WILD TROUT TRUST

Advisory Visit

River Cover (Ure)

for Ure Dales Landscape Recovery, 2025

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Key Findings

- The Cover has been subject to considerable historical channel modification, mostly in the form of straightening and realigning of the channel to the southern side of the valley to expose more pasture to the sun. Pinning of the channel in position has taken a remarkable amount of embankment and revetment, mostly using stone from the channel which has also been used for adjacent boundary walling, resulting in an incised channel unable to re-engage with its floodplain for the most part.

- Historical sediment supply has been excessive. There was much evidence of substantial avulsion events that deposited huge quantities of boulders, especially around limestone seams and from some of the steeper tributaries. The latter may have started in response to the disturbance from bronze age woodland clearance but may have been further catalysed by gripping of moorland and forestry plantation management.

- These actions caused the physical homogenisation of the channel in those modified reaches, dominated by continuous shallow riffle which left a channel dominated by boulder. Over the last 50y, more sensitive land-management practices have led to demonstrable recovery in the substrate composition with much more cobble and latterly gravel being retained within the system. But the channel remains overly straight, incised and disconnected from the floodplain

- Mostly unfettered livestock access to the channel has denuded the riparian flora and prevented any natural tree regeneration. Much more tree cover and a diverse native herb understorey will be key to helping restore the channel and providing future proofing / resilience for climate change eg keeping the water cool.

- Water quality appeared good. Cursory stone turning revealed typical stonefly, mayfly and caddis taxa for an upland watercourse, in places at reasonable density given the time of year.

- No INNS were noted during the walkover.

- No evidence of white clawed crayfish was observed during the walkover (signs of predation events eg chelae or spraints containing remains on prominent rocks).

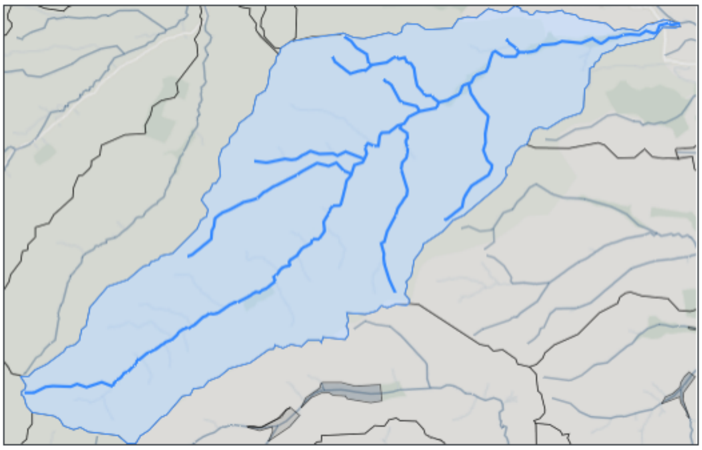
- Ambitious works to restore the channel functionality and protect the riparian zone, and hence boost biodiversity, are achievable.

1.0 Introduction

This report is the output of a site visit to the River Cover, a headwater of the River Ure catchment, Yorkshire, undertaken by Prof Jonny Grey of the Wild Trout Trust. Walkovers of many Ure tributaries were undertaken to inform the Ure Dales Landscape Recovery Project. The overarching objective was to provide a baseline assessment of the current state of habitat and water quality for the wider aquatic and associated riparian ecology. Specific issues were identified or flagged as requiring further investigation and some opportunities and recommendations for improvement are included.

Coverdale Catch (Trib of Ure) Water Body

Good ecological status



Get Coverdale Catch (Trib of Ure) data

- Download water body (Shapefile)
- Download water body (GeoJSON)
- Download classifications (CSV)
- Download site classifications (CSV)
- Download investigations (CSV)
- Download challenges (CSV)
- Download objectives (CSV)
- Download protected areas (CSV)

Related links

- Plan maps on ArcGIS online
- Flood risk management plans

Attributes

Water Body ID GB104027069330	**Water Body Type** River	**Hydromorphological designation** not designated artificial or heavily modified	**NGR** SE0753085852
Catchment area 81.464 km2	**Surveillance Water Body** Yes	**Length** 53.276 km	**Catchment area** 8146.36 ha

Source:https://environment.data.gov.uk/catchment-planning/v/c3-plan/WaterBody/GB104027069330

The Cover is not designated as *artificial or heavily modified* and was classified overall as *Good Ecological Status* under the 2019 and 2022 rounds of assessment, with no changes in any parameters. Most physico-chemical quality elements were classified as *High*, but Fish, Macrophytes, and hydromorphological elements were designated as *Good*.

2.0 Habitat Assessment

Normal convention is applied with respect to bank identification, i.e. left bank (LB) or right bank (RB) whilst looking downstream. Upstream and downstream references are often abbreviated to u/s and d/s, respectively, for convenience. Latitude & longitude decimal degrees are used to identify locations in the legends of figures and can be cut & pasted into mapping software easily.

All image files are available if required.

2.1 The Cover

Discrete sections of the River Cover were walked at different times but for reporting purposes, described from the most u/s point. Like the majority of the Wensleydale headwaters, the valley sides are steep and, coupled with moorland and sheep grazing regimes, discharges from the numerous smaller tributaries are consequently flashy in nature. The upper catchment has been under the same ownership for ~50y, and there have been noted improvements in the river from sympathetic land management actions, such as grip blocking, resulting in retention of smaller size-fractions of substrate like cobble and gravel.

