Preliminary Feasibility Assessment for Potential Geopark Sites in the South-West Coast of Viti Levu in Fiji

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Pacific Community
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PACIFIC TOURISM ORGANISATION

Ministry of Tourism and Civil Aviation

Executive Summary

The opportunity to develop a national network of geosites that could be proposed as a UNESCO Global Geopark in Fiji is a strategic opportunity that should be given further consideration. This preliminary feasibility assessment identifies options to inform future work, site inspections and community consultations of the proposed geopark site in South West Viti Levu.

A key challenge to developing the sites is the absence of strong legislative or community protection of sites of important geological, natural and cultural heritage. The process to develop a geopark could raise awareness of the national and international importance of sites in Fiji stimulating action and identifying champions locally that could drive improved protection, conservation, research and restoration, recognising that this has been a longstanding issue that many decades of research and technical support have attempted to address.[1]

A geopark would align with Fiji's commitment to sustainable tourism development[2], assist in the diversification of tourism product offerings, ensure long-term protection of sites of national and international significance, and provide additional marketing opportunities for the country. If designed appropriately, the geopark designation could stimulate national awareness, educational partnerships with schools in the area and research partnerships with national and international academic institutions. Geoparks are popular in Asia and Europe and they have the potential to bring a new demographic of visitors to Fiji and support educational experiences for existing travellers from the traditional source markets of Australia, New Zealand, and the United States. It can also stimulate the growth of the local tourism market.

UNESCO Global Geoparks are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education, and sustainable development. They focus on ten key areas: natural resources, geological hazards, climate change, education, science, culture, women, sustainable development, local and indigenous knowledge, and geoconservation. There are currently 195 UNESCO Global Geoparks in 48 countries around the world, but only one in the Pacific region (Waitaki Whitestone UNESCO Global Geopark). In 2022, the Fiji Government confirmed the South West Coast of Viti Levu as the preferred geopark site for Fiji and this assessment

[1] Pers. Comm. Dr Dick Watlng
[2] Ministry of Tourism and Civil Aviation (MTCA). 2023. 'National Sustainable Tourism Framework'. MTCSME Official Website. 2023. https://mcttt.gov.fj/division/tourism/national-sustainable-tourism-framework/.

represents a preliminary feasibility assessment of this area based on the UNESCO criteria for geopark development.

Lessons from other parts of the world suggest that a strong local interest, conservation and protection of the sites is a critical basis for building a geopark. Several choices for the proposed geopark location in Fiji and its management have been suggested and would need to be investigated further as part of a more comprehensive feasibility assessment.

As the geopark concept is new to Fiji and the Pacific, the selection of a pilot site on the southwest coast of Viti Levu was guided by its feasibility due to existing infrastructure, accessibility of the region, and existing tourism activities within some of the sites. Experience in this area could provide valuable lessons for elsewhere in Fiji and the region. As the Pacific geoparks initiative was developed as part of the economic recovery process, there is a strong emphasis on leveraging existing infrastructure and product offerings.

Given the complexity of Fiji's tectonic history, island formation, the history of human settlement, and the Lapita culture, the South West of Viti Levu has a strong basis to develop a unique and fascinating geopark given the multiple sites of national and international significance coupled with the rich cultural heritage that has formed around them. From a tourism marketing and awareness perspective, an option explored in this assessment is to link this geological and cultural heritage to current awareness and education of current climate change impacts, centering the global awareness of the current changes Fiji is experiencing within the historical context of sea level change over the last 6000 years. This would need to be further researched to assess its feasibility.

This pre-feasibility assessment introduced the concept of a geopark in Fiji to a wide variety of stakeholders. It attempts to provide additional creativity, thinking, and evidence to inform the scope of future work. The assessment presents preliminary concepts for a Fiji geopark and includes recommendations for consideration by decision-makers. By centring the geopark in a location with strong existing tourism infrastructure and accommodation, it stands a better chance of attracting support from tourism operators and Tourism Fiji through media and familiarisation visits and enhances the possibility of public-private partnerships. Further work would be needed to assess the degree of local leadership, including Provincial and Local government and mataqali-led protection and conservation initiatives, to ensure strong community and resource owner involvement. These factors have been identified as critical foundations for a successful geopark development. Detailed site visits and community consultations will be critical to ascertaining the viability of the options identified in this assessment. An organisational champion and multi-stakeholder management mechanism would also need to be determined to drive the process.

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Acknowledgements

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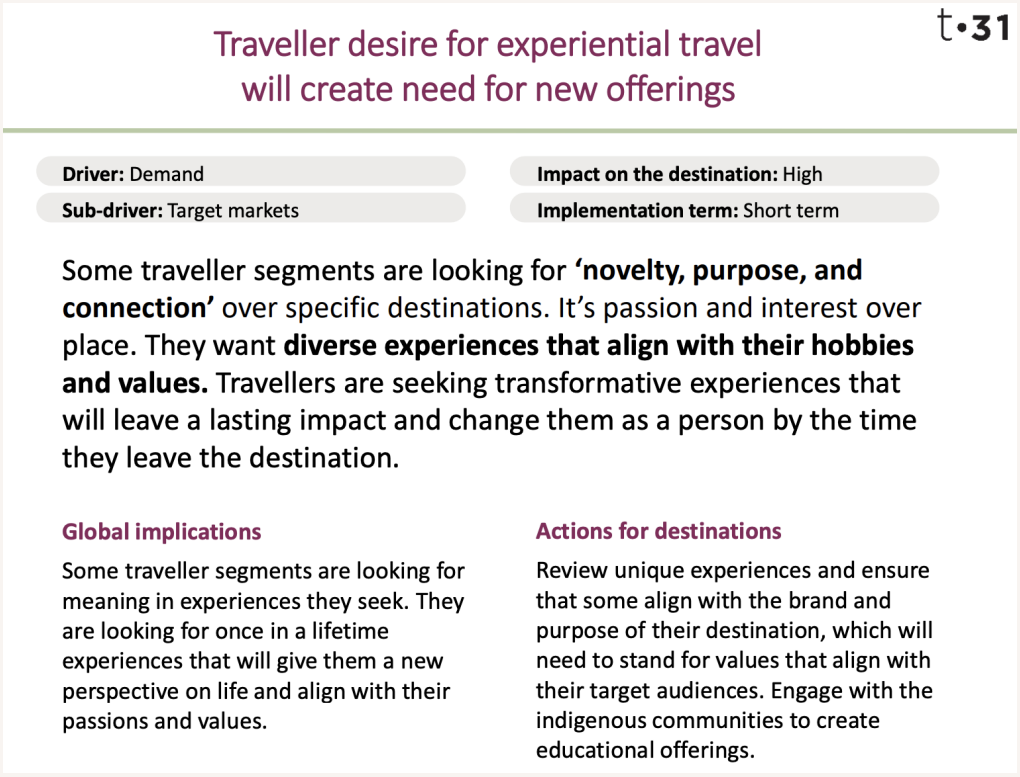
Section 1: Introduction

According to the Pacific Asia Travel Association (PATA) traveller's demands and desires are shifting[3], with travellers seeking more ecologically responsible experiences, off-the-beaten-track destinations, opportunities to immerse themselves in cultural experiences, and the potential to give back to communities[4]. Analysis of consumer trends conducted for Tourism Fiji also indicates that destinations should explore the development of unique experiences that align with their brand values and include indigenous and educational offerings.[5]



Source: Tourism Fiji: The Forward Outlook for Tourism Recovery

[3]Pacific Asia Travel Association (PATA). 2023. 'Strong Tourism Growth Predicted for Asia Pacific in 2023 and Continuing to 2025'. 31 May 2023. https://www.pata.org/press-release/pata-strong-tourism-growth-predicted-for-asia-pacific-in-2023-and-continuing-to-2025.

[4]Savvy Vanuatu. 2021. 'Pacific Ecotourism Recovery Initiative'. Preliminary Feasibility Assessment of Potential Geotourism Sites in The Pacific: Samoa, Vanuatu, Tuvalu and Fiji. SPTO, SPC, and UNESCO. PACIFIC ECOTOURISM RECOVERY INITIATIVE.

[5]Ministry of Tourism and Civil Aviation (MTCA), Tourism Fiji, Fiji Hotel & Tourism Association, Market Development Facility, and Australian Aid. 2023. 'Top 12 Trends Shaping the Future of Travel and Destinations - An Evidence-Based Analysis by Twenty31 Tailored for Fiji's Tourism Industry'. Twenty-31 tourism by design. https://fijicdn.azureedge.net/kenticoproductionmedia/fijicorp/media/mediaazure/pdf_documents/20230208_2023-trends-impacting-fiji.pdf.

These global consumer trends provide an opportunity for Fiji to analyse the possibility of establishing geological experiences as a niche segment that may draw domestic, regional, and international demand for learning, research, and experiential tourism.

Most tourism experiences offered currently in Fiji are ocean-based, including sailing and snorkelling trips.[6] If planned and developed appropriately, a network of geological sites could complement existing experiences and support the growth of community-based and ecotourism experiences. The National Sustainable Tourism Framework, currently under development, is aligned with the Pacific Sustainable Tourism Policy Framework which emphasises visible and valued cultures, inclusivity and sustainability as key pillars to guide the future development of the sector.[7]

> *"The pandemic has given the tourism sector the opportunity to shift the way we plan and manage tourism. Despite the uncertainties ahead, it is important that our islands continuously aspire to innovate, and geoparks for the Pacific is an untapped prospect for the region as we prepare for restarting tourism".* **Christopher Cocker, CEO - SPTO[8].**

A geopark can integrate and expand existing tourist operations, as well as harness the success of Fiji's tourism sector to assist larger conservation aims for natural and cultural heritage and environmental and geological education.

This pre-feasibility assessment of Viti Levu's southwest region highlights what is currently available in terms of tourism experiences, and potential sites that could be developed, and benchmarked against the geological, ecological and cultural elements required to develop a UNESCO Global Geopark.

1.1. The scope of the pre-feasibility assessment

This pre-feasibility assessment is part of a larger project supported by SPTO, SPC, and UNESCO Pacific Office and funded by UNESCO. The project is being developed in stages, with SPTO and SPC facilitating and UNESCO providing technical advice and funding. The project's primary goal is to assess the feasibility of creating UNESCO Global Geoparks in Fiji, Samoa, Tuvalu, and Vanuatu. The assessments from each country will subsequently be used

[6] Phase A Summary Report for the National Sustainable Tourism Framework
[7] Pacific Tourism Organisation (SPTO). 2021. 'Pacific 2030 Sustainable Tourism Policy Framework'. https://southpacificislands.travel/wp-content/uploads/2021/07/Pacific-Sustainable-Tourism-Policy-Framework.pdf.
[8] Wardell, David. 2022. 'UNESCO Global geoparks for the Pacific'. Corporate Web Page, Pacific Community (SPC). 3 May 2022. https://www.spc.int/updates/blog/2022/05/unesco-global-geoparks-for-the-pacific.

to inform a larger future initiative that SPTO, UNESCO, and SPC will submit to possible donors.[9]

A preliminary assessment of the feasibility of geotourism in the Pacific was conducted in 2021 as part of the Pacific Ecotourism Recovery Initiative. The assessment provided an overview of the potential benefits and challenges of developing geotourism and geoparks in Samoa, Tuvalu, Vanuatu and Fiji.

The initial assessment, and lessons from elsewhere in the world[10], guided the Fiji Government (Ministry of Tourism and Civil Aviation, Ministry of Education, Heritage and Arts and Ministry of Lands and Mineral Resources) to assist in the section of a proposed site in Fiji. Based on the findings from this initial assessment that 'geoparks that are located in areas which already have a robust tourism industry have a greater chance of building a sustainable geotourism industry and thus delivering sustainable development benefits to the local community'[11], the Fiji Government selected the South West Coast of Viti Levu as the chosen geopark location for further assessment at the end of April 2022.

This Preliminary Feasibility Assessment addresses the following objectives intending to provide additional evidence and information for use as part of the consideration for a future geopark development in Fiji:

- Assess the potential of ecotourism experiences with strong linkages to geo-tourism opportunities as a diversification strategy for Fiji.
- Enhance community engagement in managing the selected tourism sites
- Identify opportunities (including investment options) and barriers to experience development.

To achieve the assessment's goals, a desktop analysis was conducted to collect and synthesise current research and efforts related to the suggested sites. Technical reports, academic journal articles, tourism interpretation material, and existing maps were used as sources of information. Given the timeline and resource allocation for the assessment, site inspections and community visits were not possible. In-person and virtual stakeholder meetings were held (see Annex 2) to identify key information aligned with the three aims of this assessment. In collaboration with SPTO and SPC, the consultancy team designed a stakeholder engagement strategy to ensure that all shortlisted locations were explored using

[9] Tigarea, Dana, and Gary Lee. 2021. 'Pacific Geotourism: Funafuti geopark Desktop Study, Funafuti Atoll, Tuvalu'. Desktop Study SPC00068. Pacific Community (SPC): Geoscience, Energy, and Maritime Division. https://purl.org/spc/digilib/doc/ubduz.

[10] Savvy Vanuatu. 2021. 'Pacific Ecotourism Recovery Initiative'. Preliminary Feasibility Assessment of Potential Geotourism Sites in The Pacific: Samoa, Vanuatu, Tuvalu and Fiji. SPTO, SPC, and UNESCO.PACIFIC ECOTOURISM RECOVERY INITIATIVE.

[11] Savvy Vanuatu. 2021. 'Pacific Ecotourism Recovery Initiative'. Preliminary Feasibility Assessment of Potential Geotourism Sites in The Pacific: Samoa, Vanuatu, Tuvalu and Fiji. SPTO, SPC, and UNESCO.PACIFIC ECOTOURISM RECOVERY INITIATIVE.

key informants and existing reports in lieu of community consultations. Key stakeholders consulted provided valuable comments, suggestions, and access to unpublished material on the different sites. Stakeholder interviews were structured based on the 'Self-Evaluation Checklist for aspiring UNESCO Global Geoparks (aUGGp)'[12] (see Annex 5) and provided valuable insights on the long-term geological and tourism values of the various sites, the significance of the sites (national and international), and the responsibilities that communities and other stakeholders may play in the geopark operation, conservation and maintenance.

The results of this pre-feasibility study are expected to serve as the foundation for future in-depth site and market research and community consultations that would determine the overall feasibility and scope of future work for the establishment of a geopark in Fiji, as part of ongoing efforts to improve and diversify the country's tourism offerings.

1.2. What is a UNESCO Global Geopark?

The geopark concept arose in the mid-1990s as a response to the need to conserve and enhance the value of areas of geological significance, in Earth's history. Landscapes and geological formations are key witnesses to the evolution of our planet and determinants for our future sustainable development[13]. Geodiversity or geological diversity, is the abiotic component of natural diversity and refers to the number and variety of geological elements, geomorpholical, pedological and hydrological features and processes in a given area which are the result of the geological evolution of the area.[14] Geodiversity is considered to be the backbone of geoheritage, geoconservation and of modern society [15]; and has influenced the biodiversity of a given area.

The UNESCO Geopark Programme was first submitted at the ProGeo Symposium, Geological Heritage of Europe in 1998 as a new UNESCO label to establish a global network of sites having special geological features[16]. From the original idea, the UNESCO Global Geoparks label was formed and moved on to being internationally recognised and synonymous with environmental protection and development[17].

At present, the UNESCO Global Geoparks (UGGp) are described as **single, unified geographical areas where sites and landscapes of international geological significance are**

[12] UNESCO. 2020. 'Self-Evaluation Checklist for Aspiring UNESCO Global geoparks (aUGGp)'. Self-Evaluation Checklist for aspiring UNESCO Global geoparks (aUGGp).
[13] UNESCO. 2015. 'Statutes of the International Geoscience and geoparks Programme (IGGP)'. UNESCO. Statutes of the International Geoscience and geoparks programme (IGGP).
[14] Garcia, M., Queiroz D., and Mucivuna, V. 2022. Geological diversity fostering actions in geoconservation: An overview of Brazil. International Journal of Geoheritage and Parks https://doi.org/10.1016/j.ijgeop.2022.08.008
[15] Chen, L., Guo, F., M., Shao,C., Du, D., Chen, F. and M. Luo. 2022. Geodiversity characterization of the Danxiashan UNESCO Global Geopark of China. International Journal of Geoheritage and Parks Vol. 10, Issue 4, Pages 459-476. https://doi.org/10.1016/j.ijgeop.2022.07.003
[16] Patzak, Margarete, and Wolfgang Eder. 1998. '" UNESCO geopark". A New Programme-a New UNESCO Label'. Geologica Balcanica 28: 33–36.
[17] Alexandrowicz, Zofia, and Stefan Witold Alexandrowicz. 2004. 'geoparks-the Most Valuable Landscape Parks in Southern Poland'. Polish Geological Institute Special Papers 13: 49–56.

managed with a holistic concept of protection, education, and sustainable development[18]. There are currently 195 UNESCO Global Geoparks in 48 countries that integrate conservation and sustainable development as part of wider community efforts to preserve and protect important geological areas[19]. Geoparks are popular in Asia and Europe, and given Fiji's significant tourism industry, they provide an avenue to potentially diversify the visitor demographic[20]. Recent International Visitor Survey data highlights increased spend on experiences in 2022 compared to 2019, both in absolute terms and a proportion of total holiday spend,[21] suggesting that visitors want to engage in meaningful experiences that enhance their knowledge of the destination and that support in-country spending opportunities. Currently, Fiji's main source markets for tourism are Australia, New Zealand, and the United States providing a stable source of revenue during peak season. The geotourism niche can be made available to these markets and potentially attract travellers from the Europe and Asia region where geoparks operate in multiple locations.

