

Final report on National Grid Enhancement Project within the Wye and Usk catchments

Prepared by Simon Evans – Wye and Usk Foundation

September 2009



Fig 1 Restored Habitat on the Afon Honddu (Site 8)



The **Wye & Usk Foundation**
ACTION FOR FISHERIES

nationalgrid
The power of action.™

Contents

	Page
1. Summary	2
2. The Wye, Sites 1,2,3,4	3
3. The Monnow, Site 5	9
4. The Usk, Sites 6,7,8	11
Annex 1 Maps	16
Annex 2 Supporting financial data	22

1. Summary

In 2007, National Grid (NG) and its subcontractors installed a high pressure underground natural gas pipeline between Felindre (near Swansea) and Tirley in Gloucestershire. The pipeline installation involved the crossing of tributaries and main rivers associated with the Loughor, Towy, Usk, Wye and Severn catchments. During the planning and construction phases of the project, the Wye and Usk Foundation (WUF) met with National Grid and its advisors on a number of occasions to discuss the construction process.

As a result of this ongoing dialogue, National Grid invited the WUF to provide proposals for potential habitat enhancement projects within the Usk and Wye catchments. WUF identified 8 suitable locations, across the Wye, Monnow (which falls within the Wye Catchment) and Usk where a high level of cost-benefit can be obtained.

Consenting started in June 2008, field work in August 2008 and the final site was completed 15th August 2009.

Total spend has been £173,926 which breaks down as follows:

Partner	Spend
National Grid	£100,000
Wye and Usk Foundation	£33,345
Environment Agency Wales	£3,000
Monnow Fisheries Association	£22,581
Brecon Beacons National Park	£15,000
Total	£173,926

With these monies;

1 fish pass has been modified, 17,401 m of riverbank has been selectively coppiced, 16,431m of fencing, 62 water gates, and 2 hardened drinking places have been installed and 8 soft revetments completed. This is less than anticipated due to resource being expended repairing damage post the Sept 2008 and Jul 2009 floods. This is discussed further on a site by site basis.

Together they have restored 17.4km stream of which 8.95km is SAC designated.

This document provides further detail on the sites chosen, the actions undertaken and the costs incurred. This is detailed in the following table, with lengths given as single bank metres. WUF welcomes feedback on the completed project.

Site	Catchment	Fencing (m)	Coppicing (m)	Fish pass	Water gates	Revetments	Length improved
1. Marteg	Wye	1,361			2	5	1,016
2. Clywedog	Wye	445	985		3	1	985
3.Llanwrthwl	Wye	620	1,120		4		634
4.Digedi	Wye			1			562
5.Esley	Monnow	7,209	9,815		29		7,733
6. Upper Usk	Usk	3,840	2,380		9		2,714
7. Crai	Usk	1,045	1,155		12		853
8.Honddu	Usk	1,911	1,946		3	2	2,078
Total		16,431	17,401	1	62	8	16,575

2. The Wye

Within the Wye catchment 4 sites were chosen that all represented good value and all could be brought into good ecological status with simple cost-effective intervention.

The total spend on the four Wye projects was £29,767 which attracted £19,920 of National Grid funds with the Wye and Usk Foundation (WUF) making up the balance of £9,756. A summarised breakdown of spend for each Catchment is included within Annex 2.

Site 1. Afon Marteg

Background and rationale

The Marteg is an important salmon nursery stream within the Wye catchment. A water fall in its lower reach ensures only the nationally scarce large multi sea winter fish are able to reach the middle and upper reaches. This section was one of the most degraded sections to be found in the Wye catchment. The landowner ranched high densities of yearling cattle and sheep across a 60ha unfenced unit of land through which the river flowed.

Details of works undertaken

In our proposal for the restoration of the site, a large amount of grazeable area was to be left inside the fence. Despite the fact that this site was outside the Wye Special Area of Conservation (SAC) the Countryside Council for Wales (CCW) were made aware of its potentially high conservation status and WUF was able to negotiate Section 39 agreement on behalf of the landowner, whereby he received annual payments for the land taken out of production. This ensured that the restoration costs could be kept down by utilising more straight line fencing but which excluded a larger area from grazing.

Shortly after completion of the works in August 2008 and before the banks had a chance to re-vegetate and stabilise, a 50 year return period flood came down the Marteg. This caused extensive damage to the works and additional work was required to make good the fence lines and drinking places.



Fig 2 Pre-works condition of Afon Marteg



Fig 3 Soon after initial works completed. Note, double bank fencing and soft revetment of erosion prone bank



Fig 4 Post September 2008 flood



Fig 5 July 2009 A restored river corridor after final repairs and 1 year's riparian growth

Results

This site has recovered rapidly and over the next three years we expect to see an increase in fish stocks leading to an estimated increase in salmon smolt output for the 15+ years that the work would remain effective. There are extensive additional benefits to resident Brown trout, Brook lamprey, Bullhead, Otters and other SAC and LBAP features, and this year the nationally endangered water vole were found to have colonised the site.

A map of the works is included in Annex 1.

This site was completed in Sept 2008 and inspected by Shona Gentry (on behalf of National Grid) and Simon Evans of WUF on the 26th Nov 2008.

Site 2. Afon Clywedog

Background and rationale

Selected due to its importance within the Ithon sub-catchment and designation as part of the Wye SAC, this is one stream within this sub-catchment where riparian habitat rather than surrounding land-use was identified as the principle limiting factor on the fishery.

It was included in the experimental Wye Habitat Improvement Project (WHIP) which ran from 1998 to 2002. During this project various types of habitat prescriptions were investigated and these included fencing with no tree managements. After lengthy experimentation it has been determined that this prescription had no effect on fish stocks.

This has left the stream only partly restored. In order to complete the works the trees need managing within these 2 sections as can be seen in the photo. The fences remain in place and in good condition meaning that with the aid of a grab. Elsewhere some minor coppicing of regrowth is required and an eroding bank requires stabilising. When combined it means a significant length of stream can be restored at relatively low cost.

Details of work undertaken

By joining up the improved sections over 1.8km of river was improved. To do this we coppiced 985m of stream, erected 445m of fencing (mostly minor repairs following timber extractions) installed 3 water-gates and completed 1 revetment. Figures 6-11 show representative examples of the work.



Fig 6 Fenced but not coppiced



Fig 7 Now coppiced



Fig 8 Dense tunnel on Abby-Cwm-Hir



Fig 9 Now coppiced



Fig 10 Representative view – after work



Fig 11 Riparian buffer established by work

Results

Letting light into over-shaded channels such as this has been shown to lead to an increase in juvenile salmon numbers. The 692m of 7m wide channel and 293m of 3m wide channel that has been restored could generate as many as 610 more smolts p/a.

A map of the works is included in annex 1.

This site was completed in April 2009 and inspected by Shona Gentry (on behalf of National Grid) and Simon Evans of WUF on the 21st September 2009.