Fig 1: Looking across to West Stone Gill at 54.185684 , -2.0210821. Most u/s point viewed on the system. Difficult to see at distance but an early exclosure and planting scheme instigated by Yorks Dales RT appears to have established some woodland cover near to the channel. Indeed, the uppermost reaches of this gill, where

inaccessible to sheep, were noted in a previous WTT report as excellent examples of the floral diversity that should be present along these upland headwaters.

Opportunities:

- Excluding livestock, particularly sheep, from the gills and narrow floodplains to allow recovery of riparian woodland in copses, and a naturally diverse herb flora, will be essential to aid recovery, boost faunal biodiversity and productivity, and mitigate for future climate.
- Some augmented planting will be necessary to kickstart recovery in a catchment that probably has an extremely poor seedbank, plus high browsing pressure from rabbit, hare, and deer.
- These planted trees will form the basis for future natural regeneration, and supply of large woody material, as well as ongoing seasonal supply of leaf litter for aquatic invertebrates.
- In time, they will also provide shade, essential for cold adapted species in a warming climate, and more resilience to bank soils, increasing channel morphological diversity.

Fig 2: 54.191084 , -2.0104795 environs upper, and lower, 54.191427 , -2.0092028. Relatively high up the system but meanders evident within the narrow floodplain.

Issues:

- Even up here, there was evidence of channel modification, signs of straightening and realignment to one side of the floodplain.
- The boundary wall against which the channel had been aligned in sections was clearly made from stone derived from the channel, originally contributing to incision and interfering with natural geomorphological processes.
- Grazing along the riverbanks had reduced the herb layer to short sward grass (or rush) dominance with little investment in root structure, leaving the banks susceptible to accelerated rates of erosion

Opportunities:

- Removal of the drystone wall and return of all the stone to the channel. How it is returned depends upon the nature of the channel adjacent but could be in one or several of the following manner.
    - A dispersed matrix along the bed to subtly raise bed level.
    - Clustered to one side of the channel or the other (or alternating along a straightened reach) to accentuate meanders or reinstate sinuosity.
    - Clustered as a raised riffle to help reconnect paleochannels.
- Identify where paleochannels have been deliberately blocked and remove that stone to allow more frequent / earlier connection during rainfall events. Return stone to extant channel d/s as above.
- Introduce windblown whole trees (Large Woody Structure; LWS), as intact as possible ie including rootplates and lateral branches, to the floodplain and channel. The bigger the better, reducing the likelihood of movement, and clusters of trees, interlocking, with some in and some out of the channel will also induce stability.
- It should not look too contrived, rather, as if a storm had passed through and wreaked havoc.
- Placing some windblown trees across the floodplain would also restrict access to stock or wild grazers / browsers and create pockets of floral diversity. Willow whips could be pushed in amongst the crown material of such trees. If livestock pressure could be removed for at least 10y (ideally much longer), then a more targeted programme of tree planting to create riparian copses would be beneficial.
- All of the above introduced structure will make the water work over, around, or under, causing localised scour and deposition, retention and sorting of gravels important for spawning, and slowing the flow.
- There should still be an element of dynamism, ie the materials may not stay exactly where introduced, but far better to let high flow events place them naturally, and move them occasionally.

Fig 3: 54.190710 , -2.0106940. Evidence of s straighter ‘D-cut’ to redirect flow in a straighter course from one side of the valley to the other and reduce erosion into the valley side.

Issues:

- Shorter, straighter, steeper – greater conveyance of flow and erosional power d/s

Opportunities:

- With plenty of stone available in the defunct walling adjacent, both of these channels could be bed raised to allow for better floodplain reconnection. Given the width of the floodplain here and plethora of paleochannels, it may result in a multi-threaded channel or braiding.
- Scattering trees with rootplates.

Fig 4: 54.190735 , -2.0113698. Example of the renaturalising channel allowed to meander and reinstating features such as deeper pools on the outside of bends (white arrows).

Opportunities:

- Deeper pools are essential holding habitat for larger individual fish, especially in the absence of any other cover such as shaggy marginal vegetation, tree roots and fallen woody material.
- Hence, reinstating a more natural meandering channel and increasing the complexity and naturalness of the riparian habitat (removing grazing stressor, planting riparian trees, introducing tree fall) will be essential for recovery.

NB – all the opportunities identified from Figs 2-4 should be rolled out where appropriate down to the constraints of the gorge at 54.194782 , -2.0026557 (Fig 6).

