

Regional Diagnostic Study on
the Application of Building Codes
in the Pacific

Solomon Islands Case Study
Consultant's Report





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Abbreviations

ADB	Asian Development Bank
HBMSI	Home Building Manual Solomon Islands
MID	Ministry of Infrastructure Development
NBCB	National Building Code Bill
NBCSI	National Building Code Solomon Islands
PRIF	Pacific Region Infrastructure Facility
SIBEPA	Solomon Islands Built Environment Professionals Association
SINU	Solomon Islands National University





1. Introduction

The Regional Diagnostic Study on the Application of Building Codes in the Pacific was carried out in 2019. It investigated the capacity of Pacific countries to apply their building codes or building construction specifications and standards, and to provide guidance in future assistance initiatives related to building code updates.


One task of the study was to assess in detail the experience in Fiji, Vanuatu, and Solomon Islands – three countries with experience in post disaster reconstruction – using site interviews and a participatory workshop with infrastructure ministries and local construction consultants and contractors.

The interviews and workshop aimed to:

- identify the main constraints that prevent the application of the building codes requirements;
- explore actions and activities that will improve application of the codes and better align or integrate the codes with emergency guidelines or other climate adaptation initiatives;
- identify gaps in the capacity of construction practitioners and government agencies to apply and promote the countries' building codes;
- recommend building code updates and strengthening of administration, management, and compliance procedures appropriate to country capacities;
- propose mechanisms that will better align building code application procedures with other initiatives to improve resilience, including integration with emergency guidelines or other climate adaptation initiatives; and
- prioritize areas of support needed by Pacific countries to guide assistance programs supported by development partners.

The recommendations of the study informed the decision of the Australian Government in 2020 to assist the Solomon Islands government legislate building control measures and modernize the 1990 National Building Code as an interim Code to support the building control legislation. This assistance was provided under the Solomon Islands Infrastructure Management Bill Assistance (SIIMBA) project and included four significant outputs:

1. Provide logistical, technical, legal and administrative support to Solomon Island government, specifically the Ministry of Infrastructure Development (MID), for consultations with various ministries, provincial executives and agencies to consolidate the regulatory framework to be prescribed under the proposed draft National Building Code Bill (NBCB) and secondary legislation made under it.
2. Vet and confirm NBCB matters proposed to be presented in the Bill, codes, specifications and standards and regulations made under the Bill, including nominated responsible persons and delegated authorities. Consult with the MID and Attorney General's Chambers (AGC) for consensus. Assist with getting approvals for policy changes and drafting legislation, as necessary.
3. Finalize and complete drafting instructions for the NBCB as well as for applicable secondary legislation as necessary on behalf of the MID to submit to the AGC. Provide an updated and modernized National Building Code for Solomon Islands (NBCSI) version 2 – 2021 as an interim code required for the enactment of the NBCB and Home Builders Manual of Solomon Islands (HBMSI) version 2 -2021 – both assessed, approved and endorsed by the MID as the



industry reference document for the nation's construction industry in the short to medium term (2022-2023) – effective as at the date specified by the enacted NBCB.

4. Provide 'at-call', ongoing, technical and legal inputs, administration, coordination, preparations and assistance to the Solomon Islands Government specifically to the Undersecretary (Technical) MID prior to and up to the legislation and enactment of the NBCB and the interim National Building Code for Solomon Islands version 2.

As of August 2021, the update and review of the first drafts of both the NBC and HBM were completed and will be circulated for public comment in conjunction with a stakeholder consultation exercise in September 2021. It is expected that the NBCB will be enacted in November 2021 and the 2021 versions of the NBCSI and HBMSI will be part of the law. The NBCSI and HBMSI 2021 versions will be uploaded in the MID website by the end of 2021.

Due to COVID 19 restrictions, a full review of the NBCSI was not possible. Once COVID 19 restrictions are lifted in 2022, consideration will be given under the DFAT Solomon Islands Infrastructure Program for a more detailed review of the NBCSI with emphasis on:

- Fire safety, resistance, access, and egress
- Energy efficiency
- Climate change risk mitigation

The rest of this country report documents the in-country mission to Solomon Islands from 21–30 May 2019 undertaken by Rhys Gwilliam, the Senior Building Expert contracted by PRIF. Section 3 of the report outlines the consultation process and methodology.

Based on the key themes that emerged from the Solomon Islands consultation process, as documented in section 3.4 of the report, enabling and constraining factors are identified, actions and activities proposed, and an action plan of initiatives recommended. The report suggests areas of support that could be provided by PRIF development partners to enable the action plan.

2. Context

2.1 Building Regulations, Legislation, and Standards

Status of the National Building Code of Solomon Islands

The National Building Code was developed in the late 1980s under an Australian Aid program and published in 1990.

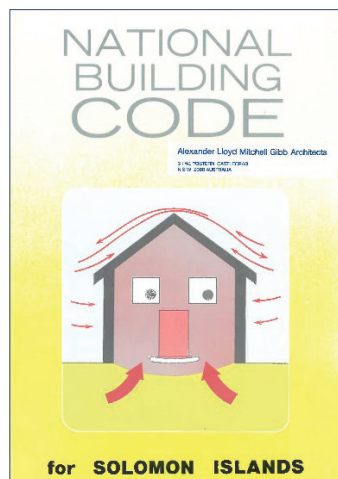
The code was reviewed in 2016 by a retired Building Inspector sponsored by the New Zealand Volunteer Service Abroad. Key conclusions included the following:

- The document is well written, researched and is still appropriate for 2016, with some minor improvements and the updating of the Australian and New Zealand standards.
- Once adopted in to law, the Solomon Islands Regulatory Authority responsible needs to obtain a complete and updated library of all of the Australian and New Zealand Standards referenced in the National Building Code.
- Enforcement of National Building Code compliance can only be achieved with a comprehensive inspection regime, set up and used on all projects.
- Building non-compliance needs to be supported by an operative system of legal fines and penalties set up within the judicial system.
- Exceptions need to be made for traditional buildings.

