

Environment

Enhancement, mitigation, trees and planting

We are the Environment Agency and our role is to protect people and environment from flooding and a changing climate. Like any scheme, we face many challenges in delivering an infrastructure project, often in built up areas with an established natural environment. We have worked really hard alongside the local community to evaluate the options to deliver a scheme that is technically feasible, economically viable, environmentally sustainable and acceptable to local people.

Planning Permission and environmental conditions

The planning permission we were granted came with a number of planning conditions that we need to discharge before the scheme can begin construction. As well as developing the detailed design of the scheme we are also working on detailed Landscape Plans and Biodiversity Monitoring and Construction Environment Management Plans in order to satisfactorily discharge these conditions set by South Lakeland District Council.

Our team of environmental specialists have been engaged throughout, informing the design from an environmental perspective and providing technical knowledge on environmental surveys, tree removal requirements and planting specifications. This team will continue to provide advisory support throughout the project.

Summary of opportunities

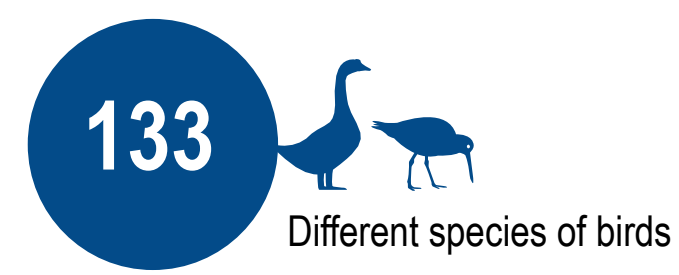
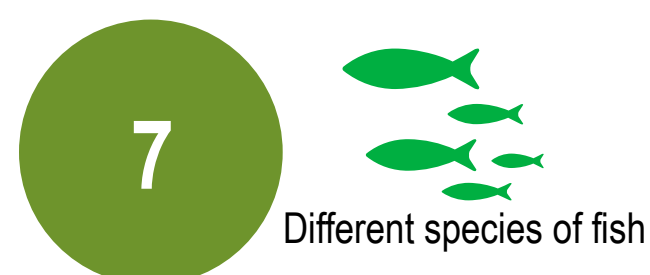
With all of our schemes we aim to deliver more for the environment. Phase One of the Kendal Flood Risk Management Scheme has and continues to provide us with many opportunities to enhance the local environment for people and wildlife. So far, the scheme enables us to deliver the following benefits:-



These opportunities are just the start, our art strategy will enable us to work closely with other organisations to develop a long term vision for improving the use and accessibility of the local environment. Our vision is to use investment from the Kendal Flood Risk Management Scheme to start improving access and connectivity throughout the town, celebrating Kendal's wealth of heritage and prominence in the local landscape as well as promoting a healthy sustainable future for younger generations to come.

What do we know about Kendal's local environment?

Kendal has a vibrant environment, the River Kent provides a central corridor for habitat and wildlife. We have undertaken extensive environmental surveys which have identified a variety of different protected species such as otters, white-clawed crayfish, bats and kingfishers.



How are we protecting wildlife?

We know that bat and bird species are precious to the local environment. In order to protect these from any construction disturbance we are carefully planning and assessing our activities.

Surveys – our ecology surveys have enabled us to understand how wildlife use the site and which areas need special consideration.

Timing – Wherever possible we will aim to not deliver certain activities that could affect wildlife at sensitive times of year, such as removing trees in key bird nesting months and undertaking in-river works in summer to minimise impacts on fish and the wider water environment.

Physical barriers – using fencing or hazard tape to prevent people and machinery disturbing or damaging areas important for a protected species, or a tree that is being retained.

Sensitive techniques – employing the best methods to complete the work, such as 'soft felling' trees that have a low likelihood of being used by bats and creating dry working areas in the river which allow us to move fish and crayfish out of harm's way.

