

West Burton Stream & Pill Pond

3 May 2022

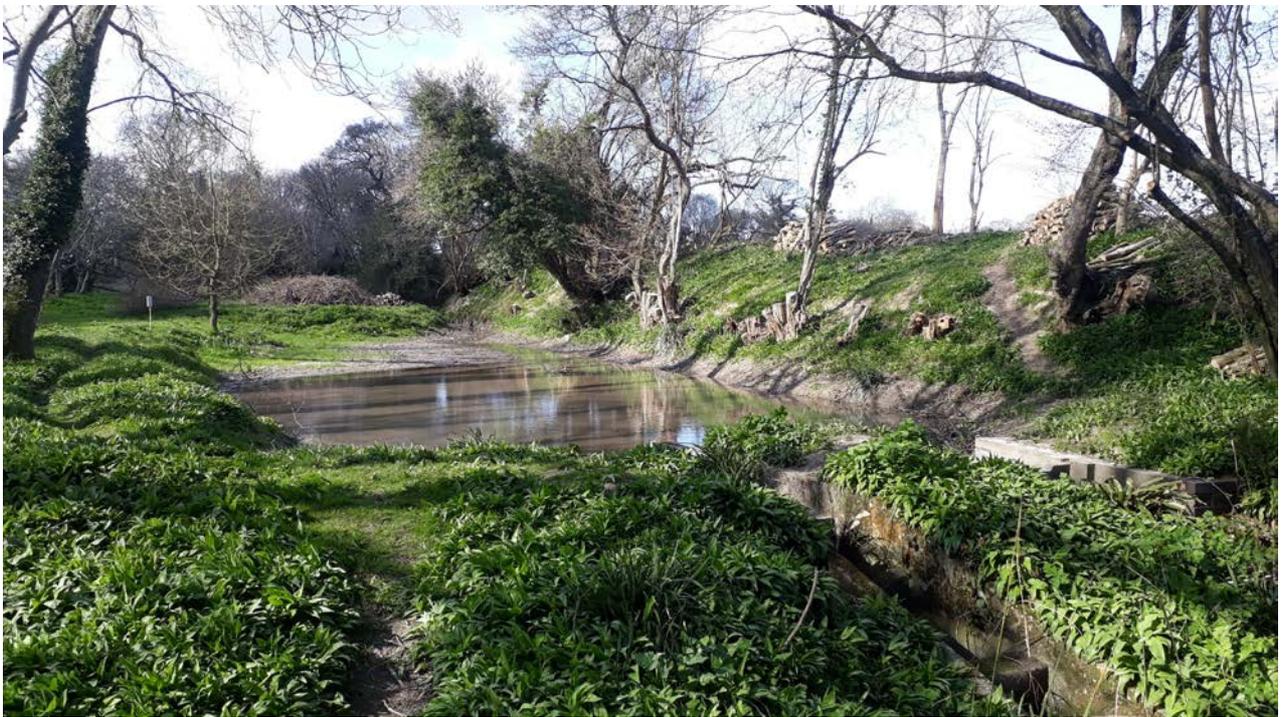


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INTRODUCTION

This Design and Access Statement has been produced in support of a planning application for the removal of an online pond, the restoration of a chalk stream, and the improvement of 20m of public footpath at West Burton, West Sussex.

The West Burton Stream is a small chalk-based stream that rises from the northern scarp slope of the South Downs just to the South of Bignor. The stream runs to the south of West Burton, before dropping into the tidal river Arun at Bury, around 3 km from its source.

Bury Parish Council (BPC) own and manage the section of this stream running through Pill Common, West Burton, and have been looking for opportunities to enhance the site's biodiversity and ecological connectivity, as well address issues with the long-term sustainability of its management. Chris Daykin, Bury Parish Councilor, has been working closely with South Downs National Park Authority (SDNPA) Ranger, Charles Winchester, and Wild Trout Trust Conservation Officer, Andy Thomas, to develop a plan to address these issues and improve the site.

