



SHADOW APPROPRIATE ASSESSMENT

LITTLECOTT MILL
PEWSEY
WILTSHIRE

MARCH 2026

ON BEHALF OF DAVID HOUSE



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1.0 INTRODUCTION

- 1.1 LC Ecological Services Ltd was commissioned by David House to conduct a Habitat Regulation Assessment (shadow assessment) in support of a planning application for renovations to include boreholes for a closed-loop Ground Source Heat Pump (GSHP) system, at Littlecott Mill, Enford, Pewsey, Wiltshire, SN9 6AW (Ordnance Survey grid reference SU 14240 51778). A site location map is provided as appendix I.
- 1.2 The use of a ten-kilometre search area to identify sites within the National Site Network (NSN) that may be impacted by the proposed development was considered. The site lies within proximity to the following statutory designated sites:
- River Avon Special Area of Conservation (SAC) is located adjacent to the application site boundary.
 - Salisbury Plain SAC and Special Protection Area (SPA) are located approximately 1.72 kilometres south-east of the application site at its closest point.
- 1.3 The need for an Appropriate Assessment is set out in the Conservation of Habitats Regulations 2017 (as amended). The purpose of these Regulations is to implement the requirement of the European Union's Habitat Directive and Birds Directive in the United Kingdom (UK). The UK left the European Union on the 31st January 2020. The most recent amendments to the regulations, the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 make it clear that Habitat Regulation Assessments continue. SACs are protected under this legislation, by the creation of a National Site Network (NSN) on land and at sea following the 2019 Regulations. These are a network of sites designated for supporting habitats or species of high nature conservation importance in the European context. Any activity that has a detrimental effect on these NSN sites is made an offence under the Regulations.
- 1.4 All SPAs receive statutory protection under the Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitats Regulations'), which transpose the requirements of the European Council Directives on the Conservation of Natural Habitats and of Wild Fauna and Flora (42/43/EEC) and the Conservation of Wild Birds (2009/147/EC) into domestic legislation. The Habitats Regulations afford a high level of protection to sites classified as SPAs as areas that hold significant populations of certain bird species (SPAs). They also afford the same level of high protection to tracts of land supporting habitats or rare species (other than birds) considered scarce or vulnerable at a European community level (SACs).
- 1.5 Under the Habitats Regulations, Wiltshire Council is a competent authority, responsible for ensuring that development control decisions do not adversely

affect the integrity of Natura 2000 sites. This document provides information for the Habitats Regulations Assessment that Wiltshire Council will need to undertake in determining the full planning application at the proposed development area (henceforth referred to as ‘the site’) and has been prepared to support an appropriate assessment of likely significant effects of the proposals on the SAC and SPA alone, and in combination with other plans and projects. Likely significant effects on the SAC and SPA sites both alone, and in combination with other plans and projects have been screened out in this exercise.

- 1.6 Acting as the competent authority, Wiltshire Council is required to undertake an independent appropriate assessment. It may adopt this document as part of this process once the Council has reviewed and evaluated the findings and concurs with the analysis and conclusions reached.

2.0 LEGISLATIVE AND POLICY FRAMEWORK

2.1 Statutory framework

Tests of the Habitats Regulations

2.1.1 SACs and SPAs form part of a network of nature protection areas across the European Union known as Natura 2000 sites and are protected in the determination of a planning application. Under Regulation 61 of the Habitats Regulations, the competent authority is responsible for assessing whether land use plans or proposed developments could adversely affect a Natura 2000 site. This requires a process known as a Habitat Regulations Assessment (HRA) encompassing two tests under Regulation 63(1) of the Habitats Regulations.

- **Test 1:** having ascertained that the plan is not directly connected to, or necessary for site management for nature conservation, the first test of the HRA, commonly referred to as a screening test, considers whether or not a plan or project is likely to have a significant effect on a European site either alone or in combination with other plans or projects.

A significant effect is any effect that would undermine the conservation objectives for the respective European site and may include physical loss and/or damage of a habitat, disturbance effects, changes to water availability, deposition of contaminants through changes in air quality etc.

