

## 3. Baseline Analysis

### 3.1 INTRODUCTION

The following section summarizes the E&S conditions in Western Province. An analysis of the existing situation provides the basis for identifying and assessing risks and opportunities that may arise from future tourism development. Information presented in this section is gained from a combination of secondary data, in-field observations, and stakeholder and community consultation.

### 3.2 TOURISM IN WESTERN PROVINCE

In 2016, a total of 46,748 people entered Solomon Islands; about half (49.6 percent) of them were visitors, with a majority (40 percent) coming from Australia. Of these visitors, only 32.9 percent were vacationers, while others visited families and friends, for business, or were in transit (SIG: National Statistics Office 2016).

A higher proportion of tourists visited Western Province compared to other places in the country. International flight services from Brisbane, Australia, to Munda in Western Province started in 2019, but the majority of tourists go through the capital city of Honiara and transit on connecting flights to Gizo, Munda, and Seghe.

Tourism in Western Province is still in its infancy with limited development of international tourism operations and small numbers of leisure visitors to the country. Western Province has the raw foundation for an outstanding visitor experience with a rich culture and varied way of life, pristine lagoons and diving opportunities, and remarkable landscapes to explore (IFC 2018).

Tourism operations and/or activities are generally focused on:

- Diving and snorkeling
- Kayaking, stand-up paddle boarding, and water-based activities
- Limited surfing opportunities
- WWII tours
- Game fishing
- Lagoon tours
- Hiking, nature conservation, and bird watching
- Cultural village visits
- Small cruise ship and live-aboard
- Some cruising yacht tourism in Western Province, with limited services for yachts

Infrastructure to support these activities is limited, with most sites accessible via small sea ray boats, including Gizo Airport, which is situated on its own island 15 minutes by boat from Gizo township.

While accommodations are abundant, tourism accommodation have limited facilities and are not well maintained and advertised, resulting in an under-utilization of total available rooms by international tourists (IFC 2018). The documented locations of existing tourism accommodation and a total of 41 operators (IFC 2020) in the corridor is included in Map 5.

In 2018, IFC undertook a tourism needs assessment that outlined recommendations on various areas for improvement for tourism operations (IFC 2018) to develop a successful tourism market in Western Province. Findings from the assessment include:

- A limited amount of market-ready accommodation and other tourism operators
- Widespread tourism sites with limited patronage
- Insufficient human-resource capacity
- Low success rate in engaging local communities in the travel and tourism economy

In 2018, the MCT set the Minimum Standards and Classification for Tourism Accommodation in 2018 to guide operators to develop offerings to international standards (SIG: Ministry of Culture and Tourism 2018); these standards, however, are not compulsory or enforceable and have no legal standing. The ministry also developed Towards a Code of Practice for the Tourism Industry.

Both of these standards are detailed in Table 22.

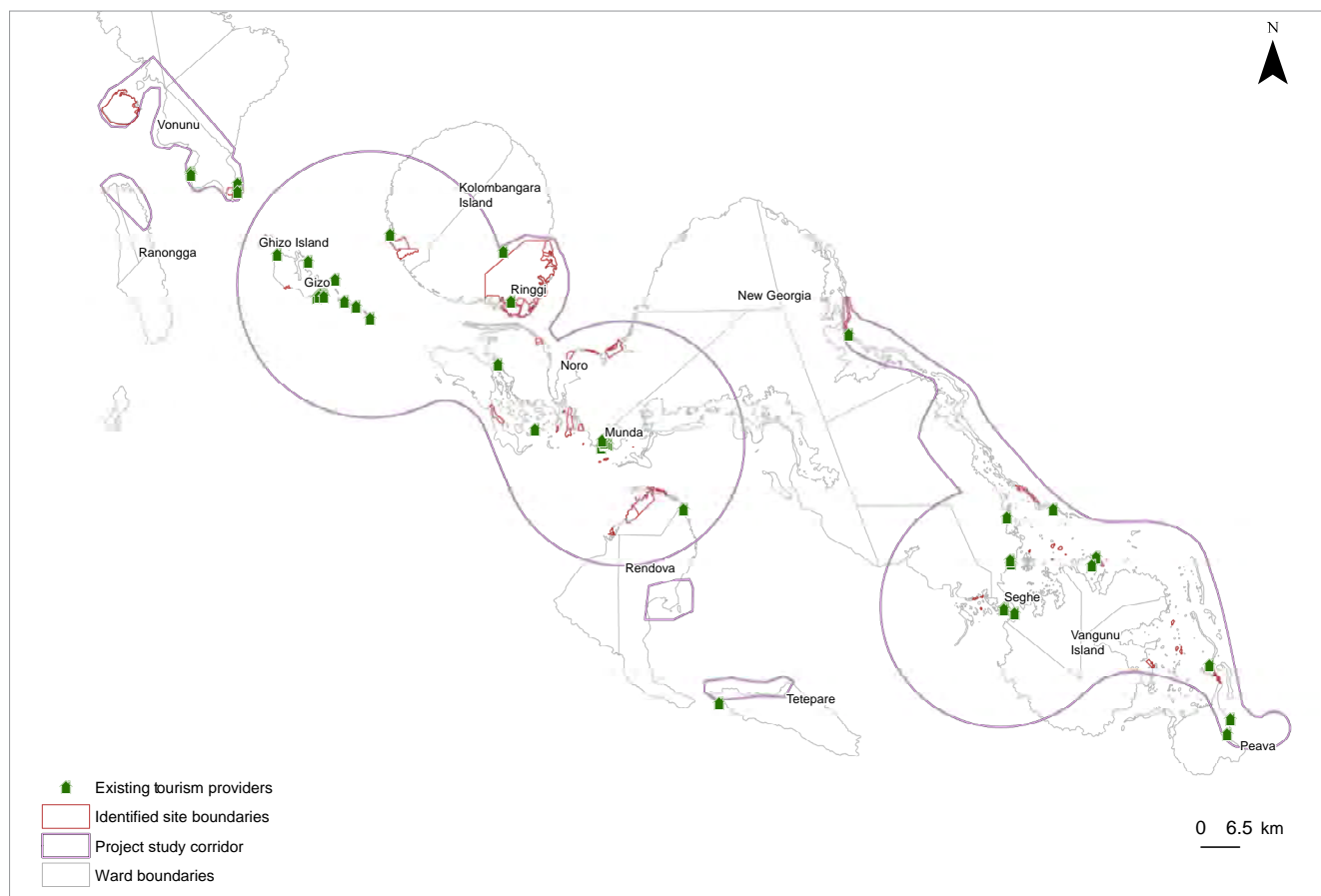
### Tourism Investment Incentives Package 2017

Depending on the investment size or nature of the tourist activity and/or project, investors may be able to apply for the Tourism Investment Incentives Package 2017 (SIG 2017a) from the MCT, including:

- Tax holiday and/or offset incentives
- Duty exemptions on some capital goods and equipment not manufactured in Solomon Islands
- Duty exemptions on renewable-energy equipment
- Ability for some businesses to sell privately generated excess electricity back to the grid

Incentives are aimed at investors focused on tourism accommodation, marine and diving tourism, and aviation. There are also incentives for partnering with Solomon Islands locals and upgrading existing accommodation facilities.

**Map 5: Tourism Providers in Western Province (IFC 2020)**



### 3.3 SOLOMON ISLANDS GOVERNANCE

#### 3.3.1 GOVERNMENT AGENCIES RELEVANT TO TOURISM DEVELOPMENT

Solomon Islands is a parliamentary democracy and part of the British Commonwealth, with the head of state as the British monarch represented by the governor-general and the head of government as the prime minister. Solomon Islands is a unitary state with a national and a provincial government, which was established under the Provincial Government Act 1981 and amended in 1997 (SIG: Ministry of Provincial Government 2018).

While Solomon Islands has organized government structures, legislations, and law enforcement, customary ways of life continue to play a significant role in various sectors in the country, particularly in terms of land tenure, ownership, and/or utilization of land.

The following government agencies are responsible for administration of legislation applicable to tourism development.

##### Central Government

**Ministry of Lands, Housing and Survey:** This ministry is responsible for land administration in the country. Their duties include registration of land, collection of land rents, recordkeeping of land records/documentation, and ensuring of statutory requirements for land surveys and valuations.

**Ministry of Culture and Tourism (MCT):** This ministry is responsible for the formulation and implementation of tourism policies and programs, including legislation and regulations, tourism education and training, tourism projects, product development, planning, research and development, and provincial tourism coordination and development.

**Tourism Solomon Islands (formerly Solomon Islands Visitors Bureau):** Under the MCT, Tourism Solomon Islands functions as the marketing office for tourism in the country.

**Tourism Task Force/Tourism Working Group:** The task force was created in 2010 through IFC's support and aimed to improve the country's tourism investment climate through strengthening the country's marketing strategies, improving processes for tourism developers and transportation infrastructure, and boosting capacity building and quality standards in the industry (World Bank Group 2019). The Tourism Working Group has developed over the years and its key stakeholders include Australian Aid (Department of Foreign Affairs and Trade), the New Zealand

Aid Program (Ministry of Foreign Affairs and Trade), Japan International Cooperation Agency, and Solomon Airlines.

**Ministry of Fisheries and Marine Resources:** This ministry is responsible for fisheries management, development, and operations. It devises and implements policies in accordance with the *Fisheries Management Act 2015* and administers community-based marine protected areas.

**Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM):** This ministry is in charge of sustainable environmental management, climate-change adaptation and mitigation, disaster risk management, and meteorological services for Solomon Islands. It is responsible for the following environmental laws:

- *Environment Act 1998*
- *Environmental Regulations 2008*
- *Protected Areas Act 2010*
- *Protected Areas Regulations 2012*
- *Wildlife Protection and Management Act 1998*
- *Wildlife Protection and Management Regulations 2008*

**Ministry of Commerce, Industry, Labour and Immigration:** This ministry is responsible for the formulation and implementation of economic and industrial development strategies for Solomon Islands. It also manages the procedures and facilitates investments in the country.

**The Ministry of Health and Medical Services:** This ministry is responsible for the following environmental laws:

- *Environmental Health Act (Cap 99)*
- *Environmental Health (Public Health Act) Regulations 1980*

**Ministry of Home Affairs:** This ministry is responsible for the *Gaming and Lotteries Act 2004* and processing applications for gaming/lottery licenses.

**Gaming and Lotteries Board:** Under the *Gaming and Lotteries Act 2004*, the board is responsible for granting or revoking the commercial gaming, casino, and lotteries licenses, as well as its renewal; it also manages the gaming licenses across the different provinces of Solomon Islands. The board is under the Ministry of Finance and Treasury.

**Ministry of Provincial Government and Institutional Strengthening:** This ministry is responsible for the administration of the nine provincial governments in Solomon Islands. Under the *Provincial Government Act 1997*, the ministry must define its core functions, programs, and priorities through its planning processes and devolve these functions to provincial governments, enabling them to deliver services at the provincial and community levels.

**Biosecurity Solomon Islands:** This unit manages compliance with the principles and systems developed by the International Plant Protection Convention and the World Organization for Animal Health. The SIG is a signatory to the World Trade Organization and strongly supports international cooperation in controlling pests of plants and plant products and of animals and animal products through science-based quarantine measures.

**Royal Solomon Islands Police Force:** The police have certain enforcement powers for general and environmental crimes.

### **Provincial Government**

**Western Provincial Government:** Under the *Provincial Government Act*, Solomon Islands is divided into provinces. Each provincial government, composed of an assembly and executive, has its own legislative and executive functions. The Western Provincial Government is the provincial governing body tasked with the planning, management, and/or implementation of tourism development plans within the study corridor.

**Western Province Ministry of Tourism:** This ministry promotes Western Province as the best tourist destination in Solomon Islands (Bennett, et al. 2014). It aims to align tourism policies with the central government.

**Western Province Ministry of Lands:** The regional land center was established in Gizo in 2003 as part of the Solomon Islands Institutional Strengthening of Land Administration Project to divulge land administration functions of the central government to provincial offices. The provincial department now manages titles for government-owned and registered land; yet, important decisions, such as the creation of new parcels, sub-divisions, and transfers, are still managed through the Ministry of Lands' central office in Honiara.

The department also manages town planning on registered government land and allocates land for residential, business, school, and other community uses as required. People can apply for registration of lands within the province, and the department collects associated fees and processes these requests on behalf of the central government.

**Town and Country Planning Board:** The board oversees development consents and approves the development of new or redeveloped land in all areas of Western Province. While all sites are required to produce EIAs, as required by the *Environment Act*, and obtain development consents and engineering approvals, most local landowners fail to do so and proceed with their developments unchecked.

Development on government-owned land is further scrutinized. Usually, the required permits are applied for and reviewed by specialists employed by the board.

EIAs are checked by the Secretary of Western Province.

**Western Province Ministry of Environment:** The ministry is the provincial link with the MECDM and provides provincial environmental department services. They collaborate on all environmental activities within Western Province.

### **3.4 POLICY AND LEGISLATIVE REVIEW**

A detailed review of the SIG and Western Province's strategies, policies, legal frameworks, and their implementation and relevance to tourism development is presented in Appendix B. The policy review considered IFC PS and World Bank Group (WBG)'s Environmental, Health, and Safety guidelines, which represent a framework of Good International Industry Practice providing both general and specific advice for an industry sector. In particular, the WBG's Guidelines for Tourism and Hospitality Development contain information relevant for business and city hotels, resorts, eco lodges, and other accommodation and catering facilities (IFC 2017). The guidelines outline potential environmental, health, and safety issues associated with tourism and hospitality activities and ways to manage the risks in this sector.

Key issues relevant to tourism development, based on the above reviews, are discussed below.

### 3.4.1 PERMITS AND LICENSING OF TOURISM BUSINESSES

A summary of the key permits and licenses required for most tourism operations are included in Appendix B. Those of interest to this study include:

- Environmental permitting
- Business licensing
- Foreign investor permitting
- Permits for casinos and gambling establishments<sup>(17)</sup>

### 3.4.2 COMPLIANCE AND ENFORCEMENT

#### Environmental Compliance

As part of the business-licensing process and development consent issued by the MECDM, an EIA is required prior to the start of a tourism development project; without the EIA, it is illegal to proceed with a prescribed development. The MECDM is responsible for implementing compliance with the EIA and the final report should be gazetted and/or circulated so that stakeholders may provide comments or objections. The MECDM's Director of Environment and Conservation will review these comments and/or objections and confirm that the project is safe for development before issuing a "Development Consent." Community stakeholders and/or landowners can appeal to the Environment Advisory Committee and Minister of Environment within 30 days of notice of the consent. There is, however, an associated cost of US\$200 when filing an appeal.

Under the Solomon Islands EIA guidelines, the proposal application should include the type, size, and nature of the development, but there are no specific requirements on the size of the tourism facilities. Nonetheless, the development proposal should include a map to indicate the site's geographic location, elevation, slope, nearby areas of environmental significance such as proposed or declared reserves, protected areas, world heritage sites, watercourses, wetlands, and adjacent land uses, including the nearest villages/communities (Ministry of Environment, Conservation and Meteorology 2010).

At the provincial level, development of tourism businesses, establishments, and/or activities must be approved by the Western Provincial Government.

As such, investors should allocate sufficient time and resources on the required processes and/or permits.

The Foreign Investment Bureau, on behalf of the Attorney General of the National Government, is charged with ensuring EIAs are carried out to an appropriate national standard. Otherwise, the SIG has little subsequent recourse to force the business to implement mitigation measures in case of environmental degradation.

Government organizations have limited E&S capacity and resources to enforce the *Environment Act* and provincial laws as well as keep proper records of and monitor all developments in accordance with the required development consents and business licenses. Insufficient manpower and poor accessibility to some islands and/or remote sites also hamper the MECDM's ability to send government employees to ensure that development projects comply with E&S safeguards, policies, and legislations (Chêne 2017).

While the *Environment Act* requires a proposed development to inform local communities via gazetted notices so that they can raise any grievances, this process often has not considered their education level, which may limit their understanding of the impacts and related mitigation measures presented. In case of disputes, local communities may need to seek legal advice and may likely be reluctant to engage in a potentially lengthy dispute-resolution process. This can lead to disgruntled communities and longer-term conflicts (Chêne 2017).

A business license is required for new businesses and prior to on-site construction. In Western Province, the application process includes an engineer review, including environmental considerations, of any construction plan. Ultimate license approval is granted by the Western Province Executive who can require an EIA to be undertaken if the construction is expected to affect the environment (Moore 2015). The business license, however, is not conditional on a satisfactory EIA submission, so it can still be issued without an EIA.

Construction-permit processes have been investigated by the World Bank (2019). The findings reveal that it takes a local business an average of 99 days per project to obtain a building permit, which costs on average 19 percent of the project's value.

17 Gambling, casinos or equivalent enterprises are included on IFC's exclusion list: <http://www.ifc.org/exclusionlist>

The study also shows that required inspections by the MECDM may not be conducted due to the remoteness of areas and limited capacities of the government agencies.

Royal Solomon Islands Police Force and ministry officers are given certain powers to enforce environmental laws and ensure compliance with regulations against the following offences (Moore 2015):

- Carrying out logging and mining operations without an EIA and/or a development consent—a permit issued by the Director of Environment and Conservation in the MECDM imposing certain conditions such as minimizing environmental risks and/or harm, provision of reports, and conducting baseline studies/surveys and periodic audits
- Felling and milling trees without the necessary license or not in accordance with a license/ permit
- Extracting minerals such as gold, nickel, and bauxite without the necessary license or not in accordance with a license
- Engaging in fishing without a license, exceeding the limit on the number of fish, catching fish that are too small, or using illegal fishing methods
- Coral or sand harvesting without approvals or the appropriate effects assessment
- Carrying out certain activities such as logging and mining or taking species from a protected area
- Importing or exporting prohibited or restricted plants and animals without the necessary permissions
- Causing pollution to the water/air and from certain premises without or in breach of the necessary permissions

### **Labor Compliance**

The SIG has labor policies and/or legislations such as the *Safety at Work Act 1982* and the *Labor Act 1996* to protect employee or worker rights. The Office of the Commissioner of Labor is the main agency responsible for managing and implementing the labor laws, including provisions for casual employees or daily-wage earners,

foreign workers, the minimum wage, working hours, and the employment of women and children.

The *Labour Act 1996* has various provisions to protect the health and safety of women:

- Prohibit women from night work except under specified circumstances such as working in hotels, restaurants, and bars.
- Prohibit women from working in mines.
- Prohibit women aged 16 to 18 from working underground or on ships.
- Provide 22 weeks of maternity leave and insisting that women must take at least six weeks of leave or they will be in breach of their original contract.

The *Labour Act 1996* also restricts children and/or young people from certain work. Specific provisions are as follows:

- No child under the age of 12 shall be employed in any capacity whatsoever.<sup>(18)</sup>
- Work is allowed for persons under the age of 15. However, employment in the industrial sector requires an approval from the Ministry of Labour. Work on ships is strictly prohibited for persons under 15.
- Persons under the age of 16 are prohibited from employment in mines.
- For employment under the age of 18, (a) males can be allowed to work in the mines if he has a medical certificate, (b) for ships, employment is only allowed for the trimmer, stoker, or ship-types that are not propelled by steam, (c) employment in ships also requires a medical certificate, and (d) employment in the industrial sector during the night is prohibited.

The *Safety at Work Act* focuses on the safety and health of employees and workers, particularly in the industrial or construction sectors. A few provisions such as first-aid training protect employees in the commercial sector, including the tourism industry.

18 Section 46 of the *Labour Act 1996* states that "no child under the age of 12 years shall be employed in any capacity whatsoever." This is not consistent with international standards requiring a minimum age of employment not lower than 14 years. On ratifying the International Labour Organisation's Convention 138, the government has declared 14 years as the minimum age, thus it is envisaged that an amendment may be made to the *Labour Act* to reflect this declaration (International Labour Organisation 2016).

### 3.4.3 POLITICAL STABILITY

In Transparency International's Corruption Perceptions Index 2019, Solomon Islands ranked 77 out of 180 countries. Weak governance can be associated with poor implementation of the rule of law and policies in the country, particularly in the forestry and mining sectors where foreign-owned companies and local politicians are in collusion (Chêne 2017). In the case of logging, the Ministry of Forestry cannot effectively manage permit approvals and oversee logging companies because of a lack of manpower and resources to perform effective monitoring.

#### Conflicts of Interests of Members of Parliament and "Big Man"

Some Solomon Islands Members of Parliament gain and maintain their position through the traditional "Big Man" leadership system, referring to highly influential individuals in a tribe who provide their followers with protection and economic assistance in exchange for their support. Campaigns are often dominated by exchange of goods between candidates and voters, a kind of patron/client relationship that characterizes the "Big Man" leadership system of *kastom* way (Kabutaulaka 1998). This system focuses on relationships between family members and *wantok*, or those who are from the same tribe (further explained in section 3.10.1).

The Leadership Code Commission established under the *Leadership Code Act 1999*, reviews required declarations from all Members of Parliament outlining all their assets and financial interests within three months of taking office and every two years after that. If there is a perceived or actual conflict of interest, the commission has the power to direct the Members of Parliament to either divest themselves of that interest or give up their office. The information is not yet publicly available for Solomon Islands citizens to review and confirm that integrity issues are being addressed by the commission (Transparency Solomon Islands 2010). Nonetheless, the local media has reported cases of Members of Parliament with personal conflicts of interests in the portfolios they oversee.

The SIG also has the *Code of Conduct – Solomon Islands Public Service* for all public servants, which highlights conflicting concepts between the *wantok* system and the principles of fair service to the wider population.

The government passed a legislative package of reforms aimed at improving political stability, women's access to parliament, the fight against corruption, and protection of whistleblowers in 2018. The *Anti-Corruption Act*, passed on July 25, 2018, provides for the creation of an independent anti-corruption entity. Parliament also passed the *Whistleblowers Protection Act* on July 31, 2018, with the aim of protecting people who come forward with information on corruption (United Nations 2019).

### 3.4.4 LAND ADMINISTRATION, TENURE, AND OWNERSHIP

The *Land and Titles Act 2016* governs landownership in Solomon Islands, including customary land. The act defines ownership arrangements, governs the management of land, and sets out procedures for the acquisition and lease of land. Land type in Solomon Islands is either customary (85 percent) or registered (15 percent). Most natural resources (with some exceptions such as river waters) belong to the landowners under custom. The Solomon Islands Constitution recognizes customary land rights (Solomon Islands Government 2017b).

Division 2 of Part V of the *Land and Titles Act* gives the Minister of Lands the power to compulsorily acquire any customary or registered land required for public purpose. Section 8(1) of the Constitution outlines when compulsory acquisition can occur:

- The acquisition is "necessary or expedient in the interests of defense, public safety, public order, public morality, public health, town or country planning, or the development or utilization of any property in such a manner as to promote the public benefit."
- There is reasonable justification for causing any hardship to the interest holders.
- The acquisition is done under a law that provides reasonable compensation (including lump sum or instalments, and by cash or other form) in a reasonable time.
- The acquisition is done under a law that allows interest holders to appeal to the high court with respect to their ownership, the legality of the acquisition, or the compensation payable.

