



WILD TROUT TRUST

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Northend Stream – Sussex Ouse



Advisory Visit December 2025

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Executive Summary

The North End Stream in Cooksbridge and Hamsey, East Sussex, is a chalk-fed stream of significant importance, both locally and nationally. A key tributary of the River Ouse, this stream is a rare and critically important spawning and nursery habitat for sea trout and other protected fish species of conservation interest. Originating in the South Downs National Park and an important tributary of the River Ouse which flows through the National Park, it would not be unreasonable to expect this stream to enjoy the very highest levels of environmental protection.

Sea trout are a keystone species of the River Ouse and Sussex, shaping stream-bed habitat and forming a critically important component of Sussex Ouse ecology. They are vital indicators of river and sea health, requiring connected habitat and are genetically unique to the Ouse and its small number of lower-catchment spawning tributaries.

Sussex Ouse sea trout have the largest average size of any trout population running into any river in England and Wales. Sea trout populations are under serious threat from a range of issues. These include climate change, pollution and habitat degradation. Development pressures also pose a significant risk to vulnerable sea trout populations, with this species listed in the Environmental Targets (Biodiversity) England Regulations 2023 and a priority species for recovery in the East Sussex Local Nature Recovery Strategy.

There is irrefutable evidence that sea trout are currently present and active in the North End Stream, as evidenced by the continued presence of large redds (nests of eggs). At any given time, a part of this migratory population will be in residence within the Northend Stream. These may be returning adults on autumn and early winter spawning migration, through to spring-time emigrating smolts. Viable eggs will be laid down in the winter and hatch in the spring as fry. As the year unfolds, these grow into resident parr, with some remaining as small resident adults. A significant component of the population will be present at any given time throughout the entire year.

Protection of the North End stream is therefore of paramount importance. Actions listed in this document should be taken to restore the stream to full health and help build the resilience needed to ensure this population remains viable. Great care must be taken to avoid damage from development or agricultural pressures.

1. Introduction

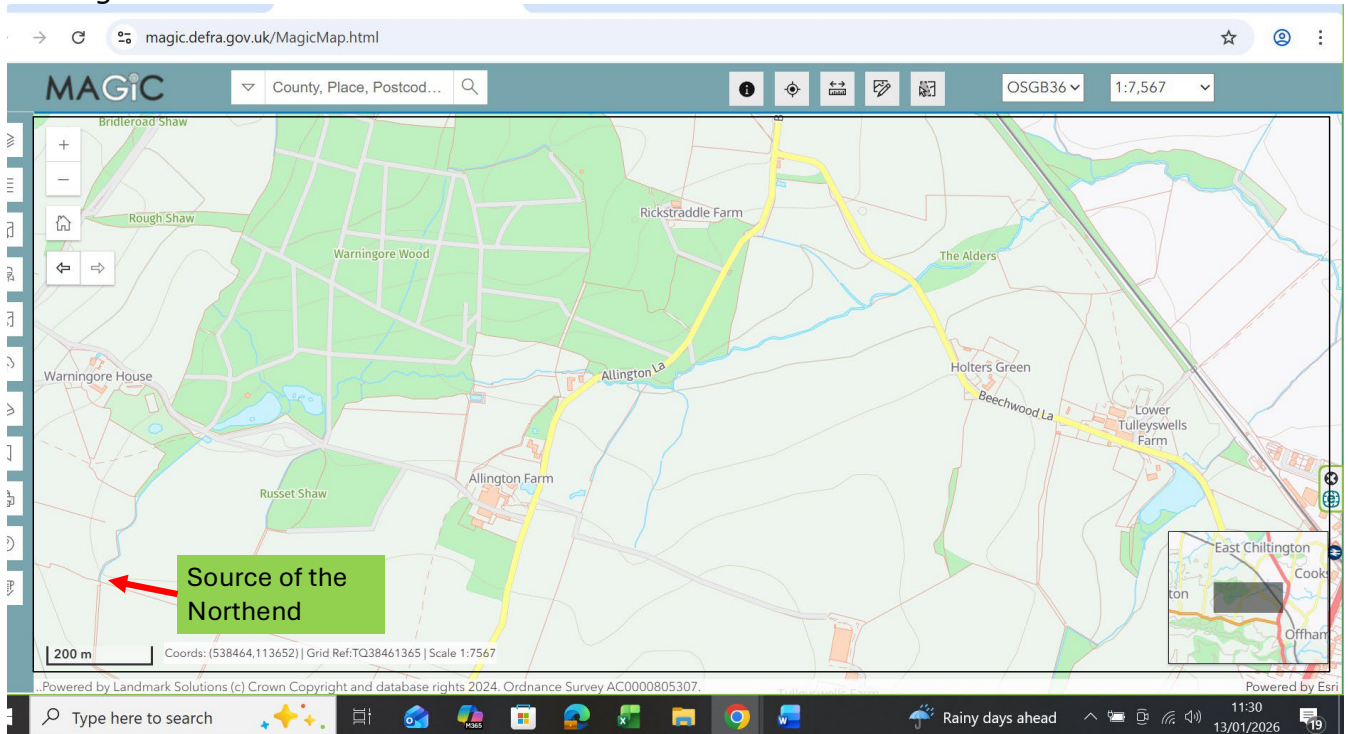
This report is the output of a Wild Trout Trust Advisory Visit undertaken on a 6km reach of the Northend Stream, a significant tributary of the Sussex Ouse. The reach inspected started at National Grid reference TQ 3818 1375, near Warningore Farm, down to its confluence with the tidal River Ouse at TQ4232 1356.