A key lesson from global experiences is that strong local champions and ownership from the local government are required to drive the development of a geopark and that sites within the geopark should already be managed and protected. Whilst overall protection and conservation of geological sites in Fiji is relatively weak (see Section X) the process of developing the concept for a geopark could provide support to enhance this protection and support existing efforts to advocate for improved protection and governance, greater community involvement and improved partnerships with educational institutions.

What is a UNESCO Global Geopark?	https://www.youtube.com/watch?v=xlWoMlaTjQo&t=2s
What do you need to become a UNESCO Global Geopark?	https://www.youtube.com/watch?v=lmlE4KSFnrw
UNESCO Global Geoparks	https://www.unesco.org/en/iggp/geoparks/about
Operational Guidelines for UNESCO Global Geoparks	https://unesdoc.unesco.org/ark:/48223/pf0000234539

UNESCO has published useful resources that can help to introduce and socialise the concept of a geopark to stakeholders in Fiji. UNESCO Global Geoparks focus on ten key areas which include, Natural Resources, Geological Hazards, Climate Change, Education, Science, Culture, Women, Sustainable Development, Local and Indigenous Knowledge, and

[18] UNESCO. 2023. 'UNESCO Global geoparks'. https://www.unesco.org/en/iggp/geoparks/about.
[19] UNESCO. 2023. 'UNESCO Global geoparks'. https://www.unesco.org/en/iggp/geoparks/about.
[20] Wardell, David. 2022. 'UNESCO Global geoparks for the Pacific'. Corporate Web Page, Pacific Community (SPC). 3 May 2022. https://www.spc.int/updates/blog/2022/05/unesco-global-geoparks-for-the-pacific.
[21] Fiji International Visitor Survey - 2022

Geoconservation.[22] A geopark needs to integrate geodiversity, biodiversity, and cultural diversity. Due to the holistic nature of UNESCO Global Geoparks, anticipated potential benefits include employment creation, increased tourism revenues, contributions towards economic growth, education, environmental protection/conservation and strengthening and revitalization of traditional knowledge, research and innovation[23]. Additional potential benefits also include raising awareness of climate change and natural hazards, increasing resilience, and broader sustainable development. This framing has been taken into consideration as part of the assessment of the proposed sites. It is important to note that the listing of Levuka as a UNESCO World Heritage Site did not result in the expected increase in visitor numbers to the old capital and accessibility to the town has actually decreased[24]. This may have influenced the limited interest among tourism stakeholders during the consultations.

Given prior knowledge and experience of the UNESCO World Heritage Site listing, as part of the socialisation of the concept of a UNESCO Global Geopark, it will be important as part of future work to address these perceptions as there are differences in the scope, development and management of the different designations. The UNESCO World Heritage Site designation promotes the conservation of natural and cultural sites of outstanding universal value while the UNESCO Global Geoparks designation gives international recognition for sites with international significance that promote the importance and significance of protecting the Earth's geodiversity through actively engaging with the local communities[25]. The UNESCO World Heritage Site designation has strict requirements that include restrictions to the developments or changes to the sites of universal value, whereas a geopark has the freedom to make sustainable changes and developments to the sites as long as the geological/cultural/biological heritage of the sites are maintained[26].

[22] UNESCO. 2021. 'geoparks Fundamental Features | Main Focus Areas | Sustainable Development Goals'. 2021. https://en.unesco.org/global-geoparks/focus.
[23] Tigarea, Dana, and Gary Lee. 2021. 'Pacific Geotourism: Funafuti geopark Desktop Study, Funafuti Atoll, Tuvalu'. Desktop Study SPC00068. Pacific Community (SPC): Geoscience, Energy, and Maritime Division. https://purl.org/spc/digilib/doc/ubduz.
[24] Levuka Airfield remains closed since COVID-19 – FBC News
[25] FAQs general public Frequently asked questions about UNESCO Global Geoparks
[26] Lessons from the Japan Geopark Study Tour

Section 2: Background

2.1 Geology of Fiji

The Fiji group of islands presents a unique laboratory to investigate structures that have resulted from various tectonic activities such as the stranding of an arc from the subduction process (whereby a volcanic arc movement was disrupted), a landmass lifted up out of the ocean through the process of uplift (rather than just volcanic activity), the rotation of a group of islands (on the Fiji Platform), and deformation as a result of back-arc extension and shear deformation[27]. An overview of relevant geological aspects is discussed in this section.

2.1.1 Tectonic Setting

The Fiji group of islands currently sits on the Fiji Platform, on the prominent offset of the convergent boundary between the Pacific and Australian tectonic plates. In Figure 1 (a), below, the group is located to the west of the Tonga arc-trench and to the east of the Vanuatu arc-trench system.[28] This prominent offset marks a broad zone of diffuse spreading and transform faulting (where two plates slide against each other) of the two tectonic plates of the Pacific and Australia[29], accommodating the divergence of the east-facing Tonga arc-trench system and the west-facing Vanuatu arc-trench system by left lateral wrenching and opening of the North Fiji Basin.[30]

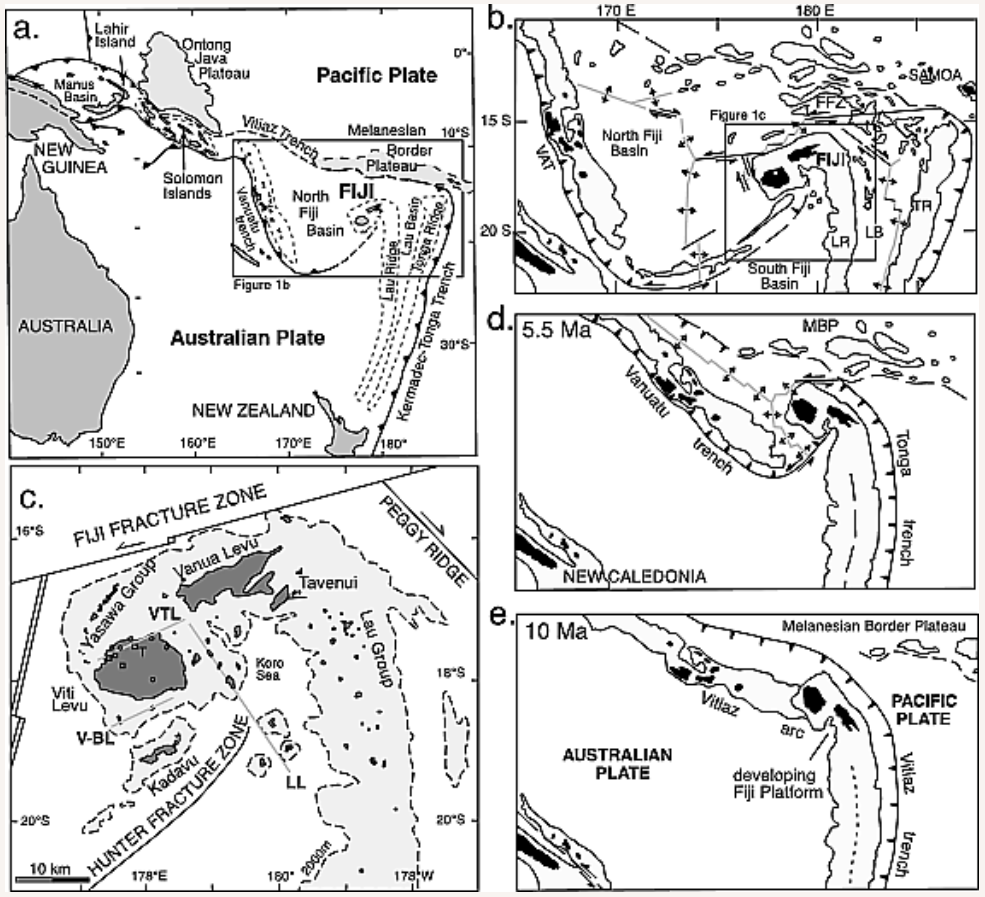
The North Fiji basin is located between Fiji and the Vanuatu arc-trench system (Figure 1 (a & b). The Lau basin is located between Fiji and the Tonga arc-trench system. The active subduction currently occurs along the present-day Vanuatu and Tonga-Kermadec trenches, indicated by earthquakes and active underwater volcanoes in these areas. The low level of earthquake activity south of Viti Levu and the dominant strike-slip fault plane solutions

[27] Begg, Graham, and David R. Gray. 2002. 'Arc Dynamics and Tectonic History of Fiji Based on Stress and Kinematic Analysis of Dikes and Faults of the Tavua Volcano, Viti Levu Island, Fiji'. Tectonics 21 (4). https://doi.org/10.1029/2000TC001259.
[28] Begg, Graham, and David R. Gray. 2002. 'Arc Dynamics and Tectonic History of Fiji Based on Stress and Kinematic Analysis of Dikes and Faults of the Tavua Volcano, Viti Levu Island, Fiji'. Tectonics 21 (4). https://doi.org/10.1029/2000TC001259.
[29] Hamburger, MW, and IB Everingham. 1986. 'Seismic and Aseismic Zones in the Fiji Region'. Bulletin of the Royal Society of New Zealand 24: 439–53.
[30] Begg, Graham, and David R. Gray. 2002. 'Arc Dynamics and Tectonic History of Fiji Based on Stress and Kinematic Analysis of Dikes and Faults of the Tavua Volcano, Viti Levu Island, Fiji'. Tectonics 21 (4). https://doi.org/10.1029/2000TC001259.

indicate that subduction along the Hunter Fracture Zone (Figure 1 (c)) has possibly ceased[31] and suggests that the Fiji Platform is again part of the Australian plate[32].

The boundary between the Pacific and Australian plates, the Fiji Fracture Zone (north of Vanua Levu, Figure 1c) is regarded to be seismically active [Hamburger and Everingham, 1986 in Begg and Grey 2002]. Recent paleomagnetic data suggest that rotation of the Fiji platform (see Figures 1d and 1e) stopped abruptly at 3 Ma with the development of a well-defined spreading centre in the North Fiji Basin [Taylor et al., 2000 in Begg and Grey 2002], putting the Fiji group in its current position.

Figure 1: The North Fiji basin[33]



(Source: Begg and Grey, 2002)

[31] Hamburger, and Everingham. 1986. 'Seismic and Aseismic Zones in the Fiji Region'. Bulletin of the Royal Society of New Zealand 24: 439–53.
[32] Begg, Graham, and David R. Gray. 2002. 'Arc Dynamics and Tectonic History of Fiji Based on Stress and Kinematic Analysis of Dikes and Faults of the Tavua Volcano, Viti Levu Island, Fiji'. Tectonics 21 (4). https://doi.org/10.1029/2000TC001259.
[33] Begg, Graham, and David R. Gray. 2002. 'Arc Dynamics and Tectonic History of Fiji Based on Stress and Kinematic Analysis of Dikes and Faults of the Tavua Volcano, Viti Levu Island, Fiji'. Tectonics 21 (4). https://doi.org/10.1029/2000TC001259.

"Tectonic setting (Figures 1a–1c) and tectonic reconstructions (Figures 1d and 1e) of the Outer Melanesian region (adapted from Hathway [1993]; reprinted with permission from the Geological Society of London). (a) Map of the Fiji platform and north end of the Lau Ridge showing the major islands in the Fiji area, the major early Pliocene volcanoes of Viti Levu, the major seafloor fracture zones, and part of the spreading center of the Fiji Basin (adapted from Gill and Whelan [1989]). Shoshonitic volcanoes, including the Tavua Volcano (T), are shown by squares and calc-alkaline volcanoes by circles. (b) Tectonic features of the northeastern segment of the plate boundary between the Australian and Pacific plates showing the Outer Melanesian Arc of the southwest Pacific, trenches and ridge systems, and oceanic plateaus (adapted from Kroenke [1984]). Fiji, as part of the Fiji Platform, consists of a series of islands at the north end of the Lau Ridge, with the North Fiji Basin formed as part of a spreading center. (c) Present plate configuration. (d) Reconstruction at 5.5 Ma. (e) Reconstruction at 10 Ma. In Figures 1a–1e the Australian plate is fixed and the east-west convergence rate between plates was assumed to be 9–10 cm yr−1. Shading represents submarine depths <2000 m. Abbreviations are as follows: VT, Vitiaz trench; VAT, Vanuatu trench; LR, Lau Ridge; LB, Lau Basin; TR, Tonga Ridge; FFZ, Fiji Fracture Zone; LL, Lomaiviti lineament; V-BL, Vatulele-Beqa lineament. Long dashes denote southern margin of the Melanesian Border Plateau (MBP). The open square (Figures 1b and 1c) denotes the location of the Tavua Volcano." **Begg and Grey, 2002[34].**

2.1.2 Island Formation

Located in the geologically diverse Pacific Ocean, the Fiji archipelago consists of 332 islands and 512 islets[35], comprising islands of volcanic origin, raised limestone islands (makateas), atolls and sand cays that have undergone uplift, rotation and deformation.

[34] Begg, Graham, and David R. Gray. 2002. 'Arc Dynamics and Tectonic History of Fiji Based on Stress and Kinematic Analysis of Dikes and Faults of the Tavua Volcano, Viti Levu Island, Fiji'. Tectonics 21 (4). https://doi.org/10.1029/2000TC001259.

[35] Neall Vincent E and Trewick Steven A 2008 The age and origin of the Pacific islands: a geological overviewPhil. Trans. R. Soc. B3633293–3308 http://doi.org/10.1098/rstb.2008.0119

The Fiji group of islands started forming 35-8 million years ago (the oldest rocks are in western Viti Levu, and are island-arc volcanics, between 56-34 million years old). Before its current location and distribution of islands, the Fiji platform was part of a continuous Vitiaz (volcanic) arc that included Vanuatu, Fiji and the Tonga islands (see Figure 1d and 1e, Begg and Grey 2002).

The Vitiaz arc was a single east-facing arc on the Australian plate, above the subducting Pacific plate, that "broke" sometime around 12 Ma, to form the west-facing Vanuatu arc-trench and the east-facing Tonga arc-trench.

Some researchers (e.g Begg and Greg 2002) argue that the Vitiaz arc system was disrupted ("arc break-up") when it collided with the Melanesian Border Plateau immediately north of Fiji and the Ontong-Java Plateau, adjacent to the Solomon Islands, further north of Fiji (see Figure 1a). This collision terminated subduction along the Vitiaz trench ca. 5.5–3 Ma and formed the Lau Basin and Havre Trough[36].

Other researchers (e.g. Gill et al., 2022[37]) argue that the subduction of the older parts of the Samoan Seamount Chain contributed to magmatism where the (Vitiaz) arc broke. Vanuatu and Fiji began to separate around 12 Ma, after which Vanuatu began to rotate clockwise to its current position and Fiji rotated counterclockwise. This rotation led to the formation of the North Fiji Basin between them around 8-5 Ma.

Volcanism in Fiji remained arc-type (volcanism due to subduction at the collision of two oceanic plates) until 3Ma, and was replaced by Ocean Island Basalt (OIB-type) volcanism thereafter. The only arc-type volcanic rocks that are less than 3Ma are in Kadavu, just north of the eastern Hunter Fracture Zone (Figure 1c), Jill et al, 2022.

Uplift of the island arcs caused the deposition of shallow-water limestones around them. Around 28 million years ago the tectonic movements (described above, e.g. rotation) caused more volcanic islands and sedimentary basins to form (now exposed in southern Viti Levu, the Yasawa, and Mamanuca Islands).

The first significant land mass of Viti Levu developed 16 to 5 million years ago from plutonic intrusions (magma that rises towards the surface but remains trapped underground), then an uplift, and tilting of these land masses.

Vanua Levu is younger, having formed about 7 million years ago while Taveuni formed less than 2.5 m million years ago through OIB-type volcanism with over 150 vents along its 40 km

[36] K. Hoernle, J. Gill, C. Timm, F. Hauff, R. Werner, D. Garbe-Schönberg, M. Gutjahr; Hikurangi Plateau subduction a trigger for Vitiaz arc splitting and Havre Trough opening (southwestern Pacific). Geology 2020;; 49 (5): 536–540. doi: Hikurangi Plateau subduction a trigger for Vitiaz arc splitting and Havre Trough opening (southwestern Pacific) | Geology | GeoScienceWorld

[37] Gill, J., Todd, E., Hoernle, K., Hauff, F., Price, A. A., & Jackson, M. G. (2022). Breaking Up Is Hard to Do: Magmatism During Oceanic Arc Breakup, Subduction Reversal, and Cessation. Geochemistry, Geophysics, Geosystems, 23(12), e2022GC010663. https://doi.org/10.1029/2022GC010663

length. At least 2.7km2 of magma has been erupted from over 100 events on Taveuni during the Holocene (since 11,000 years ago).

