St Helena
The Peaks National Park
Conservation
Management Plan

[2019-2024]

Contents of the Management Plan

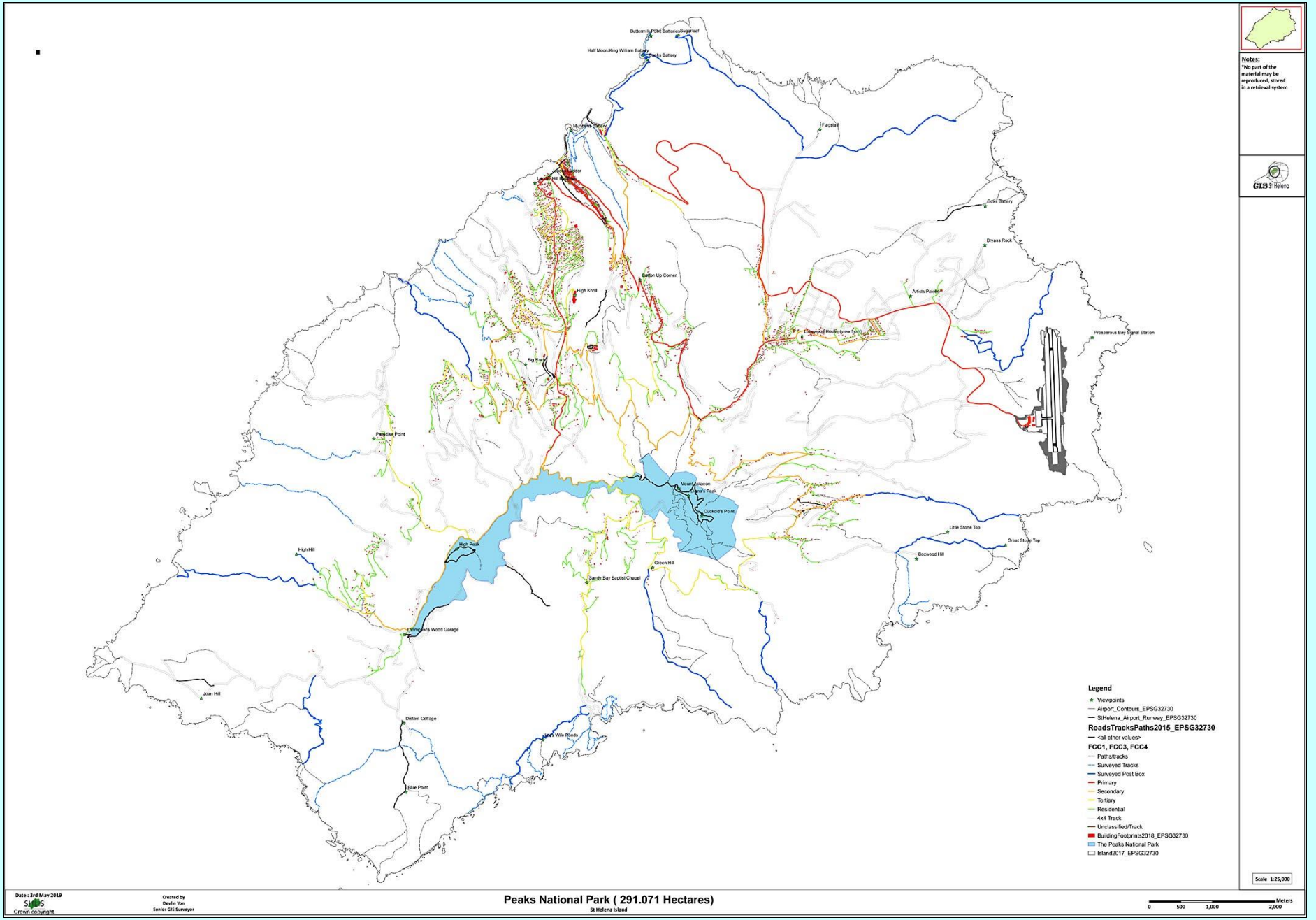
1. THE VISION for the Peaks National Park

St Helena's unique cloud forest is secured and expanded, from the existing relict fragments, in the face of pressures from invasive species and climate change; securing a unique ecosystem that sustainably: supports the full range of St Helena's native moist upland ecology and associated biodiversity and; supplies the island's future water needs from enhanced mist capture by endemic vegetation and; generates essential soils for the retention and percolation of received precipitation.

The National Park is a prominent island icon, internationally acclaimed as a collaborative and ongoing biodiversity conservation success; managed by an experienced, innovative and productive team representing relevant stakeholders.

The Peaks contribute to the sustainable development of St Helena by: providing a unique visitor experience that engages the interest and support of the local community and contributes significantly to St Helena's value as a tourist destination; supporting business activities like tourism, forestry and farming that contribute to, and benefit from, the natural wealth of the National Park.

Map1: Location of the Peaks National Park



2. NATIONAL PARK MANAGEMENT

2a.1. Rationale for Management of the Peaks for Biodiversity, Ecosystem Services and Public Engagement

The Peaks National Park occupies the highest ground on St Helena and is visible from and, provides views over, much of the island. Human history over five centuries has significantly altered the Peaks; evidence of astronomical, military, agricultural and plantation activities dominate but there also remain small fragments where it is possible to appreciate the nature of St Helena before human discovery. The Peaks provides a unique wilderness experience in the heart of the island for local and visitor alike; the selection of the Peaks as one of 'The Seven Wonders of St Helena' in 2018 by popular vote reflects the affection and appreciation the community have for this part of the island.

St Helena has claim to one third of the total endemic biodiversity recorded for all of mainland UK and her Overseas Territories. The cloud forest of the Peaks National Park alone supports 17% of this total. Many of these unique plant and invertebrate species, however, hover on the edge of extinction and are under continual pressure from a plethora of introduced invasive flora and fauna.

The high altitude and native cloud forest vegetation of the Peaks National Park make an ideal combination for the interception of moisture laden air that crosses the island making appropriate management of the Peaks National Park critically important for the water security of the island. Recent assessments of two of the nine water catchments on Diana's Peak ridge have shown that they provide 38% of the island's water needs, with the majority of this deriving from mist capture. The island has a very high dependency on altitudinal precipitation to continually replenish water supplies. With projected increases in tourism, a key economic sector, water demand is expected to rise.

Forecasts published by the Joint Nature Conservation Committee (Walling, L.J. 2008) suggest that, for St Helena, climate change impacts on future weather patterns will lead to increasingly unpredictable rainfall events. Recent research (Sansom, B. *et al* 2018) concluded that through re-establishment of areas of endemic cloud forest the Peaks can provide opportunities to sustainably increase mist capture volume and improve control of outflow rates effectively improving water security and the resilience of the island to mitigate impacts from climate change.

This conservation Management Plan delivers the legal obligation under Section 31 of St Helena's *Environmental Protection Ordinance (2016*) to develop a conservation management plan for a National Conservation Area. It was developed collaboratively via a three-day stakeholder workshop held in December 2018 and is intended to guide collective conservation management and secure international funding for conservation action. It is a separate document to that required under the Land Development Control Plan (LDCP), which mandates that National Conservation Areas develop a management plan for planning and built development purposes. Such a plan has been drafted: *The Peaks National Park (NP2): Management Development Plan 2013-2023*, but is not currently endorsed or active. The finalisation of this separate Management Development Plan is necessary to complement this conservation Management Plan and complete appropriate management governance of the Peaks National Park.

As well on delivering management planning requirements under the *Environmental Protection Ordinance*, this management plan will also support:

- The implementation of St Helena's *10 Year Plan (2017-27)*. Under National Goals: *Altogether Healthier* through the aim of ensuring access to an adequate supply of clean water; *Altogether Greener* through the aims of long term water provision for the Island in order to reduce the impact of

drought and climate change and protecting endemic fauna and flora by tackling invasive species*; Altogether Wealthier* through the aims of encouraging eco-tourism and developing amenities and recreation facilities which are affordable for all and; through improvement of local skills and expertise and; improving agriculture products e.g. honey.

- Securing a climate change resilient water supply for the island through mist capture in the cloud forest to supplement raw water abstraction;
- Activities conducive to implementing multilateral environmental agreements including *The Convention on Biological Diversity (1992)* and the United Nation's 2030 Agenda for Sustainable Development (2015) and in particular objectives under Sustainable Development Goal 6: Clean water and sanitation, Goal 13: Climate action and Goal 15: Life on land;
- Implementation of activities contributing directly to *The Updated Global Strategy for Plant Conservation 2011-2020*;
- The delivery of aspects of specific national environmental strategies including the *St Helena Invertebrate Conservation Strategy (2016-2021)* and the *2016-2021 strategy for conservation of the Spiky Yellow Woodlouse;*
- The implementation of activities in accordance with St Helena's Climate Change Policy (Draft) 2018.

This Management Plan comprises three key objective areas:

1. **Biodiversity:** This plan provides a framework (a) for actions to conserve native habitats and their communities of threatened endemic species, (b) for actions to control invasive species in conjunction with restoration of self-sustaining habitat and, (c) to guide research priorities and training needs.

2. **Water security and climate change resilience:** This plan outlines the complementary activities needed to protect and enhance the ecological services provided by the Peaks for the benefit of the people of St Helena through (a) increased mist interception to increase rainfall recharge for water supply, (b) soil-based water filtration and stream flow control, and (c) mitigation to counter predicted negative impacts of climate change.

3. **Socio-economic:** This plan sets out how the status of the Peaks as an island icon and tourism attraction will be enhanced through (a) providing opportunities for stakeholder collaboration, (b) responsible and sensitive public access, (c) ensuring positive experiences for all visitors, (d) education and, (e) contributing to the growth of St Helena as a world-class tourism destination.

2a.2. Identification of Features Influencing Management

The following table lists all the important features and identifies the **Features Influencing Management**.

Important Feature	**Why?** **(status etc)**	**Influencing Management?**	**Information** **(population size, trend etc)**	**Defining Attribute(s)**
Cloud Forest	Globally unique and threatened St Helena habitat. Native species adapted for efficient mist interception.	Yes: the key habitat of the Peaks.	A total of 16 ha (2008) of cloud forest fragments mainly above 700 m. These fragments are in decline, reducing in area and diversity. Estimates of original area made from historical records vary from 130 - 1100 ha with cloud forest vegetation down to 600 m altitude.	Area. Habitat quality (a function of plant community age structure, successional diversity, species diversity, dynamic mosaic composition, patch size, connectivity and decay cycle).
Endemic Tree and Fern Canopy	Strongly influence the light, temperature and humidity dynamics of the whole habitat. Principal component of water capture capacity.	Yes: viable canopy is needed to maintain suitable conditions for the whole biota of the cloud forest.	Loss of canopy in places from trees dying without successors. Currently large gaps in canopy associated with edges of flax area and adjacent to paths, especially ridge path, that result in reduced humidity, increased light and opportunities for colonization by alien invasives.	Integrity and percentage cover by canopy, (allowing for natural death/ replacement dynamics in an eventually restored system.

Important Feature	Why? (status etc)	Influencing Management?	Information (population size, trend etc)	Defining Attribute(s)
Water capture capacity and retention	Increase habitat and community resilience to climate change, support public health through securing a clean and sustainable water supply.	Yes: focus habitat restoration above the 690 m contour to increase mist capture. Water retention links to restoration of peat soils.	Assessment of two of the Peaks sub-catchments summarises that they provide 38% of island's water supply. Remaining seven sub-catchments not fully assessed. An average of 60% of the Peaks water volume is derived from mist capture, up to 100% during drought conditions. Water sub-catchments deteriorating through spread of invasive species.	Volume of water. Flow rates and duration/retention.
Endemic flowering plant assemblages	Rare endemic species.	Yes: species recovery, habitat restoration. Link with species fitness.	(List at Appendix 4). Associated species include bryophytes, invertebrates, fungi.	Species richness of the habitat. Area of habitat.
Endemic ferns and allies assemblages	Rare endemic species. Form shade to suppress invasive species and facilitate development of native communities.	Yes: nursery growing, planting. Essential restoration component.	(List at appendix 5). Associated species include bryophytes, invertebrates, fungi.	Species richness of the habitat. Density of fern habitats.
Endemic invertebrate assemblages	Rare endemic species.	Yes: Habitat restoration to increase the diversity and frequency of niche micro-habitats.	(Conservation strategy at appendix 9). Dead wood and plant litter resources are important for many species, and are strongly linked to fungal communities. Pollination services provided by endemic species underpin ecosystem health and production Knowledge gap: ecology, threats.	Species richness, structural diversity and decay cycle dynamics of the habitat.
Phytophagous. detritivorous and saproxylic invertebrate assemblages	Indicators of habitat health and diversity.	Yes: Habitat restoration to increase the diversity and frequency of niche habitats.		Species presence.

Important Feature	Why? (status etc)	Influencing Management?	Information (population size, trend etc)	Defining Attribute(s)
Iconic 'flagship' species e.g. the Spiky Yellow Woodlouse	Charismatic representative of the endemic invertebrate fauna of the Peaks. Has already been the focus of research and therefore a better state of current knowledge.	No specific habitat management required but further monitoring and research.	(Conservation strategy at appendix 9). Further knowledge of autecology may reveal general principles of how cloud forest management can benefit whole communities of invertebrates.	Distribution. Abundance. Extent and connectivity of niche habitat. Popularity as iconic species.
Endemic epiphytes – bryophytes, lichens, ferns	Rare endemic species. Important in natural regeneration of the forest in providing nursery area for germination and development of tree seedlings.	Yes: Habitat restoration to increase niche habitats. Many are dependent on high humidity.	Microclimate (humidity and light dynamics) is likely to be important. Knowledge gap: contribution to mist intercepting capacity through increased functional surface.	Species richness of the habitat. Intact tree canopy. Area of habitat.
Fungi assemblage	Key ecological component – decay cycle and mycorrhizal associations of macrophytes.	No specific management. Benefits from retention of dead wood and restoration of diverse habitat.	Knowledge gap: species present, identification, ecological roles, presence of endemic species and possible threats to them and from invasive fungal species. Benefits to establishing balanced micro-biomes in restoration plantings and nursery stock.	Identify and implement opportunities to increase knowledge.
Invasive species for which effective local management methods exist	Threat to the survival of endemic species through competition, habitat modification, predation.	Yes: management strategies vary depending on impact and mechanism, also ecosystem function of these species must be considered.	(Management guide at appendix 9) Includes vertebrates (rodents, rabbits, and birds), plants, invertebrates, pathogens.	Extent of coverage. Persistence in habitat. Competitive vigour. Ecosystem function.

