



Photo from WWF Report <sup>[6]</sup>

**WORLDWIDE**  *fruit*

**Case Study 1:**

**A South African Water Roadmap Case Study  
on the**

**Groenlandberg  
– Palmiet River Catchment**

# Case Study 1: A South African Water Roadmap Case Study on the Groenlandberg – Palmiet River Catchment

## Context

Water, the lifeblood of our planet, sustains ecosystems, agriculture, and human societies. However, this finite resource faces unprecedented pressure globally. Agriculture, consuming 70% of freshwater withdrawals, is a major driver of water stress and biodiversity decline. Projections indicate a potential 40% shortfall between freshwater demand and supply by 2030, posing significant risks to global food security, economic stability, and environmental health <sup>[1]</sup>.

South Africa exemplifies these challenges. As a nation reliant on its agricultural sector – a key supplier of high-value fruit like citrus, apples, grapes, and stone fruit to markets including the UK <sup>[2]</sup> – it confronts escalating water insecurity. Factors such as recurrent droughts exacerbated by climate change, naturally arid conditions, and growing demand place immense strain on water resources. The Western Cape province, home to critical agricultural catchments like Groenlandberg, Koue Bokkeveld, and Hex & Wolseley, is particularly significant. Water security in these sourcing regions for **Worldwide Fruit Limited** (WFL) is influenced by factors such as fluctuating water availability, managing water quality, and adapting to more frequent extreme weather events like floods and droughts. Without proactive, collaborative intervention, these pressures threaten the long-term viability of farming communities, the resilience of supply chains, and the integrity of unique ecosystems.

Recognising the interconnectedness of environmental health and business resilience, WFL is deeply committed to responsible water stewardship. As a signatory to the **UK Food and Drink Pact** (Courtauld Commitment 2030) – a UK-based initiative driving sustainability across the food system – WFL is part of a collective effort targeting reductions in greenhouse gas emissions, food waste, and water stress. Addressing the water targets within this Pact requires focused action, particularly in international supply chains. This is where **WRAP's Water Roadmap** plays a crucial role, providing a framework specifically aimed at improving water security in key sourcing areas for the UK food and drink industry.

WFL's commitment translates into action in South Africa through collaboration with **WWF South Africa**. WWF-SA is a central partner in implementing the Water Roadmap's objectives in the Western Cape, leading projects in the priority fruit-growing catchments from which WFL sources. Furthermore, WWF-SA is instrumental in broader initiatives like the **Western Cape Collective Action Project**, providing governance support, expertise, and facilitating the collaborative conservation and rehabilitation efforts essential for long-term water security in the region. Through this multi-layered partnership structure, WFL supports a two-tiered strategy: promoting best practices at the farm level (efficient irrigation, soil health) and strengthening catchment-level governance (balancing agricultural, community, and ecological water needs).



This first case study in a series of three explores collaborative efforts within the **Groenlandberg–Palmiet River Catchment**, focusing on the practical actions driven by the UK Food and Drink Pact and WRAP’s Water Roadmap. It highlights the pivotal implementation role of WWF South Africa and illustrates how the initiative is advancing water security and ecological resilience in one of South Africa’s key agricultural regions. Select examples from WFL suppliers and their growers help to illustrate how growers are aligning with and contributing to these broader efforts.

### **South African Water Roadmap Case Studies:**

- **Case Study 1: A South African Water Roadmap Case Study on the Groenlandberg – Palmiet River Catchment**
- Case Study 2: A South African Water Roadmap Case Study on the Koue Bokkeveld – Olifants & Doring River Catchment
- Case Study 3: A South African Water Roadmap Case Study on the Hex & Wolseley – Hex & Breede River Catchment



Report compiled by Malissa Murphy  
**Blue North Sustainability**

# Contents & Overview

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## 1. THE GROENLANDBERG CATCHMENT

The Groenlandberg–Palmiet River Catchment in the Western Cape is ecologically rich and agriculturally important, especially for apples and pears in WFL's supply chain. Its waters, sourced in the Hottentots Holland Mountains, support local towns and Cape Town. As part of the Kogelberg Biosphere Reserve and a Strategic Water Source Area, the catchment faces growing threats from water scarcity, pollution, and climate change—making it a key focus for collaborative stewardship.