Currently the site contains a dammed online pond, known locally as the Pill Pond, which is acting as a sediment trap and creating the need for ongoing and costly de-silting operations. The pond also has the effect of significantly reducing ecological connectivity between the upper and lower parts of the stream catchment. Impounding weirs and dams on streams and rivers are one of the major causes of Water Framework Directive failures, often being responsible for a lack of effective sediment transport, ecological fragmentation, and restricted species movement and migration. The dam at Pill Pond is no exception, acting to block free fish migration, as well as adversely impacting habitat quality for a significant distance above the pond inlet. Moreover, due to the rapidly deteriorating condition of the dam, the pond is unable to consistently retain sufficient water levels to provide a valuable habitat resource, and is at a high risk of complete failure in future.

Approximately 20 metres downstream of the pond there is also a section of public footpath (part of the West Sussex Literary Trail promoted route) that is being consistently undermined and eroded by the stream, and has been shored up using wooden toe boarding as a temporary protection measure. Habitat quality within the stream is currently adversely impacted by the toe boarding and, despite this protection, the stream continues to undermine the bank behind the boards, inevitably leading to the failure of the surface of this stretch of footpath — something which will limit access to the common and cause significant expense to West Sussex County Council rights of way team.

This planning application is being submitted, in partnership with South Downs National Park Authority, to address these issues. This will be achieved by removing the online pond, reconnecting the sections of West Burton stream up and downstream of the dam, and restoring a biodiverse chalk stream with a low-lying wet mini-floodplain in place of the old pond. The project will also address the erosion of the public footpath by moving the course of the stream away from the edge of the path, allowing for wider path surface and a more resilient, well-vegetated and biodiverse stream bank.

The Partnership Management Plan for the National Park confirms that the main purposes of the National Park are:

1. To conserve and enhance the natural beauty, wildlife and cultural heritage of the area.
2. To promote opportunities for the understanding and enjoyment of the special qualities of the National Park by the public.

The National Park Authority also has a duty when carrying out these purposes to seek to foster the economic and social well-being of the local communities within the National Park.

The South Downs Partnership Management Plan (2020-25) policies which are particularly relevant to these proposed works are:

- POLICY 1: Conserve and enhance the natural beauty and special qualities of the landscape and its setting, in ways that allow it to continue to evolve and become more resilient to the impacts of climate change and other pressures
- POLICY 4: Create more, bigger, better managed and connected areas of habitat in and around the National Park, which deliver multiple benefits for people and wildlife
- POLICY 6: Favour natural functions and processes in and around the National Park where they support the value and resilience
- POLICY 24: Support and promote river catchment management approaches that integrate sustainable land management, wildlife conservation, surface and groundwater quality and flood risk management of terrestrial, freshwater, marine, coastal and estuarine habitats.
- POLICY 26: Raise awareness of the importance of chalk streams and rivers and develop a programme of restoration and rehabilitation
- POLICY 28: Improve and maintain rights of way and access land, to provide a better connected and accessible network for a range of abilities and users, and to reduce conflict where it occurs.

This project will also support the delivery of the following outcomes of the South Downs Partnership Management Plan (2020-2025):

- 1.2 To improve green and blue infrastructure to deliver nature recovery networks and connect people to nature within and around the National Park.
- 2.1 To improve soil and water by reducing soil erosion, improving carbon capture and filtration and reconnecting wetland habitats.
- 3.1 To create, restore and improve areas of priority habitat to be more, bigger, better, and joined up at a landscape scale.
- 5.2 To improve accessibility through a network of high quality routes connecting communities with the landscape, heritage, attractions and transport hubs and gateways.
- 8.1 To increase and diversify volunteering opportunities that support the National Park.

The National Planning Policy Framework supports developments that minimise environmental impact and provide net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures. Moreover, the South Downs Local Plan, adopted in 2019, has a range of policies to support developments that deliver sustainable environmental management, safeguard views, conserve and enhance aquatic biodiversity, and improve access. The following policies from this 2019 Local Plan are also in support of the proposed works:

Core Policy SD2: Ecosystem Services

1. Development proposals will be permitted where they have an overall positive impact on the ability of the natural environment to contribute goods and services. This will be achieved through the use of high quality design, and by delivering all opportunities to:

a) Sustainably manage land and water environments; b) Protect and provide more, better and joined up natural habitats; c) Conserve water resources and improve water quality; d) Manage and mitigate the risk of flooding; e) Improve the National Park's resilience to, and mitigation of, climate change; f) Increase the ability to store carbon through new planting or other means; g) Conserve and enhance soils, use soils sustainably and protect the best and most versatile agricultural land; h) Support the sustainable production and use of food, forestry and raw materials; i) Reduce levels of pollution; j) Improve opportunities for peoples' health and wellbeing; and k) Provide opportunities for access to the natural and cultural resources which contribute to the special qualities.