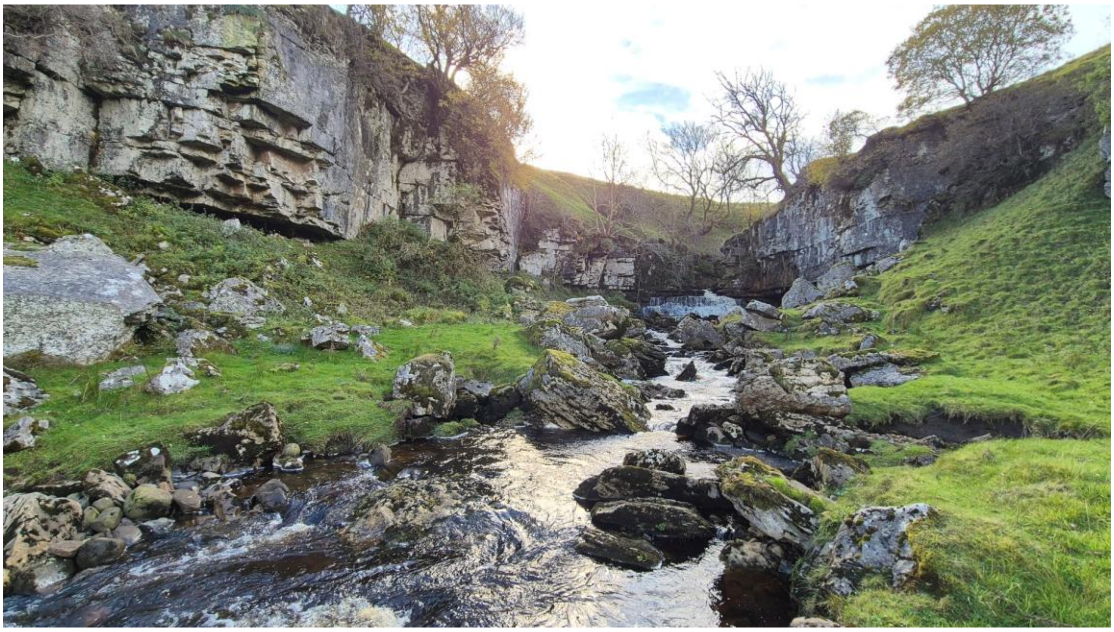
Fig 5: An attempt at creating pools by introducing boulder weirs. This was advocated by some in the early years of river restoration but would not be promoted now. With the benefit of hindsight and with increased understanding, it is better to work with natural processes to achieve more sustainable goals.

Issues:

- Whilst this is a limestone catchment, and there are seams of bedrock which may form a cascade (see Fig 6), they are relatively infrequent and are not present in this reach.
- A weir angled perpendicular across the channel, even of irregular boulders, is not particularly natural.
- It may create a small pool of greater depth immediately below the structure, but it has also impounded a reach upstream which has gradually aggraded, filled with sediment, and hence robbed the channel of natural features u/s.
- Trapping sediment on the u/s side then starves the reaches d/s of smaller size fractions leading to changes in habitat niches, and potentially further channel incision.
- The impounded, infilling reach, with more sluggish flow will be shallower and more prone to warming.
- Under low flow conditions, there may be issues for free fish passage.

Opportunities:

- Relocate the boulders to kickstart more natural processes or better reconnect paleochannels, as highlighted previously.



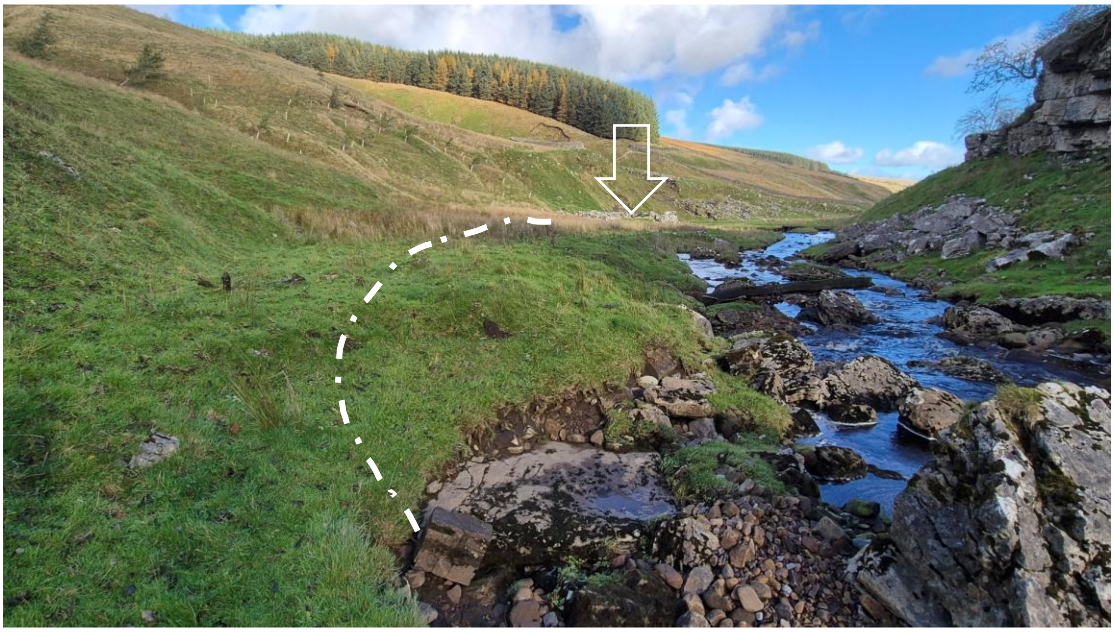


Fig 6: 54.194782 , -2.0026557. A section of limestone gorge with natural cascades which would prove challenging for fish passage. Electric-fishing surveys from ~20y ago revealed trout population(s) u/s.

Opportunities:

- This is a natural feature and hence should not be tampered with to 'improve' fish passage. Indeed, there is value in potentially isolated and genetically distinct trout populations residing u/s.
- As the valley widened out from the falls, there was evidence of channel modification, realigning the channel away from the LHS (dashed white line) where a series of sheep folds (white arrow; see Fig 7) had been built, now dilapidated and unused. Potential to open up the head of the old channel and allow flow to return – see Fig 7.

Fig 7: 54.195673 , -2.0020439 environs. Looking across to the sheep folds and the paleochannel (white dashed line) identified in Fig 6. The extant channel had been historically 'D-cut' but the current landowner reinstated access to the meander <10y ago and dispersing the flow energy across both 'arms' had allowed for greater retention of gravels in pockets that could be used for spawning.

