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The Rotary Ditcher

Case Studies

Creating a foot drain at Chimney Meadows Nature Reserve © Mike Shurmer (RSPB)

Home Farm, Clifton, Oxfordshire

Author:
Mike Shurmer (RSPB) and George Fenemore.

Project location:
Home Farm is managed by George Fenemore and sits within the catchment of the River Cherwell, between Banbury and Oxford.

Site details:
30 hectares of riverside meadows grazed by ewes and lambs. The soils are alluvial over a layer of shallow Oxford clay. The fields are entered into Higher Level Stewardship as restoration of wet grassland for breeding waders.


Rotary ditcher at Home Farm © Mike Shurmer (RSPB)

Project aims:
To create a series of shallow foot drains to provide habitat for breeding waders (lapwing, curlew, redshank and snipe) and wintering waders and wildfowl (golden plover, lapwing, teal and wigeon).

Date of work and length of time taken:
The initial work took place in late August 2006. The ditcher returned to the site in July 2010 to further enhance the site. The ditcher has worked a total of two days here.

Overview of work:
The rotary ditcher was chosen on the basis of cost and suitability in creating foot drains in existing paleaochannels, as well as issues with collecting and removing spoil.

A total of 1635 metres of foot drains were created and enhanced over the two projects. These features were typically three metres wide and a maximum of 40 centimetres deep.

Foot drains were connected to farm ditches running into the Cherwell, diverting water across the field. A series of blind foot drains were also created to catch and hold flood water. Three sluices were subsequently installed on ditches to keep water levels high and foot drains full.

Pre-planning work involved Natural England commissioning a levels survey, which help to shape the design and identify suitable areas for work. Soil test pits were dug in several locations. The Environment Agency were consulted and official floodplain consent received.

We were always mindful of leaving space for vehicles and topping operations. Foot drains were made shallow in some sections to allow vehicles to drive across them.


Newly excavated foot drain © Mike Shurmer (RSPB)

To further enhance the site there is a stocking restriction until July at 0.75 LU/ha. Three right-angle bend sluices have been installed and a number of willows have been entered into a pollarding regime to keep an open aspect.

Freshly cleaned foot drain after heavy rainfall and right-angle bend sluice © Mike Shurmer (RSPB)

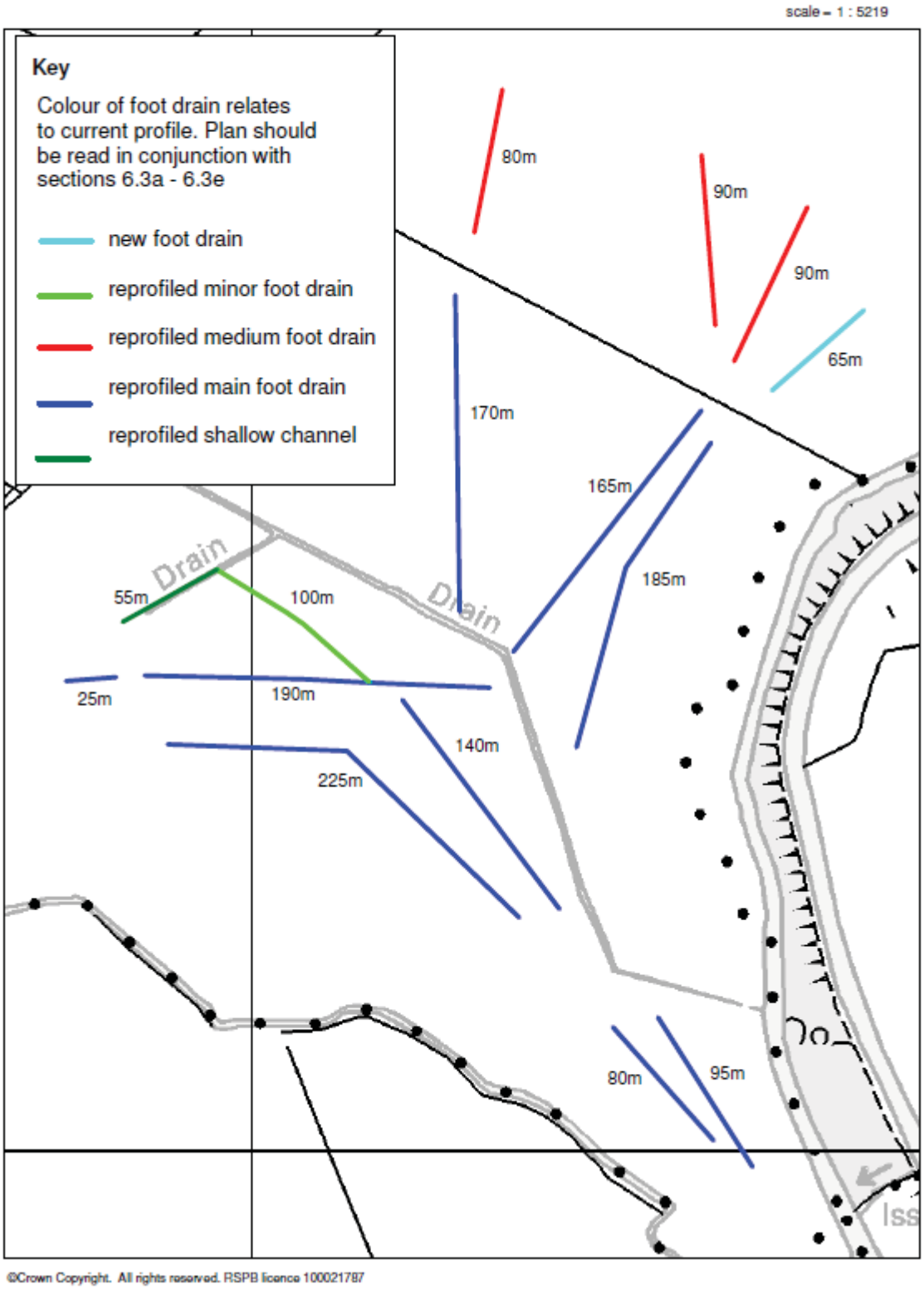
Problems encountered and how were these overcome:
Good planning ensured there were no real problems.