- **Test 2:** the second test of the HRA is relevant to those plans or projects that are screened as likely to have a significant effect alone or in combination with other plans or projects and requires an appropriate assessment. The role of the appropriate assessment is to consider the implications of the plan or project for the conservation objectives of the European sites in question and determine whether they will have an adverse effect on the integrity of the site. In carrying out an appropriate assessment, a local authority must have regard to the manner in which the project is proposed to be carried out, or to any conditions or restrictions subject to which it proposes that the consent, permission or other authorisation should be given.

2.1.2 The European Court Judgment (ECJ) *People Over Wind and Sweetman v Coillte Teoranta* (C-323/17) altered the process of screening for likely significant effects by overturning the 2008 *Hart District Council vs. Secretary of State* judgment (2008), known as *Dilley Lane*. This *Dilley Lane* judgment stated “*there is no legal requirement that a screening assessment.... must be carried out in the absence of any mitigation measures that form part of that plan or project.*”

2.1.3 The *People Over Wind and Sweetman* ruling states that “*it is not appropriate, at the screening stage, to take account of measures intended to avoid or reduce the harmful effects of the plan or project on that site*”. This means that mitigation measures must be excluded from assessing whether a project is likely to have a significant effect, either alone or in combination with other plans and projects.

- 2.1.4 A likely significant effect is any effect that is likely to undermine the site's conservation objectives, in light of the characteristics and specific environmental conditions of the SAC and SPA sites.

2.2 Local Plan

- 2.2.1 The Conservation of Habitats and Species Regulations 2017 imparts a duty on Local Planning Authorities (competent authorities) to carefully consider whether any proposals may have a significant effect on a European site, either alone or in combination with other plans or projects.
- 2.2.2 Wiltshire Core Strategy (adopted 2015) provides details on the importance of protecting internationally important nature conservation sites.
- 2.2.3 Core Policy 50 of the Wiltshire Core Strategy – Biodiversity and Geodiversity states:

'Development proposals must demonstrate how they protect features of nature conservation and geological value as part of the design rationale. There is an expectation that such features shall be retained, buffered, and managed favourably in order to maintain their ecological value, connectivity and functionality in the long-term. Where it has been demonstrated that such features cannot be retained, removal or damage shall only be acceptable in circumstances where the anticipated ecological impacts have been mitigated as far as possible and appropriate compensatory measures can be secured to ensure no net loss of the local biodiversity resource, and secure the integrity of local ecological networks and provision of ecosystem services. All development proposals shall incorporate appropriate measures to avoid and reduce disturbance of sensitive wildlife species and habitats throughout the lifetime of the development. Any development potentially affecting a Natura 2000 site must provide avoidance measures in accordance with the strategic plans or guidance set out in paragraphs 6.75-6.77 above where possible, otherwise bespoke measures must be provided to demonstrate that the proposals would have no adverse effect upon the Natura 2000 network. Any development that would have an adverse effect on the integrity of a European nature conservation site will not be in accordance with the Core Strategy.'

- 2.2.4 Core Policy 69 of the Wiltshire Core Strategy – Protection of the River Avon SAC states:

'In order to avoid and reduce potential environmental effects on the River Avon SAC, development will need to incorporate measures during construction and operation to avoid and prevent pollution and mitigate potential disturbance effects; appropriate measures may include consideration of suitable buffer zones along watercourses, habitat enhancements and river access management measures. All development within 20m of the river banks should submit a construction management plan to the local planning authority to ensure

measures proposed during construction are satisfactory. Where additional sewage discharges to a STW cannot be accommodated without measures to offset phosphate loading, development will be required to undertake proportionate measures (which may include contributions towards those measures identified in the Nutrient Management Plan) to demonstrate that the proposals would have no adverse effects upon the SAC’.

2.3 Conservation objectives

- 2.3.1 Conservation objectives are identified for all European sites and cover all features that qualify the site for classification or designation. The conservation objectives apply under the Habitats Regulations, Habitats Directive, and Wild Birds Directive, and must be considered during a Habitats Regulation Assessment, including an Appropriate Assessment.