The Advisory Visit was undertaken at the request of Charles Bacchus, Environment Agency Fisheries Technical Specialist for the Sussex Ouse catchment and Mike Deacon. Mike is a local sea trout angler, conservation volunteer with detailed local knowledge of the local Ouse catchment. The purpose of the walkover survey was to evaluate current habitat quality and connectivity, particularly for migratory sea trout (*Salmo trutta*) and identify opportunities for environmental enhancement.

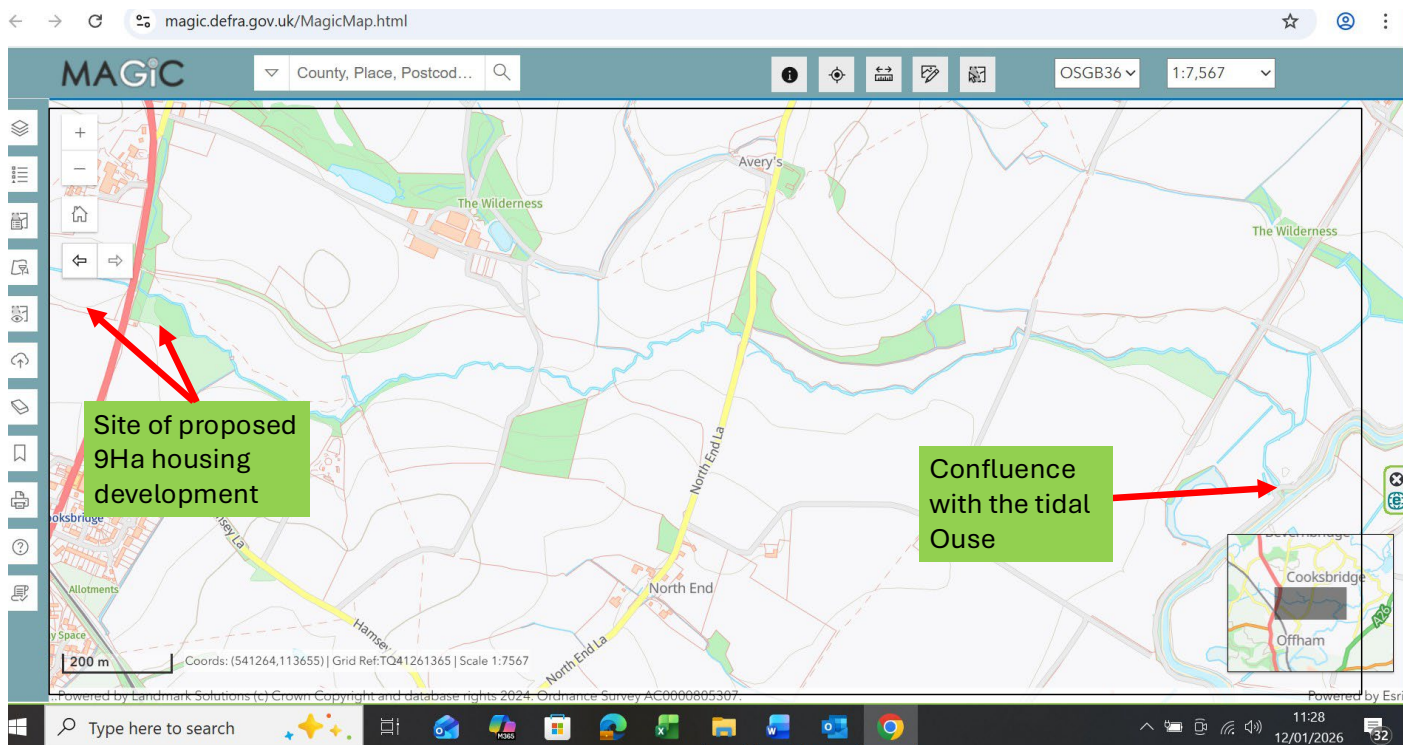
Concern has been raised over a potential change in local land use from arable meadows to the proposed development of 151 houses in fields that border the North End stream and a further 600 houses proposed in the draft Local Plan on fields immediately adjacent to this area, that drain into the stream