Opportunities:

- Positioning of sheep folds in this natural 'bowl' in the landscape was ideal to protect herds from inclement weather. Clearly, livestock still use it to shelter as the grass was heavily grazed. However, that sheltered aspect should mean that flora will bounce back readily if given the chance. It would be beneficial to augment some riparian tree cover using alder and the shrubby willow species if livestock can be excluded.
- Stone taken from the channel to build the sheep folds should be returned.
- To retain as much gravel in this location as possible (potential upper limit for spawning before the falls), multiple Large Woody Structures (LWS) created from windblown trees should be introduced.

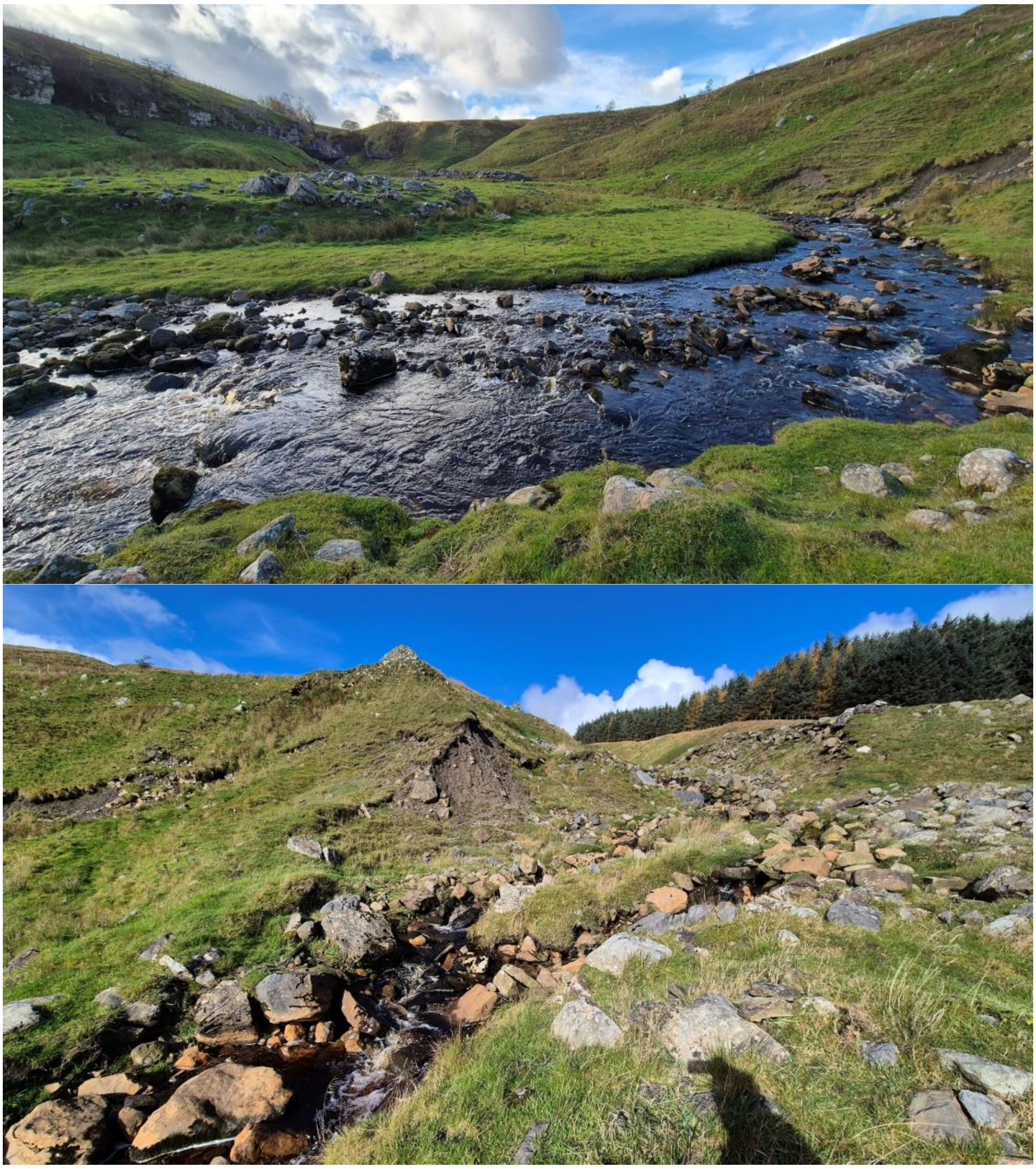


Fig 8: 54.196124 , -2.0016313 environs. Extremely large deposits of boulders both alongside the main channel (upper image) and in an alluvial fan (lower image) at the confluence of Lock Gill point to historical avulsion events. These may have been in response to destabilising human interventions like original tree clearance from the fells, drainage of the moors, and early forestry plantations. Note terracing in the valley sides adjacent to the obvious landslips in both images, caused by sheep tracking along the contours.

Opportunities:

- Extract boulders from the piles that have not stabilised to the point of plant colonisation and return them to the channel as a dispersed matrix to reduce incision and increase hydraulic roughness.
- Exclusion of grazing will be necessary to allow the soils to stabilise and flora to recover.