2.1.3 Geomorphology

Understanding the complex geological history of Fiji, shaped by its proximity to the Australian–Pacific plate boundary, provides valuable insights into the formation of its landforms, geological features, and the types of rocks that make up the islands.

Manaaki Whenua Landcare Research (2023)[38] reports that "the range of soil forming parent materials in Fiji includes:

- Siliceous - Acid volcanic rocks (rhyolite, granite and quartz-rich tuffs); siltstones, sandstones and silicified sedimentary rocks.
- Intermediate – older chrystalline rocks; younger coral limestones; marls and calcareous mudstones; andesites.
- Basic – basalts, gabbros and other basic volcanic rocks; younger andesitic and basaltic volcanic ash.
- Colluvial (hillslope/gravity transport), alluvial (water transport), aeolian (wind transport) and littoral (coastal) materials may be derived from any of the above.

The two major groups of parent materials are tuffaceous sedimentary rocks that occupy about 36% of the landscape and basic volcanic rocks that occupy 48% of the landscape".

The complex tectonic history, diverse geology (geodiversity) and location within the South Pacific have influenced the rich biodiversity in the Fiji Islands and the historic and current land use practices. Natural terrestrial habitats can be categorised into nine vegetation classes based on Mueller-Dombois and Fosberg's (1998) description of the major vegetation types found in Fiji: Broad-leaf lowland rainforest, and Upland rainforest. Cloud forests, Dry forests Talasiga vegetation, Freshwater wetland vegetation, Mangrove forests, Coastal strand vegetation. Over 80% of Fiji's endemic biodiversity is found in these major vegetation types.

Some of these species became extinct with the arrival of human beings over 3000 before the present (BP).

2.1.4 Viti Levu

Viti Levu is the oldest landmass in Fiji, and its river system, drainage and rich mineral deposits give some indication of how the island was formed and the subsequent tectonic activities[39].

[38] Manaaki Whenua Landcare Research (2023) Pacific Soils Portal - Flji Parent Material - Soils of Fiji. Accessed on 10th November 2023.
[39] Ollier C. P and J Terry. 1999. Volcanic geomorphology of northern Viti Levu, Fiji. Australian Journal of Earth Sciences 46: 515-522

Viti Levu has five major drainage systems, the largest is the Rewa River fluvial system, draining one-third of the island. The Rewa River fluvial system drains from Fiji's highest peak - Mount Tomaniivi to the east and south-east of Viti Levu into the Rewa River delta through the two large rivers of the Wainimala and the Wainibuka; and the two smaller rivers of the Waimanu and the Waidina rivers in the lower reaches.

The other four large systems are the Ba River, Sigatoka River, Navua River and the Nadi River. The Nadi River, Sigatoka River and the Navua River flow outward from central Viti Levu to the west, south-west and south of Viti Levu respectively.

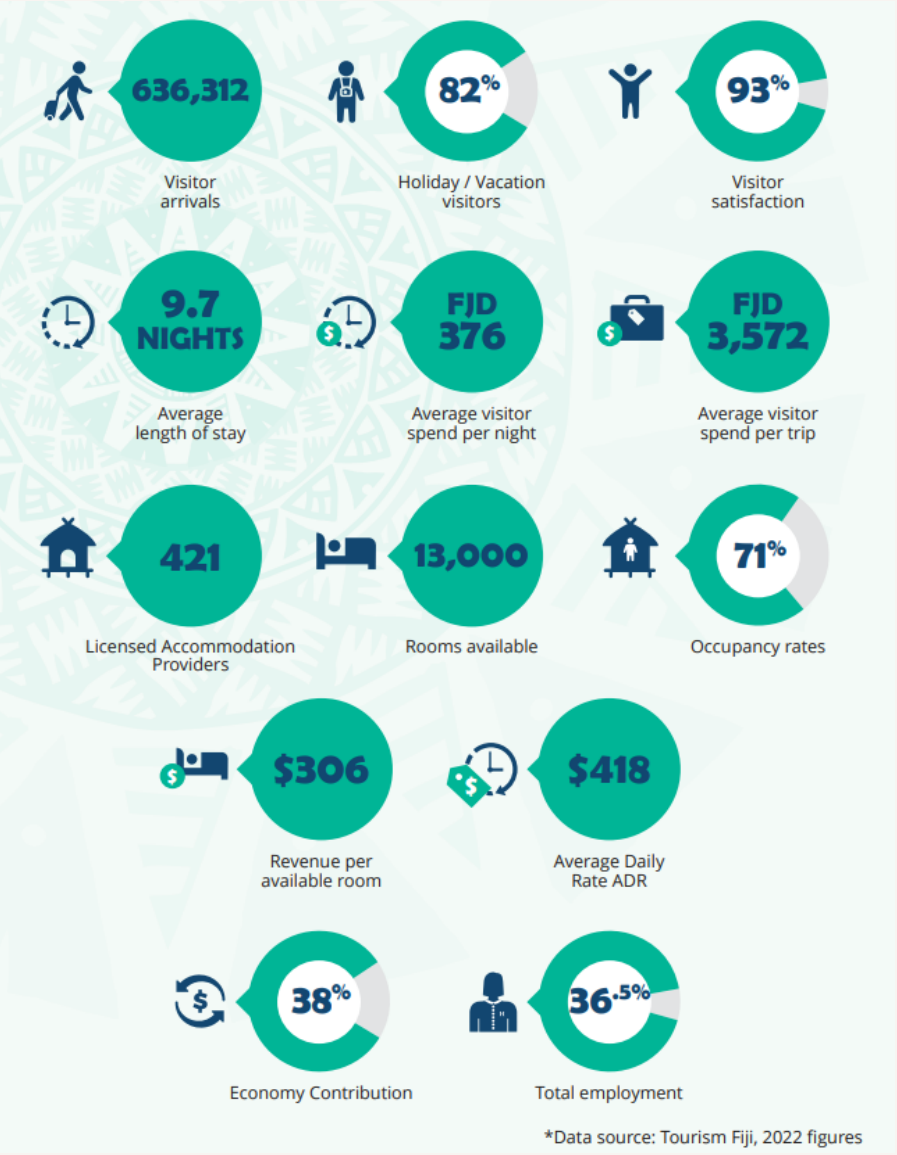
Deltas have been formed by the Rewa River, Ba River, Navua River and the Nadi River.

The current landscape of southwest Viti Levu can be described as highly modified because of pre-historic, recent and current human activities, some of which have led to the exposure of rocks and elements that highlight the geodiversity of the area. Some of the sites selected illustrate Fiji's geodiversity and how it influenced the human occupation of the area.

2.2 Tourism in Fiji

Fiji is one of the most accessible economies in the Pacific and acts as a hub connecting the region to the world. The tourism sector remains Fiji's largest income earner and has recovered strongly post-COVID. In 2019, close to 900,000 visitors came to Fiji[40] generating up to FJD 3.03 billion in tourism earnings[41]. Following the reopening of international borders in late 2021 the country hosted 636,312 visitors in 2022 surpassing expectations with higher per-person visitor spend per trip than in 2019 at FJD 3,572[42]. In 2023, Fiji's visitor numbers and tourism earnings are tracking above 2019 levels. For example, in September 2023 Fiji welcomed 90,439, surpassing September 2019 arrival figures by 111% (81,354)[43] with overall arrival figures expected to surpass 940,000[44]. Forecasts suggest that tourism earnings in 2023 will surpass 2019 earnings and the industry has played a critical role in Fiji's overall economic recovery[45].

[40] FBOS visitor arrivals to Fiji
[41] 2019 Fiji International Visitor Survey
[42] 2019 Fiji International Visitor Survey including 50% of airfare
[43] Visitor Arrivals | Tourism Fiji's Corporate Website
[44] Fiji's tourism-fuelled 2023 economic rebound: ANZ Research – FBC News
[45] Fiji's tourism-fuelled 2023 economic rebound: ANZ Research – FBC News

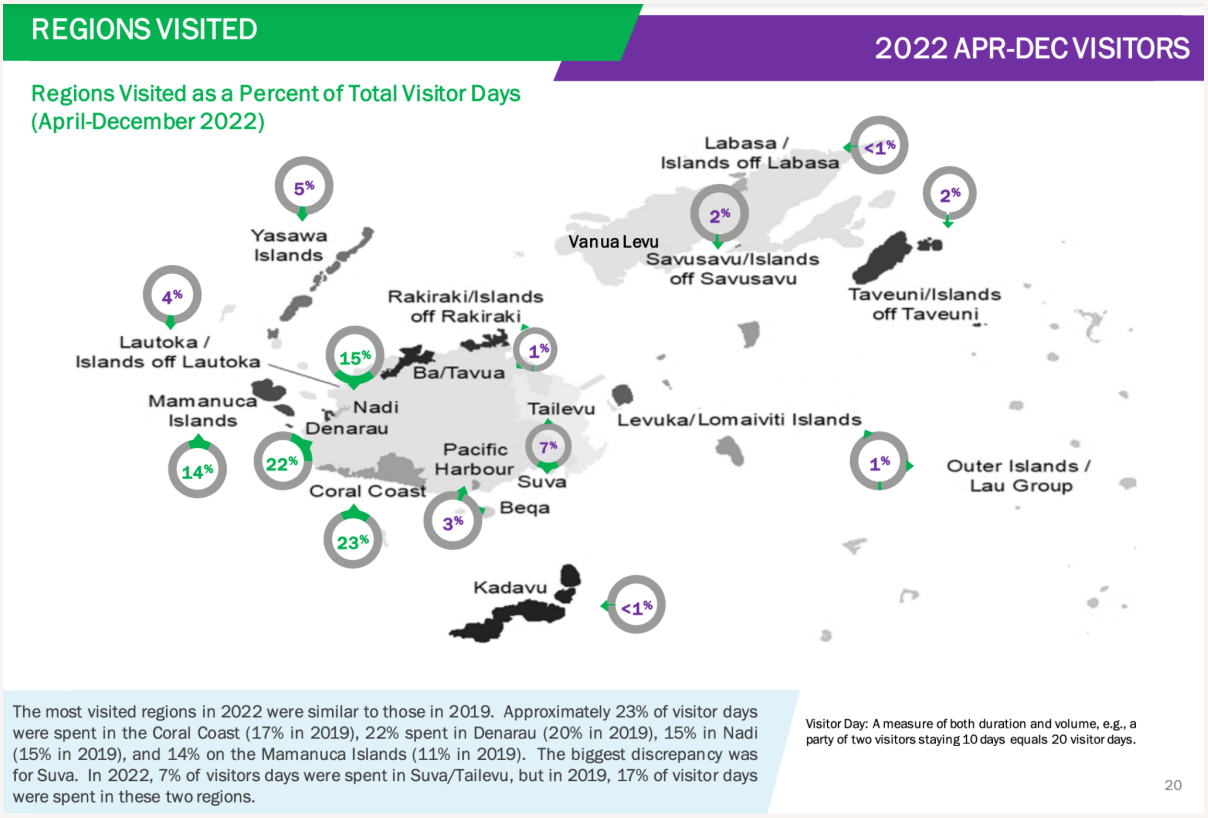


Source: Fiji National Sustainable Tourism Framework - Phase A: Setting a Strategic Foundation

Other industries in Fiji that have a direct or indirect economic link to tourism include but are not limited to, agriculture, construction, creative arts and entertainment, transportation, and the broader MSME sector. There are over 400 licenced accommodation properties in Fiji, with about half of these properties operating in Viti Levu's south and west sides (Nadi, Denarau, and the whole Coral Coast)[46]. Within the area proposed as part of this feasibility assessment there are a total of 26 licensed properties and over 1,600 rooms (see Annex 4).

[46] Phase A Summary Report prepared for the National Sustainable Tourism Framework. Forthcoming.

According to Tourism Fiji's 2022 Care Fiji Commitment (CFC) database and the International Visitor Survey[47], the majority of Fiji's experiences and excursions are concentrated around the Nadi-Coral Coast belt, which also hosts the largest number of visitors. A high proportion of Fiji's experience offerings are ocean-based tourism activities including boat tours, fishing, sailing, diving, surfing, jet skiing and snorkelling trips. Land-based trips including trips such as zip-lining, river rafting, and hiking are not as well developed. A limited number of the current day trip options are centred around educational and environmental experiences. Whilst operators such as Sigatoka River Safari and Rivers Fiji provide some opportunities for learning about Fiji's geological history, this is a minor focus of the overall experience. The Sigatoka Sand Dunes is a well-established site of natural heritage significance and has a small exhibition with good information about the site's geological formation and cultural history including the excavations and finds of Lapita pottery that have been conducted within the National Park. The site is managed by the National Trust and has trained rangers available to accompany guests along the trails through the park.



(Source: Internation Visitor Survey: 2023 Report for April – December 2022)

Given the significance of the tourism sector to the nation and the nation's reliance on it, its future must be sustainable and secure. The Ministry of Tourism and Civil Aviation (MTCA) has recognised the importance of ensuring that the sector is underpinned by a strong and

[47] https://mcttt.gov.fj/wp-content/uploads/2023/07/FIJI-IVS-2022-vs-2019-Report.pdf

cohesive sector framework that provides overall direction to the tourism sector and is in the process of developing a National Sustainable Tourism Framework[48]. Consultations held with hundreds of interested participants identified that the sector must improve and diversify its product and experience offerings including through the use of its significant natural resources, develop tourism standards, improve environmental management, contribute to biodiversity conservation, respect social-cultural authenticity, and ensure the viable and equitable distribution of tourism-generated socioeconomic benefits[49]. In line with the Pacific Sustainable Tourism Policy Framework[50] transforming the sector such that it contributes more to poverty reduction, community development and well-being, health, education, agricultural development, environmental protection, cultural heritage preservation, and indigenous entrepreneurship is viewed as critical for its long-term sustainability.

This also aligns with the global UNESCO geopark designation process. Geotourism focuses on educational tourism centred on geology and landscapes as well as indigenous cultures, encouraging visitors to respect local customs and the environment. Geotourism strives to have a low impact on natural resources while simultaneously promoting indigenous communities' economic success.

Stakeholder View:

> *"The geopark concept aligns well with the diversification needs of tourism in Fiji. To gain support from key operators, Tourism Fiji recognizes the importance of raising awareness and preparing our adventure operators to be trade-ready. This involves putting in the necessary effort to highlight the benefits and opportunities associated with the geoPark concept within the industry."*
> **Leigh Howard, CEO of Tourism Fiji.**

2.3 Proposed Boundary of Fiji Geopark Project

To assess the feasibility of a geopark, the boundaries of the proposed site needed to be identified. Several criteria and lessons from elsewhere in the world were drawn upon to delineate the boundaries of the site for assessment.

Based on the sites identified in a desktop review by SPC in 2021 on Viti Levu and Taveuni[51], the Ministry of Tourism and Civil Aviation (MTCA) in consultation with SPTO decided to focus on the South West area of Viti Levu for the following reasons:

[48] National Sustainable Tourism Framework - MTCSME OFFICIAL WEBSITE
[49] Phase A Summary Report to inform the National Sustainable Tourism Framework
[50] Pacific Sustainable Tourism Policy Framework
[51] Tigarea, Dana. 2021. 'Potential Geosites - Fiji - Preliminary Overview Report'. Overview Report. Pacific Community (SPC).

- The existence of a stable tourism market and existing tourism infrastructure (roads, cafes, transport providers etc) along the Coral Coast and in the South Western Viti Levu from which visitors could be easily targeted.
- The UNESCO criteria for a geopark to represent a single, unified geographical area where sites and landscapes of international geological significance are managed with a holistic concept of protection, education, and sustainable development (UNESCO, 2017).
- To use the experience gained from the South Western Viti Levu and identify lessons and good practices that could inform future geopark development in other parts of Fiji and potentially the Pacific.

The selection of the South Western Viti Levu area resulted in significant discussions during the consultations, with various stakeholders suggesting that other areas of the country (Savusavu, Upper Navua gorge, the Lau group) hold more international geological significance.[52]

Taking into account the following additional criteria, and drawing from the existing list of Viti Levu sites identified by SPC[53], this feasibility study focuses on the geographical boundaries of Momi in the West to Korotogo in the East (see Figure 2).

Additional criteria developed for this assessment

- Product and experience development advice from existing tourism operators[54] suggesting that most visitors will travel no longer than 45 minutes for day trips from their hotels.
- The availability of existing information that could be drawn upon and developed into signage and educational materials for community members and guests.
- Existing management and governance arrangements for some sites in the area.
- Experience in managing domestic and international visitors.
- Strong opportunities for co-management arrangements including charitable trusts, community-based organisations, private tourism operators and civil society organisations.

This area includes 10 sites (see Section 3) that are either already open to visitors (e.g. Sigatoka Sand Dunes, Sigatoka Valley, Lawai Pottery village, Tavuni Hill Fort) or known to

[52] Personal Communication., Geoff Taylor and Dick Watling
[53] Tigarea, Dana. 2021. 'Potential Geosites - Fiji - Preliminary Overview Report'. Overview Report. Pacific Community (SPC).
[54] James Sowane - NSTF consultation

researchers and community members such that they could be developed into sites for visitors without too much additional capital investment.

Based on recommendations globally, a key criterion for success is the presence of an organisation or committee, having legal existence under national legislation, to champion the initiative. As discussed in Section 6.1, it is unlikely that the Ministry of Tourism and Civil Aviation have the capacity or resources to drive coordination of the geopark development.