Strategic Policy SD6: Safeguarding Views

2. Development proposals will be permitted that conserve and enhance the following view types and patterns identified in the Viewshed Characterisation & Analysis Study: c) Views from public rights of way, open access land and other publicly accessible areas;

Strategic Policy SD9: Biodiversity and Geodiversity

1. Development proposals will be permitted where they conserve and enhance biodiversity and geodiversity, giving particular regard to ecological networks and areas with high potential for priority habitat restoration or creation. Prior to determination, up-to-date ecological information should be provided which demonstrates that development proposals:

a) Retain, protect and enhance features of biodiversity and geological interest (including supporting habitat and commuting routes through the site and taking due account of any use by migratory species) and ensure appropriate and long-term management of those features; b) Identify and incorporate opportunities for net gains in biodiversity; c) Contribute to the restoration and enhancement of existing habitats, the creation of wildlife habitats and the creation of linkages between sites to create and enhance local and regional ecological networks; d) Protect and support recovery of rare, notable and priority species; e) Seek to eradicate or control any invasive non-native species present on site; f) Contribute to the protection, management and enhancement of biodiversity and geodiversity, for example by supporting the delivery of GI and Biodiversity Action Plan targets and enhance Biodiversity Opportunity Areas (BOA); and g) Comply with the mitigation hierarchy as set out in national policy e) Outside of designated sites i. Development proposals should identify and incorporate opportunities to conserve, restore and recreate priority habitats and ecological networks. Development proposals should take opportunities to contribute and deliver on the aims and objectives of the relevant biodiversity strategies where possible.

Development Management Policy SD11: Trees, Woodland and Hedgerows

1. Development proposals will be permitted where they conserve and enhance trees, hedgerows and woodlands.
2. Development proposals that affect trees, hedgerows and woodland must demonstrate that they have been informed by a full site survey, including an Ecological Survey, Arboricultural Method Statement and associated Tree Protection Plan, and include a management plan.
4. Development proposals must provide adequate protection zones and buffers around hedgerows and other woodland and trees to prevent damage to root systems and taking account of future growth. A minimum buffer of 15 metres will be required between the development and ancient woodland or veteran trees.

Strategic Policy SD17: Protection of the Water Environment

1. Development proposals that affect groundwater, surface water features, and watercourse corridors will not be permitted unless they conserve and enhance the following:
a) Water quality and quantity, and help achieve requirements of the European Water Framework Directive, or its replacement;

- b) Ability of groundwater, surface water features and watercourse corridors to function by natural processes throughout seasonal variations, within the immediate vicinity, and both upstream and downstream of the site of the proposal; and
- c) Specifically for surface water features and watercourse corridors:
 - i. Biodiversity;
 - ii. Historic significance;
 - iii. Character, appearance, and setting;
 - iv. Public access to and along the waterway for recreational opportunities; and
 - v. Ability for maintenance of the watercourse, including for flood risk management purposes.

Strategic Policy SD20 - Walking, Cycling and Equestrian Routes

- 1) Development proposals will be permitted provided they contribute to a network of attractive and functional non-motorised travel routes, with appropriate signage, throughout the National Park.

DESCRIPTION OF DEVELOPMENT

The proposed development — hereon these works are referred to as ‘the proposed works’ — is to cut a notch in the dam wall by removing the concrete fish pass (currently functioning as trap for wildlife due to dam failure causing inconsistent and low water levels — see Photo 1, below) and wooden step boards, thereby draining down the online pond, and reconnecting the West Burton stream catchment.



Photo 1: Frogs trapped in the concrete fish pass located in the dam wall. Due to gradual degradation and leakage through the bottom of the dam, this fish pass no longer functions as intended and acts instead as a trap for wildlife.

