Devon hedges and development 2: pipelines

This section gives guidance on how to reduce the impact of new pipelines on Devon hedges. Rather than being prescriptive, it sets out a series of principles that if followed carefully should ensure that damage to historic and archaeological features and disruption to wildlife is kept to a minimum, and that the landscape is not permanently scarred.

The planning and regulatory processes that apply or need to be considered are not covered here; the local authority will be able to advise on these.

Note that the term hedgebank refers both to the bank and the woody growth on it.

Scheme design and planning

The reinstatement of hedgebanks is complicated, time-consuming and costly. This is particularly true in Devon where the fields are often small and the shrubs grow on banks which are frequently steep sided and massive. Designing the route to minimise the number of hedgebanks that have to be crossed should be a key consideration from the outset, making good economic as well as environmental sense.

Early consultation with environmental bodies, including local authority ecologists, archaeologists, landscape specialists and arboriculturalists will pay dividends. Other appropriate bodies to consult include members of the Devon Hedge Group such as the Devon Rural Skills Trust, the Devon Wildlife Trust and, in areas where cirl buntings are likely to occur, the RSPB. Regular consultation is essential before, during and after the preparation of environmental statements and method statements.

Hedgebanks with particular archaeological or historic importance should be avoided. Some form part of archaeological monuments such as prehistoric settlements or field systems and are legally protected, as listed in the Historic Environment Record held by local authorities. The Devon Historic Landscape Characterisation project shows different types of historic hedgebanks and areas where historic hedgebanks are prevalent - see www.devon.gov.uk/historicenvironment

Carefully check whether protected species are known to be, or likely to be, present. Consult with the Devon Biodiversity Records Centre as well as carrying out field surveys. Particular attention must be given to European Protected Species, notably bats and dormice, with the impact on these being assessed and appropriate mitigation measures taken. Bats and dormice, both of which are frequently associated with Devon hedges, are known to be adversely affected by the creation of gaps in hedgerow networks, and where significant populations of either of these species occur it may be necessary to re-route the pipeline. Particular measures will also need to be taken for species specially protected under UK law, including badger, cirl bunting and Plymouth pear.

Where hedges have to be crossed, plan the route as far as possible so that heavy machinery passes through existing gaps or places where the hedgebank is in poor condition. Avoid mature hedgerow trees, especially veterans, wherever possible, including their root zones (refer to British Standard 5837:2005). Where a gap can be used for the machinery but is a little distance away from the route of the pipe, then consider tunneling under the hedgebank for the pipe itself.

Plan the work so that reinstatement follows as soon after breaching as possible. The longer the interval, the more the health of both soil and plant material will suffer.

Contracting out the work

When seeking tenders, specify the outcomes required and ask for submissions to say how the work will be carried out. Encourage innovation. Choose contractors who are familiar with Devon hedgebanks: they must have clear and sensible ideas about how to ensure reinstated hedgebanks match those in the immediate vicinity and are stable over time. For major pipelines a suite of different techniques will probably be necessary: contractors should demonstrate adaptability and flexibility and this should be reflected in the method statement.

Regular liaison between client, contractor, landowners and key consultees will ensure that the work progresses to the satisfaction of all main parties. Joint site visits are particularly important in the early stages.

Breaching the hedgebank

Produce a detailed Record of Condition for each hedgebank before work starts, including height, width, construction style and woody species, supplementing written records with photographs. If possible, involve those who will be engaged in reinstatement with this recording work. Check carefully that stone facing is not hidden behind dense vegetation. Where hedgebanks of particular historic importance are concerned, archaeological monitoring may be needed to identify old ground surfaces or deposits and to record exposed features and sections - this will require the services of professional archaeological contractors.

Minimise the width of breaches as far as possible, particularly where any hedgebank is of special wildlife or archaeological importance. The narrower the gap, the less disruption there will be to animals like bats and dormice and the easier it will be to reinstate the hedgebank and ensure it blends back into the landscape quickly. If the gap has to be very wide, say greater than 30 m, consider leaving or creating habitat islands in the middle during the work.