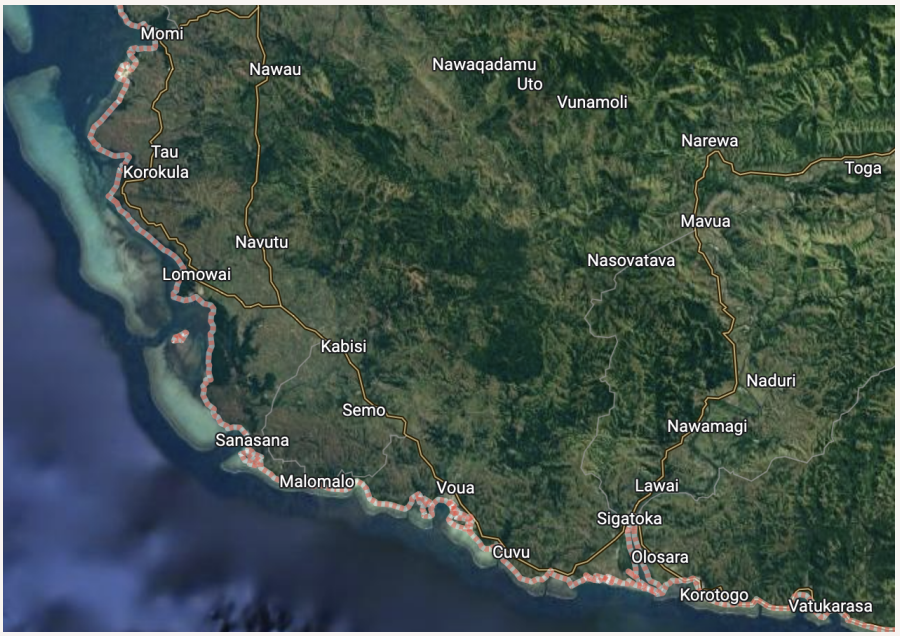
Stakeholder View:

> *"The Ministry of Tourism and Civil Aviation is committed to advancing sustainable tourism development and this is reflected in our (soon to be released) National Sustainable Tourism Framework. Geoparks provide an opportunity to diversify our offerings by capitalising on our rich geological heritage that also supports cultural and socio-economic benefits. However, its success will depend greatly on support from all levels, from the national level to the community level, and also key partnerships between relevant stakeholders."* **Miriama Ryland, Ministry of Tourism and Civil Aviation**

Based on consultations with various stakeholders (see Annex 2), a key challenge with the proposed sites is the lack of active protection and management of the sites currently. The Sigatoka Sand Dunes remains the only legally protected terrestrial national park in Fiji and is managed by the National Trust, which still struggles to raise the funds necessary via grant financing or the private sector to manage it effectively.[55]

Figure 2: Proposed delineation for Fiji's geopark from Momi to Korotogo

[55] Personal Communication, National Trust of Fiji



(Source: Google Maps)

Given the UNESCO criteria that “Geosites are specific focus areas located within a broader geopark boundary, forming a network of sites for visitors and local communities to tour, admire and explore” this area represents a location that could be developed into a network of sites with a coherent geological and historical narrative.

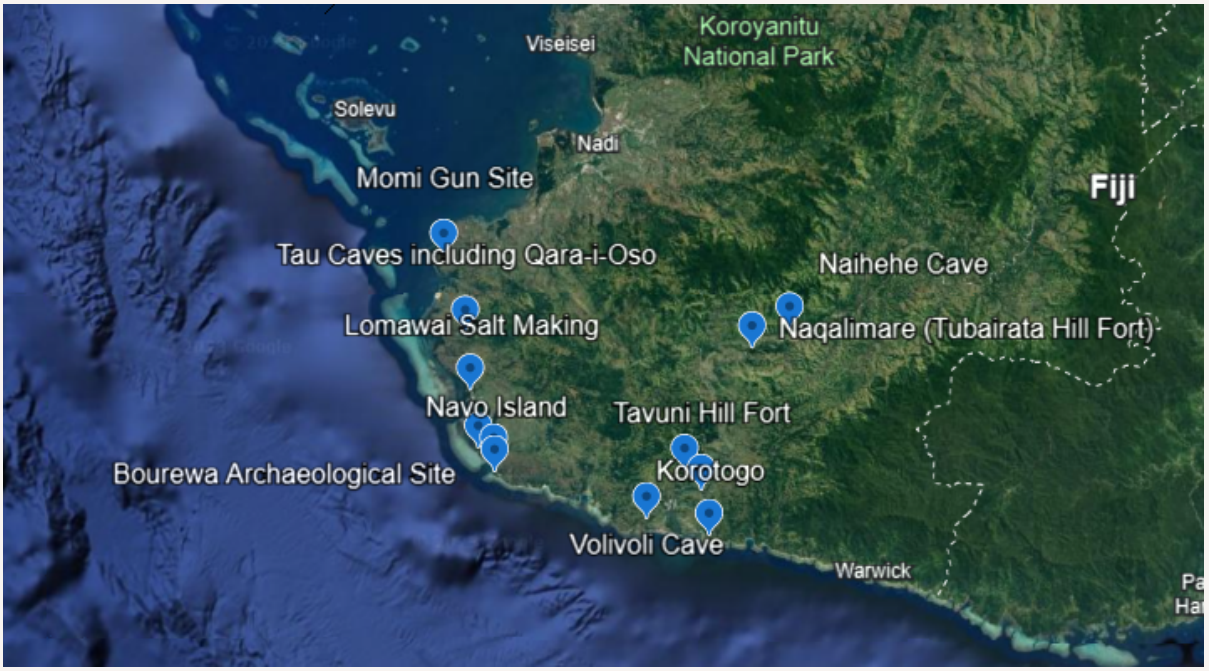
Section 3: Site Assessments

3.1 Proposed Geosites - South West Viti Levu

A preliminary list of potential Geosites is presented below. For these sites to play an active role in the functioning and formation of a successful geopark there is a need for a strong justification in terms of geological, cultural and natural heritage, management, visibility and networking to qualify as a UNESCO Global Geopark. It is important to note that this is a preliminary list, identified to assess the feasibility of the proposed area for geopark development. Further in-depth research, including an assessment of the geodiversity of each site, site and community visits, may result in the identification of additional sites worthy of inclusion noting that new sites identified within the geopark area do not require reassessment by UNESCO unless there is an expansion of the geopark boundary. The sites listed below are not exhaustive and further work is needed to identify the precise boundaries, including any potential marine protected or managed areas that could be included.

Below is a snapshot of the potential geosite on the map of Viti Levu.

Map 1: South West Viti Levu Prospective Geosites



(Source: Google Earth)

The following table summarises the potential values of the site (high, medium and low) ranked by the team based on the evidence gathered. For the sites that have some form of tourism activities taking place, the Trip Advisor ratings are provided in the last column.

Table 1: Assessment of geopark proposed sites based on geopark criteria

Site	Geological value	Cultural Value	Natural Value	Historical value	Tourism value	Educational value	Community management potential	Trip Advisor Rating
Korotogo Beach	High	Medium	High	Medium	Medium	High	Medium	Not on Tripadvisor
Tavuni Hill Fort	Low	High	Medium	High	High	High	High	4
Pottery villages - Nakabuta and Lawai	Medium	High	Medium	Medium	Medium	Medium	High	4
Naqalimare and Naihehe cave	High	Medium	High	Medium	High	High	Medium	4.5
Sigatoka Sand Dunes	High	Medium	High	High	High	High	Low	4.5
Lomawai Salt making	Low	Medium	Medium	High	Medium	Medium	High	Not on Tripadvisor
Volivoli cave	High	Medium	High	High	Medium	High	High	Not on Tripadvisor
Natadola beach	Medium	Low	High	Medium	High	Medium	Medium	4.5
Momi Battery	Low	Low	Medium	High	Medium	Medium	Low	Not on Tripadvisor
Rove Peninsula	High	High	High	High	Medium	High	High	Not on Tripadvisor

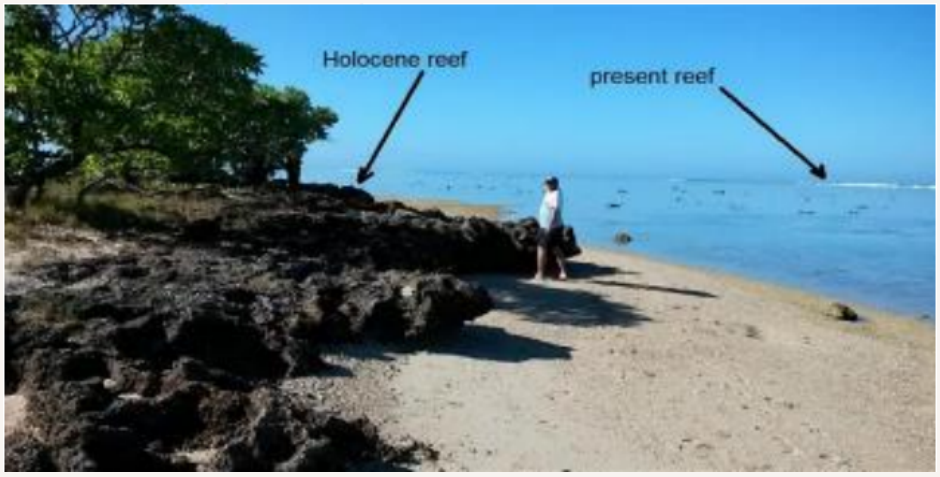
The potential sites are described below. Available information on each site has been synthesised. Further work and site visits are needed to document and collate all available research and traditional knowledge including more comprehensive descriptions of the geodiversity of the site, the associated biodiversity and natural landscape features, associated folklore and interpretation materials that minimise the risk of misinterpretation of the significance of the site. Not all of the sites below have strong geological features, but are included based on their accessibility and the culture, historical and natural heritage of the sites.

3.1.1 Korotogo Beach (Fossil Beach)[56] [57]

Climate change is a natural phenomenon and sea level has risen and fallen historically. Some landforms in Fiji show evidence of these historical changes in sea level, particularly those that happened in the Holocene age (the name given to the last 11,700 years of the Earth's history - it is also a time in which there was a climate shift and the notable "little ice age" occurred between 1200 and 1700 A.D). In Fiji, not only was there sea level change, but there was also some tectonic activity that resulted in the uplift in some parts. Along the Korotogo shores, there are various patches of evidence of changes in sea level and these tectonic uplift, in the form of fossil reefs and fossil beaches. These tell the stories of ancient sea levels and provide an overview of the Holocene age. The geological diversity of this site can generate stories to engage visitors to the area, particularly in the context of exposed and accessible fossils.

While community awareness of the significance of these monuments has been limited, there is potential to include them in the area's tourism activities and market them as sites of national and perhaps international significance as part of a geopark. Nature-based and educational trips have enormous potential. Because the site is mostly open to the public and easily accessible via the major road, good signage explaining the processes that generated these features would be quite beneficial. This, in turn, will contribute directly to site appreciation, teaching, research, and increased community awareness. The spillover effects might include entrepreneurship and overall geoconservation of the significant landmark.

[56] Lal, Kirti K., and Patrick D. Nunn. 2011. 'Holocene Sea Levels and Coastal Change, South-West Viti Levu Island, Fiji'. Australian Geographer 42 (1): 41–51. Holocene Sea Levels and Coastal Change, South-west Viti Levu Island, Fiji.
[57] Tigarea, Dana. 2021. 'Potential Geosites - Fiji - Preliminary Overview Report'. Overview Report. Pacific Community (SPC).



(Source: The University of the South Pacific)

Stakeholder View:

> *"The fossil reef at Korotogo is a great example of such a 'raised reef' because you can see the corals in it. Even better is the Makasiko raised reef on the eastern side of the mouth of the Sigatoka River. There is a cemetery on the promontory but the sides have some magnificent fossil corals exposed".* **Professor Patrick Nunn, University of Sunshine Coast**

As shown below:

(Source: Google Map)

3.1.2 Tavuni Hill Fort [58] [59]

Tavuni Hill Fort, also known as Tavuni Archaeological and Botanical Park, is about four miles from Sigatoka Town. The site is a national historic monument and one of Fiji's well-preserved historic village sites in Fiji. It is a fort showcasing the intertwined culture of Fiji and the Kingdom of Tonga. A tribe of Tongans arrived in the 1800s and lived atop Tavuni Hill for its natural fortifications and magnificent views. They were led by Maile Latamai Finau, who deserted Tonga following a disagreement with his royal Tuipelehake family and decided to govern over his fort and start a line in Fiji.

There are still traces of a chief's bure at the fort's highest point, stone walls, lovo pits (earth ovens), and over 60 housing mounds. The ground is covered with shells that the residents apparently collected from the river to eat and then discarded. The "Noitoga" are the descendants of the initial Tongan settlers. The indigenous inhabitants of Viti Levu's interior fought British colonial control during the Colo Wars (1875-1876). To calm the kai Colo, the Colonial Administration organised a native constabulary of over 1000 men. Tavuni was raided and destroyed by government soldiers in 1876, under the reign of Noitoga ruler Kunatui (who later died as a result of battle wounds).

The hill fort was never rebuilt. In the mid-1980s, with the support of the European Union, an overall assessment of archaeological sites in the Sigatoka valley was completed, a plan for Tavuni Hill Fort was developed, an interpretive centre was built with the support of FMF and the clearing of the site occurred over two years in partnership with Naroro village. The then NLTB also agreed with the leaseholders at the time to release 75% of the site (which had been in their lease for nearly a century) 10 or more years before it was due to expire.[60]

The fort now consists of cleared paths and tours are hosted regularly[61]. There are many descendants of the Tongans living in Sigatoka today as a result of intermarriage and adaptation. The descendants of Finau and his followers now can be found in the villages of Naroro, Korotogo, Nawamagi, Malevu, Cuvu and Nadrala in Nadroga; Waicoba in Navosa; and Vatutu and Waqadamu in Nadi.

Although there are many forts like it scattered all over Fiji, Tavuni Hill Fort is the most accessible for visitors. The Park itself does not have any significant geological significance, but it sits along the Sigatoka River, Fiji's longest river and is a site at which the geological diversity of southwest Viti Levu and how it influenced biodiversity and human occupation of the area can be highlighted. The fort can provide a range of learning opportunities covering varying aspects of culture, local and indigenous knowledge, historic population movement,

[58] Francis, J. n.d. Tavuni Hill Fortification, Department of Town and Country Planning and the Ministry for Commerce, Industry and Tourism, Fiji.
[59] Simmons, M. 2018. History of Tavuni. The Fiji Times, 24 June,
[60] Pers. Comm. Dr Dick Watling.
[61] Pers. Comm. Henibua Manager, Leilani

how geography helped sustain communities, and geo-conservation. The site can also give an overview of how different cultures and demographics intertwined which resulted in the diversity in population in the locality.

(Source: Tavuni Hill Fort, Sigatoka, 2018 - The University of the South Pacific)

(Source: Tavuni Hill Fort - All You Need to Know BEFORE You Go (with Photos))

The fort is managed by the community and has been through cycles of effective management and mismanagement. Currently, the site is managed through the Henibua Trust. Henibua Manager, Leilani, participated in a sustainable tourism accelerator programme in 2023 and has reconnected with Tourism Fiji, the national tourism management agency, Rosie Holidays, and several of the Coral Coast hotels that send visitors regularly. There are significant lessons to be learned from evolving management arrangements at different community-managed sites (Bouma, Abaca, Naihehe). Incorporating a peer-learning mechanism across community-managed sites within the development of the geopark would be useful.

3.1.3 Fijian Pottery Making[62] [63]

Of all Fiji's rich and diverse culture, the art of pottery making is one of the most significant in terms of understanding the country's ancestral migrations. Pottery lasts an extremely long time and it is therefore used to map and understand events of the past. The materials used for pottery making and their source are of geological significance as their availability is dependent on the geological conditions that formed the materials - clay is not readily available in all sites in Fiji. These influence the type of pots, the methods for pottery production and trade between communities.

The term Lapita refers to an ancient Pacific culture that occupied several of the islands about 3000 years ago. The Lapita people are said to be the ancestors of current Pacific Islanders and to have been the first to settle in most of the region. Much of what we know about them comes from their pottery, which is decorated in unique ways and offers information about where and how they lived. The Lapita pottery decoration (series of dentate stamping using a comb-like or a sharp tool) is what makes it unique and different from modern-day pottery (which uses little shells and other available tools used to make the elaborate designs that adorned cooking pots, bowls, serving stands, and utensils). Deposits of pottery with Lapita decoration have been excavated at the Sigatoka Sand Dunes and Bourewa, and are restricted to a timeframe of 1,200 BCE. There is no evidence or little of Lapita pottery after this date.

Several villages in the area practice modern pottery making. Easily accessed sites include:

Fijian Pottery at Nakabuta Village

In the Fijian village of Nakabuta, traditional pottery-making techniques are used to create items such as bowls, animal figurines and jewellery[64]. Nakabuta Village welcomes visitors and offers pottery-making demonstrations to the public. Nakabuta is located about 8 km north of the town of Sigatoka on the island of Viti Levu.