Important Feature	Why? (status etc)	Influencing Management?	Information (population size, trend etc)	Defining Attribute(s)
Invasive species with no effective local management methods	Threat to the survival of endemic species through competition, habitat modification, predation & disease.	Yes: management strategies vary depending on impact and mechanism, also ecosystem function of these species must be considered.	Includes vertebrates (birds, frogs, mosses, ferns and some higher plants, predatory and parasitoid invertebrates, fungi, pathogens). Knowledge gap: impacts of species individually and synergistically, suitability of novel control strategies.	Extent of coverage. Persistence in habitat. Competitive vigour. Ecosystem function.
Species fitness (genetic diversity and genetic health and disease resistance) of plants	Threats to the survival of endemic species (ability to regenerate naturally etc) withstand disease/extreme events.	Yes: creation and maintenance of functioning diverse living gene banks, ensuring balanced genetic representation in propagation output. Propagation protocols to support production of healthy plants.	(Numbers detailed at Appendix 3) Some preliminary DNA research is in progress. A comprehensive analysis is needed.	Growth trials. Outbreeding results.
Pests and Pathogens of plants	Threat to the survival of endemic species.	Yes: bio-security. Access to habitats, translocations, nursery hygiene and practices.	Translocation of infected plant material and soils restricted. Introductions and distribution more likely with increased visitor/staff numbers Knowledge gaps: which pathogenic fungi are present and their impacts, foreign seed and spore loading in nursery growing media.	Impact on native habitats and endemic species.

Important Feature	Why? (status etc)	Influencing Management?	Information (population size, trend etc)	Defining Attribute(s)
Public Access & Interpretation	Building and maintaining local support. Contributing to the local economy. Health and well-being link to SHG strategies and Sustainable Development Goals.	Yes: Access control Installation and maintenance of infrastructure e.g. boardwalks. Information and interpretation. Tours and guides Health and safety.	No formal monitoring, policing or feedback at present. Comments left in Post Box Walks visitor book; on social media; at tourism office. Peaks staff provide informal monitoring and interpretation when on site. Limited number of deteriorating interpretation panels. Extensive boardwalks on main Diana's Peak circuit (mixture of designs). 3 regular guides running tours.	Number of Visitors. Visitor Experience. Impact on cloud forest. Competency of tour guides.
Nurseries	Essential for propagating native plants for restoration of habitat. Visitor engagement.	Yes: Plant production and planting cycles.	Identity and numbers of each plant propagated will impact diversity /structure of restoration areas.	Capacity. Diversity. Staff.
Substrate – Peat & Mineral	Peat accumulation is essential to cloud forest habitat recovery and function, including water retention. Carbon sequestration.	Yes: Ferns needed for litter production. Management methods to prevent soil erosion. Recognised need for patches of exposed substrate for germination, regeneration and burrowing invertebrates.	Knowledge gaps: soil features, the influence of the changing invertebrate detritivore communities (including endemics and invasives) and the role of fungi and other micro-organisms - other invertebrates, bacterial, fungi, including ecto- and arbuscular mycorrhizae. Carbon sequestration value of cloud forest peat. Comparative water retention capacity values of substrates.	Depth of peat. Rate of generation. Soil analysis results (chemistry, bulk density and moisture content). Biodiversity.

Important Feature	Why? (status etc)	Influencing Management?	Information (population size, trend etc)	Defining Attribute(s)
Landscape	Iconic for St Helena. Part of the appeal to visitors.	Yes: Control of built structures and work areas.	Key to marketing St Helena. Land Development Control Plan (2012) at Appendix 9 – protecting the green heartland.	Views. Aesthetic appeal. Rural open green landscape with few structures. Land use strategies. Multiple ownership.
Historic features	Cultural heritage and visitor interest.	Yes: preservation, recording in Historic Environment Record and interpretation - visitor interest.	Includes pathways, structures and land use.	Relevance to history and culture.

2a.3. Condition of the Features Influencing Management and the Main Factors affecting them

The following tables identify the target condition of the Features Influencing Management and the Main Factors influencing whether these target conditions are attained.

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
Cloud Forest	Area.	Four key tree species are critically endangered / extinct in the wild. Remnants of these species exist in isolation or in small remote groups. The associated habitat and ecology of these trees is essential for cloud forest functionality. The combined area of coverage (5600 m^2) is severely fragmented and declining.	All (120) key fragments centred on threatened trees to be stabilised (no further decline) or expanded. Establish continuous native habitat to connect fragments where distance and terrain permit.	Number of wild trees. Invasive species. Low recruitment rates.	5600 m^2 of key habitat fragments stabilised. Additional 21000 m^2 of native habitat restored from invasive vegetation on fragment perimeters. 60 corridors connecting native habitat (5000 m^2) created. Additional area created under *Water capture capacity and retention* feature.	Fragments are primarily centred on single or small contiguous groups of key tree species. Separations between adjacent fragments range from 10 m up to 2.8 km and are dominated by non-native vegetation. Restoration protocol developed under DPLUS029 to be employed. Employ planting densities and companion planting practices developed under DPLUS029. Planting cycles to establish full range of habitat age structure.
	Habitat quality.	Variable: Worst case: 'Terminal' where a remote single keystone tree has	Establish self-sustaining assemblages which score well on all components of	Inter- and intra-species diversity. Age structure of trees. Spacing of plants.	Improved habitat diversity. Species diversity, plant numbers and density in each	Habitat quality is a complex measure including species diversity, age structure, completeness of canopy, and supply of dead wood.

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
		recently died and the fragment cannot be restored before irreparable losses are incurred. Best case: 'Thriving' Diverse native habitat with multiple keystone trees across a range of ages from recruiting seedlings to dead trees. Dead wood composition is varied as are ecological surfaces. Canopy continuous.	habitat quality defined in DPLUS029 site survey report.		fragment Increased above survey base line and improved annually.	Survey baseline from DPLUS029.
Water capture capacity and retention	Volume of water.	Only Wells and Grapevine Guts assessed and together account for 38% of island total. 60% from mist.	Additional 33 % or 146,000 m^3 per year within ten years.	Cloud forest area. Forest composition. Climate. Geology/hydrogeology. Springs and streams.	12 ha of new cloud forest vegetation established above 690m contour on central ridge and upper catchments 4 ha of existing native vegetation diversified to increase mist interception Interaction between main factors modelled.	Capture surfaces, vegetation height and density, wind, moisture, temperature, substrate composition, sub-surface geology. Stream flows and depth. Geology/hydrogeology investigation in Peaks needed to understand relationship between precipitation (mist and direct rainfall) and aquifer recharge/stream flows.

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
	Flow rates and duration/retention.	Poor flow regulation Potential for soil losses.	Stabilised flow, minimised soil loss.	Soil type and depth. Hydrogeology. Vegetation type and coverage.	Understand hydrogeology of the Peaks and relationship with precipitation and recharge mechanisms.	Establish peat & litter producing vegetation especially ferns and bryophytes.
Endemic flowering plant assemblage	Species richness of the habitat.	Species distributed in small fragmented populations. Habitat components missing. Low recruitment.	Maintain/improve genetic diversity and gene flow. Increased species richness in target areas.	Habitat patch connectivity. Genetic diversity. Low recruitment.	Targeted planting to improve number of species and genetic diversity. Reconnect isolated habitat patches. Natural recruitment/ Regeneration.	Cross sector opportunity to populate degraded forestry areas with flowering endemics which could support honey production and occupy land currently acting as invasive reservoirs.
Endemic ferns and allies assemblage	Species richness of the habitat.	Some species under represented particularly in restorations.	More diverse fern swards.	Restored habitats. Habitat degradation. Loss of genetic diversity. Knowledge gaps.	Diverse planting into all habitats. Effective propagation for all species.	Cross sector opportunity to develop fern habitat in non-conservation areas e.g. forestry.
	Density of fern habitats.	Sparse, fragmented allowing invasive incursion. Canopy gaps causing humidity problems.	Healthy fern swards excluding invasives.	Invasive species. Low recruitment. Propagated material.	Targeted planting. Invasive control.	Some invasive species stands provide habitat conducive to fern establishment and could be managed as such.
Endemic invertebrate assemblage	Diversity. Species distribution. Habitat availability.	Habitat loss – especially of old trees and dead wood. Knowledge gaps in many areas.	Improved species knowledge especially Taxonomy / un-named species and basic ecology of	Deadwood availability in a range of states of decomposition. Connectivity of habitats. Old trees.	Increased longevity of older trees & tree ferns. Increased dead wood availability.	Potential as flagship species (Spiky Yellow Woodlouse, Brassy Weevil, Sail spiders, Rainbow Assassin Bug, *Opogona* moth species).

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
			spiders and flagship species. Conserve / bolster number of older trees. Increased deadwood availability.	Impact of non-native invertebrates. Danger of over-collecting and habitat damage in surveys – small populations.	Improved connectivity of forest fragments. Improved knowledge of invertebrate ecology, distribution and abundance (non-native and native), Identify options for predator control. Effective regulation and enforcement of research activities.	List of endemic cloud forest invertebrates and their association with native plants in production by St Helena National Trust Key, R.S. (2014) at Appendix 9.
Phytophagous saproxylic and detritivorous invertebrate assemblages	Species present Assemblage diversity. Distribution of species.	Many species are known but some are still un-described. The ecology of most species is not known. Status and distribution of rare species is not known (some may be extinct).	Assess the status of phytophagous saproxylic and detritivorous species present and where possible their ecological role.	Population size. Isolation (for flightless species 5-10m may be enough to isolate a population). Dependence on individual host species. Impact of non-native invertebrates.	Conduct sensitive ecological work where appropriate to understand the distribution and ecology of species present e.g. which are restricted to a single host.	Taking specimens for identification could have a serious impact on rare species. Some species may not be able to be identified in the field without taking specimens
Spiky Yellow Woodlouse (as 'flagship' example of endangered	Population size. Distribution. Habitat quality.	Critically endangered. Fragmented distribution. Knowledge gaps	Increased population. Improved habitat quality. Better knowledge of the	Resources and staff capacity. Connectivity of habitat (invasive plants). Possibly predators, disease,	Improved habitat quality and connectivity. Research needs on ecology,	Havery, S. et al (2016) Conservation strategy for Spiky Yellow woodlouse at Appendix 9.

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
invertebrate)			species' ecology	genetics. Population dynamics and microhabitat requirements are not yet known.	population and genetics identified and prioritised.	
False Gumwood (as example endangered plant).	Number of plants. Species fitness.	Six individuals at one site remain in the wild (status: CR). This and an extinct site represented in living gene bank plants. Associated endemic species (still surviving at the wild site) are not present on propagated plants or other restoration sites.	Sustainable population safe from extinction in the wild (increased numbers of healthy mature plants at wild site). Associated organisms present at other restoration sites.	Genetics. Propagation. Pests and diseases. Resources and staff capacity. Habitat size and health.	All genetics for species represented in living gene bank. Pests successfully managed on propagated plants. Recruiting sustainably *in situ*. Population sustainability of associated endemic organisms understood.	Consider selecting other 'flagship' plant species to tag promotion opportunities e.g. Black Cabbage – St Helena's ancient tree daisy. CR: IUCN Red list status of risk – Critically Endangered.
Endemic epiphytes - bryophytes, lichens & ferns	Species richness and range.	Knowledge gaps in ecology. Habitat loss – tree ferns/old trees. Humidity loss from incomplete canopy, habitat edges – especially of footpaths.	Improved knowledge of epiphyte ecology. Habitat stabilised.	Species interaction. Plants providing the habitat. Climate.	Improve knowledge of epiphyte ecology. Conserve supporting plants. Extend habitat of supporting plants. Increased area of closed canopy.	
Fungi assemblage	Species Ecological function mycorrhizae,	Significant knowledge gap. Species (endemic /	Improved understanding of species present, their	Lack of expertise (this may be the most important knowledge	Prioritise research needs. Engage overseas expertise	Possibly the most important knowledge gap in the ecology of the forest.

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
	endophytes, saprophytes, and pathogens.	introduced) and their statuses unknown.	ecology and role in ecosystem function.	gap in the ecology of the forest).	to carry out research and develop practical outcomes for research priorities. Develop expertise on St Helena.	
Invasive species for which effective and acceptable management methods exist.	Species.	All Invasive plant species identified. Key invertebrate pests identified. Impacts of known species largely understood.	No new invasive species. Build knowledge base from associated research on invertebrate and other taxa.	Bio-security (especially if the number of visitors increases). Early detection and response	Restrictions on transportation of soils and plant material to the Peaks. Raising awareness of issues for staff and visitors.	Paths create weed corridors. Mitigate impacts through raised boardwalks and focussed management of verge vegetation. Adapt Bio-security field trip protocol; reduce invasive loading in nursery growing media, tool inoculation and clean working practices. Revise in the event of new information.
	Extent.	Extent /range of invasive plant species recorded for discrete areas. Scale of feature far exceeds resources available to deal with it. Small scale control undertaken in targeted areas.	75 % reduction of invasive plants within the existing cloud forest (replaced with native flora). 16 ha reduction in invasive plant monoculture above the 690 m contour.	Resources (time, number of staff, money) available for clearing invasives. Continuity of effort. Availability of native species to plant into cleared areas (nursery capacity).	Secure adequate long term funding stream. (Double conservation staff numbers on a 5 yearly staged approach over the next 20 years).	Reductions in extent of invasive plant area need to be closely matched to capacity for habitat restoration.

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
Invasive species with no effective or acceptable management methods	Species.	All Invasive plant and some invertebrate species identified. Knowledge gap of remaining invertebrate species and other *taxa.*	Be innovative, trial new methods. Improved knowledge.	Knowledge gaps Potential control methods locally unacceptable. Expense.	Improve knowledge of the impacts of poorly understood species. Trials to demonstrate acceptability of known methods. Review current research and developments and assess potential for effective control of problem species, including verified specific bio-control options.	There have been some good bio-control results on the island and very good precedents elsewhere, however new introductions should be subjected to a rigorous screening process and stakeholder agreement.
	Extent of invasive plants.	Extent /range of invasive plant species recorded for discrete areas. Scale of feature far exceeds resources available to deal with it.	Set up early detection and response protocols across the island to minimise new incursions and spread.	Persistence, multiple modes of propagation.	Improve knowledge of species ecology.	
	Invasive detritivorous and predatory or parasitoid invertebrate assemblages.	Poor knowledge of species and effects of invasive invertebrates. Detritivore community totally dominated by	Probably impossible to achieve any kind of control – advice needed from elsewhere.	Change to decay dynamics of dead plant material. Massive loss of invert biomass due to European wasp	Increased knowledge of impact. Effective methods for detection and monitoring	European wasp has shown to have economic impacts on honey production by competing with and predating on bees.

