104 Foul Pressure Sewer
Private Surface Water Pressure Sewer
Private Combined Pressure Sewer
Private Foul Pressure Sewer
Surface Water Vacuum Sewer
Foul Vacuum Sewer
Combined Vacuum Sewer
S104 Surface Water Vacuum Sewer
S104 Combined Vacuum Sewer
S104 Foul Vacuum Sewer

Private Surface Water Vaccum Sewer
Private Combined Vacuum Sewer
Private Foul Vacuum Sewer
Surface Water Siphon
Combined Siphon
Foul Siphon
Private Surface Water Siphon
Private Combined Siphon
Private Foul Siphon
S104 Surface Water Siphon
S104 Combined Siphon
S104 Foul Siphon
Surface Water Unsurveyed Pipe
Combined Unsurveyed Pipe
Foul Unsurveyed Pipe
Service Pipe
Surface Water Lateral Drain
Combined Lateral Drain
Foul Lateral Drain
S104 Surface Water Lateral Drain
S104 Combined Lateral Drain
S104 Foul Lateral Drain

Private Surface Water Lateral Drain
Private Combined Lateral Drain
Private Foul Lateral Drain
Transferred Surface Water Lateral Dra
Transferred Combined Lateral Drain
Transferred Foul Lateral Drain
Ancillary
Balancing Lagoon
Grease Trap
Interceptor
Screen
Chamber
Flushing Chamber
Scalaway
Overflow
Fitting
Blind Shaft
Facility Connector
Head Node
Lamphole
Sewerage Air Valve
Sewerage Chemical Injection Point
Sewerage Hatch Box

Sewerage Pressure Washout
Vent Column
Waste Water Outfall
Control Valve
Hydrobrake
Penstock
Sewerage Isolation Valve
Sewerage Non Return Valve
Print500mLine

MATERIALS

- - NONE
AC - ASBESTOS CEME
BR - BRICK
CC - CONCRETE BOX CULVERT
CI - CAST IRON
CO - CONCRETE
CSB - CONCRETE SEGMENTS (BOLTED)
CSU - CONCRETE SEGMENTS (UNBOLTED)
DI - DUCTILE IRON
GRP - GLASS REINFORCED PLASTIC
MAC - MASONRY IN REGULAR COURSES
MAR - MASONRY RANDOMLY COURSED
PE - POLYETHLENE
PF - PITCH
PP - POLYPROPYLENE
PSC - PLASTIC STEEL COMPOSITE
PVC - POLYVINYL CHLORIDE
RPM - REINFORCED PLASTIC MATRIX
SI - SPUN (GREY) IRON
ST - STEEL
U - UNKNOWN
VC - VITRIFIED CLAY
XXX - OTHER

CATEGORIES

W - WEIR
C - CASCADE
DB - DAMBOARD
SE - SIDE ENTRY
FV - FLAP VALVE
BD - BACK DROP
S - SIPHON
D - HIGHWAY DRAIN
S104 - SECTION 104

SHAPE

C - CIRCULAR
E - EGG SHAPED
O - OTHER
R - RECTANGLE
S - SQUARE
T - TRAPEZOIDAL
U - UNKNOWN

PURPOSE

C - COMBINED
E - FINAL EFFLUENT
F - FOUL
L - SLUDGE
S - SURFACE WATER

SEVERN TRENT

Severn Trent Water Limited
Asset Data Management
PO Box 5344
Coventry
CV3 9FT
Telephone: 0345 601 6616

SEWER RECORD (Tabular)

O/S Map Scale: 1:5,000

This map is centred upon:

Date of Issue: 09-05-24

X: 393938.68 **Y:** 246289.23

Disclaimer Statement:

1 Do not scale off this Map.

2 This plan and any information supplied with it is furnished as a general guide, is only valid at the date of issue and no warranty as to its correctness is given or implied. In particular this plan and any information shown on it must not be relied upon in the event of any development or works (including but not limited to excavations) in the vicinity of SEVERN TRENT WATER assets or for the purposes of determining the suitability of a point of connection to the sewerage or distribution systems.

3 On 1 October 2011 most private sewers and private lateral drains in Severn Trent Water's sewerage area, which were connected to a public sewer as at 1 July 2011, transferred to the ownership of Severn Trent Water and became public sewers and public lateral drains. A further transfer takes place on 1 October 2012. Private pumping stations, which form part of these sewers or lateral drains, will transfer to ownership of Severn Trent Water on or before 1 October 2016. Severn Trent Water does not possess complete records of these assets. These assets may not be displayed on the map.