Site 3. Afon Llanwrthwl

Background and rationale

Selected due to its importance as main stem tributary, this stream provides excellent nursery habitat for salmon. The extensive lengths of boulder cobble bed-load provide the very best potential parr habitat. This is a habitat type that is of limited extent within the Wye catchment.

The potential improvement was identified due to this section being severely and extensively over shaded with associated unregulated stock access. This had reduced salmon parr densities to 10-20% of estimated potential.

Details of work undertaken

A selective coppicing programme of 1,120m was undertaken supported by 620m of fencing and 4 water gates. In total some 634m of stream was improved. Since the stream has, in the main, one good existing fence, overall costs per kilometre were lower here than at some other sites.

This site was completed in January 2009 and inspected by Shona Gentry (on behalf of National Grid) and Simon Evans of WUF on the 26th Nov 2008.

Result

The 634m of 4m wide channel that has been restored could generate as many as 760 more smolts p/a.



Fig 12 A representative picture of the stream prior to improvements taking place



Fig 13 Jan 2009 shortly after completion

A map of this work is included in annex 1.

Site 4. Afon Dgedi

Background and rationale

The Dgedi drains the north flank of the Black Mountains and is ideally suited to salmonids. Due to its steep gradient a series of waterfalls naturally limit fish access to the bottom 2km. Access was limited further to the lowest 350m by 2 weirs built to protect the foundations for the old railway bridge, which has since collapsed. In 2001 fish passes were constructed but subsequent electro fishing upstream has shown that access is still intermittent and the excellent habitat upstream is not being fully utilised. Further observation has determined that this is due to fish having difficulty accessing the jumping chamber of the upper pass.

Details of works undertaken

To reduce velocity downstream 4 3-4 tonne boulders were placed to impound the flow below, with the aim of reducing velocities to under 3m/s-1.

Completed in Aug 2008, initial observations suggest it had worked and we await this year's (2009) electro fishing results to confirm its success.

Result

The 562m of 4.5m wide channel made accessible to salmon has the potential to generate 330 salmon smolts p/a once fully populated. A similar number of additional trout will also be produced.



This site was completed in August 2008 and inspected by Shona Gentry (on behalf of National Grid) and Simon Evans of WUF on the 26th Nov 2008.

Fig 14 Prior to work

Fig 15 Now with the extra barrage to reduce drop and exit velocity



3. The Monnow (Part of the Wye Catchment)

The work on the Monnow focussed on one tributary, the Escley, and was part funded by the Monnow Fisheries Association (MFA). The work was led by the MFA in partnership with WUF and conducted by Wye and Usk Foundation staff supported by the MFA.

The total spend in the Monnow was £71,143 which attracted £48,562 of National Grid funds with the balance of £22,581 coming from the MFA. A full breakdown of spend is included within Annex 2.

Site 5. Escley brook

Background and rationale

The Escley is one of the five principal tributaries in the Monnow catchment. For much of its length it was a productive trout fishery in its own right. It has suffered from habitat degradation and, until recently, water quality issues due to Cypermethrin based sheep dips, which have recently been removed from sale. The Monnow Improvement Project recognised the high value of the stream for trout recruitment and it would have been subject to the Project's prescription was it was not for the water quality issues, which came to light early in the Project's timetable. Consequently only a very short length of the upper river has previously been improved. There are abundant spawning areas and habitat for juvenile trout and salmon and access to the river and these areas are reasonably unfettered. The upper river and some side streams still have a population of White clawed crayfish and the habitat improvement works will allow them to colonise the lower reaches from which they were eradicated by sheep dip pollution.

Background and rationale

Details of works undertaken

Work commenced in September 2008 and finished in August 2009. Due to a favourable response from the landowners more work was completed here than anticipated with eventually all degraded habitat from Michaelchurch-Escley to the junction with the Monnow (7.73km) being restored. The new work joins on to work previously completed above Michealchurch to complete a continuously improved 8.5km corridor. Owing to the bedrock nature of much of the stream, the channel was fairly stable meaning no revetments were required. Instead the prescription favoured the laying of live hazel into the margins to increase in-stream refugia.

Long term sustainability of the project has been ensured by the marketing of improved fishing through the Wye and Usk Passport <http://www.wyeuskfoundation.org/fishing/r36-37-upperlowerescley.php> and will ensure that future funding should be available to maintain the enhanced sections.

In total 9,815m of riverbank was coppiced, 7,209m of fencing erected or made stock proof and 29 watergates were installed.



Fig 16 Escley Brook before work.



Fig 17 6 months on.



Fig 18 Representative view of lower brook shortly after work completed

Result

The 2 Passport beats have fished very well and developed a loyal clientele, with many large trout taking advantage of the improved habitat. Also, in addition to a noticeable but as yet un-quantified increase in juvenile trout numbers, the native White clawed crayfish are now to be found throughout the length of the Escley.

This site was completed in August 2009 and inspected by Shona Gentry (on behalf of National Grid) and Simon Evans of WUF on the 21st September 2009.

4. The Usk

3 sites were chosen on areas that were in close proximity to the areas crossed by pipeline construction. For efficiency, the project was combined with a Sustainable Development Fund (SDF) project running in the area. The work was conducted by The Wye and Usk Foundation at a cost £73,016. It attracted £32,198 of National Grid funding, which was matched by £22,818 of WUF, £15,000 of SDF and £3,000 of EAW funds.

A major catchment wide flood on the 6th Sept 2008 (return period >50 years) caused extensive slope failures within the recently completed Honddu site. This introduced a large number of trees that required removing from the channel.



Figs 19-21. Immediately after the Sept 08 flood showing how the structures installed by the project had survived, but also the large amounts of woody debris introduced to the channel that required fixing/removal

A second much more localised severe flood occurred on July 20th 2009 and affected the south western corner of the catchment. This damaged the work recently completed on the Crai with water levels peaking at 4m over bank level. These were repaired within the life of the project.

Site 6 – Upper Usk

Background and rationale

This 3.58km section of the Upper Usk and Lower Hydfer supported fisheries at a capacity, which was limited by the degraded habitat, with lengthy sections of 100% tree canopy and extensive bank degradation from unregulated stock access. This made the section a prime site for restoration as the fishery should respond quickly.

2 sections were consented up for work. The upper section, at Ynsmarchog, was heavily shaded and involved extensive tree work whilst the lower, just above the Crai junction, was mostly overgrazed and only required fencing.

The lower section was deemed to be Otter sensitive habitat and due to the tightening of the Habitat Directive regulations in autumn 2008 and the inclusion of Otters on the European Protected Species list, we needed to have our staff re-trained in order to gain consent to work at the lower site.

Details of works undertaken

2,380m of riverbank was selectively coppiced during the winter and this summer 3,840m of fencing with 9 water gates were installed, effectively restoring 2,714 m of river. The middle 0.8km section

was left due to the presence of otters and the unrealistically high cost of the entirely manual coppicing (with no chainsaws!) that the consent required.