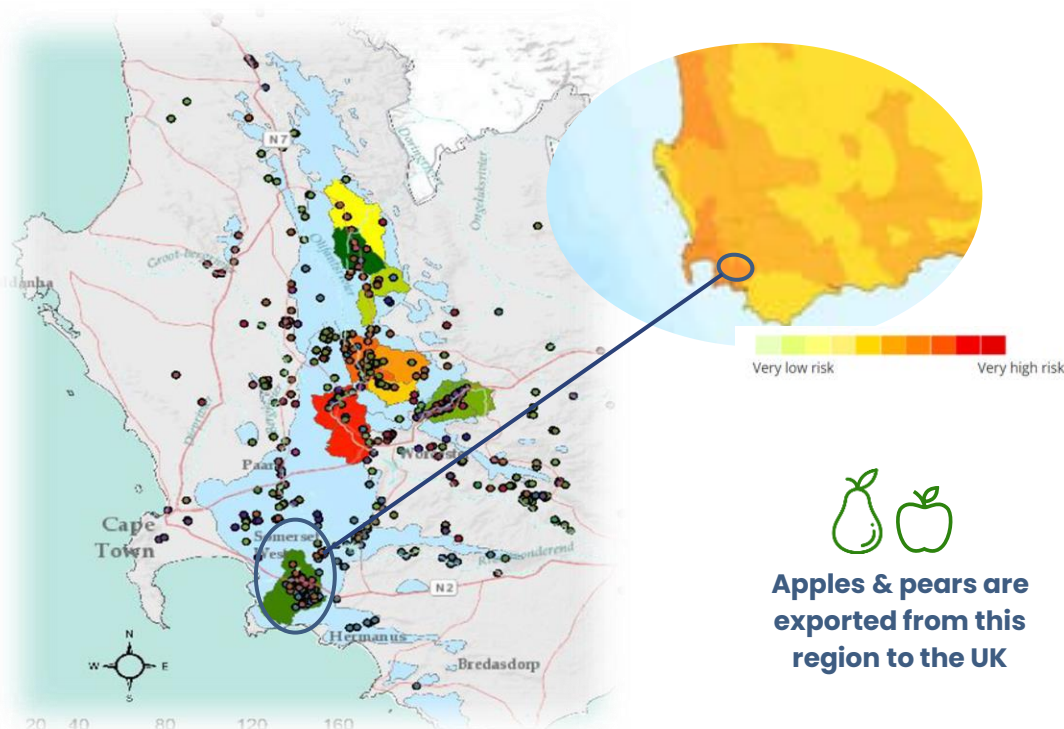
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## 2. COLLECTIVE ACTION IN MOTION

Through the **Water Roadmap**, WWF South Africa leads a collaborative effort in the Groenlandberg–Palmiet River Catchment alongside WFL suppliers and their growers, the Groenland Water Users Association, and local partners to restore ecosystems and improve water security. Key actions include **clearing over 85 ha of invasive alien plants, restoring indigenous vegetation, promoting efficient on-farm water use, and supporting water quality monitoring**. WFL suppliers contribute significantly through their own conservation efforts, innovative farming practices, and resourceful use of biomass, while the initiative also creates local jobs and supports community enterprises.



WWF SA leads the on-ground Water Roadmap work.



Apples & pears are exported from this region to the UK

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## 3. NAVIGATING THE CHALLENGES OF COLLECTIVE WATER MANAGEMENT

Despite progress, managing water in the Groenlandberg catchment remains complex due to **climate variability, fragmented infrastructure, and limited capacity**. WFL suppliers call for clearer guidance, greater **government support**, and prefer working through central bodies like the Groenland Water Users Association (GWUA) to ensure coordinated, effective water stewardship.