Approximate cost and funding:
The cost of the work was approximately £2,500 + VAT. Total funding available from HLS was approximately £5,000

Achievements:
Within one year of the initial work redshank and lapwing were breeding on the site. Curlew which breed in adjacent hay meadows are also seen regularly feeding on the site.

Foot drains and surface flashing late winter 2010 © Mike Shurmer (RSPB)

Future plans:
The foot drains will be managed in five years time, to clear vegetation and silt to ensure the habitat is maintained.



Plan for reprofiling foot drains in July 2010 © Mike Shurmer (RSPB)

Acknowledgements:
Vicky Robinson and Andrew Russell at Natural England assisted with the HLS process and Pedro Collins at the Environment Agency helped with consent issues. George and Christopher Fenemore have embraced their HLS with great enthusiasm and interest.

Crook Farm, Thurnham, Lancashire

Author:
Gavin Thomas, (RSPB Bowland Wader Project Officer)

Project location:
Crook Farm lies in the Morecambe Bay coastal fringe in Lancashire.

Site details:
Former silage fields managed as cattle grazed permanent pasture, covering 13.4 hectares. The soils are best described as silty clays. The fields are entered into the HLS option of restoration of wet grassland for breeding waders.

Existing muddy ditch in May 2010. A pair of adult Lapwings are watching over their chicks, one of which is just about visible feeding in the small pool at the far end of this ditch © Gavin Thomas (RSPB)

Project aims:
To manage coastal wet grassland for breeding waders, specifically lapwing and redshank. The fields also provide winter feeding and loafing areas for a range of wildfowl and waders from the adjacent Lune Estuary.

Date of work and length of time taken:
Three hours work on two dates in September 2009 and August 2010.

Overview of work:
Soil bunds with pipe sluices had previously been installed, with land drains interrupted with sub-surface pipe sluices. These help to maintain high ditch water levels and a high water tables into the early summer and are sufficient to create localised re-wetting of the grassland.

John Gerrard inspecting a sub-surface pipe sluices (left) and soil bund and pipe sluice backing water up one of the existing ditches © Gavin Thomas (RSPB)

The rotary ditcher created 357 metres of shallow foot drains, on average three metres wide and 45 centimetres deep. These connected to the existing ditch network to create more wet features across the field.