5 Ordnance Survey licence number: **100031673**

6 Document users other than SEVERN TRENT WATER business users are advised that this document is provided for reference purpose only and is subject to copyright, therefore, no further copies should be made from it.

SUPPLEMENTARY GUIDANCE NOTES RELATING TO DISPOSAL OF SURFACE WATER

Introduction

The purpose of this guidance note is to provide advice to applicants when completing the surface water drainage design for a new development, both for Greenfield and Brownfield sites. This does not affect foul drainage disposal which should be discussed with Severn Trent as early as possible to ensure additional flows can be accommodated without undue delay to the development.

Lead Local Flood Authority (LLFA) Consultation

Since April 2015, the LLFA have assumed the role of being a statutory consultee in the planning process for developments of 10 dwellings or more; or equivalent non-residential and/or mixed development. The LLFAs role is vital to ensure that surface water disposal on new development is adequately assessed so that the local planning authority can satisfy themselves that drainage proposals are satisfactory and to make sure, through the use of planning conditions or planning obligations, that there are clear arrangements in place for future maintenance of sustainable drainage systems (SuDS) over the lifetime of the development. This will also ensure surface water disposal aligns with local planning policies, flood risk strategies and national policies, such as the National Planning Policy Framework (NPPF).

It is strongly recommend that the LLFA are involved in early pre-application discussions when the development of a site is initially being considered. Pre-application discussions will help to ensure that SuDS are appropriately considered ahead of or as part of preliminary development layouts, and that they are fully integrated into the final development layout. Whilst Severn Trent are willing to advise on sewerage availability this does to negate the planning requirement relating to adequacy of SuDS on new development.

SuDS Hierarchy

Severn Trent is fully supportive of the fundamental SuDS principle that priority should be given to managing surface water as close to source as possible. In accordance with national standards and guidance a sequential series of checks should be undertaken to ensure the relevant SuDS features are being proposed whereby (in order of priority) rainwater re-use, infiltration to ground and controlled discharge to a water body are properly considered ahead of any controlled connection to a culverted watercourse/other drainage system or public surface water sewer.

A controlled connection to a public combined/foul sewer would only be considered under rare exceptional circumstances where all other options have been completely exhausted. Acceptance of surface water into a combined sewer is not only unsustainable because of the need to convey/treat rainwater but is also takes away existing capacity which could constraint the connection of foul flows on future development. It is also possible that connection of additional surface water flows will require capacity upgrades to the existing sewerage system which may delay development.

Connection to a Public Sewer

Whilst Severn Trent will be able to provide advice on potential public surface water sewer connection options, it is essential that a developer contacts the LLFA as early as possible to discuss surface water disposal as they will be able to provide guidance on surface water flood risk policy which may influence SuDS requirements. It is strongly recommended that LLFA discussions take place before contacting Severn Trent. Where the outcome of LLFA discussions concludes that a controlled discharge to the public sewerage system is the only viable option then Severn Trent would be pleased to discuss sewer connection options, satisfied that the LLFA have been consulted in line with their surface water management role and in their capacity as statutory consultee.

Evidence must be provided to demonstrate why the sequential SuDS checks have concluded that a connection to the public sewer is required. This must include a Site Investigation Report including percolation test data/graphs/calculations/results together with relevant correspondence with the LLFA.

Design Standards

Surface water disposal design should consider the interactions between the adoptable sewer design criteria based on a 30 year design storm (outlined in 'Sewers For Adoption') and the "Non-statutory technical standards for SuDS" requirement to restrict discharge from a site up to and including the 1 in 100 year critical storm event plus an allowance for climate change as required by the LLFA.

For Greenfield development, the peak runoff rate should never exceed the peak pre-development run-off rates/volumes for the same rainfall event irrespective of the design storm duration consistent with the national non-statutory technical standards. For developments which were previously developed (Brownfield), the peak runoff rate must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment again for the same rainfall event. This requirement to remove pre-development surface water discharges to the sewerage system will help remove capacity constraints and aid future development.

