



Q&A – Huis River restoration project

Grootvadersbosch Huisrivier alien clearing and river restoration project

Who is behind the Barrydale alien clearing and river restoration project?

The project is led by the Grootvadersbosch (GVB) Conservancy with support from willing Barrydale landowners, the community and the Swellendam Municipality.

What is the project about?

The project is called *Creating a safe home in the Huis River for the Barrydale Redfin* and involves restoring the ecological health of the Huis River. This includes removing alien vegetation and planting indigenous species. This will bring back natural biodiversity and help with the flow of the river.

The project is funded by the International Union for the Conservation of Nature (IUCN) and is focused on protecting the critically endangered [Barrydale Redfin](#) (*Pseudobarbus burchelli* - also called the Tradouw Redfin), a small fish found only in the Huis River.

More information is on our [website](#).

What gives Grootvadersbosch Conservancy the authority to do this project in Barrydale?

The project is a response to a request raised by the Barrydale community at a discussion in August 2023 on water security for Barrydale and Smitsville. A copy of the stakeholder engagement [report](#) is available.

The GVB conservancy has an agreement with the Swellendam Municipality to help with alien plant clearing on municipal land. The municipality has in turn been issued with directives from the Department of Forestry, Fisheries and the Environment (DFFE) to manage aliens on its property. The GVBC does not represent any government department, and does not have any enforcement capacity. We raise funds from various sources to support alien removal.

Our mandate is to work with willing landowners to restore and protect the natural environment. We do that within our capacity and to match the capacity and willingness of the landowners.

Why doesn't the municipality do this work?

The Swellendam Municipality supports the project. Like many local authorities, Swellendam's resources are under pressure from other service delivery needs, so it welcomes the involvement of environmental and civil society groups like the Grootvadersbosch Conservancy.

The municipality is providing access to its chipper and contributes about R300,000 annually towards alien clearing across all municipal property in the Swellendam and Barrydale area.

What are the benefits for Barrydale?

The project will have many benefits for Barrydale, including restoration of biodiversity, improved health of the river, and protection of the Barrydale Redfin. Since the alien clearing and restoration work began in the Barrydale area in 2022, a total of 1,149 person days of employment have been created at an estimated value of R400 000. The restoration has also included skills development by expanding the teams from alien clearing to restoration work. By enhancing Barrydale's biodiversity, and its reputation for environmental protection, the village is likely to attract more visitors and create more tourism opportunities.

Why is the Huis River so important for Barrydale and Smitsville?

The Huis River is the only source of fresh water for Barrydale and Smitsville. It provides the entire community's water, from drinking and household water to business needs and irrigation of farms and gardens.

The river has rich biodiversity and supports many bird, insect, amphibian, mammal and fish species, including the critically-endangered Barrydale Redfin.

Why are you taking out the big old gum trees that are a feature of the village?

We recognise that some of these big gum trees (different species of Eucalyptus) have become a feature of Barrydale. But any gum trees near a river are classified as Category 1b invader under the National Environmental Management: Biodiversity Act (2004) (NEMBA).

This is because gum trees consume so much water that they threaten water supply to towns and villages, and suppress indigenous species.

The NEMBA *Alien and Invasive Species Regulations* require the removal of gum trees within 32 metres of the edge of a river, lake, dam, wetland or estuary. This is to prevent their establishment downstream and negative impacts on water, sedimentation and biodiversity.

Gums are believed to reduce the flow of a river between 10% and 30%. The impact is greatest from very large gum trees like those in Barrydale, and particularly those close to the river.

Despite their heritage in the village, it is best that they now make way for the restoration of indigenous biodiversity and protection of the water supply.

Don't gum trees also have lots of uses and some positive value?

Yes they do. Gums are valuable for their timber, as a pollen resource for honeybees (*Apis mellifera*), as habitat for specific birds, and as shade and wind protection. That is why the NEMBA regulations only require their removal from riparian zones (close to a river) or where they have a negative environmental impact.

What can we as individuals do to improve the Huis River

There is a lot that local people can do to protect the river in Barrydale and assist in ensuring water security for people, businesses, tourists and all indigenous species.

It helps to use less water in the household and particularly in gardens by removing invasives and planting indigenous species.

Households and businesses are encouraged to ensure that overflow from septic tanks and any other toxins or chemicals do not end up in the river.

What species and plants will replace the gums?

Locally indigenous species (endemic) and indigenous riparian (river ecosystem) species are being planted to support the ecological functions of the river, including a healthy flow, cleaning water & supporting wildlife. This selection of plants was formulated from site analysis along the Huis river and surrounding healthy river systems.

The species that will be planted fulfill various ecological roles within the river system and will be planted in three specific sites across the landscape in aquatic, wet bank and dry bank conditions. The grasses, sedges, reeds, bulbs and strappy leaved plants such as Palmiet, *Typha capensis* and *Ficinia nodosa* are used to control flow and cleanse nutrients from the water.

Species such as *Cliffortia strobilifera*, *Cyperus textilis* and *Brabejum stellatefolium* stabilise the wet banks that are prone to fluctuating waters. Species such as *Searsia lancea*, *Kiggelaria africana* and *Halleria lucida* are useful in preventing erosion on dry banks that experience seasonal flooding.