Fig 22. Before- Lower section



Fig 23. After Lower section



Fig 24. Representative view of upper section after work

Results

With an average channel width of 8m, a doubling of fish stocks would lead to an increase in salmon smolt output of around 2,100 p/a for the 15+ years that the work would remain effective. There are extensive additional benefits to resident brown trout, Brook lamprey, Bullhead, Otters (including creation of 2 new suitable breeding locations) and other SAC and LBAP feature.

This site was completed in August 2009 and inspected by Shona Gentry (on behalf of National Grid) and Simon Evans of WUF on the 21st September 2009.

Site 7 Crai

Background and rationale

The Crai is the most westerly of the major Usk tributaries and was crossed by the pipeline in its lower reaches (RVX28). Historically an important trout fishery this has declined markedly in recent years. It remains an important spawning stream for the imperilled multi sea winter spring salmon, due to the temperature barrier at Pantysgallog falls just downstream of its confluence with the Usk.

Further upstream around the village of Crai, WUF has improved 3.2km of stream through the Usk project. However in the middle of this section one landowner refused to sign up at the time.

Details of works undertaken

1,145m of riverbank was selectively coppiced during the winter (2008-2009) and this summer (2009) 1,045m of fencing with 9 water gates were installed effectively restoring 853m of river. This links with the upper and lower section to create a 4km strip of excellent habitat in a key nursery area.

Shortly after completion a major flood ripped down the valley. Although all the fencing survived a large tree damaged several watergates on its way downstream. This was made good within the project.

Inclusion in the Passport scheme will fund the long-term maintenance and ensure the benefits will persist in perpetuity.

Figure 25, is a representative view of the section immediately after the work was completed.

Results

Once the river has readjusted to the extra light and reduced grazing pressure it should generate an extra 500 salmon smolts p/a. There are extensive additional benefits to resident Brown trout, Brook lamprey, Bullhead and Otters.



This site was completed in June 2009. The repairs after the flood were completed in August 2009. The site was inspected by Shona Gentry (on behalf of National Grid) and Simon Evans of WUF on the 21st September 2009.

Site 8 – Brecon Honddu

Background and rationale

The Brecon Honddu is a key middle Usk tributary which, in addition to salmon and trout, supports a population of White clawed crayfish. The river has benefited from a fish access project in its lower reaches and some habitat restoration completed during the Usk project. This section from Bailey Bach to Lower Chapel links two restored sections, to give a completed corridor of some 7.5 km of stream.

One landowner could not be persuaded to exclude his stock. The river was eroding along a 200m length (returning to its original course having been straightened 10 years ago) and the area of ground he would have to give up to ensure a stable fence line was excessive. This section will be fenced in a future project once the river has returned.

Details of works undertaken

1,946m of coppicing was completed 1,911m of fencing, 3 water gates and 2 revetments were installed. Together this restored 2,078m of stream.



Fig 26 Before work



Fig 27 Restored river corridor



Fig 28 Lower section, shortly after fencing Sept 08



Fig 29 Re-vegetating, Aug 09



Fig 30 Restored corridor,
Note soft revetment in
foreground

Results

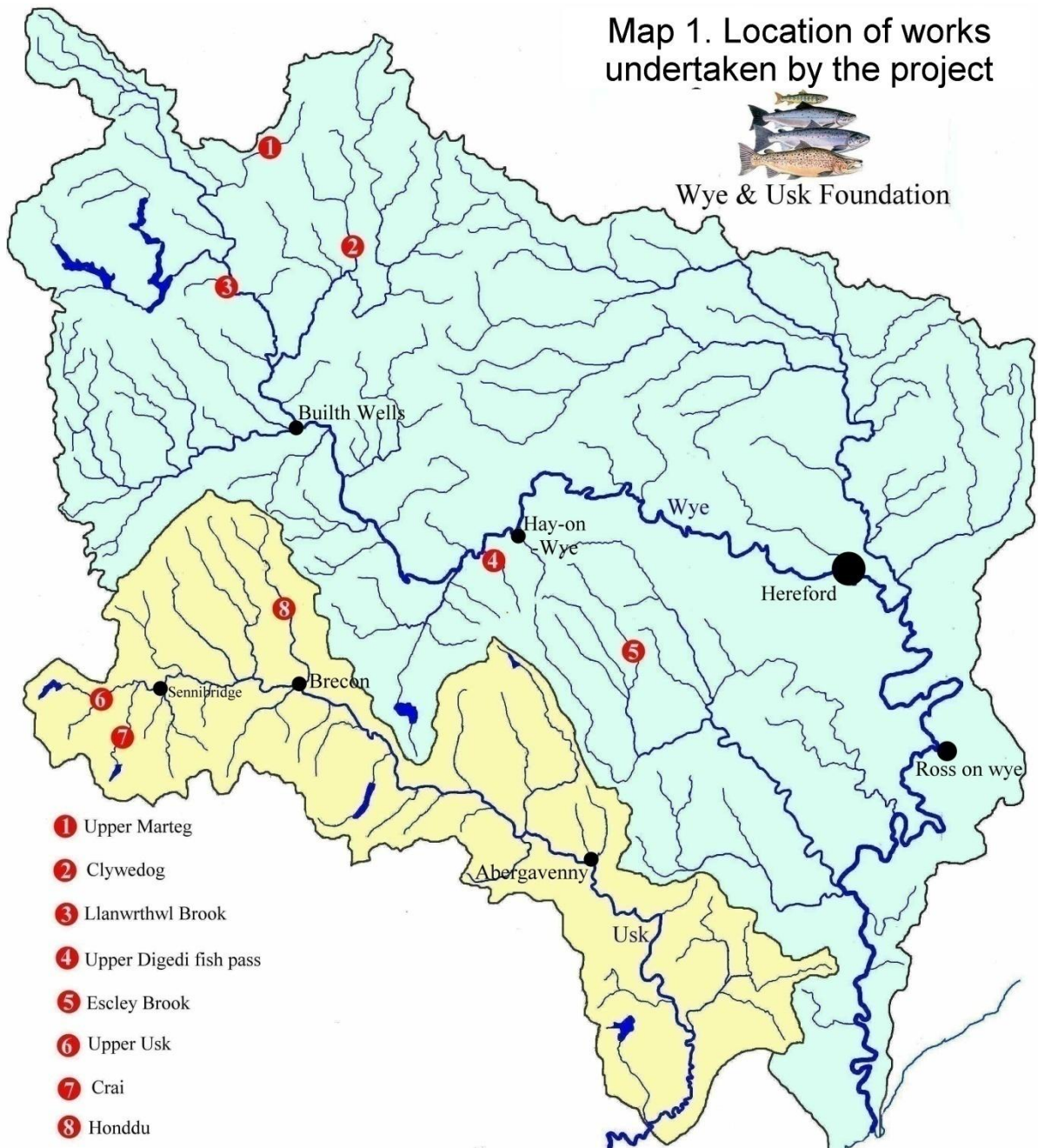
As can be seen from the images here and in fig. 1 on the front piece, this section of river has recovered very quickly and a walk in September showed large numbers of trout in the improved habitat. This work should result in an additional 300 salmon smolts and around 2,000 1+ trout p/a within the next 12 months.

