Port Vila Urban Greening Master Plan

August 2022

Table of Contents

Sponsor

The Pacific Adaptation to Climate Change (PACC) Programme is the first major climate change adaptation initiative in the Pacific region. Since it began in 2009 the Programme has been laying the groundwork for more resilient Pacific communities that are better able to cope with climate variability today and climate change tomorrow. The Programme approaches this from two directions: it is working to enhance adaptive capacity on the ground, and it is driving the mainstreaming of climate risks into national development planning and activities.

Project team

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Executive Summary

The Secretariat of the Pacific Regional Environment Programme (SPREP) has commissioned, on behalf of the Vanuatu Government, under the Pacific Adaptation to Climate Change (PACC) Programme; the Port Vila Urban Greening Master Plan to systematically assess and identify opportunities for Government and the community to protect and enhance the city's' natural assets, otherwise known as Green Infrastructure. Green infrastructure recognises that natural vegetation and assets such as waterways and forests provide an economic benefit to a city either through improving the quality of the environment or by reducing the costs of managing urban infrastructure.

The development of this plan has occurred under the guidance of a Steering Committee chaired by the Department of Urban Affairs and Planning. Stakeholder consultation has been undertaken throughout the project. This has included awareness raising through social media and local news media, delivery of five on-line surveys, direct consultation with key stakeholders and a national stakeholder workshop on the 22nd June 2022. The consultation has directed the outcomes and recommendations in this plan.

Protecting and enhancing Port Vila's green infrastructure is a cost-effective method for improving the environmental quality of the city over the long term. For example, by developing a strategic urban tree planting and management plan, the worst effects of urban heating can be alleviated through increased shading. Those same trees can help to reduce air pollutants from vehicle emissions and dust. Trees are also habitat for local birds, bats and insects that are important for biodiversity conservation. A well-managed urban forest can also help to reduce water contamination from storm run-off. Urban wetlands help to remove nutrients and heavy metals that damage marine life from washing into the sea. Like urban forests, wetlands can also improve biodiversity, and cool the surrounding areas. Above all well planned and managed green infrastructure makes the city more pleasant, attractive and enjoyable to live in.

Residents and workers who enjoy a healthy green home or workplace are more productive and are less likely to be mentally or physically unwell. As the capital city of Vanuatu, well designed and managed urban parks, streets and public spaces enhance the reputation of Vanuatu as a green and healthy destination for tourists and investors. For all these reasons, the Urban Greening Masterplan is an important contribution to Port Vilas Planning framework.

Green infrastructure is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation. This network of green (land) and blue (water) spaces can improve environmental conditions and therefore citizens' health and quality of life. It also supports a green economy, creates job opportunities and enhances biodiversity.

The focus of this Plan is the Central Business District, the Parliamentary zone and national institutions, the road corridors that from the airport and the wharf that represent the gateway for international visitors. The Plan is further divided into four zones with their own characteristics and environmental

benefits. These are the Central Business District, the parliamentary and national institutions , the administrative precinct, and the gateways approaches. A green infrastructure strategy has been developed for each of these zones in the context of a broader assessment of the environmental quality of the greater Port Vila area.

A green infrastructure strategy provides a measurable framework for investment in resources for protecting and enhancing Port Vila's natural assets and environmental standards. This Plan presents an evaluation method for investment based on the benefits that flow from nature to people, otherwise known as ecosystem services. Generally, ecosystem services are classified into three groups for environmental accounting purposes. Provisioning services include the material and metabolic outputs of ecosystems (e.g., fresh food, timber and fibre). Regulating services refer to the processes that maintain an ambient or pleasant environment that contributes to human health and comfort (e.g. providing shade, or removing pollutants from air and water).

Cultural services are the non-material benefits, such as symbolic meaning and aesthetic experiences, which affect human physical and mental wellbeing (e.g. parks and gardens for enjoyment).

The Plan is set out in three parts. Part one provides an introduction and background research. It identifies regulations, policies and procedures that enable the Plan to be gazetted and implemented. A landscape analysis of Port Vila provides a baseline condition of the existing natural assets and how a green infrastructure framework can systematically and cost effectively enhance sustainable development.

Part two outlines the consultation process and community input. It describes role and terms of reference for the advisory committee. Then it details the method of consultation, the major findings and outcomes of each stage of consultation. Part three documents design guidelines, recommendations and technical information to help decision makers plan and allocate resources towards the implementation of the plan.

Figure 1: Fatumaru Bay Park was redeveloped in 2018 as part of the Seafront redevelopment.

Implementation of the Plan

The success of this Plan depends on an implementation framework that is measurable and can be evaluated. The Plan will also require regulatory authority to allow decision makers to implement aspects of the plan through project funding or developer contributions.

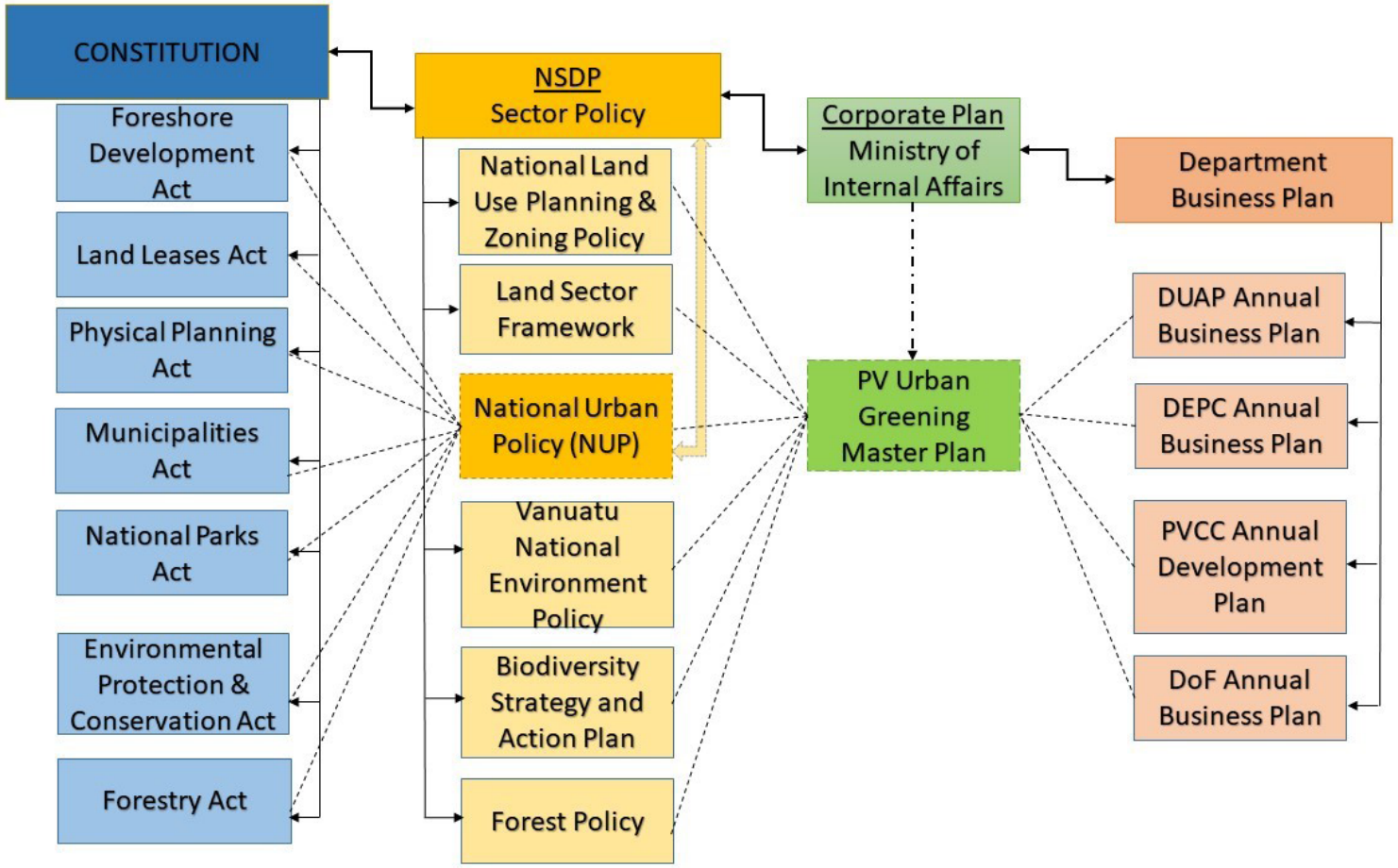


Figure 2: The Port Vila Urban Greening Masterplan will reside with the Department of Urban Affairs and Planning with the Ministry of Internal Affairs.

Evaluation framework

For the Plan to be successful, it must demonstrate a positive impact from the investment in green infrastructure. The Plan achieves this through establishing guidelines for proposing, designing and implementing specific projects that may arise out of the recommendations from this Plan.

A measurable ecosystems services framework provides a cost-effective method for achieving a more sustainable allocation of resources for improving the quality of our urban environment. Table #1 provides an example of how measurable benchmarks can be established for implementing policies and programs that benefit the whole community. This approach will help the Government and other stakeholders to allocate funding for projects and programs going forward.

Type of Ecosystem service (ES)	Example of ES to Port Vila	Example of evaluation	Example of benefit
Provisioning service	Fresh food, fibre, wood, flowers, and plants	Increase in the number of productive gardens in urban areas. Increase access to productive gardens for urban residents.	Reduce NCDs, Improve health of residents, Enhance resilience during disaster.
Regulating service	Shade, clean air, water, and biodiversity	Increase in urban canopy/number of trees in public spaces. Reduce the amount of pollution entering streams and lagoons.	Reduce heat stress, Increase biodiversity, Improve water and air quality.
Cultural service	Culturally and Nationally significant trees/gardens, playgrounds and parks	Increase in positive community feelings towards national institutions and public open spaces. Increased positive response from tourists.	Increase physical activity, reduce NCDs and stress. Improve civic pride, enhance reputation as capital city. Improve international reputation.

Table 1: An example of an ecosystems services based evaluation framework.

Plan targets

The Plan proposes four key targets to achieve its outcomes. Part three explains in more detail the targets and how the Plan can meet these goals.

1. A 30% increase in the urban canopy by 2030.
2. Improve access to and use of public green spaces by the community.
3. Improve the reputation of Port Vila as a green and clean capital of the Republic of Vanuatu
4. Improve the resilience of Port Vila's natural assets through enhancing environmental outcomes.

Figure 3: The Fortieth Anniversary Independence Day Celebrations in 2020 showcased how Port Vila's green spaces are essential for celebrating national identity and nationhood.

Part 1
Planning context and case for implementation

The Urban Greening Master Plan is one of several strategic planning and urban regulation activities that are in development as part of the Government's efforts to formalise and improve urban planning policies and procedures. The department of Urban Affairs and Planning was recently established in the Ministry of Internal Affairs to recruit and develop specialist planners, spatial scientists and bureaucrats to lead the effort in this area. This Plan presents an opportunity to establish a green infrastructure-led planning agenda for Port Vila.

Conventional strategic planning has traditionally emphasized economic growth through maximising development opportunities and improving land values. Land set aside for open space and recreation has tended to be low value land that was otherwise not valuable for development. Improvements to environmental and human health have depended on zoning to avoid the conflicting land uses. Historically, Port Vila was planned using these conventional methods[1]. For example, industrial commercial and retail zones have been established separately from residential areas. However, rapid growth and lack of investment in planning regulation and investment has seen many new developments that are not compatible with surrounding land uses (for example new warehouses have been developed in residential areas). In the absence of robust planning strategies and policies, these types of inappropriate development will continue to occur. Green infrastructure planning is compatible with conventional zoning-based development control planning. This Plan establishes a framework for enhancing environmental, social and economic values through accessing and mobilising ecosystem services (the benefits that nature provides to people).

Port Vila was planned as a European colonial port town on the fishing and gardening grounds of Ifira. Colonial administrations did not involve Ni Vanuatu in the early development of Port Vila. Surrounding villagers in Pango and Mele participated in the early Port Vila economy seeking work and education opportunities, however, it is still rare to refer to a Ni Vanuatu as man Vila. Following independence, all freehold land was returned to the Ni Vanuatu. In practice the newly independent Government, unwilling to lose foreign investment were reluctant to resume urban land. Instead, the early administrators adopted a pragmatic approach by providing expatriate businesses certainty for the greater economic benefit to the country. To manage the seemingly competing interests between land tenure and business autonomy, the Government established the Port Vila urban land corporation to manage the transition to leaseholds and manage rents. The Vila Urban Land Corporation operated for five years to distribute rental income to surrounding villages due to concern over poor operating procedures. Since then, national economic policy has focussed on agriculture and tourism, and this has contributed to the current policy vacuum in urban planning and development. Table #2 highlights the evolution of regulations impacting urban planning preceding independence.