A copy of his report is attached as **Annex 1**.

The National Building Code has yet to be legislated.

Figure 2-1: Solomon Islands - National Building Code



Solomon Island building ordinances used in lieu of an unlegislated National Building Code

Building ordinances are in place for the Honiara City Council and the following provinces:

- Honiara City Council (Building By Laws 1960, consolidated 1996);

- Malaita Province (The Malaita Province Building Standards Ordinance 1995);
- Western Province (Western Province Building Standards Ordinance 1991, consolidated in 1999), and
- Choiseul Province (Choiseul Province Building Standard Ordinance 1998).

These are used in lieu of the Building Code to regulate building construction in these three provinces and the Honiara City Council.

There are no building ordinances or controls in the other six provinces.

These ordinances include standards for the various elements of a building, such as the foundations, floor, walls, and roof. They also include the application and permit process, enforcement provisions, forms for staged completion of a building and the application fees.

Honiara City Council has a team of three building inspectors supported by a contracted civil engineer. There are no building inspectors in the provinces, and the ordinances are managed by planners seconded from the Ministry of Lands Housing and Survey.

Construction related manuals related to the National Building Code

A HBMSI was developed in the late 1980s under an Australian Aid program as a companion document to the National Building Code. The Home Building Manual was published in conjunction with the National Building Code in 1990.

The Home Building Manual fully conforms to the structural requirements of the National Building Code. The Home Building Manual does not cover traditional construction.

There have been no updates to the Home Building Manual since publication in 1990.

Building control legislation

An Infrastructure Management Bill was drafted in 2014 under the direction of the Ministry of Infrastructure Development (MID). This bill includes new provisions to recognise the National Building Code of Solomon Islands as the building standard for Solomon Islands.

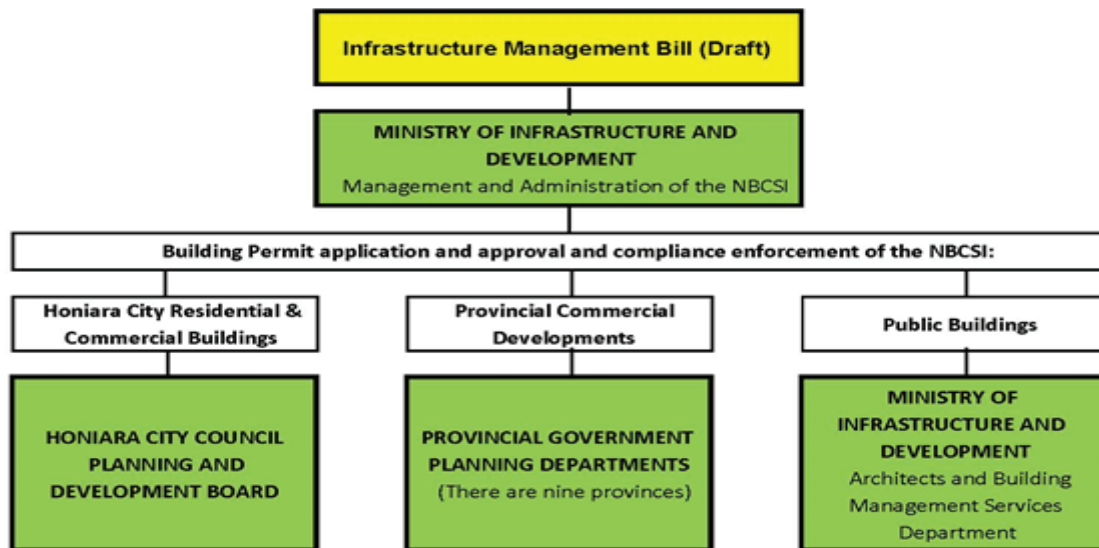
The Infrastructure Management Bill:

- Covers both transport and the National Building Code of the Solomon Islands (National Building Code).
- Once the new Bill is enacted the Honiara City Council and provincial building ordinances will need to align with the National Building Code.
- The first Draft Infrastructure Management Bill was prepared after an extensive consultation process.
- For various reasons the draft Bill has not been accepted by the Attorney General's office in its original format.
- Currently the Attorney General's office is waiting for the outcome of the Honiara City Council and provincial elections so that there can be a consultation with the Honiara City Council and provinces before the Bill is legislated.
- The intension is to have the Bill legislated by the end of the year.
- The National Building Code cannot be enforced until the Bill is enacted.
- Currently the Honiara City Council appoints private consultants to vet building approvals for commercial buildings. Public buildings are vetted by MID.

Notes on drafting instructions for building-related provisions of a Infrastructure Management Bill prepared by the Acting Commissioner of Lands (Alan McNeil) are attached as **Annex 2**.

The links between the ministries and the agencies responsible for administration, management, and compliance for the proposed bill are illustrated below:

Figure 2-2: Ministries and Agencies Responsible for Administration, Management and Compliance



NBCSI - National Building Code of Solomon Islands

Source: Author provided.

Buildings to which the legislation applies

The current building ordinances and proposed bill do not specify which buildings the legislation applies to. Under the Honiara City Council the Planning and Development Board require that a building permit is issued for all permanent structures.

Building consultants

There are 10 locally established architectural/engineering firms with university trained staff who carry out the bulk of the design and construction supervision work for government. A number of other smaller technical firms provide building design and drafting services. The private sector use these firms as well as other international consultants to provide design and construction supervision services. Most of the locally established professional firms are familiar with the National Building Code and Home Building Manual and some use these documents as design guidelines. The international consultants generally use Australian or New Zealand codes and standards.