[62] Fiji Pottery – a history of arts and crafts in the South Pacific. – Luxe Surf Style
[63] Fijian Pottery at Nakabuta Village
[64] Fijian Pottery at Nakabuta Village


(Source: Simon Fraser University - Museum of Archaeology & Ethnology)

Lawai Pottery Village

Currently the village provides an experiential village-based tour coupled with the display of the art of pottery making. On the tour, guests get to see a meke, participate in a kava ceremony, and view a step-by-step presentation on modern style pottery making practised by the local inhabitants. Guests are also welcome to purchase the premade pottery to take home.

(Source: Lawai women diversify pottery business – FBC News)

Elia Nakoro also shared that the village of Nakoro, close to Draubuta, also practices traditional pottery making but this village is fairly remote and a few hours inland from Sigatoka along rough stretches of road so it is unlikely that it would be possible to include as a visitor attraction on its own for all except history enthusiasts.

Stakeholder View:

"Another good site to add to the list would be the Nakoro village, near Draubuta. They still practice traditional pottery making." **Elia Nakoro, Head of Archeology, Fiji Museum**

3.1.4 Naqalimare Limestone Outcrop and Naihehe Cave [65]

Naihehe Cave is located on the east side of the Sigatoka River in Viti Levu, Fiji, within a large limestone promontory named the Naqalimare. Composed of volcanically uplifted limestone that once lay on the ocean floor, the cave formed through natural processes of solution and erosion that extend back to the late Miocene epoch (23 to 5.3 million years ago). The Miocene epoch is when the Pacific plate made its rotation to influence Fiji's geographical position today. The resulting geological diversity would have influenced the evolution of Fiji's biodiversity, and upon human occupation, the evolution of the culture and folklore of the area. Historically, Fiji's caves were home to native insectivorous and nectarivorous bats, both of which have disappeared from the Naihehe cave and many other caves on Viti Levu.

Archaeological deposits in caves tend to be preserved and are useful for understanding how the geodiversity influenced human occupation - such as refuge in the times of war. The status of the caves also showcase the impact of humans on the local environment, a topic that is critical to understanding long-term trends of human-environment interactions in an era of increasingly rapid climate change.

The site receives positive feedback from guests but is not protected leaving it vulnerable to damage from members of the wider community. Having the site included in the geopark as a site of national significance will not only help sustain and protect the site but also raise awareness of its importance and heritage value. Proposing the cave as a potential site warrants essential consideration as the cave's proximity to operators such as Sigatoka River Safari adds to its ecotourism potential. Other features that add site value to the cave are its potential for education, research, geoconservation and eco/geo-tourism. The cave can be used as an educational tool for geography and archaeology students. An information board displaying historical and scientific information about the cave could be placed at the entrance of the cave to eliminate further graffiti and side destruction. Engaging the indigenous owners of the site will also be essential for the long-term sustainability of the cave and its heritage value.

[65] Riordan, Kyle J, Julie S Field, and John V Dudgeon. 2021. 'Investigating Geoarchaeological Deposits from Naihehe Cave in the Sigatoka River Valley of Viti Levu, Fiji'. Journal of Archaeological Science: Reports 40: 103202.

(Source: The Safari - Off Road Cave Safari - Take the Road Less Traveled)

(Source: Secrets of Naihehe Cave – Part 1)

Stakeholder Opinion:

> *"I suggest Sigatoka Valley is a bit broad. The limestone outcrop at Naqalimare is perhaps the most spectacular rock outcrop in the area...Naihehe cave is NOT a cannibal*

oven and really it would be embarrassing to claim anything like that. This is just tourist-speak!" **Professor Patrick Nunn, University of Sunshine Coast**

"Naqalimare limestone is a feature that can be seen from the road and includes history of human occupation. Stories of the formation and the culture. You can also find some massive hill forts. There was a proposal to take visitors up there – check with Sigatoka River Safari. This was their proposal". **Elia Nakoro, Head of Archeology, Fiji Museum**

(Source: Trip Advisor)

3.1.5 Sigatoka Sand Dunes National Park[66] [67]

The Sigatoka Sand Dunes stands out as one of the more unique natural wonders of the Fiji Islands. During the stakeholder consultation and background literature review, the site was referenced and regarded as a site of international significance. The national park consists of a distinctive landscape that covers an area of 650 acres, of which 390 acres were established as Fiji's first National Park in 1989. The National Trust of Fiji is responsible for the

[66] National Sites and Places of Heritage Significance in Fiji
[67] Sigatoka Sand Dunes National Park (Official GANP Park Page)

conservation and management of the park as it is regarded as a significant heritage site in Fiji.

Containing deposits of metallic magnetic minerals, the dunes are the results of thousands of years of sedimentation from Fiji's longest river, the Sigatoka River. Secreted underneath the sands and diversity of plants that exist in the park, are some of Fiji's most important shreds of evidence of human historical migration through the Pacific. The park hosts a range of activities and the different programs and activities are part of the park experience upon request. Along with the dunes, the park is home to many different plant species and 22 different species of birds. Visitors to the park are allowed to take a one or two-hour walk through the park with the option of a guided walk with one of the rangers to learn more about the dunes. One of the most interesting parts of the park is the old archaeological site where ancient Lapita artefacts have been found.

This rich combination of geomorphologic, ecological and cultural attributes makes the park an excellent site to be included in the proposed geopark region for Fiji. The site currently hosts multiple activities and programs aligned to recreation, research and education. The park is managed with a holistic concept of protection, education and sustainable development. The site management team uses its geological heritage, in connection with all other aspects of the area's natural and cultural heritage, to enhance awareness and understanding of the site.

In addition to its natural and cultural heritage, the site is also well utilised as a training ground for the Nadroga, Drua and national rugby teams, enhancing awareness and promotion of the site to a diverse range of domestic and international visitors.

(Source: Sigatoka Sand Dunes National Park (Official GANP Park Page))

3.1.6 Salt Making[68] [69]

Homemade salt was manufactured in settlements near the Sigatoka Sand Dunes hundreds of years before the arrival of the first Europeans in Fiji. Using the energy of the sun, these early inhabitants made salt by evaporating saltwater in specific clay dishes. They were alleged to be the first salt manufacturers in the Pacific before contact. The village of Lomawai revived the practice of manufacturing salt. However, unlike the early salt makers, the new generation of salt makers produce their salt by boiling salt water. This method utilises fuel and firewood (from the mangrove system) as part of the production process and is therefore not sustainable.

Salt evolved from its early subsistence usage into a market commodity "for prestige and trade and as an agent of social change," and it is now used as a seasoning in meals, cosmetics, and food preservation. However, between 1976 and 1994, the salt-making region of Wai lost around 11 hectares of mangroves and three hectares of salt fields. As the natural habitat from which salt was produced decreased, salt production ceased, and the knowledge and skills linked with it were lost. For many years, no salt was produced in the district.

Lomawai Village revived the practice with support from WWF. When visiting neighbouring villages in the past, Lomawai villagers would offer salt as a gift or trade it for other food items or traditional handicrafts. Salt was also given at specific customary events. Making salt, like many traditional culinary methods, is time-consuming and mostly done by women.

The Sigatoka Sand Dunes provide evidence for solar salt production practised as a household-based skill. Archaeological surveys and excavations in the Sigatoka Sand Dunes during the late 1960s identified significant evidence of salt working, but it wasn't until the early 21st century that archaeologists identified a definite salt production site in Nadroga.

Given the archaeological significance and research history of salt making, the salt-making at Lomawai village can be utilised and included as a site of national significance that showcases modern-day salt-making influenced by pre-contact salt-making practices. The site has good potential for community empowerment and management but support would need to be provided to ensure the practices are sustainable and are not causing further destruction of mangroves in the area.

If produced sustainably, the salt produced by the community at Lomawai could potentially be marketed through the geopark under the concept of geofood, accompanied by the existing tours of the salt production process.

[68] The Fiji Times » The story of salt – Lomawai's white gold Part 2
[69] Salt Production at a Post-Lapita Village in Nadroga - Fiji's Coral Coast


(Source: Lomawai Fijian Traditional Salt Making | micksfiji)

Stakeholder Opinion:

> *"The Salt Making in Sigatoka is a good existing community-managed prospective geosite, but note the harvesting of mangroves for the process raises questions around sustainability, particularly if the geopark was to increase salt production/demand for mangrove firewood. This would need to be considered moving forward, and support offered to the community to ensure sustainability".*
> **Gary Lee, the Pacific Community**

3.1.7 Volivoli Cave[70] [71]

Volivoli Cave is located 2 km southwest of Sigatoka, in the south-facing limestone cliffs above Volivoli Village. The cave formed within the limestone of Upper Pliocene age and is part of the "Cuvu Formation". The Volivoli Cave is an important archaeological site for Fiji, as it is the first fossil site containing extinct megafaunal remains, such as the giant flightless bar-winged rail, *Vitirallus watlingi.* The extinction of this endemic bird was attributed to the changes made to the habitat after human arrival in Fiji, particularly in the upper reaches of the Sigatoka valley (activities which led to the formation of the Sigatoka Sand Dunes), compounded by predation by Fiji's early settlers and the introduced rats that they brought with them to Fiji. Following the findings of the fossils between 1996 and 1998, the cave is now protected under the Fiji Museum Act, Cap. 264 The Preservation of Objects of Archaeological and Palaeontological Interest Act.

[70] Stephens, M., S. Hodge, and J. Paquette. 2013. 'Geoconservation of Volivoli Cave, Fiji: A Prehistoric Heritage Site of National Significance'. Geoheritage 5 (2): 123–36. Geoconservation of Volivoli Cave, Fiji: A Prehistoric Heritage Site of National Significance | SpringerLink.
[71] Tigarea, Dana. 2021. 'Potential Geosites - Fiji - Preliminary Overview Report'. Overview Report. Pacific Community (SPC).

The Fiji Museum reports finding three human burials and has collected fragments of adzes, undecorated pottery and shells. There is also a man-made wall in the cave entrance. The environment of Volivoli Cave has been degraded. The slopes leading down to the cave entrance have been used for sugarcane farming, beginning in the mid-1970s up until 2008 leading to increased overland flow of water into the cave. This has resulted in the loss of large areas of stratified archaeological and fossiliferous deposits from the cave entrance and with them important clues as to Fiji's prehistory and natural heritage.

Regardless, the geological value can be sustained with proper site management and sustainable development. Proposing the cave as a potential site warrants consideration as the cave's proximity to the Highway adds to its ecotourism potential. Other features that add site value to the cave are its potential for education, research, geoconservation and eco/geo-tourism. The cave has been mainly used as an educational tool for geography and archaeology students from the University of the South Pacific. An information board displaying historic and scientific information about the cave has been placed at the entrance.

(Source: Leadership Fiji 20th Anniversary Reflections – Making choices)

3.1.8 Natadola Beach [72]

Natadola Beach is a very popular beach with locals and visitors alike and several accommodation options in the area. Many tourism operators offer day trips to the area. Nearby Navo Island is a geologically and ecologically unique island that includes a cave. It is not clear if the cave hosts cave-dwelling bats, which would make it a unique spot for biodiversity (with limitations to human visitation to protect the bats). As part of the geopark, this site could highlight the formation of sea caves and how the reef system and associated marine interact with oceanographic processes to form this beach.

[72] Tigarea, Dana. 2021. 'Potential Geosites - Fiji - Preliminary Overview Report'. Overview Report. Pacific Community (SPC).

(Source: Natadola Beach Land Estates)

3.1.9 Momi Battery Historical Park [73] [74]

In October 1940 the soldiers of the Fiji Defence Force started preparing sites for the 6-inch guns with the help of the Public Works Department and locals from the Momi area. The Momi Battery was one of six batteries in the country and was tasked with defending the Navula passage in World War II which was considered the primary entry point for Japanese enemy forces during a coastal invasion. It was close to a deep water passage and the strategically important airstrips at Nadi and the port of Lautoka. In February 1944, the site was closed due to the retreat of Japanese forces from the Pacific after their loss at the Battle of Guadalcanal in the Solomon Islands.

The site was developed to secure Fiji from a war that never arrived. Initially, the site comprised guns, batteries, airports, camps, and other infrastructure. In the present day, the site holds two 6" Breech-Loading Naval Guns, one of which was used during the Boer War in South Africa and the other from the 1st World War. Other structures include a Command Post, Fire Control Rooms, Armories and the foundation of the barracks and a hospital.

The site was donated to the National Trust of Fiji in 1986 by Tremol Crowl and is being managed and operated as a visitor centre by the Trust. In 2017, the site was restored by the National Trust of Fiji and officially opened on 24 August. The eight cement structures were re-painted with the traditional camouflage design and a visitor information centre was erected. The site consists of a visitor Information Centre providing visitors with a more in-depth view of the conflict and history of the site. The information centre houses multiple

[73] National Sites and Places of Heritage Significance in Fiji
[74] Fijian History - Momi Bay Battery Historical Park

information boards consisting of written and visual materials denoting the history and operation aspects of the site.

A geopark could potentially add a further dimension to the site's existing offerings, through telling stories about the broader geological setting of the Pacific and how the islands created by this geological context played a critical role in the Pacific Theatre of WWII. Additionally, the geology of the Momi Battery could be described, explaining why it was made for a strategic location during WWII.

Source: Fijian History - Momi Bay Battery Historical Park

Source: Fijian History - Momi Bay Battery Historical Park

3.1.10 Rove Peninsula including Bourewa Cave and Qwara-i-O'o (more commonly Qara i Oso)

The Rove Peninsula, close to Natadola Beach, contains several sites of geological and historical significance including the site of the first human settlements in Fiji.

Bourewa was established about 3100 years ago (that is, 1150 BC) on what was then a smallish island off the coast of Viti Levu. The first people there had probably travelled across at least 950 kilometres of open ocean from the islands of what we now call Vanuatu – an ocean crossing of almost unprecedented distance for the time. Attracted to Bourewa by its massive and pristine fringing coral reef, the people built stilt platforms across the inner reef and lived there for a few hundred years before the sea level fell and the amount of food obtainable from this reef declined.[75]

The site was excavated over six years from 2002-2008, items found include shell middens, jewellery, stone tools and pottery. Various informational materials detailing the finds from these excavations are also available which could be incorporated into signage, and educational and tourism resources if the site is added as a geosite in the proposed geopark.

Stakeholder View:

> *"Perhaps the greatest landscape and archaeological interest is the Rove Peninsula where the two earliest-known human settlements in Fiji (at Bourewa and Qoqo) are found. They are hugely important to the entire Pacific, not just Fiji, because they represent the first landing in Fiji as part of people's west-east colonisation of the region, around 3000 thousand years ago".* **Professor Patrick Nunn, University of Sunshine Coast**

[75] Fiji's earliest human settlement – Bourewa – Patrick Nunn

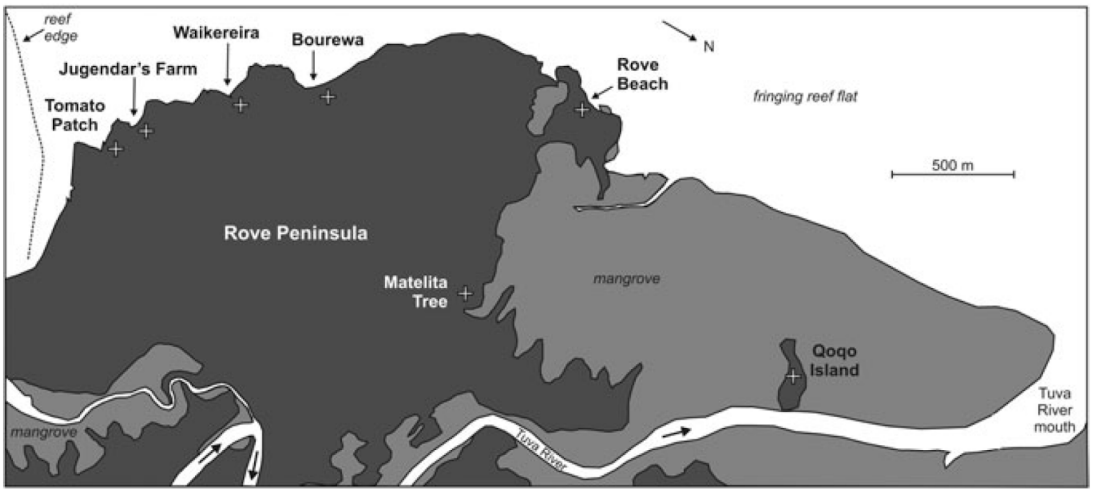


Figure 3 The earliest-known (Lapita-era) settlements in Fiji are all found along the Rove Peninsula in southwest Viti Levu Island. This map shows the Lapita settlements located at Bourewa, Jugendar's Farm, Matelita Tree, Qoqo Island, Rove Beach, Tomato Patch and Waikereira. The large mangrove swamp that now exists in the estuary of the Tuva River was far less extensive, if it indeed existed, in Lapita times (3050–2500 cal BP or 1100–550 BCE) here. Base map from Nunn (2007a).