[1] Lindstrom, L. (2012). Vanuatu migrant lives in village and town. Ethnology: An International Journal of Cultural and Social Anthropology, 50(1), 1-15.

Timeline of Historical Events in the Land Sector	
1975	Foreshore Development Act Cap 90
1979	Vanuatu Constitution was drafted
1980	Vanuatu gained Independence. Constitution defines that all land belongs to custom owners.
1980	National Land Policy- defines 3 categories of land: urban, rural & public.
1986	Physical Planning Act Cap 193
2001	Forestry Act
2002	Environment Management & Conservation Act
2005	National Self Reliance Summit
2006	National Land Summit- resolved with 20 Resolutions.
2007	Review of Land Sector
2009	Vanuatu Land Program- AUSAid funded initiative that supported many land reforms
2013	Constitutional Amendment /Land Leases Amendment Act /Legalise the LMPC /
2013	Repeal of Land Tribunal Act & replace with Customary Land Management Act Cap 23
2013	National Land Use Policy- with a proposal for review in 2017
2017	National Water Policy
2019	National Subdivision Policy
2020	Establishment of Department of Urban Affairs and Planning (DUAP)
2022	Port Vila Urban Greening Master Plan

Table 2: The development of land regulation since independence.

A review of relevant documents

In response to declining environmental and social conditions in Port Vila, several studies have been undertaken to highlight and address some of the major challenges facing Port Vila. The following summary of projects plans and reports that inform this Plan.

Planning for Ecosystem-Based Adaptation in Port Vila Vanuatu

This synthesis report is based on a series of detailed technical reports prepared on behalf of SPREP and the Government by RMIT University, Griffith University and Victoria University of Wellington for the Pacific Ecosystem-based Adaptation to Climate Change project. Backed up with intensive community consultation data and stakeholder feedback, the report displays the great potential and success that ecosystem-based adaptation projects will have if implemented in the Greater Port Vila area. The report aims to reinforce the policy, planning and implementation models of the Pacific Ecosystem-based Adaptation to Climate Change project and stress that the success of such models is achievable through a thorough and consistent approach of the standard Ecosystem based adaptation planning process. The planning model used to plan and implement Ecosystem Based Adaptation (EbA) projects is a tenfold step process. This synthesis report has provided an overview of Step 1 to Step 7 of the process and the final steps are underway when this report was being produced. The first 4 steps are focused on knowledge and synthesis of the existing ecosystem and current threats affecting the ecosystem. The following steps 4 to 6 are prioritization of Ecosystem based options. The planning models clarifies that this process will depend on the community knowledge of their ecosystem and thus identify Ecosystem Based Adaptation options and prioritize which will have the most benefit to the community if implemented. The final steps are implementation and adaptation management. With over 250 workshops and 800 household surveys conducted the report successfully identified five (5) potential Ecosystem-based Adaptation projects within the Greater Port Vila area.

Acknowledging the threats to ecosystem services the report outlines projections with very high confidence of sea level rise, increase in annual mean temperatures, increase in mean annual rainfall, a decrease in frequency but increased intensity of tropical cyclones, ocean acidification and increase coral bleaching. These threats have both direct and indirect impact on the ecosystem functions and in turn the economic, social and cultural benefits to the community. The ecosystems functions are not able to meet the needs of the communities because of various threats and that an EbA project is an effective approach to reviving the natural environment and enhance the services the ecosystem provides to the community. The synthesis report collates all the community consultation feedback and with the planning guideline from the Pacific Ecosystem-based Adaptation to Climate Change project it prioritized the EbA options, these being a regeneration project along the Tagabe riparian corridor, a restoration and protection project of the coastal vegetation, intensification of home gardens, urban trees and sustainable housing development. These EbA projects were prioritized according to nine (9) selection criteria that included climate change resilience to cost effectiveness to implementation timeframe and flexibility to complement other projects.

In relation to the Port Vila Urban Greening Master Plan this EbA Planning report has demonstrated the great potential, need and support for urban greening as an adaptation to Climate Change for Port Vila. Although the focus for the other EbA options is outside of Port Vila's CBD the option of urban trees is planned to be implemented along streets, promenades, key transport routes, which will include the heart of Port Vila and the CBD precinct as designated in this Urban Greening Master Plan. The report concludes that national policies support the EbA approach as an effective solution for resilience to climate change for the greater Port Vila area and the enabling frameworks are the Vanuatu Climate Change and Disaster Risk Reduction

Policy, the National Environment Policy and Implementation Plan, the National Forest Policy and the National Oceans Policy which are similar policies that enable the Port Vila Urban Greening Master Plan.

Port Vila Climate Change Vulnerability Assessment: Greater Port Vila

This report was prepared by the RMIT University Climate Change Adaptation Program for the United Nations Human Settlements Program- Cities and Climate Change Initiative. The UN Human Settlements Program seeks to enhance the preparedness and mitigation activities of cities in developing countries and this Vulnerability Assessment and report forms part of this broader initiative. It is informed by the Planning for Climate Change: A Strategic, Values- based Approach for Urban Planners. The values-based approach sets out a cyclical four module framework for assessing, prioritizing, and acting on climate change within urban environments. This report has successfully covered the step two and three of the 1st Module which resulted in identifying prioritized areas of vulnerability in the Greater Port Vila area and an assessment of stakeholder's adaptive capacity. The research for this report was carried out while the World Bank funded project of Mainstreaming Disaster Risk Reduction (MDRR) In Vanuatu 2013 was being finalized. The authors took a low level approach not to duplicate this process and engaged into community and stakeholder approach in identifying hazards. This approach was aimed at 'ground truthing' the more 'top-down' approach being taken through the MDRR project. Stakeholder and community workshops were run, transect walks in the Blacksands community were done and desktop review of related policies, legislations and national documents. This report reviewed, analyzed and presented extensive data from the 2009 National Census. When the report was endorsed in 2015, it was noted that discussions were still on-going with the National Advisory Board (NAB) to ensure that the remaining modules of the CCCI was an approved NAB assessment framework that will be used to streamline and encourage effective participation and community engagement in the implementation of the MDRR World Bank project.

Assessment of Port Vila's vulnerability to climate Change impact was measured using a Climate Vulnerability Toolkit that demonstrated three key components- Exposure, Sensitivity and Adaptive Capacity, with the overlaps being the space of climate vulnerability. The Exposure component related to the areas impacted by climate hazard, the severity of the climate hazard and the frequency of the climate hazard. The sensitivity component covered both community and individual household physical characteristics like housing quality and functionality and access to services and utilities. The final component was the measurement of adaptive capacity being how efficiently resources can be mobilized, how effective skills, information and communication tools can be used and the institutional and social capacity. It was clear in the report that Port Vila's vulnerability and capacity to respond to climate change was not only dependent on the natural climate but largely on non-climate factors. Therefore, the importance of a non-climate baseline and data to be collected prior to additional compounding effects of climate change be analyzed. The basis for this non-climate data is the 2009 National Census which the report extensively presented and discussed in detail in the report with a correlation being made to all aspects of vulnerability. For the purpose of the Urban Greening Master Plan the LiDAR modelling below identifies storm exposure hot spots in 1 to 100 years for Port Vila.

There is much correlation between the hotspots and the precincts of the Urban Greening Master Plan as indicated above. Hotspot two is within the CBD Precinct and hotspot three is within the Southern Corridor precinct. This is also reflected in the flash flooding data reported in the vulnerability assessment report. Additionally, related to this data is the high confidence in extremely hot days to be more frequent and more intense giving the support and basis

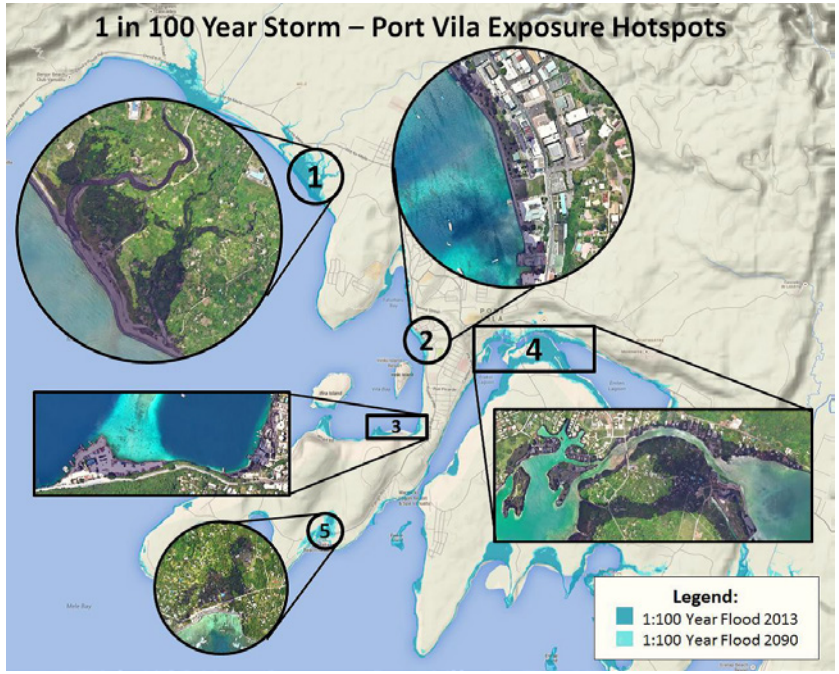


Figure 4: LiDAR Modeling of Coastal Flooding 1:100 years. (NAB, 2014)

for urban greening as a method of reducing urban heating. The report concluded with eight recommendations that acknowledges the challenge in implementing existing policies and legislations while encouraging a cross-boundary engagement between key stakeholders. The report does not recommend the development of new Policy or legislation but encourages institutional support & strengthening at national and community levels. The report recommends a separate analysis of water vulnerability and thus the Integrated Tagabe River Catchment Report was undertaken and presented to the NAB in February, 2022. A recommendation that the reviewer directly relates it to the Urban Greening Master Plan is to integrate traditional knowledge into decision- making process, this is a strong basis for the identification of native and resistant species to be used to achieve 30% increase in urban forest canopy for Port Vila by 2030.

The Integrated Tagabe River Catchment Management Plan (ITRCMP)[2]

The Tagabe River Catchment Management Plan builds from the previous Management Plan of 2017 which was developed to improve the overall health of the Tagabe River Catchment Area. The Catchment was divided into 3 zones for Management purposes, namely the Matnakara Zones 1, 2 and 3. Matnakara Zone 1 includes the river source downstream towards the Agriculture Department premises, Zone 2 is the greater area extending from the source towards Bellevue area and finally Zone 3 is the greater Matnakara area extending further into Erangorango community. The 2017 Tagabe River Management Plan successfully mapped out the Matnakara Catchment and these designated zones for planning purposes. However, the plan was limited as it was isolated from the Government agencies and its efforts were not strategically coordinated thus the need for an Integrated Management Plan that will concentrate on strategies of improving water quality and quantity in the lower catchment area. Despite its challenges, the 2017 Plan achieved several milestones like the Water Protection Zone was marked and issuance of penalties to Airports Vanuatu Limited (AVL) and CCECC for breaches. The Tagabe River Committee finally had a Terms of Reference that gave them regulatory powers to develop plans, guidelines for development within the Catchment Area this included the Blacksands Coastal Restoration Project was also an initiative in the 2017 Management Plan along with replanting of trees within the Protected Zone. The requirements of an EIA and a water works permit were among regulations that the Terms of Reference of the Tagabe River Committee outlined, along with a 30-meter buffer was also agreed in the Committee for no development zone around the Tagabe River.

[2] Vanuatu Government. (2017). Tagabe River Catchment Management Plan. Prepared by the Tagabe River Management Committee.

The integrated plan aligns with Sustainable Development Goal (SDG) 6 'Ensure access to water and sanitation for all.' and the National Sustainable Development Plan 20230 under ENV 4.2 which is to protect vulnerable forests, watersheds, catchment and freshwater resources including community sources. Specifically addressing Objectives 4 and 5 related to water resources and catchment and water quality monitoring to meet standards of the National Water Resources Strategy respectively.