Replacement habitat – we will ensure that wildlife always has an alternative habitat to use before we impact on the existing habitat. We will plant new trees before felling and install bat and bird boxes in suitable locations before any trees with roosting or nesting opportunities are taken down.

Managing non-native invasive species – We will manage species like Japanese knotweed and Himalayan balsam in our work areas to re-support the establishment of our native wildflowers.

Ecological Clerk of Works – we will employ an ecological specialist as an Ecological Clerk of Works to oversee our construction activities. They have the power to stop works if they consider there to be a risk of environmental harm.

Tree Removal and our approach

As a consequence of the construction works, a number of trees will need to be removed throughout Kendal which will unfortunately impact both habitat for wildlife as well as changing the visual landscape. We have started to engage with landowners to discuss potential tree losses as well as access arrangements that may be required.

What have we assessed?

We have and will continue to assess all options to try and ensure any tree removal is kept to a minimum. We have already amended our flood scheme alignments where we can to reduce the number of tree losses but continue to review and assess a number of trees on an individual basis throughout the project.

Through amendment of the design during construction we have reduced the number of trees that need to be felled. We are still working on the detailed design of the flood defences and hope to reduce the number of trees affected still further.

We will consider management such as coppicing/pollarding and transplanting smaller trees wherever possible and we intend to collect seeds from some of the trees identified for removal and grow these into new trees for future replanting.

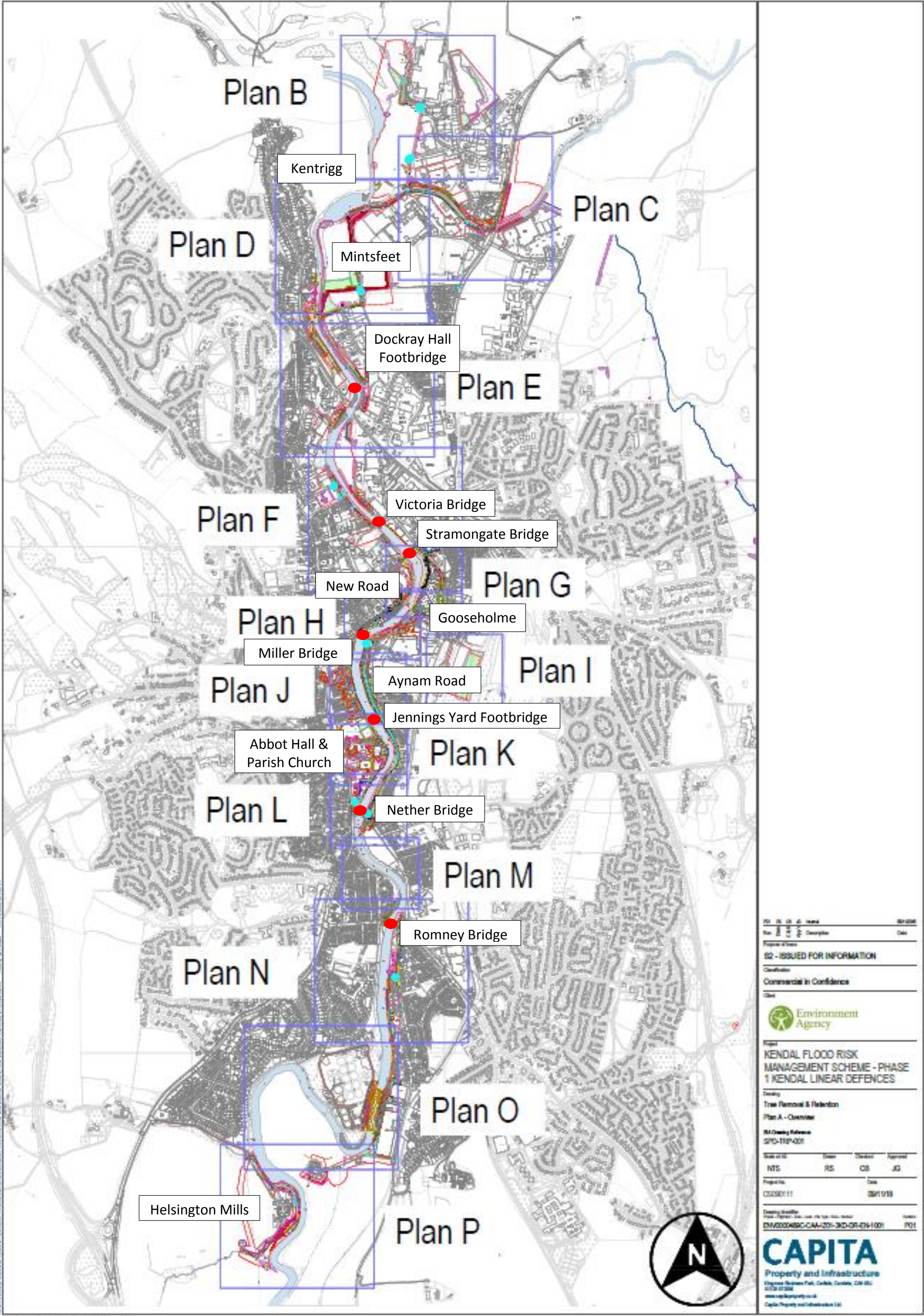
How is the tree removal going to be managed?