Comments in this report are based on observations on the day of the site visit and discussions with key stakeholders

Throughout the report, normal convention is followed with respect to bank identification i.e. banks are designated Left Bank (LB) or Right Bank (RB) whilst looking downstream.



Map 1. Top 3km of the Northend Stream from Warningore to Cooksbridge.



Map 2. Bottom 3km of the Northend Stream to its confluence with the tidal River Ouse.

2. Catchment overview

The Sussex Ouse is an important local fishery and wildlife resource and supports a number of threatened and nationally protected species. The Ouse is particularly valued for its unique, locally adapted sea trout (*Salmo trutta*) population. The Environment Agency and local stakeholders are keen to protect and improve this special population, along with other conservation species, such as eel (*Anguilla anguilla*), bullhead (*Cottus perifretum*) brook lamprey (*Lampetra planeri*) and other coarse fish species. Sea lamprey (*Petromyzon marinus*) are known to run the Ouse and have been seen in the Barcome Mills area and may well utilise the Northend stream for spawning purposes.

The Sussex Ouse, along with the Adur and Arun forms one of the three unique “gap” rivers flowing within the highly protected downland landscape of the South Downs National Park.

Much of the main river Ouse is heavily modified and impounded by man-made water-level control structures, fragmenting habitat and restricting access for migratory species.

The number and extent of small tributaries that support viable spawning and nursery habitat for salmonids is very limited. Particularly so on the lower reaches of the Ouse, where a combination of the porous underlying geology, coupled with extensive modification of most of the water courses, has resulted in comparatively

sparse habitat availability. All of the small streams that are present have been straightened and dredged and riparian land use in some areas still an issue of concern. Those streams that still have some clean, natural outcrops of spawning gravels and discharge into the tidal reaches of the Ouse are therefore of critical importance in helping to sustain the wider Sussex Ouse migratory trout population.

3. Local trout ecology and habitat assessment and availability.

Northend Stream rises from the toe of the north facing scarp of the South Downs before rapidly swinging east and then south onto the Ouse flood plain, where it carves the gap through the Downs at Lewes, eventually to join the English Channel at Newhaven.

Initially the stream is characterised by a typically straight and shallow form. The straighter nature of the planform is to be expected in the headwaters, where the gradient is steepest. However, the channel has been historically modified throughout its entire length and sits down in a relatively deeply incised channel, with the height of the banks increasing as you go further downstream.