The ITRCMP intersects with multiple national policies and legislations and a matrix of these policies, strategies, and legislations are presented as a legislative and planning framework in the document. The matrix identifies not gaps within the Policies in relation to the ITRCMP but instead it highlights the relevant objectives that are being addressed by the Integrated Plan. The matrix highlights that Part 6 of the Forestry Act No. 26 of 2001 forest protected areas are to be declared and Part 7 a reforestation fund be set up and these are addressed in the Integrated Plan. Furthermore, the plan describes key issues related to the implementation and management of the 2017 Tagabe River Catchment Plan with governance of the plan itself being a primary challenge. It was highlighted in the report that unlawful entry and vandalism into the protected Zone 1, where the water source is, by communities has indicated the high need for fuelwood and fruit tree sources in the botanical garden within the fenced perimeter. There is lack of viable alternative fuelwood or fruit tree sources available to the community and thus pressure them into breaching the perimeter fence.

The ITRCMP outlines nine (9) optimistic objectives that aim to address the numerous issues identified around governance, robust water quality monitoring and reporting program, education programs, reforestation of upper catchment, improving the household sanitation facilities of community, progressively connect formal households to water main, conduct research to assess groundwater recharge rates, improve management capacity of River Management Committee and finally to undertake adequate monitoring of ecological & social parameters to measure the plan implementation. An implementation Plan Matrix identifies the Department of Water Resources as the leading agency in the majority of the activities. The consultants presents that the plan is a living document and should be updated and reviewed accordingly.

Regulation framework

The Land sector is cross cutting amongst many sectors of government administration. This poses a challenge for its operation given the diverse geographic and traditional structure of the eighty three islands of Vanuatu. For the first twenty years of independence, the development of key national planning policies was not coherent; creating adhoc, and non-sustainable land developments occurring without planning and zoning control. This has led to community disputes and lack of confidence, a backlog of land related legal cases in the judiciary system, adhoc planning approvals and reactive administrative approaches by officials. The legislations and policies that were in place were scattered amongst the sectors and lacked actual enforcement. Thus, the National Land Summit of 2006 brought national and provincial leaders to discuss way forward for the land sector. The Summit resulted in twenty Resolutions that have been the basis of major reforms in the Land sector, and to some extent the Justice Sector, over the past fourteen years.

Vanuatu spatial planning is multi sectoral and covers a wide range of interests, creating a complex scenario for urban development. The roles and responsibilities of land regulators, and the design of policies and codes are aimed at formulating land use plans to guide development, resolve land disputes, facilitate land lease arrangements, executive land leases, registration of leases, upkeep of records, registration of customary land, land valuation, provide high quality survey and mapping services. With the current complex scenario of Vanuatu's land development, these functions are key in the administration of land development in Vanuatu. The Government has only very recently placed more emphasis on the urban sector. Understanding

this context is important for developing realistic and coherent goals for green infrastructure development. While an urban planning and regulatory framework is in its nascent stages of development, the Plan provides an opportunity to identify how urban greening and urban design more generally fits into the emerging planning and sustainable urban development framework.

This section presents a review of related land & planning legislations in the attempt to identify gaps that exist for the enforcement of sustainable urban development practices, particularly Green Infrastructure. This review will identify areas in legislation & policy directives that can be used to support the Port Vila Urban Greening Master Plan. The five key legislation and their policies that have been reviewed are the Physical Panning Act (Cap 193), Foreshore Development Act (Cap 90), Environmental Management and Conservation Act of 2002 and the Forestry Act 26 of 2001. During the time of review the Urban Affairs and Planning legislation has not being gazetted. Related legislations and their subsequent policies that have been reviewed include Land Leases Act Cap 163, Land Reform Act (Cap 123), Natural Parks Act (Cap 224), Land Acquisition Act No. 34 of 2000, the Municipalities Act Cap 126 and the Decentralization Act Cap 230.

National Land Use Policy

This Policy was developed in 2013 as a result of the 2006 National Land Summit as a policy direction for the land Sector. Prior to this policy, there was a 'National Land Policy' declared by the then Minister of Land in 1980. This earlier version of the Land Policy was not a comprehensive policy but came as the Government's post-independence land policy. The National Land Use Policy defined three broad categories of land that existed in Vanuatu; Rural, Urban and Public land. The Policy accepts 'kastom' as an integral part of sustainable land development. The policy acknowledges planning issues, diverse cultures and governance of land, urban growth and complexity of urban development and aims to set a ppolicy direction for respective Government authorities to administer. Public places and green spaces were identified in the National Land Policy as priority areas to be enhanced and protected. The policy prohibits the sale of publicly owned green spaces and public amenities.

Physical Planning Act Cap 193

Physical Planning, zoning and foreshore development are critical land administration tools for land use planning. The main law in Vanuatu is the Physical Planning Act of 1986. This law sits in the Ministry of Internal Affairs and is administered by the Physical Planning Unit that very recently has moved out from the Department of Local Authorities a new Department of Urban Affairs and Planning. The core functions of the Act are being administered by Provincial Councils and in the case of Port Vila by the Port Vila Municipal Council and cover planning permission within declared Physical Planning Areas. The power to declare an area a Physical Planning area is with the Councils and is overseen by the Minister of Internal Affairs. Planning permission are regulated by the Physical Planning Act and are guided by council Bye Laws. Enforcement and penalties have only recently being raised and with recent amendments the Act gives power to Officers to enter development site for inspection and enforce fines. It provides for the basic structure of physical planning.

Foreshore Development Cap 90

The Foreshore development Act regulates development of the foreshore without the Minister of Internal Affairs consent. The Act further defines the two terms 'foreshore' and 'development' and uses the high-water mark and the bed of the sea as defining features. Access to foreshore areas is priority

in the Act and the directive is to ensure that public spaces and coastlines are accessible to the people of Vanuatu and they should be compensated for the lack of access if their access is limited. Section 5 of the Act described the discretion of the Minister whether to grant permission, refuse or grant with conditions. The remaining sections of the Act describe the enforcement and penalties to offenders who develop foreshore land without consent.

Environment Protection and Conservation Act Cap 283

The Environmental Management and Conservation Act is another primary legislation that is relevant to land use planning. This Act came into effect in 2002 and sets out requirements for Environment Impact Assessments. Legislative amendments in 2011 changed the name of the Act and department and transitioned the once administrative Unit from the Ministry of Lands to the Ministry of Climate Change as a Department responsible for environment protection and conservation. Administration, Environmental Impact Assessment and Biodiversity are the three main functions under the law. In relation to Biodiversity conservation, the Act recognizes community conservation areas and gives direction to communities on how to register and protect their conservation sites and allows research to be undertaken in these sites.

Forestry Act Cap 276

The Forestry Act came into effect in 2001. The Act gives the Department of Forests the legal mandate to protect, develop and sustainably manage the forests of Vanuatu. Its functions are cross cutting and is administered under the Ministry of Agriculture, Livestock, Forests, Fisheries & Biosecurity. The Minister under this law has the power to declare conservation sites. Similarly, the Minister for Climate Change has the same powers under the Environment Protection and Conservation Act. This is an overlap as there is no mention in the legislation of consultation between the two authorities.

Land Leases Act Cap 163

The Land Leases Act is the primary law that governs all land dealings in Vanuatu. The Law contains parts covering the registration, disposition, leases, mortgages, transfers, transmissions, easements, subdivisions and other related land dealings. This legislation is one of the primary post-independence legislations and came into effect in 1983. The provisions of the legislation form the basis of the administration roles of the Ministry of Lands and Natural Resources. The Department of Lands, Survey and Registry administer a core component of the law in their daily operation. There is a Planning & Enforcement Unit within the Department of Lands, Survey and Registry and their role is to process land lease applications to be considered by the Land Management and Planning Committee for decision prior to a Certificate of Negotiation is being approved by the Minister responsible. As with any registration statute, the basic position is that leases and other dealings in land only gain their legal effect after registration, and upon registration the rights of the proprietor are "not liable to be defeated" (ie, are indefeasible), and are held "free from all other interests and claims whatsoever". Thus once a lease is registered is legal and remains legal unless challenged in a court of law.

National Parks Act Cap 224

National Parks Act is amongst the seven legislative instruments administered under the Environment Protection and Conservation Act in the Ministry of Climate Change The Act creates a legal provision to protect areas that have been identified and declared as National Parks and Nature Reserves. It acknowledges the Decentralization Act Cap 230 and the Municipalities Act Cap 126 as a local authority wherein the designated areas are located. A National Park Board is to be appointed and will make recommendations to the Minister for declaring a site to be a National Park or Reserve. The law acknowledges traditional governance as it allows custom landowners of such designated areas to appeal during a defined notice period if they object to the Minister's intention to declare the site a National Park or Reserve. The Minister has powers to make regulations under this Act.

Land Acquisition Act No. 5 of 1992 & No. 34 of 2000

Article 80 of the Constitution enables the Government to own land acquired by it "in the public interest", and Article 81 enables the Government to buy land from custom owners for the purpose of land redistribution. The Land Acquisition Act was enacted for the realization of the Constitutional articles 80 and 81. The Land Acquisition Act 1992 set out the procedure for exercising the Government's powers to acquire land in the public interest. This public interest is mainly for access to land for customary purposes. The Law sets out the process of serving notice to affected parties, process of appeals, rate of calculating value of lessees interests and lessors interests. Where there is no registered lease the custom land owners is referred to as the decision maker.

Decentralization Act Cap 230

Providing for decentralization and establishment of provincial government regions is the main purpose of this Act. It was gazetted in 1994 after a change in Government policy. The establishment of Provincial Government councils came into effect and transitioned from the local island governments to regional administrations. This Act and its administration are the key focus of the government policy to implement to the National Sustainable Development Plan through the structure of regional and sub-regional administrations. The establishment, functioning, reporting and removal of the Council is the main feature of this Act. Section 18 mandates the Council to use its power for the welfare of its people. Part 5 gives the Council power to make Bye Laws for the implementation of its functions.

Municipalities Act Cap 126

This Act is to provide the establishment of municipalities and municipal councils and their powers. Similarly, to the Decentralization Act this law regulates the Council and its duties. Part 7 of this law mentions public places, unlike the Decentralization Act. In relation to green infrastructure the Council has power under Section 30 to acquire interests in land for any purpose for the function of the Council, upon consultation with the Minister of Internal Affairs, however if the interests is in relation to an easement the Ministers consent is not required. The Act further stipulates the power of the Council to sell land, lease interests in land, and exchange any lease or interests in land for another lease or interests. This is an exclusive power that the Municipal council has and can exercise upon the consent of the Minister. Part 8 gives the Council power to make By-Laws for the function of the council.

In summary; regulatory reform is necessary to improve sustainable urban development. In the Port Vila context, this is a challenge as urban development has been happening without little strategic guidance of a development control plan or a national urban policy. This creates a scenario where developments occur in isolation and in an ad hoc state. The absence of a development control plan or a national urban plan has made strategic urban planning and development a challenge for Port Vila. The strategic focus of this review is to portray a picture of the areas of potential to cater for an urban greening master plan for Port Vila. To ensure efficient administration there should be harmony in the legislations and policies that should aim at encouraging sustainable infrastructure development practices. This Plan does not propose new legislation but highlights gaps in policy and advocates for an enhanced responsibility within relevant authorities to implement existing policies. The next section examines the greening principles that underpin this Plan.

Regulatory issues to consider - the Plan recommends the following

The Plan advises the Department of Urban Affairs and Planning to work with the various agencies to achieve the following amendments to existing regulations to ensure the recommendations of the Plan have legal force.

ACT/REGULATION	RECOMMENDED AMENDMENT
Physical Planning Act	Amendment to current Physical Planning Act to allow the Minister by order make rules for the implementation of the Plan. This will allow Policy development and enforcement.
National Land Policy	Review of the National Land Policy to enable an Urban Land Policy to be enhanced and expand into new areas.
Land Leases Act	The exercising of Ministerial orders under the Land Leases Act to create opportunities for new public green spaces and easements for planting street trees
Physical Planning Act	Sustainable development practices including, but not limited to, green infrastructure strategies should be inserted as part of the Physical Planning Act and development proposal criteria.
All	Improve capacity of officials to assess ministerial proposals
PVMC and DUAP policies	Biodiversity targets should be incorporated into DUAP and PVMC land use planning operations
Forestry Act	Amendment of the Forestry Act to include provisions for regulating removing, cutting or damaging of trees.
Ministry of the Lands	The development of an Urban Green space Policy under the Ministry of the Lands for the management of green spaces.
National Parks Act	Port Vila Beautification Plan and any future green infrastructure project to come under the Provisions of Section 2 (1) (d). A basis for declared sites within Port Vila under the National Parks Act for the enjoyment of the public.
Land Acquisition Act	Using the Power of the Minister to acquire land under the Land Acquisition Act No. 5 of 1992 & No. 34 of 2000 for public purposes to acquire land within Port Vila for Green Infrastructure projects.
Decentralization Act	The SHEFA Provincial Council can use its powers under Part 5 of the Decentralization Act 230 to create Bye Laws to support the management of green spaces in Port Vila.
Municipalities Act	Develop a By Law under Part 5 of the Municipalities Act to develop an Urban Development Policy and Development Control Plan for the Port Vila Municipal Council.
Municipalities Act	Develop a By Law under Part 5 of the Municipalities Act to mandate use of green infrastructure in applications for planning permissions.
National Land Use Policy.	A National Urban Policy is recommended to complement the National Land Use Policy.