With such a large construction project, we have divided the project into a number of reaches and staggered the construction start and completion times for each reach to try and minimise overall disruption to the environment and people of Kendal. This will mean that some phases will start much later than others which will also enable the phasing of tree removal, enabling us to keep trees positioned in situ as long as possible. We will aim to replant trees as quickly as we can following construction but may be limited to the best time to plant which is within the winter when they are dormant.

There will be some instances where we may need to remove trees a few months ahead of our planned construction works. This may be to avoid impacting on birds during the nesting season or bats which may be roosting. In these instances, soft felling is a method of removing trees where there is a low potential that they are used by bats. Trees are cut down in sections and where there is a feature such as a hole or crevice that may be suitable for use by a bat it is carefully cut out and lowered to the ground using ropes and pulleys. The section of tree is left overnight with the crevice facing upwards. In the unlikely event that a bat is present, it will fly out of the crevice to feed at dusk and find an alternative roost site the following morning. This can only be done at specific times of the year outside of the bat roosting and hibernating periods.

Tree Removal Plan

The following plan provides an overview of the key areas where trees have been identified for removal . Each reach identified on the plan has more detailed information located in the accompanying ‘Tree Removal and Retention Plans’ folder.



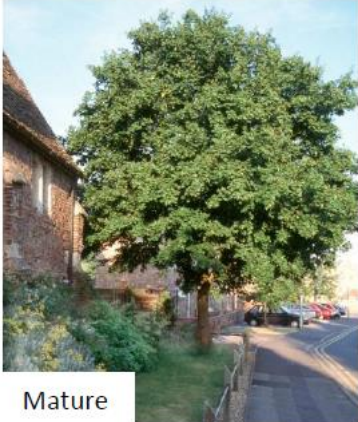

Tree planting

We have an extensive tree planting programme which will take place in key locations throughout the scheme and wider across the Kent Catchment. We will be planting at least 3666 trees with further opportunities to work with local environmental groups and schools to collect seeds for planting and nurturing. Our aspirations is that we will as a community start to locally grow many more trees for planting in future years.

Tree Species



We have developed an extensive tree planting plan with our environmental specialists and in collaboration with South Lakeland District Council to ensure each tree is selected and located to an area that is in keeping with the local character, is visually attractive throughout the seasons and benefits wildlife. The images below show a selection of the different tree species and size we will be planting as well as giving an indication of size at maturity.