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## 4. CONCLUSION & FUTURE OUTLOOK

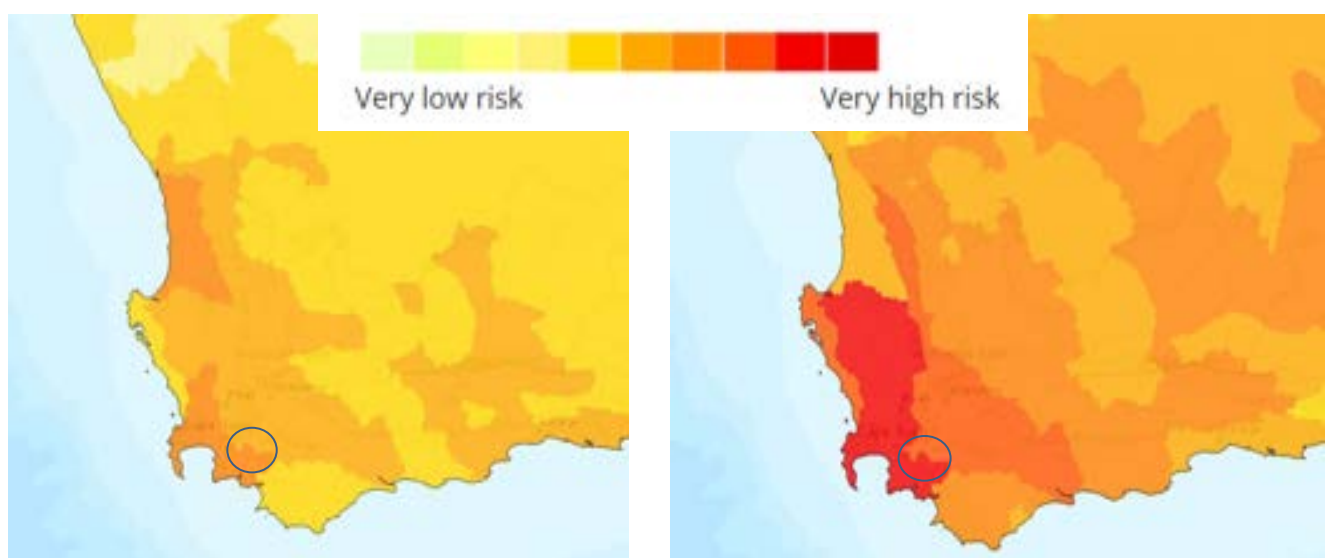
The Groenlandberg catchment showcases the **power of collaboration** between WFL, its suppliers, WWF-SA, and local partners to deliver clear benefits for water security, ecosystem health, and community livelihoods—supporting the UK Food and Drink Pact and WRAP's Water Roadmap. Looking ahead, the project aims to scale its impact through **expanded restoration, stronger local coordination, increased investment, and continued socio-economic benefits**. Lessons from this work offer a valuable model for sustainable water management across the Western Cape.

# 1. The Groenlandberg Catchment:


Nestled in the Western Cape, the Groenlandberg – Palmiet River Catchment is a landscape of significant ecological and economic importance. Covering approximately 500 km<sup>2</sup>, its waters originate high in the Hottentots Holland Mountains, flowing 74 km via the Palmiet River through diverse terrain before reaching the Atlantic Ocean near Kleinmond. This catchment generates substantial annual runoff, supporting extensive deciduous fruit farming – particularly apples and pears crucial for WFL's supply chain – and contributing significantly to the water supply of nearby towns and the City of Cape Town through inter-basin transfer schemes [4].