3.0 DEVELOPMENT PROPOSALS AND SITE CONTEXT

- 3.1 The proposals are for the renovation to include boreholes for a closed-loop GSHP system.
- 3.2 The application site is located adjacent to the River Avon SAC. The village of Littlecott lies south-east of the site. The wider landscape consists of arable fields and woodland. The site comprises developed land; sealed surface, vegetated garden, and mixed scrub.
- 3.3 Section 4 of this document outlines the interest features of the SAC and SPA sites. Section 5 sets out the likely significant effects assessment where objective information is used to determine if the proposed development will, in the absence of mitigation measures, result in any effect that is likely to undermine the designated site's conservation objectives, in light of the characteristics and specific environmental conditions of the SAC and SPA sites.

4.0 BASELINE

- 4.1 The following section sets out the location, designation criteria and conservation objectives of the European sites to be included in this HRA.

River Avon SAC

- 4.2 River Avon SAC is located within the application site boundary and is designed for annex I habitats that are a primary reason for selection, including:

- 3260 Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachium* vegetation

- 4.3 Annex II species present as a primary reason for selection include:

- 1016 Desmoulin's whorl snail (*Vertigo moulinsiana*)
- 1095 Sea lamprey (*Petromyzon marinus*)
- 1096 Brook lamprey (*Lampetra planeri*)
- 1106 Atlantic salmon (*Salmo salar*)
- 1163 Bullhead (*Cottus gobio*)

Conservation objectives

- 4.4 The conservation objectives for River Avon SAC are outlined in the Natural England publication Site code: UK0013016 as follows:

- The extent and distribution of qualifying natural habitats and habitats of qualifying species.
- The structure and function (including typical species) of qualifying natural habitats.
- The structure and function of the habitats of qualifying species.
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely.
- Populations of qualifying species.
- The distribution of qualifying species within the site.

Known vulnerabilities

- 4.5 Vulnerabilities for River Avon SAC are outlined in the site improvement plan (SIP185 Natural England 2014):

- **Physical modification pressures** H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1016 Desmoulin's whorl snail, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead.
- **Siltation pressures** H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic

salmon, S1163 Bullhead.

- **Water pollution pressures/threatens** A037(NB) Bewick's Swan, A051(NB) Gadwall, H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1016 Desmoulin`s whorl snail, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead.
- **Water abstraction pressures/threatens** H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead.
- **Changes in species distribution threatens** A037(NB) Bewick's Swan, S1016 Desmoulin`s whorl snail, S1106 Atlantic salmon.
- **Invasive species pressures/threatens** H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead.
- **Public access/disturbances pressures** A037(NB) Bewick's Swan.
- **Hydrological changes threaten** S1016 Desmoulin`s whorl snail.
- **Inappropriate weed control threatens** A037(NB) Bewick's Swan, H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1092 White-clawed (or Atlantic stream) crayfish, S1095 Sea lamprey, S1096 Brook lamprey, S1163 Bullhead.
- **Change in land management threatens** A037(NB) Bewick's Swan.
- **Habitat fragmentation threatens** A037(NB) Bewick's Swan, A051(NB) Gadwall, H3260 Rivers with floating vegetation often dominated by water-crowfoot, S1016 Desmoulin`s whorl snail, S1095 Sea lamprey, S1096 Brook lamprey, S1106 Atlantic salmon, S1163 Bullhead.

4.6 As outlined above, multiple routes of adverse impacts are possible to the qualifying features of the River Avon SAC. Some of these routes of impact are not relevant to this application due to its scope and proposed site use. The routes of impact that have been considered most relevant are:

- Water pollution
- Invasive species
- Public Access/ Disturbance
- Hydrological changes

Salisbury Plain SAC and SPA

4.7 Salisbury Plain SAC and SPA is located approximately 1.72 kilometres south-east of the application site at its closest point. The SAC is designated for several Annex I habitats that are primary reasons for its selection, including:

- 5130 *Juniperus communis* formations on heaths or calcareous grasslands.
- 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites).