Field Maple (*Acer campestre*)
Mature height: 7-12m



Mature
 4-5m

Snowy Mespilus (*Amelanchia lamarkii*)
Mature height: 3-5m



Mature
 < 3m

Silver Maple (*Acer saccharinum*)
Mature height: 17-22m



Mature
 3-4m

Hornbeam (*Carpinus betula*)
Mature height: 17-22m



Mature
 4-5m

Pedunculate Oak (*Quercus robur*)
Mature height: 20m+


Mature
 5m+

Dawn Redwood (*Metasequoia glytostroboides*)
Mature height: 20m+





Mature
 5m+


Hawthorn (*Crataegus monogyna*)
Mature height: 12-15m




Yew (*Taxus baccata*)
Mature height: 7-12m




Bird Cherry (*Prunus padus*)
Mature height: 7-12m



Rowan (*Sorbus aucuparia*)
Mature height: 3-7m

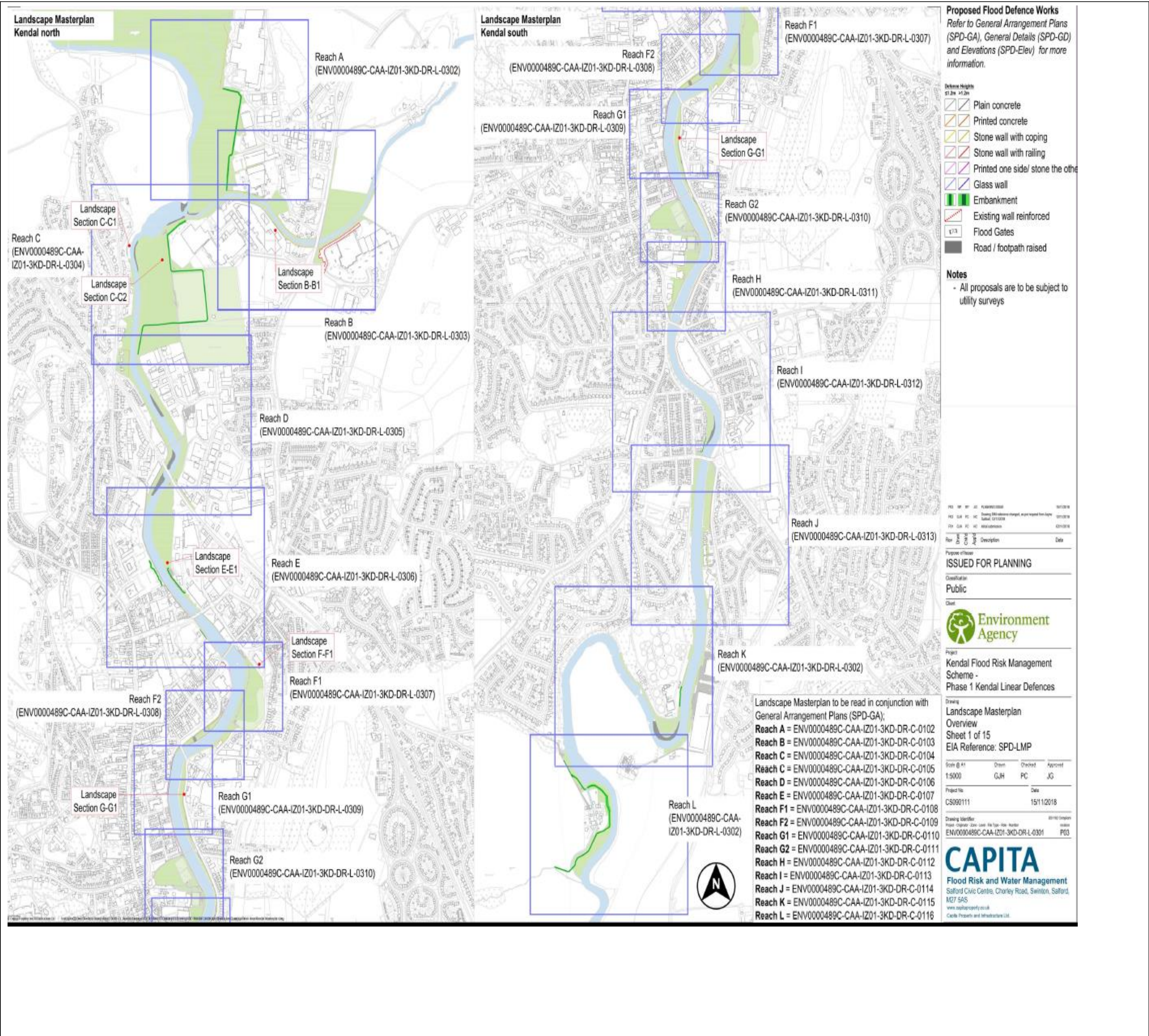


Damson (*Prunus domestica*)
Mature height: 3-7m



Tree planting, landscaping plans and programme of planting

This plan shows the areas in which we will be delivering a programme of tree planting and landscaping activity. Each landscape section has further detailed information in the ‘**Landscaping Masterplans**’ folder accompanying this display.



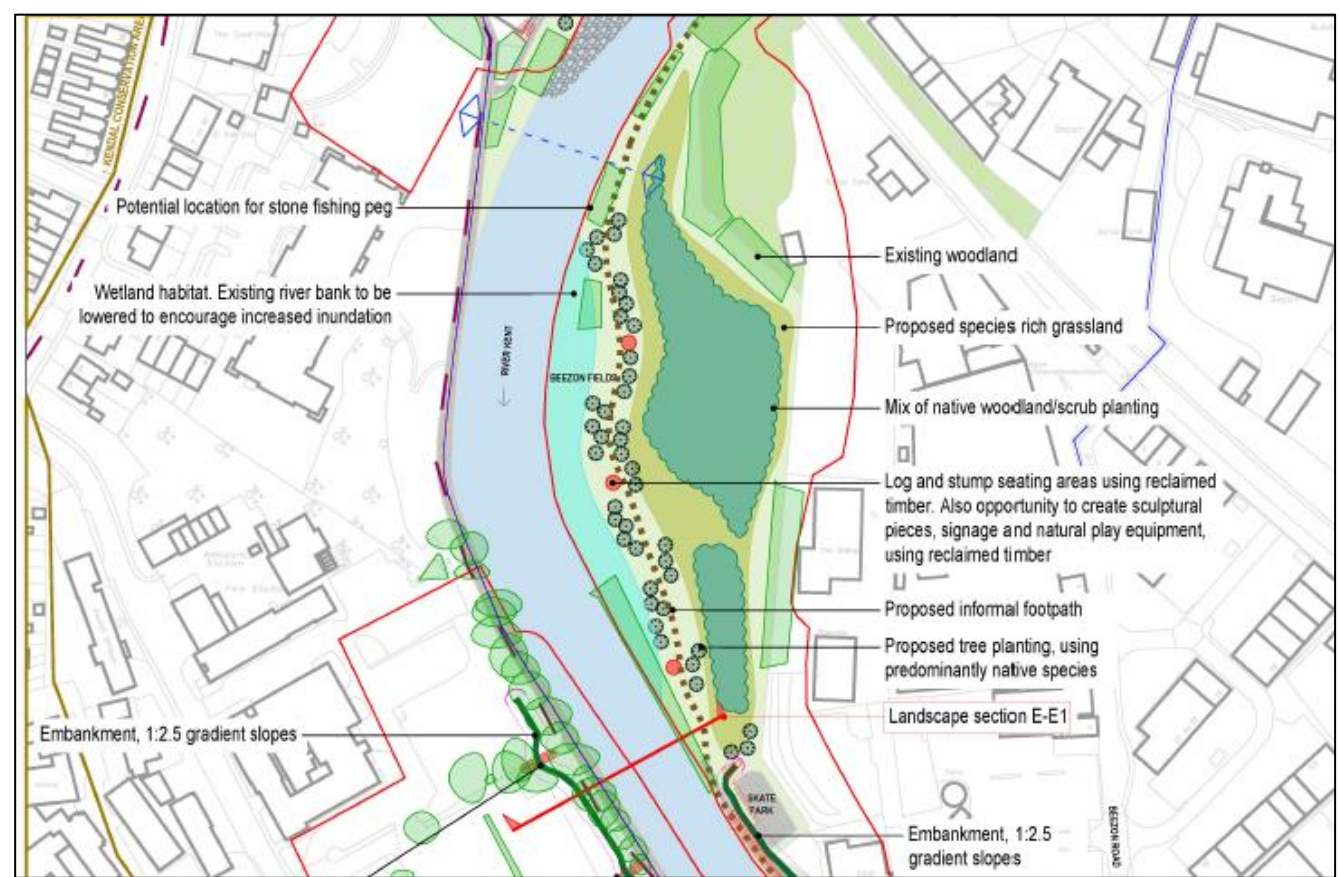
Habitat improvement areas at Mintsfeet and Beezon Fields