Fig 9: 54.196841 , -1.9991246 environs, looking u/s and d/s at the head of the straightened reach (which extended to 54.200912 , -1.9891137, ~950m). A small copse of alder and birch had been established on the LB (lower image)

Issues:

- It appeared that large boulders had been removed from the channel (LB, upper image) or there was clear evidence of dredging spoil embanked to the RB (lower image; white line).

Opportunities:

- Return stone to the channel to bed raise and increase sinuosity.
- Further augmented planting, or willow pegs / stakes added at high density (without guarding) and pushed into where embankment was removed from.

Fig 10: Upper image (54.197710 , -1.9973406) depicts one of the last renaturalising meanders at the head of the narrowest, straightest modified section. The larger boulders exposed in the LB beneath the hawthorn are part of a formalised embankment preventing the river migrating northwards. The lower two images (54.198536 , -1.9943412 environs) highlight embankment and walling of the LB and then a boundary wall set a few metres further back.

Opportunities:

- Remove embankments and return all stone, including walling, to the channel

Fig 11: 54.199090 , -1.9924131. Looking back u/s to the straightened, constrained reaches highlighted in Figs 9&10. From this point down to 54.200912 , -1.9891137, the channel had been shunted first to the middle and then to the northern (LH) side of the valley and hence the embankment enabling that transition was mostly in the RB (white line).

Opportunities:

- Removal of RB embankment to allow full access to floodplain.
- Return of the stone to the channel.
- Introduction of LWS

Fig 12: 54.199818 , -1.9911115. Plenty of evidence of paleochannels within the landscape to both sides of the extant, straightened channel.

Opportunities:

- Open up access to any paleochannels that had been blocked.
- Cast any stone from paleochannels, redundant walling and embankments back into the channel to reduce incision.
- Addition of multiple LWS to push water onto floodplain earlier.

NB – all the opportunities identified from Figs 10-12 should be rolled out where appropriate down to 54.202143 , -1.9849714 (Fig 16).

Fig 13: 54.199780 , -1.9905296. A substantial alluvial fan of large boulders as Crab Gill entered the floodplain from the south (RB) side of the valley.

Issues:

- There appeared to be historic evidence of straightening of Crab Gill, perpendicular across the floodplain to the Cover, ie the shortest route possible.

Opportunities:

- Reorganise the boulders to ‘force’ Crab Gill back onto what was its more natural course onto the RHS of the floodplain as indicated by the white arrows.
- Once directed toward the edge of the floodplain, allow it to form its own channel, akin to ‘stage-0’ restoration.