Ecologically, the catchment is invaluable. Much of its lower reaches fall within the Kogelberg Biosphere Reserve, South Africa's first UNESCO Biosphere Reserve, renowned for its exceptional biodiversity, particularly its pristine fynbos vegetation. The upper catchment areas are recognised as Strategic Water Source Areas, natural 'water factories' vital for downstream water quality and quantity.

However, this critical resource also faces several challenges. [WWF's Water Risk Filter](#) classifies the catchment as having high physical risk, primarily due to increasing water scarcity, declining water quality from agricultural runoff and settlement impacts, ecosystem degradation (including the proliferation of invasive alien plants), and heightened vulnerability to droughts and floods – risks projected to intensify with climate change. While the upper river sections remain relatively pristine, the middle reaches, particularly around agricultural areas and the town of Grabouw, show signs of degradation from altered flows, pollution, and habitat loss, impacting both ecological health and downstream water users. This complex interplay of high-value agriculture, critical biodiversity, community dependence, and escalating water risks makes the Groenlandberg–Palmiet catchment a priority area for collaborative water stewardship intervention.



Current physical risk (left) and expected risk in 2030 (right) for the Groenlandberg – Palmiet River catchment (circled) in the Western Cape of South Africa, according to the WWF Water Risk Filter.



**Elgin Shale Fynbos**, found mainly in the Elgin and Villiersdorp Basins, is critically endangered due to habitat loss from agriculture, forestry, and infrastructure like the Theewaterskloof and Steenbras dams. Conservation and restoration are now essential to protect this unique vegetation type <sup>[9]</sup>.

Photo by Jacques Marais



Scan to learn more about WRAP's Water Roadmap Project in South Africa.

## 2. Collective Action in Motion

Addressing the multifaceted challenges in the Groenlandberg catchment requires a truly collaborative approach. Under the banner of the Water Roadmap, WWF South Africa takes the lead in coordinating and implementing crucial on-the-ground conservation and restoration activities. This involves working hand-in-hand with a network of partners, including WFL suppliers and their growers (like Stargow, Dennegeur, Kromco, Two-A-Day, and Boomerang), the Groenland Water Users Association (GWUA), conservation bodies, and government entities.

WWF-SA provides scientific expertise, facilitates stakeholder engagement, secures funding, and manages large-scale interventions like invasive species clearing and ecological monitoring. WFL plays a vital supporting role by leveraging its supply chain influence, encouraging supplier participation, and contributing resources through initiatives like the WRAP Water Roadmap. WFL suppliers are not merely passive recipients but active contributors, implementing best practices on their farms, undertaking independent conservation actions, and sharing valuable local knowledge. The GWUA acts as a key local coordinating body, representing the interests of major water users and facilitating communication and collaborative projects within the catchment. This multi-stakeholder platform fosters trust, pools resources, and enables coordinated action at a scale necessary to achieve a meaningful impact on water security and ecosystem health.