Table 3: Recommended amendments to existing legal and policy instruments to give the Plan legal authority.

Principles of a Port Vila Urban Greening Master Plan.

The Port Vila Urban Greening Masterplan has been developed in response to a number of environmental, cultural and social factors affecting Port Vila in recent decades. Port Vila is home to over 50 000 predominantly Ni-Vanuatu, many of whom have migrated in the past forty years from the eighty three inhabited islands of the archipelago, seeking jobs in tourism, retail, construction and the public service. In the decade between 2010 -2020 Port Vila's population grew an average of 2.2% in the municipal areas and the peri-urban areas grew at 2.6% per year.[3] This rapid population growth has placed significant pressure on urban infrastructure and resources. Compounding these development pressures are increased environmental and social impacts of climate change on the city's infrastructure and natural assets. Climate change presents the greatest existential challenge for urban planning in Port Vila. Increased frequency and intensity of cyclones and increased temperatures and humidity are caused by global warming. This Plan presents an opportunity to develop relatively low cost adaptive strategies to mitigate some of these effects. In response to stakeholder consultations and expert feedback, the Plan has identified three strategies to address sustainable development goals set in the 2030 People Plan. These strategies are, developing adaptive responses to climate change, improving human health and enhancing economic benefits. Specific greening actions are proposed for each strategy.

Figure 5: The Plan is focused on improving the quality of life for Port Vila residents and visitors.

[3] World Bank - World Bank rankings 2020.

Developing adaptive responses to climate change

Vanuatu and Port Vila depend on fragile terrestrial and marine ecosystems along with shallow ground water resources for many residents' essential needs. The dependency on vulnerable ecosystems risks significant economic loss if those ecosystems face potential collapse and the ecosystems services are no longer provided[4]. Population growth and climate change are the two greatest challenges for the development of Port Vila's planning framework. The Urban Greening Master Plan provides an opportunity to address the medium to long term impacts. Specifically the Plan addresses three key areas of concern, reducing urban heat island effect, improving water quality and protecting and enhancing biodiversity.

Figure 6: Reducing urban heat island effect is one of the most effective strategies for improving the urban environment.

Reducing urban heat island effect (UHI)

UHI is broadly defined as the observed increase in night time temperatures in urban areas relative to adjacent rural areas. Typically, urban areas with few trees and other vegetation absorb heat into surfaces such as roads, buildings and other pavements and release the heat at night. As a result, during the warmer months, the temperature remains higher day and night and this has negative effects on health, increases energy demand and air pollution.

The principal drivers of UHI are climatic factors, landform, land cover type, urban infrastructure and building surfaces that result in increase heat in cities. The severity and extent of longer hotter summers will disproportionality affect urban cores because the intensity of irradiated heat is affected by the surface materials, the absence of vegetation and water bodies, and the scale and distribution of buildings and infrastructure. The long term implications of the energy demand is so great in extreme cases, UHI may put the cities energy supply system under strain and cause increase in prices more generally. Other effects compounded by UHI during more frequent and intense heat events include threats to human health and increase in atmospheric pollution[5].

Where space is available, tree planting is the most effective green infrastructure strategy for mitigating the effects of UHI. From a policy perspective a heat mitigating strategy might involve the creation of a shade coverage based requirement for tree planting in certain urban areas. The beneficial cooling is created by both shading and transpiration by cooling the air parcel above the urban core areas through horizontal air movement . Green urban areas also store less overall heat during the day and cool down more after sunset, explaining the positive influence of vegetation on reducing night time temperatures. Therefore by paying attention to the distribution and density of park vegetation in a city centre, the cooling effect could be amplified and contribute to reducing latent UHI effects from elevated night time temperature[6].

[4] Trundle, A., & McEvoy, D. (2015). Climate Change Vulnerability Assessment: Greater Port Vila. RMIT University.
[5] McDonald, R. I., Kroeger, T., Zhang, P., & Hamel, P. (2019). The Value of US Urban Tree Cover for Reducing Heat-Related Health Impacts and Electricity Consumption. Ecosystems.
[6] MacKenzie, A. (2020). Understanding Metropolitan Landscapes. London: Routledge.

Improving water quality

Port Vila's inadequate drainage systems and degraded catchments undermine Port Vila's ability to cope with the predicted increased frequency and intensity of flood events[7]. The Plan advocates for the integration of more water sensitive urban design principles in the upgrading and expansion of Port Vila's catchment management system using green infrastructure elements such as constructed wetlands, detention basins, swales and contouring to enhance groundwater recharge. Water sensitive urban design uses better urban planning and design to reuse stormwater, stopping it from reaching our waterways by mimicking the natural water cycle as closely as possible[8].

It is often cheaper to prevent water quality problems at the source rather than treat the polluted water down-stream. Green infrastructure can provide cost effective upstream solutions for reducing sediment, nutrients and heavy metals entering into streams, lagoons and estuaries. The Plan identifies opportunities to incorporate constructed wetlands in selected open spaces and within road corridors. Constructed wetlands include a range of engineered solutions using nature-based solutions to trap sediment and regulate water flow before the pollutants can be mobilised by rain. In this case, soil conservation (erosion and sediment control) using a combination of mechanical and natural techniques (e.g. settlement ponds, nutrient traps) are a good example of how green infrastructure can address specific water quality targets.

A constructed wetland is part of stormwater infrastructure that captures and retains stormwater and, over time, removes excess suspended nutrients such as nitrogen and phosphorous along with inorganic pollutants and heavy metals. The Wetland performs other roles beyond improving water quality. It affords habitats for a range of organisms from bacteria to urban mammals, enhancing biodiversity. The park that hosts the wetland also provides educational and recreation opportunities, encouraging positive mental and physical health outcomes for users. From a policy perspective, Green Infrastructure should not be thought of as a thing (a tree, a wetland, a park, a garden). Rather it should be treated as an asset class that interacts with a range of urban networks (transport, stormwater, ecological, pedestrian) that perform certain functions and provide ecosystem services that contribute to the operation of the metropolis[9].

The Plan recommends demonstration sites are used in existing open spaces to showcase and evaluate the design and management of green infrastructure elements for improving water quality.

Figure 7: Improving water quality through intervention of upstream stormwater is a cost-effective technique using green infrastructure.

[7] SPREP 2017
[8] https://www.melbournewater.com.au/building-and-works/stormwater-management/introduction-wsud
[9] MacKenzie, A. (2020). Understanding Metropolitan Landscapes. London: Routledge.

Protecting and Enhancing Biodiversity

The value of biodiversity for the health of non-urban landscape and marine systems is easier to comprehend than for urban ecosystems. These landscape systems are seen as more natural whereas urban landscapes are highly fragmented and disrupted by urban infrastructure and processes. However, biodiversity is highly valuable in urban settings as it supports the underlying productive ecosystems. Biodiversity is valuable in urban settings at a range of scales. For example, soils conservation practices improve soil biodiversity that is necessary to promote healthy trees by reducing the impact of pathogens and fungi that are detrimental to plant growth. Soil conservation also improves soil permeability which increases ground water recharge and reduces runoff and sedimentation.

Improving human health

Reducing Non-Communicable Disease Burden

Factors affecting individuals' access to physical space are difficult to determine due changes in urban form, the influence of social, technological and economic factors as well as a myriad of changing cultural attitudes towards exercise, parenting, sport, recreation and sun exposure to name a few. Regardless, the decline in physical activity is believed to be responsible for up to 5 million deaths globally per year (Lee et al., 2012). The UN has made serious efforts to target physical inactivity as a means of reducing the global increase in non-communicable diseases related to urban lifestyles. The UN has recommended improvements to the quality and accessibility of urban environments as a priority action (WHO, 2013). Physical inactivity is not exclusively an urban problem; however the disease burden resulting from sedentary lifestyles is exacerbated by the increasing urban population and the increasing density of cities as they squeeze out accessible open spaces in order to accommodate rapidly growing populations, particularly in East Asia and Africa (WHO, 2018).

Reducing the mental health burden

One of the most cost effective strategies for improving mental health outcomes is to protect and retain trees and plants in urban areas. Environmental psychologists have long established that there is a strong positive relationship between an individual's well-being and their ability to access natural spaces. Even looking at trees and gardens from a window provides positive outcomes. The economic benefits of improved well-being are measured in improved productivity and reduced absenteeism through stress and other illnesses. The plan will focus on conserving and enhancing parks and gardens in the central business districts and the parliamentary precincts. Port Vila's private businesses and public servants will be healthier and more productive if the parks, gardens and other public spaces are green and well maintained.

Figure 8 Improving the quality of public open space has a positive correlation with improved mental and physical health outcomes for residents.

Direct economic benefits

Place branding and tourism

Vanuatu, like many Pacific Island nations, is dependent on tourism. According to the World Travel and Tourism council, pre-Covid 2019 tourism data show the direct and indirect contributions of tourism accounted for 48% of GDP. Most tourism jobs and expenditures are in Port Vila. The Plan recognises the importance of the tourist experience by considering the entry sequence from Bauerfield airport and the Lapetasi Wharf where many visitors enjoy their first impression of Vanuatu. The importance of this experience cannot be underestimated as the reputation of Vanuatu as a tourist destination is very much dependent on the visitor experience of Port Vila. The Plan recommends a place branding approach to enhance the economic performance of Port Vila through tourism. Place branding involves the strategy of discovering or creating some uniqueness, which differentiates Vanuatu from other tourism destinations in order to gain a competitive brand value. The key objective here is the help visitors shape their perception of Vanuatu (their first impressions of Port Vila) through three main areas of interaction. The first is the perceptions and images obtained through the accumulated experiences of how visitors encounter specific places; secondly, through various forms of place representation such as brochures, films, novels, paintings, and social media; and thirdly, through policy interventions such as planning and urban design. The Plan recognises that these three aspects of Place branding are key elements of the design guidelines.

Figure 9: Improving Port Vila's reputation as a clean and green city will benefit the economy through increased tourism

Place of national significance

The Plan presents an opportunity to strengthen and enhance the symbolic significance of Port Vila as the Nation's Capital and the seat of the Federal Parliament. Well maintained, accessible and culturally relevant public greenspaces provide a sense of civic pride. National cultural, legal, administrative and political institutions are all located within a park like setting and the Plan presents an opportunity to support and foster a sense of national pride as was experienced during the 40th Anniversary celebrations in independence park. The Republic of Vanuatu is founded on the constitution built on inclusiveness, tolerance and pride in our cultural heritage and this should be reflected in the planning and design of a national precinct. The Plan identifies two precincts, the Cultural Precinct and the Administrative Precinct, that accommodate major national cultural institutions, the Parliament, Ministerial offices and the Convention centre. The Plan recommends that the office of the Prime Minister develops a National Capital Plan based on the Australian example for Canberra. The following extract provides an approach for translating the concepts of national significance into environmental values. This provides a guide to how the Cultural and Administrative Precincts should be managed and developed.

Australia expresses this civic pride through matters of National Significance in the national Capital Plan. It identifies Matters of National Significance in the planning and development of Canberra and a number of these matters focus on preserving and enhancing the landscape and development of a city that respects environmental values. The National Capital Plan for Canberra provides a suitable framework for the Vanuatu Government to develop its own guidelines for planning and development of this Plan.

These include;

- *The Preservation and enhancement of the landscape features which give the National Capital its character and setting.*
- *The creation, preservation and enhancement of fitting sites, approaches and backdrops for national institutions and ceremonies as well as National Capital Uses.*
- *The development of a city which both respects environmental values and reflects national concerns*[10].

Figure 10 The 40th Anniversary celebrations were held at Independence Park.