4.8 Annex II species present as a primary reason for selection include:

- 1065 Marsh fritillary butterfly *Euphydryas* (*Eurodryas*, *Hypodryas*) *Aurinia*
- 4.9 The SPA qualifies under article 4.1 of the Birds Directive (79/409/EEC) as it regularly supports nationally important populations of two Annex I species. It supports 10% of the British breeding population of stone-curlew (*Burhinus oedicephalus*), and 1% of Britain's wintering hen harrier (*Circus cyaneus*). Other Annex I species which occur in small numbers include merlin (*Falco columbarius*), short-eared owl (*Asio flammeus*), and Montagu's harrier (*Circus pygargus*).
- 4.10 The site also qualifies under Article 4.2 of the Directive by supporting nationally important breeding populations of two regularly occurring migratory species. Approximately 20% of the British population of quail (*Coturnix coturnix*) and 1% of the British population of hobby (*Falco subbuteo*) breed on the SPA.

Conservation objectives

- 4.9 The conservation objectives for Salisbury Plain SAC are outlined in the Natural England publication Site code: UK0012683 and are as follows:
- The extent and distribution of qualifying natural habitats and habitats of qualifying species.
 - The structure and function (including typical species) of qualifying natural habitats.
 - The structure and function of the habitats of qualifying species.
 - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely.
 - The populations of qualifying species.
 - The distribution of qualifying species within the site.
- 4.10 The conservation objectives for Salisbury Plain SPA are outlined in the Natural England publication Site code: UK9011102 and are as follows:
- The extent and distribution of the habitats of the qualifying features.
 - The structure and function of the habitats of the qualifying features.
 - The supporting processes on which the habitats of the qualifying features rely.
 - The population of each of the qualifying features.
 - The distribution of the qualifying features within the site.

Known vulnerabilities

- 4.10 Vulnerabilities for Salisbury Plain SAC and SPA are outlined in the site improvement plan (SIP209):
- **Changes in species distributions pressures** H5130 Juniper on heaths or calcareous grasslands, H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites).

- **Air pollution: risk of atmospheric nitrogen deposition pressures** H5130
Juniper on heaths or calcareous grasslands, S1065 Marsh fritillary butterfly.

4.11 As outlined above, multiple routes of adverse impacts are possible to Salisbury Plain SAC and SPA. Some of these routes of impact are not relevant to this application due to its scope and proposed site use. The routes of impact that have been considered most relevant are:

- Air pollution: risk of atmospheric nitrogen deposition pressures.

5.0 LIKELY SIGNIFICANT EFFECT TEST

- 5.1 The first test of Regulation 63 of the Habitats Regulations requires an assessment of whether the following elements of the scheme are likely to have a significant effect on the European sites in question, either alone or in combination with other plans and projects.
- 5.2 As set out in paragraph 2.1.1 a likely significant effect (LSE) is any effect that is likely to undermine the designated site's conservation objectives, in light of the characteristics and specific environmental conditions of the SAC and SPA sites. The likely significant effect test must be based on objective information, and the risks must be real, not hypothetical.
- 5.3 Any measures that have been included in the application to reduce impacts on the European site cannot be considered within this test because they are included in the application and would not be included were there not a need to mitigate the impact on European sites (see paragraph 2.1.3).
- 5.4 Tables 1 and 2 on the following pages show the potential pathways through which impacts could arise through development of the project on the European nature conservation sites.

Table 1: River Avon SAC – assessment of likely significant effects

√ Likely significant adverse effect on the Natura 2000 site x Not likely to have a significant adverse effect on the Natura 2000 site. - The principle is not relevant to the screening exercise					
Check list of change Potential impacts	Reduction in area of Annex 1 habitats?	Direct effects on the populations of species for which the site is designated	Indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	Changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?	Interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?
Water pollution	-	X	√	X	-
	The application site lies adjacent to River Avon SAC . As a result, there is a clear hydrological pathway between the application site and the designated site. Activities undertaken within the application site therefore have the potential to affect the water quality of the SAC through surface runoff, drainage pathways, or accidental pollution events. <u>Construction phase</u> During the construction phase, there is potential for impacts to water quality associated with ground disturbance and borehole drilling required for the installation of the closed-loop Ground Source Heat Pump (GSHP) system. Potential sources of pollution could include: • Surface water runoff containing sediment generated by ground disturbance, excavation, and borehole drilling activities. Localised ground vibration associated with drilling could also contribute to minor disturbance of unconsolidated soils or bank substrates, potentially increasing the mobilisation of sediments during rainfall events. • Accidental spills or leaks of fuels, oils, or lubricants from construction vehicles and plant.				