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
		invasive millipedes and isopod/ amphipod crustaceans.				
Endemic plant fitness (genetic diversity and genetic health)	Growth trials. Outbreeding results.	Commenced with four species.	Assess fourteen species with fragmented populations.	Geographical separation. Sub-population size.	Establish functioning species diverse living gene banks. Increased connectivity of fragmented populations.	
Pests and Pathogens	Species. Impacts.	Difficulty in identification of phytopathogens – no local expertise. Nursery production constrained. Knowledge gap equates to potential catastrophic risk.	Improved ability to identify pathogens. Effective control measures for all nursery pests. Knowledge base of species, synecology, impacts and control established.	Expertise. Resources. Capacity.	Establish close relationship with relevant external agencies. Training in identification, bio-hygiene and control. Needs based research.	Explore control of targeted pests which have been successfully controlled elsewhere including biological controls. Ensure rigorous testing of potential biocontrols and stakeholder agreement.
Public Access	Number of Visitors.	Low visitor numbers not quantified.	Develop appropriate access in line with tourist numbers. Improved capture and dissemination of visitor statistics.	Physical impacts on the forest including soil compaction, trampling, breakage, removal of components. Overcrowding.	Low impact access maintained in line with visitor numbers. No immediate target but in future may need to set limits on numbers.	Appropriate access needs to combine safety and positive experiences for the public with protection for biodiversity and habitats. Wider cross-sector management issues of infrastructure monitoring & maintenance

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
						(boardwalks/steps), road access, roadside verge management and parking capacity.
	Quality of visitor experience.	One partially board-walked loop trail. Limited parking. Limited interpretation particularly of conservation activities. Two shelters. Endemic plant nursery. Historical artefacts Limited feedback on visitors' experience. No on-site visitor liaison or off-site environmental visitor centre. Access challenging for physically less able visitors. No toilet facilities	Complete loop trail with raised boardwalk sections. Additional unobtrusive interpretation for eco-service function of cloud forest and conservation activities. Improve capture and dissemination of visitor feedback to improve visitor experience. Ensure access is safe (for park and visitors). Improve engagement with visitors. Investigate needs/opportunities for visitor dedicated staff and visitor centre. Positive feedback from 90% of visitors. Investigate feasibility of on-site earth toilets	Resource and staff capacity for construction and maintenance of access (paths, boardwalks). Access (ownership and land use - presence of cattle). Resource for signage, digital interpretation, promotion and publicity (leaflets, hotel info, local media, social media). Tour guides. Education.	Clearly identify resources required for visitor experience activities separately from recurrent conservation work. Create a safe immersive and diverse visitor experience incorporating under-canopy walks and landscape views, incorporating historic interest with appropriate interpretation. Retain knowledge through continuity of staffing. Feedback disseminated regularly.	Consider cross sector working group, tourism led to initiate improvements and react to feedback from visitors, guides, local community and conservation management. If not totally boarded walk encourage boot cleaning before and after visits Voluntary feedback in the form of visitor books on the post box walks (Diana's Peaks & High Peak) gives an indication of visitor numbers and a subjective measure of appreciation in the form of comments left. Not sufficient or comprehensive enough to inform tourism decision making

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
Nurseries	Propagation of endemic and other native plants. Possible opportunity for visitor engagement.	**Peaks** nursery: (dedicated to production for Peaks). 12000 plants per annum with all 15 flowering plant and 4 of 14 fern species regularly propagated. 1 part time and 1 temporary staff. Infrastructure, soils and water limited but match current production. **Scotland** nursery: (4 staff approx 40% of time in nursery production. Grow cloud forest species as capacity allows, main focus is on propagation for all non-Peaks sites). 4000 cloud forest species plants per annum planting at Cassons, Swampy Gut and maintaining	**Peaks** nursery: 10 year programme of production. Double production every year for the next 5 years. Full (29) species range produced. Balanced and regular species production. Dedicated team under propagation manager. **Scotland** nursery: Develop production levels in proportion to team size. Diversify and maintain living gene bank at Cassons. Implement ex-situ spore germination programme for critically endangered fern species.	**Peaks**: Limited staffing. Genetic resources. Water/soil/compost availability. Infrastructure. **Scotland:** Limited staffing. Genetic resources. Water/soil/compost availability. Infrastructure.	**Peaks**: Fully staffed (+7) /trained dedicated nursery team including propagation manager and habitat specialists. All endemic species populations across Peaks represented in living gene banks. Match water/soil/ compost to needs. Develop infra-structure in line with production. **Scotland:** Additional staff (+1) to focus on cloud forest species and fern propagation. Clean room and supplies for fern propagation.	Translocation of growing media on plants from Scotland Nursery to the central Peaks is a bio-security risk.

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
		nursery seed plants of rare species. Visitors welcomed at both nurseries informally which will detract from core activities if visitor numbers grow. Feedback indicates these visits are informative and enjoyable.	Investigate possibility of third party opportunity to liaise between tourism/tourists/tour guides and nurseries to organise and escort tour groups.			
Substrate	Peat and mineral soils.	Variable depth.	Increased area and depth of peat soils Conservation of exposed mineral soil areas which provide an important component of native habitat.	Area of native vegetation, especially ferns and bryophytes. Invasive species encroachment.	Increased depth coverage and, quality of peat soils. See Cloud Forest, Endemic Ferns and Endemic flowering plants.	Potentially a good indicator for habitat improvement and water flow control.
Landscape	Aesthetic appeal.	Established views into and out from the Peaks.	Viewpoints with interpretation.	Vegetation. Skyline.	Viewpoints sited to maximise visitor experience with due regard to sensitivity of habitat and visual impact on the skyline/flanks of the Peaks.	The aspiration is to allow walkway canopies to develop and close creating an 'immersive' experience in the cloud forest. Viewpoints will allow access to open views and also to specific habitat features away from main pathways. Visual impact of any future structure including temporary shelters needs to be considered.

Feature	Attribute(s)	Current	Target(s) for attribute	Main factor(s)	Target for main factor(s)	Comments
Historic features	Historic structures are present including paths.	Objects known but unrecorded, paths largely unknown and some overgrown with invasive flax.	Structures recorded Inclusion in Historic Environment Record.	Degradation through acidic soils. Difficulty of access. Low recognition of value.	Identify and assess and record all features. Assess possibilities of restoration. Produce interpretation.	

3. MANAGEMENT OBJECTIVES

3a. Conservation of biodiversity objectives

3a1. Cloud forest habitat is increased in area and quality, through planting of native species to increase patch sizes, reduce fragmentation and increase connectivity, and by management of non-native invasive species, to create a self-sustaining, functioning ecosystem.

- 120 identified fragments, totalling 5600 m^2, of cloud forest habitat centred on wild trees of 'keystone' species targeted (as located and assessed through Darwin Plus project DPLUS029 and further refined through project DPLUS099).
- 100 % of fragments stabilised (no further decline) or showing habitat quality improvement (age structure, diversity, density, recruitment) after three years.
- A minimum of an additional 1 m radial restoration of cloud forest habitat area from invasive vegetation for each of the 120 fragments each year; a total increase of 21000 m^2 over five years.
- Invasive vegetation replaced by 'corridors' of connecting native habitat between adjacent fragments where proximity and terrain permit; 5000 m^2 of new habitat over five years.
- Existing maintenance programme for 5 active restoration areas is maintained.
- Effectiveness of rodent control measures monitored and improved where possible.
- Footpath margins are managed to reduce open width, restrict invasive species and improve habitat quality through targeted invasive removal and supplemental planting; 50 m of footpath improved per year.
- Footpath biodiversity impacts reduced through constructing a boardwalk surface that protects endemics and reduces fragmentation of invertebrate habitat and further spread of invasive plants.
- Develop a relationship with private landowners within the National Park boundary to (a) establish presence and value of areas of cloud forest habitat or species (b) explore means and methods of improving those areas through diversity, extent and density of coverage (c) ensure the long-term security of habitat/species (d) encourage and raise awareness of economic benefit inherent in holistic land management, benefitting from the natural resources.

3a2. The capacity of nurseries and living gene banks are increased to support restoration of the endemic flowering plant and fern assemblages, by securing the genetic 'pool' for endemic plant species and by providing a genetically diverse source of propagation material.

- The Peaks living gene bank system is expanded to provide genetically diverse seed, seedlings and cuttings representative of each endemic flowering plant species to ensure species fitness in restoration work.
- Plant output (12000) from the Peaks nursery is doubled per year for the next five years.
- Production is based on an accepted best practise for securing genetically diverse propagation materials which will be reviewed and updated based on the finds of research where uncertainty exists.
- Production is balanced across all (14) species of endemic flowering plants and (16) species of ferns to match habitat requirements.

- Production cycle is further developed to regularly produce mixed species batches of plants at correct stage for planting. Weekly output by year 5.
- The Scotland nursery will maintain its proportion of cloud forest species production relative to staff numbers. Plants produced will further strengthen living gene banks at Cassons and Scotland. Supplemental seed will be provided for the Peaks nursery where genetic integrity is lacking e.g. she cabbage, redwood & false gumwood.
- The Scotland nursery will develop protocols and undertake trials for ex-situ spore germination for critically endangered fern species.
- The Scotland nursery will maintain a gene-bank of all Peaks germplasm in long term storage; continue with its on-going programme of genetic assessment of un-assessed endemics and the genetic integrity of living gene banks.

3a3. Research, data gathering and training is carried out to inform and maximise effectiveness of restoration and management techniques.

- Pursue research to fill knowledge gaps in identification, ecology and genetics of endemic species, primarily:
    - Identification, distribution and ecology of invertebrate assemblage, particularly phytophagous invertebrates, arachnids and 'flagship' species by local invertebrate scientists and visiting specialists; Thorough genetic assessment of bellflower (*Wahlenbergia* spp.), jellico *(Berula* spp.), peak grass (*Carex* sp.), false gumwood, *Sphagnum* populations and other un-assessed endemic flowering plant species;
    - Identification and ecological function of fungal assemblage; assess the impact of horticultural use bio-inoculi;
    - Composition and ecology of epiphytic communities;
    - Soil biodiversity.
- Undertake research and data gathering that directly influences restoration methodology:
    - Relationships between specific ecological surfaces and the invertebrate community;
    - Impacts of invasive invertebrates and vertebrates on endemic flora and fauna;
    - Monitoring methods to assess value of restored cloud forest vegetation to endemic invertebrate communities.
    - Assess the role of non-native species in supporting conservation & ecological services and integrity; impact of climate change and other factors on the ecological imbalances; physiology of endemic plants and its role in adaptability to change.
    - Investigate the impact of hybridisation on species conservation and habitat restoration.
- Local staff given opportunities for training:
    - by working alongside local and visiting specialists;
    - by appropriate exchange visits with other conservation organisations;
    - on overseas courses for identified needs that can't be met locally.

3b. Water security and climate change resilience objectives

3b1. Research, data gathering and training is carried out to inform and maximise effectiveness of cloud forest restoration on improvements in water capture and peat soil production.

- Research secured to understand the relationship between cloud forest composition, topography, geology hydrogeology, hydrology, precipitation dynamics, soil moisture retention and outflow.
    - Survey water features – springs, streams, catchpits, wells, boreholes;
    - Survey geophysics of key catchments – geological data, identification of perched aquifers and water table, assess mechanisms for groundwater recharge, spring flow and base flow to streams;
    - Soil survey to provide detail on current soil conditions and build on 2018 island soil survey (DPLUS052);
    - Continue climate monitoring within the Peaks with new studies to measure rainfall interception by vegetation types, precipitation throughfall and stem flow.
- Identification of priority catchments for cloud forest restoration, including Wells Gut and Grapevine Gut, through water resource investigations.
- Trial plantings of endemic tree/fern components in the principal water sub-catchments of Grapevine Gut and Wells Gut to assess changes in mist capture, stream flows and levels and peat soil production within 2 years.
- Climate, water level and flow measurement training to increase capacity on island. Skills developed to collect accurate data in the field and interpret data sets to enable sustainable water resource management in the Peaks and across the island. Interpretation of water resource data training needed in order to evaluate the success of re-forestation and efficiency of water distribution network to reduce transmission losses.
- Collection of climate and water resource data to measure changes in mist interception and recharge to aquifers, springs and streams within restored catchments. Quantify success of cloud forest restoration for water resources and climate change mitigation.

3b2. Water capture is increased by expanding cloud forest area; water retention and stream flow control are improved by creating conditions conducive to the production of peat soils; the resilience of St Helena to the negative impacts of climate change is improved.

- Re-vegetate the Diana's Peak ridge (2000 m^2) with cloud forest species to increase the height and density of interception and reduce the evaporative effect of the bare central ridge within 5 years.
- Creation of an additional 12 ha of new cloud forest habitat and 4 ha of existing habitat diversified to promote mist interception and peat soil production above 690m within 10 years.

3b3. Development of cross sector understanding of the value of the islands water resources and cloud forest for climate change mitigation and sustainable development of an ecotourism economy.

- Communicate the benefits of managing the island cloud forest to secure a sustainable national water supply through Increasing mist interception to provide a reliable and sustainable water supply.
- Communicate the benefits of cloud forest restoration to mitigate the effects of climate change by securing habitats for endemic cloud forest species, removing invasive species and increasing the area of cloud forest.
- Develop tools to communicate the value of water to the island, its population and economy.

    - Water is seen as a free commodity, with only the costs of abstraction, storage, treatment and distribution being considered. If water is seen as a product, then the cost of production also needs to be accounted for. Mist capture is a means of increasing the production of water in a sustainable way; and
    - Costs of restoring cloud forest indicate that bringing additional water to the island through improvements in mist capture is initially more expensive than the costs of constructing water storage infrastructure, although ongoing maintenance costs will be minimal compared to maintaining infrastructure. Planning for these costs will require a change in strategic thinking across Government, the private sector and society.
- Communicate the promotional benefits of a large cloud forest restoration project:
    - Restoration of the cloud forest not only brings opportunities for improving the island's water supply, but also provides an opportunity to significantly enhance the island's international reputation for nature conservation;
    - Cloud forest restoration would also support efforts to develop an eco-tourism economy by providing evidence of the island's connection with its rich natural resource and desire to be climate change resilient;
    - Funders and stakeholders benefit from international exposure and where applicable gain evidence-based outputs against environmental obligations and commitments.

3c. Socio – economic objectives

3c1. Development of cross sector understanding of, and support for the importance of the Peaks Natural and Cultural capital.

- Develop a partnership-based collaborative effort utilizing the skills and experience of the various stakeholders engaged in the Peaks National Park.
- Engage in collaborative promotions (e.g. Health sector's exercise and well-being initiative, St Helena as a dark sky destination).
- Cross sector engagement with agencies on issues which affect the Peaks National Park (agriculture, forestry, roads, tourism, planning).
- Promote the role of the Peaks National Park and the economic value of its natural capital in providing climate change resilience and water security.
- Support initiatives to improve the international standing of the Peaks, including through exploring formal designation of part or all of the Park as a RAMSAR site.
- Establish a group to assess and regulate the Peaks as a visitor product, explore means to capture visitor numbers, feedback, needs and revenue generating opportunities.
- Collaborate with Beekeeper's Association to improve foraging capacity for honey bees.
- Develop outdoor educational learning opportunities and resource materials for students and lifelong learners
- Develop, promote and facilitate a research programme leading to a robust evidence base about the Peaks National Park and the issues affecting it.

3c2. Provide appropriate infrastructure to enhance visitor experience and safeguard the Peaks environment.

- Install structures to improve access and enhance physical exploration of the Peaks
    - Construct a visually-sensitive and easy-to-maintain boardwalk loop trail at Diana's Peak to secure year-round safe access, minimise visitor impact of increased numbers of tourists and reduce invasive species management costs;
    - Upgrade entrance and access at George Benjamin's Arboretum;
    - Upgrade entrance and access to High Peak;
    - Establish a series of unobtrusive viewpoints, looking outwards to landscape or looking inwards to particular habitat feature. These will complement the aim of making a more immersive experience by encouraging canopy closure along paths.
- Create focal points to promote and provide interpretation of the Peaks
    - Provide appropriate unobtrusive interpretation and information for visitors at key points within the Peaks – consider digital means of provision;
    - Clearly identify access points to the Peaks with signage, safety information and with secure gates or stiles to exclude stray grazing animals;
    - Explore options for creating an interpretation centre (possibly at the Scotland nursery) to showcase the Peaks and their unique species to those less able to visit the Park in person.
- Pro-actively monitor and maintain infrastructure
    - Assess the need and potential sites for additional car parking in line with increasing visitor numbers;
    - Undertake annual inspection and maintenance programme for built infrastructure.