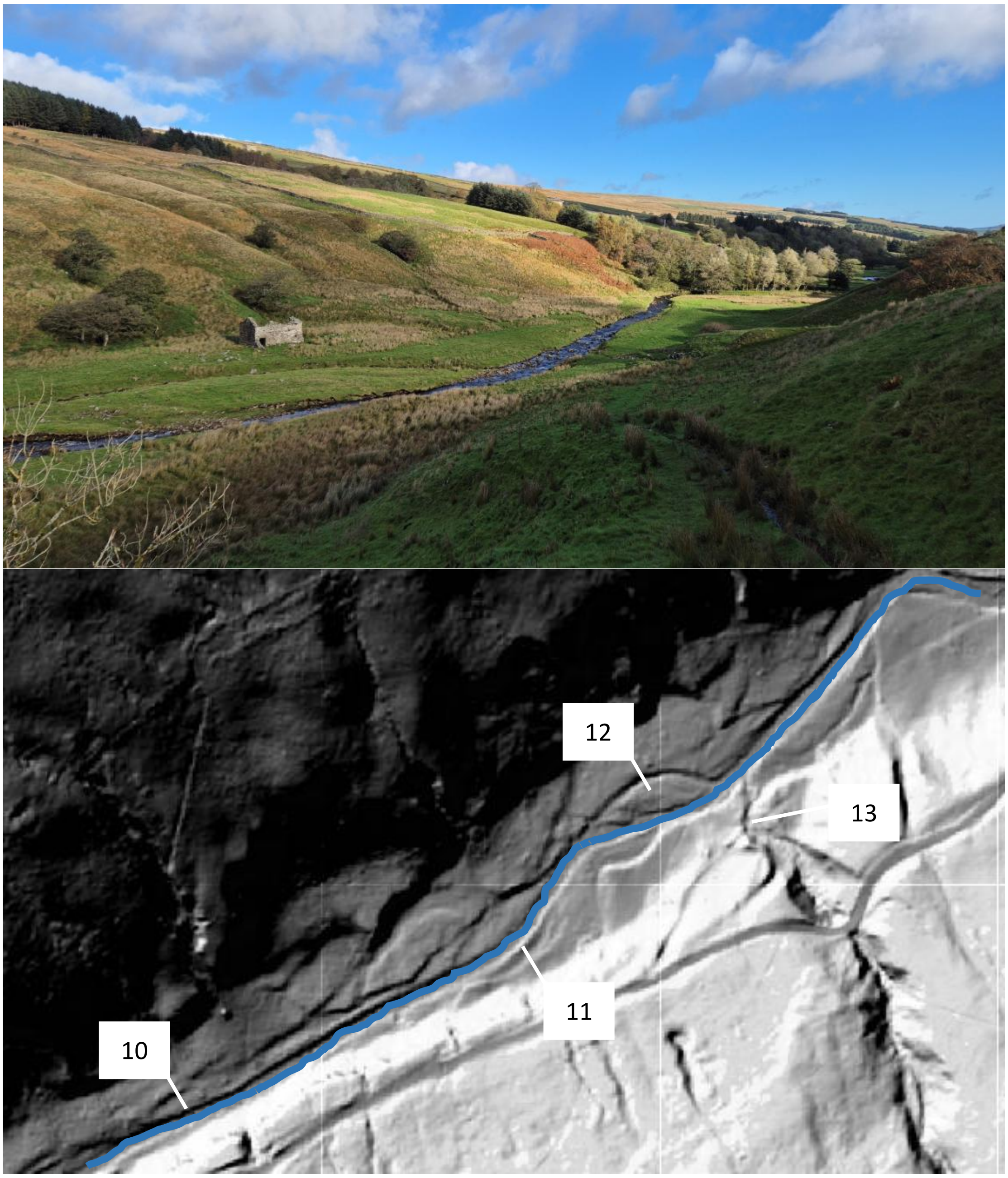


Fig 14: Taken from 54.199254 , -1.9911437, an overview of the modified, straightened channel, and the huge potential for paleochannel reconnection to either side, and a LiDAR-derived terrain model with the modified extant channel overlaid in blue.

Numbered callouts present the position of the features highlighted in Figs 10-13.

Fig 15: 54.202934 , -1.9822502 Burn Gill had been incorporated into a planting scheme in the past and a number of trees had established.

Issues:

- Like most of the steep, narrow gills, the sides offered little in the way of quality grazing but livestock still accessed it and exacerbated erosion and slippage by tracking and grazing.
- Flows would naturally be flashy or even ephemeral but accentuated further because of unfettered grazing.

Opportunities:

- Ungrazed, shaggy herbage and tree cover would help to slow flows during spates, but also to keep water cool during summer low flow conditions.
- Hence, revisit and bolster planting scheme, and where easily accessible like here, adjacent to the road, there is a fantastic opportunity to roughen up the habitat even further with addition of windblown trees and crowns or rootplates.
- The steepness and flow regime of many of these gills may be too extreme for consistent use by fish (although ideally, they should be surveyed to check), but naturally fish-free channels are even better for macroinvertebrate production and supply d/s via drift and emergence.

Fig 16: 54.202934 , -1.9822502. Looking u/s at the remarkable influence of one fallen ash (highlighted by the white arrow), responsible for a substantial proportion of the deposition bar d/s on the LB.

Issues:

- Livestock access was probably hindering the colonisation of parts of the deposition bar by pioneer plants which would help to stabilise it.
- Only mature (and failing) trees near to the riverbank because of stock browsing; no natural regeneration to succeed those mature specimens in time.

Opportunities:

- Failing trees such as ash with *Chalara* could be proactively pulled over or felled and lodged / tethered as LWS.
- Preventing access to the riparian strip to allow native herb understorey and natural regeneration of trees.

Fig 17: 54.202866 , -1.9843519. Another substantial embankment of boulder and cobble removed from the channel. It is also likely that the head of a paleochannel was blocked in this section of RB – see Fig 18 for the visible path of the paleochannel.

Opportunities:

- In conjunction with reinstatement of the paleochannel (overleaf), cast all stone back into the extant channel to constrict and bed-raise, helping to reactivate the paleochannel.