A Solomon Islands Built Environment Professionals Association (SIBEPA) was established some years ago and was to receive support under the RAMSI Solomon Islands Infrastructure Partnership in 2012–2015. For various reasons this support did not eventuate and as a consequence SIBEPA, while still in existence, has struggled to provide a high level of representation to the construction practitioners community.



Building contractors

A number of well-established local building companies have the capacity to finance their own construction works. Two of these firms, Fletcher Construction and CCECC, are subsidiaries of large international construction groups. There are numerous smaller building companies with limited financial capacity. Most builders are unfamiliar with the National Building Code and Home Building Manual.

Insurers and Financial Lenders

There are two main insurers (QBE and Tower) and three Commercial banks (BSP, ANZ and Bred). Insurers require that commercial buildings are certified by qualified structural engineers in accordance with Australian and/or New Zealand standards. Valuations by professional valuers are required for residential buildings. Compliance with the National Building Code is not a requirement. QBE advised that approximately 60% of commercial buildings are insured and 40% of middle to high covenant residential buildings.

Building standards

The National Building Code references Australian and New Zealand building standards. Where the standards from either Australia or New Zealand do not cover any specific areas, the relevant standards issued by the British Standards Institution or the American Society for Testing and Materials can be used. Some of the Australia/New Zealand standards referenced under the National Building Code have been withdrawn or superseded.

There is no builder's licencing process.

The MID have a materials testing lab which tests soils, concrete, blockwork, etc.

There is no legislation on **national trade measurement and standards** or agency responsible for monitoring standards.

2.2 Institutionalization

Technical and vocational institutes where construction technology is taught include:

- Solomon Islands National University (SINU)
- Solomon Islands Rural Training Centres

The curriculum at these institutes does not include the introduction and application of the National Building Code or building regulatory issues generally.

2.3 Training, Capacity Building, and Promotion

The Solomon Islands government does not have courses to train building inspectors or programs to build the capacity of the regulatory bodies to administer and monitor compliance of the National Building Code. Strategies to promote the code to the public, builders, professional users, and technical and vocational institutions have not been developed.

While most of the architectural and engineering consulting firms are aware of both the National Building Code and Home Building Manual only a few use them as a basis for their design work. Hard copies of the National Building Code are not readily available.



3. Solomon Islands Consultation Process and Methodology

3.1 Bodies Consulted

The key bodies responsible for administering and monitoring compliance of building regulations are:

- Ministry of Infrastructure and Development
- Honiara Planning and Development Board
- Honiara City Council
- Provincial government planning departments

Other government and quasi-government organizations who have an interest in the application of the building regulations include:

- Ministry of Health
- Ministry of Education and Training
- Ministry of Justice
- Ministry of Environment, Climate Change, Disaster Management and Meteorology (Environment and Conservation Division and Disaster Management Office)
- Solomon Islands Fire Service
- Solomons Islands Electricity Authority

All of these government organizations were contacted about the study. Most sent representatives to the workshop. One-on-one interviews were key government offices at MID and Honiara City Council.

There are 10 locally established provisional architectural/engineering consultants and a number of well-established local building companies based in Honiara. All provisional architectural/engineering firms were notified of the study and a selection of local builders. All consultants and four of the builders and suppliers had representatives attend the workshop. One-on-one interviews were held with three of the largest consulting firms and Solomon Housing (formerly the Solomon island Housing Corporation).

The two main insurance companies operating in Solomon Islands were contacted in relation to engineering requirements on buildings they are funding or insuring. One-on-one interviews were conducted with the managers of these insurance companies (QBE and Tower).

Asian Development Bank, Australian Department of Foreign and Trade, New Zealand Ministry of Foreign Affairs and Trade, Japan International Cooperation Agency, United States Agency for International Development and the World Bank are currently funding activities in Solomon Islands. All were invited to send representatives as observers to the workshop. Representatives from ADB and the United States Agency for International Development were present at the workshop opening.

3.2 One-on-One Site Interviews

One-on-one site interviews were held with the following people:

Government sector/enterprises

- Jimmy Nuake—MID Undersecretary Technical
- Japhette Tuhanuku—Chief Planner Honiara City Council Physical Planning Team
- Geoffrey Samuel—Solomon Housing Ltd (formerly Solomon Islands Housing Corporation)
- Steve Urariua—Solomon Housing Ltd (formerly Solomon Islands Housing Corporation)
- Alan McNeil—Director of Lands
- Paul Hoiasi—MID Architect

Building consultants

- Lemuel Siosi—Principal Engineer, LBS Engineering
- Daniel Tucker—Country Manager Kramer Ausenco
- Antoinette Wickham—GW Associates Group Pty Ltd Project & Construction Management Services
- Flori Gatu—GW Associates Group Pty Ltd Project & Construction Management Services
- Joe Sika Manuopangai—Tongs Builders Warehouse

Aid donors

- Habiba Gitay—World Bank
- Dalcy Ilala—ADB Senior Country Coordination Officer

Insurers

- Mypana Isaac—Branch Manager QBE SI
- Diana Tasion—Country Manager, Tower Insurance

The key government stakeholder representative is Mr. Jimmy Nuake, the MID Under Secretary Technical, Mr. Nuake is responsible for managing the National Building Code legislation enactment process. Meetings were held with Mr. Nuake before the workshop (he was unable to attend due to other commitments) and a debriefing was held after the workshop. Mr. Nuake was very supportive of the workshop outcomes and requested that PRIF members support the placing of a national coordinator within the MID office to assist with implementing and promoting the updated National Building Code. He also asked if law drafting assistance could be provided by PRIF members to help finalize the draft Infrastructure Management Bill so that it could be enacted by the end of 2019.

3.3 Participatory Workshop

Participatory workshops are designed to bring a range of people together to seek their opinions, extract knowledge, and solve problems in a collaborative and creative environment. This process can be an invaluable tool to reaching a consensus on identifying challenges and issues, agreeing solutions, and formulating a road map of interventions that are practical and achievable.