There are extensive additional benefits to resident Brown trout, Brook lamprey, Bullhead, Otters and other SAC and LBAP feature.

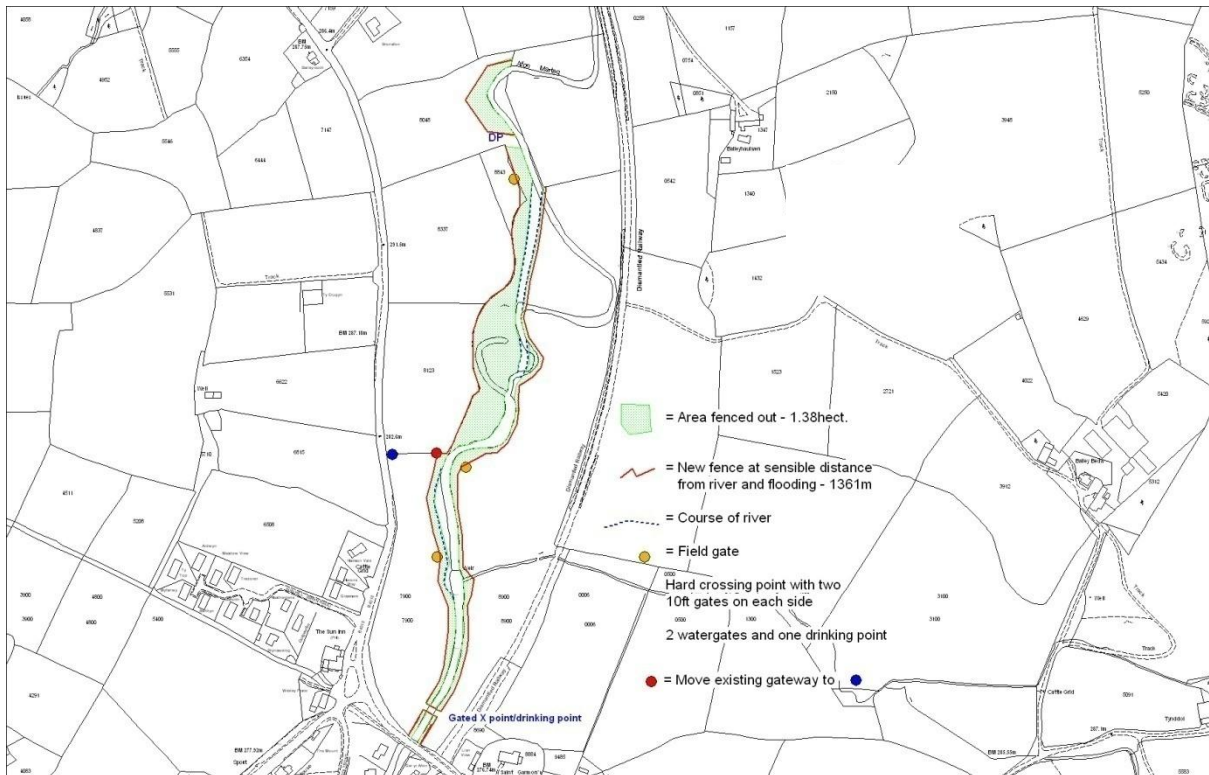
This site was completed in May 2009 and inspected by Shona Gentry (on behalf of National Grid) and Simon Evans of WUF on the 21st September 2009.

A map detailing this work is included in annex 1.

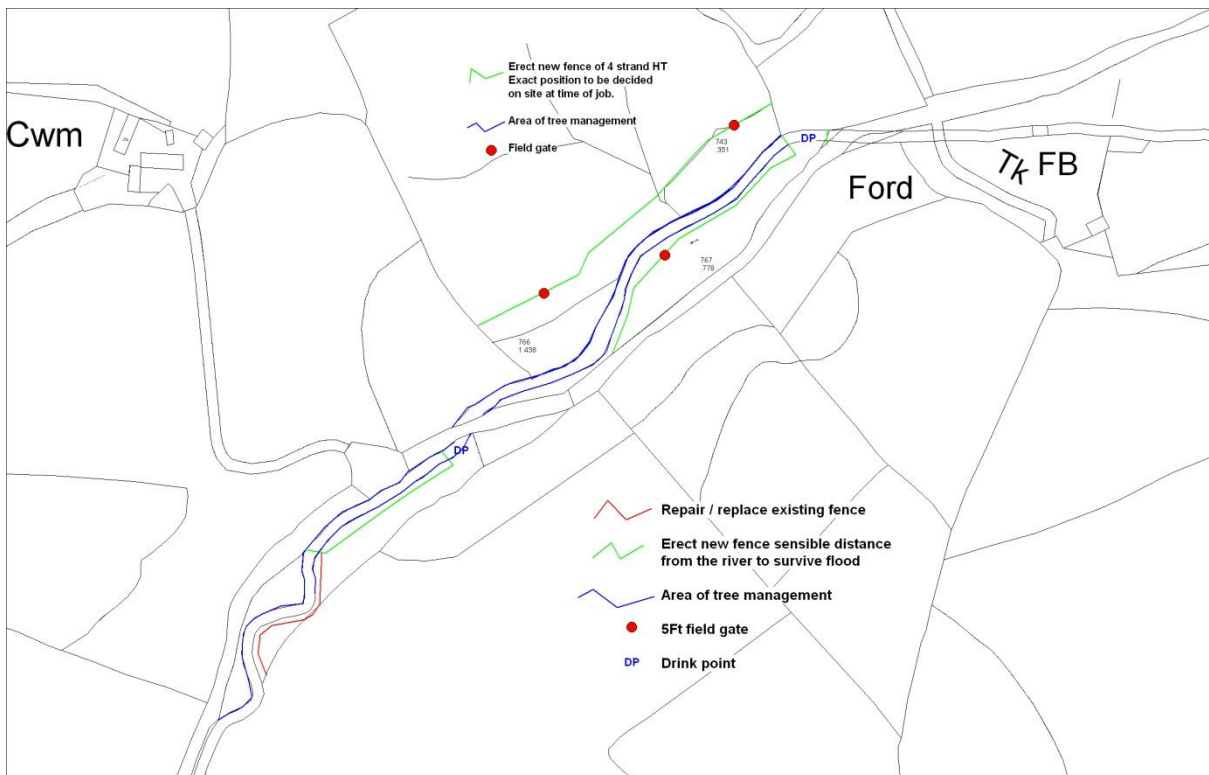
Map 1. Location of works undertaken by the project