Map 6 provides an overview of land status in Western Province. The different land statuses—customary and registered land—are described in the following sections.

### **Customary Land**

Customary land is used or occupied by a person or community in accordance with current customary usage. This includes land covered by water and things that grow on the land, buildings, and structures fixed to the land. Tribes, communities, or families can apply for their customary rights or land to be recorded under the *Customary Land Records Act*. Lease and sale of recorded customary land differs from registered land, as the government is involved in the demarcation of the land, with consideration to the number of land occupants and/or users of natural resources in the customary land. Part of the process to record land as customary includes the gazetting of the customary land record so that other rights holders to the land and natural resources would be able to inform if there are overlapping claims (Foukona 2007).

Map 6 identifies customary land and land that has been surveyed but not registered (referred to as “Land Reference—surveyed, not registered”). It is unclear if this land has been formally recorded under the *Customary Land Records Act*, but identifying the land like this shows that the extent of the land is known. Although there are legal mechanisms to regulate customary governance (see Appendix B) for landownership, communities and/or tribes in Solomon Islands perceive land as communally owned by tribes (Ogle 2014).

Under the country’s policies and/or legislations, tribes and/or families can record their primary rights and/or ownership over a parcel of land under the *Customary Land Records Act*. With the primary owner’s permission, other tribes and/or families may use land and marine resources in the said area. In addition, transactions or disputes in tribal land are to be addressed primarily through customary institutions before being escalated to the state legal system (SIG: Solomon Islands Law Reform Commission 2012).

Despite the availability of legal mechanisms for communal land, tribes and/or families still face the following issues in recording or registering their land (Corrin 2010):

- There is a lack of agreement and/or an overlapping of landownerships or boundaries; registration process can be lengthy and challenging due to conflicting claims over parcels of land and marine and forest resources.
- There is a lack of a bridge between a group’s customary laws and the country’s legal systems.
- Formal registration of ownership of specific resources, such as customary rights on timber, water, and minerals, may cause tribes and/or families to lose rights or benefits on other resources. As such, it is difficult to identify the right landowner/s but also ensure the equitable distribution of benefits from land lease or acquisition.
- Tribes and/or families are often asked to settle overlapping claims through traditional methods. While customary landowners and/or tribes can seek legal advice on land acquisition or lease from outside government agencies, they often lack the financial resources and/or information to seek qualified, professional advice.

Voluntary registration of customary land is under Division 1 of Part V of the *Land and Titles Act*:

*“Customary land may be sold or leased to the Commissioner or any Provincial Assembly in accordance with the provisions of this Division... and the lease of that land from the registered owners.”*

While a land register is maintained under the Ministry of Justice and Legal Affairs, the registry is not public, and it is difficult to ascertain the percentage of customary land that has been registered.



## Registered Land

Under the *Land and Titles Act 2016*, customary land can be converted into registered land, which can then be transferred and leased. There are two types of registered land estates: perpetual and fixed term.

- Similar to a free-hold estate, a perpetual estate grants the permanent right to use and occupy the land, subject to any conditions laid out by the *Land and Titles Act*. According to the country's constitution, only a Solomon Islander (or other person prescribed by Parliament such as the Commissioner of Lands) has the right to hold or acquire a perpetual estate.
- A fixed-term estate is granted on a registered perpetual estate allowing use and occupancy of the land and its produce for a fixed period, subject to the payment of rent and compliance with obligations and restrictions. Lease estates in land, including long-term leases, are also granted.

## Land Administration

The Ministry of Lands, Housing and Survey facilitates and/or manages the lease, sale, and transfer of ownership of both customary and registered land via the *Customary Land Records Act 1994* and the *Land and Titles Act 2016*. After reaching an agreement with the landowners for the lease of land, investors are required to submit the agreement forms to the ministry. The forms include provisions such as the size of the land and names of the landowners and/or council. For leasing customary land, additional details such as rent, payment schedule, and length of the lease need to be included.

The Ministry of Lands, Housing and Survey and provincial governments maintain a record of land titles of customary, recorded, and registered lands. Map 6 provides an overview of land status in Western Province as of 2006 when the last digital records were presented spatially.

Division 2 of Part V of the *Land and Titles Act 2016* covers compulsory land acquisition and legislation guiding the compensation process (SIG: Ministry of Lands, Housing, and Survey 2016). The level of compensation is largely determined by the Commissioner of Lands, but the landowners can dispute it through the High Court (SIG: Ministry of Mines, Energy and Rural Electrification 2017). Under the *Land and Titles Act 2016*, compensation or

compensation rental shall be made payable to a group of persons claiming rights or interests in land based on current customary usage of natural resources or land. Further, compensation shall be payable to the group and for the benefit of all of them.

Compulsory acquisition of land can occur should any land, both customary and registered, be required for public purpose. The Ministry of Lands will need to demarcate the land required for public development and identify customary-rights owners, landowners, and interested stakeholders. The notice on compulsory-land acquisition will need to be gazetted so that the customary-rights holders can register their interest or appeal to the High Court on how the said land acquisition will affect them.

For registered land, compensation will be determined by the High Court based on the condition of the land and other matters in relation to the diminution in value to the occupier of the land. For customary land, the Commissioner of Land will first offer to transfer or grant to the person or group of persons entitled to the compensation for the land acquired an estate in land, in lieu of paying to such person or group of persons any compensation claimed by them. Customary-rights owners to the land can refuse or dispute the offer within three months. If there is no dispute, the High Court will determine the compensation or compensation rental based on the customary usage of natural resources and land. If the customary-rights owners, who constitute a majority of the affected group, are dissatisfied with or dispute the initial offer from the Commissioner of Lands, they need to file a complaint or appeal to the court within three months. Any dispute as to whether any persons, being members of a group, constitute a majority of the group shall be determined by a magistrate's court unless the parties agree otherwise. Under its constitution, the following procedures are required for government-led land acquisition for development purposes:

- Prior negotiations with the landowners
- Owners have the right to access independent legal advice
- As far as practicable, the interest acquired shall be limited to a fixed-term interest<sup>(19)</sup>

<sup>19</sup> While both the Solomon Islands Constitution and the *Land and Titles Act* have this provision, it remains unclear on the length or how payment conversion of fixed-term interest should occur (Corrin 2010).

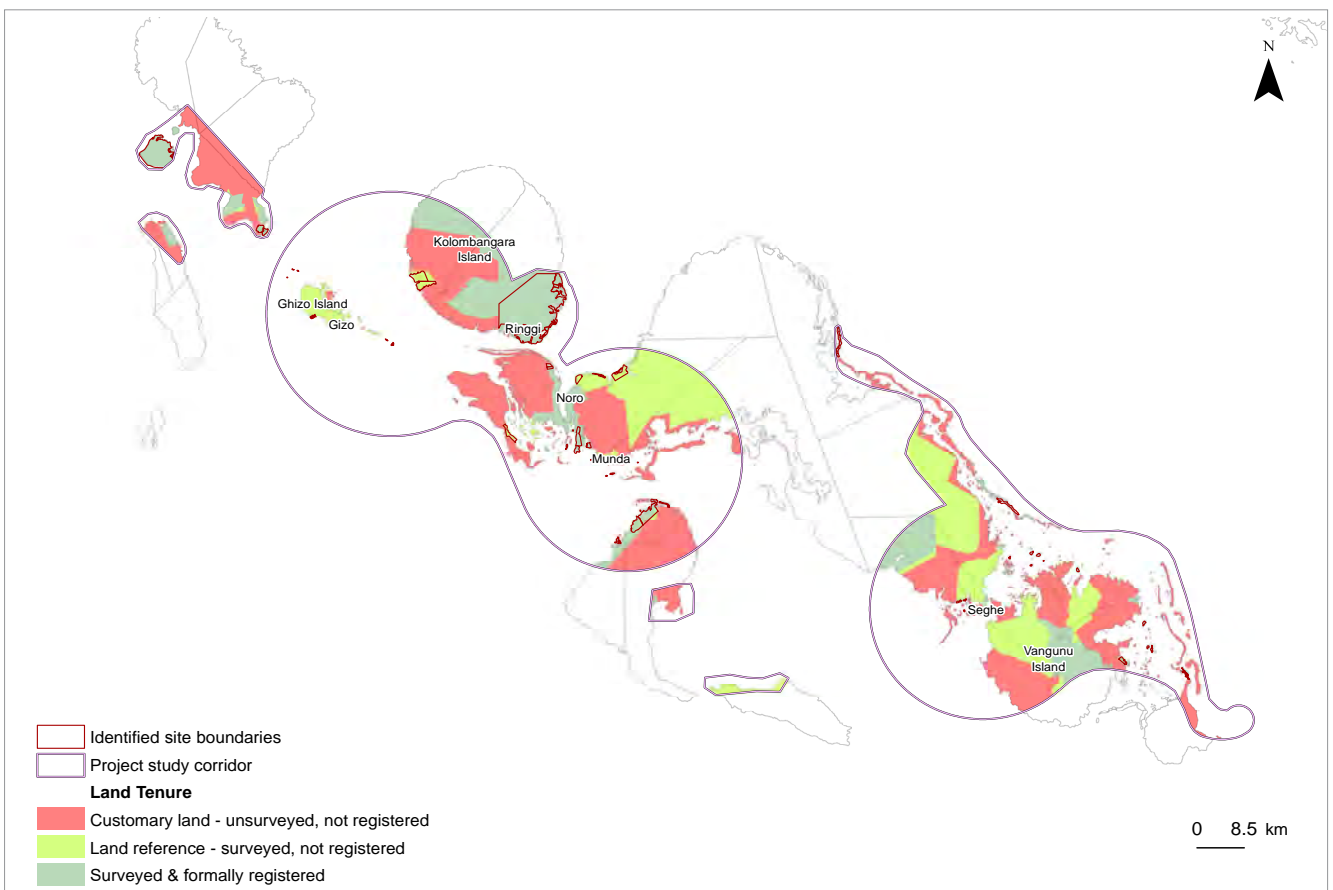
Based on the constitution, customary landownership should take precedence over commercial-related transactions. However, there is no clear national legislation or action plan concerning involuntary displacement or resettlement should the development project be led by the government. The SIG also has limited resources for the efficient registration of customary land and dispute resolution (Corrin 2010), making it difficult to administer the required procedures as defined under the constitution.

### Housing Tenure

In addition to land tenure, housing tenure was also examined. Census 2009 data showed that across the study corridor, predominant housing tenure is “own mortgage” or “rent free”; small proportions in central parts of the corridor near urban centers like Noro, Munda, Nusa

Roviana, Gizo, and South Kolombangara show people living with “private rent,” “subsidized rent,” or “as caretakers.” Own mortgage includes those who own and live on the land but have a mortgage against it. Rent free includes those who either own their land or do not pay rent to live on it (likely to include customary-land occupants). Private rent and subsidized rent refer to occupants who pay a landlord, whereas caretakers are given access to live on the land in exchange for services to maintain and protect it for the landowners. Caretakers are reasonably common in parts of Western Province and highlight the need to consider them differently from other occupiers when considering occupation of land (SIG: National Statistics Office 2009).

**Map 6: Land Tenure in Western Province as of 2006 (SIG: Department of Lands and Survey 2006)<sup>(20)</sup>**



20 “Land reference – Surveyed, not registered” is understood to be customary land that has been surveyed for the purpose of recording customary interest in the land. It is unclear if this land has been formally recorded under the *Customary Land Records Act 1994*.

### 3.4.5 TOURISM DEVELOPMENT STRATEGY

The MCT and the Western Provincial Government have both recently devised relevant policies to support the development of sustainable tourism:

- MCT: Solomon Islands National Tourism Development Strategy 2015-2019
- MCT: Tourism Investment Incentives Package 2017
- MCT: Minimum Standards and Classification for Tourism Accommodation 2018
- Western Provincial Government: Western Provincial Government Tourism and Culture Policy 2019/2021

These documents outline initiatives to support tourism development in the region, such as:

- Identifying areas for tourism development
- Integrating tourism resources, markets, and operators to develop sustainable products and marketing strategies
- Infrastructure planning
- Protecting environment and conserving culture for tourism development
- Strengthening relevant governance mechanism, business registration, and permits and licensing processes
- Providing guidance for businesses to invest in Western Province
- Providing guidance on standards of accommodation
- Educating communities about sustainable practices and impacts of tourism
- Integration with the national strategy on tourism development
- Building capacity and capability for tourism development
- Planning for visitor safety and positive experience
- Working with villages and community groups to develop community-based tourism in order to support the region's development

Western Province's Tourism Development Plan has identified Gizo, Munda, and Seghe as the three tourism hubs in the province. The following areas will be created as tourism-protected areas under the National Heritage Bill:

- The Marovo Lagoon
- Turupu Island
- Tetepare Island
- Kolombangara Island
- Ghizo Island
- Uepi Reserve
- Njari Island and reef
- Simbo Island
- Vona vona Lagoon
- Shortland Island and Treasury Islands
- Kenelo
- Ugele-Titiru
- Baniata
- Vangunu-Zaira
- Ngatokae-Biche

All of the above listed tourism hubs and areas of natural-heritage value fall within the corridor. Most are located at or near the identified sites and are fairly distributed across the corridor.

## 3.5 PHYSICAL ENVIRONMENT

### 3.5.1 INTRODUCTION

Solomon Islands is a country in the South Pacific Ocean, lying to the east of Papua New Guinea and northwest of Vanuatu. With a total area of 28,900 km<sup>2</sup>, the country comprises about 1,000 islands, of which around 350 are inhabited (Food and Agriculture Organization of the United Nations (FAO) 2016). Western Province is the largest (5,475 km<sup>2</sup>) of the country's nine provinces. Its provincial capital is Gizo, a town of roughly 3,000 people.

### 3.5.2 GEOLOGY

Solomon Islands has a complex geological history, having formed along the converging Indo-Australian and Pacific tectonic plates (Holl 2013). The New Georgia Islands that make up Western Province were formed in the late Miocene to recent period through second-stage arc volcanism (volcanoes formed above a subducting tectonic plate). The composition of the New Georgia Islands group is complex and includes a wide range of igneous rocks including basalt, andesite, and dacite (Pettersen, et al. 1998). Younger reef limestone is found at coastal locations on most islands and has been recorded up to 145 m above current sea level, indicating that the coast itself is formed of recently uplifted reef limestone (Stoddart 1969).

Sea-level changes through the Pliocene and Quaternary periods have accounted for sea-level rise of not less than 150 m and regression of about 200 m (Stoddart 1969). In Solomon Islands, these sea-level shifts have been combined with continuous tectonic movements and active volcanicity, leading to an extraordinarily complex coastal formation.

### 3.5.3 CLIMATE

Solomon Islands lies within 12 degrees latitude of the equator and more than 1,500 km from the nearest continent (SIG: Ministry of Environment, Climate Change, Disaster Management and Meteorology 2020). The weather and climate of the region can be explained largely by the seasonal movement and development of the equatorial trough (a belt of low pressure that migrates between hemispheres) and the subtropical ridge of the southern hemisphere (a belt of high pressure typically located between 30 and 35 degrees south).

The country has little temperature variation throughout the year (average temperature 27°C), fluctuating 2°C from the average. The temperature is strongly tied to changes in the surrounding ocean temperature.

The country has two distinct seasons: a wet season from November to April and a dry season from May to October. The average annual rainfall is largely within the range of 3,000 to 5,000 mm. The Central and Western Provinces tend to average about 100 to 200 mm of rain per month during the dry season and 200 to 300 mm during the wet season. The eastern regions of Solomon Islands tend to have a more consistent rainfall (averaging 300 to 400 mm per month) with less seasonal variation (Pacific Climate Change Science Program Partners 2011). These values are, however, highly variable between islands. While there is limited data on the effects of elevation on rainfall, it is expected that rainfall is heaviest between 600 and 1,000 meters above sea level.

The winds in Solomon Islands are generally of a seasonal nature, with east to southeast winds occurring from May to October at a typical wind speed over the sea of around 30 km/h. West to northwest winds occur from November to April and are usually lighter and less persistent than the southeast winds. In addition to the seasonal winds, there are also strong diurnal wind patterns caused by the islands themselves. These are location specific but can be caused by ocean and land temperature changes and topography. The frequency of strong winds is relatively

low with winds over 39 km/h occurring less than six days a year on average (SIG: Ministry of Environment, Climate Change, Disaster Management, and Meteorology 2020).

Thunderstorm activity peaks between December and March, with thunderstorms generally occurring over the large, more mountainous islands in the afternoon before drifting toward the coastal areas. Over the ocean, thunderstorms are more likely to occur during the night or in early morning.

Tropical low-pressure systems occur each year over Solomon Islands at times when the equatorial trough is in the vicinity, but few of these develop into tropical cyclones (winds with a gale force of at least 34 knots). Cyclone season tends to be from November to mid-May, but they can form outside of this period when the sea is warm. There is on average one cyclone per year, but this number is rising in the southern parts of the country (Pacific Climate Change Science Program Partners 2011). The cyclones that affect Solomon Islands are generally in their early stages and relatively small.

### 3.5.4 NATURAL HAZARDS

*ThinkHazard!* is a web-based tool created by the Global Facility for Disaster Reduction and Recovery to consider the impacts of disasters on new development projects. The tool is designed to be used at a countrywide or local level depending on the availability of country data. The Solomon Islands *ThinkHazard!* report outlines only country-level data and the following natural hazards (Global Facility for Disaster Reduction and Recovery 2019):

- **Coastal flood:** High-hazard level—potentially damaging waves are expected to flood the coast at least once in the next 10 years.
- **Earthquake:** High-hazard level—a more than 20 percent chance of a potentially damaging earthquake shaking in the project area in the next 50 years.
- **Landslide:** High-hazard level—the area has rainfall patterns, terrain slope, geology, soil, land cover, and earthquakes that make localized landslides a frequent hazard phenomenon.
- **Volcano:** High-hazard level—the selected area is located less than 50 km from a volcano that has recorded a damaging eruption in the past 2,000 years and future damaging eruptions are possible.

- **Cyclone:** High-hazard level—a more than 20 percent chance of potentially damaging wind speeds in the project area in the next 10 years.
- **Tsunami:** High-hazard level—a more than 20 percent chance of a potentially damaging tsunami occurring in the next 50 years.
- **Wildfire:** Moderate-hazard level—between a 10 percent and 50 percent chance of experiencing weather that could flame a hazardous wildfire posing risk of life and property loss in any given year.
- **Extreme heat:** Moderate-hazard level—a more than 25 percent chance of at least one period of prolonged exposure to extreme heat, resulting in heat stress, will occur in the next five years.
- **Urban flood:** Moderate-hazard level—a more than 20 percent chance that potentially damaging and life-threatening urban floods will occur in the coming 10 years.
- **Water scarcity:** Very low-hazard level—droughts will occur less than once every 1,000 years in the selected area.
- **River flood:** Very low-hazard level—a less than 10 percent chance that potentially damaging and life-threatening river floods will occur in the next 10 years. The Solomon Islands National Emergency Operation Centre has identified Honiara and Guadalcanal as more prone to river-flood risks (Government of Solomon Islands 2014) than the less developed Western Province.

The high ratings are appropriate given the history of many natural hazards occurring in or near Western Province. The only hazard rating that appears to be potentially underrated is river flood, which should likely be rated moderate. Given the high rainfall and steep topography around many larger Western Province islands, river flooding is a real risk for communities that live closer to rivers. While Western Province has not documented significant flood damages compared to Honiara and Guadalcanal, the country's housing infrastructures are highly vulnerable to natural disasters and flooding (Government of Solomon Islands 2014).

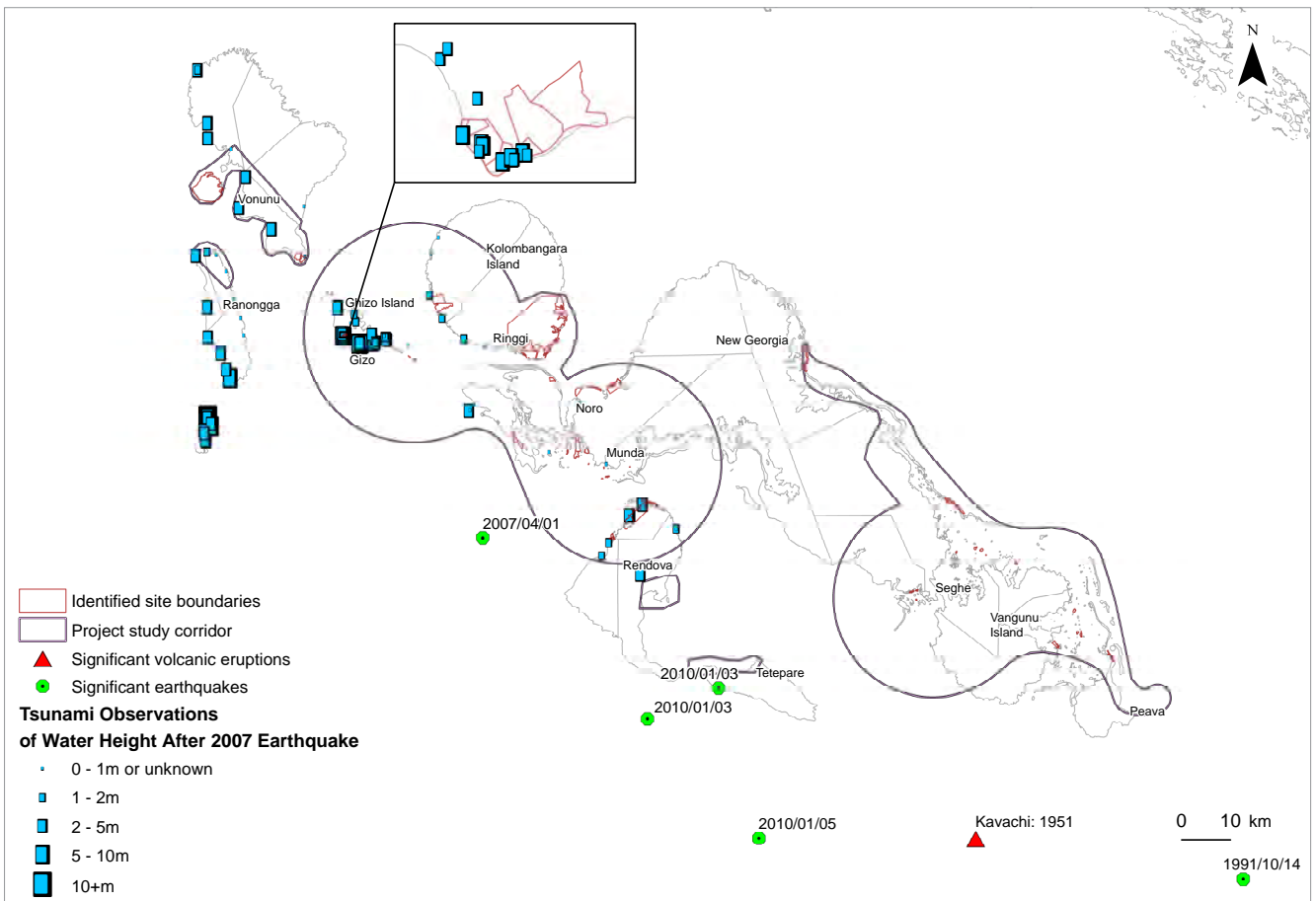
Removal of mangroves, vegetation, or reef coral for development may increase the potential for severe impacts from natural hazards, including landslides, storm surges, and erosion of coastal areas or rivers. As sea levels rise, developments need to be designed to withstand potential impacts from coastal inundation with climate change. Impacts may include incursion of water sources, overtopping of septic tanks or sewage treatment facilities, and the destruction of building foundations by wave energy.