3c3. Recognition and awareness of and public engagement with the Peaks National Park.

- Raise profile of Peaks conservation achievements locally and internationally through:

- International media output, social media, journal articles and partner organisation articles;
- Local media output: At least one local and one SHG press release annually, promote achievements on radio;
- Participation in relevant UK, UK Overseas Territories & international environmental conferences
- Participation in other relevant fora to showcase conservation work on Peaks;
- Hosting a Peaks based international master class workshop on habitat restoration;
- Promote cloud forest mist interception as world class sustainable water supply solution.

- Develop engagement of local community and visitors with the Peaks:
    - Host a whole community planting event highlighting the importance of the Peaks for water security (tie in with 2021 Napoleonic commemorative events for maximum exposure);
    - Host bi-annual open day alternating with Scotland nursery;
    - Provide opportunity for at least one group visit to the Peaks from each school every year supported by outreach educational events into the schools;
    - Provide volunteer opportunities in conservation;
    - Establish a community planting area on the Peaks, possibly tied to a donation/adoption scheme;
    - Promote Peaks nursery as part of visitor experience;
    - Provide background information including bio-security guidelines, conservation aims, value of ecosystem services for tourism, visitors, researchers and tour operators;
    - Support events such as festivals of walking and running;
    - Organise an annual photographic competition with themes to promote the Peaks;
    - Hold design competitions for: Peaks National Park logo; future boardwalk and viewpoint vision; visitor centre design ideas.

- Recognise the historic values within the Peaks National Park:
    - Map all historic features and record in Heritage Environment Register;
    - Implement heritage feature restoration measures where possible;
    - Provide interpretation of historical timeline and features.
- Collaborate with agriculture and forestry land managers:
    - Map land uses within the peaks (land cover, management, responsible entities etc.) and identify agriculture and forestry parcels with high biodiversity and/or economic value or potential
    - Identify and explore areas for collaboration to deliver on the vision of this plan
    - Explore formal agreements with land managers, as well as other mechanisms, to improve potential benefits for all

4. WORK PROGRAMME

4a Conservation Work Programme for the duration of this Plan

Definition of priorities tabulated below:

1: **Essential** actions. Actions which we are legally bound to undertake, actions required to achieve or maintain favourable condition, essential habitat management which would lead to immediate deterioration of the habitat if not undertaken.

2: **Important** actions. Actions which are important for the routine management of the park, including habitat management which could be missed for one year without immediate deterioration of conservation interest.

3: **Desirable** actions. Actions which could be undertaken after all priority 1 and 2 actions are complete, and if time and other resources become available

Definition of organisations tabulated below:

EMD	Environmental Management Division (St Helena Government)
HR	Human resources (St Helena Government)
SHNT	St Helena National Trust
FRS	Fire & Rescue Service (St Helena Government)
PH	Public Health Directorate (St Helena Government)
Tourism	Tourism Directorate (St Helena Government)
Bio-sec	Bio-security Section (St Helena Government)
ANRD	Agriculture & Natural Resources Division (St Helena Government)
SHRI	St Helena Research Institute (St Helena Government)
Connect	Connect St Helena, water and electricity service provider
Overseas Partners	Regular partners in terrestrial environmental work including: Royal Society for Protection of Birds, Royal Botanic Gardens Kew, Buglife, Centre for Ecology & Hydrology, Joint Nature Conservation Committee, IUCN Mid Atlantic Island Invertebrate Specialist Group

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
3a1. Cloud forest habitat is increased in area and quality, through planting of native species to increase patch sizes, reduce fragmentation and increase connectivity, and by management of non-native invasive species, to create a self-sustaining, functioning ecosystem									
	Monitor extent and quality of remaining cloud forest habitat fragments centred on keystone trees	Geo-referenced baseline database. Route network for site access. Bi-annual progress surveys.	EMD SHNT	1		1		1	Methodology developed from DPLUS029 survey work. Incorporate elements relevant to invertebrate conservation strategy.
	Stabilise or improve identified cloud forest habitat fragments	56500 m^2 of fragmented cloud forest secured. Protocols for invasive control, propagation and restoration planting including invertebrate habitat considerations. Habitat improvement programme.	EMD SHNT	1	1	1	1	1	Develop protocols and experience gained from DPLUS029
	Radial restoration of additional habitat area for each cloud forest fragment.	21000 m^2 of additional cloud forest habitat. Reduced invasive species loading.	EMD	1	1	1	1	1	Develop protocols and experience gained from DPLUS029 and EU- funded South Atlantic Invasive Species project (EDF9).
	Create connecting 'corridors' of native habit between adjacent cloud forest fragments.	5000 m^2 of additional native habitat. Improved gene flow between sub-populations.	EMD	2	2	2	2	2	Connections focussed on 'best gain' options where impact of proximity and terrain are most favourable.
	Continue maintenance programme for 5 existing active restoration areas.	Existing areas of habitat restoration secured and consolidated.	EMD	2	2	2	2	2	Existing areas currently maintained under SHG recurrent programme, part of previous Peaks management planning.

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
	Rodent control	Review of existing control programme and identification of improvements to effectiveness	EMD	1	1	1	1	1	Rabbits, rats and mice damage and destroy native vegetation, predate on native invertebrates and consume seed from endangered species.
	Footpath margin management	Footpath width reduced to 1 m. Remaining width (up to 4 m) converted to native vegetation. 50 m length per year.	EMD Volunteers	3	3	3	3	3	Reduction in width will reduce long term maintenance requirement and assist with canopy closure over paths
	Footpath boardwalk creation to reduce biodiversity impacts	Footpaths through highest value and most sensitive biodiversity habitats have visually-sensitive and low-maintenance boardwalks built	EMD		2	2	2		
	Develop a relationship with other landowners within the National Park boundary to (a) establish presence and value of areas of cloud forest habitat or species (b) explore means and methods of improving those areas through diversity, extent and density of coverage (c) ensure the long term security of habitat/species.	Landowner working group. Geo-referenced database of cloud forest habitat and species outside of SHG conservation management. MoUs with landowners to secure important biodiversity.	SHG Land owners		3				
3a2. The capacity of nurseries and living gene banks are increased to support restoration of the endemic flowering plant and fern assemblages, by securing the genetic 'pool' for endemic plant species and by providing a genetically diverse source of propagation material.									
	Expand the Peaks living gene bank.	A comprehensive living gene bank representative of and providing security for all endemic cloud forest species sub-populations Seed and cutting resource for nursery production.	EMD,	1	1	1	1	1	Critical resource for ensuring diverse propagation and restoration work

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
	Nursery propagation of native plants.	Current production (12000) doubled each year. Full range of flowering plant (14) and fern (16) species in continual production. Production cycle producing mixed species batches of plants at correct stage for planting. Weekly output by year 5. Scotland nursery maintains its cloud forest species production relative to staff numbers, and strengthens living gene banks.	EMD	1	1	1	1	1	Having sufficient numbers of genetically diverse plants is a key driver for restoration work.
	Trial ex-situ spore germination for critically endangered fern species at Scotland nursery.	Clean room Growth media steriliser Protocols for fern propagation.	EMD	3	3	3	3	3	
	Scotland nursery maintains a gene-bank of all Peaks germplasm in long-term storage.	Appropriate storage and record-keeping facilities	EMD	3	3	3	3	3	
3a3. Research, data gathering and training is carried out to inform and maximise effectiveness of restoration and management techniques									
	Identification, distribution and ecology of invertebrate assemblage, particularly phytophagous invertebrates, arachnids and 'flagship' species	Practical guides on invertebrate habitat niches and restoration protocols for invertebrates	SHNT, EMD Partners	1	1	1	1	1	These guides will inform the habitat management protocols for vegetation.

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
	Thorough genetic assessment endemic flowering plant species of bellflower (Wahlenbergia spp.) complex, jellico (Berula spp.), Peak Grass (Carex sp.) False Gumwood, Sphagnum populations and other un-assessed;	Genetic status of known bellflower (Wahlenbergia spp.) complex. Jellico (Berula spp.), Peak Grass (Carex sp.) false gumwood, and Sphagnum populations.	EMD Partners	2	2	2	2	2	These are priorities, it would be beneficial to have remaining species assessed too.
	Identification and ecological function of fungal assemblage.	Practical guides on identification and function of Peaks fungi	EMD Partners	2	2	2	2	2	The importance and contribution of fungi to the Peaks ecosystem remains a significant knowledge gap.
	Understanding the composition and ecology of epiphytic communities.	Practical guides on restoration protocols for epiphytes. Habitat quality indicators	EMD Partners	3	3	3	3	3	Epiphytic micro-habitats are a key germination component for self sustaining cloud forest.
	Soil biodiversity survey	Practical guide for assessing soil biological components and their relevance. Geo-referenced baseline database.	EMD SHNT Partners	3	3	3	3	3	
	Research relationships between specific ecological surfaces and the invertebrate community;	Practical guides on invertebrate habitat niches and restoration protocols for invertebrates	EMD SHNT Partners	2	2	2	2	2	
	Investigate impacts of invasive invertebrates (and vertebrates) on endemic flora and fauna and assess mitigation measures	Practical guide for control of invasive fauna	EMD SHNT ANRD Partners	3	3	3	3	3	

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
	Monitoring value of restored cloud forest vegetation to endemic invertebrate communities.	Geo-referenced database Potential habitat quality indicator	SHNT EMD Partners	1	1	1	1	1	
	Investigate the impact of hybridisation on species conservation and habitat restoration	Practical guide on hybridisation and revision to restoration protocols as necessary	EMD Partners	3	3	3	3	3	
	Staff training alongside local and visiting specialists	Skills transfer Institutional knowledge base	EMD SHNT Partners	2	2	2	2	2	
	Organise exchange visits with other conservation organisations	Skills transfer Skills network Institutional knowledge base	EMD SHNT Partners	3	3	3	3	3	
	Attend overseas training for specialised needs	Skilled staff Specialist knowledge Innovation	EMD SHNT Partners	2	2	2	2	2	

4b. Water security and climate change resilience work programme for the duration of this Plan

Definition of priorities tabulated below:

1: **Essential** actions. Actions which are required to achieve increased mist capture and provide evidence of improvements in water supply through cloud forest restoration.

2: **Important** actions. Actions which are important for the routine management of water resources, the communication of benefits to islanders and support development of international reputation.

3: **Desirable** actions. Actions which will enhance our understanding of the water environment in the Peaks and support interpretation of water resource data.

Definition of organisations tabulated below:

SHG	St Helena Government
Connect	Connect St Helena, water and electricity service provider
SHRI	St Helena Research Institute (St Helena Government)
Arctium	UK Environmental Consultancy
EMD	Environmental Management Division (St Helena Government)
RSPB	Royal Society for Protection of Birds
MO	Meteorological Station Bottomwoods St Helena (St Helena Government)
ENRC	Environment & Natural Resources Committee (St Helena Government)
CEH	Centre for Ecology & Hydrology
SHNT	St Helena National Trust
ANRD	Agriculture & Natural Resources Division (St Helena Government)
Partners	On and off island advocates, advisors and funders including: St Helena Legislative Council, St Helena Government Press Office, Joint Nature Conservation Committee, academic institutions, Darwin Initiative

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
3b1. Research and data gathering carried out to inform and maximise effectiveness of cloud forest restoration on improvements in water capture and peat soil production.									
	Funding secured to understand the relationships between cloud forest composition, topography, geology hydrogeology, hydrology, precipitation, soil moisture retention and base flow	Funding secured. Projects implemented.	SHG, Connect, SHRI, Arctium, RSPB, Partners.	1					All tasks in 4b except stream flow and water monitoring are subject to securing external funding from an off-shore source.
	Identify key water resource catchments	Confirm key water resource catchments that need monitoring.	Connect, Arctium	1					Catchments in Peaks which provide significant proportion of the islands water supply.
	Water features survey	Identify water control structures, spring, streams, wells, boreholes in Peaks in key water resource catchments.	Connect, Arctium	1					Use DPLUS051 project output as basis of the water features survey.
	Design water monitoring network and install equipment	Surface water level and flow, groundwater level and climate monitoring equipment.	Connect, Arctium, RSPB. ANRD	1					Use DPLUS051 monitoring locations to start monitoring in Wells Gut and Grape Vine Gut in month 1.
	Develop Water Resource Management Plan	Water resource management plan for Peaks.	Connect, Arctium, EMD	1					Water resource management plan to identify maintenance and management of water resource infrastructure, monitoring requirements, development of minimum environmental flows for surface water.

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
	Cloud Forest Restoration for Water Supply	Select candidate restoration areas above 690m contour.	Connect, Arctium, EMD, SHNT, Partners	1					Staged process based upon available data.
	Stream flow and level monitoring	Water level logger and spot flow gauging.	Connect	1	1	1	1	1	Use DPLUS051 monitoring locations to start monitoring in Wells Gut and Grape Vine Gut in month 1.
	Spring flow monitoring	Water flow monitoring.	Connect	1	1	1	1	1	Use DPLUS051 monitoring locations to start monitoring in Wells Gut and Grape Vine Gut in month 1.
	Groundwater level monitoring	Identify existing boreholes, new boreholes, drilling programme and monitoring.	Connect	1	1	1	1	1	Funded through a Darwin Plus grant application.
	Water quality assessment	Sampling and analysis of surface water and groundwater sources.	Connect	2	2	2	2	2	Use some DPLUS051 monitoring locations as part of a wider monitoring network. Simple water quality analysis based on island chemistry lab facilities and mobile monitoring equipment.
	Climate monitoring	Rainfall, mist, temperature and humidity.	ANRD, EMD, MO	1	1	1	1	1	Assist with water balance and interpret change in soil quality over time and water available for water supply. Use DPLUS051 monitoring locations to start monitoring in Wells Gut and Grape Vine Gut in month 1.
	Geophysics Survey	Map sub-surface to min 10m depth. Aerial or ground.	SHRI, Connect, Arctium, Partners.	3	3				Determine perched aquifers, spring lines, aquifer connectivity.