Indigenous plants provide essential resources to wildlife such as breeding, feeding, nesting and resting. Non-indigenous species cannot fulfil all these roles and outcompete indigenous species that have adapted alongside local birds, fauna and insects over thousands of years.

Gum trees do provide pollen resources for honeybees and habitat for some birds, but they do not support a very wide diversity of pollinators and other insects found in South Africa.

How does the restoration project contribute to enhancing biodiversity along the Huis river?

Biodiversity is the amount of different living things in an area. It includes everything from plants and trees, birds, mammals, amphibians and insects to fungi, microbes and bacteria.

In ecological and natural systems there is a web of interconnectedness between all living things.

More diversity means more connections and greater ecological health. This makes a system more stable against disturbance; so if one connection is broken, there are many others that still support the system.

When you have invasive alien species in a system they out-compete indigenous species. One invasive tree can outcompete multiple indigenous plants. This can include changing the soil so indigenous species can no longer grow, shading them out or taking resources such as water so that they cannot survive.

Through planting a diversity of indigenous species there will naturally be an increase in diversity of bird, insect and mammal life around the river as the different food web chains are slowly re-established. This will slowly increase the biodiversity along the Huis River.

How will you ensure successful establishment of indigenous plants and seeds along the Huis River?

The restoration plants were carefully selected based on their current extent and distribution in the region. We chose species that are locally occurring, and resistant to drought and fluctuating water conditions.

The planting and sowing were done as close as possible to a rain event to support germination and establishment. Additional planting will occur after the winter frost. Smaller plants with sturdier root systems were selected as these have been shown to establish faster and thrive in restoration projects compared to larger plants.

Who is responsible for the ongoing maintenance of the planted sites?

The community of Barrydale will be responsible for the maintenance of the newly-planted species in public places like the caravan park. This is because the Swellendam Municipality does not currently have the resources for this task.

On private land, it is the landowners' responsibility to maintain planted sites and control any regrowth of invasive species. As all species selected for planting are endemic to the Western Cape they will require little to no maintenance once established.

A restoration project is not a gardening project and it is not sustainable to have a garden service to look after it. We are creating a natural space not a manicured garden.

The conservancy is not responsible for ongoing maintenance and does not have a budget for this work.

Some plants that were planted have died. Is that normal?

This is normal. In restoration projects there is an expected success rate of 40-60%, depending on the climatic, geographic and ecological conditions of the site. This is taken into account and a high number of smaller plants are planted to account for possible losses.

The success rate of the caravan park planting is currently between 60-70%. We do expect more losses due to frost and there is always a possibility of flood damage when working in or near a river. In ecological restoration one always needs to consider the bigger picture and the timescale of trees, plants and river systems. Although there will be some losses, many of the trees selected do have the ability to resprout.

How will you prevent erosion along the riverbank now the invasive trees have been removed?

Material from the felled invasive trees is being used to stabilise the banks and create a gentler and more natural slope down to the water's edge.

Indigenous riparian and aquatic plants have been introduced along the gradient of this slope. Their mat-forming root structures will further support these sloped banks. These root structures develop over centuries to control and allow the flow of water, while protecting against erosion.

Rivers naturally move and erode their banks, and it is very hard to predict and control their ebbs and flows. All we can do is give the river the space it needs to establish its natural flood mechanisms.

In a time of climate change, floods are becoming harder to predict. The establishment of natural vegetation on a riverbank will always be the best way to mitigate the impact of floods.

How will the restoration project impact the flow and quality of the water?

Following the removal of the invasive species there will over time be an increased flow rate in the lower parts of the river system. The impact of indigenous plants in the river system makes the annual fluctuations more regulated. Indigenous aquatic plants act as natural sponges, holding water and releasing it slowly over time.

In flood events these indigenous plant species slow down water without causing erosion, and in drought events they release their stored water, ensuring a permanent flow.

Riparian and aquatic plants are also the best filters. Through the introduction of indigenous species along the banks the quality of the water will improve as sediment, minerals and even toxins are filtered out and stored by the roots of the plants in a dense layer of oxygen poor and waterlogged soil. This layer can store more carbon than a tree.

How does the restored area play a role in mitigating the effects of climate change?

Indigenous riparian and aquatic plant species are essential to natural water retention and release within a river system, they ensure that there is stored water within the riverbed that will be released slowly during drought periods and slowed during flood events.

Aquatic and wetland systems store more carbon in their soils than trees do. The fluctuating water levels and anaerobic conditions are perfect for the roots of plants to deposit minerals, elements, nutrients and toxins, and through layering of sedimentation they become carbon banks.

What happens next?

We will continue to clear aliens from the river within our available budget and capacity. The planting will continue at key sites and will be tailored to meet the challenges of winter frosts.

I still have questions and want to discuss them with someone

We welcome questions and discussion but the GVBC works in a very wide area with multiple projects and is one small team. We would love to meet every person individually to discuss the project, but this just won't be possible.

We created this platform to address as many questions as we can. We regret that we will not be able to respond at length to individual questions and emails. Please study the material available on the [GvB website](#) to make sure that your concerns are not addressed above before reaching out.

If you ask a question that is not included here, we will add it and an answer to this document.

We also hope in future to arrange another public meeting to listen to and address any other concerns.