The purpose of the Solomon Islands participatory workshop was to seek opinions and recommendations from construction practitioners and government regulators on how Solomon Islands' National Building Code and its legislation, administration, and compliance enforcement procedures can be improved.

The one day participatory workshop was held at the King Solomon Hotel on 28 May 2019. The list of participants is attached as **Annex 3**. Participants breakdown as follows:

- 33 construction practitioners and regulators attended.
- 5 (15%) of the participants were women.
- 10 (30%) of the participants were from the government sector, 3 (10%) from government enterprises, and 20 (60%) from the private sector.
- All major private sector engineering and architectural consulting firms in Solomon Islands were represented.
- 3 builders and one building materials supply merchant were represented.
- Ministries of Infrastructure, Finance, Education, Housing and National Planning and development were represented.
- 18 construction practitioners or regulators invited to the workshop were unable to attend, however most had their views represented by other participants whom they had nominated.
- PRIF, ADB, and USAID visited as observers. Australia, New Zealand, World Bank and Japan were invited to send observers.

Figure 3-1: Solomon Islands participatory workshop, National stakeholders



Source: Author provided.

The outcomes and key themes emerging from the workshop have informed the action plan as section 5 of this document and will help formulate a document for PRIF that will provide guidance in future assistance initiatives related to building code updates and strengthen of the NBSCI administration, management and compliance enforcement for all Pacific island countries targeted under this Study.

The workshop comprised three sessions

- **Session 1:** National Building Code and the Home Builders Manual
- **Session 2:** Legislation Administration and Compliance
- **Session 3:** Guidance Document and Road Map

The workshop powerpoint is attached as **Annex 4** and workshop outcomes are attached as **Annex 5**. A draft of the workshop outcomes were circulated to all participants for comment.

Figure 3-2: Solomon Islands participatory workshop



Source: Author provided.

3.4 Key Themes

Key themes emerging from the consultations and participatory workshop can be grouped under six headings:

- v. Adequacy of the National Building Code
- vi. National Building Code administration and compliance
- vii. National Building Code training and capacity building
- viii. National Building Code awareness and promotion
- ix. Building standards
- x. Insurance

Issues and comments raised can be summarized as follows:

- i. Adequacy of the National Building Code and Home Building Manual
 - The National Building Code must be legislated as soon as possible.
 - Donors should be identified to assist with the final drafting of the Building Act. This may involve a final series of reviews/peer reviews with both the industry and regulators.
 - The 1990 National Building Code and Home Building Manual must be updated.
 - It may be necessary to produce a supplementary Bill of building regulations once the National Building Code has been updated.
 - A working committee to update the National Building Code and Home Building Manual needs to be established. This committee needs to meet regularly and be responsible for the National Building Code's and Home Building Manual's ongoing review.
 - A timeframe needs to be set for having a reviewed and updated National Building Code implemented.
 - Stakeholders involved in the review of the National Building Code process need to be identified.

- A review of the 1990 National Building Code and Home Building Manual should consider:
 - Including civil design.
 - Updating cyclone and earthquake design and including them as separate sections.
 - Including Leaf hut and buildings built with traditional or semi-permanent materials.
 - Including building discharge from surface run-off.
 - Include a section on solar and energy ratings.
 - Having Fire and Health amenity as separate sections.
 - Including fire panel links to the fire brigade and reference to fire panels and smoke detection.
 - Addressing water supply restrictions, lack of water pressure and fire hydrant issues.
 - Ensuring Solomon Islands Electrical Authority input is required to the electrical section.
 - Capturing the changes to construction materials and techniques since the original code was published in 1990.
 - Include guidelines in the form of a flowchart on how the National Building Code is to be used.
 - Guides to show how builders should use an updated National Building Code.
 - Ensuring that multi storey construction is covered.
 - Ensuring that any cross clauses do not create confusion to the user.
 - Including a demolition section which would include reference to asbestos removal.
 - Addressing storm surge, tsunami and climate change, in particular for coastal locations.
 - Including construction materials standards for soils, concrete, timber and steel.
 - Including sections on universal access and disability.
 - Mandating the responsibilities between MID, Honiara City Council and the private sector.
 - Insuring that what is proposed in the National Building Code is cost effective.

Figure 3-3: Solomon Islands participatory workshop, Private sector stakeholders



Source: Author provided.

- Australia and New Zealand standards referenced are not readily available to most National Building Code users. The references need to include a short paragraph of how the standard is to be applied
- A tiered approach is required for the classification of buildings targeted under the National Building Code. The three level code (Gold-Silver-Bronze) proposed at the Fiji Workshop would also be appropriate for Solomon Islands. The Bronze level should include a traditional materials manual.
- A list of building materials available in Solomon Islands together with indicative cost rates would be a useful annex to the Home Builders Manual.
- Once legislated and updated the National Building Code should be the basis of the Solomon Islands construction industry.
- The code must be regularly reviewed.



Source: Author provided.

ii. National Building Code administration and compliance


- Currently Honiara City Council and MID have insufficient resources, trained officers and budget restrictions to inspect and enforce compliance.
- Most provinces have no resources.
- The capacity of the MID, Honiara City Council and provinces to administer and enforce the code needs to be assessed.
- Building inspections need to be mandated.