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
	Canopy Climate Monitoring	Funded through a new Darwin Plus grant application. Canopy drip, trunk flow etc.	MO, Arctium, CEH	3	3	3	3	3	Darwin Plus grant application in July 2019 with UK Met Office, Bottom Woods Met station, Arctium and CEH. Follow on from DPLUS051 and link in with UK Met Office island climate project.
	Soil Survey	Sample and map soils within the Peaks NCA in Year 1 and in restoration areas. Assess benefits to soil structure from cloud forest restoration.	MO, Arctium, CEH	3				3	Identify areas of good quality peat within the Peaks and understand water retention. Use DPLUS052 outputs to support work.
	Geology and Hydrogeology Interpretation	Refined water balance for the Peaks. Describe aquifer system beneath the Peaks.	Connect, Arctium, Partners.	1	1				Support selection of water supply restoration areas. Identify where missing water is going.
	Understand existing flow rates to establish baseline data.	Stream level and flow monitoring equipment installed, and data collected regularly.	Connect, Arctium	1	1	1	1	1	Interpretation of data as part of regular surface water monitoring.
	Training – staff development	Increased capacity on island to monitor, measure and interpret water resource and climate data.	Connect, Arctium	1					Deployment of all water level and flow monitoring equipment currently in storage on St Helena. National water monitoring network.
	Assess mist capture potential and peat soil production of cloud forest vegetation within 2 years.	Select trial restoration areas for increased water supply. Trial plantings of endemic tree/fern components in the principal water sub-catchments. Monitoring and analysis programme implemented.	EMD, Connect, Arctium, ARND, MO, EMD, SHNT Connect, SHRI.	1	1				Connect to lead all surface water monitoring. ANRD to collect climate data from monitoring network. UK Met Office and Bottom Woods MET station share climate data from island weather station.

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
	Collect climate and water resource data to measure changes in mist interception and recharge to aquifers, springs and streams within restored catchments. Quantify success of cloud forest restoration for water resources and climate change mitigation.	Collection of monitoring data. Interpretation of data. Annual report and 5 year report. Confirmation of net gain in mist and stream flow/spring flow corresponding to restoration.	Connect, Arctium, ANRD, CEH, Bottom Woods Met Station	1	1	1	1	1	See 3b1 for all tasks concerning monitoring data collection and interpretation.
3b2. Water capture is increased by expanding cloud forest area. Water retention and stream flow control are improved by creating conditions conducive to the production of peat soils; the resilience of St Helena to the negative impacts of climate change is improved									
	Re-vegetate the Diana's Peak ridge with cloud forest species to increase the height and density of interception and reduce the evaporative effect of the bare central ridge within 5 years.	Mist interception along length of the prominent ridge of the Peaks. Reduction of moisture evaporation from exposed central ridge	EMD, SHNT	1	1	1	1	1	See 3b1 for selection of areas for Cloud Forest restoration.
	Select restoration areas locations above 690m contour.	Restoration programme	EMD Connect						
	Clear non-native vegetation and establish cloud forest habitat to promote mist interception and peat soil production. Expand continuous area of cloud forest to mitigate negative impacts of habitat loss through climate change.	12ha of non-native and degraded vegetation above 690m restored to cloud forest habitat over 10 years 4ha of existing native habitat diversified to increase mist capture Additional water capture (33%) and improved retention and flow control within 10 years.	EMD, SHRI, Connect, RSPB, Partners	1	1	1	1	1	See 3b1 for selection of areas for Cloud Forest restoration.

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
3b3. Development of cross sector understanding of the value of the islands water resources and cloud forest for climate change mitigation and sustainable development of an ecotourism economy.									
	Develop tools to communicate the value of water to the island, its population and economy.	Outcomes used to support other objectives in 3b3. Educational materials. Lessons/presentations to Primary Schools and Secondary School. Meetings/presentations with ENRC and other leaders within SHG and Community.	SHG, ENRC, Connect, SHNT, Arctium, RSPB, Partners	2	2	2	2	2	
	Communicating the benefits of managing the island cloud forest to secure a sustainable national water supply and mitigate climate change.	Public education through communication and regular reporting of progress. Monitoring data needed as evidence.	SHG, ENRC, Connect, SHNT, Arctium, RSPB, Partners	2	2	2	2	2	
	Communicate promotional benefits to the island from a large cloud forest restoration project.	Prepare evidence for international conferences to promote sustainable development, ecotourism and climate change resilience. Attend conferences and international political and tourism events to spread message. Attain international sustainability accreditation as an eco-island. Attain UN SDGs 6, 13, 15	SHG, ENRC, Connect, SHNT, Arctium, RSPB, Partners	2	2	2	2	2	SHG take lead with strategic support from ENRC and elected members, with technical support and guidance of all other organisations and partners. Collaborative working to increase international awareness and economic development opportunities arising from St Helena's cloud forest restoration project and its benefits.

4c. Socio-economic work programme for the duration of this Plan

Definition of priorities tabulated below:

1: **Essential** actions. Actions which we are legally bound to undertake, actions required to achieve or maintain favourable conditions, essential actions which would lead to immediate deterioration of Park value for users if not undertaken.

2: **Important** actions. Actions which are important for the routine provision of services for users of the park, including actions which could be missed for one year without immediate deterioration of Park value for users.

3: **Desirable** actions. Actions which could be undertaken if time and other resources become available which would enhance the status of the park and extend the range or extent of values for Park users

Definition of organisations tabulated below:

SHG	St Helena Government
Tourism	Tourism Directorate (St Helena Government)
SHRI	St Helena Research Institute (St Helena Government)
JNCC	Joint Nature Conservation Committee
Health	Health Directorate (St Helena Government)
Roads	Roads section (St Helena Government)
Planning	Planning Office (St Helena Government)
PO	Press Office (St Helena Government)
EMD	Environmental Management Division (St Helena Government)
RSPB	Royal Society for Protection of Birds
Kew	Royal Botanic Gardens Kew
ENRD	Environment & Natural Resources Directorate (St Helena Government)
Legco	St Helena Legislative Council
SHNT	St Helena National Trust
ANRD	Agriculture & Natural Resources Division (St Helena Government)
HS	St Helena Heritage society
Museum	The Museum of St Helena
Landowners	Private and institutional managers, owners and tenants of land in or directly adjacent to the Peaks National Park

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
3c1. Development of cross sector understanding of and support for the importance of the Peaks Natural and Cultural capital									
	Develop a partnership-based collaborative effort building skills and experience.	Stakeholder group of various stakeholders engaged in Peaks National Park.	All stakeholders.	3					
	Engage in collaborative promotions.	Peaks promoted in appropriate initiatives e.g. Tourism - Running and walking festivals, Dark Skies. Health – Exercise and well being.	Appropriate agencies: Tourism, Health.	2	2	2	2	2	
	Cross-sector engagement on Peaks issues.	Strategies for improving agriculture/forestry/road verge areas for biodiversity. Strategy for access and parking capacity.	ANRD, EMD, Roads, Landowners, Tourism.	2	2	2	2	2	
	Promote value of Peaks natural capital for climate change resilience and water security.	Economic evaluation for SHG sustainable development planning.	JNCC, SHRI.	2					
	Improve the status of the Peaks through exploring appropriate designation (RAMSAR).	Contribution to designation process with details of Peaks values.	SHG.	3	3	3	3	3	Peaks could also potentially contribute to St Helena's World Heritage Site bid
	Assess and regulate the Peaks as a visitor product.	User group forum to consider perceived needs, statistics on numbers and experience ratings and potential revenue generation.	Tourism, tour operators, EMD, SHNT, Legco.	2	2	2	2	2	See Appendix 7 for template

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
	Collaborate with Beekeeper's Association to improve foraging capacity for honey bees	Produce flower calendar mapping year round pollen sources on the peaks. Produce trial endemic forest and compare honey production with neighbouring non native species	EMD, Beekeepers, Landowners		3	3	3	3	
	Develop outdoor educational learning opportunities and resource materials for students and lifelong learners	Training & volunteering opportunities. Resource materials	Education, EMD, SHNT	3	3	3	3	3	
	Develop, promote and facilitate an applied research programme leading to a robust evidence base about the Peaks National Park and the issues affecting it.	Collaboratively agreed report on prioritised research needs.	SHRI, EMD, SHNT, Kew	2	2	2	2	2	
3c2. Provide appropriate infrastructure to enhance visitor experience and safeguard the Peaks environment.									
	Install structures to improve access and enhance physical exploration of the Peaks.	Boardwalk loop trail at Diana's Peak to secure year-round safe access, minimise visitor impact and reduce invasive species management costs. Network of unobtrusive viewpoints, looking outwards to landscape or looking inwards to particular habitat feature.	Tourism, EMD, SHNT Tourism, EMD, SHNT		3 3				These will complement the aim of making a more immersive experience by encouraging canopy closure along paths. Existing structures dilapidated and increasingly hazardous

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
		Secure steps or ramp and gate/signage at George Benjamin's Arboretum.	Tourism, EMD, SHNT	1					
		Secure steps and signage at entrance to High Peak.	Tourism, EMD, SHNT	1					
	Create focal points to promote and provide interpretation of the Peaks	Unobtrusive interpretation and information points for visitors at key points within the Peaks.	Tourism, EMD, SHNT, RSPB		3	3			Consider digital means of provision
		Standardised entry point to develop Peaks 'brand' Includes litter receptacles, signage to identify entrance, directions and safety information and secure gates or stiles to exclude stray grazing animals.	Tourism, EMD, SHNT, RSPB		3	3			
		Options for an environmental visitor centre to showcase the Peaks and their unique species accessible to those less able to visit the Park in person.	Tourism, ENRD, RSPB				3	3	
	Pro-actively monitor and maintain infrastructure	Proposals for additional car parking in line with increasing visitor numbers.	Tourism, EMD, Planning, Roads, Landowners Tourism				2	2	

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
		Discrete annual safety inspection and maintenance programme for built infrastructure.		1	1	1	1	1	
3c3. Recognition and awareness of, and public engagement with the Peaks National Park									
	Raise profile of Peaks conservation achievements locally and internationally.	International media (Social media, Journal articles, partner organisation articles.	PO, SHNT, EMD, Projects, Partners.	3	3	3	3	3	
		Local media (Press releases, radio slots).	PO, Local media, SHNT, EMD, Projects, Partners.	2	2	2	2	2	
		Presentation at relevant international conferences.	SHRI, EMD, SHNT, Projects, Partners.	3	3	3	3	3	Promote cloud forest mist interception as world class sustainable water supply solution.
		Presentation at local conferences, meetings.	SHRI, EMD, SHNT, Projects, Partners.	2	2	2	2	2	
		Peaks based international master class workshop on habitat restoration.	EMD.			3			

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
	Develop engagement of local community and visitors with the Peaks.	Whole community planting event highlighting the importance of the Peaks for water security.	EMD, Napoleonic Team, Office of Chief Secretary, Tourism.		3				Tie in with 2021 Napoleonic commemorative events for maximum exposure.
		Bi-annual Peaks open day alternating with Scotland nursery.	EMD.			3		3	
		At least one group visit from each school every year.	EMD, Education.	2	2	2	2	2	
		Schools outreach events	SHNT, Education.	2	2	2	2	2	
		Conservation volunteer programme.	EMD, SHNT, Tourism.		3	3	3	3	
		Community planting area	EMD, SHNT, Tourism.		3	3	3	3	Donation/adoption scheme – revenue
		Nursery tours	Tourism, tour operators.	2	2	2	2	2	Opportunity for specialist guide?
		Viewpoint platforms	EMD, Tourism, tour operators Tourism, EMD		3	3			Location and design critical
		Interpretation and information on Peaks	Tourism, EMD, ANRD		2	2			Needs to be innovative and not detracting

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
		Background information including bio-security guidelines, conservation aims, value of ecosystem services and guidance for tourism, visitors and tour operators		1	1	1	1	1	
		Annual Peaks themed photographic competition	Tourism, Sponsor	3	3	3	3	3	Possible feature in RSPB/Kew publications
		Design competitions for: Peaks brand logo; future boardwalk vision; viewpoint design; visitor centre design ideas.	Tourism, Sponsor		3				
	Recognise the historic values within the Peaks National Park	Historic features mapped	HS, Museum, GIS	3					
		Heritage Environment Register updated	HS, Museum, SHNT	3					
		Assessment of feature restoration possibilities	HS, Museum, SHNT, EMD, Tourism		3				
		Interpretation information for historical timeline and features	HS, Museum, SHNT, Tourism		3				

Objective	Activity	Outputs	Who	2019/20	2020/21	2021/22	2022/23	2023/24	Comment
	Collaborate with agriculture and forestry land managers:	Map land uses within the peaks (land cover, management, responsible entities etc.) and identify agriculture and forestry parcels with high biodiversity and/or economic value or potential	GIS, EMD	2					
		Identify and explore areas for collaboration to deliver on the vision of this plan	EMD, ANRD, Landowners		2	2	2	2	
		Explore formal agreements with land managers, as well as other mechanisms, to improve potential benefits for all	EMD, ANRD, Landowners		2	2	2	2	

5. RISK ASSESSMENT

This is a preliminary risk assessment compiled during the drafting of the management plan. The risk assessment section of this plan should be considered 'dynamic' and can be improved by input from stakeholders. The assessment should be revisited for each revision of the plan and kept under review during the plan implementation as risks become better defined.

Personnel - The physical presence of people within the Peaks National Park. This will include but is not limited to Peak park staff, guided tours, tourists, school groups, visiting scientists and project staff. Potential risks are identified below.

Likelihood and impact ratings: L – Low, M – Medium, H - High

Category	Hazard	Risk	Likelihood	Impact	Mitigation
Personnel - Physical	Uneven and or slippery ground and slopes. Trip hazards.	Slip, trip, fall	L	M	Interpretation warnings, Clearly marked routes. Regular route maintenance. Boardwalks
	Working on steep terrain	Fall, injury, death	L	H	Provision of appropriate PPE Specialist training. Team working. Evacuation plan.
	Lifting/Carrying tools/plant material	Injury	L	M	Provision of appropriate equipment for safe carrying. Properly secured tools. Training in manual lifting
	Bladed manual and mechanical tools	Injury	M	M	Provision of appropriate PPE. Appropriate training including first aid. Maintenance programme. Evacuation plan.
	Breakaway of flax clumps/rocks	Injury, death	L	H	Monitor and remove flax from priority areas. Restrict access.
	Boardwalk/Steps	Slip, fall	L	L/M	Annual inspection and rectification programme
Personnel - Chemical	Fuels and oils	Spillage	L	L	Provision of appropriate PPE. 'Spill proof' containers. Protocol for clean up. Appropriate secure storage.

Category	Hazard	Risk	Likelihood	Impact	Mitigation
	Agrochemicals- pesticides, fertilisers	Exposure	L	M/H	Provision of appropriate PPE. Appropriate training and revisions. Use of signage. Restrict access to affected areas. Appropriate secure storage of stock.
	Baits	Exposure	L	L/M	Appropriate signage identifying bait type in use/how set. Bait containers marked hazardous. Appropriate secure storage of stock.
Personnel - Biological	Invertebrates Wasp, spiders	Bite, sting	L	L	General guidance for Peaks users
	Rodents	Weil's disease	L	H	
	Plants	Cuts, scratches	L	L	
Biodiversity - Political	Competing priorities	Reduced support	M	H	Promoting biodiversity as an economic asset and key component of ecosystem services. Local and international advocacy. Exploring funding opportunities.
Biodiversity - Technical	Knowledge gaps	Inappropriate methodology and actions	M	M	Working with partner organisations. Developing needs based research programme. Data collection, analysis and publication.
Biodiversity - Physical	Off track travel	Breakage, trampling of vegetation	M	L	Interpretation warnings, Clearly marked routes. Regular route maintenance. Boardwalks. Staff training.
	Collection of native flora or fauna	Loss of genetic diversity, destruction of ecosystem	L	H	Interpretation warnings, education, enforcement of Environmental Protection Ordinance.
	Breakaway of flax clumps/ rocks	Destruction of habitat, loss of species.	M	M	Monitor and remove flax from priority areas. Consider translocation or cloning if necessary.