Map 2 Marteg



Map 3 Llanwrthwl Brook

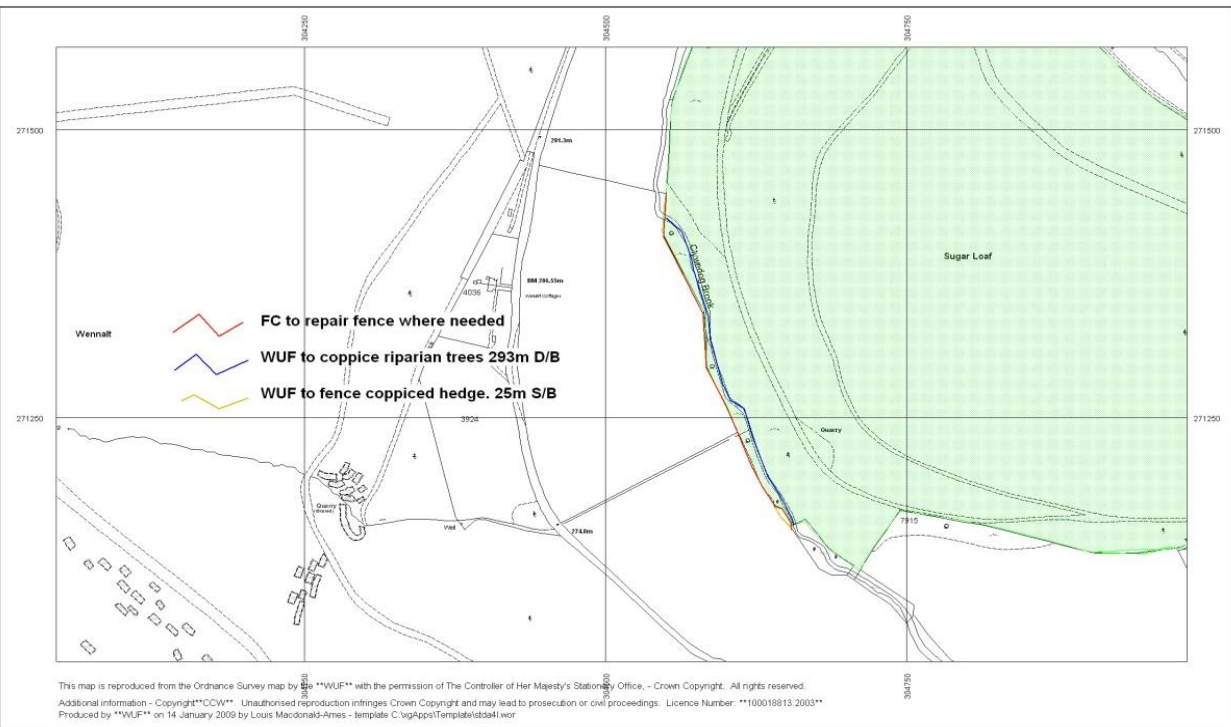


Map 4 Clwydog - Abby-Cwm-Hir

Wye

Clywedog

Scale 1:3642



Map 5 Middle Clywedog

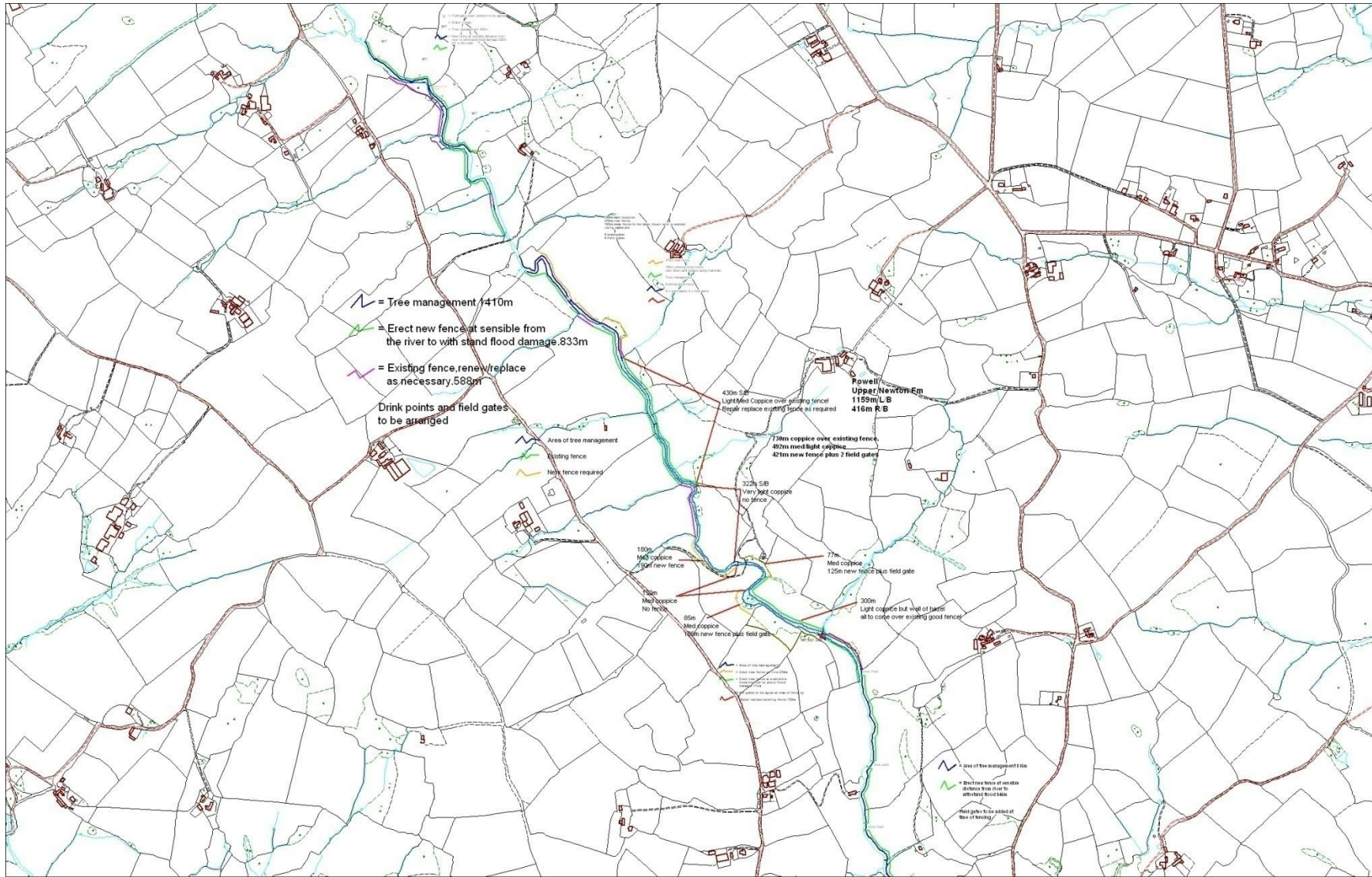
Wye

Clywedog

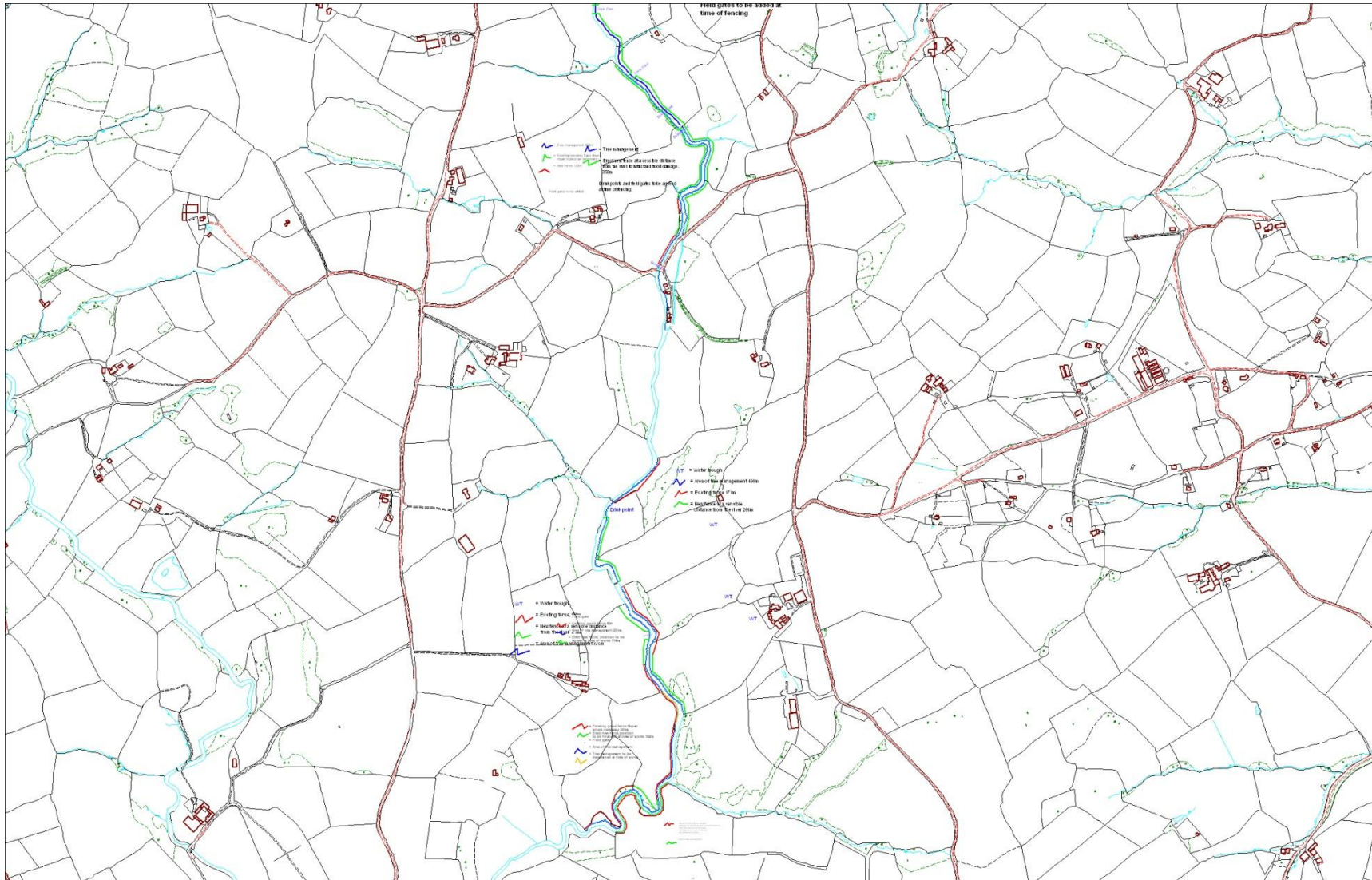
Scale 1:4739



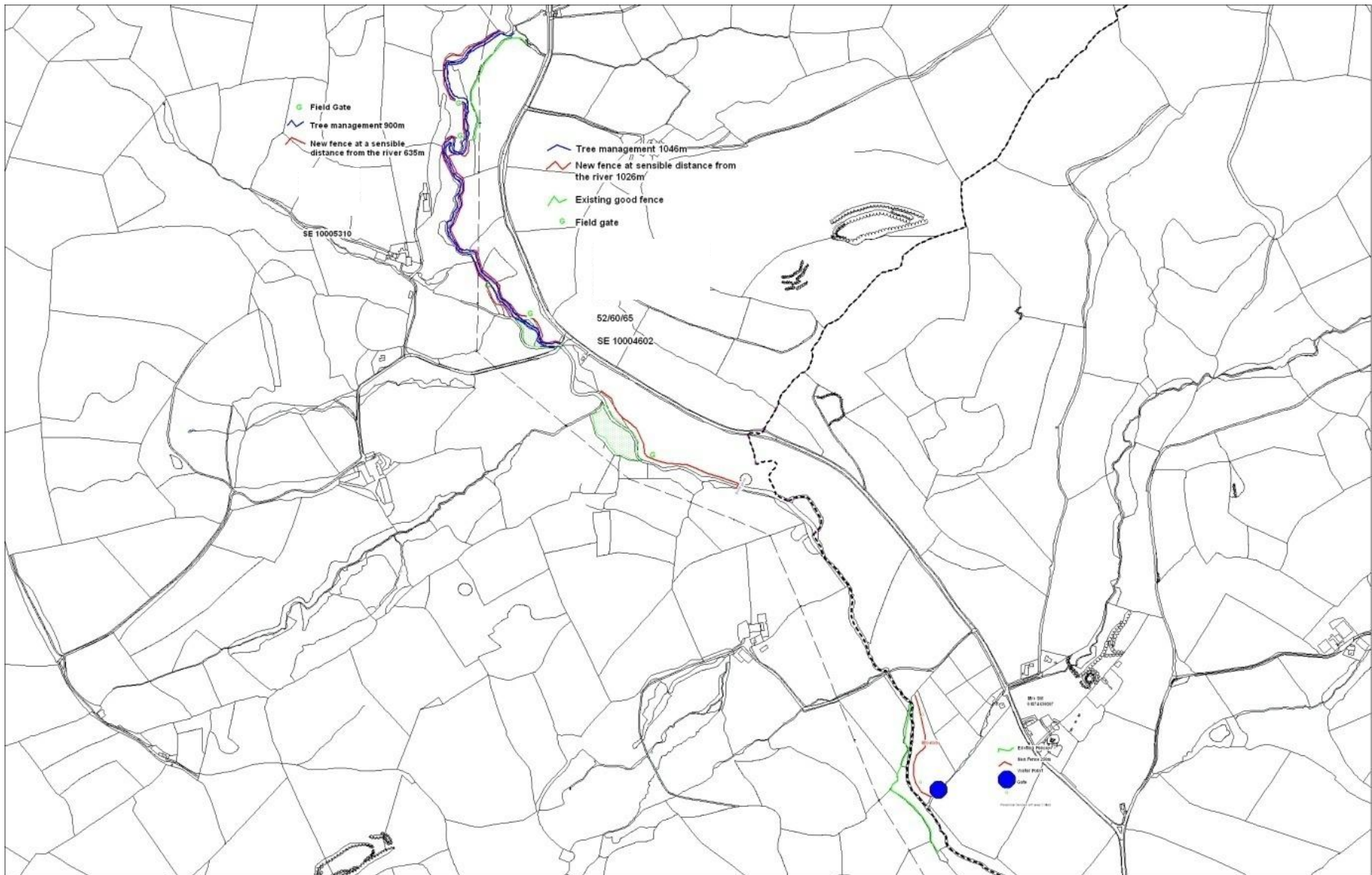