[10] National Capital Plan (Canberra)

Part 2
Consultation, stakeholder and community input

A Consultation Plan was developed in January 2022 and approved through the Steering Committee in February. It proposed a range of methods to gather views from diverse stakeholders. However, community COVID transmission commenced a couple of weeks after implementation of the Plan began, thus the consultation methodology was adapted and included:

- Development of a media release and 'Benefits of Greening' infographic. This was well received by the local newspaper and two articles were run on the project. The resulting community awareness was useful for subsequent consultations
- The number of in-person meetings able to be held was limited due to COVID restrictions, but targeted consultation with eight key stakeholders continued through email and electronic means. This consultation included meeting with the Shefa Provincial Government Council during an Extra Ordinary Meeting, and meetings with Port Vila City Council, Port Vila Council of Women and Vanuatu Society for People with Disability
- The proposed week-long exhibition at Alliance Francaise was cancelled and a new digital engagement strategy for community stakeholders was employed, including:
- Development of a PVGMP Facebook page. This became an important platform for community engagement, and as at 8 April it had gathered 507 likes, 4,123 engagements and reached 31,805 people
- A new on-line survey was developed and released through the Facebook page in three languages. The post in Bislama to launch the survey was boosted to generate greater engagement from community members (although most opted to complete the survey in English)
- The other two on-line surveys were implemented as originally planned: one for the private sector (released through the Vanuatu Chamber of Commerce e-newsletter) and one for public servants (released through the Government email network)
- Thus a total of five surveys were delivered. The surveys were hosted by Survey Monkey and focused on the level of support for greening, reasons for support and priority areas for greening. An open question also yielded a large number of constructive and specific suggestions.

Survey Type	Survey Name	Number Completions	Completion by Gender	Other
Community Surveys	English	174	50% male / 50% female	73% live in Vila
	Bislama	59	59% male / 41% female	56% live in Vila
	French	36	53% male / 47% female	86% live in Vila
Private Sector Survey	Private Sector	26	52% male / 48% female	73% business owner 25% private workers
Public Sector Survey	Public Sector	140	68% male / 32% female	80% work in Vila
Total		**435**	**250 male / 185 female**	

Table 4: Summary of Online Surveys

The project was governed by a Port Vila Greening Steering Committee, constituted under a formal Terms of Reference. The principal purpose of the Steering Committee is to provide strategic direction to, and approval of, the Port Vila CBD Greening Masterplan.

Membership of the Steering Committee:

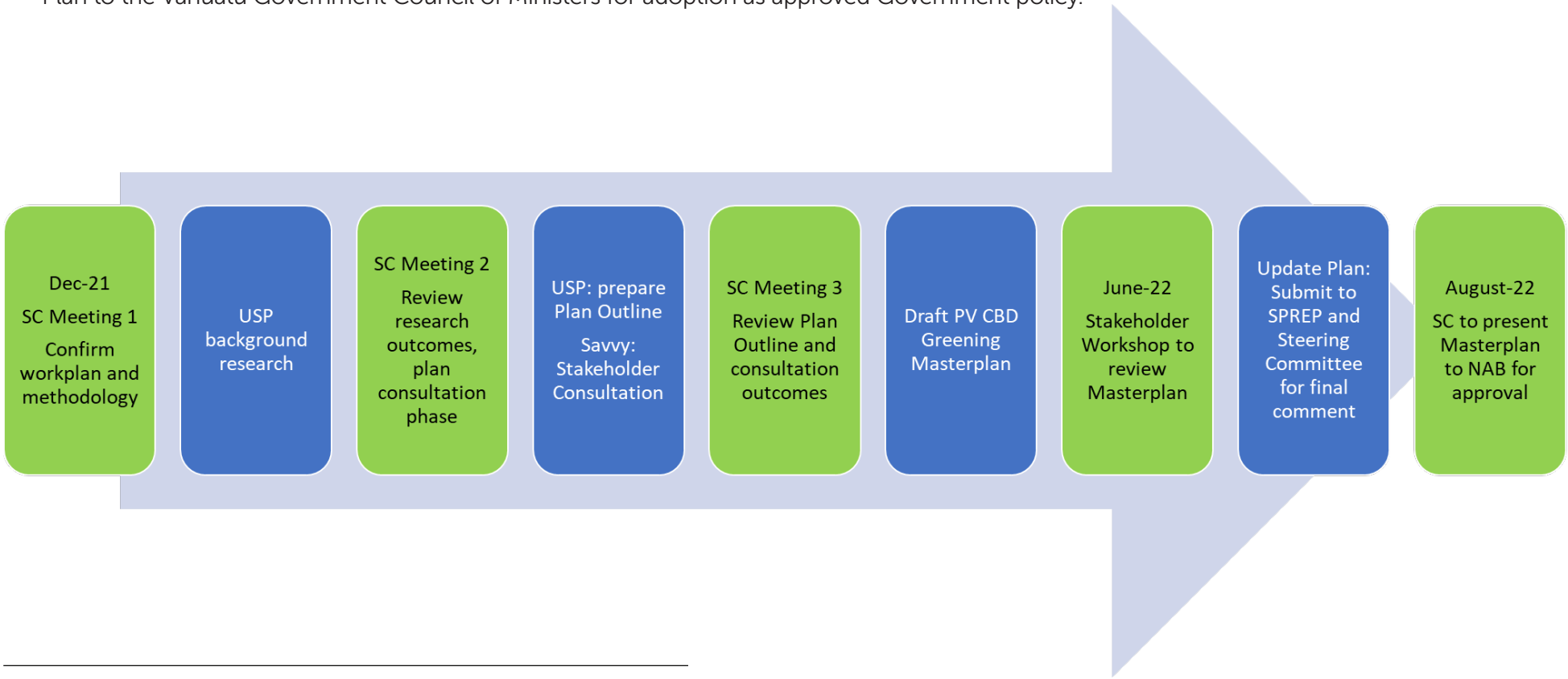
- Director, Department of Urban Affairs and Planning (Chair)
- Town Clerk, Port Vila City Council (Deputy Chair)
- Director, Department of Climate Change
- Director, Department of Forestry
- Director, Department of Local Authorities
- Director, Department of Environment
- Secretary General, SHEFA Provincial Government
- Project Manager, SPREP (Advisor/ Observer)
- PACRES Project Officers (Advisor/ Observer).

The Steering Committee met a total of four times as well as attending the National Stakeholder Workshop.

The National Stakeholder Workshop was held on 22 June in Port Vila. The workshop attracted a range of Government, private sector and civil society representatives and was also streamed on-line. Workshop sessions gave participants an opportunity to review and test some of the Plan's proposed recommendations. Workshop outcomes were further reviewed by the Steering Committee. A recording of the workshop can be found on the Port Vila Urban Greening Facebook page.

The approval process for the Master Plan included:

- Presentation of project scope to the National Advisory Board on Climate Change in February 2022 (an intra-governmental body comprising all Government Departments)
- Approval of Plan structure and contents through the Steering Committee
- Review of draft Plan by National Stakeholder Workshop and Steering Committee
- email review of the final draft Plan by Steering Committee
- Presentation of the final Plan to the National Advisory Board in August 2022. Upon approval, the National Advisory Board will submit the Master Plan to the Vanuatu Government Council of Ministers for adoption as approved Government policy.



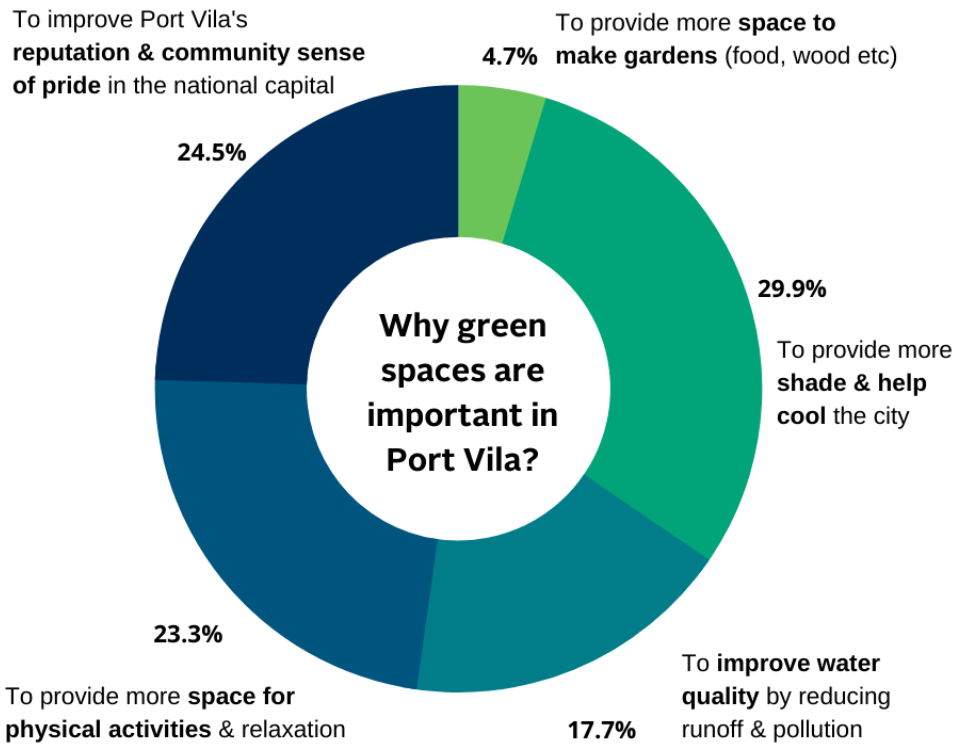
Community consultation and presentation of the plan and feedback

Overall outcomes of the surveys included:

- There was overwhelming support for greening of Port Vila
- The most common benefit sought by stakeholders was shade and cooling of the city, followed by space for recreation / exercise, and civic reputation/ pride
- The priority area for greening was identified as the CBD, followed by the Northern Gateway
- There was little variation between stakeholder groups or by gender.

Survey	% who see greening as 'Very Important'	TOP 2 Reasons for Support	TOP 2 Priority Areas
Public English	94%	69% shade/ cooling 54% reputation/ pride	68% CBD 58% Northern Gateway
Public Bislama	92%	64% shade/ cooling 50% reputation/ pride	66% CBD 57% Northern Gateway
Public French	92%	53% water quality 44% recreation/ exercise	66% CBD 46% Southern Gateway
Private Sector	96%	62% shade/ cooling 62% recreation/ exercise	85% CBD 50% Northern Gateway
Public Sector	97%	61% shade/ cooling 59% recreation/ exercise	59% Northern Gateway 53% CBD

Table 5: Survey results by sector



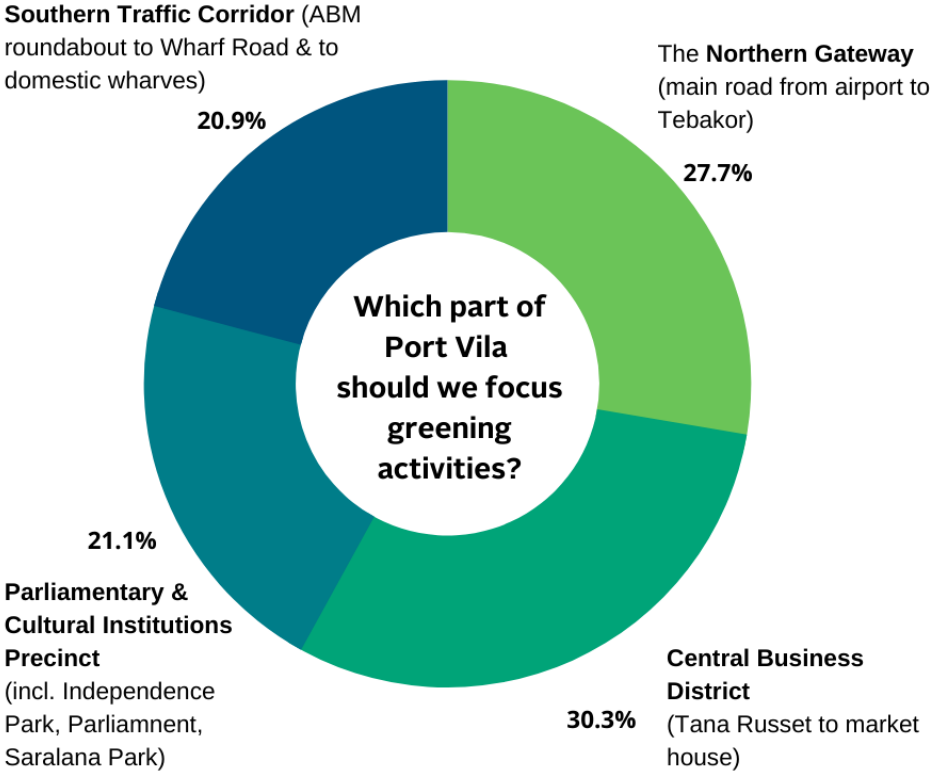


Figure 11: Distribution of preferences by precincts

Both the surveys and the Facebook page allowed stakeholders to make specific comments on the project. These comments can be broadly grouped into four categories.