To establish the pre-development run-off rates a detailed existing drainage survey will be required indicating pipe locations including sizes and levels, impermeable area connectivity to each pipe and topographical information to support existing drainage assumptions. Photographs of the existing buildings and surface features should be provided and where necessary a CCTV sewer survey should be provided to support the drainage survey to demonstrate connectivity.

In line with 'Sewers for Adoption', the drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 30 year rainfall event. For higher storm return periods the drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station, electricity substation, water booster station) within the development.

Small Developments

Whilst developments of fewer than 10 dwellings (or their equivalent) are excluded from the post April 2015 planning requirements the underlying principles regarding sustainable surface water management are still valid. The collective impacts of surface water discharges from smaller developments can have an adverse impact on flood risk, especially in smaller rural catchments where smaller sewerage systems are more susceptible to increases in surface water inflow. On small developments infiltration to ground and peak flow attenuation must be considered to mitigate flood risk in the community but where a sewer connection is envisaged then the developer is recommended to discuss surface water disposal options with Severn Trent as early as possible.

Contact

For further assistance please contact our Network Solutions team via:
network.solutions@severntrent.co.uk

APPENDIX F – Greenfield Run-off Calculations

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Lewis Everiss
Site name:	Rebecca Road
Site location:	Pershore

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	52.11512° N
Longitude:	2.09366° W
Reference:	3402997332
Date:	Jul 15 2024 12:47

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 1.84

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	617	617
Hydrological region:	4	4
Growth curve factor 1 year:	0.83	0.83
Growth curve factor 30 years:	2	2
Growth curve factor 100 years:	2.57	2.57
Growth curve factor 200 years:	3.04	3.04

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited

Q_{BAR} (l/s):	7.66	7.66
1 in 1 year (l/s):	6.36	6.36
1 in 30 years (l/s):	15.33	15.33
1 in 100 year (l/s):	19.7	19.7
1 in 200 years (l/s):	23.3	23.3

Storage Estimate

Return Period (years)	30		OK
Climate Change (%)	0		Cancel
Impermeable Area (ha)	2.030	Update	
Peak Discharge (l/s)	7.660		
Infiltration Coefficient (m/hr) (leave blank if no infiltration)		Calc	
Required Storage (m^3)	Calc		
from	663		
to	920		
With infiltration (m^3)			
from			
to			

Storage Estimate

Return Period (years)	100		OK
Climate Change (%)	59		Cancel
Impermeable Area (ha)	2.030	Update	
Peak Discharge (l/s)	7.660		
Infiltration Coefficient (m/hr) (leave blank if no infiltration)		Calc	
Required Storage (m^3)	Calc		
from	1645		
to	2051		
With infiltration (m^3)			
from			
to			

APPENDIX G – Drainage Strategy Plan

INDICATIVE 5m OVERALL EASEMENT SHOWN. PRECISE EASEMENT DIMENSIONS TO BE CONFIRMED DURING THE DETAILED DESIGN.

FOUL WATER PUMPING STATIONS. 12m x 8m BASED ON FIGURE D3 WITHIN THE DESIGN AND CONSTRUCTION GUIDANCE

ADDITIONAL TOPOGRAPHICAL & RADAR SURVEY INFORMATION REQUIRED ALONG THE OUTFALL LOCATION TO CONFIRM WHETHER DIVERSIONS ARE REQUIRED AND AT WHAT POINT A GRAVITY SOLUTION CAN BE USED. OUTFALL ROUTE SUBJECT TO CHANGE BASED ON EXISTING APPARATUS.

ATTENUATION BASIN
TOP OF BANK = 47.600m
BASE OF POND = 46.300m
APPROXIMATE STORAGE = 1600m³
(THE POND HAS BEEN DESIGN USING 1 IN 3 MAX EMBANKMENTS AND TO ALLOW FOR 300mm OF FREEBOARD. IN ADDITION A 1m MAINTENANCE STRIP HAS BEEN INCLUDED).

S38 - CONTROL CHAMBER
CL -53.258m
IL - 46.067m
DISCHARGE RATE - 7.66 l/s
(BASED ON IH124 CALCULATIONS)

DEVELOPER TO GAIN 3RD PARTY LAND PERMISSION TO ALLOW FOR CONSTRUCTION OF OUTFALL AND REQUIRED EASEMENTS..

DETAILED DITCH SURVEY TO BE COMPLETED IN ORDER TO CONFIRM OUTFALL LOCATION. CONSENT TO DISCHARGE WILL BE REQUIRED ALONG WITH 3RD PARTY LAND CONSENT.