Coastal vegetation and fringing coral reefs act as a protection or buffer zone for many high-risk natural disasters; their alteration or destruction can have wider impacts on the surrounding ecosystem, ultimately leading to a lack of natural protection along a wide span of the coastline.

At some sites, it is impossible to retreat to higher or more stable land in the event of tsunamis or earthquakes. Remote locations will restrict access to shelter and health services during weather events as boat travel would be unsafe. Therefore, the more remote a site is, the more likely it is to generate higher health, safety, and operational risks and costs for the transport of workers and service providers to the site.

Map 7 depicts the historic earthquakes and observations of associated tsunamis in Western Province.

Map 7: Visualization of Natural Hazards in Western Province



### 3.5.5 UNEXPLODED ORDNANCE

Western Province saw extremely heavy fighting during WWII with more than 40,000 troops involved in the conflict between June 21, 1943, and October 9, 1943 (SafeGround Inc. et al 2015). The province is littered with unexploded ordnance (UXO) such as bombs, bullets, artillery shells, and grenades from this period. The vast majority of these UXO have not been cleared and pose a significant risk to both locals and visitors. Large stockpiles of munitions and equipment were disposed of at sea after WWII. Smaller stockpiles on the former front lines and the munitions that had been fired and failed to explode were largely ignored at the end of the conflict and have been left where they were for the past 70 years (Eliseussen and Rodsted 2016).

The Solomon Islands Special Police Force has been trained by donor countries to clear UXOs discovered by the public. Any development of large sites where UXOs may be present will need to employ private contractors to clear sites at the developers' cost (SafeGround Inc. et al 2015).

There is no official database on areas of known UXOs in situ. Yet, historical records of WWII battle areas and bombardments are well documented, so areas of high likelihood of UXOs can therefore be deduced from these records and are mapped in Map 8.

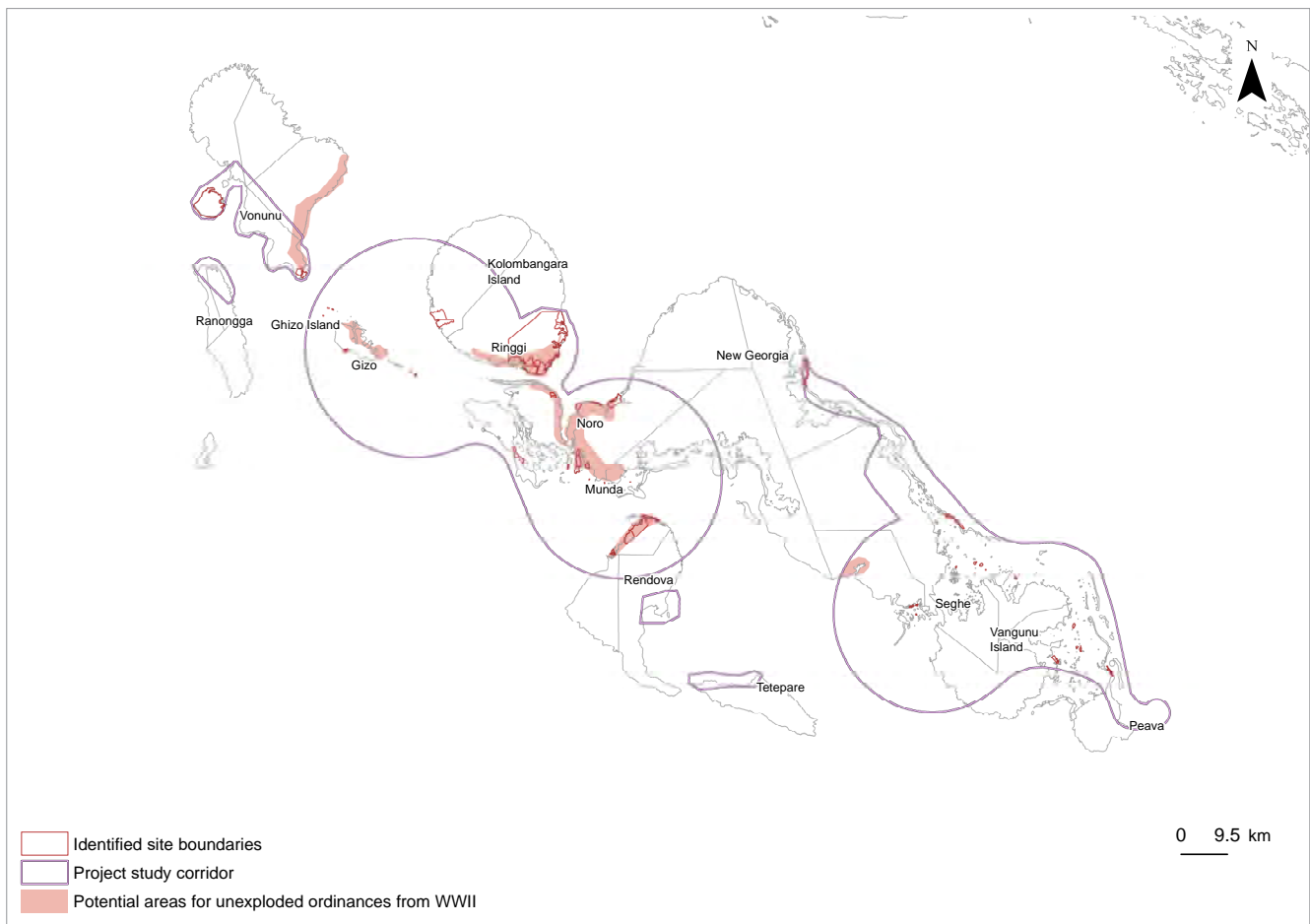
Areas where land battles and/or aerial/naval bombardment took place and UXOs have been found (World War II Database 2020):

- Wickham Anchorage on the southeastern coast of Vangunu Island
- Seghe on the southeastern tip of New Georgia
- Viru Harbor on the southwestern coast of New Georgia
- Rendova Harbor on Rendova Island
- Munda on the southwestern tip of New Georgia
- Enogai Point/Bairoko Harbor, northeast of Noro, on the northwestern shore of New Georgia
- Kula on the southeastern side of Kolombangara Island

- Kohinggo Island on the north side (known as Arundel Island in literature)
- Barakoma on the southeastern side of Vella Lavella Island

Of the above areas, Munda and Seghe have already been extensively cleared. Yet, stakeholders note that during clearing, further UXOs are sometimes discovered nearby but cannot be cleared simultaneously. As such, there is no mapped data showing areas of cleared sites as this would involve authorities taking on more efforts to ensure that no UXO remains on these sites. Because there is no register, it is the responsibility of the landowners and occupiers to manage these sites.

**Map 8: Visualization of Potential UXO Areas in Western Province (SafeGround Inc. et al 2015)**



### 3.5.6 WASTE MANAGEMENT

Waste management is underdeveloped across Western Province, with no formal waste-recycling facilities and only a municipal dump site in Gizo (with municipal-collection service) and an open-waste tip in Munda. Most households dispose of organic waste in their gardens or feed it to livestock such as pigs or chickens. A common practice is to burn combustible waste and sometimes it is simply disposed of in the terrestrial and marine environment.

Based on discussions with communities, there is limited awareness on good waste-management. As one of the country's main tourist destinations, Western Province has made efforts to curb plastic pollution. Outdated data on Western Province's waste and wastewater facilities poses a challenge to waste-management planning, for example, the Solomon Islands National Waste Management and Pollution Control Strategy 2017-2026 still cites data from the 2009 census.

According to the Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries (J-PRISM) study (SPREP 2011), it was determined that the household rate of waste generation in Gizo is 0.9 kg per day. Gizo has a recycling firm that purchases aluminum cans from residents, but the waste still needs to be shipped to Honiara, the main recycling hub for Solomon Islands (Pacific Region Infrastructure Facility 2018).

## 3.6 TERRESTRIAL ECOLOGY

Solomon Islands has unique biodiversity values recognized at an international level. However, most of the New Georgian Island group remain inadequately surveyed. The distribution and occurrence of conservation-significant species is not well-known in the study corridor or identified sites. Habitat integrity is a widely adopted ecological surrogate when considering the likely use of resources by a particular species in an area. If the habitat is relatively undisturbed, it retains a degree of connectivity with other habitats to promote genetic exchange and has a sufficient patch size to support a genetically viable population of conservation-significant species (generally classed as essential habitat factors). Specific essential habitat factors for individual threatened species may be found on the [IUCN Red List profiles](#) (IUCN 2020).

At the corridor level, it was difficult to discern habitats that met all of the essential habitat factors outlined above. Western Province's terrestrial environment within the corridor is dominated by anthropogenic disturbances, nearly all associated with the development of copra plantations on coastal fringes and extensive mechanized logging on coastal lowlands and ridges, including some higher altitude areas. This has given rise to a mosaic of successional vegetation communities, which in their own right have become a discernible habitat type.

### 3.6.1 FLORA

The vegetation communities of Solomon Islands and, by extrapolation, within the study corridor of Western Province demonstrate close affinities with those of Melanesia (Pikacha 2008) and can be broadly divided into similar associations. Six major categories of vegetation communities are recognized in Solomon Islands and occur throughout the study corridor (Bennett 2000):

#### Saline Swamp Communities

These are the vegetation communities within the intertidal zone and influenced by saline water, including wetlands such as mangroves and samphire flats. They are the typical Mangal communities found in the run-on areas at the mouth of estuaries on substrates of mud and marine silts, and along the banks of slow-flowing rivers that have allowed the deposition of transported sediments in the tidal reaches. The communities are more frequently found in the sheltered estuaries and embayment of the main islands of Vella Lavella, the southern coast of Ghizo and Kolombangara Islands, within the Marovo, Vona vona, and Roviana lagoons, and along the north New Georgia Coast.

Saline swamp communities are critical habitats supporting the life cycle of many reef fish species. The majority of those within the study corridor remain relatively undisturbed with high integrity, supporting an estimated 30 of the 38 species of mangroves known to occur in Solomon Islands. Nearly all mangrove species found in the study corridor, including those of the dominant genera *Rhizophora* and *Bruguiera*, are listed on the IUCN Red List as conservation-significant species (UNEP-WCMC and IUCN 2019).



## Freshwater Marshes and Swamps

These are seasonally inundated vegetation communities that vary in floristic composition and structure from sedge lands comprising various treeless areas of grasslands and sedges to tall treed freshwater swamps. The latter are primarily found in the near tidal zone, often persisting as extensive areas of wetlands behind the main strand and littoral zone adjacent to the coast. In some localities, these wetlands are almost natural monocultures of the sago palm *Metroxylon salomonense* and *M. wareburgi*, both of which are culturally important species as traditional building material and an ingredient to make sago flour (although this practice is no longer widespread in the study corridor) (Dowe 2002). Common larger tree genera found in association with these swamps include *Dillenia*, *Terminalia*, and *Calophyllum*, with the species *Camptosperma brevipetiolata* being a common diagnostic floristic element.

These communities are major regulators of flood and coastal-drainage processes and are important contributors to coastal-foreshore stability. Larger areas are predominantly restricted to the base of hilly and mountainous locations on the bigger islands within the study corridor, primarily New Georgia and Vangunu, but occur as smaller discrete units in numerous coastal locations.

## Coastal Forests

These are the most frequently encountered communities within the study corridor, varying from the simple floristic diversity of the vegetation of coral atolls and islands to complex littoral and strand communities on larger islands. They exhibit a high degree of anthropogenic influence, often hosting a heavy level of land use, from occupation for villages and settlements to extensive copra (coconut – *Cocos nucifera*) plantations and logging activities. Almost exclusively this vegetation has formed on alluvia and/or coral substrates; it is well adapted to providing shelter to lowland forests from strong winds, cyclonic seas, and storm surges, with numerous larger tree species, such as *Barringtonia asiatica*, *Calophyllum inophyllum*, and *Terminalia catappa*, frequently encountered throughout the study corridor within the strand environment. The species comprising these communities are not listed as conservation significant, but where the community is relatively undisturbed, they are vital coastal vegetable types contributing to shoreline stability.

## Lowland Forests

Once the dominant vegetation on the coastal lowlands of the large islands in the study corridor, these forests are now almost extinct as a result of commercial logging. This community is characterized by about 60 large tree species, most of them commercially valuable. The high value of timbers on the international market has meant that remaining primary lowland forests are restricted to a few inaccessible areas or areas where villagers have resisted commercial logging. While there is no known primary forest within the corridor, successional forest is widespread and of varying ages, with the regrowth being actively logged in many areas.

Compared to other tropical mainland forests and those of nearby Melanesia, the forest diversity is relatively low, with only 12 primary species: *Calophyllum kajewskii*, *Calphyllum pseudovitiense*, *Camptosperma brevipetiolatum*, *Dillenia salomonensis*, *Elaeocarpus sphaericus*, *Endospermum medullosum*, *Gmelina moluccana*, *Maranthes corymbosa*, *Parinari salomonensis*, *Pometia pinnata*, *Schizomeria serrata*, and *Terminalia calamansanai*.

Within the study corridor, regrowth species, including *Vitex cofassus* and *Canarium sp.*, were dominant in logged-over areas and species of the *Ficus* genera—notably strangler fig trees (*Ficus obliqua*, *F. benjamina*, *F. glandulosa*, *F. xylosyca*, and *F. subordata*)—are a common canopy component present near coconut plantations and within secondary forest. The common climbers and epiphytes associated with these coastal forests include *Epipremnum amplissimum*, *E. dahlia*, *E. nobile*, *Pothos hellwigii*, *P. rumphii*, *Rhaphidophora korthalsii*, and *Spathiphyllum commutatum*. Ferns of the genus *Staenochleana* and *Pandanus sp.*, including successional regrowth, are common in the lowland forests.

## Hill Forests

This is a distinctive community occupying lowland areas to altitudes between 400 m and 600 m above sea level on the larger islands within the study corridor. Compared to coastal lowland forests, hill forests have formed on in-situ derived soils of primarily volcanic or metamorphic origin (as opposed to alluvial/sedimentary soils) and occupy higher, well-drained landscapes.

Diagnostic canopy species include *Calophyllum pseudovitiense*, *Dacrydium sp.*, and *Eugenia sp.* Other associates include *Ascarina maheshewarii*, *Astronia sp.*, *Belliolum haplopus*, *Cyathea brackenridge*, *Dipteris sp.*, *Garcinia sessilis*, *Gleichenia kajewskii*, *Homalium tatambense*, *Pandanus sp.*, *Pemphis acidula*, *Podocarpus pilgeri*, *Racembambos scandens*, *Schefflera sp.*, and *Streblus glaber*. Epiphytes (including many Orchidaceae) and vines are common.

This community is not as rich in commercially valuable timbers as lowland forests and is more difficult to access because of topographical constraints. Subsequently, logging has been less intensive, and areas of moderate-to-high-integrity hill forest remain across the study corridor, primarily on Kolombangara Island and the uplands of New Georgia, Vangunu, Rendova, and Tetepare islands.

### **Montane Cloud Forests**

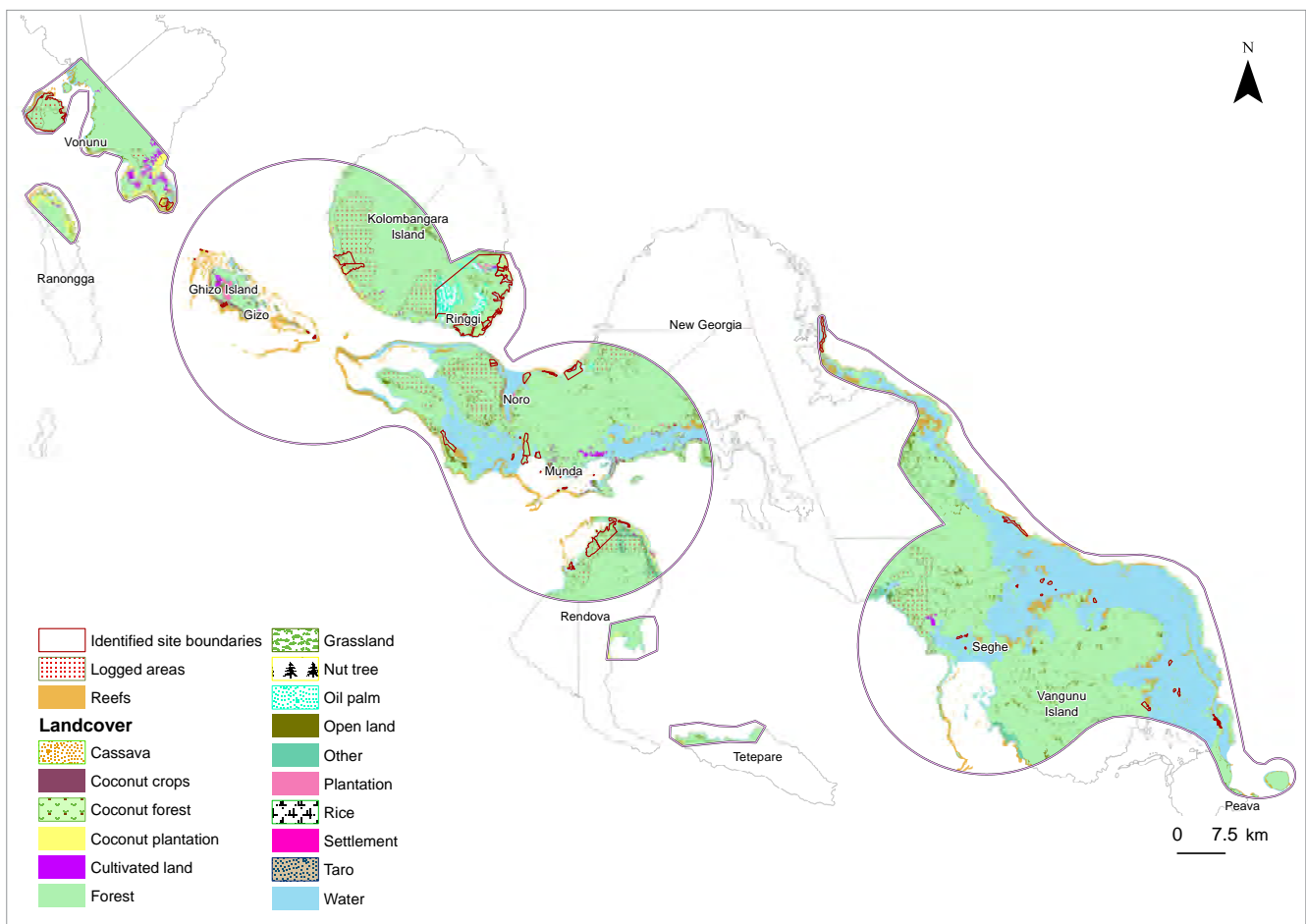
These unique communities persist at higher altitudes as a result of “cloud stripping,” where the vegetation obtains moisture from humid cloud formations passing through the mountains (the “Massenerhebung effect”). This ensures an almost year-round supply of water and the community is not overly reliant on monsoonal rain activity. On oceanic islands, these cloud forests may be as low as 400 m to 600 m above sea level, whereas they only exist at much higher altitudes on mainland ranges. Mount Veve on Kolombangara Island exceeds 1,700 m and its montane cloud forests are broadly divided into three subcategories (Filardi 2004): sub-montane forests (900 m to 1,200 m), montane bamboo forest (1,300 m to 1,500 m), and mossy elfin cloudy forest (above 1,500 m). Leaf size decreases on increasing altitudinal transect from mesophyll forest (400 m to 600 m above sea level) to nanophyll/microphyll leaf size.

The components of the montane forest of Kolombangara are primarily shrubs and understory species, including *Cyrtandra laciniata*, *C. filibracteata*, *C. atheroclyx*, *C. cominsia*, and trees of the *Syzygium* genus. Lichens and mosses covering the trees and shrubs are characteristics of montane forests, and many restricted/endemic or otherwise poorly known species are found in these communities. Ferns from the genera *Davalia sp.* and *Trichomanes sp.* are also common.

New Georgia and Vangunu islands also have sparse coverage of montane forests extending from 600 m to 900 m above sea level. Logging in these areas has generally been mitigated through poor accessibility, a paucity of commercial timbers, and high costs because of the extensive road and track networks required. Yet, the slopes of Mount Veve on Kolombangara Island remain vulnerable, with ongoing attempts by commercial-logging operations to access upper slopes for specific high-value timbers unique to species in these areas.

The montane forests are believed to harbor the majority of conservation-significant, endemic, or other significant flora (and possibly fauna) species, although they are poorly documented (Pikacha 2008). No tourism investment is proposed for these localities, which will unlikely be affected by tourism activity to any quantifiable extent. Map 9 shows the general land cover for the study corridor, highlighting the wider spans of forested areas and indicating areas that have been logged.

**Map 9: Land Cover in Western Province**



### 3.6.2 TERRESTRIAL FAUNA

The fauna of Solomon Islands is globally significant because of its recognized biological diversity and high level of endemism. Similar to its flora, data on the location, abundance, distribution, and general ecology of most of the terrestrial fauna is sparse to non-existent; this is particularly true for Western Province.

#### Mammals

Within the study corridor, 41 mammal species have been recorded (Pikacha 2008), of which 19 are considered endemic and 20 are listed under the provisions of the IUCN Red List, including three critically endangered bat species (see details in Appendix I). Among them, the New Georgia monkey-faced bat was considered extinct in the 1960s following logging of habitat in the lowlands; it was, however, rediscovered on Kolombangara Island in 2015 (outside the area of influence of proposed tourism investment sites).