The wet grassland is located in the fields furthest from the farm buildings, thus allowing easier access to more intensively managed silage fields closer to the yard. Cattle grazing maintains a tussocky sward structure, with livestock excluded or grazed at very low densities during the breeding season. The fields are large with an open aspect due to low boundaries of post and wire fences and reedy ditches with only one or two hedgerows.

The Environment Agency were consulted but the work did not require formal consent. Service checks were requested from Lancashire County Council.

Problems encountered and how were these overcome:
The ditcher could not complete the ditching work in 2009 due to prolonged heavy rainfall and subsequent flooding. The work therefore had to be delayed until August 2010 when the ditcher was on nearby farms and travel costs could be reduced.

Approximate cost and funding:
HLS capital works funding provided £1170. This initially more than covered the actual cost of the work but in the end balanced out the cost of the ditcher having to make two trips instead of just one.

Achievements:
Since the fields were restored to wet grassland from silage they are used far more frequently by wintering waders and wildfowl. In 2009 the Lapwing population had grown to at least ten pairs, some of which successfully fledged young. Redshanks are not yet breeding on site but it is hoped that extension of the ditch network by the ditcher will create enough wet features to attract these in to breed.

Future plans:
None planned.

Rotary ditcher making its first pass in September 2009 & existing ditch in July 2010, holding water despite the dry summer © Gavin Thomas (RSPB)

Acknowledgements:
John Gerrard, whose enthusiasm and commitment to his HLS agreement is ensuring it is a real success. Margaret O'Kane from Natural England undertook the HLS application and has continued to ensure it delivers for farm wildlife. Lancashire County Council provided Service Plans ahead of the ditcher work.

Lyth Valley, Cumbria

Author:
Tonia Armer (RSPB)

Project location:
Land next to Lords Plain Causeway, Levens in the Lyth Valley. This is an artificially drained floodplain that empties into the Kent Estuary and is part of Morecambe Bay.

Site details:
Cattle and sheep grazed permanent pasture covering 16.8 hectares. The soils are peat over clay and the land is managed in HLS as restoration of wet grassland for breeding waders.

Project aims:
The land is primarily managed for breeding waders, particularly lapwing and curlew. The site is also used by wintering waders and wildfowl, such as wigeon and teal.

Date of work and length of time taken:
One days work with the rotary ditcher in August 2010.

Overview of work:
The Lyth Valley is drained by the Environment Agency through a system of pump drained sub catchments but this is under review and likely to be substantially curtailed. This is a core area for the Morecambe Bay Wetland Vision and part of The RSPB's Morecambe Bay Futurescapes area.

The rotary ditcher was used to create a channel from the Levens Catchwater to the Levens main drain. This will allow a proportion of the base rich water that is currently caught by the catchwater to flow slowly over the land and create shallow wet features across the site.

Old creek channels were followed as far as possible, and some lateral sections of ditch were created. Depth varied from 5-10 cm close to the Levens main drain to approximately 50 cm near the Catchwater, with a width of 3 metres. An 8 metre length was left at both ends of the main ditch due to land drainage consent requirements, earth bunds with right angled pipe sluices will be installed here at a later date. 1181m length of shallow channel was created.

The rotary ditcher on the second pass © Tonia Armer (RSPB)

Problems encountered and how were these overcome:
Access onto the site was difficult but was overcome by the skill of the ditcher driver. The path of the main ditch was through 3 hedges and a wire fence. These had to be removed to allow access for the ditcher. Cattle and sheep were on site but did not cause any problems.

Approximate cost and funding:
Work was fully funded through the Wetland Vision and the cost was estimated to be £1,828 inclusive of VAT.

Achievements:
The created/restored channels are formed from clay and quickly fill up with rain water. They can be seen from the road above the valley. The site is monitored 6 times a year by the Cumbria bird Club.

The channel created by the rotary ditcher © Tonia Armer (RSPB)

Future plans:
A small digger is going to dig out the remaining hedge roots to link the main ditch into one unbroken length. One further pipe sluice is being constructed to keep water levels high. If it is not possible to keep water levels as high as desired, water will be extracted from the Catchwater and will percolate through the site before exiting into the Levens Main Drain.

Acknowledgements:
The National Trust and Peter Henderson for agreeing to enter HLS and for allowing the ditcher to be used on their site. Natural England for supporting the application, and financing the ditcher through Wetland Vision funding.