Check list of change Potential impacts	Reduction in area of Annex 1 habitats?	Direct effects on the populations of species for which the site is designated	Indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	Changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?	Interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?
	- Spillage or discharge of drilling fluids or borehole arisings associated with the installation of the GSHP system. - Mobilisation of sediments or contaminants within soils during excavation works. - Inappropriate storage or handling of construction materials and waste, which could result in contaminants entering surface water through rainfall runoff. Given the proximity of the site to the River Avon SAC, there is potential for contaminants generated during construction to enter the watercourse and affect the qualifying habitats and species of the designated site. <u>Operational phase</u> During the operational phase, the proposed GSHP system would operate as a closed-loop system, with heat exchange fluid contained within sealed underground pipework. However, potential pathways for water pollution could still arise in the event of: - Leakage of heat transfer fluid from underground pipework, for example due to system failure or damage; and - Surface runoff from the site transporting nutrients or contaminants into the adjacent watercourse. Although such events would be expected to occur infrequently, the direct hydrological connection between the application site and the River Avon SAC means that a pathway for impacts to the designated site cannot be ruled out at this stage. Conclusion: Likely significant effect.				
	-	X	X	X	X

Check list of change Potential impacts	Reduction in area of Annex 1 habitats?	Direct effects on the populations of species for which the site is designated	Indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	Changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?	Interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?
Invasive species	The application site lies adjacent to the River Avon SAC and currently does not support any invasive species. <u>Construction phase</u> During the construction phase, there is a potential pathway for the spread of invasive non-native species through construction activities. This could occur through: • Movement of soil or vegetation during excavation works, including those associated with borehole drilling. • Transfer of plant fragments or seeds on construction machinery, equipment, or vehicles arriving from other sites. • Importation of soils, aggregates, or landscaping materials, if these are required as part of the works. These pathways could result in the introduction or spread of invasive plant species within the site, which could subsequently disperse to the adjacent River Avon SAC via natural spread mechanisms such as water transport or vegetative growth. However, the proposed works relate to the renovation of an existing residential property and are limited in scale. Excavation works associated with borehole drilling would be localised within the site and would not involve the import or redistribution of large volumes of soil. While there is a theoretical risk of spreading invasive species through the movement of soil during excavation or via plant fragments or seeds carried on construction machinery and vehicles, these pathways will be controlled through standard construction best practice. This includes appropriate site management measures such as the inspection and cleaning of machinery arriving on site, and the appropriate handling and storage of excavated materials. Such measures will be detailed in a Construction Environmental Management Plan (CEMP). Given the small scale of works and the implementation of standard construction practices, the risk of introducing or spreading invasive non-native species to the adjacent River Avon SAC during construction is considered to be very limited.				

Check list of change Potential impacts	Reduction in area of Annex 1 habitats?	Direct effects on the populations of species for which the site is designated	Indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	Changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?	Interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?
	<u>Operational phase</u> During the operational phase, potential pathways for the introduction of invasive non-native species could theoretically occur through domestic gardening activities, including the planting of ornamental species that may subsequently spread beyond the site boundary. However, the site is already in residential use, and the proposed development would not materially change the nature or intensity of land management at the site. As such, the development would not introduce a new pathway for the introduction or spread of invasive species beyond that which already exists. Conclusion: No likely significant effect.				
Public access / disturbance	-	X	X	X	X
	Recreational use of sensitive habitats can result in disturbance to wildlife and physical damage to habitats through trampling, vegetation loss, and erosion. Increased residential development near designated sites can contribute to such effects where it results in an increase in the number of people accessing those sites. The application site lies adjacent to the River Avon SAC. <u>Construction phase</u> During the construction phase there is a limited potential for temporary disturbance associated with the presence of construction workers on site. There is a theoretical possibility that contractors could access land adjacent to the river, for example during breaks. Such activity could result in minor, localised disturbance to habitats immediately adjacent to the site. However, construction activities would be temporary and small in scale. The number of contractors present on site at any one time would be limited and any disturbance				