(Source: Patrick Nunn: Stakeholder Consultation)

> *"Qwara-i-O'o (more commonly Qara-i-Oso) is the cave above Tau Village. It was the first inland Lapita site discovered in Fiji and has a lot of geo-interest too."*
> **Professor Patrick Nunn, University of Sunshine Coast**

These sites contrast with the existing tourism and widely held local narrative that the area around First Landing resort close to Vuda was the site of the first settlement and therefore has an important role to play in re-examining Fiji's history[76]. It supports the view that there were several waves of migrations into the Fiji group of islands and that not all of these have been documented. This provides the opportunity for a more holistic narrative based on the archaeological evidence from this site.

[76] The Fiji Times » History and Culture | A visit to Fiji's earliest human settlement

2.4 Illustrative Itineraries

To highlight the potential of the geopark the following illustrative itineraries have been created to demonstrate how the sites could be visited as part of a cohesive itinerary.

It is proposed that with appropriate guide training and cohesive information material, an active itinerary can be created using some existing tour and transport providers. It would also be possible, with appropriate signage, and online resources to visit some of these sites on a self-drive itinerary through partnerships with the car rental companies. This would add significantly to Fiji's experience offerings which currently have limited information available for those wanting to self-drive. Partnerships with the Fiji Museum could support the development of informational material based on the extensive published literature and posters describing many of these sites.[77] Support for guide training, in partnership with the Sigatoka Sand Dunes perhaps, is critical to ensuring that guides have access to the correct information for interpretation purposes.

Tourism Fiji has also indicated strong support for supporting operators to be trade-ready and socialising potential itineraries and opportunities associated with the proposed geopark.

Geopark in a Day

Korotogo, Tavuni Hill Fort, Volivoli Cave, Sigatoka Sand Dunes, Bourewa and Natadola Beach

Proposed Itinerary

Time	Sites
8.30 am	Depart accommodation
9 am - 11 am	Korotogo beach Visit
10 am - 11 am	Tavuni Hill Fort Guided Tour
11.15 am - 11.45 am	Volivoli Cave Visit
12 pm - 1 pm	Bula Coffee for lunch, look at geopark displays
1 pm - 2 pm	Sand Dunes guided walk and visit of the museum
2 pm - 3 pm	Bourewa

[77] Nunn, Patrick. 2008. 'Fiji's Earliest Human Settlement – Bourewa'. WordPress. Fiji's Earliest Human Settlement – Bourewa. 2008. Fiji's earliest human settlement – Bourewa – Patrick Nunn.

3 pm - 5 pm	Brief visit to the Nearby Navo Island cave and swim at Natadola beach

Itinerary Details

Following breakfast you'll board your transfer and head to Korotogo. Your guide will explain how sea levels have changed over time. The raised reef that you can view is from the Holocene period which helps us visualise the ancient sea levels in Fiji.

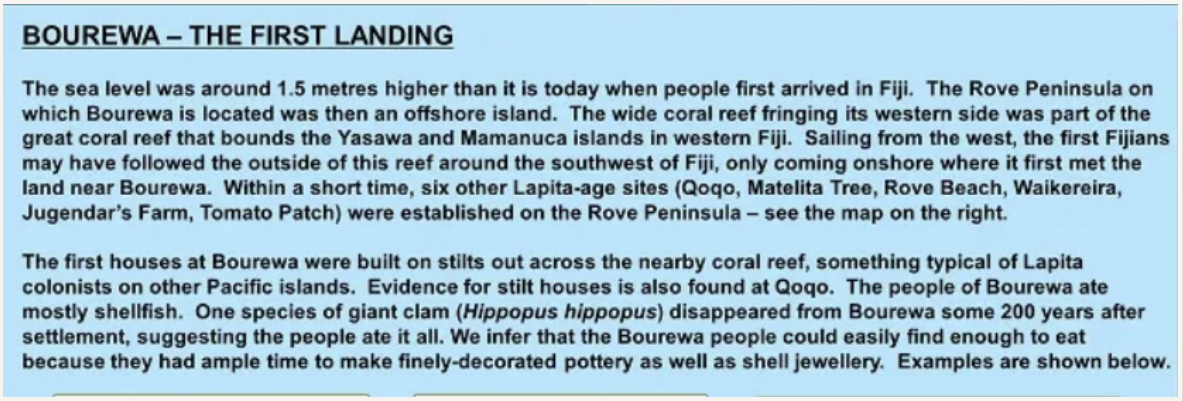
After visiting the fossil beach and spending some time walking around you will head to Tavuni Hill Fort, a historic village site located on top of a 90m limestone ridge. The hillfort was once ruled by Tongans who came to the area in search of a home in foreign lands. You will hear the ancient stories directly from the descendants of the Tongans who once called the hillfort their home!

After visiting the Tongan descendants you will pay a brief visit to the Volivoli Cave. After the short visit, we will be heading to Bula Coffee to have lunch. While fueling up at the small coffee processing factory, you will be given WiFi access and directed to a QR code to get access to an online infographic on the famous and unique Viti Levu geopark.

Following lunch, we'll head to the Sigatoka Sand Dunes for a guided 45-minute walk of the dunes and the lush forest complementing its beauty. While on the walk, your guide will chat with you about how the modern infrastructure and development near to the dune interact with natural processes, and what measures have been put in place to reduce the encroachment of the dunes onto the road. The local guides will also describe the efforts in the park to support climate resilience through agroforestry, forest rehabilitation and fire buffer zones[78].

Leaving the dunes, we'll head on to Rove Peninsula and visit Bourewa, which is hypothesized to be the arrival site of the first people to Fiji. Excavations in the area between 2004-2008 found evidence of habitation, stone tools and shell jewellery. Your guide will also show you evidence of how the sea level used to be 1.5 metres higher than it is today and how the first people to arrive likely lived in stilted houses above the reef. You will also visit a reconstructed house containing a small display of pottery and jewellery found from the excavations.

[78]KIWA Initiative. 2023. 'Building Coastal Resilience/Dune Ecosystem in Fiji'. 2023. https://kiwainitiative.org/en/projects/filters/cobenefits/biodiversity-conservation/building-coastal-resilience-forest-restoration-invasive-management-actions-and-the-heritage-in-young-hands-program-project.



BOUREWA – THE FIRST LANDING

The sea level was around 1.5 metres higher than it is today when people first arrived in Fiji. The Rove Peninsula on which Bourewa is located was then an offshore island. The wide coral reef fringing its western side was part of the great coral reef that bounds the Yasawa and Mamanuca islands in western Fiji. Sailing from the west, the first Fijians may have followed the outside of this reef around the southwest of Fiji, only coming onshore where it first met the land near Bourewa. Within a short time, six other Lapita-age sites (Qoqo, Matelita Tree, Rove Beach, Waikereira, Jugendar's Farm, Tomato Patch) were established on the Rove Peninsula – see the map on the right.

The first houses at Bourewa were built on stilts out across the nearby coral reef, something typical of Lapita colonists on other Pacific islands. Evidence for stilt houses is also found at Qoqo. The people of Bourewa ate mostly shellfish. One species of giant clam (*Hippopus hippopus*) disappeared from Bourewa some 200 years after settlement, suggesting the people ate it all. We infer that the Bourewa people could easily find enough to eat because they had ample time to make finely-decorated pottery as well as shell jewellery. Examples are shown below.

(Source: Patrick Nunn,2008[79])

After a full day you will head to Natadola Beach to end your day with a swim in the historic Nadadola beach and take in the beautiful scene of the ocean and reflect on how the mesmerising ocean system shaped the landscapes of Fiji over a hot cup of coboi (lemongrass tea).

An alternative option for non-active excursionists

The itinerary above can be adapted for a less active traveller by replacing the Tavuni Hill Fort guided tour with the Lawai Pottery Village visit and cultural experience and the Sand Dunes tour with a visit to Lomaiwai salt making.

Geopark in three days

The itinerary above can be expanded as a 3-day itinerary as follows:

Day 1 - Sigatoka Sand Dunes, Volivoli Cave, lunch, Tavuni Hill Fort and Korotogo Beach

8.30 am	Depart Accommodation
9 am - 11 am	Sand Dunes guided walk and visit of the museum
11 am - 12 pm	Volivoli Cave visit and forest walk
12 pm to 1 pm	Lunch at a local cafe
1 pm - 2 pm	Tavuni Hill Fort Guided Tour
2 pm - 4 pm	Korotogo beach Visit and swim at the beach

[79]Nunn, Patrick. 2008. 'Fiji's Earliest Human Settlement – Bourewa'. WordPress. Fiji's Earliest Human Settlement – Bourewa. 2008. Fiji's earliest human settlement – Bourewa – Patrick Nunn.

Day 2 - Lomaiwai salt making, Naqalimare and Naihehe & Lawai pottery

8.30 am	Depart Accommodation
9 am - 11 am	Village Visit and Salt-Making Experience
11 am - 1 pm	Scenic drive and site visit to Naqalimare and Naihehe
2 pm - 3 pm	Late lunch at a local cafe
3 pm - 5 pm	Village Visit and Pottery Making Experience

Day 3 - Momi Battery, Bourewa, picnic lunch on Natadola and swim

8.30 am	Depart Accommodation
9 am - 10.30 am	Site visit to Momi Battery and scenic views of coastline
10.30 am - 12 pm	Scenic drive and site visit to geosites at the Rove Peninsula (Baurewa)
1 pm - 2 pm	Picnic Lunch at the Natadola Beach
2 pm - 3 pm	Brief visit to the Nearby Navo Island cave
3 pm - 5 pm	Swim at Natadola beach

Itinerary Details

Day 1 - Sigatoka Sand Dunes, Volivoli Cave, lunch, Tavuni Hill Fort and Korotogo Beach

Following breakfast, we'll head to the Sigatoka Sand Dunes for a guided 45-minute walk of the dunes and the lush forest complementing its beauty. While on the walk, your guide will chat with you about how the modern infrastructure and development near the dune interact with natural processes, and what measures have been put in place to reduce the encroachment of the dunes onto the road. The local guides will also describe the efforts in the park to support climate resilience through agroforestry, forest rehabilitation and fire buffer zones.

Leaving the dune, you will pay a brief visit to the Volivoli Cave completed with a scenic walk and view of nature.

Following lunch, you will head to Tavuni Hill Fort, a historic village site located on top of a 90m limestone ridge. The hillfort was once ruled by Tongans who came to the area in search of a home in foreign lands. You will hear the ancient stories directly from the descendants of the Tongans who once called the hillfort their home!

After visiting Tavuni Hill Fort, you'll board your transfer and head to Korotogo. Your guide will explain how sea levels have changed over time. The raised reef that you can view is

from the Holocene period which helps us visualise the ancient sea levels in Fiji. You will visit Fossil Beach and spend some time walking around and swimming.

Day 2 - Lomaiwai salt making, Naqalimare and Naihehe, Lawai pottery

After breakfast, you will head to Lomawai village, the only location in Fiji where you can experience Fijian making sea salt. Friendly and helpful villagers will teach you the process, from extracting seawater from a deep sinkhole to boiling it in large pots. The salt is pure, natural, and has no added chemicals.

Leaving Lomawai Village, your transfer will take you on a beautiful drive on the way to Naqalimare and Naihehe. The Naihehe cave is the past house of the 'Sautabu' people during the time of Fiji's tribal warfare. You will hear a story about the tribe's history while exploring a mysterious cave.

After lunch, you will make your way to Lawai Pottery Village, where you will have the experience of making traditional pottery with a demonstration by a local artisan in the village. There will also be traditional ceremonies, including dancing and Kava, allowing you to immerse yourself in Fijian culture.

Day 3 - Momi Battery, Bourewa, picnic lunch on Natadola Beach

Following breakfast, we will take you to Momi Battery Historical Park, which houses several gun emplacements used to prevent Japanese invasion during World War II. You will discover Fiji's wartime history through gun sites and museums, all while enjoying a beautiful view. As we approach the site, you will be treated to a scenic view over the sea.

Following the historical park visit you will make your way to the Rove Peninsula (Baurewa). The Rove Peninsula, close to Natadola Beach, contains several sites of geological and historical significance including the site of the first human settlements in Fiji. You will get the chance to hear local myths and legends coupled with scientific findings and knowledge sharing.

Following lunch, you will shortly visit Navo Island Cave, the hidden place where villagers fled to protect themselves from wars that happened regularly. You will also get to understand the unique geology and geography of the site and learn how cultures formed around them.

After visiting Navo Island Cave, you will get to Natadola Beach, one of the most beautiful beaches in Fiji. The white-sand beach may catch your eye, offering opportunities for horseback riding, surfing, walking along the coast, swimming, and snorkelling.

The Self-Drive Option

This assessment has identified many sources of information that could support the

development of appropriate signage such that self-drive itineraries could be developed. This would add value to the diverse guided experiences that are available to visitors to Fiji.

This may not be possible for the visits to villages (Lawai, Lomaiwai, Volivoli) but most other sites are accessible to the public currently. With support from the Fiji Museum and Provincial government for appropriate signage and the development of small parking areas with facilities, revenue could be generated through the sales of a geopark self-drive 'pass' that would provide access to online material to support a self-guided itinerary along with parking facilities at each site.

Section 4: A coherent overarching narrative? Connections to modern climate resilience

Within the iTaukei ethos of development, you look to the past to move forward. A geopark illustrates this as it highlights the geological diversity of a site and how this diversity has influenced the natural diversity (biodiversity and landscape), and human activities in the past and present. From an educational and a tourism perspective, the interest in the way in which climate change is currently affecting Fiji could provide an opportunity to integrate geological diversity and the historical and geographical sites within a geopark that connect these reflections to how our climate and sea levels are changing today.

Given the way that sea levels have changed in the area historically which has exposed some of the sites highlighted above a coherent and unified narrative that connects the sites highlighting how previous sea level changes influenced the geology of the area, the settlement of Fiji's first people, their diets and practices, the impact that changes in sea levels and climate conditions had previously and the impacts they are having today.

The Sigatoka Sand Dunes for instance have examples of how modern infrastructure development such as the Queen's Road, has interfered with natural processes leading to nature-based adaptation in the way of tree planting to protect these built assets. These examples can provide interesting educational experiences that could be developed such that they are also contributing to an improved understanding of how we might manage climate change in the future. This would need further research and advice from geologists, historians and climate scientists[80].

It is known that the sea level at the height of the last Glacial (ice age) was around 120-150 m below what it is today in the southwest Pacific. It reached its present level around 6000 years ago and then, in most parts of the region, it rose above its present level by as much as 2m

[80] Professor Patrick Nunn has written extensively on both Fijian geological history and is an Intergovernmental Panel on Climate Change author who could be consulted further.

and then fell. The chronology of late Holocene sea-level behaviour in Fiji has become quite well-known in recent years (Miyata et al., 1990; Nunn, 1990a, l99la). From evidence throughout the group, it seems that the sea level reached around 1.5m above its modern level between 2500 and 3500 years BP (BP is years Before 1950 AD). From the evidence of late Holocene reef growth and shoreline erosion, it seems likely that the sea level has been at its present level for around 1000 years although minor fluctuations have occurred during this time. It is probable that sea level rose slightly as the result of slightly high temperatures in the period leading up to l300 AD then fell abruptly as temperatures fell in the Little Ice Age. Since the end of this period, around 1800 AD, sea levels and temperatures have been rising slowly. [81] Climate change will accelerate sea-level rise and this provides an opportunity to weave in the historical context and how we might learn from history and traditional knowledge to provide solutions for adaptation in the future.

[81] https://www.sprep.org/att/publication/Retro/Climate-Change/AssessmentofCoastalVulnerabilityYasawa.pdf

Section 5: Opportunities that the geopark could provide to these sites

The geopark designation aims to combine conservation, education and geotourism, with a strong underlying focus on sustainable development and management. A proposed geopark in SW Viti Levu has the potential to stimulate sustainable economic activity that is culturally and environmentally sustainable[82]. Many of the sites identified above are either under-utilised in terms of educational and tourism potential or not yet developed for visitors.

Geoparks are a tool for rural development, local community participation, and poverty reduction that can be applied in developing countries with abundant geological heritage. Due to the nature of the potential geo sites identified in this assessment, the potential opportunities and benefits may include employment creation (direct and induced), tourism revenue and broader economic contributions and growth, education and awareness of local geological and cultural heritage, environmental protection and stewardship, increase knowledge and resilience on climate change-related matters and other natural hazards, and potential for broader sustainable development contributions and advancement of the Sustainable Development Goals (SDGs).

A geopark in Fiji has the potential to create a range of new employment opportunities including minor construction work during the development of geopark infrastructure, direct operational jobs such as geopark management, maintenance and guiding roles, indirect jobs in support sectors such as accommodation, food and beverage, transport, retail, recreational activities, and culture, which could benefit from increased tourist numbers to these sites, and broader job creation associated with economic multiplier effects. The realisation of these opportunities is likely to require support from various stakeholders for guide training, product and experience development, small business management and tourism market-readiness.

There is also scope for the geopark to protect and conserve key areas which serve natural resilience functions. The strict conservation requirements from UNESCO also enable sustainable practices and management of the sites and put an end to unsustainable practices and activities. Additionally, the potential education and research benefits of a geopark could lead to increased knowledge, capacity, and resilience. The history and geology of several of the sites listed above are not well-known to Fijians or visitors.