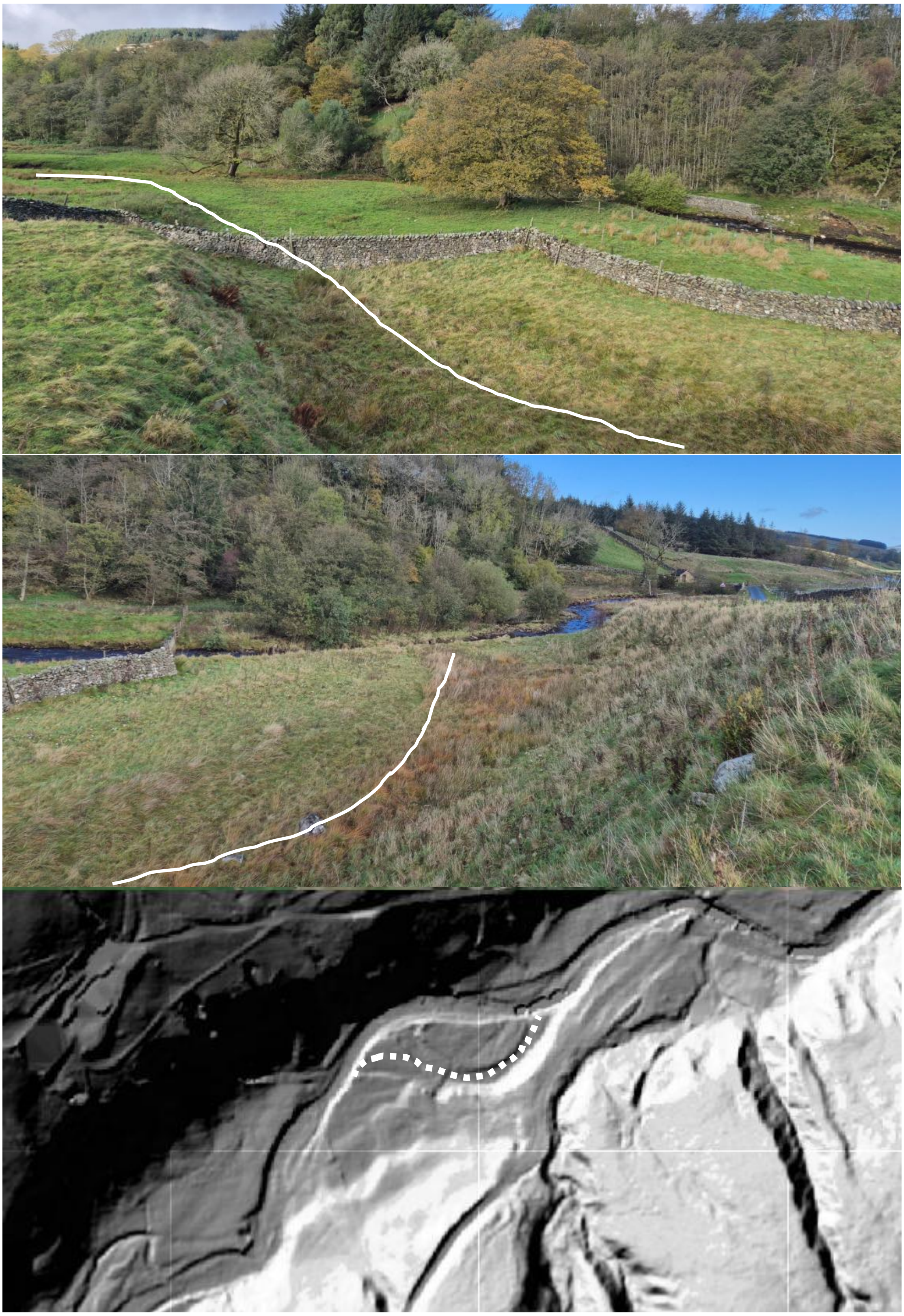


Fig 18: 54.203056 , -1.9830543. Photographs with accentuating white lines and LiDAR-derived terrain model of the paleochannel.

Fig 19: 54.204405 , -1.9795118. Compared to many of the tributaries, West Gill appeared to have been protected from livestock for longer, in part because it had also been used for forestry plantation. Hence, there was much better-established tree cover shrouding the channel.

Issues:

- Given the steep nature of the valley sides, any future harvesting of timber could result in fine sediment ingress to the beck.

Opportunities:

- Selective use of individual trees for habitat restoration elsewhere, rather than blanket felling of the remaining plantation trees. For example, the crown (~60% of one tree) had been left *in situ* in the lower image and was doing a fantastic job of performing Natural Flood Management.

Fig 20: 54.204288 , -1.9794127. The road bridge over West Gill contained a natural bed throughout and hence caused no issues for fish passage. Historically, there was evidence of cobble, rock, and boulder build-up at the bridge which had been dredged out and placed on the bank on the u/s side (right of shot).

Opportunities:

- Given the tree cover along West Gill now, there is less likely to be an event which would cause sediment to build up in such volumes. However, if it does occur, then it would be less detrimental to the geomorphology of the channel to return any removed sediment to the d/s side of the bridge and let it disperse naturally. Watching brief.

Fig 21: 54.204264 , -1.9787090. Looking u/s at a couple of 'beaver analogue dams' or 'pole assisted log structures' installed with the best of intentions to create a holding pool for bigger fish. The uppermost one still reasonably intact, but the lower one was blown-out to the RB.

Issues:

- While at least the upper one had achieved what a beaver analogue dam should do, ie impound water to a certain extent, it wasn't the most natural looking of structures, using plantation tree trunks as a line of posts between which brash and boulders had been placed.
- The channel was artificially straightened and confined already throughout this reach which probably contributed to the failure of the second. However, damming the channel simply maintains those artificial features and exacerbates their issues further.

- Beavers need to constantly maintain their dams, so such analogues need constant work too.

Opportunities:

- For a more sustainable approach, let beavers do beavery things. However, it is unlikely that beavers would find much of the Cover suitable in its current state.
- Better to get the channel and the riparian zone restored back to a more functional character first and then use LWS as advocated previously to accentuate features such as deeper pools which should then maintain themselves.