#### Birds

Solomon Islands is classified by BirdLife International as an Endemic Bird Area important for the study of bird evolution, speciation, and population genetics. An estimated total of 245 species of birds are known from the country, of which 170 have been recorded in Western Province. Forty-one of these have been recorded only on New Georgia (BirdLife International 2020). Solomon Islands has more restricted-range species than any other country in the world (Moyle and Andersen 2017) because of its isolation from any significant land mass. Key habitats are represented in the study corridor by the montane and upland forests of Kolombangara and New Georgia islands, freshwater wetlands/swamps, mangrove communities, offshore coral island atolls, and remnant primary forest of any vegetation type.

## Reptiles and Amphibians

Reptiles include skinks, geckos, crocodiles, monitor lizards, forest dragons, snakes, and five species of marine turtle. A total of 85 reptile species, including 19 endemic ones, are recorded for Solomon Islands, including the world's largest prehensile-tailed skink (*Corucia zebrata*). It is unknown how many endemic species occur within the study corridor or in their general locality, although essential habitat factors for reptiles is presumably best met by primary forest or undisturbed habitats of high integrity, including beaches for marine turtles laying eggs.

Of particular note is the estuarine crocodile, *Crocodylus porosus*. Once widely hunted throughout Solomon Islands for its skin and as food, the government ban on commercial crocodile hunting in 1993 has seen a dramatic increase in its population across the country (van der Ploeg et al. 2019). As a marine-reliant species (although they may be found in freshwater environments), estuarine crocodiles are discussed separately in section 3.6.9.

A total of 23 frog species are documented for Solomon Islands: three are endemic and frogs of the New Georgian Islands are known to be highly variable occupying all altitudes and forest types (Pikacha et al. 2016). Several poorly documented species, notably various Hylidae, are restricted to the montane uplands, while most others rely on clean water sources, such as high-quality surface water, for breeding. The exact location and associated records for amphibians are not available for the study corridor, although particularly sensitive areas include riparian communities, upland montane forests, freshwater swamps, and waterbodies.

## Invertebrates

Similar to most tropical areas throughout the world, invertebrates in Solomon Islands remain poorly studied and documented. Guilds with some basic information include *Lepidoptera* (butterflies and moths, 130 species recorded, 35 endemic), *Gastropoda* (snails, 25 endemic), Cicadidae (cicadas, 31 endemic), and *Heteroptera* (grasshoppers and similar, representing 28 genera and 12 families with 60 percent endemism at the species level). A total of 63 *Odonata* (dragonflies and damselflies) species were also recorded, representing 37 genera and 12 families with 44 percent of the species endemic and one new to science. Solomon Islands is estimated to have between 40,000 and 50,000 insect species, of which only 14,511 are formally

described (Greenslade 1969). Records for invertebrates within the study corridor offer no details on locations or site-specific conditions, such as habitat types. It is assumed that the most sensitive areas are associated with ecosystems with little to no significant disturbances.

### 3.6.3 FRESHWATER ECOLOGY

The study corridor has a wide representation of freshwater bodies including rivers, streams, lakes, swamps, wetlands, and underground water expressed as natural springs. Across Solomon Islands, the different habitat types have given rise to a very diverse fish community with a high level of endemism and uniqueness, similar to other Pacific Islands. A total of 73 fish species are recorded for the country's freshwater systems: 13 are endemic to the bioregion and all are found in the major rivers and watercourses within the study corridor. Of the fish species listed under the IUCN Red List, one species (a goby) is considered vulnerable and four are listed as data deficient (poorly known). However, the information available is caveated in that many species have not yet been evaluated.

A unique characteristic is that freshwater systems are primarily colonized by fish guilds (such as *Gobiidae* and *Eleotridae*) with a life cycle adapted to the prevailing conditions in these distinctive insular habitats, such as young oligotrophic rivers, subject to extreme climatic and hydrological seasonal variation. These guilds are almost exclusively amphidromous in their life cycle, with the species spawning in freshwater and the free embryos drifting downstream to the sea where they undergo a planktonic phase before returning to the rivers to grow and reproduce. These amphidromous guilds have marine ancestors that contribute to the diversity of fish communities and the highest levels of endemism, a trait shared with many other Pacific Islands and the eastern tropical coast of Australia.

Other instream fauna remains poorly studied. *Gyrniniidae* (water insects including whirligig beetles and water boatmen) are represented by nine species across Solomon Islands and *Simuliidae* (black flies with an aquatic life stage) have 10 known species. About 90 percent of both groups are entirely restricted to Solomon Islands. The status of mollusks, crustaceans, and other insects with aquatic life cycles is almost completely unknown. Details for the status and occurrence of even the recorded freshwater groups are unknown for areas within the study corridor.

### 3.6.4 INTRODUCED SPECIES

The level of threat from introduced species across Western Province and within the study corridor is highly variable depending on the habitats and level of disturbance encountered.

At a vegetation level, Solomon Islands is particularly vulnerable to foreign weed invasions owing to the high level of disturbance through logging, colonial introductions for horticulture, and the accidental escapees from modern horticulture. It was estimated over 30 years ago that 520 species were introduced into the Pacific Island region (Swarbrick 1989), with at least 18 of them deemed commercial threats to horticulture and island cropping. Since then, the Pacific Island Ecosystems at Risk database and the Invasive Species Compendium (CAB International 2020) have identified 212 of the estimated 520 as occurring on Solomon Islands, 44 of which are listed as among the most invasive weed species in the world, such as *Mikania micrantha*. Nearly all of those recorded for the country are now ubiquitously established across Western Province, with a high-to-very-high representation within the study corridor.

Ninety-four fauna species are introduced into the country (CAB International 2020) and many of them, such as crazy ants, tilapia (a mouth-brooding fish), and gambusia (mosquito fish), have significant quantifiable adverse impacts on tropical forest and freshwater ecosystems. All of these species occur throughout the study corridor. The government deliberately sponsored the introduction of some species, such as Mozambique tilapia (*Tilapia mozambicus*), to provide a supplementary or main source of animal protein (SIG: Ministry of Fisheries and Marine Resources 2019).

### 3.6.5 CONSERVATION-SIGNIFICANT TERRESTRIAL SPECIES

Information on the occurrence, abundance, distribution, and general ecology of conservation-significant terrestrial fauna/flora species in Solomon Islands, particularly Western Province, is scarce. No government agency maintained public databases and research outcomes are published in scientific journals, many of which are unavailable for casual review.

The IUCN Red List (IUCN 2020) provides the most reliable repository of external information on conservation-significant species. The Red List categorizes the conservation status of species into several categories based on expert panel advice. For Solomon Islands, a search on the Red List database returned the following:

- **Extinct:** two species
- **Critically endangered:** 15 species
- **Endangered:** 41 species
- **Vulnerable:** 213 species
- **Lower risk/conservation-dependent:** three species
- **Near threatened:** 221 species
- **Least concern:** 2,550 species
- **Data-deficient:** 175 species

Many of them are marine species, with most coral, reef, and pelagic fish listed as vulnerable. The Red List database can be further interrogated at a regional level based on existing information. This information should be regarded as preliminary as detailed surveys for most of the listed species have not been undertaken.

Based on the Red List, the conservation-significant terrestrial associated species known to occur within the corridor are presented in Table 23. This includes three mammals, one reptile and one amphibian, 11 birds, 15 plant species, one fish, and one insect. Overall, they represent a very small proportion of the region's known biodiversity. See appendix C for more information on conservation species.

### 3.6.6 GENERAL BIODIVERSITY VALUES

Solomon Islands is part of the Coral Triangle region, a global center for marine diversity that exemplifies the richness, uniqueness, and beauty of the world's coastal and marine environment. The coral reef fish fauna of Solomon Islands' waters alone consists of at least 82 families, 348 genera, and 1,019 species (Green et al. (eds) 2006). Forty-seven of these had not been documented in Solomon Islands prior to 2004. A more recent Honiara market survey conducted on behalf of the Ministry of Fisheries and Marine Resources identified a further 55 species, representing new records for the country (Tua and Rhodes 2016).

The diversity is largely because of the complex marine physiography and subsequent habitats that include globally significant coral reefs, mangroves, seagrass areas, seamounts, and deep-sea trenches. Many of them remain unexplored: within the country's exclusive economic zone of 1,580,000 km<sup>2</sup>, 80 percent of the ocean is deeper than 8,000 m.

The diversity sustains both large-scale commercial offshore fisheries dominated by tuna fishing, comprising purse-seine, long-line, and pole and line fishing, to inshore artisanal small-scale fisheries supporting village and household incomes. In rural areas, where most Solomon Islanders live, nearly half of all women and 90 percent of men fish or collect aquatic resources for food and income (SIG: Ministry of Fisheries and Marine Resources 2019). Fishing, as well as collection, is done with a wide range of equipment and techniques; the fisheries themselves are diverse and composed of multiple species.

The corridor includes examples of nearly all major habitat types, excluding deep-ocean-upwelling areas associated with abyssal trenches, the nearest of which is about 26 km to the west of the study corridor. Many of the reef systems are subject to fisheries pressures; those within small-boat range (several kilometers) of larger settlements/townships are affected by overfishing and degradation. Both explosive fishing (usually with home-mixed explosives of nitram fertilizer and diesel) and poison fishing using cyanide injection (where cyanide is sourced from mining ventures who use it as an ore separator for certain minerals) are undertaken in some localities. Within the study corridor, the coral reef systems with the highest integrity are associated with those furthest from easy access. They include coral atolls (notably within Saeraghi Reef at the northern tip of Ghizo Island), offshore barrier reefs, and ribbon-reef systems on the edge of open ocean trenches. Nearly all of the 485 coral species identified in Solomon Islands are listed under the IUCN Red List provisions in various conservation-status categories.

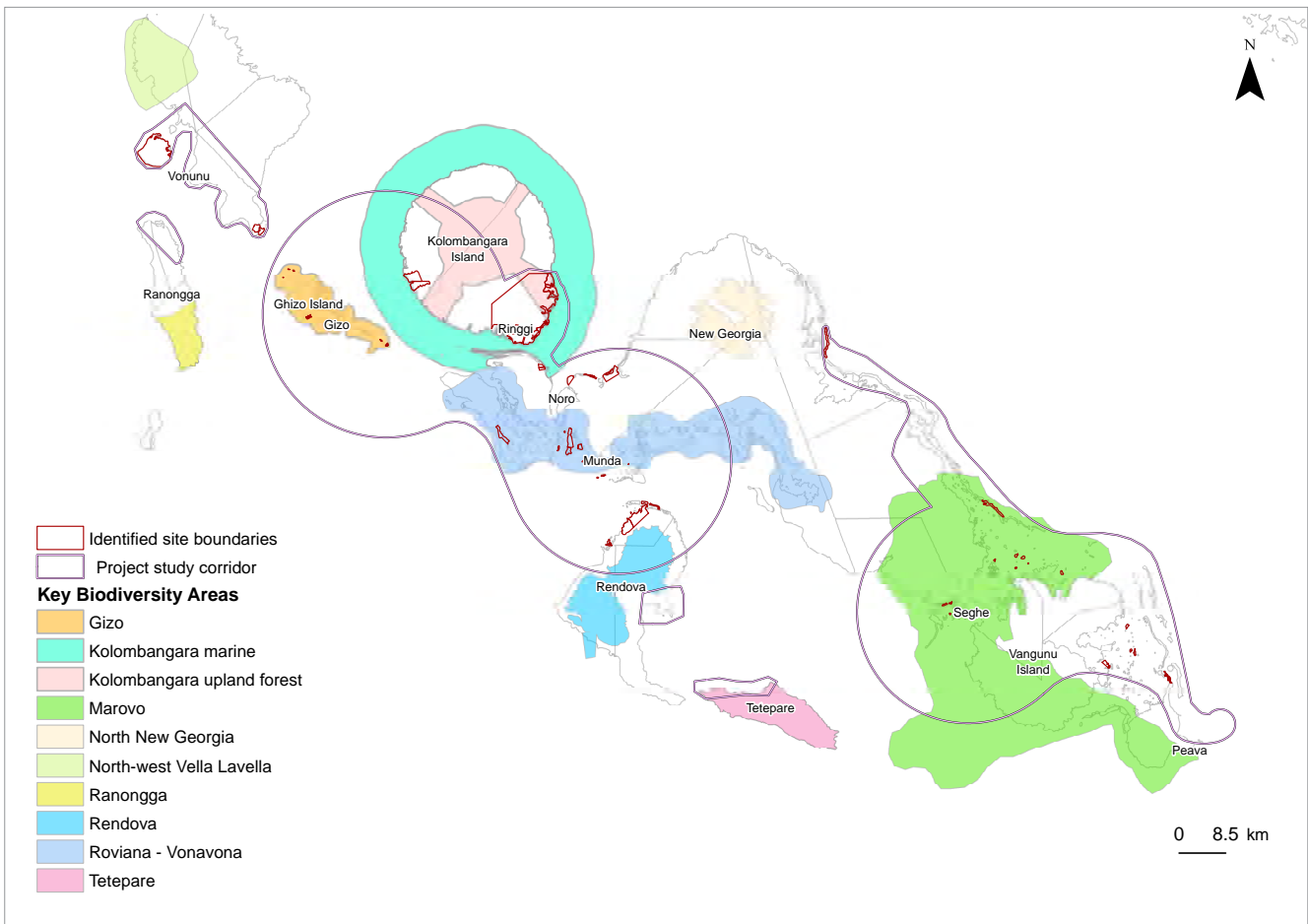
Mangrove communities and seagrass beds are prominent features of the inshore marine environment of the study corridor. As previously noted, 30 of the 38 species of mangroves known to occur in Solomon Islands are also found inshore around the estuaries of the main watercourses on the larger islands. They frequently form the seaward boundary of many of the inshore islands. Fourteen of the 30 species are endemic to Solomon Islands. These mangrove communities occupy about 650 km<sup>2</sup>, with 120 km<sup>2</sup> within the study corridor (Warren-Rhodes et al. 2011). Mangroves are critical components of the marine/terrestrial interface ecosystem. They provide various ecosystem services, including nursery areas for many fish species of commercial and conservation significance, and are among the most nutrient-productive ecosystems in the world with very high biomass turnover. They regulate tidal movement and the impact on foreshores from storm surges and cyclonic waves. They also provide a filter/buffer capacity for nutrients and sediments from terrestrial origins directly entering the inshore waters.

Throughout the world, mangrove systems have rapidly diminished as coastal development and land degradation continue to affect these communities. Within the study corridor, these factors have had minimal wide-scale impacts on mangroves as a community and the effects have so far been restricted to smaller, site-specific disturbances, such as clearing for a boat ramp or landing area.

Similarly, of at least 100 km<sup>2</sup> of seagrass meadows mapped in Solomon Islands, over 100,000 hectares are estimated to be within the inshore marine ecosystems of Western Province, with a significant proportion represented within the study corridor (McKenzie, L, Campbell, S and Lasi, F 2006).

Key biodiversity areas of Western Province, as developed by the Key Biodiversity Partnership, are displayed in Map 10. In terms of tourism, there are no specific provisions in national and/or provincial policies related to the management of key biodiversity areas. Nonetheless, tourism developers can integrate existing policies into their tourism planning and operations to mitigate potential development risks to these areas (see section 6.1.1).

**Map 10: Key Biodiversity Areas in Western Province**



### 3.6.7 CORAL HARVESTING

A common practice observed during the field inspections is coral (predominantly dead) and sand harvesting. Local communities harvest coral heads, aggregates, and sand from the marine environment for use as construction, fill, and paving materials. In a 2015 study, Albert et al. interviewed coral-reef users in Western Province (Saeraghi and Paelonghe) and Central Province (Leitongo and Hagalu) and found that local communities historically used coral-based products for construction and lime for betel nut. There is, however, an increasing demand from local businesses to purchase their coral sand, rubble, and stone for the purpose of land reclamation (Albert, et al. 2015). In comparison to the Central Province, the level of coral extraction in Western Province is still lower (Albert, et al. 2015).

The impact of this activity could not be determined because of limited data on the status and/or state of coral reefs in Solomon Islands, but it may exacerbate marine biodiversity threats, alter habitats and coastal processes, and reduce the resilience of the ecosystem.

### 3.6.8 CONSERVATION-SIGNIFICANT MARINE SPECIES

The conservation status of many marine species is relatively well understood because of the fisheries sector's high commercial value to the SIG and the importance of artisanal fishing to local villages and settlements. There is, however, no government legislation that prescribes specific protected marine species or ecosystems, devolving the identification of conservation status to external parties, including the IUCN and numerous NGOs.

The IUCN Red List for Solomon Islands identifies 274 terrestrial and marine species of a threatened conservation-risk status including “extinct,” “critically endangered,” “endangered,” “vulnerable,” and “conservation dependent.” Of these 274 species, 244 are marine species, including corals (nearly all are listed as vulnerable), sea turtles (endangered), marine mammals (dugongs and cetaceans), and various fish including many sharks, rays, and larger sedentary fish species such as groupers (IUCN 2020). Nearly all of these species use the wide variety of marine habitats represented within the study corridor.

A further 2,946 species are listed for Solomon Islands in lesser conservation-significant categories:

- **Near threatened:** 221 species
- **Least concern:** 2,550 species
- **Data deficient:** 175 species

Of the above, 1,065 are marine species, comprising predominantly coral and fish species. Nearly all mangroves recorded in the study corridor are listed under IUCN categories. Threatening processes identified by various IUCN conservation expert panels include commercial and artisanal overfishing, coral harvesting, sediment, and nutrient runoff from land-clearing/logging operations, climate change/coral bleaching, and sea-level changes.

### 3.6.9 ESTUARINE CROCODILE

The estuarine crocodile (*Crocodylus porosus*) is a widely distributed pantropical species found in marine, estuarine, and freshwater habitats between India and the central Pacific, including Southeast Asia, Australia, Melanesia, and Pacific Islands. In nearly all areas, the estuarine crocodile, along with most other crocodile species, has been commercially hunted for skins. The intensity of hunting, particularly since the 1950s, had severely reduced its populations in many areas, leading to its extinction in some localities. The estuarine crocodile was listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the SIG, as a signatory to CITES, banned the hunting of estuarine crocodiles and export of crocodile skins in 1993.

Subsequently, the number of estuarine crocodiles (there is only one species in Solomon Islands) increased dramatically, particularly following a gun ban in 2003. Human encounters with crocodiles became more frequent (Hviding 2018), so the Solomon Islands National Biodiversity Strategic Action Plan 2016–2020 identified the need to develop a management plan for estuarine crocodiles. The Asian Development Bank funded a crocodile study in 2018 through WorldFish, which surveyed 234 villages throughout Solomon Islands and recorded 225 attacks (83 fatal) within the previous decade (van der Ploeg et al. 2019).<sup>(21)</sup>

The WorldFish report, through systematic interviews with villagers, local police, and conservation organizations, identified no preferential pattern in habitats, localities, or human activity type in attacks by estuarine crocodiles. Attacks were recorded in Gizo harbor, on sandy atoll beaches, on coral reefs, in villages, in rain-forested catchments/freshwater rivers, mangroves/estuaries, and in freshwater lakes. Divers, fishermen, people canoeing on rivers, children swimming in front of their villages, and people going to the water for ablutions were all attacked. There was no particular activity (except proximity to water), higher-risk areas, nor habitats that favored crocodile attacks. Interviewed villagers said no matter where they were, what they were doing, or whether it was day or night, they simply needed to remain vigilant and take preventative measures to minimize the risks of crocodile attacks. The physical and village surveys supporting the WorldFish report concluded that the estuarine crocodile is a ubiquitous species in Solomon Islands: widespread, highly mobile, and may be found in any habitat at any particular time.

With reference to Western Province, the following table is adapted from Annex 2 of the WorldFish 2019 report and estimates the number of estuarine crocodiles, both sub-adults and adults, in various localities.

21 Van der Ploeg J, Ratu F, Viravira J, Brien M, Wood C, Zama M, Gomeze C, and Hurutarau J, Modified from Annex 2 of *Human-Crocodile Conflict in Solomon Islands*, Penang, Malaysia: WorldFish, Program Report: 2019-02, 37.

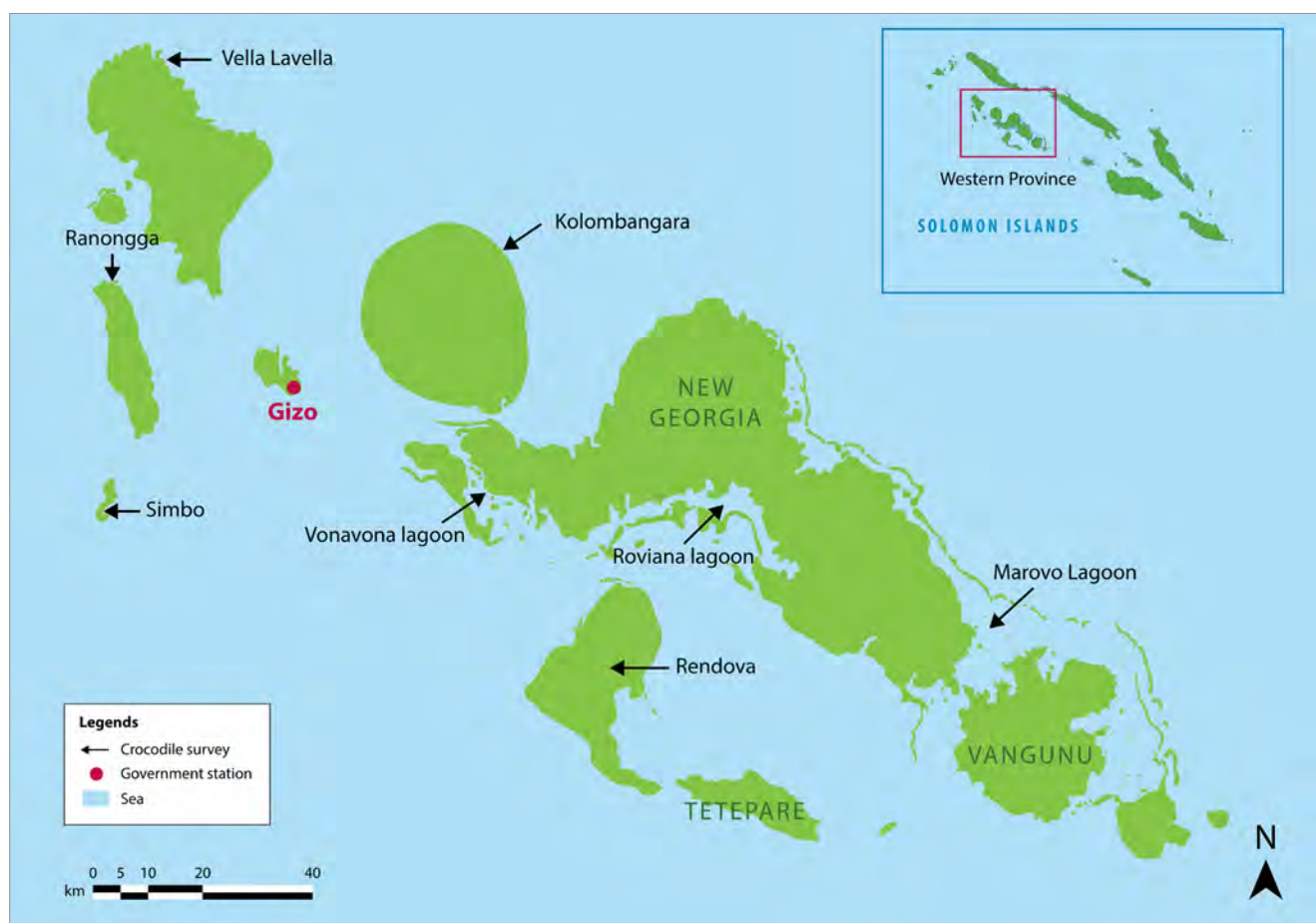


**Table 5: Estimated Estuarine Crocodile Population in Western Province<sup>(22)</sup>**

| Area                    | Estimated Number of Estuarine Crocodiles (Range) |        |
|-------------------------|--|--------|
|                         | Sub-adults                                       | Adults |
| <i>Vella Lavella*</i>   | 40–60  | 20–30  |
| <i>Ranongga</i>         | 40–50  | 10–20  |
| <i>Simbo</i>            | 30–45  | 10–20  |
| <i>Kolombangara</i>     | 20–70  | 20–35  |
| <i>Vonavona Lagoon*</i> | 40–80  | 25–35  |
| <i>Roviana Lagoon*</i>  | 50–75  | 30–50  |
| <i>Marovo Lagoon*</i>   | 40–60  | 20–30  |
| <i>Rendova*</i>         | 40–60  | 25–35  |

The survey areas are shown in Map 11.