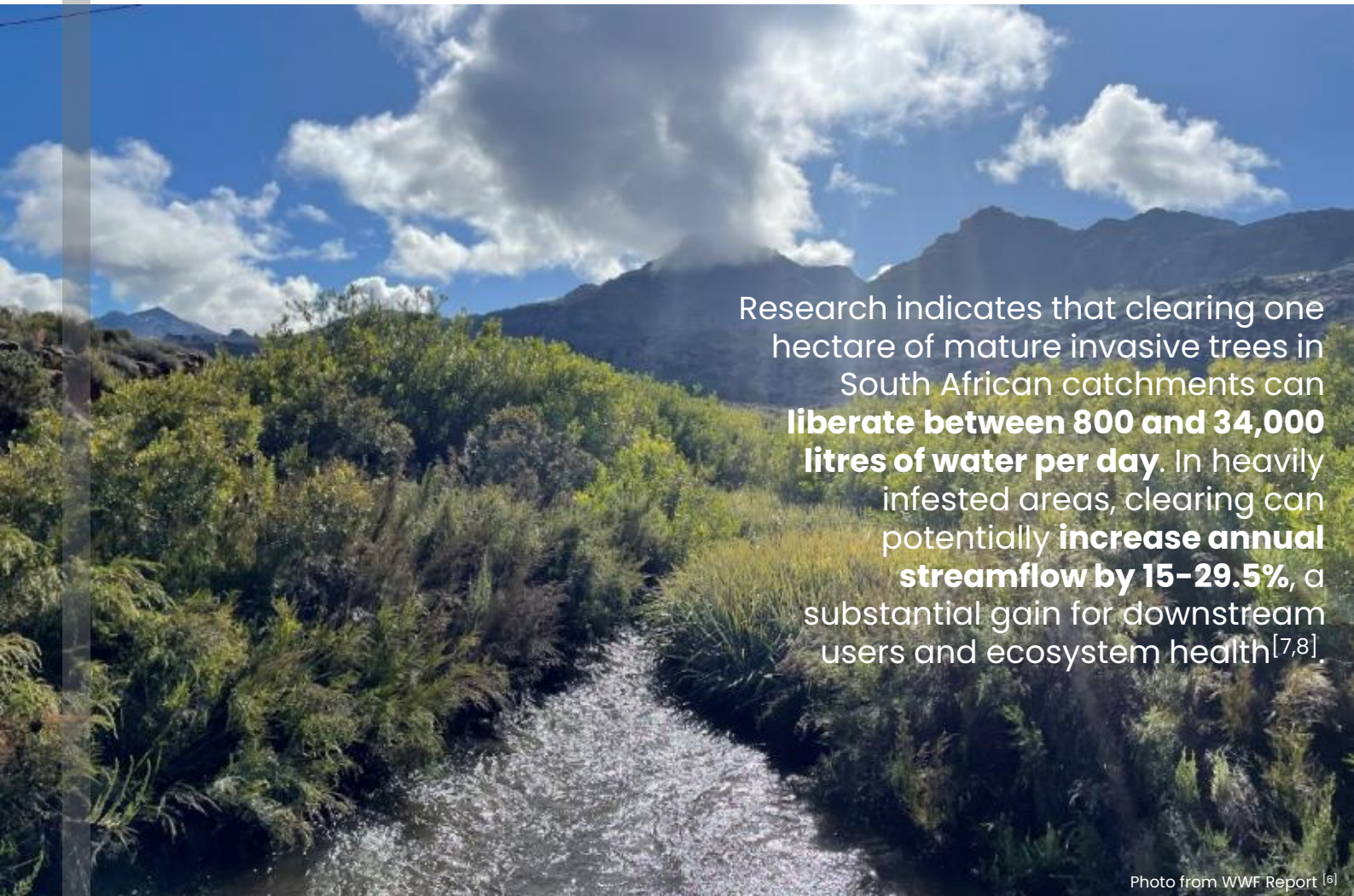
The collaborative efforts focus on tangible actions that address the root causes of water stress and ecological degradation, yielding benefits for both nature and agriculture.

## Clearing Thirsty Invaders

Invasive alien plants (IAPs) like Black Wattle, Port Jackson, Bramble and various Pine species consume vast amounts of water, far exceeding native fynbos, thus reducing streamflow and degrading riparian habitats.

Over the past four years, the Water Roadmap project, managed by WWF-SA, has cleared over 85 hectares of dense IAPs, primarily along riverbanks <sup>[6]</sup>. This work employed six specialised teams (predominantly women), managed by implementing partner Blue Science, providing crucial local employment and skills development.

WFL suppliers complement these efforts significantly. Dennegeur independently cleared 42.2 ha using its dedicated environmental team, fostering youth employment. Boomerang actively maintains 26 ha clear of IAPs, demonstrating long-term commitment. "We do the continuous alien cutting... Luckily, we don't have significant problems with aliens anymore," confirms Boomerang. Groendal also plans further clearing, targeting 2 ha of Black Wattle between 2024-2026.