Freckleton Marsh, near Preston, Lancashire

Author:
Andrew Gouldstone (RSPB)

Project location:
Freckleton Marsh sits on the Ribble Estuary near Preston in Lancashire. The site is adjacent to Newton Marsh SSSI, which has been under conservation management for some time.

Site details:
Cattle and sheep grazed permanent pasture covering 67.8 hectares of coastal grazing marsh (former saltmarsh) on former estuarine silts and clays. The site is managed in HLS as restoration of wet grassland for breeding waders.

Project aims:
The site currently holds 2-3 pairs of lapwing, but the adjacent Newton Marsh SSSI has approximately 50 pairs of breeding waders – primarily lapwing and redshank. Improved management on Freckleton Marsh should enhance these populations and allow for population growth. The enhanced coastal grazing marsh will also target wintering waders and wildfowl, eg wigeon.

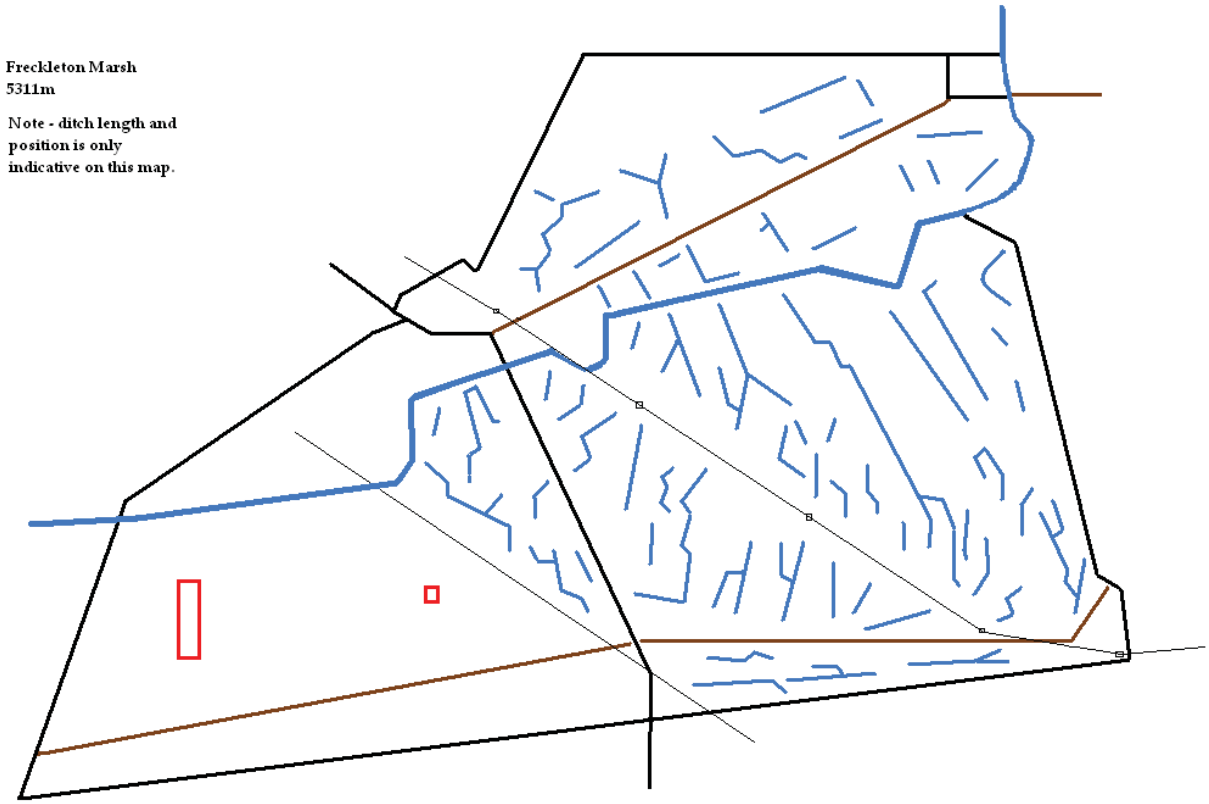
Date of work and length of time taken:
The rotary ditcher worked for three days in August 2010.