Check list of change Potential impacts	Reduction in area of Annex 1 habitats?	Direct effects on the populations of species for which the site is designated	Indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	Changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?	Interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?
	would be short-term. Standard construction management measures, such as briefing contractors on the ecological sensitivity of adjacent habitats and restricting unnecessary access beyond the working area, will be implemented through a CEMP. <u>Operational phase</u> During the operational phase, the development would not result in a net increase in residential units. The proposal relates to the renovation of an existing dwelling and the installation of boreholes associated with a GSHP system. As such, the development would not increase the number of residents at the site or materially change the level of recreational activity associated with the property. The site is already in residential use and therefore any informal recreational access to the adjacent river corridor could already occur under the existing baseline conditions. The proposed development would not introduce a new pathway for recreational disturbance nor increase the baseline level of public access to the River Avon SAC. Conclusion: No likely significant effect.				
Hydrological changes and Atmospheric pollution from particulate	-	X	X	X	X
	The application site lies adjacent to the River Avon SAC which is designated for its internationally important chalk river habitats and associated species. As such, changes to hydrology or deterioration in water quality could potentially affect the integrity of the SAC. <u>Construction phase</u> During the construction phase there is potential for minor pollution risks associated with construction activities, such as accidental spills of fuels, oils, or sediments entering nearby drainage pathways. Construction activities associated with the works including the drilling of boreholes for the GSHP system have the potential to generate dust and particulate emissions. These emissions may arise from excavation works, vehicle movements, and drilling activities. Where sensitive habitats occur in close proximity to construction works, dust can settle on vegetation and surrounding substrates. Dust deposition may temporarily affect vegetation by coating leaf				

Check list of change Potential impacts	Reduction in area of Annex 1 habitats?	Direct effects on the populations of species for which the site is designated	Indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	Changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?	Interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?
	surfaces, potentially reducing photosynthesis and altering local habitat conditions where deposition occurs. In addition to direct deposition on vegetation, deposited particulates may also be mobilised during rainfall events and transported via surface runoff, linking to hydrological pathways. However, these risks are temporary and can be managed through standard good practice construction measures, including appropriate storage of materials and implementation of pollution prevention measures which will be detailed in the CEMP. <u>Operational phase</u> The proposals will not result in a material increase in foul water generation or surface water runoff compared to the existing baseline. The operation of the GSHP will involve a closed-loop system and therefore will not result in abstraction from, or discharge to, groundwater or surface water, and will not produce combustion emissions or dust. As such, the proposals are not expected to alter groundwater flows or water levels that could influence the hydrological regime of the SAC, and no pathway for atmospheric particulate pollution exists during operation. Conclusion: No likely significant effect				

Table 2: Salisbury Plain SAC and SPA – assessment of likely significant effects

√	Likely significant adverse effect on the Natura 2000 site
x	Not likely to have a significant adverse effect on the Natura 2000 site.
-	The principle is not relevant to the screening exercise

Check list of change Potential impacts	Reduction in area of Annex 1 habitats?	Direct effects on the populations of species for which the site is designated	Indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	Changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?	Interruption or degradation of the physical, chemical, or biological processes that support habitats and species for which the site was designated or classified?
	-	X	X	X	X
Air pollution: risk of atmospheric nitrogen deposition	The application site is located approximately 1.72 km from Salisbury Plain SAC and SPA which are designated in part for sensitive calcareous grassland habitats and associated species including the marsh fritillary butterfly. These habitats may be sensitive to atmospheric nitrogen deposition, which can alter plant community composition and lead to declines in characteristic species of nutrient-poor grasslands. <u>Construction phase</u> During the construction phase there may be a temporary and minor increase in vehicle movements associated with contractors travelling to and from the site and the delivery of materials. However, these movements will be short-term and limited in scale. During the operational phase, the proposal relates to the renovation of an existing dwelling including boreholes for a closed-loop GSHP system and therefore will not result in a meaningful increase in traffic generation above the existing baseline. Vehicle emissions are a recognised source of nitrogen oxides (NOx) and ammonia which can contribute to nitrogen deposition on nearby habitats. However, research has consistently demonstrated that concentrations of traffic-related pollutants decline rapidly				