Category	Hazard	Risk	Likelihood	Impact	Mitigation
	Development	Destruction of habitat	L	L	Enforcement of Land Planning Development Controls, Comprehensive environmental impact assessments.
Biodiversity - Chemical	Agrochemicals	Impairment or destruction of native species	L	M	Specialist training. Integrated pest control management. Monitoring and feedback.
Biodiversity - Biological	New non-native species	Introduction and establishment	H	M	National bio-security measures, Interpretation warnings, Regular route maintenance and monitoring, Restrictions on soil/plant translocations. Secure Park access against itinerant grazers.
	Established non-native species	Change in status	M	H	Ecosystem approach to conservation/restoration work. Maintain consistent input to control invasives. Monitoring and feedback.
	Genetic Diversity	Loss of representative individuals	H	H	Secure existing genetic stock in situ and establish ex situ collections. Promote genetic diversification in restoration work. Promote natural gene flow by re-connecting habitat fragments.
Water - Climate	Rainfall	Irregular, reducing	M	H	Secure water supply sustainably through increased mist capture.

6. REQUIREMENTS FOR MONITORING, REPORTING, AND ASSESSMENT

As per the *Environmental Protection Ordinance*, the Chief Environmental Officer is ultimately responsible for the review of this management plan as required. All named organisations however have a responsibility to include appropriate monitoring, assessment and recording for all activities and actions.

This is an overarching plan involving collaboration between multiple stakeholders both on-island and overseas. Significant resources will be needed to implement this plan, and these will be sourced from a number of funders. Securing funding will require clear project management structures and an agreed reporting regime to be developed. All reports produced for funders should be made publicly available. Additional projects employed for the implementation of aspects of the plan will be expected to publicly report on progress against plan objectives. Any datasets generated or extended will be lodged on island to enhance institutional knowledge.

Each sector will be responsible for identifying the lead coordinator to collate reporting data:

- St Helena Government's Terrestrial Conservation Officer will coordinate the reporting related to the conservation of biodiversity aspects of the plan.
- Annual Tourist Office statistics and feedback and reporting should play an increasingly directive role as the plan rolls out.
- Connect Saint Helena are currently responsible for monitoring and reporting on water outflows from the Peaks and will coordinate the additional reporting arising from the water security aspects of the plan.

The Chief Environmental Officer has an obligation under the Environmental Protection Ordinance to publish a 'state of the environment' report on a two-yearly cycle and with some collaboration the reporting schedules above should be able to directly support this.

It is anticipated that the newly created St Helena Research Institute will be instrumental in coordinating some of the research needs under this plan and will ensure the data and findings from all research are secured and accessible.

In the interests of continuing support for the national conservation areas and the activities under this plan it is suggested that a stakeholder group provide a presentation to Legislative Council at least once during and again on completion of the plan lifespan. Major implementation projects should do likewise at the beginning, middle and end of their projects.

Appendix 1: SITE LOCATION AND DESIGNATION

A1.1. Location

The location of the Peaks National Park is shown in Map 1 (page 5) and relevant details given in the table below.

Site name	The Peaks National Park
Area (ha)	291 ha
Altitude range (m)	470 - 823 m
Grid ref (centre of reserve)	15° 58’19” S 5°43’06” W

A1.2. Designations

Details of statutory, planning and other designations are given in the following table and shown in Map 3 (Appendix 6).

The Peaks National Park is one of 23 National Conservation Areas designated under the 2012 Land Development Control Policy. It is one of the two National Parks designated on St Helena that are defined as '*Areas for landscape conservation and community development, conserving and protecting key biodiversity areas and ecosystem service values including watershed. They contain some of the most iconic island features and views. Also include multiple ownership and land-uses objectives'*

Designation	**All or part of site?**	**Name and other details**
Land Development Control Plan (LDCP) Zone	All	GH Green Heartland
LDCP National Conservation Area	All	NP2 Peaks National Park
LDCP Primary policies	All	GH1; AF1;NH1;BH1
RAMSAR (proposed)	Part	St Helena Central Peaks UK52001
National Park	All	The Peaks National Park
World Heritage Site (WHS)	All	St Helena 2012 Tentative list No. 5675
National Conservation Area	All	NP2
Heritage site	Part	Some military artefacts, cultural use; Taylor's Gate; historical names

A1.3. Public Access

Access and public rights of way are shown in Map 5 (Appendix 6).

There is foot access to the Diana's Peak and High Peak at all times via the Post Box footpaths. (Cabbage Tree Road circuit and High Peak circuit respectively).
In addition, there is foot access to Diana's Peak via a pasture track (Solomon's) from Black Gate and via a forestry track (ANRD) from Wrangham's. Other foot access routes are recorded but not currently maintained or open.
George Benjamin's Arboretum and Cassons' Forest are accessible from the roadside at Cassons. Access to the Depot is via ANRD leased pasture and is currently restricted for airport navigational security. Access to other areas is at the discretion of landowners.

There is a small (~ 1000 m^2) public car park at Cassons. At all other access points, car parking is along the sides of narrow roads (maximum of approximately 6 vehicles at each point).

A1.4. Current issues and constraints

- Governance
  - Various mechanisms have been discussed over the past two decades for how oversight of management for the Peaks National Park and more recently the other National Conservation Areas should be implemented. Although titles and roles for the different options have been generated there remains the need to designate an 'authority', to endorse its terms of reference and powers and subscribe a budget.
- Land ownership
  - Some valuable habitat areas are privately owned. Of these some are not managed, some managed privately and some by informal arrangement are managed by government or NGO staff. A more formal agreement would help identify roles, responsibilities and risks for the parties involved.
- Water resources
  - Costs of restoring cloud forest indicate that bringing additional water to the island through improvements in mist capture is initially more expensive than the costs of constructing water storage infrastructure, although ongoing maintenance costs will be minimal compared to maintaining infrastructure. Planning for these costs will require achange in thinking across Government, the private sector and society.
  - Water is seen as a free commodity, with only the costs of abstraction, storage, treatment and distribution being considered. If water is seen as a product, then the cost of production also needs to be accounted for. Mist capture is a means of increasing the production of water in a sustainable way.
- Public Access
  - Car parking and facilities are limited and not easily scaled up if visitor numbers grow significantly.
  - Maintenance of public access routes within the Diana's Peak area by conservation staff occupies a significant amount of time and detracts from conservation operations
  - Other walks exist but have fell into disrepair and not open to the public.
  - All paths act as a route for invasive species to spread and act as a physical barrier that is insurmountable for many invertebrate species
  - A low level of vegetation damage occurs along routes of public access. More significant damage, particularly trampling and soil disturbance arises from public incursions into habitat adjacent to routes.
  - Public access routes are acting as corridors for invasive introductions from road verges and further spread and establishment within the Peaks cloud forest habitat.

Appendix 2: ENVIRONMENTAL INFORMATION

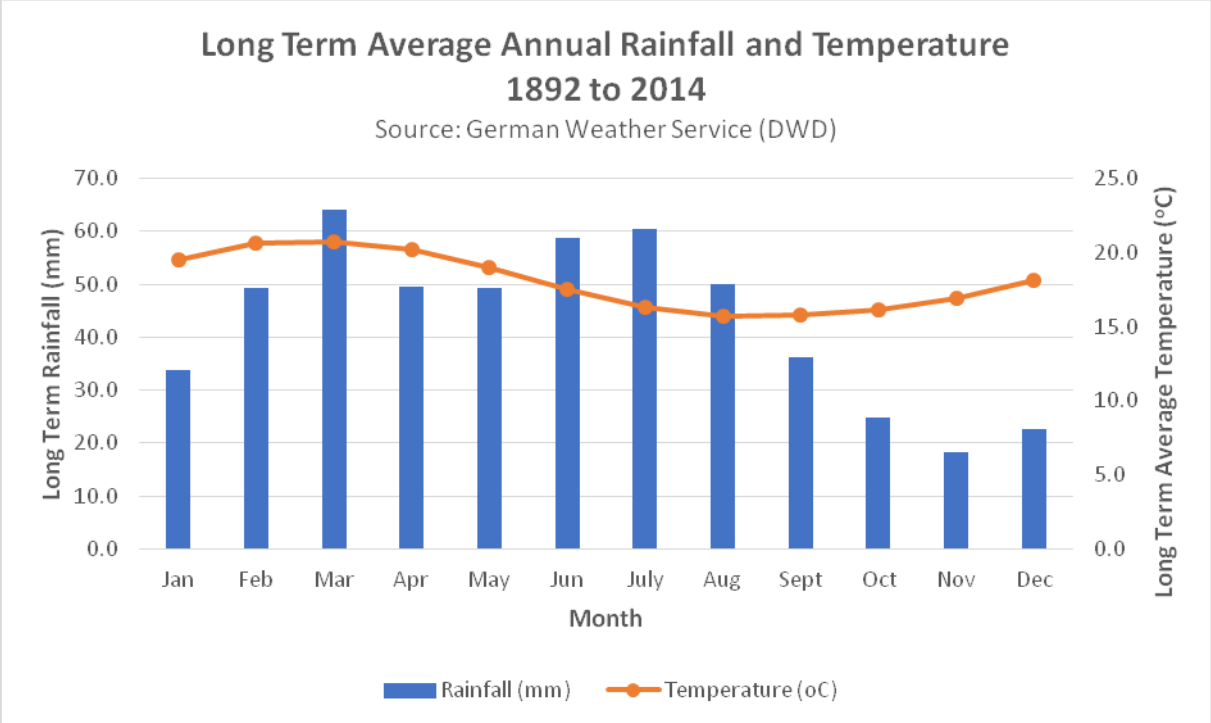
A2.1. Climate

St Helena enjoys a mild sub-tropical climate due to the South Atlantic Anticyclone (SAA) which controls weather and climate over the central South Atlantic. St Helena's sub-tropical latitude affords it fairly constant temperatures; the average annual temperature range at sea level is 21-28°C, reducing by about 1.3 degrees every 100 m rise in elevation. Rainfall is often extremely localised, creating desert-like conditions of the outer part of the island where 175mm of rain falls per year, compared to the Peaks where cloud and mist accumulate bringing 290 days of overcast conditions and an average of 1050mm of rain each year. Mean monthly temperatures since 1893 have rarely been below 15 °C or above 22 °C. The long-term average rainfall and temperature record for the island are presented in **Error! Reference source not found.** and **Error! Reference source not found.**.

Table 1: Saint Helena Long Term Average Rainfall and Temperature (1892 to 2014)

Month	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Rainfall (mm)	33.8	49.4	64.2	49.5	49.4	58.7	60.5	50.1	36.3	24.9	18.3	22.6
Temperature (°C)	19.5	20.6	20.8	20.2	19.0	17.5	16.3	15.7	15.8	16.1	16.9	18.1

Figure 1: Saint Helena Long Term Average Rainfall and Temperature (1892 to 2014)



Darwin Plus project DPLUS051 recently reported that mist comprised over 60% of recorded precipitation in the Central Peaks, with mist forming above 690mASL. Rainfall recorded at Grapevine Gut was reported being 3.9 greater in volume than at Bottom Woods Met Station in 2017 (Sansom, B. et al 2018).

A2.2. Geology, hydrogeology and soils

The island was formed from the coalescence of two basaltic shield volcanoes erupting approximately 15 million years ago, rising from a depth of approximately 4.24km below sea level to 823m above sea level. Olivine rich Basalt comprises the majority of the island's geology, appearing as lava flows inter-bedded with volcanic ash and tuff. The Peaks are located within the south-west volcano, where volcanic activity started 10 to 11 million years ago. The lowers rocks comprise pyroclastic material and lava flows (Lower Shield), underlying sequences of lava flows (Main Shield) which starts approximately 450 m above sea level. The lava flows are heavy, almost black and rich in crystals of augite and olivine. All of the rocks in the Lower and Main Shields are cut by light coloured masses (dykes and parasitic intrusions) of phonolite and trachyte, dating around 7.5 million years ago.

The rim of the Sandy Bay Complex (also known as the Central Ridge) includes Diana's Peak, Mount Actaeon, High Peak, Hooper's Ridge and White Hill. The weak basaltic rocks and bedded lavas have been highly eroded to form a broad amphitheatre valley, drained by several streams flowing into Sandy Bay.

The geology of the Peaks is mainly hidden beneath the dense tree canopy, its understorey and the peaty soil beneath. There is very little outcrop of lava and pyroclastic material to indicate the geological sequence, except for occasional exposed rock faces along the central ridge between Mount Actaeon and Cuckhold's Point. An example of such an exposed rock face is the trachyte dyke found along the road between Mount Actaeon and Diana's Peak shown in **Error! Reference source not found.** (Sansom, B. *et al* 2018).

Plate 1: Trachyte Dyke on the Central Peaks Road

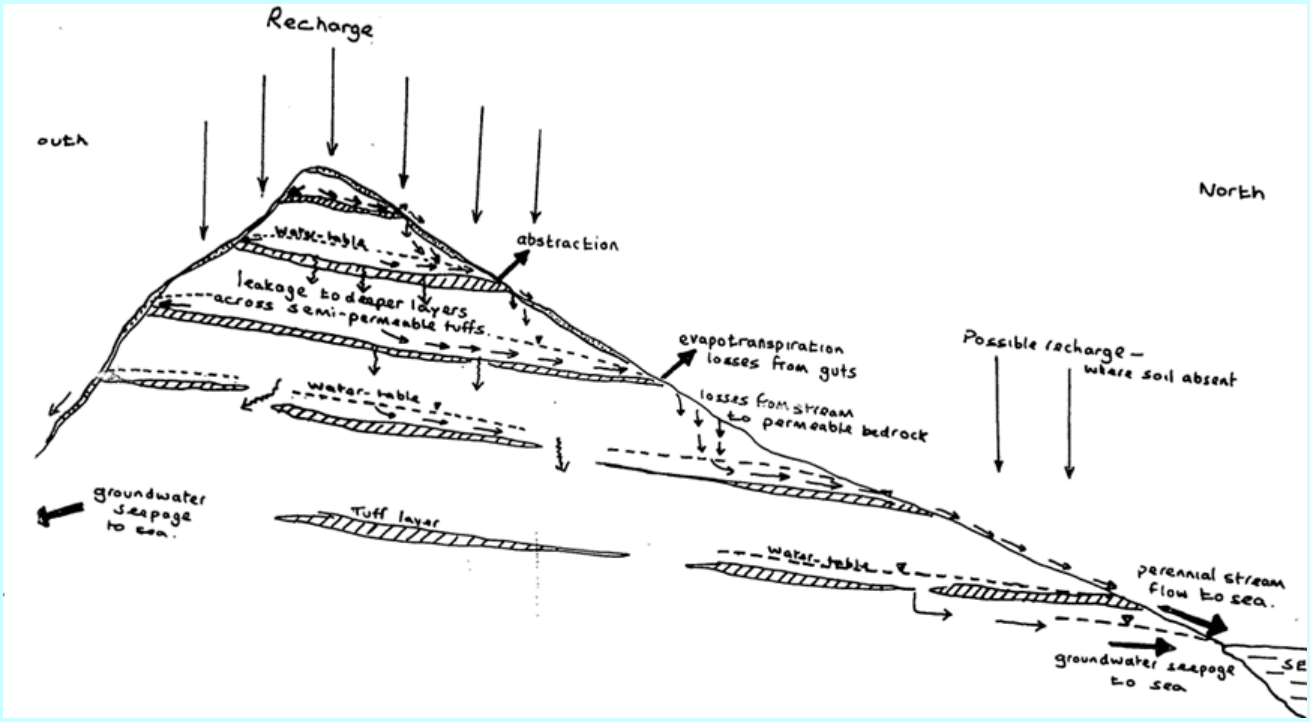
The hydrogeology of the island is poorly understood, as a comprehensive geological and hydrogeological investigation of the island has never been completed. However, several reports and investigations make comment about the island's hydrogeology.