Notes:

HEADWALL LOCATION WILL BE SUBJECT TO DETAILED SURVEY WORKS BEING COMPLETED. FIXED LOCATION TO BE SET DURING THE DETAILED DESIGN. LOCATION ALSO SUBJECT TO APPROVAL.

SCALE BAR 1:1250
0 10 50 75 100

EXISTING FWMH 1201 PROPOSED OUTFALL LOCATION BASED ON DEVELOPER ENQUIRY RESPONSE. NO COVER LEVEL OR INVERT LEVEL INFORMATION AVAILABLE. THIS SHOULD BE CONFIRMED PRIOR TO THE DETAILED DESIGN.

PROPOSED MANHOLE AND EXISTING MANHOLE COVER AND INVERT LEVELS TO BE CONFIRMED FOLLOWING FURTHER SURVEY WORKS.

GENERAL SITE INFORMATION

TOTAL SITE AREA = 4.96Ha

IMPERMEABLE AREA = 1.84Ha (BASED ON THE MEASURED IMPERMEABLE AREA)

IMPERMEABLE AREA (INC URBAN CREEP) = **2.03 Ha** (BASED ON MEASURED IMPERMEABLE AREA + 10% FOR URBAN CREEP)

115 HABITABLE DWELLINGS - SUBJECT TO RECEIPT OF A DETAILED LAYOUT & DETAILED ENGINEERING DESIGN.

ALL DRAINAGE PROPOSALS SUBJECT TO RECEIPT OF A UPDATED DEVELOPER ENQUIRY RESPONSE FROM THE ADOPTING WATER AUTHORITY AND CLARIFICATION THAT THE PROPOSED STORM OUTFALL LOCATIONS & INVERT LEVELS ARE SUITABLE & ACCEPTABLE (TO BE CONFIRMED BY THE EA AND/OR LOCAL LEAD FLOOD AUTHORITY (LLFA) & SEVERN TRENT WATER).

DEVELOPER TO CONFIRM AGREEMENT TO CONSENT TO DISCHARGE & FOR ANY EASEMENTS REQUIRED OVER OFFSITE LAND OWNERSHIP.

PROPOSED STORM & FOUL SOLUTION SUBJECT TO NEGOTIATION AND APPROVALS FROM SEVERN TRENT WATER, EA & LLFA.

ANY ADOPTION OF ANY SUDS FEATURES TO BE AGREED & CONFIRMED BY DEVELOPER.

DETERMINE DISCHARGE FROM SITE

BASED ON THE SITES IMPERMEABLE AREA OF 1.84 Ha, DISCHARGE RATES WERE DETERMINED.

BASED ON USING 5 L/S/H THE SITE DISCHARGE RATE WOULD BE 9.2 L/S.

BASED ON USING THE IH124 WALLINGFORD TOOL THE DISCHARGE RATE WOULD BE 7.66 L/S.

BASED ON ENSURING THE SITE IS DESIGNED BASED ON THE WORSE-CASE SCENARIO THE DETERMINED DISCHARGE RATE FOR THE DEVELOPMENT WILL BE **7.66 L/S.**

DETERMINE STORAGE VOLUMES

SITE AREA = 4.96 Ha

IMPERMEABLE AREA = 2.03 Ha (INCLUDING 10% FOR URBAN CREEP)

FLOW HYDRAULIC CALCULATION BASED ON AN IMPERMEABLE AREA OF 2.03 Ha & DISCHARGE RATE OF 7.66 l/s .

FLOW STORAGE CALCULATIONS = **1645m³ - 2051m³** (INCLUSIVE OF 1 IN 30 YR VOLUME)

ABOVE CALCULATION INDICATES APPROX **1648m³** STORAGE REQUIRED TO BALANCED FLOWS RESULTING FROM A 1 IN 100 (+40% CC) YEAR EVENT.

THIS COULD BE ACCOMMODATED THROUGH INSTALLATION OF AN ONLINE AND OFF-LINE ATTENUATION AS ILLUSTRATED

THIS HOWEVER IS SUBJECT TO DETAILED DESIGN INC. MODELLING & AGREEMENT WITH WATER AUTHORITY & EA AND APPLICABLE CONSENT TO DISCHARGE APPLICATION (WHERE REQUIRED).