Opportunities for trout spawning are available via occasional outcrops of eroding flint and chert gravels (photo 1), providing opportunities for productive spawning for any fish that can penetrate up, especially into the headwater reaches adjacent to Warningore Farm. Flow and hence readily available access for migrating fish will vary both seasonally and annually, with the perennial source of the stream likely to migrate up and down the headwater valley, depending on autumn/winter rainfall and the critically important groundwater recharge.

Water quality within these headwater reaches is likely to be excellent and the local trout population is genetically programmed to push as far upstream as possible, on autumn/early winter spawning migrations, to hopefully exploit the very best conditions for spawning and fry/parr survival. Sections of stream that either run through, or skirt deciduous woodland, are of particular value. The woody root systems of riparian trees often provide the necessary structure for the streams flow to bite against and carve a varied bed morphology of pool, riffle and glide. In doing so, this provides the optimum conditions for holding adult trout, as well as the essential spawning and nursery habitat that trout require to build the population. Many other stream organisms also thrive on the physical diversity that this type of channel form provides.

The local trout population utilising the Northend stream is likely to be a fully integrated and genetically unique mixture of both small resident brown trout and the fully migratory component of the stock which is reliant on access to and from the sea. Once at sea, these trout wax fat on rich feeding, most likely within the locality of the English Channel, before heading back into freshwater as very large fish, capable of carrying large numbers of eggs. On average, Sussex Ouse Sea trout are known to be the largest sized sea trout running any river in England or Wales.

The strategy of these large hen sea trout is to push upstream as far as they can to obtain a competitive edge over their rivals. Their ability to utilise the high-quality habitat found in the headwaters will vary, dependant on seasonal flow

conditions and whether, or not, the numerous man-made structures (photo 2) comprising gates, culverts and weirs are in a sufficiently “passable” condition. This desire and occasional ability to be able to fully migrate through the whole system applies equally to the large adult broodstock coming back to spawn, as well as the small juvenile “smolts”, which usually embark on a springtime downstream emigration to go back to sea. Very little information is available on Sussex Ouse smolt behaviour.



Photo 1. A nest of trout eggs (redd) located right near the very top end of the Northend Stream at Warningore. Evidence that sea trout can currently access virtually all of the catchment.



Photo 2. A typical bridge culvert on the Northend stream. These can be difficult for fish migration, but this example looks to have received a pre-barrage of imported rocks, designed to help drown out the invert of the culvert and give migrating fish a better chance of making upstream progress.



Photo 3. A resident North End Stream brown trout. The resident fish are likely to be genetically integrated with the migratory component of the Ouse trout population.

The numerous road and track culverts, bridge inverts and assorted man-made structures, including the tidal flap gate at the confluence of the Northend Stream with the main river will pose problems for free and easy fish movement. The tidal flap gate and its impact on fish migration is discussed further in the conclusions and recommendations section of this report.

Considerable work and effort is deployed each autumn by a handful of local conservation volunteers to try and ensure that the upstream passage for adult sea trout on spawning migration is not blocked (photo 4). These efforts are heroic and very important. It will also be essential to ensure that smolt escapement is equally possible and blocked culverts pose a particular problem, even when flow appears to be easily passing through. Smolts tend to migrate passively, dropping back with the flow, rather than actively swimming, head-first downstream. Partially blocked culverts, or even very low bridges can induce behavioural problems for smolts and often delay downstream progress. Often, it's not so much a case of "can the smolts drop down" and through a partially blocked culvert but "**will**" they. It is very common for even clear culverts to act as a behavioural barrier and any delay in making downstream progress invariably leads to increased losses through predation, when pods of delayed smolts shoal up and become incredibly vulnerable. These issues become more apparent on sites where the downstream exit of the culvert is perched, or where the passage is made up of multiple small diameter tubes, rather than large diameter tubes that have the invert sunk below downstream bed-levels and have at least some free-board between water levels and the top of the tube, even in flood conditions. Clear span bridges with inverts set below upstream and downstream bed levels are the very best solution to ensure free migration of all species.