The optimal time to carry out breaching work is usually the autumn. Always avoid the main bird breeding season between March and August inclusive. Where cirl buntings are likely to occur, delay work until mid-September as this bird has an extended breeding season. If dormice are present the best time to carry out the work is in September or October, after their main breeding season and before they go into hibernation. If surveys reveal the hedgebank to be an important flyway for uncommon bats like greater horseshoe bats then try to carry out the work during late autumn or winter.

Breaching may be carried out in several ways. The main options are either to translocate entire sections by cutting them out and lifting or sliding them to one side, or to de-construct the bank layer by layer, storing the main components separately. Choice of method will depend on hedgebank structure and friability, the distance it has to be moved and the machinery available. The less the bank structure is disturbed the better. Certain shrubs and trees like hazel, hawthorn and blackthorn tend to consolidate soil, while others like ash and sycamore make translocation difficult. It is a good idea to test out chosen methods well before the main work gets underway. Section 13, *Devon hedges and development 1: moving hedges* gives guidance on translocation techniques.

Where the bank is to be taken to pieces, as is often necessary where it is large, stone faced or made of friable material, the top layer of soil (with its seed bank), other soil and any stone facing should be stored separately. Stones should preferably be removed by hand to prevent damage and mixing with soil and other material.

If the existing shrubs are to be saved, which is recommended, they should be coppiced before breaching and, if the bank has to be dismantled, the stools need to be carefully lifted with as much soil attached to the roots as possible. These stools should either be covered with soil or stored under protective covering so the roots are always kept moist and free from frost damage. Survival rates will be greatest if removal takes place in the winter, although the presence of protected species or ground conditions may make this impractical.

Reinstatement of the hedgebank

The key to successful reinstatement of a Devon hedge is to get the bank right: when completed it should match the hedgebank on either side. The bank can be lifted or slid back into place, or re-built, in a number of ways; whatever method is chosen it is critical to ensure structural stability as well as a close match to the original.

If the hedgebank is in poor condition, then reinstate the breached section to a good sound structural state while retaining a reasonable match to the hedgebank on either side.

Take care to ensure that the original line is followed to preserve the historic landscape character.

See the Case history below and section 8, *Devon hedge creation: new turf faced banks and planting* for more information.

The original hedge shrubs have been replanted successfully in this Carmarthenshire hedge. A couple of saplings have been staked out to be allowed to grow into mature trees. The cross railings provide additional support for the protective fencing. ©Robert Wolton

Although this section of reinstated bank is of similar dimensions to the original, there was no stone facing to begin with and the bank is taking a long time to blend in. Turf facing would have been better. The young shrubs (whips) do not mirror the species mix on either side, and were slot planted: establishment has been poor. ©Robert Wolton

Case history: National Grid South West reinforcement gas pipeline

This pipeline, laid between 2006 and 2008, required that over 400 Devon hedges should be breached. The contractors who laid the pipeline were Laing O'Rourke, who in turn subcontracted the management of the hedgebank reinstatement work to an accredited member of the Devon Rural Skills Trust who led a team of 27 skilled local craftsmen. The results appear very promising. A range of innovative techniques was used to reconstruct the banks to the original shape and appearance. These involved using combinations of unprotected compacted earth, hessian textile laid over the surface of the soil (and secured by biodegradable pegs), pre-seeded soil-filled hessian sacks and stone facing. Drawing on this menu of techniques, banks of varying heights and batters could be recreated accurately, including some with steep sides over 2 m high. Banks were planted with mixes of cell-grown shrubs matching those originally present. Early indications are that the banks have a high degree of stability, and that the new hedgebank sections will blend back rapidly into the surrounding landscape.

This high steep bank has been carefully restored as part of the South West reinforcement gas pipeline to match the original. Note the innovative use of hessian sacks filled with topsoil to build up the steep sides and hessian textile to stabilise the top. The original hedgebank shrubs have since been replanted successfully. ©Laing O'Rourke

Use the original materials as far as possible. If further soil, subsoil or stone are needed, perhaps because the hedgebank was originally in poor condition, then source these locally if you can, taking care to avoid archaeologically sensitive areas: seek advice from the local authority archaeologist. Any stone facing should match the original stone in type and orientation. If the bank is being built mainly with rammed soil compacted with an excavator bucket or similar, it may be necessary to build it about 10% higher than the original to allow for settling. This should not be necessary for hand built stone and turf faced banks. Particular care should be taken to bind the bank in well on either side.