CLIENT TO CONFIRM/ENSURE THAT LAND OWNER CONSENT IS NEGOTIATED AND NECESSARY "CONSENT TO DISCHARGE" AGREED FOR AT DRAINAGE OUTFALL LOCATIONS (WHERE REQUIRED).

IT SHOULD ALSO BE CONFIRMED BY THE DEVELOPER THAT ANY EASEMENTS REQUIRED IN ORDER TO CONSTRUCT THE PROPOSED OUTFALL SEWER IS AGREED WITH THE LAND OWNER (IN ORDER A S104 AGREEMENT CAN BE COMPLETED AND NO ADOPTION OR RANSOM ISSUES FOR DRAINAGE OR HIGHWAYS ARE ENCOUNTERED).

PLEASE NOTE THE ABOVE IS CRITICAL TO THE PROPOSED SCHEME & IT IS THE DEVELOPERS RESPONSIBLY TO ENSURE THIS ELEMENT IS SATISFIED, IN ORDER THAT THE PROPOSED SITE CAN BE DEVELOPED.

FOUL DISCHARGE FROM SITE

THE PROPOSED OUTFALL STRATEGY WILL BE VIA A FOUL WATER PUMPING STATION. AS STATED WITHIN THE DEVELOPER ENQUIRY A PUMPED ALLOWANCE WOULD BE ACCEPTABLE TO THE EXISTING MANHOLE WITHIN WORCESTER ROAD "MANHOLE 1201". A PUMPED CONNECTION HAS BEEN SHOWN TO THIS MANHOLE. AT THE STAGE OF COMPLETING THIS DRAINAGE STRATEGY, NO INFORMATION ON THE COVER LEVEL OR INVERT LEVEL OF THE EXISTING MANHOLE IS KNOWN. SUBJECT TO ANY DETAILED DESIGN THIS SHOULD BE CONFIRMED TO CONFIRM THE FOUL STRATEGY IS VIABLE. IN ADDITION TO THIS, CONFIRMATION ON THE REQUIRED ROUTE BEING ACCEPTABLE WILL BE NEEDED.

ALL FOUL WATER PIPES 150Ø UNLESS OTHERWISE SPECIFIED.

PROPOSED FOUL WATER STRATEGY INDICATED ON THIS DRAWING SUBJECT TO CONFIRMATION FROM SEVERN TRENT WATER THAT THERE IS SUFFICIENT CAPACITY WITHIN DOWNSTREAM (EXISTING) PUBLIC SYSTEM TO ACCEPT ADDITIONAL FLOWS FROM DEVELOPMENT AREA.

ALL DETAILS ARE SUBJECT TO FURTHER REVIEW & POTENTIAL REDESIGN WORKS, FOLLOWING PROVISION OF ANY SITE SPECIFIC FOUL WATER DRAINAGE STRATEGY, MODELING REPORT OR ANY OTHER STRATEGIC DESIGN PLANS AND DOCUMENTS.

AS STATED ABOVE THE FOUL WATER EXISTING SEWER COVER LEVELS AND INVERT LEVELS NEED TO BE CONFIRMED AND SHOULD BE USED DURING THE DETAILED DESIGN TO MAKE SURE THE PROPOSALS TIE UP WITH THE EXISTING SEWER.

CLIENT TO CONFIRM/ENSURE THAT LAND OWNER CONSENT IS NEGOTIATED AND NECESSARY "CONSENT TO DISCHARGE" AGREED FOR AT DRAINAGE OUTFALL LOCATIONS (WHERE REQUIRED).

IT SHOULD ALSO BE CONFIRMED BY THE DEVELOPER THAT ANY EASEMENTS REQUIRED IN ORDER TO CONSTRUCT THE PROPOSED OUTFALL SEWER IS AGREED WITH THE LAND OWNER (IN ORDER A S104 AGREEMENT CAN BE COMPLETED AND NO ADOPTION OR RANSOM ISSUES FOR DRAINAGE OR HIGHWAYS ARE ENCOUNTERED).

PLEASE NOTE THE ABOVE IS CRITICAL TO THE PROPOSED SCHEME & IT IS THE DEVELOPERS RESPONSIBLY TO ENSURE THIS ELEMENT IS SATISFIED, IN ORDER THAT THE PROPOSED SITE CAN BE DEVELOPED.