A geopark has the potential to form an important platform for conserving Fiji's culture and traditional knowledge and to advance the formal protection of some critical historical and

[82] Tourism Planning Group, and Lions Gate Consulting. 2015. 'Wells Gray – North Thompson and Robson Valley Global geopark Project Feasibility Study'. https://www.mcbride.ca/uploads/Tourism%20Master%20Plan%20RFP%20VOM%202020-02%20documents/geopark%2520Project%2520Report%2520May%25202015.pdf.

geological sites. The local education dimension of a geopark could facilitate intergenerational knowledge transfer to Fijian youth. The tourism dimension of a geopark could raise awareness of Fijian culture, history, and traditional knowledge on the international stage. The research dimension of a geopark could elevate the importance and wisdom of traditional knowledge, and support integration with relevant scientific disciplines. Integral to the development of any geopark is the ownership of the local community members who, at first, need to support and understand the geological, cultural, and natural heritage of their sites. As such, geoparks are a way of increasing appreciation and pride from the locals towards their sites enabling them to share their stories to the rest of the world.

These opportunities would need to be explored further to identify the pathways to achieving some of the potential benefits and the institutions and champions that could act as facilitators to support their realisation.

The current tight labour market conditions and limited spare capacity within the tourism sector limit the likelihood that 'new and additional' employment could be created in the short to medium term. Many tourism operators are already bringing in labour from outside Fiji to fill labour shortages within the industry and hotels in the area are operating at high occupancy rates.

Realising these opportunities would therefore rely critically on partnership with 'new' organisations including government departments such as the Department of Mineral Resources, the Ministry of Education, the Ministry of iTaukei Affairs, Culture, Heritage and Arts, educational and research institutions including Universities in Fiji and globally, the local communities and tourism operators that are keen to diversify or establish new experiences in partnership with community-managed sites.

Opportunities for indigenous and community entrepreneurship will rely critically on addressing some of the existing barriers to business development (See Section 6).

Stakeholder Opinion:

> *"There are consistent discussions on how we can and should be more inclusive and diversify tourism offerings, by spreading the adventure and tour opportunities further. Geoparks are a classic opportunity that we continue to ignore because there is often insufficient political will to follow through, especially when budgets get tight during our ongoing emergencies. But it should be looked at for what the longer term benefits are, and bite the bullet for commencing what will be a long process, that ultimately provides the economic benefits and outcomes that inclusive platforms provide; including the extra revenue*

needed. Funding can also be provided from outside Government". **Fantasha Lockington, FHTA**

Section 6: Risks, challenges and barriers

The development of a geopark involve a staged approach consisting of collaboration between a broad range of stakeholders.

6.1 Lack of an Obvious Lead Organisation and Champion

The most significant challenge identified to realising the potential benefits that a geopark development could bring is the perceived limited interest nationally and the absence of an obvious organisation that could drive the process and lead a multi-stakeholder approach to the proposed geopark development.

Stakeholder consultations revealed moderate interest in the opportunities from the tourism stakeholders contacted. Researchers, geologists and historians[83] responded enthusiastically when contacted to the prospect of a geopark being developed and a significant amount of existing knowledge and expertise could be utilised to support site interpretation, educational materials and guide training but none of these organisations would be able to lead the process themselves and several of these experts now reside outside Fiji.

A multi-stakeholder working group was highlighted as a priority by several stakeholders, but this group would still need to be spearheaded and coordinated by a single organisational champion.

Table 2 summarises the existing expertise and interest across several possible candidate organisations for driving the process.

[83] Including Professor Patrick Nunn, historians Elia Nakoro and Tarisi Vunidilo and natural heritage specialist Paddy Ryan.

Table 2: Candidate organisations for leading and driving the process of a geopark development

Organization	Expertise	Interest	Overall evaluation of capability
Department of Tourism, Ministry of Tourism and Civil Aviation	Confined to a policy and coordination role but has limited capacity to play this role effectively. Limited expertise in site development and not within their mandate.	Limited availability to provide input but high interest expressed on the proposal of geopark development in Fiji.	Geopark development is aligned with their broader mandate and policy direction of diversifying Fiji's tourism offerings and encouraging environmental, experiential and community-based tourism but the Department of Tourism within MTCA currently have limited staff (6) to be able to coordinate and drive the process
Department of Culture and Heritage	The Fiji Museum plays an important role in conducting archaeological and historical assessments. Attempts by the Fiji Museum to develop sites have had limited success.	Unknown	Limited existing experience of site development beyond the Fiji Museum.
Department of Mineral Resources	Good existing expertise to support site assessment. Limited experience in developing sites for visitors or educational purposes.	A high level of interest was expressed in engagement with the tourism sector.	Geopark development could provide an opportunity for greater collaboration between the department and other identified stakeholders.
iTaukei Land Trust Board (TLTB)	TLTB was established in 1940 to administer iTaukei land for the	Unknown	TLTB's support in the development of the proposed UNESCO Global Geopark will be critical in Fiji. Existing leases, such as

	benefit of indigenous landowners. Now iTaukei Land comprises 90 percent of the country's total landmass[84]. They have experience and a specific unit responsible for supporting the leasing of land for tourism purposes. They provide eco-tourism leases focused on low capital and environmentally conscious accommodation options and infrastructure development which is well aligned to the values of the UNESCO Global Geoparks designation		the conservation leases or eco-tourism leases may be required to support the overall management arrangements of the geopark and will require extensive consultations with community and other relevant stakeholders. TLTB can also advocate for policy direction within the geoparks proposal to ensure fair and equitable economic returns to land owners.
The National Trust of Fiji	The National Trust has existing experience in managing the Sigatoka Sand Dunes. Not all National Trust sites have developed a strong tourism perspective due to resource limitations.	The National Trust is supportive of exploring the geopark concept for potential National Trust sites such as the Sigatoka Sand Dunes. Given that the National Trust already has outreach facilities and staff on site, this program could be a welcome addition to their current program.	Good existing experience and a national mandate for protecting sites that could be built on. Will require additional resources to drive the process.

[84] TLTB - Corporate Profile

Nadroga / Navosa Provincial Government	Conservation officers within the Provincial Government office could be involved in site assessment and community consultations.	The Provincial Offices are generally very busy addressing existing tourism-related issues in the area including providing advice on Environmental Impact Assessment processes.	Not consulted as part of this assessment due to limited time and resources. Additional resources would likely be needed to support their involvement. Experiences from elsewhere in the world suggest that local government involvement is critical to site development and maintenance.
iTaukei Trust Fund	Supports and invests in the documentation and conservation of iTaukei culture and heritage including opportunities to link this to iTaukei and community entrepreneurship	Unknown	The entrepreneurship section has provided seed funding to several sites including the Tavuni Hill Fort and could support business training. Limited experience in site development and management and unlikely to have the capacity to manage a site at this scale.
Commissioner Western's Office, Ministry of Rural and Maritime Development	Coordination function of various government agencies servicing the Western Division.	Unknown	Developing business opportunities in rural areas is highlighted in their Strategic Development Plan but they play a limited role in entrepreneurship facilitation beyond coordinating with other government departments. District Officers in the area could provide guidance and support to infrastructure development.
Tourism Fiji	Good expertise in destination development and market intelligence. Not within their mandate to support site development.	High interest as identified in section 2.2, but lacking the mandate for destination development and site management.	Tourism Fiji's new destination development unit would be an important partner and source of guidance and advice on on-site development, but as the national marketing agency, it is not currently their role to support site development.

6.2 Limited perceived interest or competing priorities

Tourism operators that we consulted revealed either limited perceived interest or competing priorities[85] or some disillusionment from previous attempts to develop experiences and protected sites in the area.[86] This partly stems from the current situation in which the industry is almost at capacity and is therefore currently focussed on the management of existing visitor numbers as opposed to looking for opportunities to grow or diversify. Given the long-term nature of any geopark development process, this may be a temporary issue.

Tourism Fiji has some destination development expertise and guidance that they could provide to the process but site development is not currently within their mandate.

Stakeholder View:

> *"Tourism Fiji is interested in exploring potential opportunities to play a supportive role by leveraging our Destination Development expertise. We are open to further investigation and collaboration with relevant stakeholders who may facilitate the process."* **Leigh Howard, CEO of Tourism Fiji.**

6.3 Tourism and community partnerships

The area selected is the area that experiences the highest number of current visitors. Increased tourist numbers could compound existing population density issues and add stress to existing resources, infrastructure, and the environment. As with any tourist activity, there is potential for conflict between visitors and host populations due to different perceptions and interests. In general, experiences in the area have been developed in partnership with communities and Fiji's code of conduct for operators provides valuable guidance that can be used with operators in the area. There is, however, a perception that the tourism industry has not yet provided the opportunities for community-based management and iTaukei entrepreneurship that would have been expected in an area that is dominated by the sector. Existing efforts to enhance access to product and experience development advice, incubation and accelerator programmes and support for general business and financial management would be needed to support the potential opportunities for further development of community-managed sites.

[85] The Marriott Group stated that they had 'no available information for geological or historical sites in the area'.
[86] Jay Whyte, Sigatoka River Safari, pers.comm.

6.4 Limited awareness and capacity of tourism operators of the area's geology and history

More significant risks related to the ongoing perceptions within the industry and from visitors that guiding and interpretation are not well grounded in historical and cultural facts and that many guides within the industry share inaccurate historical information with visitors.

Trip Advisor review heading of the Off-Road Cave Safari

The guides at Sigatoka River Safari and rangers at the Sigatoka Sand Dunes are well trained and experienced at providing good interpretive experiences and could be a useful resource to train community partners, tourism operators and guides in the wider geopark area if appropriately resourced to do so. The rangers have provided training to guides from other organisations previously including guides at Bula Coffee and Talanoa Treks.

6.5 Poor protection of existing sites

Few stakeholders have highlighted the poor protection of some of the proposed sites. The only two sites in the area with formal protection are the Sigatoka Sand Dunes and the Volivoli Cave. Despite this formal protection, both sites suffer from damage caused by burning and gravel extraction (sand dunes) and graffiti (cave). This raises concerns about the ability of the national authorities to protect sites such that they could be considered for geopark consideration. The Protected Areas Committee which is mandated to coordinate site protection does not meet regularly. Various stakeholders have been advocating for stronger protection for environmental, historical, cultural and geological sites for decades.[87]

Stakeholder View:

> *"We continue to try and educate however as we cannot oversee the site 24/7 numerous visitors come and continue to put their name on the cave wall and negatively impact on this beautiful site. Sadly without*

[87] Pers. comm. Dr Dick Watling

> *greater conservation efforts the negative impacts of humans on the site will continue."* **Jay Whyte, Owner, Sigatoka River Safari and former Sigatoka Special Administrator**

The conservation and protection element of the prospective UNESCO Global Geopark may raise concerns regarding land-use restrictions hindering other development aspirations, such as infrastructure projects. Preliminary consultations with UNESCO have indicated that although geoparks boundaries cover large areas, only specific 'Geosites' within the broader geopark boundary require protection under a national legal and policy framework. It would be recommended that future planned infrastructure projects are considered when designing the geopark and selecting 'Geosites' to prevent potential land-use conflicts. There is scope for the geopark to complement future and ongoing infrastructure projects within the region.

The risks highlighted above are significant given that environmental sustainability, conservation, and community development are fundamental to the geopark concept and assessment. The geopark development process can mitigate some of these risks by providing a sustainable pathway for environmental protection and local community development, but this would need to be intentionally built into the process and resourced appropriately. Geoparks also seek to attract environmentally and socially conscious tourists who are low-impact-high-value in character. Research partnerships resulting from the site development may also provide opportunities to address some of the risks highlighted above.

Section 7: Recommendations

Fiji has a distinct geological history that is intertwined with the island's and its people's natural, cultural, and environmental histories. This geological history and its national and international significance still need to be well understood. The creation of a national geopark is an opportunity to further this understanding and contribute to improving Fijians' and visitors' awareness and comprehension of this past and its importance for the future.

As part of the geopark initiative, a study tour to Japan was organised to visit a geopark. Reflections from SPTO and MTCA participants that should be taken into account in the development of the geopark in Fiji included:

- Adopting a community-centred approach in using the geopark to drive domestic tourism opportunities is among the highlights of the Japan geopark development approach. International tourism is an added benefit.
- Using the geopark as an educational platform in community pride and appreciation of their natural and cultural heritage has been the focus of the Japan geopark model.
- Existing resources such as existing tourism sites can be improved and enhanced to provide the basis for the geopark development within a designated geopark boundary. New sites do not have to be developed necessarily.
- Partnering with established businesses to promote geoparks is critical and Public Private Partnerships go a long way in enhancing collective efforts in promoting the geopark.
- It is important to assess the feasibility of geoparks not only from the destination development and management perspective but also from the demand side and if there is such a potential market in the Pacific already (e.g. adventure market and market demand from domestic and international).
- Management of the geoparks -– it is critical to assess the interest of the local government as well as communities in supporting the initiative. The success of the geopark is dependent on effective management and coordination. It is therefore important to ensure that a suitable body is identified to take this role and be given resources and the mandate to support site development.
- Geopark development is a long process however there is an opportunity to develop the site first as a ‘National geopark’. Attaining UNESCO Global Geopark status could be the long-term goal. This will give Fiji time to navigate potential challenges and identify solutions as it aspires for global recognition status.

- Resourcing – The success of geoparks in Japan is attributed to funding support provided by the Provincial Government. In addition to this, the sizeable domestic market and accessibility of the sites have contributed immensely to increased visitation.

Drawing from the understandings and findings from the desktop research and analysis, the stakeholder consultations and the learnings from the above-mentioned Japan geopark study tour, ten essential recommendations are provided below to guide future work in developing and applying for a geopark designation in Fiji:

Recommendation 1: Build awareness of Fiji's geological diversity and history and collate existing information relevant to the proposed sites

The existing geological research that has been documented[88] is not widely known among the general public and sites identified in this assessment are sometimes visited by University students but are not well integrated into the primary and secondary educational curricula. The available Information is fragmented, in journal articles, academic posters, media articles, and within the traditional knowledge of communities in the area. Education and research partnerships that could further collate and socialise information on the geological history of the proposed area in South West Viti Levu would be necessary to build awareness of the sites and advocate for their conservation and protection.

Recommendation 2: Develop high-level commitment to the concept at the national level including the conservation and protection of the relevant sites

This assessment revealed moderate interest and commitment to the concept of a national or global geopark amongst the key stakeholders that could drive the concept forward. Several organisations that do not necessarily have the expertise for site development did show enthusiasm (e.g. Department of Mineral Resources) but there does not appear to be a commitment at the highest level within government to advance the concept. The National Sustainable Tourism Framework includes commitments to diversifying Fiji's tourism offerings and tourism leaders acknowledged at the Pacific Sustainable Tourism Leadership Summit that 'developing geoparks is a crucial approach to sustainable tourism management'. Tourism Fiji expressed support for the concept as part of their destination development objectives including growing the adventure tourism sector, but they do not currently have the mandate to lead this sort of site development. Further engagement with the Fiji government would need to occur to ensure that the process of developing a geopark is a priority for them. This would also include the necessary political will to advance the conservation and protection of the relevant sites.

[88] Professor Patrick Nunn during his time at USP made a substantial contribution to our understanding of Fiji's geological history and links to traditional knowledge and current climate changes

Recommendation 3: Identify a proposed lead organisation and creation of a multi-stakeholder management mechanism

The absence of an obvious candidate for a lead organisation to drive the development of the site further is problematic. Consultations revealed interest from several entities but many of these organisations are under-resourced and unlikely to be able to lead this process in the absence of additional resources. A more detailed assessment of potential lead and supporting organisations could be included in the in-depth feasibility study (see Recommendation 10). A multi-stakeholder mechanism, such as a national geopark committee, has also been proposed that comprises various interested entities including the Provincial and Local government, industry operators in the area, relevant government departments/ministries and representation from communities who hold rights and ownership of sites of international and national significance.

Recommendation 4: Socialisation of the concept of UNESCO Global Geoparks nationally and within the proposed area

Most of the stakeholder consultations revealed limited knowledge, of the geopark concept beyond the geologists, environmental specialists and historians consulted. A more comprehensive socialisation exercise is needed with the Provincial Government, relevant District officers and communities in the area to socialise and make important stakeholders aware of the potential of the UNESCO Global Geopark designation in Fiji.

Tourism stakeholders in particular were unfamiliar with the concept and require simple and accessible information that 'markets' the idea to them to get their buy-in. This will also support the synthesis of relevant information and feedback that will be critical to shaping any future geopark development. Representatives from Tourism Fiji also propose the same.

Stakeholder View:

> *"Given the significance of environmental sustainability, conservation, and community development in the geopark concept, Tourism Fiji can contribute by advocating for the intentional inclusion of sustainable practices in the development process, in line with our commitment to Sustainability that is a key part of our Corporate Plan. Our recent partnership with the Adventure Travel Association also positions us to leverage their resources for educating our tour operators and creating opportunities to grow the adventure segment in Fiji."* **Leigh Howard, CEO of Tourism Fiji.**

Recommendation 5: Engagement with the Provincial and Local Government to conduct detailed site visits and community consultations

The information on the proposed sites presented in this assessment has been collated from written sources and key informant interviews. Detailed site visits and community consultations are critical to assessing community support and obtaining up-to-date information about the status of the sites, existing tourism infrastructure, current visitor numbers and revenue, the level of support from the site owners and local communities, as well as understand the institutional arrangements that govern the sites. The Provincial and Local government and the Nadroga/ Navosa Provincial Council are critical actors and can support this engagement. The desktop review did not allow time for consultations with them directly.