The banks either side of this new notch will be battered and re-landscaped to create gently sloping, stable banks that allow the stream to pass through, and the low-lying footprint of the former pond will be transformed into a wet, species-rich ‘mini-floodplain’ (see Illustration 1, below, for a plan view of the newly restored stream flowing through the footprint of the old pond, as well as Photo 2 for an example of a newly restored stream channel).

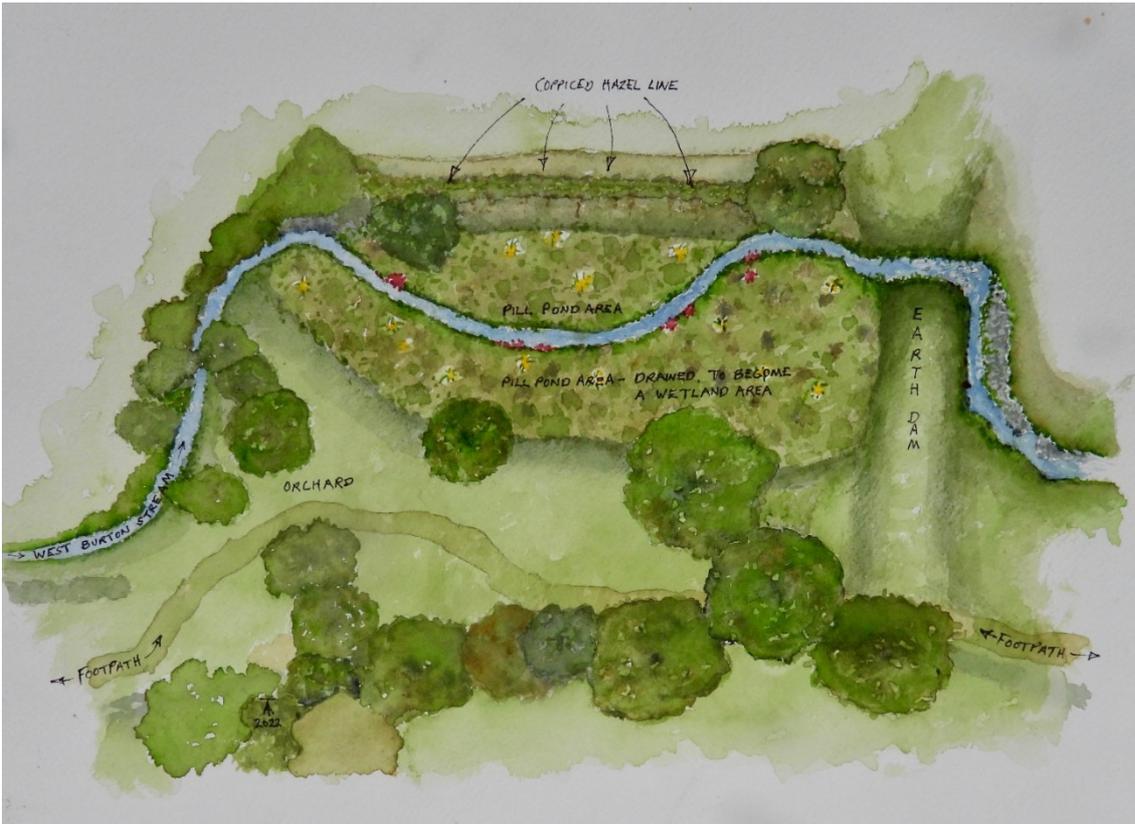


Illustration 1. Plan view of the site following the



Illustration 2. View looking upstream once a notch has been cut in the dam, and the concrete fish pass and wooden step boards removed. (For a before picture from the same viewpoint, see image on front cover of this document.)



Photo 2: Example of a newly restored stream channel with gently sloping, biodiverse margins.

The proposed works also seek to address the erosion of the public footpath by moving the course of the stream away from the edge of the path, allowing for wider path surface and more resilient, well-vegetated and biodiverse stream bank.



Photo 3: West Burton Stream channel immediately downstream of proposed realignment away from footpath. Note the wider channel, more gently sloping banks, light sinuosity, and well-vegetated backsides. This is what the proposed works to realign the section of stream currently contained by toe boarding will create along this entire section.