GENERAL NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL LEVELS GIVEN IN METRES ABOVE ORDNANCE DATUM (m AOD).
3. ALL OTHER DIMENSIONS IN MILLIMETRES, UNLESS OTHERWISE STATED.
4. ALL SLAB LEVELS ARE +/- 475mm AND ARE SUBJECT TO DETAILED ENGINEERING DESIGN.
5. ALL DRAINAGE SHOW IS INDICATIVE AND SUBJECT TO DETAILED ENGINEERING DESIGN.
6. ATTENUATION POND SIZED FOR STORM RUNOFF FROM DEVELOPMENT AREAS BASED UPON LAYOUT PROVIDED.
7. ALL FOUL SEWERS 150mmØ UNLESS OTHERWISE STATED.
8. MINIMUM CARRIAGEWAY GRADIENT 1:80.
9. MAXIMUM CARRIAGEWAY GRADIENT 1:20
10. MAXIMUM GARDEN GRADIENT OF 1:15
11. MAXIMUM TANKING OF 600mm ON GARAGES
12. NO TANKING ON PLOTS UNLESS UNAVOIDABLE
13. ALLOWANCES FOR RETAINING FEATURES (INCLUDING RETAINING WALLS, EXPOSED BRICKWORK, TANKING ETC) MADE AT THIS STAGE SUBJECT TO REVIEW FOLLOWING RECEIPT OF A DETAILED LAYOUT. SLAB LEVELS INDICATED REFLECT PROPOSED LEVEL DIFFERENCES AT THIS STAGE OF THE PRELIMINARY DESIGN.
14. PART M APPROACH TO THE FRONT DOOR UNLESS IDENTIFIED DIFFERENTLY.
15. NO ALLOWANCE HAS BEEN MADE TO CATER FOR SW OR FW FLOWS THROUGH THESE PARCELS FROM OTHER AREAS.
16. ALL INFRASTRUCTURE WORKS WITH REGARDS TO HIGHWAY LEVELS, S278 & S106 WORKS HAVE BEEN ASSUMED AND ARE SUBJECT TO DETAILED DESIGN INFORMATION BEING PROVIDED BY OTHERS

PROPOSED SUDS FEATURES

ATTENUATION BASIN INCORPORATING LOW FLOW CHANNEL, STONE PITCHING & AQUATIC PLANTING

INDICATIVE LOCATION FOR PERMEABLE PAVING

INDICATIVE LOCATION FOR SWALES

PRELIMINARY DESIGN KEY

The Contractor is to check and verify all building and site dimensions, levels and sewer invert levels at connection points before work starts. The Contractor is to comply in all respects with current Building Legislation, British Standard Specifications , Building Regulations, Construction (Design & Management) Regulations, Party Wall Act, etc. whether or not specifically stated on this drawing. This drawing must be read with and checked against any structural, geotechnical or other specialist documentation provided. This drawing is not intended to show details of foundations, ground conditions or ground contaminants. Each area of ground relied upon to support any structure depicted (including drainage) must be investigated by the Contractor. A suitable method of foundation should be provided allowing for existing ground conditions. Any suspect or fluid ground, contaminates on or within the ground, should be further investigated by a suitable expert. Any earthwork constructions shown indicate typical slopes for guidance only & should be further investigated by a suitable expert. Where existing trees / structures are to be retained they should be subject to a full specialist inspection for safety. All trees are to be planted so as to ensure they are a minimum of 5 metres from buildings. A suitable method of foundation is to be provided to accommodate the proposed tree planting.
Residential & Commercial Engineering Limited do not accept any responsibility for any losses (financial or otherwise) to any Client or third party arising out of the Clients (be it Developer or Contractor but not limited thereto) non-compliance with afore mentioned provisos.

Rev	Description	Date	Drawn	Check

Revisions:

Lioncourt Homes
RACE
RESIDENTIAL & COMMERCIAL ENGINEERING

Drawing Status:
FOR INITIAL DISCUSSION/REVIEW PURPOSES ONLY.

Client:
LIONCOURT HOMES

Project:
REBECCA ROAD, PERSHORE

Title:
PRELIMINARY DRAINAGE STRATEGY

Job Number. RACE/LCH/RRP
Drawing No. ENG_001
Revision. #

Scale: 1:500 @ A1
Date: JULY ' 24
Drawn by: LE
Checked by: SM

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