- Consideration should be given to certification of private sector certifiers.
- An independent National Building Board should be established and should include representatives from MID, Honiara City Council, the provinces and SIBPEA.
- SIBPEA needs to be registered as a professional organisation with sub-categories for architects, engineers, QS, valuers, etc., and should be properly funded with a small full-time secretariat.
- SIBPEA to be mandated to assist with the regulatory process, including building applications, planning approvals, and licencing.
- Building professionals and builders should be licenced/registered.

iii. National Building Code training and capacity building

- There is no training at SINU, rural training centers, or secondary schools on the National Building Code. The National Building Code and Home Building Manual should be incorporated in the SINU curriculum. Training could be provided under the umbrella of SINU.
- “Train the trainer” training in the National Building Code needs to be provided to SINU, Rural Training Centre and secondary school technical teachers as well as building inspectors and compliance officers.
- Training programs are required for those involved in design, approval, inspections, and enforcing compliance as well as builders.
- Professional development courses should be established to control and manage the competency of SIBPEA members contracted to carry out National Building Code approval, inspections and non-compliance.
- The qualifications of those technicians responsible for certifying compliance needs to be outlined in an updated National Building Code.
- Capacity building and training workshops to be undertaken on a regular basis for Building Inspectors, SIBPEA members and local builders.
- A cost recovery system of generating building inspection fee income to pay for inspections needs to be established.
- Capacity development programs for building professionals, builders and compliance inspectors and regulators to be rolled out on a regular basis.
- Retired overseas building professional volunteers provided through organisation such as New Zealand Volunteer Service Abroad could be used to provide capacity building to Solomon Island building professionals and builders.
- Workshops and awareness programs should also cover:
 - climate change adaption
 - disaster management mitigation
 - traditional materials
 - Occupational health and safety (e.g., bamboo scaffolding)

SPC (Anthony Blake) had separate consultations with emergency services on development of their emergency management roadmap. The Fire Service indicated that it is seeking support to develop their staff with basic skills of plan reading and fire safety audits of building plans and final fire safety audits as well as ongoing periodic audits. The Fire Service has been undertaking this task on behalf of the Honiara City Council but with little formal competency training. SPC asked if



this project could assist with access to competency based training or even secondments to Fiji or Australia/New Zealand services to get them some exposure.

iv. National Building Code awareness and promotion

- An awareness program, highlighting to the public and builders the benefits of adopted the National Building Code to improving social standards and long term cost saving, needs to accompany the National Building Code review process. The program needs to be ongoing once an updated National Building Code has been put in place.
- Currently most Solomon Island builders are unaware that a building code exists.
- Industry groups such as SIPEBA need to be supported to promote construction best practice and make the public aware of the benefits of adopting the National Building Code.
- The National Building Code needs to be promoted to provincial authorities, most of whom are unaware that a National Building Code exists.
- The awareness program will include the following components:
 - Education
 - Training/Legislation/Licencing
 - Industry awareness
 - Public awareness
- The National Building Code should be available on line.
- SIBPEA and MID should have regional connections in other Pacific Countries so that lessons learned regionally can be incorporated into reviews of the National Building Code.
- The building industry and the public should have better access to the NBSI and the building standards using a digital version available online with app access. The online version should be interactive so that questions from building professionals, builders and the public can be answered and issues addressed.
- Regular industry conferences to promote the National Building Code, good design and construction practice, proper use of building materials and the industry generally, should be staged and managed by MID/SIBPEA.
- The proper implementation of the National Building Code will revolutionise the Solomon Islands building industry and provide confidence to potential donors.

v. Building standards

- A section in the National Building Code needs to be included on building material standards and quality compliance that is relevant to Solomon Islands.
- Building standards need to clarify distinctions between traditional materials and manufactured materials.
- A system for monitoring the quality of building materials imported into the Solomon Islands needs to be established.
- Materials suppliers should be mandated to only provide materials that comply with the standards in the National Building Code.
- The MID materials lab needs to be updated and supported for competency testing of building materials.
- Building materials standards need to take account of affordability issues.

vi. Insurance

Insurance companies need to be encouraged to recognize the National Building Code in their risk analysis of building insurance.

4. Issues and Outcomes

4.1 Building Legislation

Enabling factors

- An Infrastructure Management Bill was drafted in 2014 under the direction of the Ministry of Infrastructure Development (MID). This bill includes new provisions to recognize The National Building Code as the building standard for Solomon Islands.

Constraining factors

- The Infrastructure Management Bill has not yet been legislated.
- Honiara City Council and the provinces will have to be consulted before the final bill is enacted.
- The legal draftsman in the Attorney General's office responsible for finalizing the draft bill has recently resigned.

Proposed actions and activities

The Infrastructure Management Bill needs to be legislated by the end of 2019.


MID and the Attorney Generals' office should start consultations with the new Honiara City Council and provincial governments as soon as possible and a legal expert amend the bill to reflect the outcome of the consultations. The consultations will include an agreed mechanism for aligning the existing building ordinances with the National Building Code.

The bill could also:

- mandate the establishment of a National Building Board;
- set out the administrative, management and compliance enforcement roles and responsibilities of MID, Honiara City Council, and the provincial governments;
- reference the Planning and Development Act, Environment Act, Provincial Government Act, Honiara City Act and existing provincial ordinances; and
- mandate a process whereby the National Building Code can be amended, subject to approval of the relevant minister and subject to notification in the Gazette.

Once an updated National Building Code has been adopted an amendment to the Infrastructure management bill will need to be drafted that will:

- set out a comprehensive inspection regime for administering and managing National Building Code compliance,

- 
- define an operative system of legal fines and penalties, and
 - identify what buildings will be exempt from the application of the code, e.g., traditional buildings.

4.2 Building Regulations, National Building Code

Enabling factors

- A National Building Code of Solomon Islands was prepared under the Australian Aid program in 1989 and published in 1990.
- The National Building Code and its companion the Home Builders Manual for Solomon Islands is being used by some of the Solomon Islands based engineering and architectural consultants.
- A limited review of the National Building Code was completed in 2016 by a retired building inspector sponsored by the New Zealand Volunteer Service Abroad (refer Section 2.1).
- The Honiara City Council and three of the provinces have building ordinances.