Pond drain-down and sediment management

Works are scheduled for summer 2022 when flows will be low and the first stage will be draining down the pond. Water level in the pond can be controlled using both the wooden drop boards in the dam wall, and the capped low-level pipe. Before any groundworks commences water levels will be drawn down by removing the drop boards sequentially to allow the pond to drain down slowly. The cap on the end of the pipe may also need to be removed in order to ensure the pond is drained completely. Depending on flow conditions at the time, it may also necessary to cut a narrow slot in the invert of the structure to completely drain the pond.



Photo 4: Image of a Sedi-Mat after use in a project to capture and store sediment from the hy-tex website <https://www.hy-tex.co.uk/product/sedimats/>

The pond's water levels are currently less than 1m deep at the dam end and draining the pond slowly over a two-day period will reduce any risks of complete dam failure due to elevated flow velocities. The pond has also been dredged in the last 2 years, and the bed materials have been tested using a ranging pole and waders, so the quantity of fine sediments stored within the pond are known to be modest and manageable. A slow and controlled drain-down process will ensure that the majority of settled sediments are retained within the pond. These will quickly consolidate once the pond is drained and they can then be landscaped within the existing confines of the pond boundaries with a tracked excavator.

A series of temporary biodegradable jute Sedi-Mat will also be located across the stream channel in the section immediately downstream of dam to mitigate for any loss of fine pond sediments. On completion of the stream channel restoration, these mats to re removed and pegged out on bare bank sections and seeded or plug planted.

Waste Management

All existing materials used to construct the dam (i.e. earth, stone and a small amount of concrete from the defunct fish pass) will be used as valuable landscaping materials, as well as being redistributed within the footprint of the drained pond to help provide bed material for the newly restored section of stream. The small slab of concrete used for the fish pass will be broken up on-site to a suitable size (i.e. between 1/2 to 2 inches, the ideal size for spawning wild trout) using a tracked concrete crusher and used as bed material in the new stream channel. The wooden boards will also be removed from site and any in a re-useable condition recycled.

Stream Restoration Methodology

Once the pond is empty, the stream will find its own lowest point through the dry pond bed. It is possible this will be a braided channel but once the route has been established, the excavator will be used to consolidate a new, meandering single-channel. Material from the pond's earthen dam will be redistributed to help form the new, gently sloping stream banks. A single 20 tonne load of angular gravel will also be imported via dumper truck and redistributed using

a tracked excavator to construct a natural stream bed that will be contiguous with the upstream and downstream reaches — as well as helping to create naturalistic pool, riffle and glide sequences typical of these kinds of stream flowing from the northern slope of the Downs. The new stream margins will be low-lying, creating a biologically valuable ‘mini-floodplain’ between the newly constructed and gently sloping stream banks, and the pre-existing banks of the former pond.

Some additional regrading of the stream bed immediately downstream of the deconstructed dam may be required. The existing pond bed material is likely to be too friable and not suitable for the stream/bank interface, so a new margin will be created using hazel faggot bundles (some of which were harvested on-site by coppicing around the edge of the pond over winter) tied together and secured using untreated, locally-sourced cleft chestnut stakes. A biodegradable jute soil saver will be pinned the inside of the faggot revetment to form a temporary envelope, which can then be filled with soft pond bed material, and planted up with National Park volunteers using local-origin, native wetland plug plants typical of this habitat. As per the Preliminary Ecological Assessment, species will include: Blue Water-speedwell *Veronica anagallis-aquatica*, Water Forget-me-not *Myosotis scorpioides*, Yellow Iris *Iris pseudacorus*, Purple Loosestrife *Lythrum salicaria*, Branched Bur-reed *Sparganium erectum*, Greater Tussock Sedge *Carex paniculata*, Reed Canary-grass *Phalaris arundinacea*, Brooklime *Veronica beccabunga*, Water Mint *Mentha aquatica*, Great Willowherb *Epilobium hirsutum* and Common Comfrey *Symphytum officinale* (see the accompanying Preliminary Ecological Assessment for a full list of potential plug plant species). Any large natural stones found in the toe of the dam will be redistributed within the new stream channel to create additional micro habitats for small fish and invertebrates.