Photo 4. The inlet of a partially blocked culvert bridge, subsequently cleared out by the volunteers.

From the middle reaches around Cooksbridge, all the way down to the Ouse confluence, there were numerous examples of high-quality in-stream habitat. A more sinuous planform and sequence of shallow runs and deeper pools were

evident providing opportunities for trout of all life stages. Mature bank-top trees offer additional cover via complex submerged root systems (photo 5).

Naturally fallen woody material (photo 6) was also present within the stream channel. This valuable material also provides opportunities for promoting essential bed and bank-toe scour, helping to clean and free-up fresh gravels for spawning, as well as providing cover and a critically important food source for aquatic invertebrates, thus helping to build the natural food-web.

When woody debris dams naturally form, they can occasionally become occluded with fine brash and leaf material and subsequently upstream water levels will rise. This is when some intervention is recommended. However, the woody material must not be completely removed from the stream but moved or repositioned to allow free flow and lower upstream levels.

In addition to the examples of large woody material, there were also good examples of marginal zones benefiting from trailing riparian vegetation (photo 7 & 8). This is particularly valuable winter cover, especially when it coincides with small outcrops of bed gravels. The combination of a spawning site adjacent to a well-covered shallow margin provides emerging trout fry with essential and extremely valuable cover from predators.



Photo 5. A good example of high-quality stream habitat with complex roots systems provided by the riparian tree and natural bend and pool. Great habitat for adult brown migration trout to hold up and feed, or a resting zone for a large sea trout on spawning migration.



Photo 6. Large chunks of fallen woody material help to drive valuable natural process and should always be retained when possible. Move it, don't remove it is the key message if it causes a full-channel width debris dam to form. Only redistribute the wood if the dam becomes completely blocked with fine brush and leaves and the upstream bed and water levels begin to rise.



Photo 7. A great example of high-quality trout habitat, with a seam of clean bed gravels adjacent to a light matrix of trailing riparian brushwood cover.



Photo 8. Marginal cover provided by terrestrial plants, including bramble and ivy should never be cleaned out of the channel as it provides valuable winter cover for fish of all life stages.

In several areas, but particularly in the reach just downstream of Cooksbridge, the stream is under pressure from various riparian farming practises, ranging from cattle poaching pressures on unfenced stream banks adjacent to parcels of permanent pasture, through to intensively worked arable fields (photo 9). Uncultivated buffer zones between the field margins and the bank top were very narrow and lacked the complex vegetation and root systems necessary to fully protect the river from pollution by nutrient rich, fine sediment-laden run-off. The sloping topography of some of the adjacent meadows potentially increases the risk of large quantities of nutrient rich soil being picked up during intensive rain-fall event and deposited into the stream.

In one area (photo 10), it looks as though a drainage channel has been deliberately cut into the top of the bankside buffer to assist field drainage. This is very poor land care and soil conservation practice. The topography of this large arable field, and possibly even the direction of tillage, coupled with thin and sometimes non-existent buffer zones means that it's likely to be a particularly challenging reach for viable trout production. Even the farm track and bridge provide a pathway for diffuse pollution (photo 11) threatening the health of the stream below. All of these issues can be easily mitigated via the installation of wide (20m plus) planted buffer zones.

It is understood that a new housing development has been proposed for land that is currently in arable farming production. It is hard to overstate the significant risk that a housing development within the stream corridor could pose to the ecology of this important stream. The impact that arable agriculture is currently having on stream quality can be easily mitigated but the impact of additional surface water run-off pressures and associated disturbance associated with human activity could

seriously impact on the value of the stream as a viable spawning and nursery habitat for sea trout.



Photo 9. A large sloping arable meadow under recent cultivation with only a tiny buffer zone that is too narrow to potentially intercept over-land run-off.



Photo 10. Sloping arable field with buffer zone drainage slot. A direct pathway for nutrient rich sediment.