The most recent hydrogeological investigation (WSP, 2017) was commissioned by Connect Saint Helena to evaluate the potential for deep aquifer groundwater abstraction. The report describes unconsolidated gravels in the valleys which, combined with the upper layer of fractured bedrock, form a superficial perched aquifer of limited storage but which are recharged by surface runoff and rainfall. These superficial aquifers are thought to feed many of the islands springs but are susceptible to drought or reduced flow due to periods of low rainfall. Vesicular and brecciate lava which forms along the contact between two lava flows form aquifers of low storage but are believed to be significant zones of transmissivity. Secondary, fractured, basalt aquifers of low porosity but high permeability exist in areas of faults, dykes and fissures (WSP, 2017).

Layers of weathered material which separates lava flows are relatively permeable, along with soft, weathered tuffaceous deposits (Sir William Halcrow and Partners, 1969). These permeable layers form perched aquifers which can be seen as a secondary source of spring lines across the island. A hydrogeological conceptual of Saint Helena was developed by Lawrence (1983) and has been reproduced in **Error! Reference source not found.** (WSP, 2017). As well as identifying spring flow, Lawrence describes leakage from overlying tuff to lower layers, increasing the potential for deep groundwater storage.

Test drilling completed by WSP in 2017 completed 10 exploration boreholes to depths between 69mbgl and 132mbgl in Harper's, Shark's Valley, Pleasant Valley, Molly's Gut, Rosemary Plain, Kunji Field, Plantation and Carson's Gate. Eight of the boreholes intercepted deep groundwater with yields between 0.3 l/s and 4.3 l/s. Water strikes were reported in weathered material associated with the contact between the Upper Shield/Main Shield.

Figure 2: Hydrogeology Conceptual Model of Saint Helena – Lawrence, 1983



Several permanent springs are located within the largest of the island's catchments. An assessment of the islands springs was reported by Brown, 1981 (Volume 2). In periods of dry weather, spring flows from the eastern valleys (Fishers, Sharks and Deep Valley) and springs from James Valley provide the majority of flow for domestic supply. Sharks Valley contains the largest perennial flow on the island; estimated at 390-490 m^3/d by Dennis during the very dry year of 1973 and 734 m^3/d in February 1969 by Halcrow which was also a dry period (Brown, 1981 Volume 2). Due to the limited data available for the island, the relationship between rainfall recharge, dry weather flow and spring flows cannot be accurately assessed. The Halcrow report (Sir William Halcrow and Partners, 1969) evaluated mean base flow for the islands perennial streams and calculated that base flow may be as high as 8% of annual rainfall at Sharks Valley, with a mean base flow for all perennial streams of 3% annual rainfall. However, due to the complex nature of the islands geology and limited hydrological and hydro-geological data, the contribution of springs and base flow to total stream flow cannot be reported with confidence.

Pike, D et al 2018 completed a survey of the islands soil between 2017 and 2018 as part of Darwin Plus project DPLUS052. The 2018 soil quality map for the island is provided in **Error! Reference source not found.**. Further investigation is required to fully characterise soils within the Peaks due to the nature of the large-scale island soil survey.

Map 2: St Helena Soil Quality 2018

A2.3. Hydrology

Due to the highly weathered nature of the island's topography, surface water catchments are delineated by the high ridges in the centre of the island. There are 20 main valleys which have a number of tributary valleys in their systems. In most cases the valleys are narrow and steep sided. Steep waterfalls are a feature in some of the valleys, corresponding with areas of harder basalt (Henry, 1974b). The largest catchments were reported by Sir William Halcrow and Partners, 1969 and are summarised in **Error! Reference source not found.**.

Figure 3: St Helena Catchment Areas *

Catchment	Catchment Area (km^2)
Sandy Bay	14.00
Fishers Valley	10.02
Ruperts Valley	8.25
James Bay	7.83
Lemon Valley	6.29
Sharks Valley	5.91

*Source: Sir William Halcrow and Partners, 1969

There are no long-term records of continuous stream or spring flow on the island, which is surprising given the reliance of the island on springs and stream flow for potable water supply. Several short term stream and spring flow measurements (spot flow measurements) were reported by Sir William Halcrow and Partners (1969) however the data sets were too short and disparate to confidently assess stream and spring flows across the island. However, the magnitude of flow recorded in Wells Gut and Byron's Gut between 1937 and 1969 indicated that recorded flows were low (7.9 to 42.4 m^3/d).

Flow data recorded between 2016 and 2018 in Wells Gut and Grapevine Gut recorded average stream flows between 5 and 642 m^3/d. Flows were reported to be significantly lower in the large catchment (Grapevine Gut), indicating at the relationship between sub-catchment geology, soils, rainfall recharge, dry weather flow and spring flows is key to understanding stream flows within the Peaks as they can be significantly impacted by differences in local conditions (Sansom, B. *et al* 2018).

A2.4. Projected changes in climate

"*Not only is there a lot of uncertainty surrounding the future impacts of climate change on UKOTs, the full extent of current impacts is unknown*"

Climate changes predictions for the UK Overseas Territories have been attempted by JNCC in their review *Climate Change in the UK Overseas Territories – An Overview of the Science, Policy and You* (2008). From the predicted changes for St Helena, those likely to impact the Peaks are summarised here:

- Changes in temperatures could disrupt established wind and rainfall patterns i.e. prevailing wind direction less certain, rainfall more erratic;
- Floods, drought, and soil erosion are more likely from erratic weather conditions;
- Research points to a strong warming trend in air temperature (2°C over 60 years) and a slight decrease in rainfall;
- Reduced rainfall (and mist) has negative impact on local water supplies;
- Altitudinal shifts in vegetation zones;
- Currently identifiable ecological imbalances could become even more marked.

A2.5. History of management

a. Brief history of the area

Between the mid 17th and mid 18th centuries the English East India Company cleared significant portions of the original cloud forest of timber, bark was stripped for tanning and land converted for agriculture.

Subsequent attempts at establishing plantations to develop the economy resulted in further degradation. Most notable among these were the introduction of quinine (*Cinchona spp.*) in 1870 and New Zealand flax (*Phormium tenax*) at the end of the 19th century.

The collapse of the flax industry in the 1960's lead to plantations in the lower reaches of the Peaks being claimed for pasture and forestry. The majority of the central ridge plantations were simply abandoned and little in the way of management was undertaken for the next three decades.

The establishment of a small conservation team within the government forestry section in 1976, led by the late George Benjamin, was a significant step towards the conservation of the island's endemic flora.

International concern over the fate of the unique biodiversity on the Peaks resulted in a conference on island in 1994 from which a management plan was developed a year later with the designation of the Diana's Peak National Park in 1994.

From George Benjamin's conservation team the government now employs two small ground teams (11 in total), within the government's Environmental Management division. One of these teams (total of 6 staff) is assigned for work within the Peaks National Park.

Much of the work undertaken on the Peaks since the 1990s has focussed on converting flax plantation back to native habitat, invasive plant control and the maintenance of public access routes.

The St Helena Government provides a small recurrent budget for wages and essential equipment. This has been supplemented over the past 10 years by a number of externally funded projects to improve capacity, focus on critically endangered species and undertake more ambitious restoration objectives.

b. Management in the last 5 years

The importance of restoring the Peaks as an ecosystem has driven the recent management ethos. A Peaks focussed Darwin project, DPLUS029, was undertaken to capture the genetic makeup of the remaining populations of four key tree species: he cabbage, whitewood, dogwood and false gumwood. Clones of the majority of the remnant trees scattered across the Peaks are now growing in living gene banks. Material harvested here and more widely across other species is allowing the propagation of genetically diverse plants for restoration work.

Propagation protocols in the Peaks nursery have been developed and refined in order to grow plants more efficiently and this continues as part of a management objective to refine and improve techniques.

Nursery facilities have been expanded and capacity increased. One of the Peaks ground team has been trained up and is currently dedicated to running the endemic nursery.

Management of flax is focussed on the maintenance of restored areas, edge clearance of valuable sites and targeted removal from steep slopes and cliffs to limit 'breakaway' where the developing mass of flax plants cause the whole plant and rootball (weighing 100s of kg) to pull away and plummet hundreds of metres down slope; devastating any valuable habitat it encounters and creating a safety risk to Peaks users.

A team of six on-site conservation staff with management oversight by the Terrestrial Conservation Officer makes up the staff component. A wealth of anecdotal knowledge and experience resides within the long term members of the current team. Additional personnel, typically 2-3, funded by external project grants have complemented the Peaks team for shorter periods during the past five years.

Significant project work has been carried out, funded by the Darwin Initiative, to survey invertebrate presence on the Peaks (DPLUS040). As part of a Darwin project to remotely map vegetation (DPLUS052) some soil sampling and analysis has been carried out. A Darwin study (DPLUS051) on the value of the Peaks as an island water resource has been undertaken.

A2.6. Current issues and constraints

- Conservation
  - Over 50% of remaining key habitat fragments are difficult or extreme to access. This implies a significant effort is required in path making or major clearance effort and subsequent maintenance just to gain access.
  - A quarter of the most valuable fragment sites on the Peaks are on slopes of 60% or more, this necessitates specialist training, willing and able staff and expensive equipment and a potentially higher risk for operations.
  - Within the boundaries of the cloud forest all tools, construction and restoration materials have to be hand carried.
  - Maintenance of public access routes by conservation staff occupies a significant amount of time and detracts from conservation operations.
  - A low level of vegetation damage occurs along routes of public access. More significant damage, particularly trampling and soil disturbance arises from public incursions into habitat adjacent to routes.
  - Public access routes are acting as corridors for invasive spread and establishment.

Appendix 3: BIOLOGICAL INFORMATION

Vegetation zones have been determined by remote sensing and are shown at Map 9 (Appendix 6).

A3.1. Habitats and Vegetation communities

Habitat categories defined by Peaks staff for conservation activities.

Habitat	Description	Comments
Tree fern thicket	**Slow growing. Principal source of litter production. Key cloud forest mist interceptor. Essential wild nursery species**	
Black scale fern thicket	**Typical found on wet soil denuded slopes.**	Apart from creeping invasives reasonably resilient to invasive incursion
Mixed endemic cloud forest	**Full assemblage of endemic species with continuous vegetation at ground and canopy levels**	Essential habitat for effective mist interception and support of biodiversity. Remnant is fragmented and degraded (missing components)
Open banks	**Partial to full shade, moist, supports a mosaic of lichens, bryophytes, ferns and smaller flowering species, essential habitat for some invertebrates**	Increasing overrun by invasive seedlings (white weed) or creeping fuchsia
Stream margins	**Typically full shade, predominantly rock and wet soil with bryophytes, ferns and moisture loving invertebrates**	All stream beds congested and margins now heavily infested with invasives
Flax plantation	**Remaining dominant habitat much of it monoculture**	Physical whip damage to adjacent habitat on margins. Host habitat for spread of invasive pheasant tail fern
Heavily infested endemic habitat	**Degraded habitat with non continuous or negligible native canopy**	
Predominantly invasive species	**Includes areas won over by invasive competition or areas where ineffective management or lack of continuity has occurred**	Some mature invasive species canopies can be utilised to re-establish native under storey in advance of clearance works
Paths	**Maintained paths act as host habitat for transference of invasive grasses and feather moss.**	Considered too wide and too open

Forestry	**Primarily managed plantations of introduced species. Intensity of management variable.**	Opportunities for development of native fern communities, threats from invasive species incursion.
Agriculture	**Primarily grazed pasture of introduced grass species.**	Ongoing threat of kikuyu incursion on cloud forest margins
Roadside verges	**Globally renowned for transference of invasive species. Wider verges maintain an unmanaged corridor.**	Potential to active as native species corridors with appropriate mgt protocols

A3.2.i Important native and endemic plant species

Scientific name	English name	Popn. Size and Date Last Recorded	Status IUCN 2015	Comments
Tree fern thicket				
Dicksonia arborescens	Tree fern	90300 (2015)	VU	Principal threat from creeping fuchsia, bramble and canopy breaks. Localised rat damage can be significant. A key cloud forest species
Hymenophyllum capillaceum	Filmy fern	Unknown	EN	Almost exclusively epiphytic on tree fern and black cabbage. Thrives in mist laden air
Grammitis ebenina	Dwarf tongue fern	Unknown	**Globally rare native**	Almost exclusively epiphytic on tree fern and black cabbage. Thrives in mist laden air
Open banks				
Dryopteris napoleonis	Lesser kidney fern	2000 (2015)	EN	Favours shade
Wahlenbergia linifolia	Large bellflower	<100 wild plants (2018)	CR	Favours partial shade
Elaphaglossum furcatum	Mossy fern	Unknown	NT	Widespread outside the Peaks, adaptable
Elaphaglossum dimorphum	Toothed tongue fern	122 (2015)	CR	Also epiphytic, favours shade
Berula burchellii	Dwarf Jellico	6400 (2015)	EN	Also in mixed endemic habitat
	Endemic bryophytes	Unknown		Not yet fully assessed. Significant threat from feather moss (*Pseudoscleropdium purum*)
Black scale fern thicket				
Diplazium filamentosum	Black scale fern	Unknown	**LC**	Provides successful cover on wet soil -denuded slopes. Can become inundated by bramble, creeping fuchsia and Mexican creeper
Asplenium lunulatum	Hen and chicks fern	Unknown	**Native, LC**	Under storey component of habitat
Berula bracteata	Jellico	1200-2500 (2015)	**VU**	More often in gullies
Mixed endemic cloud forest				
Nesohedyotis arborea	Dogwood	120 wild trees (2018)	**CR**	Negligible recruitment
Petrobium arboretum	Whitewood	95 wild trees (2018)	**EN**	Over recorded. Monoecious, low numbers of females
Pladaroxylon leucodendron	He Cabbage	145 wild trees (2018)	**CR**	
Trochetiopsis erythroxylon	Redwood	<100 cultivated trees in Peaks	**EW**	No wild habitat exists. No recruitment.
Melanodendron integrifolium	Black Cabbage	2200 (2015)	**VU**	Climax keystone species, supports numerous epiphytes

Lachanodes arborea	She Cabbage	~500 cultivated trees in Peaks	**EW**	Grouped with other trees, no wild habitat exists. Some recruitment.
Pseudophegopteris dianae	Brown Scale fern	94800 (2015)	**LC**	Widespread groundcover, works well with Sticky fern
Dyopteris cognata	Large Kidney fern	75-300 (2015)	**CR**	Under recorded and underused in restoration work
Elaphaglossum nervosum	Veined tongue fern	70 (2015)	**CR**	Also on open banks and epiphytic, favours partial shade
Trimeris scaevoifolia	Lobelia	6300 (2015)	**NT**	
Carex dianae	Diana's Peak grass	32900 (2015	**LC**	
Asplenium platybasis var. platybasis	Sickle fern	Unknown	**Endemic variety**	Widely scattered but in low numbers
Pteris palacea	Lays back fern	Unknown	**LC**	
Nesiota elliptica	St Helena olive	0	**EX**	Rediscovered 1977, extinct 2003. The most recent plant extinction.
Mount Vesey – exposed cliff regularly subjected to wind driven mist				
Commidendrum spurium	False gumwood	6 wild trees (2018)	**CR**	Remaining habitat degraded, determined by terrain rather than vegetation type. Possibly a buffer zone habitat between moist and dry zones.
Wahlenbergia angustifolia	Small bellflower	8800 (2015)	**VU**	Found sporadically at lower altitudes on the Peaks normally on exposed cliffs. May hybridise with W. linifolia
Eragrostis saxatilis	Hair grass	>100000 (2015)	**EN**	Typically a dry zone species

A3.3. Trends of important native and endemic plant species

Four key cloud forest tree species, dogwood, he cabbage, whitewood and false gumwood are in decline in the wild. Many of these trees now only exist in small fragmented groups or as remote individuals. The population is skewed towards a few older, mature trees with low recruitment levels and consequent loss of genetic diversity as they die out.
The St Helena Olive became extinct in 2003. Redwood and She Cabbage are already extinct in the wild. Conservation has stabilised the populations in cultivation; the re-establishment of self-sustaining wild populations is a long term conservation objective.
Large bellflower, toothed tongue fern and veined tongue fern are critically endangered, and further threatened by habitat loss to vigorous invasive species.
Other endemic and native species on the Peaks are subject to the same pressures and the general trend is one of slow but persistent decline.