Research indicates that clearing one hectare of mature invasive trees in South African catchments can **liberate between 800 and 34,000 litres of water per day**. In heavily infested areas, clearing can potentially **increase annual streamflow by 15-29.5%**, a substantial gain for downstream users and ecosystem health<sup>[7,8]</sup>.

Photo from WWF Report <sup>[6]</sup>




## Restoring Native Habitats:

Clearing IAPs is only the first step; restoring native vegetation is crucial for long-term ecological stability and preventing re-infestation.

The Water Roadmap initiative has planted over 5,000 indigenous plants (including species like Yellowwood, Wild Olive, False Olive and Elgin Shale Fynbos) in cleared riparian zones<sup>[5,6]</sup>, helping to stabilise banks, improve water quality, and restore biodiversity corridors.

Demonstrating a remarkable initiative, Dennegeur established its own nursery focused on propagating endangered Elgin Shale Fynbos species, sourcing local seedlings. They have already restored 1 hectare with over 1,140 indigenous plants, strategically focusing efforts where the rare *Aspalathus monosperma* occurs. This proactive approach significantly contributes to conserving local biodiversity hotspots.

Post-clearing, managing erosion is vital. Dennegeur implements a comprehensive Restoration Management Plan, monitoring cleared sites and employing erosion control measures and strategic replanting, further contributing to local job creation.

A photograph showing three people in a nursery. On the left, a man in a red long-sleeved shirt and grey trousers stands with his hands behind his back. In the center, a man in a blue jumpsuit and a beanie is crouching, holding a tray of small pink flowers. On the right, another man in a blue jumpsuit and a beanie stands with his hands on his hips. They are surrounded by numerous black plastic trays filled with various small plants and seedlings. The nursery is covered by a green netting structure supported by wooden poles. The background shows a cleared field with some trees in the distance.

Dennegeur's nursery aims to support restoration planting, create local jobs, and encourage nearby farms to source plants for their own alien clearing efforts.

Photo by Dennegeur




## Optimising On-Farm Water Use

Through the widespread adoption of water-wise practices, WFL suppliers and growers are not only maximising on-farm efficiency and reducing their water footprint but also contributing to catchment-scale improvements in water security and ecosystem resilience.

- **Precision Irrigation:** Transitioning from sprinkler to highly efficient drip and micro-irrigation systems delivers water directly to plant roots, reducing wastage.
- **Soil Moisture Monitoring:** Most growers now use soil moisture monitoring technology to inform more precise irrigation scheduling. "We use many continuous logging capacitance probes to measure soil moisture and adjust our irrigation scheduling precisely to the plant's needs, avoiding over- or under-watering." – Kromco grower.
- **Evaporation Reduction:** Using shade netting over orchards and irrigating during cooler night-time hours significantly cuts down evaporative losses.
- **Soil Health Practices:** Implementing cover cropping between tree rows and mulching (often using chipped alien biomass) improves soil structure, enhances water infiltration and retention, and suppresses weeds.
- **Holistic Farm Management:** Estates like Paul Clüver's De Rust, situated within the Kogelberg Biosphere Reserve, exemplify integrated landscape management. They actively manage upstream catchment areas, employ drone technology for precision agriculture, protect natural vegetation corridors, and have planted over 800 endemic trees, recognising the link between healthy ecosystems and water yield. "You get 30–40% more runoff from natural fynbos vegetation, with no alien vegetation present," notes Paul Clüver.

## Monitoring Water Quality

A key component of the Water Roadmap plan includes ongoing monitoring of water quality parameters within the Palmiet River catchment to track improvements in river health. Complementing these efforts, the Groenland Water Users Association (GWUA) also plays a role in monitoring water quality to help safeguard the resources to protect downstream users.