The rotary ditcher opening out a former saltmarsh creek © Andrew Gouldstone (RSPB)

Overview of work:
The rotary ditcher was used on Freckleton Marsh to excavate a system of former saltmarsh creeks that were still (varyingly) evident on the marsh. These were opened out to form shallow channels of approximately 20-30 cm depth, and 3 metres wide. The course of the old creeks was followed as closely as possible, meaning the resulting ditches were quite meandering – the ditcher was certainly capable of achieving this.

Most of these are blind features, but where some connected to a main central brook, a simple earth bund with a right angle pipe sluice will be installed. To allow for this, the ditcher stopped 20m from the brook, leaving 12m of spoil from the un-dug ditch to be saved for the creation of the bund, and retaining a final 8m stand-off for land drainage consent requirements.

In total, 5,311 metres of shallow channels have been created or reinstated in three days, nearly 16,000m^2 of new lapwing and redshank feeding habitat.



Indicative plan of features created and reinstated by the rotary ditcher © Andrew Gouldstone (RSPB)

Problems encountered and how were these overcome:
EA land drainage advice was sought regarding the bunds – so long as we were 8m back from the brook, this was not a problem. Advice was also sought whether these would require an impoundment licence, but after some delay, it was agreed this was not required.

Overhead power lines cross the site. No ditching was done within approx 40m of these, to avoid creating habitat directly under these predator perches and from a health and safety perspective. The route of an underground water pipeline was avoided.

Approximate cost and funding:
The cost of three days of ditching work with the rotary ditcher was covered by the scrape creation payments available within the sites HLS agreement. Transport costs were shared between this and other Lancashire sites done at the same time.

Achievements:
The site will be closely monitored in 2011.

Future plans:
The bunds will be constructed in October 2010.

Acknowledgements:
The Freckleton and Newton Marsh Owners Association for agreeing to enter HLS and for wishing to see the ditcher used on their site. Lancashire FWAG for submitting the HLS application and assistance with scheme design. Natural England and Environment Agency for approving and processing the application, and for advice regarding consents.

Newly created channel following rain a few weeks after the work © Andrew Gouldstone (RSPB)

Bridge House Farm, near Sandbach, Cheshire

Author:
Andrew Gouldstone (RSPB)

Project location:
Bridge House Farm is in central Cheshire close to Sandbach.

Site details:
The site is cattle grazed permanent pasture on peat soils covering 9.6 hectares. It is managed as maintenance of wet grassland for breeding waders.

Project aims:
Primarily breeding lapwing, but also wintering waders such as snipe.

Date of work and length of time taken:
Three quarters of a days work with the rotary dicther in August 2008.

Overview of work:
Bridge House Farm is a mixed arable and livestock farm that entered HLS in 2008. Management for lapwing was proposed that included spring cereals and several areas of wet grassland. One large field was selected for enhanced wet grassland management.

A series of nine linear foot drains were dug using the rotary ditcher, these were 30-40 cm deep, and 2-3 metres wide. Most of these are blind features, however they follow the route of sub-surface drains which have been blocked with control sluices. In total, 636 metres of shallow foot drains have been created.

Shallow foot drain created by the rotary ditcher © Andrew Gouldstone (RSPB)

Problems encountered and how were these overcome:
This proved to be a very peaty site. At one location, the ditcher did get stuck. Several tractors were required to pull it out.

Because of the peat conditions, the normal number of passes was not possible, hence the width of some of the ditches was 2m. However, the results were still well worthwhile.

Approximate cost and funding:
The cost of ditching work with the rotary ditcher was covered by the scrape creation payments available within the sites HLS agreement. Transport costs were shared between this and other Cheshire sites done at the same time.

Achievements:
Lapwings in 2009 numbered 2 pairs, with an additional 1-3 pairs on adjacent arable. In 2010, at least 5 pairs were thought to be present. Productivity appears to be good. The ditches have held water well, even in drier conditions.

Foot drain with surface flashing © Andrew Gouldstone (RSPB)

Future plans:
Adjacent trees are to be coppiced to remove predator perches, and increase the openness of the site still further.

Acknowledgements:
Mr Sutton and his family for entering Bridge House Farm into HLS and for wishing to see the ditcher used on their land. Joe Winstanley of Joe Winstanley Agri-Environment Advice Ltd for undertaking the HLS application at Bridge House Farm, and for completing the HLS Water Level Management Plan. Natural England for approving and processing the application.