1. The important role that trees play in Port Vila was a strong message from the community. Trees provide shade and in doing so, help cool the city during the hottest months. They are also attractive and give people a sense of well-being and pride in Port Vila as a green and attractive city. Concern was expressed about the lack of controls or regulations around the removal of trees along major road corridors and in retail areas. The plan will develop a strategic approach to planting and maintaining trees within the study area
2. Pleasant and accessible parks and public spaces were a strong theme across the community. There was recognition of the important and valuable role that the Seafront Feiwa and Fatumaru bay park play in providing public spaces in town. There was also a good understanding from the community that the quality of open spaces can enhance the reputation of Port Vila as the primary tourism destination for Vanuatu. Another theme that emerged was the sense of importance that the community felt about the role of parks, ovals, and public spaces in reflecting a sense of pride in Port Vila as the national capital and the location of national cultural institutions, the parliament and the convention centre
3. Water quality was a concern for many community members. There was an expectation that improved planting of trees may help to reduce sedimentation, erosion, and runoff into surrounding waterways. The plan will serve to harmonise a number of initiatives across different catchments and promote the role of green infrastructure to improve existing and proposed water quality initiatives

The fourth theme was a general desire in the community to protect and retain green spaces across the city. These include all types of vegetation that contribute to improving the quality of the environment in Port Vila. The plan recognizes that a number of conservation corridors exist within the study area and these should be mapped and managed as important environmental assets Introduction to Savvy specialization in community consultation, original plan for consultation interrupted by COVID moved to online including Facebook page survey.

Participants at the National Stakeholder Workshop workshopped four key issues, and identified challenges and actions for each of these issues:

- Greening of the Central Business District Precinct
- How to improve access to; and improve use of public green spaces by the community
- Greening of the Parliament/ National Institutions Precinct
- How to improve the resilience of Port Vila's Natural Assets through enhancing environmental outcomes.

Part 3
Landscape assessment and design guidelines

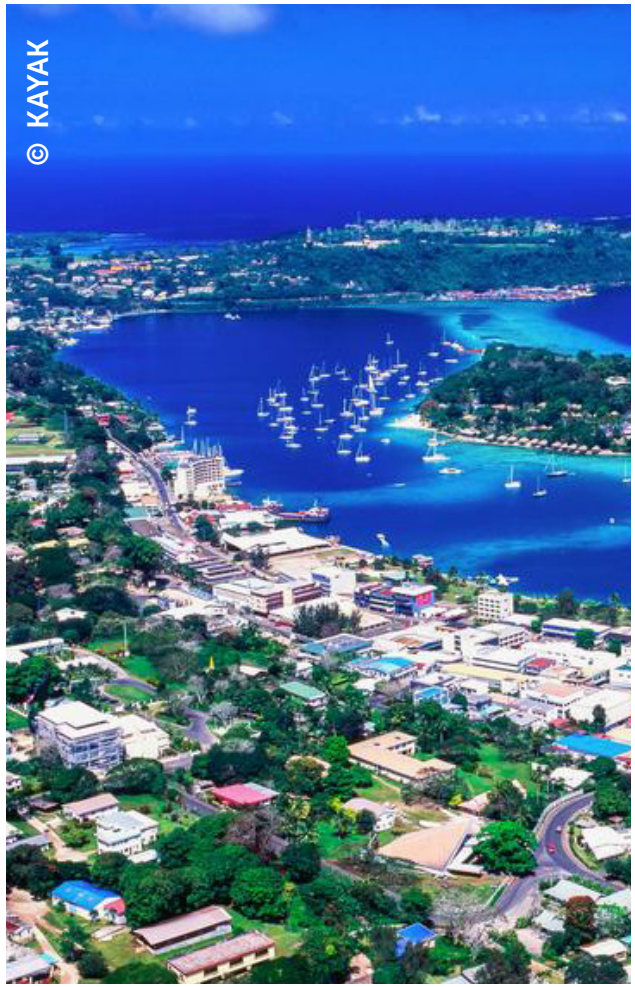


Figure 11: Port Vila CBD and Harbour

Landscape assessment - evaluating existing conditions of green assets

Port Vila is a medium-sized urban centre 17 degrees south of the equator in the sub-tropical zone with small variations in temperature during the year. Average temperatures range from 21°C to 27°C, however, seasonal temperatures in Port Vila exhibit high variability with summertime highs exceeding 30°C and minimum temperatures often reaching below 20°C[11]. The mean annual precipitation for Vanuatu is around 2500mm per year with a distinct wet season from December to April. Vanuatu is in the southwestern Pacific cyclone corridor and experiences an average of three to five cyclones per year[12]. A Green infrastructure strategy for Port Vila needs to take into consideration increased risks associated with climate change such as increase frequency and intensity of cyclones, flooding, landslides and drought.

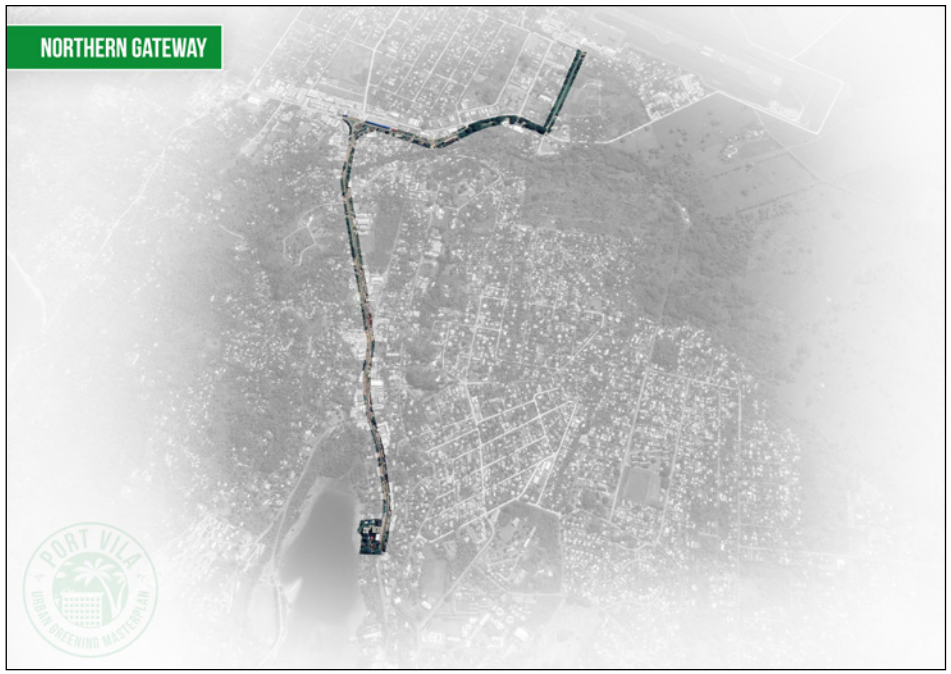
The Vanuatu population in 2020 is estimated at 308,956 with an average growth rate over the last five years of 2.53%, representing an average increase of 7,203 people per annum. Urban population is estimated at 57,944 and Port Vila is gaining an average of approximately 1,300 people per year. There are 10,965 households in Port Vila and 9,795 were connected to the water mains. Approximately one in ten households are connected to the water mains and rely on other sources for drinking, cooking and bathing. There has been increasing community concern that the water table has lowered over time resulting in a reduced quantity of water available for use, but there have been no comprehensive hydrological studies carried out on the available volume of extractable water or projections oh how increase water demand from urban immigration could affect supply. Integrating water sensitive urban design into the protection and management of critical water catchments can improve the quality and quantity of ground water and surface runoff available for communities who have no access to mains water.

Port Vila is a green city. The relative abundance of vegetation compared to other Pacific Capital cities such as Apia, Samoa and Suva, Fiji, is apparent. However, the abundance of vegetation is patchy.

[11] World Bank https://climateknowledgeportal.worldbank.org/country/vanuatu/climate-data-historical
[12] https://www.vmgd.gov.vu/

Four precincts

The Plan is organised around four precincts that are defined by the distinct landscape characteristics, dominant land use and cultural significance. The four precincts are, the north and south entry gateways, the cultural precinct, the administrative precinct and the city precinct.



The northern gateway

The northern gateway extends from Bauerfield Airport to Chantilly's at the northern end of Faturmaru Bay Park. This gateway is the major entry for visitors entering Vanuatu by air. The corridor is divided into two zones that have distinctive landscape characteristics. Bauefield to Tagabe roundabout is predominantly an established avenue of large trees. From Tagabe roundabout to Chantilly's is dominated by the high volume Lini highway with patches of vegetation, with few street trees and exposed to sun and wind.

The southern gateway

The southern gateway is the major entry for passenger on cruise ship tourists. Like the northern gateway, the southern gateway can be organised into two zones. Wharf road from Lapetasi wharf to the wharf road roundabout is a wide low volume heavy vehicle road with large corridors of vegetation to the south along Eluk plateau. The zone from Wharf Road roundabout to ABM Nambtu includes the high volume Pango Road and Kumul Highway. This zone is less organised with fewer clusters of trees and exposed to sun and wind.

The City Precinct.

The city precinct includes the central business district (CBD) and the seafront from Chantilly's to the Central Market. The CBD has a grid structure with the north south roads (including Kumul Highway) enclosed by narrow footpaths and European village style building facades. The east-west roads traverse up a steep ridge with similar road corridor scale. The CBD has an established character that depends on building facades to provide a pleasant pedestrian friendly scale. This intimate scale also creates a sense of crowding and conflict with traffic during high traffic periods. Opportunities for street tree plantings are limited, whereas gardens and street furniture can be used to improve the pedestrian experience (the gardens adjacent to Jungle café are a good example). The seafront zone (Feiwa and Fatumaru Park, and Central Market) is a multi-purpose mixed use space designed for tourists and local families to enjoy. Along the 1200m long seafront redevelopment, the vast majority of the new public space is oriented towards informal gatherings on lawns, swimming in the harbour or just sitting under the new shade trees.

The Administrative Precinct

The Administrative Precinct is the setting for many government department buildings, the Prime Minister's Office and the OPP offices and the site for the new Supreme Court currently under development. These buildings are located in a park like setting which is pedestrian friendly with large open spaces and few low volume roads. The opportunity exists to enhance the campus like character of this precinct to preserve and enhance the environmental qualities of the space and increase pedestrian access to the green spaces and parks for workers and surrounding residences. Independence Park is at the centre of this precinct.

The cultural precinct

The cultural precinct can be understood as a triangular setting for the major cultural and national institutions. The three distinct zones are; Parliament House, the Convention Centre and Saralina Park. Parliament house set in a picturesque garden setting with views over Port Vila Harbour and Irriki Island. Parliament house orients east towards the Kumul Highway and Saralina Park. The Convention centre is the largest and most prominent building overlooking the CBD. The Convention centre includes a large forecourt and carpark surrounded by a large open grassed area with no public utility value. Saralina Park is the setting for major cultural institutions including the National Cultural centre and the Chief's Nakamal. Saralina Park itself has a natural amphitheatre character, surrounded by large shade trees to the north and a performance stage to the south.

Recommended strategies for promoting and improving environmental quality and public health through urban greening strategies.

Port Vila is already a green city. The considerable abundance of vegetation is one of its greatest assets. The Plan recommends that new strategies for greening should take into consderation and incorporate exisitng greenery as much as possible. Four strategies are proposed and corresponding design guidelines have been developed to implement this Plan.

Identifying existing green infrastructure assets.

This Plan recommends that a greater Port Vila metropolitan conservation management plan is needed to identify natural assets and degraded areas that will benefit from increasing the diversity and complexity of vegetation communities. For example, the Integrated Tagabe River Catchment Management Plan identifies degraded vegetation communities and incorporates a range of green infrastructure elements to reduce sedimentation, increase stream flow and ground water recharge.