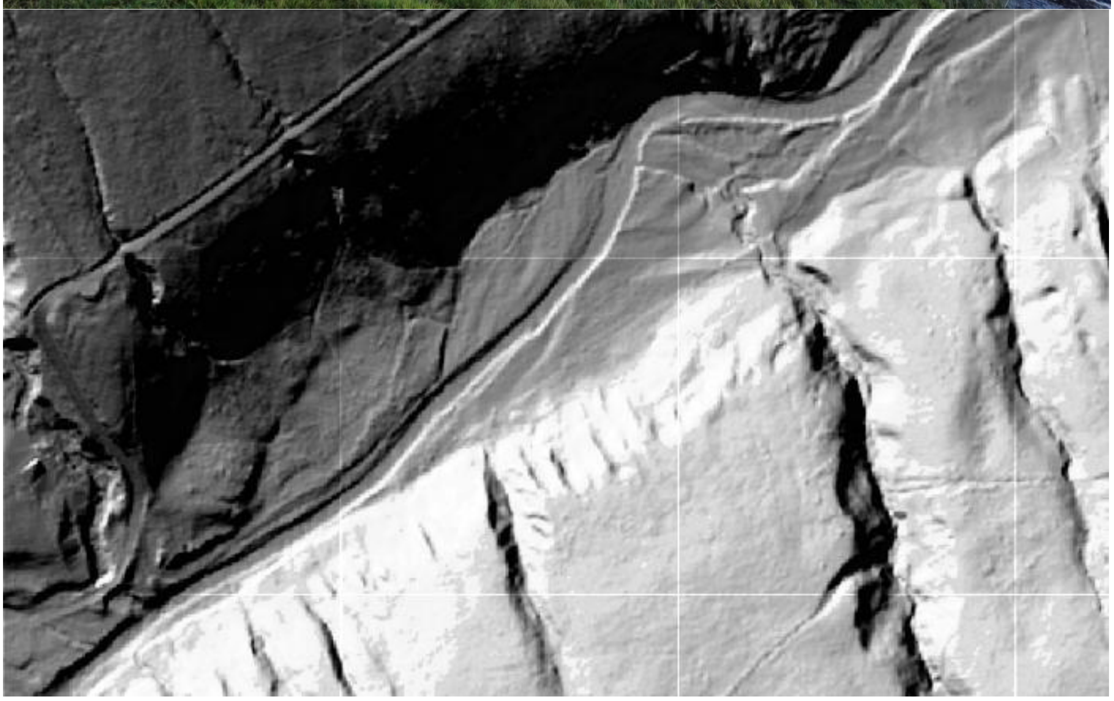


Fig 22: 54.205238 , -1.9766736. Suspiciously long, straight reach with embankment of stone and a consistent slope, certainly along the

LB. The LiDAR-derived terrain model clearly shows multiple meandering paleochannels etched into the floodplain.

Opportunities:

- Rework both banks where there was clear embankment, and especially where the LiDAR revealed paleochannels might cross the extant channel.
- Separate alluvial material from soil and sod and return stone to the channel. Bank lowering and bed-raising in combination to reconnect the channel better with its floodplain and reinstate a more meandering form.
- Scatter LWS within the restored channel and floodplain.

Fig 23: 54.207692 , -1.9672404 A small plantation of mature larch and possibly some other conifers on the RB, with the channel pinned to that side of the valley. A boundary wall and watergating restricted stock movement along a very narrow strip of LB, exacerbating the stressors of grazing and trampling.

Opportunities:

- Ideally, the wall boundary and any embankment within the LB should be removed to allow the channel to re-engage with the floodplain – NB this may be an ownership boundary.
- Certainly, scope to use the failing trees for habitat improvements, either pulled over or felled and lodged / tethered *in situ* or d/s.
- Ideally exclude stock from this small parcel of woodland to re-invigorate some more diverse deciduous tree cover.


Fig 24: 54.207692 , -1.9672404. A boulder weir at the d/s end of the small plantation (Fig 23).

Issues:

- Again, put in with the best intentions to create a pool via down scour on the d/s, actually, within the confines of the straightened, dysfunctional channel, any benefit of the short pool was being offset by the aggrading of sediment u/s of the weir, and maintenance of artificially consistent channel proportions.
- Little cover associated with the short pool. The bankside vegetation had been reduced to short sward grass, and the tree cover u/s was larch.

Opportunities:

- In conjunction with channel restoration measures, it would be better to relocate 40% of these boulders from one side to the other as a low berm and hence accentuate sinuosity, or use them to bed-raise elsewhere to help reactivate paleochannel reconnection.

Fig 25: 54.208000 , -1.9660551. Looking u/s at the plantation with the channel pinned to the southern side of the valley by an embankment; the position of the photographer is marked by the red dot on the LiDAR image, and the freely meandering paleochannels within the floodplain to the north are very obvious.

Opportunities:

- Removal of any revetment and embanking material and return of stone to the channel, scattering of LWS from the plantation within the channel and floodplain.
- Ideally pepper with willow and alder whips to kickstart riparian tree cover.

Fig 26: 54.208000 , -1.9660551. Looking d/s at the tail end of the long, straightened reach that had been pinned to the southern (RH) side of the valley, and to where it was beginning to interact with the alluvial fan of deposition from Fall Gill from the northern (LH) side; Fig 27.

Issues:

- The vertical eroding RB in the distance was caused by the modifications to the channel u/s, delivering water too quickly to that point.
- Highly exposed channel with shallow water, prone to warming.

Opportunities:

- Explore opening up some of the paleochannels to the LB and restrict grazing further.

Fig 27: 54.208659 , -1.9650862 – confluence of Fall Gill (foreground) with the Cover; the furthest d/s observation point again highlighting how exposed and incised the channel is.

3.0 **Making it Happen**

The WTT can offer further assistance to devise more detailed project proposals. This would usually detail the next steps to take and highlight specific areas for work, with the report forming part of a land drainage consent application.

The Cover is considered Ordinary Watercourse and therefore comes under the jurisdiction of North Yorkshire Council for land drainage consent which would be required if returning stone to the watercourse, and potentially reconnecting paleochannels. The sites for such works proposed herein would be very low risk, and WTT has plenty of prior consented applications for similar works in neighbouring catchments eg Snaizeholme & Widdale.

3.0 Acknowledgement

The Environment Agency support advisory and practical visits in England, through a partnership funded using rod licence income which contributed a small proportion to the wider Ure Dales LRP reporting.

4.0 Disclaimer

This report is produced for guidance; no liability or responsibility for any loss or damage can be accepted by the Wild Trout Trust as a result of any other person, company or organisation acting, or refraining from acting, upon guidance made in this report.

Legal permissions must be sought before commencing work on site. These are not limited to landowner permissions but will also involve regulatory authorities such as the Environment Agency – and any other relevant bodies (eg Natural England and Forestry Commission) or stakeholders. Alongside permissions, risk assessment and adhering to health and safety legislation and guidance is also an essential component of any interventions or activities in and around your watercourse.