We have identified two habitat improvement areas, creating an opportunity to bring together enhanced habitat for wildlife with better community access and usability of these areas. The planting in these locations will create woodland blocks, interspersed with ornamental and ground covering planting to create and support a diverse habitat and community area.

Mintsfeet – indicative layout



Beezon Fields – indicative layout



Woodland planting (Photo credits: Barcham Tree Specialists)

Scots pine (*Pinus sylvestris*)
Mature height: 25m




Silver birch (*Betula pendula*)
Mature height: 25m




Hazel (*Corylus avellana*)
Mature height: 8m




Smaller trees and shrubs planting (Photo credits: wildflowershop.co.uk)

English oak (*Quercus robur*)
Mature height: 30m



Spindle (*Euonymus europaeus*)
Mature height: 3m



Guelder rose (*Viburnum opulus*)
Mature height: 5m



Crab apple (*Malus sylvestris*)
Mature height: 10m




Blackthorn (*Prunus spinosa*)
Mature height: 4m




Ground covering Flora (Photo credits: wildflowershop.co.uk / Wildlife Trust)


Bluebell (*Hyacinthoides non-scripta*)




Common dog-violet (*Viola riviniana*)




Pendulous sedge (*Carex pendula*)




Common wood sorrel (*Oxalis acetosella*)




Enchanter's-nightshade (*Circaea lutetiana*)




Dog's Mercury (*Mercurialis perennis*)




Common ivy (*Hedera helix*)




Large male-fern (*Dryopteris filix-mas*)



Wood avens (*Geum urbanum*)



Greater stitchwort (*Stellaria holostea*)



Helping our pollinators

We are really keen to help our pollinators such as bees, butterflies and many other insects. Our pollinators have faced a serious decline due to the changes in land use from urbanisation, modern farming methods and loss of flower-rich grasslands.

Based on the government's National Pollinator Strategy, our aim is that the legacy of the Kendal scheme will result in an increase in habitat and food plants for these valuable insects. We hope to work with local landowners to provide insect habitat and areas of native wildflowers resulting in a functioning wildlife corridor through the town.



Getting involved

We would like to thank all the families that supported our plant a 'Seed to Tree' day held back in October. Local families planted at least 50 native tree seeds that they will nurture until big enough to plant back into the community. Any seeds or trees planted as part of these events are in addition to the 3666 trees we have already committed to plant throughout Kendal.

We will support and host a number of seed and tree planting days over the coming years which will be advertised locally on www.thefloodhub.co.uk via Environment Agency and The Flood Hub social media. If you are interested keep an eye out for community events coming up or register your interest at KendalFRMS@environment-agency.gov.uk.