Where the toe of the bank is very close to the public highway, then it is acceptable to replace turf facing with stone facing. Usually it will only be necessary to stone face the bottom 150-200 mm against the road. Consultation with the Highway Authority is strongly advised.

Except where stone faced, the faces of the bank should preferably be stabilised using turf, ideally taken from the foot of the hedgebank on either side. If this is not possible, use compacted soil taken from the top layer of the hedgebank and allow natural regeneration to stabilize the faces. However where the hedgebank is high, stability is very difficult to achieve using compacted soil alone.

If turf facing is not possible, then a bought-in seed mix may be better than natural regeneration if the hedgebank has much nettle, goosegrass or aggressive weeds like creeping thistle. Seed mixes should consist of fine-leaved slow-growing grasses that occur locally. If herbs are included, use only local low-growing species, avoiding those that are aggressive competitors and domestic cultivars. Use of leguminous plants is likely to be counter-productive because the increased soil fertility through nitrogen fixing will put low growing plants like primroses at risk.

Try and replace the original shrubs wherever possible. If they cannot be used, perhaps because they are moribund, have poor rootstocks or died during removal or storage, then new planting will be needed. Use young shrubs grown from locally collected seeds or cuttings and the species mix should closely reflect that originally present. Planting should reflect the thickness and structure of the adjacent hedge, although tree species such as oak and ash and poor hedging plants such as willow, sycamore or elder may be left out.

The species mix of shrubs planted in this newly-reinstated roadside hedge closely reflects that which was originally present. The shrubs have been carefully planted and establishment rate has been good. ©Laing O'Rourke

Sometimes waiting for up to a year before planting is a good idea, to avoid destabilising the bank when digging. To ensure good survival, young trees should be planted when dormant and preferably cell grown. If bare-rooted stock is used, avoid slot planting. Only use rabbit spirals if rabbits are known to be a problem: spirals promote weak, leggy growth and are unsightly. If the bank is prone to drought, mulch the shrubs with a suitable organic material, avoiding the use of plastic sheeting.

The number of Devon's hedgerow trees is falling: too few young trees are being encouraged to grow on to replace mature individuals as they die. Although growing trees directly over the pipe may not be possible for engineering reasons, planting a small number nearby with the agreement of the landowner will be helpful, perhaps in field corners or hedgebank gaps.

In pasture fields, if necessary, erect a sturdy fence alongside the new hedgebank to prevent browsing or other stock damage (see section 4, *Devon hedges and modern farming, management cycle and fencing* for guidance).

Aftercare

It is good practice to follow a regular maintenance programme for a minimum of two years. This will include repair of any slumping, weed control and the replacement of dead shrubs with the same species. If any hedgerow trees have been planted these will need checking regularly, and to be tagged or otherwise marked to ensure they are not inadvertently cut.

Offering the landowner or manager advice about how to look after the hedgebank will help to protect the investment made in its reinstatement. Such advice may include cutting the shrubs regularly during the first few years to encourage thick, bushy growth - particularly important if there is a high proportion of hawthorn in the hedgebank.

Summary of key principles

1. Plan the pipeline route to minimise the number of hedgebanks that must be breached, avoiding ones of particular historic or wildlife importance. Tunnel under hedgebanks and use existing gaps where practical. Avoid mature trees.
2. Only use contractors who understand local hedgebanks, especially their bank structure.
3. Where hedgebanks have to be breached, reinstate them to a good condition that matches the original. Focus on getting the bank right.
4. Time the work to minimise impact on breeding birds and protected species, and keep the interval between breaching and reinstatement short.
5. Provide a regular maintenance programme for a minimum of two years after reinstatement.

Further information

1. British Standard BS 5837:2012 *Trees in relation to design, demolition and construction - Recommendations*. www.standardsuk.com
2. Natural England. 2008. *Devon field boundaries: restoration standards for agri-environment schemes*. Natural England Technical Information Note TIN 039. www.gov.uk/natural-england

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