Downstream of the existing pond dam there is a 20 metre section of stream channel that butts up against the footpath and is currently revetted with vertical timber toe boarding. Here a new route for the channel will be created at least one channel width (i.e. 1 metre) away from the footpath using the tracked excavator. The spoil generated from excavating this new channel will be side cast and used to in-fill the existing channel, and a portion of the 20 tonnes of angular gravel used in the upstream restoration brought down to create a natural stream bed. Sods of *Carex* (sedge) that currently line the left bank margin will be used in conjunction with hazel faggot revetment to create new soft margins and more erosion-resistant gently sloping banks along the edge of the new channel. As with the upstream restoration, biodegradable jute soil saver will also be pinned the inside of the faggot revetment to form a temporary envelope, which can then be filled with soft pond bed material, and planted up by National Park volunteers using local-origin, native wetland plug plants typical of this habitat (see indicative species list in previous paragraph). This will ensure the footpath is well buffered from undermining by the stream, as well as creating a larger area of valuable marginal habitat, and a more natural stream profile than the current narrow, straightened and tightly constrained section of channel.

All existing trees will be retained and protected during the works, and there will be no loss of trees or deadwood from the site (please see the accompanying Arboricultural Method Statement for full account of the mitigation measures that will be taken to ensure there is no damage to any trees during the proposed works).

LANDSCAPE APPRAISAL

Introduction

This Landscape and Visual Impact Appraisal (LVIA) has been created in support of the planning application for dam removal, stream restoration, and access improvements at Pill Common, West Burton (the site). The proposed works will take place within the footprint of the online 'Pill Pond' and on a 20m stretch of downstream channel and footpath at the southwestern end of the site. The extent of this is shown in the site plan (see accompanying documents). Due to the small scale and low impact of the proposed works, this standalone 'appraisal' has been prepared in place of the more formal Landscape and Visual Impact Assessment and Environmental Impact Assessment.

Study Area and Baseline information

Pill Common is situated immediately to the West of the village of West Burton and ESE of the village of Bignor. Although the West Sussex Literary Trail — a promoted public footpath — runs through the common (which is itself publicly accessible due to its registered common designation) and alongside the pond and stream, the site is hidden from all sides by mature trees and vegetation, and by steep banks along its northern boundary. As there is no planned work or impact on these trees, the proposed works will have no impact on views from the surrounding landscape (please refer to photographs included in this document, below).



Photo 5: on the left is a view of the section of public footpath being undermined walking in a south easterly direction, and on the right a view of the same section of footpath walking in the opposite north westerly direction. The image on the right, taken in winter, clearly shows the wooden toe boarding that is currently being used to slow erosion of this narrow stretch of footpath.



Photo 6: view of the Pill Pond from upstream looking downstream.