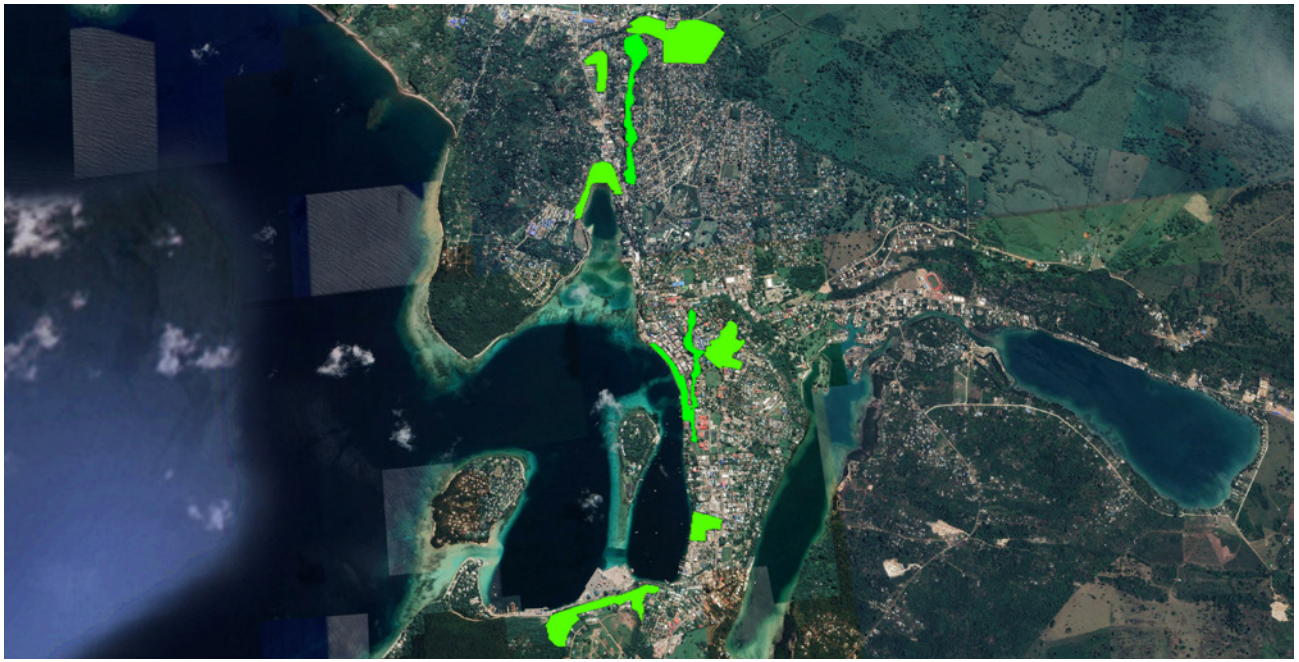


Figure 12: Proposed areas for conservation

Port Vila's public green spaces are dominated by large open parks and ovals. The main parks and open spaces include Fatumaru Park, Feiwa Park, Independence Park, Saralina Park and the Conference centre[13]. Fatumaru Park and Feiwa Park, were redeveloped between 2015-2018 as multi-purpose, mix use spaces designed for tourists and local families to enjoy. Along the 1200m long seafront redevelopment, most of the new public space is oriented towards informal gatherings on lawns, swimming in the harbour or just sitting under the new shade trees. The continuous seafront promenade also acts as a magnet for tourists arriving through the cruise ship season, increasing their time spent at the two market houses that exclusively sell made-in-Vanuatu products and services[14].

Saralina Park and Independence Park are Port Vila's major gathering spaces. These parks are large lawn areas used for formal and informal gatherings such as the 40th anniversary of independence celebrations. The convention centre open space has a similar open space layout, however the lawn isn't maintained or designed to accommodate people. The opportunity exists to incorporate this space into the city's park network.

Figure 13: Existing Parks and Public Opens Spaces

[13] The conference centre open space in not a public park
[14] https://nzila.co.nz/showcase/vanuatu-infrastructure-tourism-project

Four goals for achieving the Urban Greening Master Plan Strategies

Figure 14: Central Markets Port Vila

1. An Urban Forest Plan for a 30% increase in vegetation by 2030.

Stakeholder feedback and community consultation has identified the need to make Port Vila streets and parks more comfortable and enjoyable. This includes improving shade in our streets, parks and other public spaces. The most cost effective and efficient method for improving the environmental quality of our streets and parks is to protect existing trees and promote the strategic planting of new trees and gardens along major road corridors, urban areas and parks.

The Plan recommends a target of increasing the urban canopy of the Plan area by 30% by 2030. Four strategies are proposed to achieve this goal.[15]

[15] https://www.melbourne.vic.gov.au/SiteCollectionDocuments/urban-forest-strategy.pdf

Increase canopy cover

Port Vila is a green city, its natural climate and low density layout is suitable for growing trees and gardens, particularly in residential areas. However, there are significant opportunities to improve the density and connectivity of trees within the Plan areas of interest. The landscape analysis identified significant opportunities for increasing planting of street trees along the Wharf road and the Lini Highway and parts of the CBD and Seafront. To achieve this target, the Plan recommends

Appoint an urban forester in the Department of Forestry. The agency with the expertise, resources and policy framework for managing the Port Vila urban forest is the Department of Urban Forestry. The aim of this appointment will include interagency cooperation and oversight of amendments to Forestry Act to protect and enhance urban trees.

Undertake a detailed tree audit and registry of significant trees in selected areas. Developing a baseline understanding of the existing urban forest will allow agencies to develop specific targets for increasing the urban forest canopy.

Amendment of the Forestry Act to include provisions for regulating removing, cutting or damaging of trees in designated urban areas. Including provisions for the Forestry department to evaluate applications from lease holders to cut or remove trees is a simple approach to weighting up the merits of a lease holders claim to remove a tree in target areas.

The amendments should allow for the forestry department to;

- Refuse permission to remove a tree
- Allow for pruning of a tree
- Permit the removal of a tree
- Mandate replacement plantings to compensate the loss of canopy.

Establishing annual tree planting targets for PVMC and Shefa provincial government for selected areas with support from the Department of Forestry, the agencies can be incentivized to meet tree planting targets in selected areas.

Increase urban forest diversity and connectivity

The health of an urban forest, like all forests depends on species diversity, structural diversity and age diversity. Port Vila currently has a very diverse urban forest. This means that there is a large variety of tree species of different sizes and different ages. The major challenge for Port Vila is improving the connectivity of the urban forest. Connectivity refers to the degree of connection between the various natural elements in the landscape, in terms of their components, spatial distribution and ecological functions[16]. A forest is more connected than farmland and cities because the of natural abundance and diversity of trees and plants. Farms and cities are fragmented landscapes because we have removed many of these natural elements. To reduce

[16] https://ecologicalconnectivity.com/

the negative impacts of fragmentation, conservation biologists recommend increasing the connectivity between habitats. This has the effect of increasing opportunities to increase biodiversity in Port Vila, but will also help existing plant communities to be more resilient to climate change impacts (such as more intense cyclones).

Increasing forest diversity and connectivity also delivers more ecological services to the community.

Improve tree health

The most effective method of enhancing the Port Vila Urban Forest is to maintain the health of existing trees. The focus for improving tree health is largely a training and awareness challenge. For Ni Vanuatu gardening and caring for plants is deeply rooted in kastom. Translating this knowledge into caring for urban vegetation requires specific training on the major causes of stress on trees and the techniques and tools that can remedy those impacts.

Improving tree health requires the development of guidelines and training of municipal staff in tree care. Examples from Standards Australia are included in the Appendices

- Good tree management practices such as establishment (post planting care), and management of pest outbreaks where necessary. The department of Forestry has the resources and skills to produce guidelines for selecting, planting, establishment care, pruning and pest and disease control.
- Good soil health. This includes the protection of tree roots by reducing compaction and contamination during construction and development projects. The department of public works has the engineering knowledge and skills to produce guidelines for preparation of soil prior to planting, protection of tree roots from compaction, root control methods and maintaining soil health in dense urban areas.
- Improve water quality.
- Improving, protecting and enhancing urban forest ecosystems.

Inform and consult the community

The strength of the urban forest plan will require continuous input and support from the community and stakeholders. Tree planting and establishment is time consuming and requires attention from motivated stakeholders. Similarly, the implementation of regulations to protect trees on privately leased land also requires support from lease holders who may be subject to orders to protect or replace trees during development. Maintaining community support through good quality reporting on canopy targets and calls for support for tree planting programs will strengthen the long term success of an urban forestry plan.

2. Improve access to and use of public green spaces by the community

The Plan acknowledges the importance of public parks and places for Port Vila's residences. The demand for access to public spaces will increase as the population increases. In the decade between 2010 -2020 Port Vila's population grew an average of 2.2% in the municipal areas and the peri-urban areas grew at 2.6% per year[17]. This rapid population growth has placed significant pressure on urban infrastructure and resources. Compounding these development pressures are increased environmental and social impacts of climate change on the city's infrastructure and natural assets. Within the Plan areas of interest are major public parks and open spaces. These include the Seafront, Feiwa Park and Fatumaru Bay Park, Saralina Park, Independence Park and the Convention Centre. The community feedback reported a strong desire for these parks and other green spaces to become more available to the public.

To improve access and use of public green spaces, the Plan recommends the following;

Prepare management plans for significant parks and precincts. In 2018, a management plan was prepared for the Seafront, Feiwa Park and Fatumaru Bay Park. The aims of the Seafront Management Plan were to maximise opportunities for visitors to experience a taste of Vanuatu's cultural, social, Environmental and commercial excellence; and to encourage tourists and local residents to use and enjoy Port Vila's Seafront precinct. Similar plans should be prepared for other major parks, precincts and green spaces within the Urban Greening Plan areas.

Park/Precinct	Identity/Major Use (existing and potential)	Key aims
Saralina Park (Cultural Precinct)	Event space, community markets, cultural significance	Reinforce landscape setting of national cultural institutions, support and encourage large gathering events, increase legibility and circulation. Identify opportunities for environmental improvements.
Convention Centre (Cultural Precinct)	National setting, potential gathering space, environmental improvements.	Reinforce landscape setting of national cultural institutions, support and encourage large gathering events, increase legibility and circulation. Identify opportunities for enhancing water quality improvements.
Independence Park	National setting, sport and parades, large gatherings. Potential for small group gathering, ecological corridors and environmental improvements	Reinforce the ceremonial and sporting significance; create small scale spaces for family gatherings. Identify opportunities for enhancing water quality improvements.

Table 6: Management Plan objectives for key parks in Port Vila

[17] World Bank - World Bank rankings 2020.

3. Improve the reputation of Port Vila as a green and clean capital of the Republic of Vanuatu

Port Vila is the National Capital of the Republic of Vanuatu. The Government invested significant funds in preparing for and hosting a week long festival for the 40th Anniversary independence celebrations. This event reinforced the notion that the citizens of Vanuatu value the symbolic importance expressed in the management and use of Independence Park during 2020. The sense of community and coming together are key attributes that green spaces can embody as part of this Plan. The Plan recommends the following actions.

Prepare heritage landscape management plan for the cultural and administrative precincts. Port Vila's built environment heritage is situated in campus like settings and anchored by Saralina Park to the South and Independence Park to the north. This heritage value of this landscape setting should be mapped and protected. This can be achieved by careful consideration of siting guidelines for new buildings, roads and other infrastructure. The National Triangle in Canberra, Australia provides a good example of how to plan and develop national institutions in a heritage landscape setting[18].

Figure 15: The National Cultural Centre

[18] https://www.nca.gov.au/attractions/national-triangle

Precinct	Heritage/Cultural Value	Key objectives
Cultural Precinct	Setting for major cultural institutions and Parliament. Saralina Park is a natural amphitheatre used for cultural events (e.g. Natuman Film Festival).	Enhance the national significance through planting of trees that represent Vanuatu's natural and cultural history. Develop guidelines for the planning and management of greenspaces surrounding major cultural institutions. Prepare a heritage management plan for the Parliamentary Gardens. Prepare a feasibility study into the development of a national arboretum.
Administration Precinct	Setting for many government department buildings, the Prime Minister's Office, the Legal precinct. The Precinct enjoys a park like setting. It is pedestrian friendly with large open spaces and few low volume roads. Independence Park is a sporting and ceremonial ground.	Improve pedestrian access through the precinct and to the CBD and Lini Highway. Strengthen the ceremonial quality of Independence Park through Avenue Plantings. Enhance the national significance through planting of trees that represent Vanuatu's natural and cultural history.
Northern Gateway	The Northern Approach from the Airport to the Tagabe Roundabout has an avenue entry sequence that reflects the green urban character of Port Vila. Tagabe roundabout to Fatumaru Bay is a broad avenue that passes through mainly industrial / commercial zones with views across to Malapoa. Limited tree cover.	Develop a register of significant trees on public land in Tagabe and prepare a management plan. Enhance avenue character of Airport Entry. Identify opportunities to plant clusters of trees along the Lini Highway/ Ring road between Tagabe Roundabout and Fatumaru Bay.