**Map 11: Estuarine Crocodile Hotspots in Western Province<sup>(23)</sup>**



22 These numbers are derived through triangulation by village and area and corrected by removing unrealistic observations based on numbers and sizes. Areas indicated with an asterisk (\*) were also visited by Messel and King (1990).

23 Van der Ploeg J, Ratu F, Viravira J, Brien M, Wood C, Zama M, Gomese C, and Hurutarau J, Modified from Annex 2 of *Human-Crocodile Conflict in Solomon Islands*, Penang, Malaysia: WorldFish, Program Report: 2019–02, 37.

The likely presence of crocodiles occurring within or adjacent to any of the 70 potential investment sites was considered with respect to the findings of the WorldFish report, village surveys, and the known ecology of the estuarine crocodile (Messel and King 1990).

The conclusion is that estuarine crocodiles are a ubiquitous species across the study corridor and a potential hazard at

all potential investment sites. Similar to sharks, stonefish, cone shells, and other marine/estuary hazards in the corridor, estuarine crocodiles are an elevated operational hazard, not a determinant, in site assessment. There is no evidence to support any one locality or habitat type featuring more in attack records in Western Province than in other localities.

**Photo 1: Estuarine Crocodile Photographed on Coral Reef Around Russell Islands in Central Province, Solomon Islands<sup>(24)</sup>**



### 3.7 BIOGEOGRAPHICAL CONTEXT

#### 3.7.1 MARINE

The islands of Western Province lie parallel and adjacent to the New Britain Deep Sea Trench, representing the closest point of Solomon Islands to this seismically active area. Several submarine seamounts, periodically active as deep-sea volcanoes, are also located along this trench, the largest being Kana Keoki Seamount, about 26 km offshore to the west of Rendova Island. The largest islands in Western Province are of volcanic origin and have developed complex fringing reef and intertidal wetlands, including extensive mangrove areas; they are unique in having formed on primarily basaltic substrates in various locations around these larger volcanic islands. Elsewhere in the province, the tidal patterns and currents generated by the complex island biogeography has resulted in diverse areas of coral

atolls, barrier reefs, ribbon reefs, deep water shoals, and shallow-water seagrass meadows.

The juxtaposition of cold-water, deep-sea upwelling with warm-water, complex reef structures and inshore terrestrially influenced lagoon systems has given rise to a diversity of marine biological features of global significance. Within the study corridor, examples of these areas include the Saeraghi Reef Systems (see Map 12) on the northern tip of Ghizo Island and the ribbon reef systems extending in a 70-km-long band offshore to the east of Vangunu and Roviana islands. The diversity of fish life and coral forms in the Saeraghi Reef Systems is one of the highest in the world (Allen 2007).

The study corridor is part of a large eco-region known as the “Coral Triangle,” which includes the Philippines, Malaysia (Sabah), Indonesia, Timor Leste, Papua New

Guinea, and Solomon Islands. The Coral Triangle is regarded as the global epicenter of marine biodiversity (Vernon et al. 2009). Within the triangle, the contribution of the high diversity of marine life in Solomon Islands is delineated separately, with the country included in the regional Bismarck Solomon Seas Eco-region covering northern New Guinea, eastern Papua New Guinea islands, and Solomon Islands (up to Makira Province).

### 3.7.2 TERRESTRIAL

The terrestrial biogeography of Solomon Islands shares many attributes with the Bismarck, Trobriand, Admiralty, and D'Entrecasteaux archipelagos surrounding the Solomon Sea. Primarily, they represent the peaks of ridges up-thrust as the result of tectonic plate movement and include islands formed through volcanic activity—some of which retain remnant volcanoes, such as Mount Veve on Kolombangara Island. Some landforms, such as coral atolls, are purely a result of marine island-building processes, giving rise to coralline-based islands ubiquitously distributed throughout the corridor but more prevalent in the lagoons between the larger islands, particularly between Vonavona and Kohinggo islands. A notable feature of landforms in Western Province is the marked altitudinal variation across the islands, with the highest elevation (Mount Veve) exceeding 1,700 m and several other peaks, mostly on New Georgia and Rendova islands, exceeding 900 m. A unique feature of the province's island uplands is the demarcation of cloud forests at altitudes typically hundreds of meters lower than those found on the mainland of Papua New Guinea or tropical Australia, where cloud forest starts at around 900 m above sea level. On Kolombangara Island, unique cloud forest begins at as low as 400 m above sea level, a physiographic oddity unique to island biogeography within the Pacific. Smaller areas of this cloud forest persist also on New Georgia and Rendova islands within the study corridor.

Solomon Islands is part of a recognized Eastern Melanesian Islands Biodiversity Hotspot characterized by a unique biodiversity determined by island biographical aspects regarding island size, landform processes, topographical variability, and degree of isolation from mainland ecological interactions (Diamond, E. and J. Mayr 2001).

A defining feature of these biogeographical interactions is that biodiversity indices, such as the number of flora and fauna species, are not particularly high per se, but the level of endemism, or species unique to Solomon Islands, is very high on a pro-rata basis when compared with the overall biodiversity count for the islands.

While general information on Solomon Islands provides an overview of the relative importance of the biodiversity on the international stage, much of the terrestrial environment remains understudied and poorly documented. For example, a bat species presumed extinct for many decades—the New Georgia Monkey-Faced Bat, *Pteralopex taki*—was rediscovered on Kolombangara Island in 2015. Its presumed extinct status was a function of limited research and understanding, rather than its actual population-conservation status.

This remains applicable across the study corridor. Specific information on terrestrial biodiversity values is mostly limited or absent and only site-specific detailed studies, such as the one undertaken for the presumed extinct bat, will improve the biodiversity knowledge of Western Province. Within the corridor, four key terrestrial communities are particularly sensitive based on-site studies and available information:

- Forests that are above a 400 m altitude and include cloud forests and their unique species assemblages (flora and fauna), notably on Kolombangara Island
- Small island communities on coralline substrates – which are widely distributed throughout the corridor – where there is limited to no disturbance evident
- Any primary coastal lowland forest, but nearly all these areas have been logged and representative areas are restricted to limited localities such as on Tetepare Island
- Freshwater wetlands and the interface with intertidal communities, such as mangroves, but they remain rare, poorly understood, and relatively undisturbed on New Georgia and Vangunu islands

## 3.8 NATURE-CONSERVATION AND RESOURCE-MANAGEMENT INSTRUMENTS

### 3.8.1 LEGISLATIVE MECHANISMS

Two key legislative mechanisms provide instruments to establish resource and conservation-management areas in Solomon Islands: the *Fisheries Management Act 2015* (superseding the repealed *Fisheries Management Act 1998*) and the *Protected Areas Act 2010*.

The *Fisheries Management Act 2015* concerns the conservation, management, and development of fisheries and marine resources. The law allows the creation of Locally Managed Marine Areas (LMMA), where the local communities decide the management policies and principles as well as voluntarily undertake the day-to-day management of these areas. They are the first step in establishing formal management plans and subsequent gazettal of LMMA as Marine Protected Areas (MPA), which afford more legal recognition and management rights to the communities than LMMA. Gazettal is a process of formal notification and assessment of proposed community management plans for particular nominated areas before the government can designate them as MPA. But the *Fisheries Management Act 2015* has various stages of gazettal and designation, which create a lot of confusion for the actual status of nominated LMMA or MPA.

The *Protected Areas Act 2010* allows the creation of Community-Based Management Areas (CBMA) with a greater emphasis on biodiversity and resource conservation compared to LMMA. CBMA have more legal rights and protection than LMMA; they are the precursor to having an area formally gazetted as a Protected Area under this Act, which offers the highest degree of legal protection under Solomon Islands legislation.

### 3.8.2 PROTECTED AREAS IN THE STUDY CORRIDOR

Protected Areas may be established under both the *Fisheries Management Act 2015* and the *Protected Areas Act 2010*. While the terminology is the same, the legal basis and conservation principles vary greatly for each. An MPA designation under the *Fisheries Management Act 2015* is a mechanism to implement fisheries management plans in a particular area. Conservation benefits are an outcome of managing fisheries in the area but not the main reason for the designation, which is to protect village or artisanal fishing rights from external commercial exploitation. There are six gazetted MPA (formally notified with approved

management plans) under the *Fisheries Management Act* within the study corridor, but none have been formally designated and legally inscribed under the act at the time of this writing. All of them have management measures agreed to by local communities, but they are administered and monitored either through the Ministry of Fisheries and Marine Resource (and/or their provincial government representatives) or accredited external agencies including WWF, WorldFish, and incorporated community bodies.

A Protected Area under *Protected Areas Act 2010* covers both marine and terrestrial ecosystems. The act sets out the process for landowners to formally protect their land from commercial logging or mining, and other uses of the land will be subject to the terms of the management plan established for the land. A community or organization needs to apply to the Director of Environment for their site to be declared a Protected Area. The application should include a management plan and scientific studies to prove that the area is significant in terms of biodiversity and natural resources for the community, as well as an estimated budget for the area's management, an agreement by all customary landowners, and a map outlining the boundary and size of the site.

The Director of Environment will review the application and make recommendations to the Minister. The Minister shall consider whether:

- Conservation objectives of the proposed Protected Area are identified and in accordance with sound conservation practices
- Boundaries of the area are accurately identified or otherwise demarcated and surveyed
- Consent and approval are obtained from persons having rights or interests in the area
- An appropriate conservation, protection, or management plan is developed to ensure that the conservation objectives of the area will be achieved

The Protected Areas Committee declared the country's first Protected Area in 2016. Under the *Protected Areas Act 2010*, there are now three designated Protected Areas: the Arnavon Community Marine Park, the Sirebe Forest Conservation Area, and the Siporae Tribal Forest Conservation Area. Western Province and the study corridor have no Protected Areas, although proposals to gazette Kolombangara and Tetepare islands as Protected Areas are underway.

### 3.8.3 COMMUNITY-BASED MANAGEMENT AREAS IN THE STUDY CORRIDOR

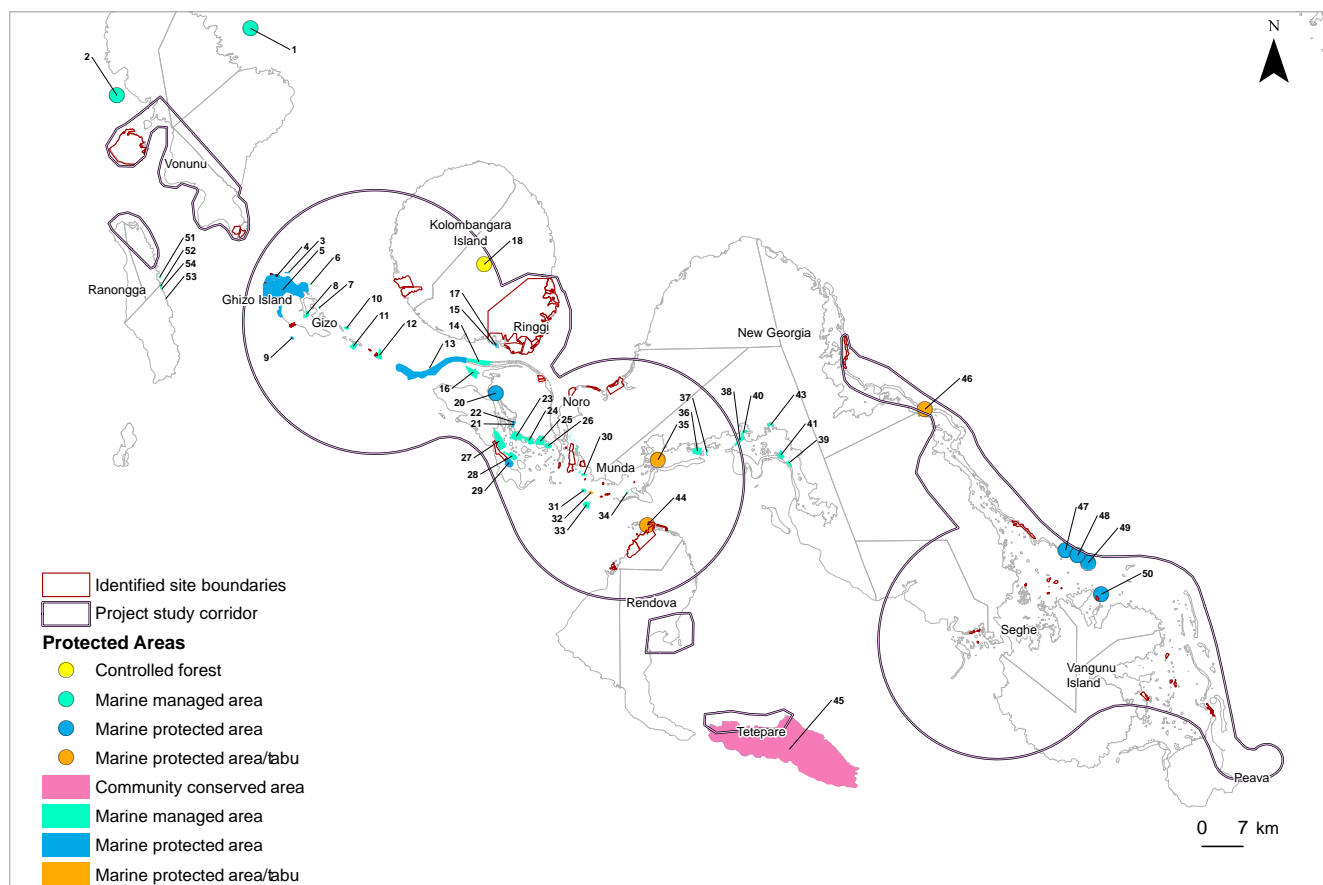
The majority of communities in Solomon Islands (and within the study corridor) manage their resources as LMMA established and administered under the *Fisheries Management Act 2015* or as CBMA implemented under the *Protected Areas Act 2010*. LMMA were originally created under the repealed *Fisheries Act 1998* and many of them were not renewed by the communities when the *Fisheries Management Act* was passed. Since 2015, 24 LMMA have been established within the study corridor, of which two have been legally gazetted by the Ministry of Fisheries and Marine Resources while others are awaiting gazettal; another LMMA is currently proposed.

Under the *Protected Areas Act 2010*, CBMA can be established in both marine and land areas as true nature-conservation reserves with biodiversity maintenance as the key management principle. There is one CBMA gazetted within the study corridor: a 19,400-hectare area of Kolombangara exceeding 400 m above sea level and

managed as a conservation reserve by the Kolombangara Island Biodiversity Conservation Association. Another CBMA proposed for Tetepare Island (managed by the Tetepare Descendants Association) includes land and sea areas within the study corridor. Several LMMA established under the *Fisheries Management Act 2015* are trying to become Protected Areas under the *Protected Areas Act 2010* to gain greater legal recognition and protection of biodiversity assets.

In the following table, “gazetted” means a formal notification and management plan has been accepted, “established” means a management plan has been submitted and is being assessed, and “proposed” refers to sites where communities have registered a formal interest in submitting a management plan for gazettal. None have been elevated to a designated MPA or Protected Area status. Map 12 depicts the various protected and managed areas as identified in the Protected Planet database developed by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC and IUCN 2019).

Map 12: Protected Areas in Western Province (UNEP-WCMC and IUCN 2019)



**Table 6: Gazetted and Proposed Protected and Management Areas in the Study Corridor**

| Map ID | Management Area                       | Reserve Type                    | Status   | Management Authority                                      |
|--------|---------------------------------------|---------------------------------|--|---|
| 1      | Ladosama Reef                         | Locally Managed Marine Area     | Established  | Local village community                                   |
| 2      | Jorio Marine Resource Management Plan | Locally Managed Marine Area     | Gazetted under the <i>Fisheries Management Act</i> | Local village community                                   |
| 3      | Varu North Reef                       | Marine Protected Area           | Gazetted under the <i>Fisheries Management Act</i> | WWF, WorldFish, Gizo community                            |
| 4      | Njari Island                          | Marine Protected Area           | Gazetted under the <i>Fisheries Management Act</i> | WWF, WorldFish, Gizo community                            |
| 5      | Saeraghi Reef                         | Marine Protected Area           | Gazetted under the <i>Fisheries Management Act</i> | WWF, WorldFish, Gizo community                            |
| 6      | Hot Spot Reef                         | Locally Managed Marine Area     | Established  | Community   |
| 7      | Pusinau Reef                          | Marine Protected Area           | Gazetted under the <i>Fisheries Management Act</i> | WWF, WorldFish, Gizo community                            |
| 8      | Kogulavata Reef                       | Locally Managed Marine Area     | Proposed   | Community   |
| 9      | Suvaria Reef                          | Marine Protected Area           | Gazetted under the <i>Fisheries Management Act</i> | WWF, WorldFish, Gizo community                            |
| 10     | Nusatupe Reef                         | Locally Managed Marine Area     | Established  | Community   |
| 11     | Babanga Reef                          | Locally Managed Marine Area     | Established  | Community   |
| 12     | Naru Reef                             | Locally Managed Marine Area     | Established  | Local village community                                   |
| 13     | Grant Island, Patuparoana             | Marine Protected Area           | Gazetted under the <i>Fisheries Management Act</i> | Local village community                                   |
| 14     | Alale, Grant Island                   | Locally Managed Marine Area     | Established  | Community   |
| 15     | Karikasi Reef                         | Marine Protected Area           | Gazetted under the <i>Fisheries Management Act</i> | Local village community                                   |
| 16     | Niumala                               | Locally Managed Marine Area     | Established  | Community   |
| 17     | Bakiha Reef                           | Locally Managed Marine Area     | Gazetted under the <i>Fisheries Management Act</i> | Local village community                                   |
| 18     | Kolombangara Forest Reserve           | Controlled Forest               | Proposed   | Kolombangara Island Biodiversity Conservation Association |
| 19     | Kolombangara Island                   | Community-Based Management Area | Gazetted under the <i>Fisheries Management Act</i> | Kolombangara Island Biodiversity Conservation Association |
| 20     | Koqu Rua                              | Marine Protected Area           | Gazetted under the <i>Fisheries Management Act</i> | Community   |
| 21     | Iri Pasapasa                          | Marine Protected Area           | Gazetted under the <i>Fisheries Management Act</i> | Local village community                                   |
| 22     | Lodu Hokata                           | Marine Protected Area           | Gazetted under the <i>Fisheries Management Act</i> | Community   |
| 23     | Nazareti                              | Locally Managed Marine Area     | Established  | Community   |
| 24     | Kinamara                              | Locally Managed Marine Area     | Established  | Community   |

| Map ID | Management Area      | Reserve Type   | Status   | Management Authority             |
|--------|----------------------|--|--|----------------------------------|
| 25     | Saika                | Locally Managed Marine Area                            | Established  | Community                        |
| 26     | Kida                 | Locally Managed Marine Area                            | Established  | Community                        |
| 27     | Barasipo             | Locally Managed Marine Area                            | Established  | Community                        |
| 28     | Buni                 | Locally Managed Marine Area                            | Established  | Community                        |
| 29     | Barivuto             | Locally Managed Marine Area                            | Gazetted under the <i>Fisheries Management Act</i> | Local village community          |
| 30     | Beta/Kandilae-Kindu  | Locally Managed Marine Area                            | Established  | Community                        |
| 31     | Kekehe               | Locally Managed Marine Area                            | Established  | Community                        |
| 32     | Dunde (Shark Point)  | Marine Protected Area/ <i>Tabu</i>                     | Established  | Local village community          |
| 33     | Dunde                | Locally Managed Marine Area                            | Established  | Community                        |
| 34     | Nusa Roviana         | Locally Managed Marine Area                            | Established  | Community                        |
| 35     | Sasavele/NB          | Marine Protected Area/ <i>Tabu</i>                     | Gazetted under the <i>Fisheries Management Act</i> | Local village community          |
| 36     | Baraulu/Bule Lavata  | Locally Managed Marine Area                            | Established  | Community                        |
| 37     | Duduli Rereghana     | Locally Managed Marine Area                            | Established  | Community                        |
| 38     | Nusa Hope/Heloro     | Locally Managed Marine Area                            | Established  | Community                        |
| 39     | Ha'apai              | Locally Managed Marine Area                            | Established  | Community                        |
| 40     | Nusa Hope (Mangrove) | Locally Managed Marine Area                            | Established  | Community                        |
| 41     | Olive                | Locally Managed Marine Area                            | Established  | Community                        |
| 43     | Kozou–Zone 1         | Locally Managed Marine Area                            | Established  | Community                        |
| 44     | Rendova Harbor       | Marine Protected Area/ <i>Tabu</i>                     | Gazetted under the <i>Fisheries Management Act</i> | Local village community          |
| 45     | Tetepare             | Community-Based Management Area/Marine Protected Areas | Proposed   | Tetepare Descendants Association |
| 46     | Pipa/Kororo (Marovo) | Marine Protected Area/ <i>Tabu</i>                     | Gazetted under the <i>Fisheries Management Act</i> | Local village community          |
| 47     | Variparui Island     | Marine Protected Area                                  | Gazetted under the <i>Fisheries Management Act</i> | Local village community          |
| 48     | Petu Island          | Marine Protected Area                                  | Gazetted under the <i>Fisheries Management Act</i> | Local village community          |
| 49     | Vaininoturu Island   | Marine Protected Area                                  | Gazetted under the <i>Fisheries Management Act</i> | Local village community          |
| 50     | Vena Island          | Marine Protected Area                                  | Gazetted under the <i>Fisheries Management Act</i> | Local village community          |
| 51     | Inuzaru Island       | Locally Managed Marine Area                            | Established  | Community                        |
| 52     | Jericho Reef         | Locally Managed Marine Area                            | Established  | Community                        |
| 53     | Niami Reef           | Locally Managed Marine Area                            | Established  | Community                        |
| 54     | Renjo Reef           | Locally Managed Marine Area                            | Established  | Community                        |