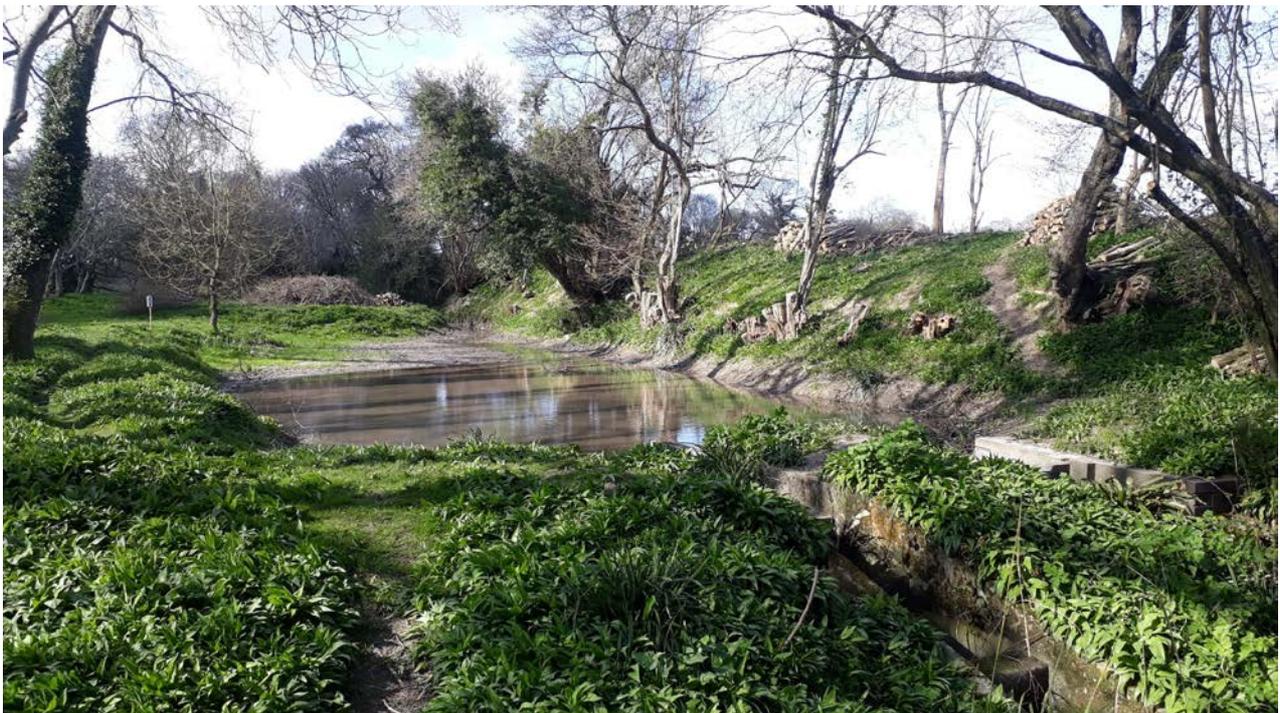


Photo 7: view of the Pill Pond from downstream looking upstream. The concrete fish pass and wooden drop board structure can be seen in the foreground.



Photo 8: view of the Pill Pond from below the dam. The concrete fish pass, wooden drop boards, and capped low-level pipe can clearly be seen in the foreground.

Landscape Character

The South Downs landscape character type is outlined as Greensand Terrace (K). In keeping with this, the site affords a strong sense of rural tranquillity resulting from the absence of overt human impact and a low density of settlement. This area is also dominated by the adjacent steep chalk escarpment, which forms a dramatic backdrop, and a series of small streams — of which the West Burton streams one — that rise from springs near the foot of the Downs. The proposed works will improve access to, and enhance the experience of, this tranquil part of the South Downs landscape, providing a newly restored stream channel and biologically rich ‘mini-floodplain’ for walkers to enjoy as they pass along the West Sussex Literary Trail.

Conclusions

As evidenced above, primarily by the visual analysis, but also in the considerations of landscape character, the proposed works on Pill Common, West Burton, will conserve and enhance the visual integrity, identity and scenic quality of the National Park together with the Landscape Character of the area. With consideration given to design, ecological benefits, and use of appropriate materials, the project can deliver public benefit with minimal impact.

ECOLOGY

An ecological appraisal and Biodiversity Net Gain report was commissioned for the site, and the findings of the ecological surveys have been submitted as part of the planning application (see planning documents).

Measures in place in response to the ecological report include:

- Limiting vegetation clearance to outside of the bird-nesting season, considered to be March to August inclusive. If any vegetation is cleared during the bird-nesting season, a thorough check will first be undertaken by a suitably experienced person to ensure no nesting birds are present.
- The disturbance of fallen deadwood will be minimised as far as possible. Where deadwood is disturbed, it will be retained on site, as close as possible to its original position, and moved carefully to preserve as much of its structural integrity as possible.
- Pond drainage will be undertaken as late in the autumn as late as possible in the year to reduce the likelihood of amphibians being present. Fish will also be safeguarded by ensuring a fisheries contractor will be on site during the drain down to immediately relocate a trapped fish downstream of the site
- the installation of the jute Sedi-Mats prior to work will ensure any sediment disturbed during the works is trapped, protecting downstream habitat.
- Earthworks will proceed slowly and from as few points as possible, to minimise the potential for compaction and disturbance to vegetation. Earthworks will also be undertaken outside of the reptile hibernation period (late-October to March), and that a ranger will be present throughout to oversee works, and ensure that if any animals (such as reptiles) are found, they can be captured by hand and safely relocated to another area of the site (outside of the works area and on the same side of the watercourse as they were captured).
- Any temporary storage of spoil will be in as few places as possible, to minimise the potential of damaging woodland vegetation.
- To safeguard badgers, and any other species commenting through the site, any trenches left uncovered have a means of escape (such as a ramp), and no obvious mammal pathways are blocked.
- A clear delineation will be made between the existing footpath and the filled channel of West Burton Stream, in the section to be relocated due to erosion. This is to ensure that the ground is able to recolonise with woodland ground flora and is not subject to erosion, poaching and nutrient enrichment impacts from the footpath.