Constraining factors

- The 1990 National Building Code has not been legislated.
- Accessing Australian and New Zealand Standards which are referenced in the National Building Code is difficult and costly.
- Six of the nine Solomon Island provincial jurisdictions have no building control regulations.


Proposed actions and activities

A building consulting firm should be engaged in a participatory exercise to review and update the National Building Code, building standards and associated legislation. A working committee needs to be established to oversight review of the Code. The committee should be headed by the MID and included representatives from:

- Honiara City Council
- provinces
- relevant government departments such as Health and Fire, Environment and Conservation Division and the Disaster Management Office, Solomon Islands Electrical Authority
- private sector architects and engineers.

The consultant team should include an:

- architect
- structural engineer
- environmental engineer (health and amenity)
- mechanical/electrical engineer
- fire engineer
- disability expert
- climate change adaption expert

- 
- environmental safeguards expert
 - senior building inspector
 - information technology expert to develop a Solomon Island National Building Code interactive online version.

Terms of reference should be developed for this review. An indicative program, inputs, and cost for this exercise is attached as **Annex 6**. It will be noted that the estimated cost is around \$325,000. This cost would be reduced if the review is included as part of a regional review of other building codes in the Pacific. The National Building Code review could also be associated with the legal review of the draft bill.

The Review should include the following activities:

- i. Explore options for a three level code with gold, silver, and bronze editions. The bronze version could be a grassroots edition of the National Building Code in Tok Pisin targeting traditional building techniques and materials used in rural areas and include a “Build Back Better” guideline for improving the quality of buildings to withstand climate change events. The Build Back Better Guideline should be developed in collaboration with the Environment and Conservation Division, the Disaster Management Office, and interested nongovernment organizations (NGOs).
- ii. Update building standards, in particular structural, wind, and seismic standards.
- iii. Work with the Disaster Management Office to align or integrate the code with emergency guidelines and other environmental and climate adaptation initiatives including updating climate data such as rainfall and its impact on drainage.
- iv. Fire, egress, safety, and sanitation all need to be reviewed.
- v. Sections on energy efficiency, renewable energy, and disaster reduction, in particular storm surge and tsunami for coastal locations, need to be included.
- vi. Address accessibility guidelines for people with a disabilities.
- vii. Develop an online interactive version of the code with mobile phone application.
- viii. Address affordable housing, which could include guidelines on how to build local/simple/affordable housing.
- ix. A flow chart that shows how the building approval process is administered.
- x. Reference occupational health and safety (in particular work safety, scaffolding, timber treatment and asbestos issues).

Local financial and insurance institutions should be encouraged to adopt the updated National Building Code as the standard for approving building insurance and building loans.



4.3 Building Standards

Enabling Factors

- The National Building Code references Australian and New Zealand building design and building product standards.
- Materials testing facilities are available at the MID in Honiara.

Constraining Factors

- The materials testing facilities available at the MID are limited.
- There is no legislation on national trade measurement and standards or agency responsible for monitoring standards.
- There is no mechanism in place to enforce building product quality compliance.
- There are no requirements for certification and accreditation of construction trades workers, building professionals or construction companies.
- Accessing Australian/New Zealand standards, which are referred to in the National Building Code, can be difficult and costly for members of the building professions.

Proposed Actions and Activities

Building material quality control could be improved by developing an appropriate compliance system involving the following activities:

- i. Updating the list of acceptable building product standards in a revised National Building Code.
- ii. Enabling copies of relevant building standards to be readily accessible to building professionals.
- iii. Include in the Building Inspectors Duty Statement the monitoring of building products on site.
- iv. Introducing legislation on trade and building standards which schedules penalties for importing non-complying building materials.
- v. Supporting MID to expand its materials testing facilities in Honiara and/or identifying an acceptable regional testing laboratory.

Improving workmanship standards would be a longer term strategy. The strategy could involve introducing a system of national certification and accreditation, including bi-annual licensing for all construction personnel (consultants, contractors, project managers and trade persons). The private sector, through SIBPEA, could work with relevant government ministries and training institutions to establish appropriate qualification benchmarks and design a regulatory framework in which certification, accreditation and licensing can be administered and compliance monitored.



4.4 National Building Code Administration and Compliance, Training and Capacity Building

Enabling factors

- Legislation exists for administering and enforcing building ordinances in the Honiara City Council and three provinces.
- Honiara City Council have building inspectors who process building permit applications and inspect construction.

Constraining factors

- Legislation does not exist for administering and enforcing compliance of the National Building Code.
- There are insufficient building inspectors at Honiara City Council to manage the building permit process and enforce compliance.
- Honiara City Council building inspectors have not received any training on compliance procedures.
- There are no building inspectors in the three provinces (Western, Malaita, and Choisel) that have building ordinances, only planning officers.
- The remaining 6 provinces do not have building ordinances, building officers, or systems for building control.
- There is no central agency mandated with administering and managing building control.

Proposed actions and activities

Building control systems need to be developed for all nine provinces based on the new legislation. Building officers/inspectors need to be appointed in all nine provinces.

Building ordinances in Honiara City Council, Western, Malaita, and Choisel provinces need to be replaced with the National Building Code.

Building control, administration, and compliance enforcement procedures should be strengthened in the Honiara City Council. This could include:

- A human resource consultant appointed to undertake a gap analysis of the current Honiara City Council building control regulatory human resource environment, which would include a baseline study on the number of Honiara City Council building inspectors and their skill levels.
- Authorities responsible for processing building permits and monitoring compliance to be appropriately funded, including funds for logistical support such as vehicles.
- A “one-stop-shop” approach should be considered for processing building permits.
- In consultation with local construction practitioners, training opportunities associated with applying the National Building Code to be offered to building professionals.

A gap analysis of human resource requirements in the nine provinces should be undertaken and include the following activities:

- based on the amount of buildings completed in Solomon Islands over the past 3 years, determine the number of building inspectors required, and
- prepare a Building Inspector Duty Statement appropriate for Solomon Islands.