Check list of change Potential impacts	Reduction in area of Annex 1 habitats?	Direct effects on the populations of species for which the site is designated	Indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	Changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?	Interruption or degradation of the physical, chemical, or biological processes that support habitats and species for which the site was designated or classified?
	with distance from roads and emission sources. Studies have shown that nitrogen dioxide and ammonia concentrations can decline by up to 90% within the first 10–15 metres from the road edge (Cape et al., 2004), and that deposition rates decrease markedly with increasing distance from traffic sources (Gilbert et al., 2003). Reflecting this evidence, UK guidance used in ecological and air quality assessments, including the Design Manual for Roads and Bridges, recognises that road traffic emissions are unlikely to result in significant pollution effects beyond 200 metres from a road (Highways England et al., 2019). As the application site is located approximately 1.72 km from the designated site, well beyond the distance at which traffic-related emissions are considered capable of affecting sensitive habitats, the proposal will not measurably increase nitrogen deposition within the SAC or SPA. <u>Operational phase</u> During the operational phase, the proposed development would not involve activities that generate atmospheric nitrogen. The GSHP system operates through a closed-loop underground pipe network and does not produce combustion emissions. Therefore, no pathway for atmospheric particulate pollution exists during operation. Given the limited scale of the proposed development, the temporary and minor increase in construction traffic, and the distance of approximately 1.72 km between the application site and the designated sites, it is considered highly unlikely that emissions associated with the proposal would result in any measurable increase in nitrogen deposition within the SAC or SPA. Conclusion: No likely significant effect				

- 5.5 The analysis in tables 1 and 2 established that there will be a potential likely significant effect from water pollution and atmospheric pollution from particulate on the River Avon SAC and no likely significant effects on the Salisbury Plain SAC and SPA. Due to these potential impacts, an appropriate assessment would be required.

6.0 APPROPRIATE ASSESSMENT

- 6.1 Section 5 identified the possible pathways likely to have a significant effect on the designated sites. In the absence of mitigation, the analysis identified the need for an appropriate assessment of water pollution impacts on the River Avon SAC during both the construction and operational phases, as well as impacts from atmospheric pollution from particulate during the construction phase.

Mitigation

- 6.2 A Construction Environmental Management Plan (CEMP) will be prepared and implemented to mitigate for the potential impacts during construction from dust generation and deposition, from construction traffic, and from pollution incidents on River Avon SAC. The CEMP will cover the following:

- Details of how any building materials, fuels and chemicals will be stored and controlled on site to avoid the risk of pollution and siltation, for example all building materials will be stored appropriately in specific designated areas or a construction site compound to avoid potential pollution incidents and creation of dust.
- Any working plant will be fitted with drip trays in order to avoid potential pollution incidents and refuelling of plant/vehicles will either take place off site or within the construction site compound, which will be situated at a safe distance from the designated sites.
- Installation of fencing along the perimeter of the construction zone to segregate the working area from the surrounding land.
- Details on the proposed construction methodology including factors such as construction access, methods of construction, timing of works, use of lighting, and working hours.
- Dust control and suppression methodology.
- Implementation of specific measures to prevent and limit siltation, such as installation of silt fencing, silt wattles and silt mats at key working areas where surface water runoff could be an issue.

- 6.3 Additional mitigation measures specific to the installation and operation of the GSHP boreholes are detailed within the Hydro-Thermogeological Appraisal (B.A. Hydro Solutions, 2026) and will be implemented as part of the scheme design and installation process. Key measures include:

Contamination control

- Boreholes will be commenced with a trial pit to a depth of up to 1.2 metres to check for services/utilities and for any signs of contamination. If contamination is encountered, it will be reported and works would be paused to confirm and appropriately manage the material.

- The drilling rig will have been serviced and well maintained prior to mobilisation to site. No servicing or works shall be undertaken on the rig while it is on site to avoid any risk of oil, fuel or loss of other contaminants to ground.
- Fuel shall not be stored on site for the drilling rig and associated equipment. Fuel shall only be brought to site when needed, stored on spill trays with spill kits and removed when no longer needed. Refuelling on site will be avoided wherever possible.
- Only food-grade drilling lubricants and environmentally friendly products will be used in the drilling process.