Photo 11. If arable production is to continue here then the buffer zones should ideally be 20 to 30m wide and planted with trees to help intercept sediment (and nutrient) rich run-off.



Photo 12. Cattle poaching site at the footbridge at the bottom of the first field downstream from main A275.

Significant damage to the streams ecology is being cause by serious livestock bank poaching (photo12). Ideally the bank should have stock fencing set back from the top of the bank and a pasture pump and drinker installed on the top of the bank to reduce pollution pressures in fields where livestock grazing is carried out.

At the confluence of the stream with the main river Ouse, a flap gate (photo 13) has been installed to reduce the risk of tidal flooding into the lower reaches of the stream and adjacent meadows. It was not possible to fully inspect the design of the structure, due to a lack of maintenance of vegetation and for safety reasons.

Tidal gates like this are known to be a huge issue for migrating trout and eel, depending on design criteria. The duration when sea trout can successfully navigate through tidal gates very much depends on their function, design and nature of the tidal cycle and freshwater flow patterns.

These gates appear to be “top hung” gates and if operational will potentially have a much shorter duration of when they are fully passable, unless of course they are partially wedged open by debris, which is entirely possible. If these gates are deemed not worthy of maintenance and in effect redundant, then they should be completely removed to allow a natural flow regime to exist between the stream and the tidal river. If there is a plan to facilitate fish migration through this semi derelict structure, then it certainly isn’t obvious.



Photo 13. Top-hung tidal gate at the confluence with the Ouse. Functional or derelict? These gates will have a profound impact on the ecology of the lower section of the stream and the species that need to navigate in and out of the system.

4. Conclusions and Recommendations.

In the context of River Ouse tributaries, the Northend Stream is of critical importance, discharging as it does into the lower, tidally influenced reaches. The tidal flap gate, located at its confluence with the Ouse, is a truly awful structure. This should be removed, or if the flood defence function is deemed essential, then replaced with a modern side hung, or float operated gate designed to facilitate improved access for migrating fish over a wider time-period within the tidal cycle.

The Northend Stream has been very heavily modified, but despite long sections having been dredged and straightened, it still supports some extremely valuable spawning and nursery habitat for trout and other important fish species of conservation concern. The reach downstream of Cooksbridge needs much wider, planted buffer zones to mitigate for agricultural diffuse pollution pressures. Areas that are currently grazed require stock fencing to eliminate bank poaching and again would benefit from thick, complex buffer zones.

There were several poorly designed culvert bridges and structures. Improved access and escape for sea trout smolts could be achieved if these were replaced with clear span bridges, or large box culverts with the invert buried below the downstream bed levels.

Removing the gate and installing a narrow (300mm) deep slot could potentially create an attractive flume of fresh water exiting the stream and is likely to attract interest from migrating fish. Fish passes only ever work well if fish can easily detect the entrance and a modification to this structure could significantly improve access into the system and crucially the behaviour of fish that might be looking for suitable spawning tributaries to run into. Despite the difficulties this semi derelict gate poses to the Northend Stream, it still manages to function as a high-quality spawning and nursery habitat. We know the stream currently supports spawning sea trout, clearly corroborated by the signs of recent spawning activity recorded on the day of the site visit.

A potential change from agriculture to a housing development will pose new and different threats that will be much harder to mitigate. The author understands that there is a local Wastewater Treatment Works that currently services the Cooksbridge area. The Wild Trout Trust does not hold data on the performance record of any WWTW operated by Southern Water. However, it is assumed that the amount of extra effluent potentially generated by any proposed development will place additional pressure on the local works. Any failure that generates the risk of raised ammonia spikes, or biological oxygen demand (BOD) is of concern and could potentially result in the loss of incubating salmonid eggs, or parr residing in areas located downstream of any outfall.

5.0 Acknowledgement

The Wild Trout Trust would like to thank the Environment Agency for their continued support of the Advisory Visit service, in part funded through monies from rod licence sales. The advice and recommendations in this report are based solely on the expert and impartial view of WTT's Conservation Team.

7.0 Disclaimer

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