Based on the outcome of the gap analysis:

- Additional building inspector positions may be needed and building technicians recruited to fill the positions at the Honiara City Council.
- Building inspector positions established in the nine provinces and building technicians recruited to fill the positions.
- The Solomon Islands government will need to allocate funds for additional salaries and logistical support, such as vehicles. Building permit fees should include the cost of inspections.
- Capacity building and training opportunities should be developed for building inspectors based on the approved duty statement.

An independent National Building Board should be established and should include representatives from MID, Honiara City Council, the provinces, and SIBPEA.

SIBPEA needs to be registered as a professional organisation with subcategories for architects, engineers, QS, valuers, etc., and should be properly funded with a small full-time secretariat.

SIBPEA to be mandated to assist with the regulatory process, including building applications, planning approvals, and licencing. Consideration could also be given to outsourcing building inspections to the private sector through SIBPEA. Professional development courses should be established to control and manage the competency of SIBPEA members contracted to carry out National Building Code approval, inspections, and non-compliance.

Capacity development programs for building professionals, builders, and compliance inspectors and regulators to be rolled out on a regular basis and annual or bi-annual building industry conferences should be organized by SIBPEA. Retired overseas building professional volunteers could be provided through organizations such as New Zealand Volunteer Service Abroad to assist with capacity building.

Competency based training for the Solomon Islands Fire Service to assist with approval of Building permits should be included in the suite of training initiatives. Training should target the basic skills of plan reading and fire safety audits of building plans and final fire safety audits as well as ongoing periodic audits.

4.5 Institutionalization

Enabling factors

- technical and vocational Institutions exist in Solomon Islands where construction technology is taught.
- Training institutions support the concept of institutionalizing the updated National Building Code by incorporating its training elements into ongoing programs.

Constraining factors

- The National Building Code is almost 30 years old.
- The curriculum at Solomon Islands' technical institutions does not include the introduction and application of the National Building Code.

Proposed actions and activities

The new updated National Building Code should be included as part of the building professionals and trades workers training curriculum at:

- SINU
- Solomon Islands Rural Training Centres

Government support should be provided for institutions to integrate the updated National Building Code into their curriculums so that it becomes an integral part of the building professionals and trades workers professional and trade practice.

“Train the Trainer” training in the National Building Code needs to be provided to SINU and Rural Training Centre technical teachers.

4.6 Solomon Islands National Building Code Awareness and Promotion

Enabling factors

- The Disaster Management Office has a disaster management awareness program that could also promote the National Building Code.

Constraining factors

- No National Building Code public awareness programs have been delivered since the publication of the National Building Code in 1990.
- There is a lack of technical and financial resources to fund preparation and delivery of appropriate public awareness programs.
- Currently most Solomon Island builders and provincial authorities are unaware that a building code exists.

Proposed actions and activities

An National Building Code awareness and promotion strategy should be developed.

The strategy should include consideration the following:

- i. Published versions of the National Building Code and associated building standards should to be readily available to building professionals and the public and a source identified where the hard copies can be purchased.
- ii. The National Building Code needs to be web based and interactive, with a mobile phone application.
- iii. Funding should be made available to deliver the programs on a regular basis. This could involve SIBPEA, the Disaster Management Office, NGOs, print, radio and TV media. A media management company could be employed to roll out the awareness strategy.
- iv. Ethical awareness and industry best practice should be incorporated as key elements in all promotional activities.
- v. Regular industry conferences to promote the National Building Code, good design and construction practice, proper use of building materials and the industry generally should be staged and managed by MID/SIBEPA.



5. Action Plan

MID have demonstrated a commitment to having the Infrastructure Management Bill legislated by the end of 2019 and the National Building Code adopted to replace existing building ordinances at Honiara City Council and the provinces. Once legislated, MID will need to set out an action plan and timeline for short-term and long-term support for the National Building Code review, management, compliance, training, and promotional activities.


Based on the outcomes of the consultation for this study, a suggested action plan of short-term and long-term actions to be carried out by the Government of Solomon Islands could include:

Short term

- i. MID and the Attorney Generals' office to start consultations with the new Honiara City Council and provincial governments as soon as possible and a legal expert be engaged to amend the bill to reflect the outcome of the consultations and harmonise the legislation with other related legislation. The consultations will include an agreed mechanism for aligning the existing building ordinances with the National Building Code.
- ii. Engage a building consulting firm to review and update the National Building Code including associated manuals (silver and bronze versions). Refer to **Annex 6** for an indicative program, inputs, and costs for a building code review and update.
- iii. Engage a human resource consultant to undertake a gap analysis of the current Honiara City Council building control regulatory human resource environment to identify shortfalls in regulatory resources and skills.
- iv. Engage a human resource consultant to work with the MID and provinces to develop a strategy for establishing a building regulatory office in each province.
- v. Engage a legal expert to draft a new law setting out trade and building material product standards and identify an appropriate body responsible for monitoring and enforcing building material quality compliance.
- vi. Support SIBPEA to establish its own secretariat.
- vii. Engage MID personnel, the Disaster Management Office, appropriate NGOs, and a private sector media management company to develop an awareness program to promote the launching of an updated National Building Code and associated manuals and deliver the program to the general public in urban and rural areas. SIBPEA to assist with this activity.
- viii. Publish hard copies of the updated National Building Code and associated manuals and identify outlets where they can be purchased.
- ix. Develop a National Building Code website that can be easily accessed by the Solomon Islands public.

Long term

- i. Develop, fund and deliver appropriate training courses targeted at building professionals who apply the National Building Code and Building Inspectors who monitor compliance.
- ii. Address quality control of building material testing by:
 - a. identifying an acceptable regional testing laboratory and/or
 - b. committing funding to expanding the MID testing facility.