### 3.9 SOCIAL ENVIRONMENT

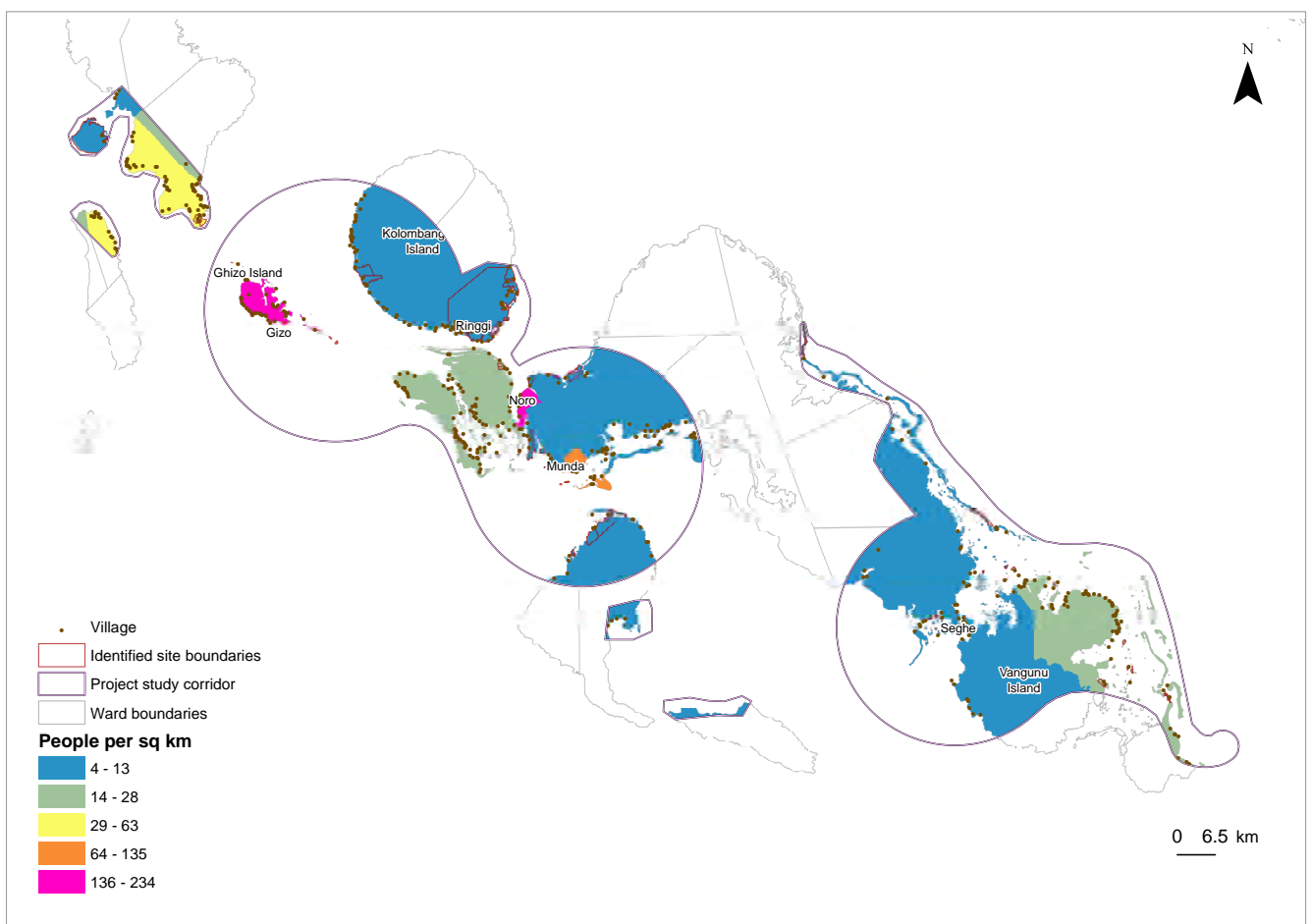
#### 3.9.1 DEMOGRAPHICS<sup>(25)</sup>

In 2020, the total population of Solomon Islands was estimated at 694,000 (SIG: National Statistics Office 2020), with 78 percent classified as living in rural areas (Food and Agriculture Organisation of the United Nations (FAO) 2016). In Western Province, the total population in 2020 is estimated to be 99,000, with 87 percent living in rural areas (SIG: National Statistics Office 2020) and 48 percent of women in the entire population.

This population consists of about 14,000 households with an average size of 5.3 people. The median age in Western Province was 39.5 years in 2019.

Solomon Islands' average annual population growth rate between 2005 and 2015 was 2.2 percent with a population density of 20 inhabitants per km<sup>2</sup>. Map 13 displays the population density across the corridor, showing most areas (except the urban centers of Gizo, Noro, and Vonunu as sparsely populated with the majority of settlements and villages located along the coast.

**Map 13: Population Density and Location of Villages in Western Province**



25 In this section, data from the 2009 Census—where it is the most up to date—has been used. More recent datasets from the Solomon Islands National Statistics Office and other national and international databases have been used where available and appropriate in all other cases.



Western Province had a total labor force (including all persons employed and unemployed) of 33,811 people (SIG: National Statistics Office 2009). The total number of people in paid employment was 17,031, which gives Western Province an employment-population ratio of 34 percent (for the population above 12 years of age), much higher than the national average of 23.7 percent (SIG: National Statistics Office 2009).

### 3.9.2 VULNERABILITY

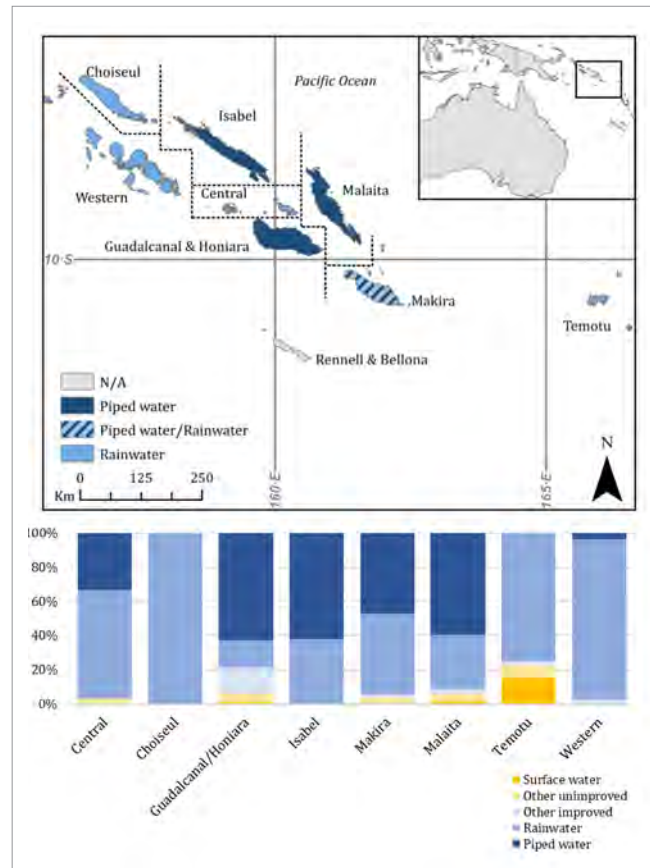
The vulnerability of the community is a measure of its resilience to impacts from the physical, social, and economic environment. Access to services and resources is likely to improve community resilience against external impacts such as natural hazards, sea-level rise, climate change, degradation, lack of social cohesion, and local economic fluctuations. The following indicators provide a measure of community access to key services and resources across Solomon Islands.

#### Access to Water, Energy, and Sanitary Services

Ninety-two percent of urban households and 55 percent of rural households in Solomon Islands has access to basic drinking water (Anthonj, et al. 2020). In Western Province, households still mostly rely on rainwater as their primary source of drinking water.

The main source of energy for lighting was kerosene lamps, used by 76 percent of all households. Only 12 percent of households were connected to the electric grid (see section 3.11 for more details). About 44 percent of households did not have access to a toilet facility, meaning neither a flush toilet, water-sealed toilet, or pit latrine (SIG: National Statistics Office 2009).

**Figure 2: Main Drinking-Water Source in Urban Households in Solomon Islands by Province [%] (Anthonj, et al. 2020)**



#### Education

Solomon Islands has an adult literacy rate of 76.6 percent (The United Nations Educational, Scientific and Cultural Organization 2009). In Western Province, 70 percent of the population has attained primary-level education, 19 percent has attained secondary education, and 4.2 percent has attained tertiary education. About 67 percent of men and 73 percent of women completed primary education; 20 percent of men and 18 percent of women above 12 years of age attained secondary education, while 4 percent of men and women received no schooling (attended preschool or only some primary education). Only 6 percent of men and 3 percent of women had tertiary education (SIG: National Statistics Office 2009).

In 2012, Western Province had 123 primary schools, 29 community high schools, five secondary schools, and six rural training centers. The education sector faces many challenges in the effective delivery of education services; one problem is not all children have access to all levels of education, particularly early childhood and secondary education. This problem is compounded by the dispersed nature of Western Province, making access to educational institutions difficult (Bennett, et al. 2014).

### **Poverty and Source of Livelihood**

In 2015, an estimated 12.7 percent of the country's population lives below the poverty line; however, the incidence of poverty is far higher in Makira and Guadalcanal provinces. The percentage of people living below the basic-needs poverty line in Western Province was 6–7 percent and those below the food poverty line was 2–3 percent. The province accounts for between 5 and 10 percent of poverty in Solomon Islands. Poverty in the country is largely a rural phenomenon, with 87 percent of poor people living in rural areas (SIG: Solomon Islands National Statistics Office 2015b).

The poverty line in Solomon Islands varies significantly between provinces, with the cost of basic needs in Honiara being twice as much as most other provinces because of the higher cost of food and other goods. The cost of meeting basic needs in Western Province was less than half of that in Honiara (SIG: Solomon Islands National Statistics Office 2015b). The country has high costs of service delivery as a result of a small and geographically dispersed population.

The majority of the population is involved in subsistence or cash-crop agriculture, with less than a quarter involved in paid work. Agriculture and raw materials, including logging, accounted for 92 percent of exports, leaving the narrow-based economy vulnerable to shocks (Australian Department of Foreign Affairs and Trade 2019).

Education has an influence on poverty levels: about 40 percent of poor households have a family head not reaching six years of primary schooling. Data shows that the number of poor households declines with the head of the household attaining a higher level of education (SIG: Solomon Islands National Statistics Office 2015b).

The sale of fish, crops, or handicrafts was the main source of income for 55 percent of Western Province households (SIG: National Statistics Office 2009). Another 27 percent of household income came from wages or salaries. About 48 percent of households raised livestock and 83 percent engaged in fishing for both own consumption and sale of their catch (SIG: National Statistics Office 2009).

### **3.9.3 HEALTH AND NUTRITION**

Life expectancy in Western Province is 69 years and the under-five mortality rate is 29 per 1,000 births (SIG: National Statistics Office 2009). In rural Western Province, access to food through gardening, fishing, and hunting is decreasing as local food production has significantly declined as a result of urbanization, depletion of natural resources, and increased access to cheap, poor-quality food imports. Such food imports have led to an increase in non-communicable diseases such as obesity, diabetes, heart disease, and associated health problems. Obesity is high in Western Province when compared to other provinces. The poor nutritional value of these foods is also leading to an increase in the numbers of children with stunted growth (Bennett, et al. 2014).

Total spending on healthcare in Solomon Islands in 2009 was estimated to be 5.4 percent of its gross domestic product, or around SB\$313 million (\$38.66 million). Health services in the country are provided through its nurse-led primary health-care system, with referral to doctors based in larger provincial towns as shown in table 7. This cost-effective system retains high numbers of nurses in provincial areas, with over 50 percent of health-care workers being nurses or nurse aides. Solomon Islands has a critical shortage of health-care workers, especially doctors, medical specialists, medical-laboratory staff, and radiologists (Hodge, Slatyer and Skiller 2015).

**Table 7: Health Workforce Data for Solomon Islands (World Health Organization 2019)**

| Country         | Year | Medical Doctors* | Nursing and Midwifery Personnel* | Dentists* | Pharmacists* |
|-----------------|------|------------------|----------------------------------|-----------|--------------|
| Solomon Islands | 2018 | n/a              | 21.642                           | n/a       | n/a          |
|                 | 2016 | 1.937            | n/a                              | 0.468     | 1.195        |
|                 | 2013 | 1.873            | 19.937                           | 0.473     | 1.313        |
|                 | 2012 | 1.546            | 17.371                           | 0.396     | 1.097        |
|                 | 2011 | 2.013            | 17.858                           | 0.665     | 0.813        |

\*per 10,000 population

Western Province has one faith-based hospital, one provincial hospital (both within the central area of the study corridor), three area health centers, 23 rural health clinics, and 31 nurse-aid posts (Hodge, Slatyer and Skiller 2015). No health services are located on Vonunu, Tetepare, and Rendova islands (see Map 15). A list of health facilities and

descriptions of services available at each are summarized in table 8. Some communities can only access medical facilities by boat during fine weather. Access to more specialized medical care is severely restricted and may require transport to Honiara or Gizo by plane or ferry.

**Table 8: Health Clinics Available in Western Province**

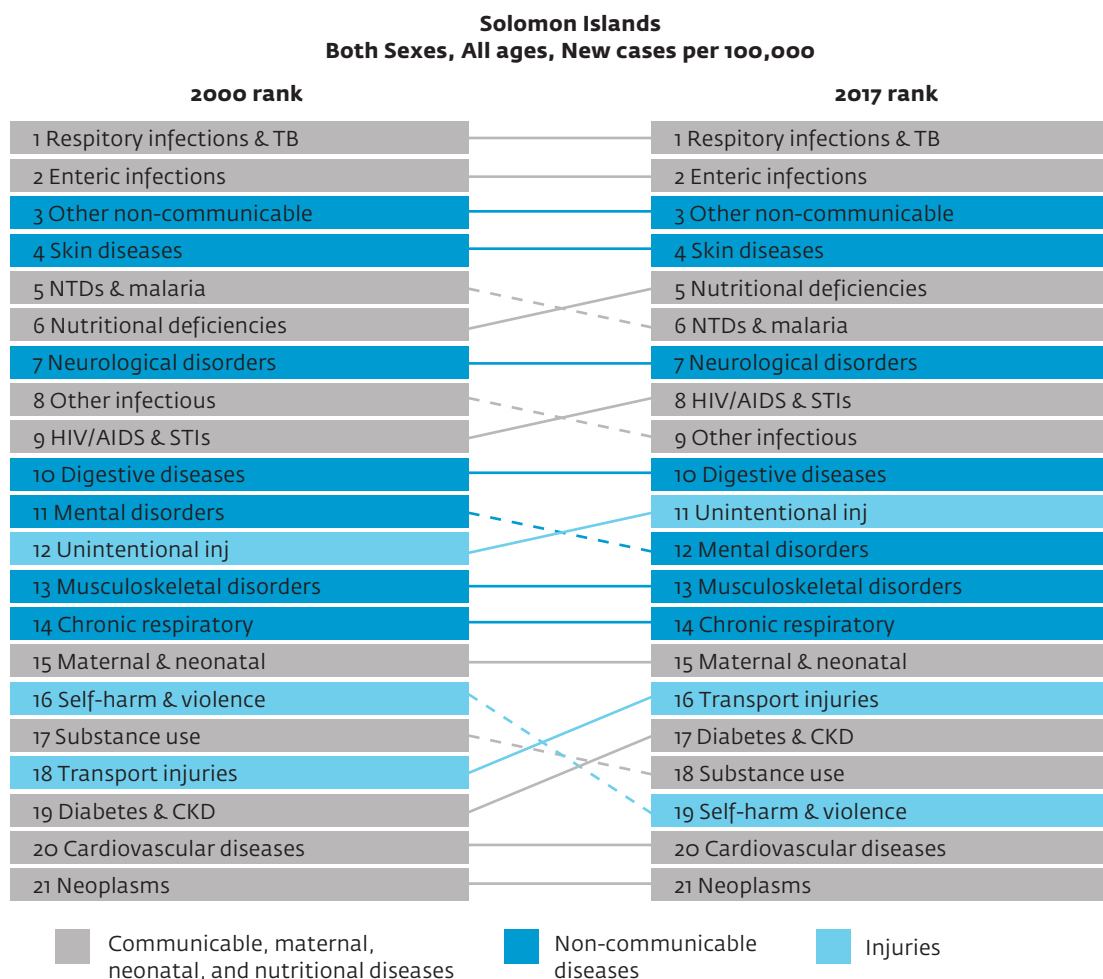
| Type of Facility            | Number in Western Province       | General Services Available at This Type of Facility <sup>(26)</sup>   |
|-----------------------------|----------------------------------|---|
| <b>Hospitals</b>            | 1 – Gizo<br>1 – Munda (Private)  | <ul style="list-style-type: none"> <li>• Diagnosis and treatment of diseases and trauma</li> <li>• In-patient admissions for several types of cases, both short and long term</li> <li>• Surgical and specialist services</li> <li>• Anesthetic services</li> <li>• Basic dental clinic with resident services and visiting dental services</li> <li>• Access to doctors and specialists</li> <li>• Pharmacy dispensing and basic laboratory testing</li> </ul> |
| <b>Area Health Centers</b>  | 3 – Public<br>1 – Noro (Private) | <ul style="list-style-type: none"> <li>• Basic diagnosis and treatment of common diseases and trauma</li> <li>• In-patient admissions for several types of cases</li> <li>• Dental cases accepted</li> <li>• Access to doctors and visiting dentists</li> <li>• Pharmacy dispensing and basic laboratory testing</li> </ul>   |
| <b>Rural Health Clinics</b> | 11 – Public                      | <ul style="list-style-type: none"> <li>• Basic diagnosis and treatment of common diseases and trauma</li> <li>• Short-term in-patient admissions for specific cases only</li> <li>• Limited access to doctors</li> <li>• Pharmacy dispensing and basic laboratory testing</li> </ul>  |
| <b>Nurse Aid Posts</b>      | 12 – Public                      | <ul style="list-style-type: none"> <li>• Basic diagnosis and treatment of common diseases and trauma</li> <li>• Short-term in-patient admissions for specific cases only</li> <li>• Limited access to doctors</li> <li>• Pharmacy dispensing and basic laboratory testing</li> </ul>  |

26 For further detail on services provided at different facilities, visit: [https://solomons.gov.sb/portal\\_map/](https://solomons.gov.sb/portal_map/)

Although progress has been made to manage vaccine-preventable diseases, communicable diseases continue to account for a high proportion of disabilities in Solomon Islands. Infectious and emerging diseases continue to affect people in the country and pose a health security threat (World Health Organization 2012). Figure 3 shows that in 2017, neglected tropical diseases and malaria cases dropped 49 percent from 2000 (Institute for Health Metrics and Evaluation 2020). But a 7 percent increase was recorded in the incidence of HIV/AIDS and sexually transmitted diseases over the same period (Institute for Health Metrics and

Evaluation 2020). The World Health Organization reported that the Solomon Islands National Health Strategic Plan for 2016–2020 looks at four key result areas: improving service coverage, improving service quality, building strong partnerships, and setting the foundations for the future. Despite the geographic challenges for service delivery, the country has made steady gains in reducing malaria morbidity and mortality and continues to achieve high coverage rates of immunization and births attended by skilled health workers (World Health Organization. Regional Office for the Western Pacific 2017).

**Figure 3: Ranking of Incidence of Diseases and Injuries in Solomon Islands (2000 and 2017), New Cases Per 100,000 Persons (Institute for Health Metrics and Evaluation 2020)**



### 3.9.4 GENDER BALANCE, GENDER-BASED VIOLENCE, AND CHILD WELFARE

As indicated in section 3.9.1, Western Province has a relatively even gender split like the rest of the country, with 48 percent of its population being women.

Cultural values and expectations of men and women in Solomon Islands are transmitted through well-defined gender roles (Bennett, et al. 2014). Stakeholder consultations in February 2020 found that women's roles typically include gardening, fishing, food collection, raising children, cooking, and cleaning.

The United Nations Development Programme Gender Development Index measures gender gaps by accounting for disparities between women and men in three dimensions of human development: health, knowledge, and living standards. Solomon Islands ranked 153 out of 189 countries (United Nations Development Programme 2020).

While the male literacy rate was 83.7 percent, it is only 69 percent for females in 2015 (SIG: Solomon Islands National Statistics Office 2015b). Localized census results show a similar pattern: women do not stay in school as long as men and are more likely to be illiterate.

The poverty risk for female-headed households (18 percent are headed by women) is slightly less than that for male-headed households (SIG: Solomon Islands National Statistics Office 2015b). The number of women in unpaid work is decreasing and more are getting paid work. Only 27 percent of women who earn money decide on how their earnings are spent, while the majority (56 percent) make joint decisions with their husband or partner. About 66 percent of married women participate in decision-making about their health care, household purchases, and visits to family or relatives, an improvement from 57 percent in 2006–2007 (SIG: Solomon Islands National Statistics Office 2015a).

Domestic violence remains a national issue. According to the Ministry of Women, Youths, Children and Family Affairs, around 64 percent of women (aged 15 to 49) who had been in a relationship reported experiencing physical and/or sexual violence by a partner (United Nations 2019). Australian Aid reported in 2008 that about 65 percent of women aged 15 to 49 had experienced sexual assault, but such figures were thought to be underreported. Among those surveyed, 37 percent experienced sexual violence

before the age of 15, indicating gender and child violence are linked when examining prospects for change. The low societal status of women and children has affected their economic prospects as women are inhibited from fulfilling their capacity and most children do not attend school above the primary level (International Social Service Australia 2012).

Some of the reasons that restrict women from thriving in the workforce are discussed below:

- One reason for knowledge gaps between men and women is “period poverty”: It is still uncommon for rural schools and villages to have toilets or facilities for young women to keep themselves clean during their menstruation cycles. As such, girls miss more school and fall behind quickly (Mohamed, et al. 2018). Sanitation practices are also basic, so girls do not get trained on how to use facilities outside home and are further limited as they seek formal employment.
- Consultation indicated that male and community expectations of women to provide food for the family can restrict them from seeking or continuing employment after having children, even if the father is also not working.
- Exploitation of women was also highlighted as an issue. Women are offered cleaning and cooking jobs that then transpire into sexual exploitation in some cases (Herbet 2007).