Map 6 Upper Escley



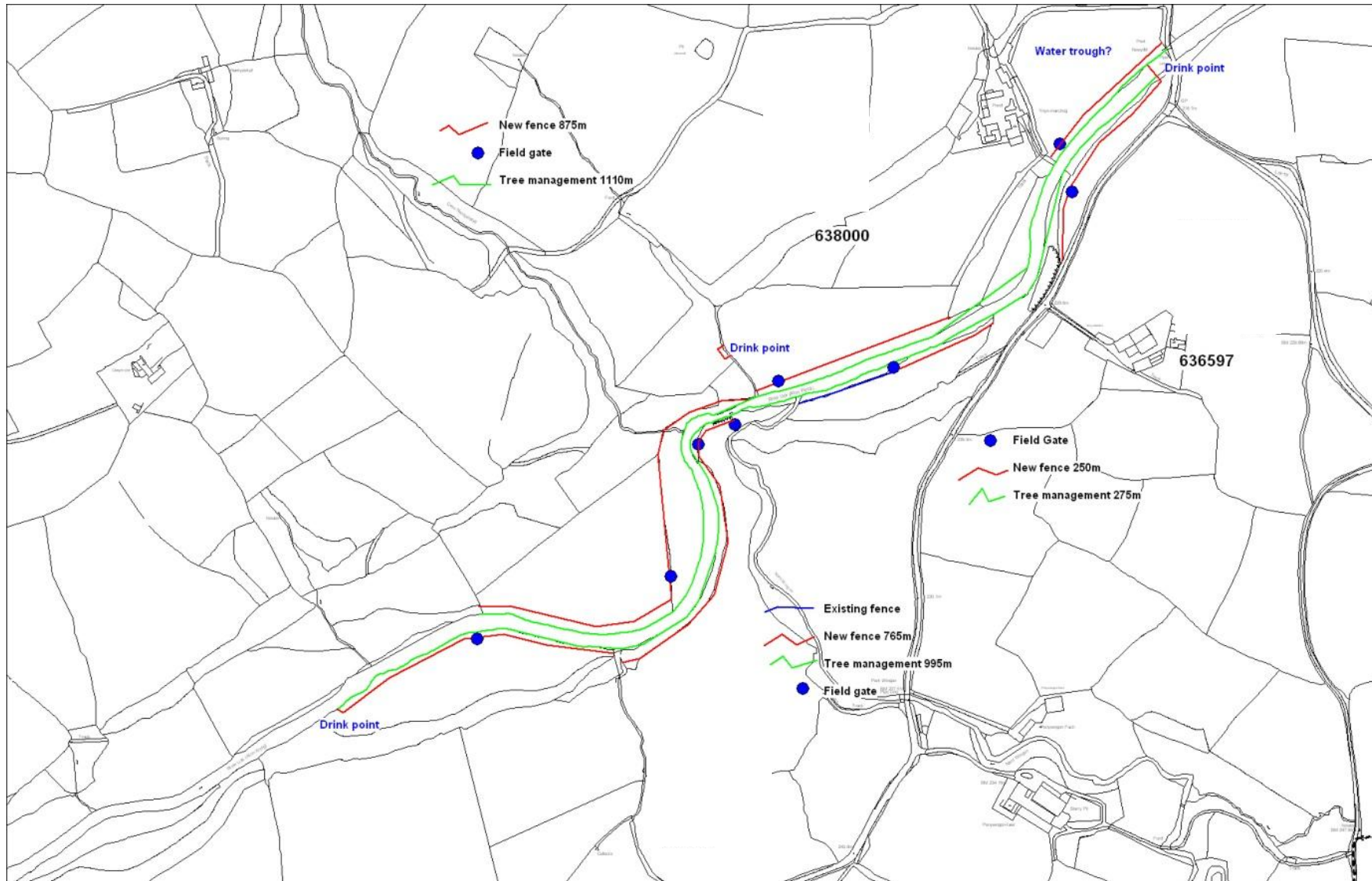
Map 7 Lower Esley



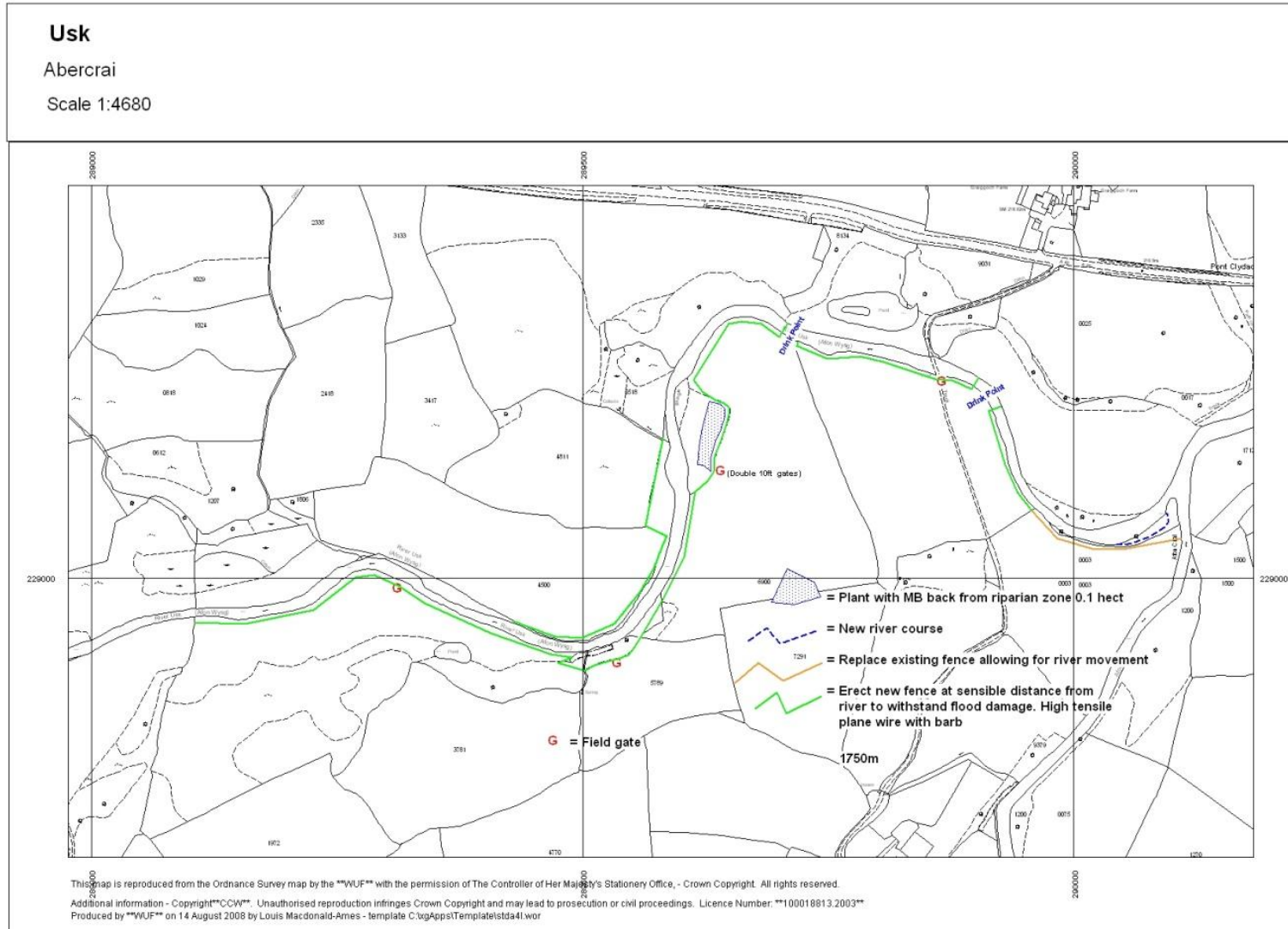
Map 8 Honddu



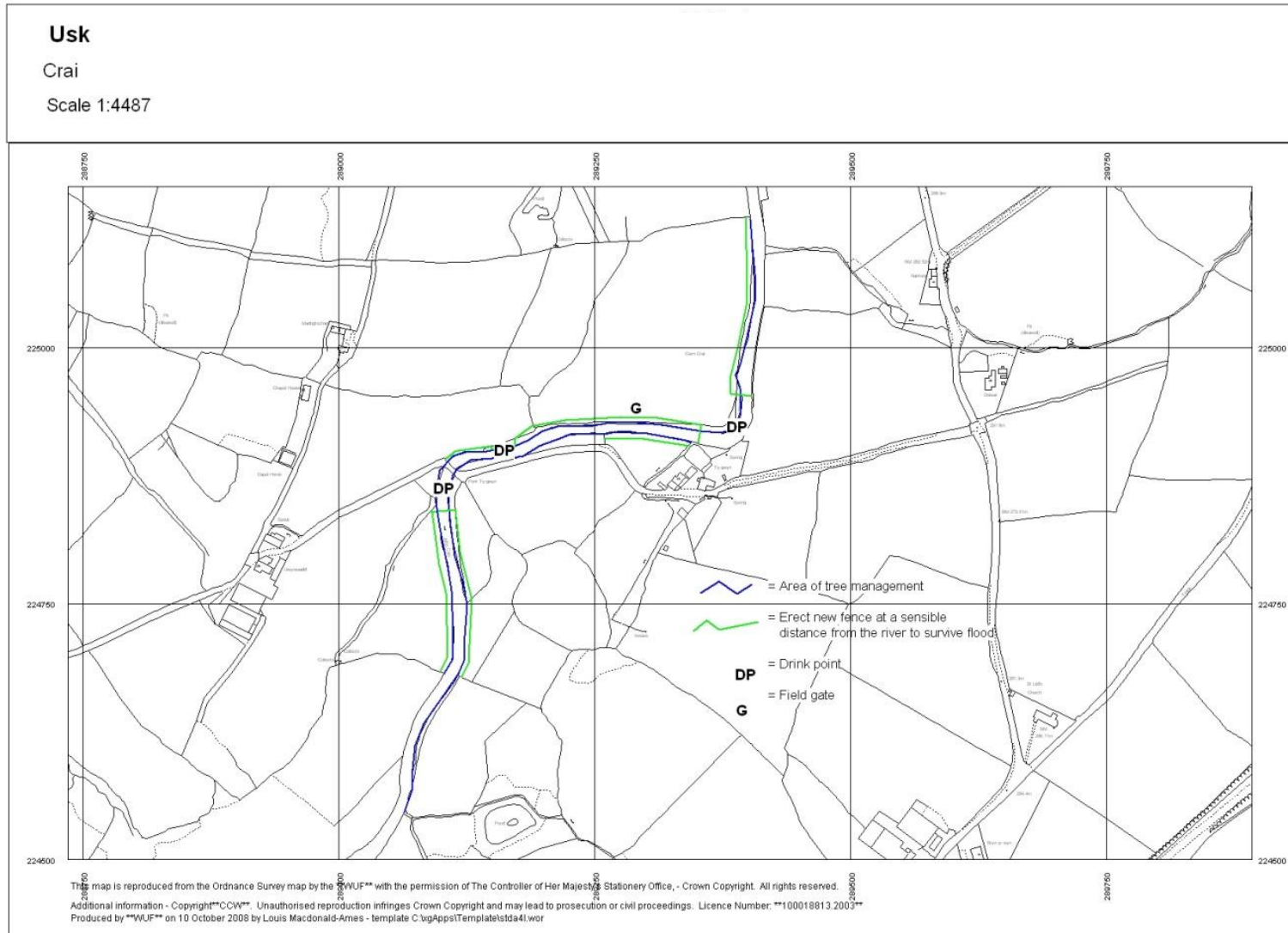
Map 9 Upper Usk Ynysmarchog



Map 10 Upper Usk Van Rees



Map 11- Crai



WYE & USK FOUNDATION

**National
Grid**

Analysis of Total Expenditure to Aug 09 - per Sage

Sage	Description	Amount	Claim headings									
Nom		per T B	Materials	Equip Hire	Motor / Travel	Payroll Habitat	Payroll Managnt	Payroll Directors	Consultcy	Office costs	Property costs	Total
Usk		73,016.27	13,991	3,730	3,429	39,288	9,595	2,216	5	307	455	73,016
Wye		29,787.72	5,231	1,991	1,138	12,540	6,480	1,706	5	342	353	29,786
Monnow		71,142.80	13,458	1,784	4,876	39,268	7,087	2,773	1,185	204	509	71,144
TOTAL		173,946.79	32,680	7,505	9,443	91,096	23,162	6,695	1,195	853	1,317	173,946

Supported by Sage Line 90. Print outs available upon request.