ECOSYSTEM SERVICES STATEMENT

Ecosystem Service Actions	Policy SD2 criterion
<p>By restoring the stream to its natural state, and reconnecting the lower and upper catchment, a more sustainable and biodiverse freshwater ecosystem will be created in which species – such as fish and freshwater invertebrates – can move up and downstream.</p>	<ul style="list-style-type: none"> a) Sustainably manage land and water environments; b) Protect and provide more, better and joined up natural habitats; e) Improve the National Park’s resilience to, and mitigation of, climate change;
<p>By removing the dam (which is already degrading and leaking from its base in several places), the risk of total dam failure during a high-flow/flooding event will be removed.</p> <p>In addition, the removal of the dam and drain-down of the online pond will ensure any remaining sediment within the pond is trapped in place to create a well-vegetated, species-rich mini-floodplain. In combination with a series of leaky dams along the length of the restored channel, this mini-floodplain will create space for more graduated, natural, and sustainable sediment storage, as well as helping to facilitate water filtration in future.</p>	<ul style="list-style-type: none"> c) Conserve water resources and improve water quality; d) Manage and mitigate the risk of flooding; e) Improve the National Park’s resilience to, and mitigation of, climate change; f) Increase the ability to store carbon through new planting or other means; g) Conserve and enhance soils; i) Reduce levels of pollution;
<p>By moving the stream channel below the pond away from the public footpath, the path will be protected from future erosion & undermining, thus improving access. This downstream section of channel will also be enhanced by making it wider, shallower, and more sinuous, thereby improving its habitat value for a range of freshwater species.</p>	<ul style="list-style-type: none"> j) Improve opportunities for people’s health and wellbeing; k) Provide opportunities for access to the natural and cultural resources which contribute to the special qualities.
<p>During the construction phase of the project, local materials (e.g. for making hazel faggots to direct the new stream channel) will be harvested & sourced from local woodlands (some of the hazel for making the faggots will actually come from Pill Common itself, having been harvested the previous winter).</p>	<ul style="list-style-type: none"> h) Support the sustainable production and use of food, forestry and raw materials;

SOILS MANAGEMENT PLAN

The soil type recorded on site consists of freely draining, lime-rich soils with a loamy texture (see map below).



Map 1: Pill Common Soilsmapes

No soil will be removed from or taken onto site, resulting in no net change. Any soil excavated during construction will be re-used for landscaping within the footprint of the old pond, or to re-fill the old channel when a new one is created in order to move the stream away from the edge of the footpath.

FLOOD RISK ASSESSMENT

West Burton Stream is small a groundwater-fed stream draining off the downland sides of the Arun Valley. The catchment is small and rural, with the area either side and above the site exclusively used for agriculture. The removal of the pond dam and restoration of a natural stream channel will have no significant impact on local stream hydraulics and does not pose any additional flood risk.

The site is also not within an Environment Agency flood risk zone and Chichester District Council's Coastal & Water Management team (who deal with works to watercourses that are not classified as main river) have been consulted on the proposed works and attended two site visits. An Ordinary Watercourse Consent application will be submitted to them alongside this planning application.

The creation of low-lying 'mini-floodplain' area within in the footprint of the current Pill Pond will provide valuable water storage capacity during times of high flow, and the selective introduction of some woody debris (to create 'leaky dams') immediately downstream of the pond — as well as the gently meandering new section of channel in place of the old pond — will further slow the flow and help remove any suspended sediment washed off from surrounding agricultural fields. The proposed works will also remove the flood risk posed by the dam totally failing during times of high flow.

LIGHTING ASSESSMENT

No lighting is proposed during construction or after works are completed.

NOISE IMPACT ASSESSMENT

Apart from the use of an excavator and concrete crusher when the works themselves are undertaken (which will last approximately 5 days), there will be no impact on noise levels following the stream is restoration and completion of works.