"The big thing is to protect our water in the Elgin area. We don't have water to waste, even if we end the season with 40–50% water capacity, we always have to plan for the worst-case scenario. Our water is very important to us."  
– Boomerang

Photo by Carina Wessels

## Sustainable Biomass Utilisation

Cleared alien biomass is increasingly viewed as a resource rather than waste. Material from WWF-SA's clearing operations is chipped for mulch or used in innovative biochar trials exploring potential soil fertility benefits. Many WFL suppliers, like Dennegeur, also repurpose cleared wood, selling larger logs to fund environmental budgets and chipping smaller branches for on-farm mulch.

## Community Benefits and Job Creation

In addition to environmental restoration, the Water Roadmap initiative delivers tangible socio-economic benefits. Local teams employed for invasive clearing gain both income and practical skills, while support for small enterprises—like an indigenous plant nursery and a biomass chipping service—helps strengthen the local economy.





### 3. Navigating the Challenges of Collective Water Management

While progress has been made, managing water resources in the Groenlandberg-Palmiet catchment remains challenging due to several key factors:

- **Hydro-Climatic Variability:** The region's Mediterranean climate results in significant seasonal fluctuations in rainfall and river flow, necessitating flexible management strategies. Extreme weather events, such as recent floods, can damage infrastructure (e.g., weirs and roads) and disrupt restoration activities.
- **Fragmented Infrastructure & Governance:** Unlike catchments with centralised government water schemes, the Groenlandberg relies on decentralised private abstractions and smaller dams, complicating coordinated monitoring, modelling, and water allocation.
- **Resource Constraints & Capacity Gaps:** Effective catchment management requires specialised expertise in hydrological modelling, ecological monitoring, and data analysis. As noted by Bruce Paxton of the Freshwater Research Centre, "The capacity isn't always on the ground... it requires a lot of monitoring, it requires modelling, which we simply don't have." Securing long-term funding for ongoing monitoring and coordination remains a significant hurdle.
- **Competing Demands:** Balancing the water needs of agriculture, downstream communities, industry, and the environment requires continuous dialogue and robust governance frameworks, such as those facilitated by the GWUA.

In response to challenges, WFL suppliers have emphasised the need for greater collaboration and government support. Many suppliers, as members of the GWUA, express support for broader water conservation initiatives and trust that the association is engaging with stakeholders effectively. However, they also advocate for clearer guidance to ensure individual efforts, such as monitoring and invasive alien plant clearing, are aligned with the actions of other growers and can inform regional decision-making. One supplier highlighted the significant costs of alien clearing and waterway maintenance, stressing the need for government funding for these efforts: "To control alien invaders is too a big and costly task for individual growers". Another noted the effectiveness of the GWUA's central coordination in managing catchment-related issues on behalf of growers, emphasising the value of a central body that can represent the interests of major water users.

Suppliers value their relationships with Water User Associations and express a preference for working with centralised bodies like the WUA, which fosters strong cooperation and ensures more effective management of the catchment.

## 4. Conclusion and Future Outlook

The collaborative efforts in the Groenlandberg catchment successfully demonstrate how WFL, its suppliers and growers, WWF-SA, and local partners yield tangible benefits for water security, ecosystem health, and community livelihoods. These outcomes directly support the goals of the UK Food and Drink Pact and WRAP's Water Roadmap. As Willie Wood, WFL's Head of Technical, emphasises, this collaborative approach is "crucial for shaping strategies and guiding actions towards continuous improvement."

Building on this success, the future outlook of the Water Roadmap project prioritises scaling up impact. Key strategies include:

- Expanding invasive species clearing and native habitat restoration, supported by establishing more indigenous plant nurseries.
- Strengthening local coordination and enhancing monitoring and modelling capacity.
- Broadening stakeholder support and investment.
- Ensuring restoration continues to deliver socio-economic benefits, including local employment.

The lessons learned in the Groenlandberg provide a valuable blueprint for sustainable water management elsewhere. The commitment remains strong to foster resilient water resources, ecosystems, and communities in the Western Cape through continued collective action and adaptive management.



Photo from WWF Report 161

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