Fijians have an innate relationship with the land, the vanua, which includes geological features and history.

> *People in Fiji are bound to one another through the Vanua. Vanua means many things—land, place, clan, people, tradition and country. To talk of Vanua is to talk not only of land in its material form but land as a Place of Being, as a Place of Belonging, and as spiritual quality. Vanua is both land and sea, the soil, plants, trees, rocks, rivers, reefs; the birds, beasts, fish, gods and spirits that inhabit these places and the people who belong there, bound to one another and to the land as guardians of this God-given world. Vanua is a relational concept that encompasses all this, paths of relationship, nurture and mutual obligations connecting place and people with the past, the present and the future.*[89]

The stories of the land and the ocean that existed before the arrival of people, how people interacted with the environment they found when they arrived and how geology and geological features have been used by indigenous Fijians would be an important part of the overall story of the geopark. As such, a strong partnership between the Provincial Government, the communities within the boundaries of the proposed geopark and the organisations supporting its development is critical. Aligning these efforts to work already underway to strengthen the Yaubula committees within communities should be explored.

Recommendation 6: Development of a financing and business model for the proposed geopark including a market assessment of national and visitor demand

Several examples of successful geoparks globally rely critically on revenue and resources provided by local government and generated through local visitors as the foundation for their revenue and management arrangements. It is unlikely that in Fiji's case, the necessary

[89] Ryle, Jacqueline. 2012. 'Burying the Past—Healing the Land: Ritualising Reconciliation in Fiji'. Archives de Sciences Sociales Des Religions, no. 157 (April): 89–111. Burying the Past—Healing the Land: Ritualising Reconciliation in Fiji.

resources would be available from within the local government and the local market. Fiji's large tourism sector may be able to compensate for the limited resourcing available locally but a more detailed assessment of market demand and a fully costed business plan and management arrangements would need to be developed in partnership with organisations and communities in the area. Additional partnerships should be explored and developed to support resource mobilisation.

Recommendation 7: Development of a twinning partnership with a geopark in another country

Engagement with the global geopark networks will provide Fiji with a strategic opportunity to gain valuable insights for managing a geopark and applying for its listing as a UNESCO Global Geopark successfully. Experiences and practices from the study tour in Japan suggest that there would be significant benefits from maintaining a relationship with existing geoparks and sharing lessons as part of that process. Twinning partnerships have been used globally between places that share similar aspirations and this could also apply to geoparks. A partnership with the Waitaki Whitestone UNESCO Global Geopark in New Zealand, as the first geopark in the Pacific, could be a potential candidate to partner with. UNESCO could facilitate these partnership arrangements as they have indicated that Waitaki Whitestone Geopark has expressed interest in supporting the development of other geoparks in the Pacific.

Fiji Airways and Tourism Fiji may also be interested in supporting a twinning partnership as part of their marketing strategy in Japan. For example, information about Fiji's proposed geopark could be shared with visitors to their 'twin' in Japan.

Recommendation 8: Development of partnerships with potential tourism partners

The tourism operators consulted as part of the assessment were limited to larger operators and those with some knowledge of the existing sites but did not include community-based operators or smaller operators that may use the sites currently. Detailed consultations with tourism operators in the area would be needed to understand current offerings and seek feedback on the proposed geopark development. They would be able to share detailed information as to why these sites are not better developed and how the process of the geopark development could assist in addressing some of the current barriers and challenges to visiting these sites.

Recommendation 9: Co-design informational resources and provide training for teachers, tourism operators, guides and community-based businesses

To ensure that the educational resources for schools, universities, marketing organisations, tourism operators and visitors (signage, posters, online resources, brochures) are accurate and accessible, a co-design process with proposed users of the resources is recommended. This is a critical part of ensuring ownership of the eventual products. The Ministry of

Education, academic researchers and Tourism Fiji could jointly support this process for different audiences if appropriately resourced.

Training for tourism operators, in particular community-based tourism operators, would be critical for supporting site enhancement and improved management. This could be done by promoting mentoring arrangements between larger tourism operators and accommodation providers and community-based operators in the area as part of a general strategy to improve partnerships within the industry.

Recommendation 10: Development of a detailed geopark feasibility assessment and development plan

To develop the concept further a detailed geopark feasibility assessment and development plan incorporating the recommendations above would be needed. This would include a detailed strategy of the necessary prerequisite activities and the responsible organisations for progressing these activities. To ensure the process is owned locally the organisation responsible for taking the concept forward should lead this process which necessitates identifying a suitable lead organisation and supporting organisations ahead of any future work.

Detailed consultations and site visits in the area are also necessary to understand the current market dynamics and support from communities within the area as well as understanding the current management and ownership arrangements each site is governed by. This would potentially include further prospective geosites which are not included in this initial pre-feasibility study. The findings of this detailed assessment would guide the refinement of the boundary of the proposed geopark.

It would also need to include a fully costed business plan to assess the financial viability of the proposed geopark. This should include any potential sources of finance that might be available from within the proposed area (e.g. sponsorship from existing tourism or corporate sponsors) in addition to sources of public finance and revenue from visitors.

Section 8: Annexes

Annex 1 - Literature Review

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Annex 2 - Stakeholder Consultations

The list below represents stakeholders that we reached out to via email to request information and organise follow-up consultations.

Name	Organisation	Mode
Jacinta Lal	MTCA	Email
Miri Ryland	MTCA	Email
Catherine Mara	SPTO	In-person & Email
Christina Gale	SPTO	Email
Gary Lee	SPC	In-person & Email
Kristine Tovmasyan	UNESCO	In-person & Email
Brent Hill	Tourism Fiji	Email
Leigh Howard	Tourism Fiji	Email
Srishti Narayan	Tourism Fiji	Email
Sonal Sharma	Tourism Fiji	Email
Sunishma	Tourism Fiji	Email
Neeraj Chadra	Marriott Group	Email
Sera Cawanibuka Seruvatu	Marriott Group	Email
Fantasha Lockington	FHTA	Email
Apisai Moce	Ministry of Forestry	Email
Jay Whyte	Sigatoka River Safari	In-person & Email
Elia Nakoro	Fiji Museum	In-person
Sipiriano Nemani	Fiji Museum	Email
Elisabeth Erasito	National Trust	Email
Milika Savou	National Trust of Fiji	Email
Patrick Nunn	USC	Email
Tarisi Vunidilo	Uni of Hawaii	Email
Nicholas Halter	USP	Email
Paddy Ryan	Natural heritage specialist and author	Email
Dick Watling	Environmental consultants	Email
Stuart Chape	SPREP	No-response
Ms Atelaite Rokosuka	Ministry of Fisheries and Forests	No-response
Ms. Sanjana Lal	Ministry of Fisheries and Forests	No-response
Sandeep K. Singh	Dept of Environment	No-response

Rajeshni Lata	Dept of Environment	No-response
Senivasa Waqairamasi	Dept of Environment	No-response
Raijeli Lewatu Taga	Ministry of Lands and Mineral Resources	Email
Mohammed Zaved Azad	Mineral Resources Department	In-Person
Apete T. Soro	Mineral Resources Department	In-Person
Noa Tuiloma	Mineral Resources Department	In-Person
Mereseini	Mineral Resources Department	In-Person
Agnes Perter-Hansen	Mineral Resources Department	In-Person
Ariela Zibah	Freelancer / PhD candidate	Email

Annex 3 - Consultation Guides

Annex 3.1 Geopark Stakeholder ConsultationGuide For Government Stakeholders

Background Information

The prospect of developing a UNESCO Global Geopark in Fiji is a strategic opportunity which warrants further consideration. A geopark has the potential to integrate and strengthen existing tourism activities, and potentially leverage the success of the tourism sector in Fiji to support broader natural and cultural heritage conservation goals. The proposed preliminary feasibility assessment of the southwest of Viti Levu will help highlight what is currently available, as the geo-tourism niche is new to the Pacific region from the experience offering perspective.

UNESCO Global Geoparks focus on ten key areas which include, Natural Resources, Geological Hazards, Climate Change, Education, Science, Culture, Women, Sustainable Development, Local and Indigenous Knowledge, and Geoconservation. Thus, geoparks are focused on sustainable development for a region that integrates geodiversity, biodiversity, and cultural diversity.

We (Talanoa Consulting and NatureFiji-MareqetiViti) are supporting SPTO and MTCA with a pre-feasibility assessment for a Geo Park in Fiji focussed on the SW Viti Levu area as selected by MTCA. We would like all of the desktop work we do to be as useful as possible for MTCA, Tourism Fiji, FHTA and other tourism stakeholders more broadly and any suggestions you have in this regard would be greatly appreciated.

These questions have been developed based on the scope of work outlined in the ToR for the pre-feasibility assessment and the Self-evaluation checklist[90] for aspiring UNESCO Global Geoparks

Boundary

Are you aware of any particular sites within SW Viti Levu of geological and cultural heritage significance?	
How are the sites delineated e.g. by mataqali land, rivers, geological boundaries, and administrative boundaries?	

International value

Are these existing geological or cultural heritage sites of significance which could be viewed as internationally significant?	
Would you consider these sites to be more significant than other geographical areas in Fiji?	
Have you or others carried out any independent geological study demonstrating/documenting researching the geological significance of the site?	

Conservation

Are there any documented maps, heritage, cultural assessments etc of the area?	
Does the site have any protection or conservation status?	
Are there cultural and natural conservation initiatives happening within the area?	

Education, Educational Tools & Research

Are you aware of educational activities connected with geological, natural or cultural heritage in these sites?	

[90]Self-Evaluation Checklist for aspiring UNESCO Global Geoparks (aUGGp), available at: Self-Evaluation Checklist for aspiring UNESCO Global geoparks (aUGGp)

Are you aware of any study groups or ongoing research activities at these sites?	
Have you developed any specific educational tools (publications, videos, slideshows, interactive elements, specific exhibits, puzzles, etc.) relating to these sites?	
Has the site been previously researched or studied by any institutions in the past?	

Infrastructure, Facilities & Visibility

Is there supporting infrastructure in that area (roads, WAF, EFL, internet and public transport)	
Is there signage along the roads or/and in important sites?	
Is there any other form of marketing and promotion being done for the site?	

Partnerships

Are there any current partnerships that you are aware of for site promotion or management?	

Geotourism

Are the sites currently used for tourism purposes?	
Do you know if they have a monitoring system for visitors?	

Cultural heritage

Are there any protected cultural/historical monuments at the sites?	
Is there any significant intangible heritage?	
Are local community and local leaders actively and formally involved in the management of the sites?	

Do you have any other feedback on the feasibility or viability of a proposed Geo Park site in SW Viti Levu?

Annex 3.2 Geopark Stakeholder Consultation Guide For Tourism Stakeholders

Boundary

Where do your experiences currently operate?	
Do they operate within a defined area?	
How is this area delineated e.g. by mataqali land, rivers, geological boundaries, and administrative boundaries?	

Adequate size

Do you know the population of the areas/villages within the area where you work?	

International value

Do your trips currently work with any existing geological or cultural heritage sites of significance which could be viewed as internationally significant?	
Would you consider these sites to be more significant than other geographical areas in Fiji?	
Have you or others carried out any independent geological study demonstrating/appreciating/discovering the geological significance of the site?	

Conservation

Are there any documented maps, heritage assessments etc of the area?	
Does the site have any protection or conservation status?	

Are there cultural and natural conservation initiatives happening within the area?	

Education, Educational Tools & Research

Have you developed educational activities connected with geological, natural or cultural heritage?	
Do you incorporate these sites into the guest experience? If so, how?	
Have you developed different specific educational tools (publications, videos, slideshows, interactive elements, specific exhibits, puzzles, etc.)?	
Has the site been previously researched or studied by any institutions in the past?	

Infrastructure, Facilities & Visibility

Is there supporting infrastructure in that area (roads, WAF, EFL, internet and public transport	
Is there signage along the roads or/and in important sites?	
Is there any other form of marketing and promotion being done for the site?	

Partnerships

Are there any current partnerships that you hold for site promotion or management (restaurants, transfers, accommodation or mataqali/community support structure)	

Geotourism

Do you provide training for guides, or Tour Operators working with you?	
Do you have a monitoring system for your visitors?	

Cultural heritage

Are there any protected cultural/historical monuments?	
Is there any significant intangible heritage?	
Are your local community and local leaders actively and formally involved in your activities?	

Do you have any other feedback on the feasibility or viability of a proposed Geo Park site in SW Viti Levu?

Annex 3.3 Geopark Stakeholder Consultation Guide For Natural and Cultural Heritage Stakeholders

Boundary

Are you aware of any particular sites within SW Viti Levu of geological and cultural heritage significance?	
How are the sites delineated e.g. by mataqali land, rivers, geological boundaries, and administrative boundaries?	

International value

Are these existing geological or cultural heritage sites of significance which could be viewed as internationally significant?	
Would you consider these sites to be more significant than other geographical areas in Fiji?	
Have you or others carried out any independent geological study demonstrating / documenting researching the geological significance of the site?	

Conservation

Are there any documented maps, heritage, cultural assessments etc of the area?	
Does the site have any protection or conservation status?	

Are there cultural and natural conservation initiatives happening within the area?	

Education, Educational Tools & Research

Are you aware of educational activities connected with geological, natural or cultural heritage in these sites?	
Are you aware of any study groups or ongoing research activities at these sites?	
Have you developed any specific educational tools (publications, videos, slideshows, interactive elements, specific exhibits, puzzles, etc.) relating to these sites?	
Has the site been previously researched or studied by any institutions in the past?	

Infrastructure, Facilities & Visibility

Is there supporting infrastructure in that area (roads, WAF, EFL, internet and public transport)	
Is there signage along the roads or/and in important sites?	
Is there any other form of marketing and promotion being done for the site?	

Partnerships

Are there any current partnerships that you are aware of for site promotion or management?	

Geotourism

Are the sites currently used for tourism purposes?	
Do you know if they have a monitoring system for visitors?	

Cultural heritage

Are there any protected cultural/historical monuments at the sites?	
Is there any significant intangible heritage?	
Are local community and local leaders actively and formally involved in the management of the sites?	

Do you have any other feedback on the feasibility or viability of a proposed Geo Park site in SW Viti Levu?

Annex 4: Accommodation listing within the proposed geopark

This list represents the main hotels and accommodation providers in the proposed geopark area, based on licensing details held by the Fiji Hotel and Tourism Association. This total of over 1,600 rooms (from a total of approximately 12,000 in licensed properties) or 5,200 people could be accommodated in the area. This does not include Airbnb, homestays and other providers of accommodation that do not hold a hotel license.

Name of Premises	Rooms	Beds	Persons
Bedarra Beach Inn, 77 Sunset Strip, Korotogo	25	54	54
Casablanca Hotel, Sunset Strip, Korotogo	8	14	40
Dunes Resort, Kulukulu,Sigatoka	5	6	11
Gecko's Resort, Nawaito,Cuvu, Sigatoka	28	84	84
Intercontinental Fiji Golf Resort & Spa, Natadola Beach	271	445	650
Kaila Na Ua Resort, Lots 1,2,3 Sunset Strip,Korotogo	8	16	27
Likuri Island Resort (Fiji),Likuri Island, Natadola	22	81	107
Malaqereqere Villas,Malaqereqere, Sigatoka	12	24	24
Myola Plantation Fiji, Lot 5, Malaqereqere,Sigatoka	6	5	10
Narayan's Apartment,Lot 5,Muasara Sub Division,Olosara,Sigatoka	6	10	12
Natadola Beach Villas, Natadola, Malomalo, Nadroga	7	10	14
Outrigger Fiji Beach Resort, Queens Rd; Korotogo, Sigatoka	253	340	600
Qoqo Island Resort,Natadola,Nadroga	8	8	16
Sand Dunes Inn, Kulukulu	3	24	24
Seaview Drive Resort,Lot 3,Muasara,Sigatoka	10	25	32
Sandy Point Beach Cottages, Korotogo	5	22	22
Shalini Garden & Hotel Apartments, Lot 1, Olosara, Sigatoka	9	30	36
Shangri-La's Fijian Resort & Spa, Yanuca Island, Cuvu	443	1,327	1,817
The Crow's Nest Resort, Korotogo	34	70	90
Tubakula Beach Bungalows, Nadroga	60	134	156
Tute's Seabreeze Heights, Nararawai, Yadua, Sigatoka	4	15	22
Villa Senikau, Lot 12 A, Maui Bay, Beachside, Coral Coast, Sigatoka	4	8	8
Wai Taci Villas, Korotogo	5	14	19
Yadua Bay Resort & Villas, Yadua Bay, Malaqereqere, Sigatoka	25	55	105
Doubletree Resort by Hilton Fiji, Sonaisali Island	120	196	392

Fiji Marriott Resort, Momi Bay	250	522	886
Total	1631	3539	5258

Annex 5 - Self-Evaluation Checklist for aspiring UNESCO Global Geoparks (aUGGp)

Attached separately