Ground water Quality and temperature

- The quality of groundwater present shall be monitored by the contractor during drilling to confirm the water is of good quality, avoid the loss or drilling fluids into the local environment and to prevent contamination of surface water and groundwater by ensuring best practice is followed at all times. Groundwater with depth, is already in hydraulic continuity with each layer, grouting of the boreholes on completion will maintain any stratification present.
- Thermal modelling of the proposed scheme has informed the closed loop ground collector design so that the heat recovered is sustainable; the amount of heat to be removed is replaced by solar radiation annually. Ground temperatures will not drop below c.5 degrees centigrade in the natural ground immediately around the boreholes during the winter, moving away from the boreholes natural ground temperatures are reached within 3 to 6 metres of the boreholes, representing the permanent maximum radial extent/influence of the installation. Ground temperatures will fully recover annually within the ground 3 to 6 metres of the closed loop boreholes.
- The design is for there to be no thermal influence from the system off site, as the scheme is designed to recover all of the heat potential needed within a radius of 3 to 6 metres around each borehole. Thermal recharge originating from solar thermal radiation over each year.
- There would be no thermal influence on the River Avon or any habitats near or surrounding the site.

Borehole Construction & Ground Stability

- Temporary casing (circa 6 to 7 inch in diameter) shall be used to line the top sections of the boreholes. This will contain the influence of drilling and prevent there being any influence outside of the casing on the ground and surrounding environment.
- The boreholes shall be drilled with clean water, compressed air or a combination. The driller shall seek to recover all drill cuttings from the borehole with minimal loss of drill fluids into the ground

- Drilling shall not remove any more material than that through which the borehole passes and thus will not undermine or cause subsidence, slumping or collapse of the ground. The grout seal means there would be no future movement of groundwater and thus no erosion or displacement of the ground in the future.

Noise and Vibration Management

- The drilling rig to be used on this site is one of the latest generations of rigs which generates a noise equivalent to heavy goods vehicle or an excavator. The noise most of the time is from the engine which is mainly running in idle and peaks when drilling rods are being advanced through hard(er) ground. In this geology the rig is not expected to struggle as the ground is firm but not excessively hard. Thus, the noise and any vibration would not be any greater than that from an excavator working.
- Vibration from the drilling is very rapidly absorbed and dissipated within the ground. Immediately around the drilling rig there would be some minor vibration felt, beyond 5 to 10 metres no vibration would be detected.

Regulatory Compliance

- Ensure boreholes are fully sealed and grouted.
- Maintain required separation distances from sensitive receptors.
- Follow British Standards and GSHP Association guidelines.

7.0 IN-COMBINATION EFFECTS

- 7.1 A search of the recent registered planning applications (dated between 2021 and 2026) on the Wiltshire Council website using the search terms 'SN9 6AW' was undertaken in order to identify any development proposals or works within the immediate locality that could potentially have significant adverse ecological effects in-combination with the site proposals.
- 7.2 The search identified a number of small-scale domestic proposals in the immediate area, including minor extensions, internal alterations, roof and wall repairs, tree works, and the addition of small fenestration features (PL/2026/00935, PL/2025/08575, PL/2025/08825, PL/2025/07034, PL/2024/07733, PL/2022/04448). One past application on the site itself related to minor tree works (PL/2024/00216). None of the identified applications involve significant land-use change, habitat loss, or activities with the potential to affect water quality, hydrology, or air quality in a manner relevant to the adjacent River Avon SAC or the Salisbury Plain SAC/SPA. It is therefore considered that the level of in-combination effects upon the identified designated sites is negligible. No cumulative effects are considered following these developments.

8.0 CONCLUSION

- 8.1 Having concluded that the application is likely to have a significant effect in the absence of avoidance, mitigation measures have been proposed to reduce these impacts to not significant to the River Avon SAC. This document sets out a Shadow Appropriate Assessment and can be used by Wiltshire Council as a Competent Authority to undertake its own appropriate assessment by the requirements of Regulation 63 of the Habitats and Species Regulations 2017 (as amended).
- 8.2 This document identifies a number of mitigation measures that will need to be implemented in full to ensure that there will be no adverse effect on the integrity of the designated sites (listed above).

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APPENDIX I: SITE LOCATION PLAN