Domestic violence has a negative impact on children: witnessing domestic violence amounts to emotional abuse and parents engaged in a violent relationship are more likely to be harsh or negligent toward their children (United Nations 2019).

As a result of customary adoption practices and migration to urban areas, many children do not live with their biological parents, which may heighten the risk of neglect, abuse, and exploitation. Adolescents engage in alcohol and drug abuse, use the Internet inappropriately, and break the law (United Nations Children's Fund 2020).

To promote gender equality and address gender-based violence in the workplace, IFC launched a Waka Mere Commitment to Action initiative. As part of the initiative, IFC facilitated the establishment of domestic-violence contact teams within 15 participating Solomon Islands

companies, surveyed more than 6,500 of their employees, and published a report in 2019 on the impact of domestic violence on the workplace. Due to the issue's sensitivity, domestic-violence victims (both men and women) did not properly report the abuses and instead shared their experiences with colleagues, community-based counselling, or the police; a majority of those who reported to the police said there was little action or positive outcome (IFC 2019).

Solomon Islands enacted the *Family Protection Act 2014* in response to domestic violence, but this law only focuses on domestic violence and does not address workplace abuse or exploitation. There are no required grievance mechanisms to hold businesses accountable for abuse of women at work, which may increase the risk of exploitation. According to the IFC report, employees reported that employers are quite passive in providing support to victims of both domestic and workplace abuse. Stakeholder consultations held in February 2020 revealed that a community-based response was used in some cases of sexually abused women, but no legal or police action was taken.

Solomon Islands enacted the *Child and Family Welfare Act 2016* to reduce exploitation of children in the workplace. However, the country's minimum employment age is still set at 12 and the minimum age of criminal responsibility is set at eight, well below international standards (Humanium 2020). The Committee on the Rights of the Child recommends Solomon Islands to align its minimum age of criminal responsibility to 18 to ensure that all children benefit from the protection of juvenile justice. The country became a member state of the ILO in 1984 and has since ratified the eight ILO Fundamental Conventions, including the Conventions on Minimum Age (No.138) in 2013 and the Worst Forms of Child Labor (No.182) in 2012. Yet, sexual exploitation of child laborers and their risk of exposure to hazardous work remain concern areas (International Labour Organisation 2016).

### **3.10 CULTURE AND DIVERSITY**

#### **3.10.1 KASTOM CULTURE**

In Solomon Islands, traditional culture, or *kastom*, constantly interacts with the introduced ways of life, especially modern institutions established post-European contact and affect each other.

#### **The Wantok System**

The *wantok* system is perceived as a way of helping family, relatives, and neighbors during times of need. This ranges from helping to pay school fees to acts bordering on corruption, such as offering a job or contract to a particular person because they are a *wantok*.

The *wantok* system has traditionally had many benefits, such as sharing and caring for the less fortunate as well as promoting community collaboration; however, the system can be misused for personal gains (Leua Nanau 2011) and impede development and progress, with revenue going to help *wantoks* (Lyabora 2016).

#### **Cultural Leadership, "Big Man" Systems, and Chief Systems**

Solomon Islands does not have a universal, identifiable traditional leadership. Two common leadership systems involve "Big Men" and chiefs (Sahlins 1963), with some villages being patrilineal and others matrilineal. There are many "Big Men" and chiefs who rule over limited geographical enclaves with relatively small populations.

The "Big Man" emerges as a leader of a group by proving his leadership capabilities in feasting or war, as an orator, or through other achievements such as gardening, exchange, or mastering certain forms of magic or healing. The position of "Big Man" is not hereditary but is acquired through personal efforts. One aspires to be a "Big Man" by accumulating wealth and distributing it, not only among one's immediate group but to others outside the clan, creating a network of allegiances and obligations that extend far beyond the village or even the island.

In chiefly societies, chiefs are very powerful in influencing public opinion in their communities. They may have an influence on which candidate people should vote for in elections and decide what their opinions should be on issues of national concern (Moore 2004). Stakeholder consultations in February 2020 noted politicians have been known to make use of their traditional and cultural ties to manipulate the electoral system through vote-buying or gifting to individuals and/or families.

### 3.10.2 ETHNICITY AND LANGUAGE

The 2009 Census (SIG: National Statistics Office 2009) indicated that Western Province had a very homogenous population composition, with 95 percent Melanesians and under 4 percent Micronesians. All other ethnic groups, such as Polynesians, Chinese, or Europeans, made up less than 1 percent of the population. Table 9 shows ethnic homogeneity across the study corridor, with the majority of people being Melanesian and some Micronesians in Gizo and Vonavona.

Melanesians are the predominant and indigenous inhabitants of Melanesia, an area extending from New Guinea to Vanuatu and Fiji, including Solomon Islands (Keesing and Kahn 2020). Most Melanesians speak one of the many Austronesian languages.

Micronesians are from the northwest area of the Pacific called Micronesia, north of Melanesia. The Gilbertese people are Micronesians.

Solomon Islands' official national language is English and Pijin is commonly spoken across all language groups. The country is linguistically diverse with the number of living languages and dialects ranging from 64 to 71 (Jourdan 2013). As a result of its British colonial history and arrival of Christianity, English became the official language and/or medium of education. Pijin is the lingua franca for everyday life, while tribes and/or local communities continue to use their vernacular language (Jourdan 2013).

#### Tribal Groups in the Study Corridor

The people of Western Province often follow a traditional hierarchy of leadership at the village level, with each tier having a defined responsibility in governing a community. A village or community may have several tribes, each with its own leadership structure and chief. In some areas of Western Province, there is a "house-of-chiefs" system, comprising various tribal chiefs spanning a particular island or region gathering to make decisions. There are 16 major languages spoken in Western Province, most of which are Austronesian languages believed to have originated from Southeast Asia about 8,000 years ago (Bennett, et al. 2014). There is limited data showing the distribution of tribes, and the impact of development may be unevenly distributed on certain tribes within the study corridor. No tribal groups have special mention in SIG policies.

### 3.10.3 SITES OF CULTURAL SIGNIFICANCE

The National Museum administers a small list of *tabu*, historic, and culturally significant sites; however, they are poorly documented and not actively protected or managed other than by local site occupiers and owners. Site-specific mapping has been undertaken by WWF on Kolombangara and Ghizo islands as part of the Ridges to Reef Conservation Plan (WWF-Pacific Solomon Islands 2018) and during site visits for this study; however, this data is still mapped at a wide scale and based on informal mapping techniques rather than ground-truth data. The *Western Province Preservation of Culture Ordinance 1989* lists protected sites in the province (Western Provincial Assembly 1989) but provides little detail on the sites, including no location coordinates of most protected sites. There appears to be no ongoing management of this list or oversight by the central or provincial government to ensure their protection.

*Tabu* sites, which were identified during site visits, through stakeholder consultations, and in the Western Province Preservation of Cultural Ordinance, are depicted on Map 14.

The word *tambu*, means forbidden, sacred, or "no entry." As indicated by WorldFish (2013), *tabu* (*tambu*) has been traditionally used to protect marine areas for the purposes of re-stocking of Trochus and other mangrove shellfish or marking the death of an important member of the community (grave or death site). *Tabu* areas are still used today for the protection of marine environments from overfishing. They may also refer to *kastom* sacred sites where traditional rituals are performed or skulls and shell money are stored; these sites may be marine or terrestrial (WorldFish 2013).

Cultural sites, *tabu* sites, reefs, and historic wrecks in water and on land are often tourist attractions. However, their mapping is only undertaken by the tour operators who frequent them and are not available publicly in a combined dataset (only the *tabu* sites witnessed during site visits and mentioned in the stakeholder consultations in February 2020 were mapped). Land occupiers, owners, and villages have different expectations on providing access to these sites, their maintenance, and the fees that should be charged for visits.

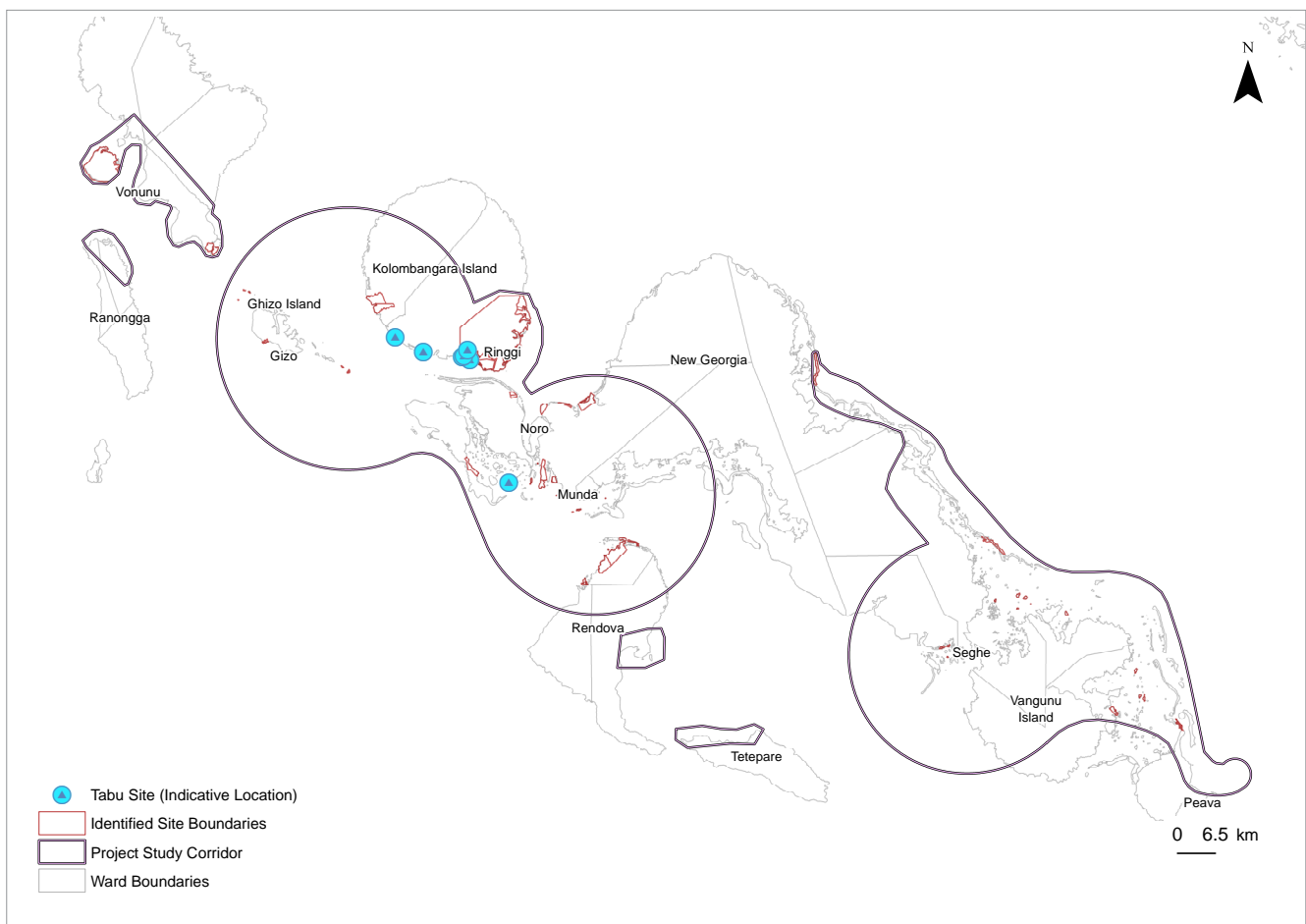
There is no set way for developers to approach these cultural sites as each has its own significance. Some must be completely avoided, others can be protected and visited by tourists for a fee, and some artefacts might be moved to make way for construction. Consultation with the local community is the key when dealing with these sites.

Table 9: Ethnicity of Western Province, by Ward in 2009 Census

| Ward Name                 | Melanesian   | Polynesian  | Micronesian | Chinese     | European    | Other       | Total population of the ward |
|---------------------------|--------------|-------------|-------------|-------------|-------------|-------------|------------------------------|
| <i>Bilua</i>              | 98.9%        | 0.0%        | 0.3%        | 0.1%        | 0.0%        | 0.6%        | <b>4,290</b>                 |
| <i>Buini Tusu</i>         | 96.5%        | 1.2%        | 2.1%        | 0.0%        | 0.1%        | 0.0%        | <b>2,965</b>                 |
| <i>Central Ranongga</i>   | 99.7%        | 0.1%        | 0.2%        | 0.0%        | 0.0%        | 0.0%        | <b>2,514</b>                 |
| <i>Dovele</i>             | 99.8%        | 0.0%        | 0.0%        | 0.2%        | 0.0%        | 0.0%        | <b>1,967</b>                 |
| <i>Gizo</i>               | 81.8%        | 0.7%        | 16.3%       | 0.5%        | 0.6%        | 0.1%        | <b>7,177</b>                 |
| <i>Iringgila</i>          | 99.3%        | 0.2%        | 0.5%        | 0.0%        | 0.0%        | 0.0%        | <b>2,833</b>                 |
| <i>Kolombaghea</i>        | 99.6%        | 0.0%        | 0.4%        | 0.0%        | 0.0%        | 0.0%        | <b>1,783</b>                 |
| <i>Kusaghe</i>            | 98.9%        | 0.0%        | 0.0%        | 0.0%        | 0.0%        | 1.1%        | <b>2,238</b>                 |
| <i>Munda</i>              | 97.7%        | 0.2%        | 1.7%        | 0.0%        | 0.1%        | 0.3%        | <b>2,620</b>                 |
| <i>Nggatokae</i>          | 99.0%        | 0.6%        | 0.1%        | 0.1%        | 0.3%        | 0.0%        | <b>3,050</b>                 |
| <i>Nono</i>               | 97.6%        | 0.2%        | 1.6%        | 0.1%        | 0.2%        | 0.3%        | <b>3,610</b>                 |
| <i>Noro</i>               | 96.7%        | 1.1%        | 1.5%        | 0.1%        | 0.3%        | 0.2%        | <b>3,365</b>                 |
| <i>North Kolombangara</i> | 99.2%        | 0.5%        | 0.2%        | 0.1%        | 0.0%        | 0.0%        | <b>2,278</b>                 |
| <i>North Ranongga</i>     | 99.4%        | 0.0%        | 0.2%        | 0.2%        | 0.2%        | 0.0%        | <b>541</b>                   |
| <i>North Rendova</i>      | 99.0%        | 0.8%        | 0.0%        | 0.0%        | 0.2%        | 0.0%        | <b>1,724</b>                 |
| <i>North Vangunu</i>      | 98.6%        | 1.0%        | 0.3%        | 0.1%        | 0.0%        | 0.1%        | <b>2,661</b>                 |
| <i>Nusa Roviana</i>       | 98.3%        | 0.7%        | 0.6%        | 0.4%        | 0.1%        | 0.0%        | <b>1,995</b>                 |
| <i>Roviana Lagoon</i>     | 99.2%        | 0.3%        | 0.3%        | 0.0%        | 0.0%        | 0.2%        | <b>4,675</b>                 |
| <i>Simbo</i>              | 99.8%        | 0.2%        | 0.0%        | 0.0%        | 0.0%        | 0.0%        | <b>1,782</b>                 |
| <i>South Kolombangara</i> | 96.6%        | 0.1%        | 1.7%        | 0.8%        | 0.2%        | 0.7%        | <b>4,023</b>                 |
| <i>South Ranongga</i>     | 99.6%        | 0.1%        | 0.1%        | 0.0%        | 0.0%        | 0.3%        | <b>3,305</b>                 |
| <i>South Rendova</i>      | 99.2%        | 0.1%        | 0.1%        | 0.1%        | 0.0%        | 0.4%        | <b>2,477</b>                 |
| <i>Vonavona</i>           | 83.7%        | 0.7%        | 15.2%       | 0.0%        | 0.1%        | 0.3%        | <b>5,515</b>                 |
| <i>Vonunu</i>             | 98.8%        | 0.4%        | 0.3%        | 0.0%        | 0.0%        | 0.4%        | <b>3,558</b>                 |
| <b>Total</b>              | <b>95.8%</b> | <b>0.4%</b> | <b>3.3%</b> | <b>0.1%</b> | <b>0.1%</b> | <b>0.2%</b> | <b>72,946</b>                |



Map 14: Known Cultural Sites in Western Province<sup>(27)</sup>



### Cultural Ceremonies and Festivals

Solomon Islands has limited public ceremonies, days of significance, and festivals. One of them is Independence Day, which is celebrated on July 7 and marks Solomon Islands' independence from the British Government. Celebrations are mainly family gatherings and sports, activities that may not be as open to tourists as other festivities. A parade is held in Honiara, in which the Solomon Islands police band performs, and tourists are welcome to attend (Solomon Islands Culture 2020).

Christian holidays (Christmas, Easter) are also celebrated in Solomon Islands, as the large majority of the population follow Christian faiths. These holidays give Christian travelers the chance to celebrate common beliefs and practices with people of Solomon Islands. On Easter, Honiara

usually hosts a fun run, and for tourists, going to Mass is a wonderful way to get involved with the people. On Christmas, most locals will move back to their hometowns outside of Honiara or visit relatives in rural areas. Tourists are welcome to join events or gatherings that are usually held by churches and community halls (Solomon Islands Culture 2020).

The Lagoon Festival is held in October and is a cultural festival of the people of Roviana Lagoon. People from throughout Roviana Lagoon gather in Munda, Western Province, for this event of festivity and celebration. The festival includes traditional canoe races and a host of other competitions such as an open water swim (Tourism Solomons 2020).

27 The mapped *tabu* sites are based on empirical observations during site visits, from stakeholder consultations, and the WWF Ridge to Reef Study (WWF-Pacific Solomon Islands 2018) conducted in the Gizo and Kolombangara areas only. No other formal mapping of *tabu* sites or cultural sites has been uncovered to date. It is highly likely that more *tabu*, cultural and religious sites exist in the Western Province.

The Western Province Tourism and Culture Policy 2019/2021 has identified the following cultural events:

- Carver's Festival (Marovo region, third quarter of the year)
- Tomoko Festival (war-canoe building program in December)
- Ijo Maringi Festival (October)
- Simbo Organic Festival (December)
- Dughore Mini-Cultural and Organic Festival (November)
- Lagoon Festival (October)
- Lagoon Splash (July)
- Stunned Mullet Fishing Competition (late October-November)
- Cooking competition (December)

#### **3.10.4 GILBERTESE**

Undertaken between 1954 and 1971, the Gilbertese Resettlement Scheme resettled 2,753 Gilbertese to Solomon Islands. The scheme, led by the British Western Pacific High Commission that administered both Solomon Islands and Gilbert Island, aimed to address famines caused by low rainfall and poor soil on Hull and Gardner islands. The majority of Gilbertese were relocated to Ghizo Island in Western Province because Gizo and several surrounding islands had been registered as crown land by the British colonial authorities, as the land was unoccupied due to an intense period of tribal warfare in the 19th century. The crown land could therefore be allocated to the Gilbertese without causing conflict or disagreement (Tabe 2011). Yet, there has been animosity between Solomon Island tribes and the Gilbertese over historic claims to ownership or rights to access some sites in some areas of Solomon Islands (Tabe 2011) and during stakeholder consultations in Western Province. The Gilbertese have been occupying registered land scattered throughout Western Province and the study corridor, but most live around Ghizo and Kohinggo islands based on primary data for the identified sites. When comparing the ethnicity of enumeration areas against land tenure, the Gilbertese (Micronesian) communities might be more affected by tourism development, which would likely be targeting registered land as it provides clearer landownership. More Gilbertese occupy registered land than Melanesians (Solomon Islands natives).

## **Religion**

Site visits and stakeholder consultations highlighted that most villages have religious buildings, such as churches. Data on areas or sites identified as having church presence is not publicly available.

The 2009 Census (SIG: National Statistics Office 2009) focusing on Western Province showed that more than 95 percent of its population follows a Christian faith. United Church had the highest number of followers, accounting for 39 percent of the population, while the two other largest religious denominations were Seventh Day Adventists (28 percent) and Christian Fellowship Church (15 percent). The remaining 18 percent was split between Roman Catholic (7 percent), South Sea Evangelical Church (3 percent), Church of Melanesia (3 percent), and all other denominations including atheists/non-religious (5 percent).

The three largest religious denominations in Western Province are outlined below:

### **United Church**

The United Church was formed in 1968 as the Methodist Church united in Papua New Guinea and Solomon Islands. In 1996, the existence of one church covering two independent countries ceased and the United Church in Solomon Islands became an autonomous church of its own. Western Province remains the focal point for the United Church, which runs schools, a hospital, health clinics, education facilities, youth camps, and educational programs (World Council of Churches 2020). Its followers consider Sunday to be the day of rest.

### **Seventh Day Adventist**

Seventh Day Adventist Church was first brought to Solomon Islands in 1914 and has since increased its following through schools, training institutions, and medical services. Seventh Day Adventist has now been active in Western Province for more than a century.

Its church members observe the Sabbath and do not work or trade on Saturdays. They consider it important for women and girls to wear conservative dresses, skirts, and modest shoulder-covering garments at all times. They also avoid eating and selling pork and water-purification species, such as crabs and clams.

## **Christian Fellowship of Christ**

The Christian Fellowship of Christ is based mainly on the northern coast of New Georgia and has its headquarters at "Paradise," an area of restricted access and devoid of any public services. No tourism sites are located in this area. Followers of this group live in and around Munda and Noro of Western Province. There are two sub-groups within the Christian Fellowship of Christ Church with reported cases of conflicts among them.

### **3.10.5 CULTURAL CONFLICTS**

While the population of Solomon Islands is largely composed of one ethnicity, there are various cultural diversities, including religion, tribal cultural practices, languages and dialects, historic immigration, and matrilineal and patrilineal societies.

For example, ethnic tensions on Guadalcanal rapidly escalated between 1998 and 2003. Many Guadalcanal people resented the influence of settlers from other islands and their occupation of undeveloped land in and around Honiara. The settlers, mostly from nearby Malaita, were drawn to Honiara and its environs because of comparatively greater economic opportunities. At the root of the tensions, particularly in Guadalcanal and Honiara, was illegal squatting, the use of customary land, the commercialization of land, rapid population growth, and weak management of urban growth. Violent clashes involving rival militant groups erupted, destabilizing Solomon Islands and undermining national institutions for more than four years. The militant groups were largely made up of unemployed youth, as a result of rapid urbanization, available for mobilization into competing militias (Tabe 2011).

In 2003, the Regional Assistance Mission to Solomon Islands was endorsed as a long-term commitment aimed at creating the conditions necessary for a return to stability, peace, and a growing economy. The mission was a partnership between Solomon Islands, Australia, and 15 contributing countries in the Pacific. Its military component was withdrawn in 2013 and development assistance was transferred to other donor programs, mainly Australia's, before the mission ended on June 30, 2017 (Australian Department of Foreign Affairs and Trade 2019).