Southern Gateway	Wharf Road to Wharf Road roundabout southern approach is a wide industrial road with views across Port Vila harbour to the North and Elouk Plateau to the South. Nambatri roundabout to ABM roundabout is a mixed use industrial/commercial high-volume road. Limited tree cover. ABM roundabout to Grand Hotel is a mixed commercial high volume road descending to the CBD with views over Port Vila Harbour.	Identify opportunities to plant clusters of trees along the northern edge of Wharf Road retaining views across Port Vila Harbour. Identify opportunities to plant clusters of trees along the Kumul Highway to increase shading and create an informal avenue character to the southern entry to the CBD. Identify and enhance southern gateway to CBD along the Kumul Highway opposite Parliament house and adjacent to Law Partners House.
The City Precinct	CBD has a grid structure with the north south roads (including Kumul Highway) enclosed by narrow footpaths and European village style building facades. East West roads traverse up a steep ridge with similar road corridor scale. Limited opportunities for tree planting. Seafront Precinct (Feiwa and Fatumaru Park, and Central Market). Designed waterfront promenade with generous pedestrian boulevard and open park like setting. Buildings reflect vernacular architecture and materials.	Identify opportunities to visually connect the CBD and the Seafront through east-west tree plantings and pavement treatments. Extend the park and avenue planting from Fatumaru Park south to Fung Kuei. Investigate purchasing the block adjacent to the Central Market to extend the Seafront park.

Table 7: Key aims for heritage management plans for each precinct

4. Improve the resilience of Port Vila's natural assets through enhancing environmental outcomes.

Water quality

The Plan advocates the training and awareness raising of Urban Planners on the benefits of water sensitive urban design as part of a broader metropolitan urban greening agenda. Interventing in the flow of surface water in the upstream parts of the catchment will have greater potential to improve the water quality entering streams, estuaries and the harbour. Future upgrades to the northern and southern corridors (Ring road, Lini and Kumul Highways and Wharf road) should include water sensitive urban design standards. Likewise, properties along these corridors should contribute to the design and construction of green infrastructure to offset the imapcts of development on water quality.

Air quality

Green infrastructrue can contribute to improving air quality, however poor management of natural assets can also contribute to poor air quality. For example, increased canopy density of an urban forest can positively contribute to improving air quality by trapping airbourne pollutants on the leaf surface. However it can also reduce air circulation and dispersal of pollutants (such as diesel fumes) at gound level. Grasses and small woody perennials are often burned to reduce mass and make land avaialable for gardening. In certain circumstances, this practice is detrimental to air quality and increases health risks for asthma sufferers. The role of green infrastructre in reducing air pollutants should not be overestimated although it is necessary that vegeation is part of borader environmental regualtions to reduce air bourne particulates from vehicle emissions and regulate the burning of vegetation.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Biodiversity

Green infrastructure plays an important role in supporting habitat for a diversity of species including insects and other invertebrates, spiders, bees, birds bats and other predators. The level of connectivity (the uninterrupted connection between tree canopies and understory shrubs) provides a good indicator of species diversity in urban settings. Therefore existing patches of relatively dense vegetation should be conserved for this purpose. Of equal importance are the corridors or narrow avenues of trees along road ways that allow larger species (birds and bats) to migrate and feed safely without risk of predation or attack. In other words, well maintained tree corridors can provide continuous shelter for species to move along, thus making reproduction and survival more likely. In a fragmented landscape such as Port Vila, improving connectivity between patches of vegetation is a cost effective way to protect and enhance biodiversity.

Protecting and managing existing conservation corridors is a cost effective and effiicent method for preserving and enhancing biodiversity in Port Vila. The Plan avdocates two strageties for achieving this goal.

- The Plan advoctes the development of conservation management plans for existing areas of high ecological value.
- New green infrastrcture initiatives should incporporate increased connectivity as a measure of success.

Appendix: Design Guidelines for implementation of the Plan

Design Guidelines

Four Goals four precincts

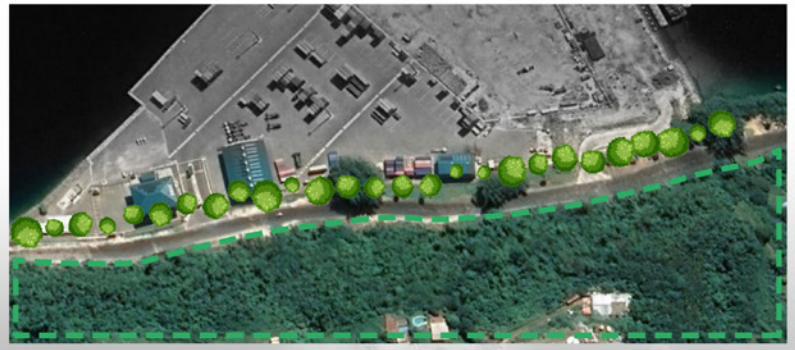
Goal	Northern and Southern Gateways
A 30% increase in the urban canopy by 2030.	Document existing trees along the main road corridors. Identify significant trees for protection from damage or removal. Plan street tree planting along the ring road corridor at clusters of shops/factories (e.g Manples, Tagabe shops, Malapoa intersection, wharf road intersection, ABM Nambatu,). Incorporate Mangrove revegetation of Fatumaru Bay into the canopy targets.
Improve access to and use of public green spaces by the community.	Identify opportunities for road crossings and traffic calming devices to improve pedestrian safe movement across the road and at intersections. (eg. Malapoa road intersection, Wharf road intersection).
Improve the reputation of Port Vila as a green and clean capital of the Republic of Vanuatu	Identify opportunities to incorporate road verge treatments (swales, rain gardens, complex plantings) at the major entry points (Bauerfield airport to Tagabe roundabout and Lapetasi to Wharf Road roundabout)
Improve the resilience of Port Vila's natural assets through enhancing environmental outcomes.	Identify opportunities to improve the connectivity of existing vegetation of high biodiversity value. Identify opportunities to incorporate water sensitive urban design elements into the road corridor to maximise upper catchment water treatment (e.g Manples detention pond, drainage swales or rain gardens between wharf road roundabout and ABM Nambatu)

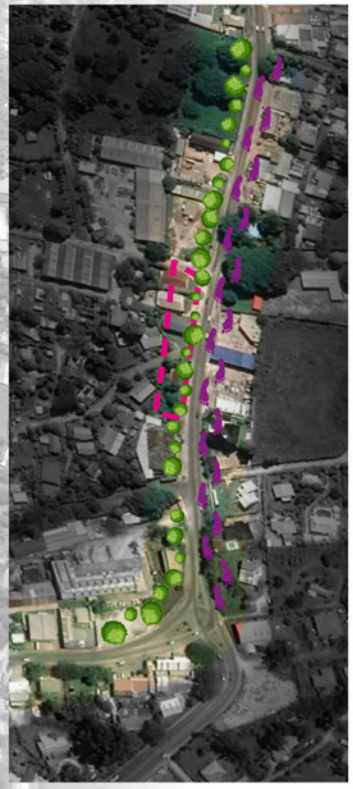
NORTHERN GATEWAY

Legend

- Preserve or retain existing vegetation
- Prepare heritage management plan
- Improve pedestrian access
- Enhance urban forest canopy
- Enhance vegetation and improve connectivity
- Enhance vegetation in public open space
- Opportunities for water sensitive urban design
- Formal avenue planting

SOUTHERN GATEWAY



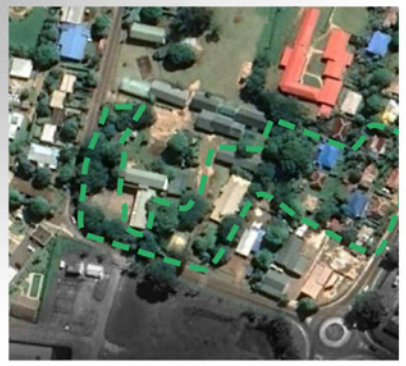


Legend

- Preserve or retain existing vegetation
- Prepare heritage management plan
- Improve pedestrian access
- Enhance urban forest canopy
- Enhance vegetation and improve connectivity
- Enhance vegetation in public open space
- Opportunities for water sensitive urban design
- Formal avenue planting

Goal	Administrative Precinct
A 30% increase in the urban canopy by 2030.	Identify significant trees for protection from damage or removal. Identify opportunities to plant trees to improve connectivity. Develop avenue plantings for Independence Park. Enhance shade plantings for Central School. Develop tree planting plan in conjunction with the development of the supreme court.
Improve access to and use of public green spaces by the community.	Prepare a detailed landscape design for the open space to the north of Independence Park as a community park. Prepared a detailed landscape plan for Port Vila central school. Design an accessible pedestrian path networks across the precinct. Prepare a detailed landscape design for the Prime Minister's offices. Prepare detailed landscape design for the supreme court development.
Improve the reputation of Port Vila as a green and clean capital of the Republic of Vanuatu	Prepare a detailed landscape design for Independence Park. Develop an interpretive signage plan to explain the significant administrative institutions (e.g. PM compound, stadium, supreme court).
Improve the resilience of Port Vila's natural assets through enhancing environmental outcomes.	Map and document areas of high conservation value and designate conservation status. Prepare WSUD plan for the capture and filtration of surface water. Prepare car parking plan to capture and control storm water runoff.

ADMINISTRATION PRECINCT

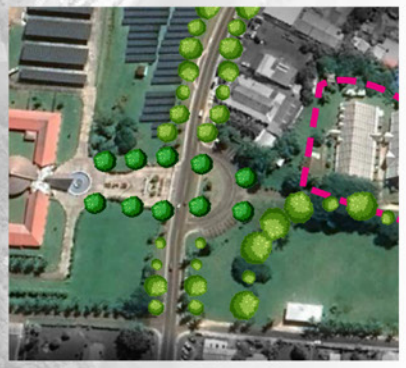


Legend

- Preserve or retain existing vegetation
- Prepare heritage management plan
- Improve pedestrian access
- Enhance urban forest canopy
- Enhance vegetation and improve connectivity
- Enhance vegetation in public open space
- Opportunities for water sensitive urban design
- Formal avenue planting

Goal	Cultural Precinct
A 30% increase in the urban canopy by 2030.	Identify significant trees for protection from damage or removal. Prepare a tree planting plan to achieve a 30% increase in canopy cover as a showcase example of urban forestry development.
Improve access to and use of public green spaces by the community.	Identify opportunities for road crossings and traffic calming devices to improve pedestrian safe movement across the road and at intersections. (e.g. Saralana Park crossing to Parliament House, Dumbea Court intersection). Prepare detailed landscape design for the Conference Centre.
Improve the reputation of Port Vila as a green and clean capital of the Republic of Vanuatu	Develop consultation plan and concept note for the development of a national arboretum across the precinct. Prepare a heritage management plan for Parliament House Gardens. Prepare a detailed landscape design for Saralana Park.
Improve the resilience of Port Vila's natural assets through enhancing environmental outcomes.	Map and document areas of high conservation value and designate conservation status. Prepare WSUD plan for the capture and filtration of surface water at Saralana Park entry and Conference Centre Carpark.

CULTURAL PRECINCT



Legend

- Preserve or retain existing vegetation
- Prepare heritage management plan
- Improve pedestrian access
- Enhance urban forest canopy
- Enhance vegetation and improve connectivity
- Enhance vegetation in public open space
- Opportunities for water sensitive urban design
- Formal avenue planting

Goal	CBD and Seafront
A 30% increase in the urban canopy by 2030.	Identify significant trees for protection from damage or removal. Identify opportunities to enhance street tree planning north and south of the CBD. Introduce minimum open space coverage for all waterfront developments between Central Market and Chantillys. Identify limited opportunities for tree plantings in car parks and open spaces in the CBD.
Improve access to and use of public green spaces by the community.	Identify opportunities for road crossings and traffic calming devices to improve pedestrian safe movement across the road and at intersections to improve east-west access between the Seafront and the CBD. Develop a wayfinding signage plan to encourage residents and tourists to visit the Seafront from the CBD.
Improve the reputation of Port Vila as a green and clean capital of the Republic of Vanuatu	Implement the 2018 Seafront Management Plan. Develop incentives for business houses to adopt greening plans for leased properties.
Improve the resilience of Port Vila's natural assets through enhancing environmental outcomes.	Prepare WSUD plan for the capture and filtration of surface water at selected CBD car parks.

CITY PRECINCT

Legend

- Preserve or retain existing vegetation
- Prepare heritage management plan
- Improve pedestrian access
- Enhance urban forest canopy
- Enhance vegetation and improve connectivity
- Enhance vegetation in public open space
- Opportunities for water sensitive urban design
- Formal avenue planting

PORT VILA

URBAN GREENING MASTERPLAN

Port Vila Urban Greening Master Plan