A3.4. Predicted impacts of climate change on existing/potential Important Features

Important feature	**Predicted impacts of climate change on the condition of the feature over the next *ca* 25 years, if no adaptation measures are taken**	**Potential adaptation measure(s)**
Cloud forest	Predicted rise in temperature and reduction in regular precipitation likely to cause a contraction in extent of cloud forest coverage	Establishing continuity of diverse cloud forest habitats and expanding extent will maintain conditions to promote altitudinal mist interception
Water capture and retention	Current 38% contribution to island's water supply threatened to decline and become more erratic with climate change predictions. Flow from Peaks more erratic and potential for erosion events increased.	60% of cloud forest contribution is via mist interception, extending cloud forest coverage will mitigate losses to direct precipitation. Increasing coverage of cloud forest peat soils to improve retention and flow control of water supply
Invasive alien species	In an evolutionary timeframe predicted changes to climate will be rapid. Established invasive species are better adapted to exploit an advantage in a wider range of conditions than small island endemics.	Continued efforts at IAS control. Vigilance to prevent new invasive species establishing, targeting invasive species which appear to adapt most successfully to modified climate.

As a small maritime island the changes in climate on St Helena are heavily influenced by prevailing wind direction and ocean currents. For the Peaks the most likely impact will be through the availability of water. Endemic plants on the Peaks are adapted to a cool moist environment. They do not currently thrive at lower altitudes where moisture levels are lower and temperature generally higher. Conversely if climate change

results in increased precipitation the potential for suitable habitat could be increased. Decreased precipitation and lowered mist interception with a concurrent rise in temperature would cause the most significant negative impact.
The restoration of a biodiverse endemic habitat with a continuous canopy across the Peaks will restrict moisture losses and provide the best possible structure to maximise mist interception. Keeping the Peaks covered, cool and moist creates a conducive environment for precipitating altitudinal mist.

In their guidance document *Biodiversity Conservation and Management in a Changing Climate in the UK Overseas Territories (2008)* JNCC offer the following principals to underpin climate change mitigation:

1. Conserve existing biodiversity (including protected areas, high quality habitats and ecological variability).
2. Reduce source of harm not linked to climate change (such as invasive species).
3. Develop ecologically resilient and varied landscapes.
4. Establish ecological networks through habitat protection, restoration and creation.
5. Make sound decisions based on analysis.
6. Integrate adaptation and mitigation measures into conservation management, planning and practice.

St Helena's Climate Change Policy (2018) **in draft** - highlights the importance of water catchment by endemic vegetation within the green heartland, though currently has no specific policy objective or climate action plan relating to water security.

A3.5. Habitat management to enhance the Visitor Experience

Feature	Attributes	Works	Comments
Cloud Forest	Diversity, species rarity, atmosphere	Develop footpath margins to give an experience of walking through pristine cloud forest	Path maintenance effort is replaced with margin restoration. Dense, diverse and successional planting to recreate key habitats in the cloud forest
Landscape	Improve viewing at key locations with elevated positions overlooking cloud forest to surrounding features	Create viewing platforms adjacent to access paths at key points	Positioning is critical to avoid skyline interruption or detracting from landscape views into the Peaks

Assemblages	Interpretation	Non- intrusive means of interpreting and educating	Signage could quickly dominate what should be a natural area, consider other options (e.g. numbered posts/phone app)
Visitor restoration area	Practical involvement	Assign area for planting, maintain stock of plants.	Potential of revenue generation through plant purchase, commemorative markers. Needs to be simple to administer – advance payment ex-Peaks.

Appendix 4: Endemic Flowering Plant Assemblage

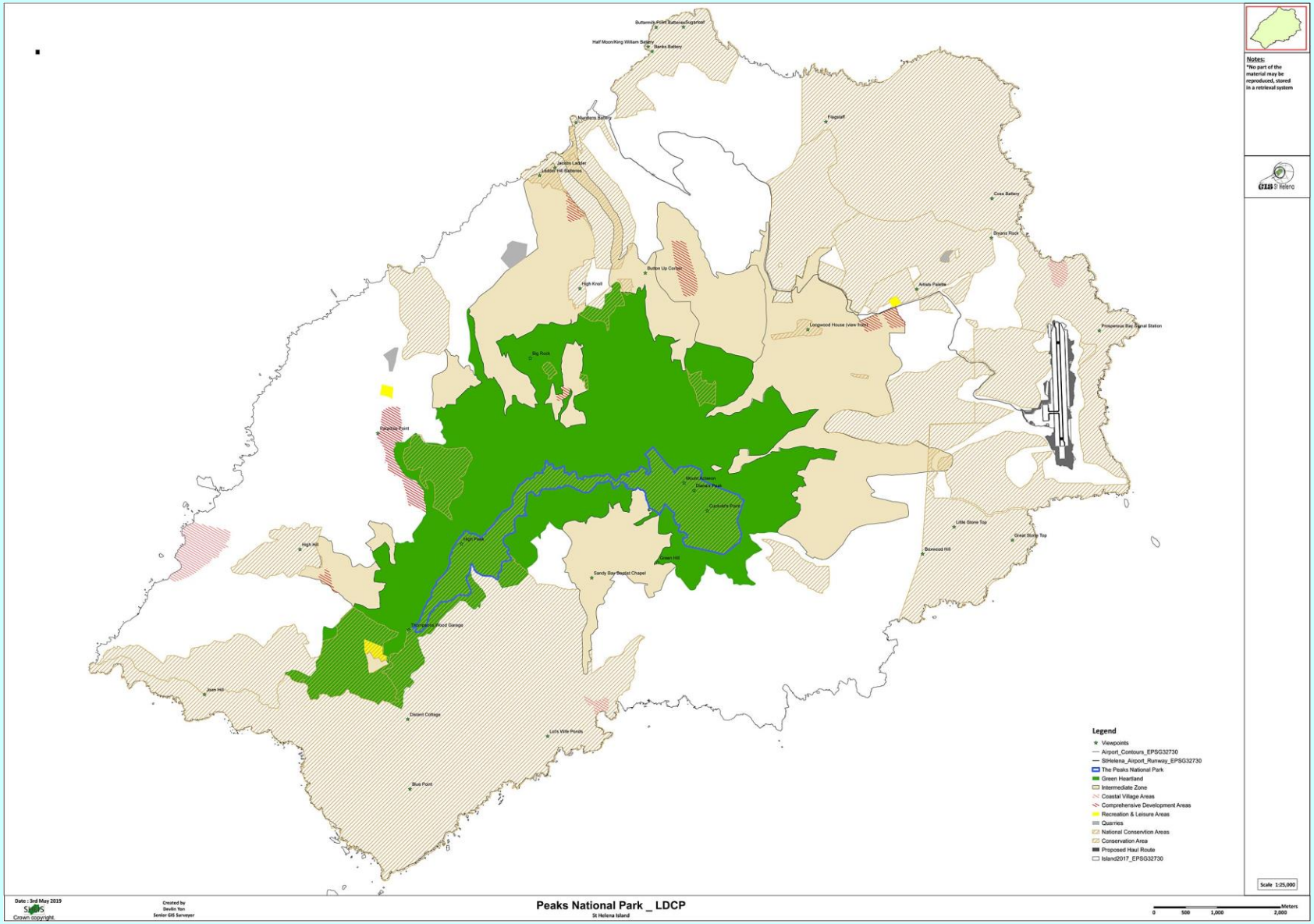
Species	Local name	Form
Berula bracteata	Jellico	Large herb
Berula burchellii	Dwarf Jellico	Herb
Carex dianae	Diana's Peak Grass	Sedge
Commidendrum spurium	False Gumwood	Small tree
Lachanodes arborea	She Cabbage	Tree
Melanodendron integrifolium	Black Cabbage	Tree
Nesohedyotis arborea	Dogwood	Tree
Petrobium arboreum	Whitewood	Tree
Pladaroxylon leucadendron	He Cabbage	Tree
Trimeris scaevolifolia	Lobelia	Shrub
Trochetiopsis erythroxylon	Redwood	Tree
Wahlenbergia linifolia	Large Bellflower	Small shrub
Panicum joshuai	Rock millet or Pat's grass	Small clump forming grass

Appendix 5: Endemic Fern Assemblage and Allies

Species	Local name	Type	Status
Asplenium compressum	Plastic fern	Fern	Endemic
Asplenium lunulatum	Hen and chicks fern	Fern	Native
Asplenium platybasis var. platybasis	Sickle fern	Fern	Endemic variety
Dicksonia arborescens	Tree fern	Fern	Endemic
Diplazium filamentosum	Black scale fern	Fern	Endemic
Dyopteris cognata	Large Kidney fern	Fern	Endemic
Dryopteris napoleonis	Lesser kidney fern	Fern	Endemic
Elaphaglossum conforme	Common tongue fern	Fern	Native
Elaphaglossum dimorphum	Toothed tongue fern	Fern	Endemic
Elaphaglossum furcatum	Mossy fern	Fern	Endemic
Elaphaglossum nervosum	Veined tongue fern	Fern	Endemic
Grammitis ebenina	Dwarf tongue fern	Fern	Native
Hymenophyllum capillaceum	Filmy fern	Fern	Endemic
Hypolepsis villoso-viscida	Sticky fern	Fern	Native
Huperzia saururus	Large buck's horn	Clubmoss	Native
Pseudophegopteris dianae	Brown Scale fern	Fern	Endemic
Pteris palacea	Lays back fern	Fern	Endemic
Lycopodiella cernua	Buck's horn	Clubmoss	Native

APPENDIX 6. ADDITIONAL MAPS

Map 3: Statutory, land development control planning and other designations



Map 4: Land ownership within Peaks National Park and outlying 200m buffer zone

Map5: Public access points and rights of way

Map 6: Operational areas (Conservation compartments)

Map 7:. Geology and soils

Map 8: Hydrology showing main catchments fed from the Peaks National Park.

Map 9: Vegetation Zones.

Map 9: Terrain 10 m contours.

Appendix 7: VISITOR MANAGEMENT INFORMATION TEMPLATE

Public Access
Access and public rights of way are shown in Map 5 (Appendix 6).

National Park information	
National Park opened to visitors:	
Visitor Centre / Information point opening hours throughout the year (if applicable)	

1. Headlines and Review of visitor targets

Visitor Objectives from last management plan

Headlines & celebrations

-
-
-

Project	**Timescale**	**Project Manager**

2. Wildlife Experiences

January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

3 Park theme/s

1.
2.
3.

4. Priority audiences

- **Primary**
- **Secondary**

5.Visitors: counting, potential and priority audiences

Type of visit	Method	Calibration calculation (if applicable)	Last calibrated (if applicable)
Local community			
Tourists, Island visitors			

Create a chart to show last management plan period visits.

6. Visitor Income

Commercial visitor operation NET profit/loss	
NET operating profit/loss per visitor	

7. Community Fundraising

8. Visitor satisfaction

Visitor satisfaction measure	Year	Year	Year	Year	Year
Visitor Survey					

Quality of experience (% good + excellent)					
Retail products score					
Availability/quality of information score					
VAQS overall score					

9. Connections to Nature and Education

10. Peak flow days

11. Sustainability

12 Current issues and constraints

13. Rationale for any changes to visitor objectives and targets

Appendix 8: ASSESSMENT FOR DEMONSTRATION USE

Identification of Key Demonstration Features

Criteria	Evaluation
Does the Peaks management address a priority conservation issue and the management activities on the reserve either: • have proven benefits for target species or habitats or, • are being trialled, and the reasoning behind them can be explained and discussed? This will also allow an exchange of ideas about the trial management. It should be clearly identified whether the management is proven or trial, and whether there is adequate monitoring in place to prove the effect of trial management.	Yes
Is the Peaks better placed to demonstrate the management practice than a private land holding? We may also wish to establish a working relationship with a complementary holding, demonstrating good practice in a commercial context.	Yes
Is there a target audience to whom the management practice will be demonstrated and the site is appropriate to that audience? Does the site show: • the management on an appropriate scale • the management in an appropriate economic context • the ideal end result of management?	Yes
Are the Peaks accessible to the target audience?	Yes
Are there adequate resources available to deliver the demonstration use of the reserve, including staff with the necessary skills and experience? These staff may not have to be on-site, but could be available to assist with events if required.	No, need coordinator
Does the reserve have adequate facilities for its use as a demonstration site? Does it have: • appropriate access routes. • adequate catering and toilet facilities – either on-site or nearby. • a suitable in-door venue – either on site or nearby?	 Yes No Scotland (need vehicle)
Is the reserve likely to provide inspiration to the target audience, e.g. through providing an appropriate wildlife/landscape spectacle?	Yes
Can demonstration use of the site be managed in a way that will not have a significant adverse effect on the conservation interest of the site? i.e. • increased human disturbance will not have a significant adverse effect on key species. • increased trampling will not have a significant adverse impact on key habitats?	Yes N/A No

Appendix 9: REFERENCES and DATA SOURCES

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A9.2 Data sources

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