From the stakeholder consultations, it was found that prospering businesses were often causing social-cohesion problems because of disparities in access to opportunities.

## **3.11 Infrastructure**

This section discusses the availability and access to infrastructure such as transport, power, water, waste disposal, and telecommunications (see Map 15). Proposed infrastructure is also discussed and depicted in Map 16. Health infrastructure is described in section 3.9.3.

### **3.11.1 TRANSPORTATION SERVICES**

#### **Land**

The road network in Solomon Islands is estimated to be 1,694 km (excluding logging tracks), of which only 127 km is sealed. One-fifth of the country's population has access to road networks, mainly in the provinces of Guadalcanal and Malaita. West Province only has about 150 km of road network, less than 20 km of which is sealed (SIG: Ministry of Development Planning and Aid Coordination 2013). This largely comprises the road from Noro to Munda and urban streets around Gizo and Munda. The majority of crossings over water courses are log bridges.

#### **Sea**

The country has two international ports: Point Cruz in Honiara and Noro in Western Province. About 90 percent of international freight management takes place in Honiara (SIG: Ministry of Development Planning and Aid Coordination 2013).

There are 120 wharves and jetties throughout Solomon Islands and 26 of them are in Western Province (Map 15 shows those that are within the study corridor). Ferries dock at Bunikalo, Gasini, Chea, Seghe, Ugele, Noro, Ringgi, and Gizo. Two ferries travel weekly from Honiara to Gizo. Although there are passenger ferries servicing these ports, they are rarely used by tourists because of the long trip duration (15 hours to Seghe, 19 hours to Munda, and 23 hours to Gizo) and a lack of facilities or services that meet international tourism standards (IFC 2018).

Most of these wharves and jetties suffer from a lack of maintenance and some are no longer in working condition. Many wharves are not connected to any road networks and small ray boats and dugout canoes are the main form of transport from these jetties to beaches and more remote villages. These forms of transport are the most prevalent manner in which Solomon Islanders commute locally and between islands. Stakeholder consultations highlighted the prevalence of accidents and fatalities from travelling in rough weather, and many boats do not carry basic safety equipment such as lifejackets or paddles.

There are two slipways in the country, both in the Central Province. A private slipway and marina is located in Liapari in Western Province.

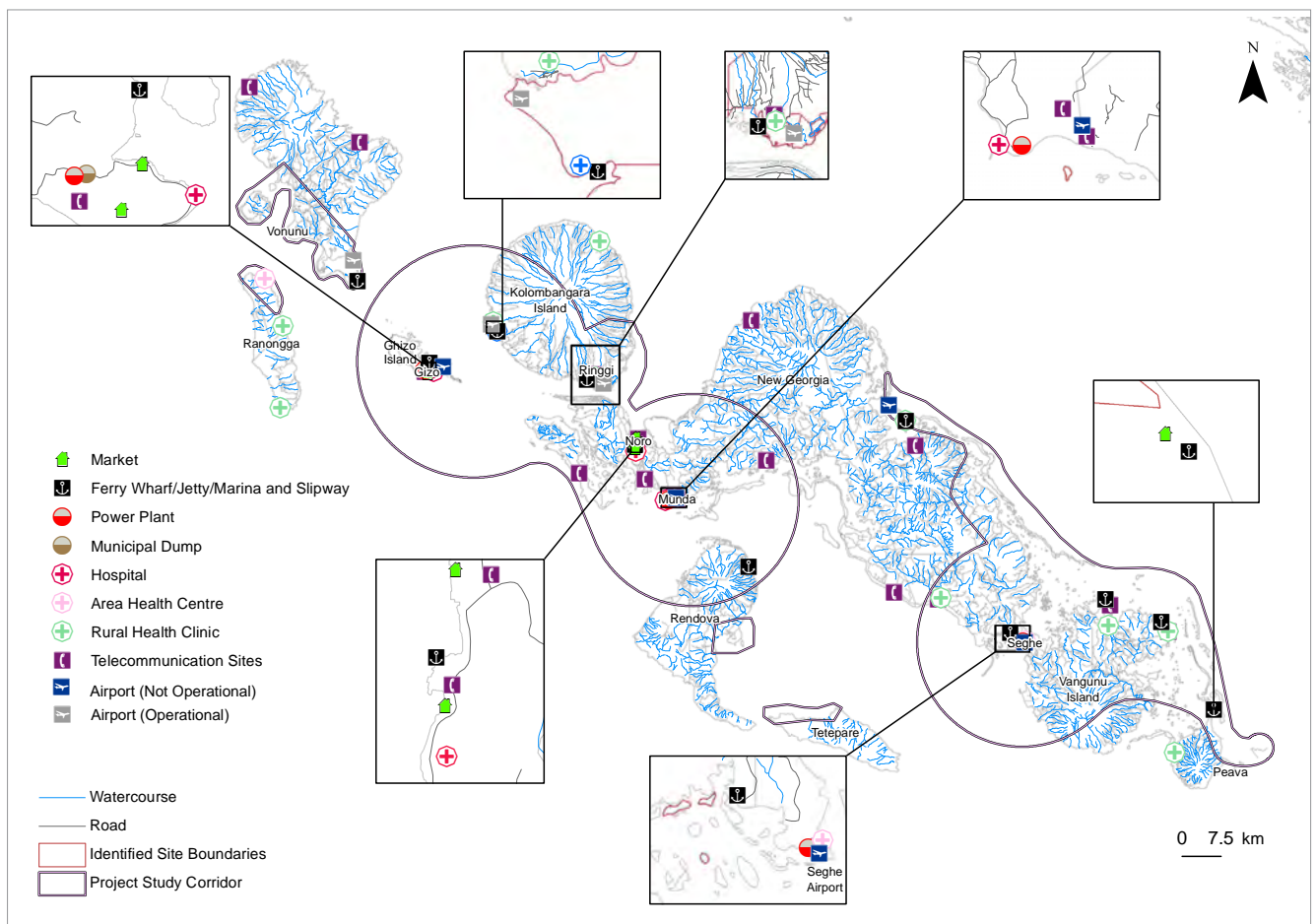
There are few cruising yachts, cruise ships, and liveaboards<sup>(28)</sup> in Western Province providing limited services. Locations for anchorages of larger cruise ships and sailing yachts in the province are also limited.

Access to the majority of identified sites is via ray boats or banana boats, beaching the boats on a patch of beach or coast not dominated by mangroves. Some sites have jetties in various states of repair, and they are used informally with the permission of the site occupiers. These jetties are made out of concrete, wood, and sometimes coral from the surrounding reefs.

## Air

Solomon Islands has two international airports: one in Honiara and one in Munda (as of January 2020). There are 38 domestic airports/airfields in the country, but only seven of them are owned by the SIG. Within the corridor, domestic air services are available at Gizo, Seghe, and Ramata (private) as indicated on Map 15. Some unused WWII airstrips are located in the northern and southern parts of the corridor, including Vonunu, Kukundu, Villa Point on Kolombangara, and Nggatokae in the southeastern point of the corridor (closed in 2008 due to land disputes) (IFC 2018). More airstrips are reported at Ranongga and Vella Lavella, but they are understood to be outside the study corridor. There is a lack of comprehensive investment planning for the air transport sector as a whole (SIG: Ministry of Development Planning and Aid Coordination 2013).

**Map 15: Existing Infrastructure in Western Province**

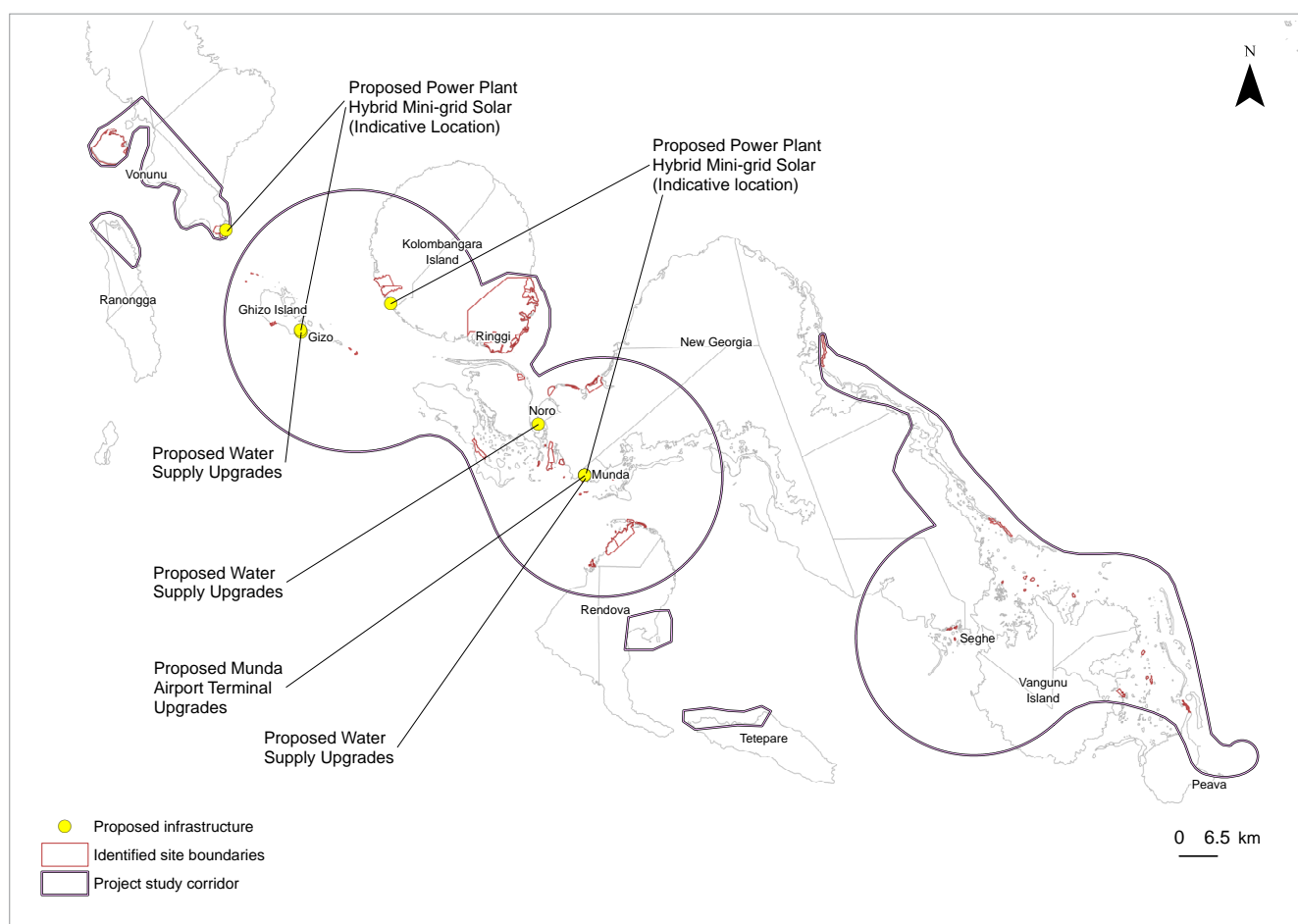


28 A liveaboard allows tourists to live on a boat or yacht for one to two weeks and takes them to different tourist sites, allowing them to snorkel, dive, or surf in the areas.

Stakeholder consultations revealed that the Seventh Day Adventist Church used to run an airline, Western Pacific Air Services, at Kukundu in the early 1990s to provincial areas including Kolombangara Island, providing a useful service to transport people rurally. It was later shut down because of competition with the national carrier, Solomon Airlines.

The World Bank is supporting the SIG with the development of a new international terminal at Munda. Construction is scheduled to commence in 2021. Stakeholder consultations also identified privately funded plans to reopen disused airstrips or develop more, such as near Liapari, within the corridor. These are not indicated on Map 16 as their status of planning has not been formally confirmed.

**Map 16: Proposed Infrastructure in Western Province<sup>(29)</sup>**

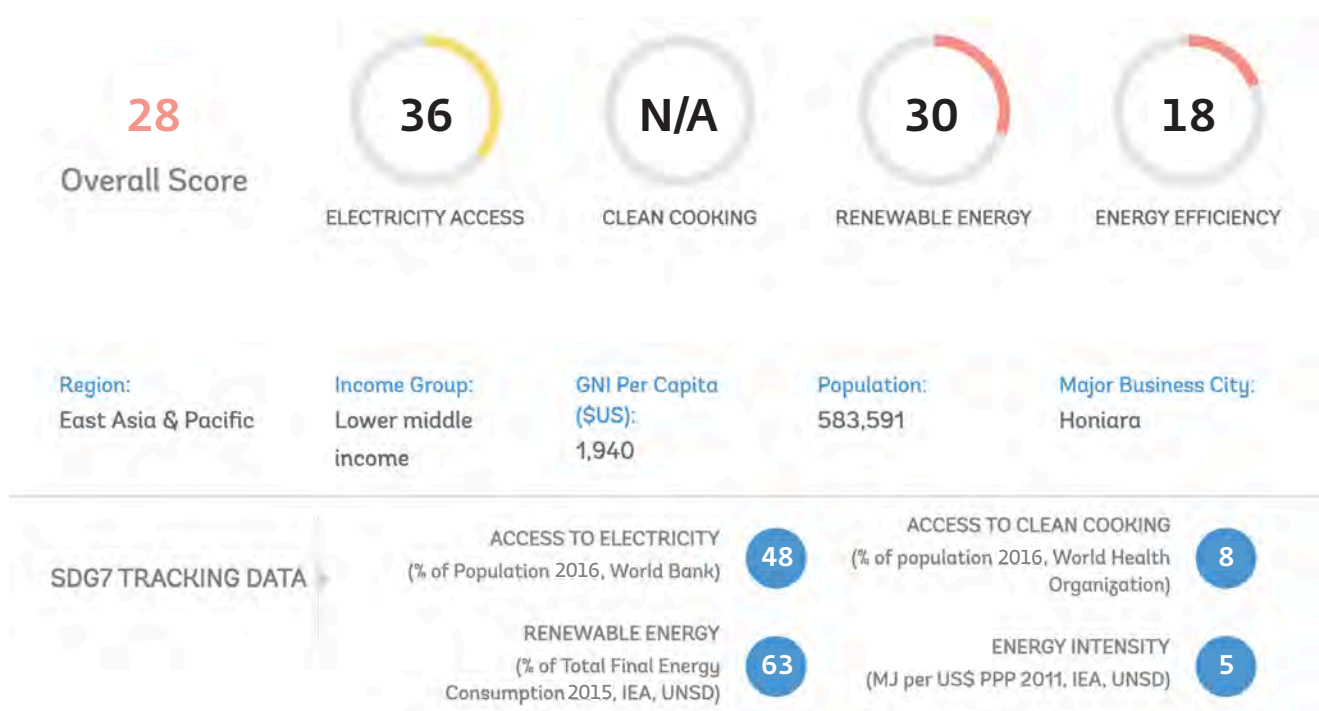


29 The proposed infrastructure map does not include private plans for the reopening of some rural airstrips as these have not been confirmed formally.

### 3.11.2 ENERGY INFRASTRUCTURE

According to the World Bank's data, 48 percent of Solomon Islands' population has access to electricity and 63 percent of its total energy consumption is from renewable energy. Solomon Islands has an overall score of 28 based on the World Bank's Regulatory Indicators for Sustainable Energy, as presented in Figure 4.

Figure 4: Country Energy Scores for Solomon Islands (World Bank 2017)



In 2009, only 12 percent of Western Province households were connected to the electricity grid and 76 percent of all households use kerosene lamps as the main energy source for lighting (SIG: National Statistics Office 2009).<sup>(30)</sup>

Solomon Islands Electricity Authority (trading as Solomon Power) has been strengthening and expanding its electrical and renewable-energy systems. In 2017, its investment program included commissioning and installing two outstations—solar-diesel hybrid systems—in Noro and Seghe and developing more than 40 proposed hybrid power generation and mini-grid distribution systems over the next 10 years. The program, funded by various organizations, helps low-income households' access existing and proposed electricity grids (Solomon Islands Electricity Authority 2017).

The authority is undertaking the Solar Power Development Project funded by the Asian Development Bank (2019). It plans to develop and operate grid-connected solar-diesel-battery power stations at five provincial centers in Solomon Islands, including Munda in Western Province (Solomon Power 2019).

These efforts will largely replace diesel power generation with sustainable alternatives to lower diesel consumption from 24 million liters per year. Solomon Power has 18 renewable-energy proposals, including the Solar Power Development Project, mini-hybrid solar-diesel-battery power stations, the World Bank-funded, grid-connected solar farms, and the Tina River Hydropower Project (Solomon Islands Electricity Authority 2019).

30 More up-to-date data at the provincial level is not available.

Solomon Islands has some of the highest costs for access to electricity in the world (up to 0.82 U.S. cents per kilowatt) (Matos 2019). As of June 30, 2019, Solomon Power had 19,561 customers. The company aims to increase its customer number to 30,000 by 2021 (Solomon Islands Electricity Authority 2019). Grid electricity via diesel generators is only available in Gizo, Munda, and Noro. Further plans for mini hybrids (solar, battery storage, and diesel back-up) are planned for Munda and Vonunu in 2020.

The remainder of Western Province operates on private generators and solar or no power at all. Grid electricity is very expensive and unaffordable for most communities (SIG: Ministry of Development Planning and Aid Coordination 2013) because of the high diesel cost. Upgrades and installations of new lines are also limited with high set-up costs and little uptake because of a lack of available land for infrastructure.

The majority of tourism accommodation providers operate self-contained electricity supplies as no grid power is available on island sites and remote areas of the province.

### **Fuel**

Fuel is an important resource in Western Province because of the reliance on motorboats as the primary mode of transport. It is also used in power generators. Fuel costs in the Solomon Islands are amongst the highest in the world, which adds to operational costs for tourism operators.

Mobil operates a fuel terminal in Gizo, which serves as the main depot for Western Province, providing lubricants, kerosene, diesel, aviation fuel, and petrol, all of which are supplied via coastal shipping from Honiara.

Clipper Oil Marine Fuels operates another fuel depot in association with Sol Tuna in Noro and also supplies a full range of fuels.

There are also small, privately owned and operated fuel depots in Gizo, Munda, and Seghe, which are supplied by merchant boats traveling between the archipelagos. Field observations showed that fuel outlets in Western Province are underdeveloped and poorly managed for environmental impacts and spills.

### **3.11.3 WATER INFRASTRUCTURE**

Across Western Province, 30 percent of dwellings were connected to a communal standpipe, 33 percent used a household tank, and another 18 percent a communal tank; about 14 percent obtained their drinking water from a river or stream (SIG: National Statistics Office 2009) and only 7 percent of the country's households use an appropriate method of water treatment prior to drinking (SIG: Solomon Islands National Statistics Office 2015a). All water in Western Province requires treatment prior to drinking.

Access to improved water supplies in Western Province is limited. Some standpipes have been installed by the provincial government and Members of Parliament to provide water from upper catchments to neighboring villages; however, the majority of Western Province relies on wells and rainwater tanks for water. Wells are typically not protected and there is little guidance from authorities to ensure they are not adversely affected by nearby septic systems and other potential groundwater incursion. Communities have been gifted various communal rainwater tanks by local Members of Parliament and charitable organizations. Most do not invest in this infrastructure independently. Some villages on larger islands rely on river water for cleaning and drinking, but it typically becomes unusable during heavy rain periods partly because of upstream logging and clearance activities.

About 44 percent of households did not have access to a toilet facility, meaning neither a flush toilet, a water-sealed toilet, or a pit latrine (SIG: National Statistics Office 2009). Stakeholder consultations highlighted that septic tanks are not managed or monitored by any particular body, therefore putting groundwater sources at risk of infiltration.

The majority of tourism operators manage their water needs on site and do not rely on communal water supplies.

Community water supplies, particularly on dry islands such as Gizo, are already severely affected and communities sometimes illegally connect to centralized water sources by cutting into plastic pipes, rendering them useless downstream or requiring major, costly repairs. Limited water supply from centralized water sources will continue to affect community health.

### 3.11.4 WASTE DISPOSAL

Government waste collection was used by 3 percent of households to dispose of their rubbish. The backyard was used by 58 percent of all households as their main means for waste disposal, followed by 24 percent using disposal at sea (SIG: National Statistics Office 2009).

Some villages still bury trash, while others burn them. Stakeholder consultations highlighted that proper disposal of waste was a low priority for many villages and waste was prevalent in even the remotest areas. Wells and rivers are not required to be monitored by external parties (such as the provincial government or local councils) for water safety, so there is no groundwater management to ensure no contamination from nearby uses, potentially imposing a risk on the health of communities and tourists.

Septic tanks are not monitored on private sites, so overflowing of the tanks leading to contamination of nearby water sources is probable. Wastewater management is inadequate to treat or dispose of full septic tanks. The only vacuum truck in Munda is owned by a private organization and is engaged by landowners to drain full septic tanks. It is unclear where the waste is disposed of as there is no wastewater-treatment facility in the vicinity. Septic tanks are used in parts of Seghe and outlying areas, but no facilities are in place to manage these tanks. Field-visit observations noted poorly executed septic systems: some are installed in the intertidal zone and would get inundated by tidal movements, rendering the entire system ineffective and causing sewage to flow directly into the marine environment.

Solid waste management is inadequate to manage waste in town centers, let alone in outer areas of the province. Many communities dispose of waste in pits or in the intertidal zone; some burn rubbish where possible and bury the rest. The province has extremely limited infrastructure and capabilities to deal with these issues.

### 3.11.5 TELECOMMUNICATIONS

Solomon Islands has two telecommunications networks providing land lines, mobile networks, and 2G, 3G, and 4G data access. However, various areas of Western Province do not have coverage for data and/or voice calls. There is no 4G data access in Western Province and 3G data access has only recently been implemented in some larger towns such as Munda (Speedcast International Limited 2018). Due to the challenging geography and sheer scale of the country's topography, mobile network coverage is poor and varies dramatically from island to island. In Map 15, there is a representation of Solomon Islands Telekom cell towers, which indicates the limited number of towers servicing Western Province (Telekom Solomon Islands 2020). The overwhelming majority of the towers shown have a service range of about 35 km and only support voice calls and texts, meaning most Solomon Islanders do not have cell data coverage. This also means geographical coverage of cell-phone service to support touristic activities across the region is limited.

Stakeholder consultations highlighted that a roll-out of more telecommunications devices is not profitable for providers partly because of the low density of some areas of the province and the upfront costs of setting up sites on privately owned or customary land (Pers Coms: Loyley Ngirah, Feb 2020). This leads to risks with emergency management and response. Phone plans are comparable to other island nations; however, the uptake in outer areas of Western Province is low as costs are still prohibitive for poorer communities.