- 
- iii. Support SIPEBA to hold annual conferences and to instigate joint fellowship programs between government and private sector and Solomon Islands industry sector and industry sectors in other countries.
 - iv. Support the Integration of the updated National Building Code into the curriculum of SINU and Rural Training Centres so that it becomes an integral part of the building professionals and trades workers professional and trade practice.
 - v. Support and fund the Institutionalization of National Building Code promotional activities so that they are delivered on a regular basis.
 - vi. Support SIBPEA to certify and accredit building professionals and promote good building design.

To facilitate this action plan a National National Building Code coordinator should be appointed for a 2-year term to be based in MID. The co-ordinator is to work closely with MID, the SIBPEA secretariat and consultants engaged to carry out the action plan activities and provide support to the Honiara City Council and provinces to implement the plan.

6. Potential Areas for Support by PRIF Partners

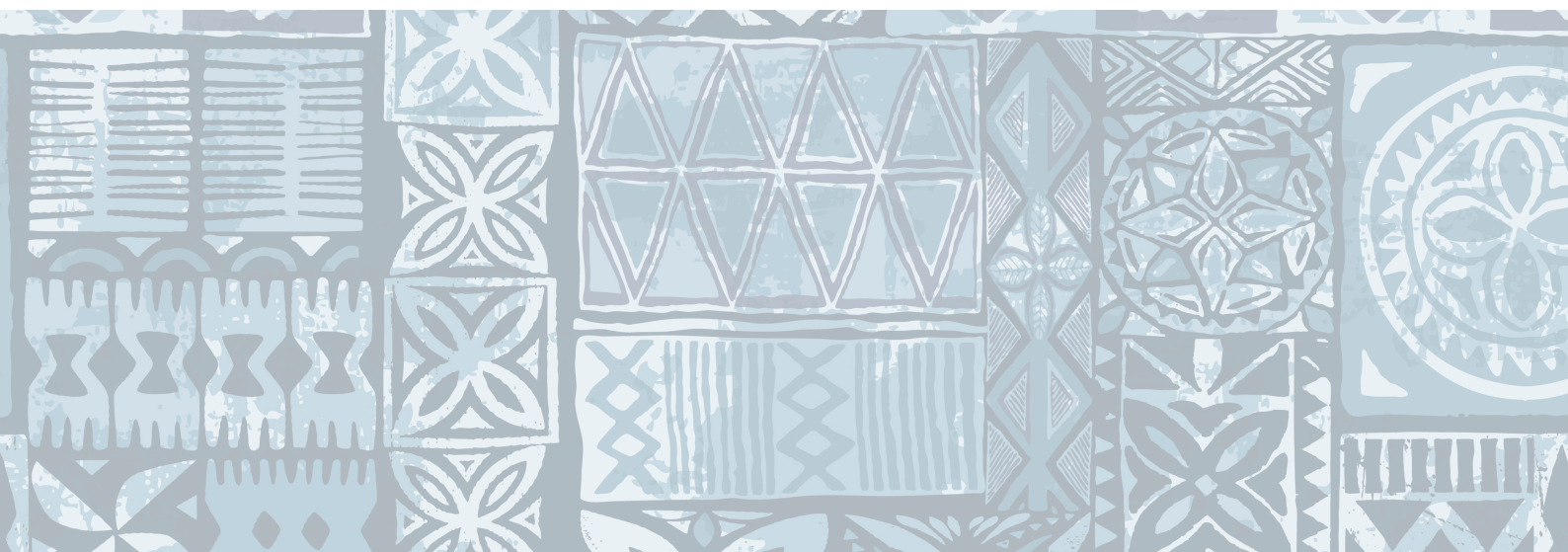
PRIF development partners could provide material support to the Government of Solomon Islands to assist with implementing the action plan. Suggested activities which PRIF development partners could support include:

- i. Recruit and fund the appointment of a national co-ordinator to implement the Action Plan. The National Building Code national co-ordinator could be a member of a team of national co-ordinators based in other Pacific countries all working under the umbrella of a regional co-ordinator.
- ii. Fund a legal expert to amend the Infrastructure Management Bill to reflect the outcome of the consultations with the Honiara City Council and provinces and harmonise the legislation with other related legislation.
- iii. Fund a team of building experts to review and update the National Building Code and develop associated building manuals.
- iv. Fund a human resource consultant to undertake a gap analysis of building control human resources and skill levels, develop building control mechanisms for the provinces and develop appropriate training programs.
- v. Fund a legal expert to draft a new law on building trade practices and standards.



- vi. Fund the delivery of appropriate training programs to Building Inspectors and private building professionals over a two year period.
- vii. Fund an NGO and/or media management company to assist the Government of Solomon Islands to develop and deliver an National Building Code launching program.
- viii. Fund the publishing and printing of the updated National Building Code.
- ix. Fund the purchase of a complete and updated set of all of the Australian and New Zealand Standards referenced in the National Building Code to be libaried with the Solomon Islands Regulatory Authority responsible for administering the National Building Code.
- x. Fund an NGO and/or media management company to assist the Government of Solomon Islands to develop and deliver on a regular basis an National Building Code awareness program through print, radio and TV media.

The national co-ordinator, supported by a regional co-ordinator, would be responsible for co-ordinating and facilitating all of these activities.





Annex 1

National Building Code Review 2016

Review: “National Building Code” for Solomon Islands (1990) “Draft”? “S.I.B.C.”

May 2016

Having read through the document supplied by V.S.A.

The document is well written, researched and is still appropriate for 2016, with the following exceptions;

1. Page B7, item B1.3 e, Timber construction should also include, NZS 3622 ammended “verification” standard.
2. Page “DF9” is missing from the document, this is the last part of “Light & Ventilation”
3. In general, as shown in “1” above, all of the Australian and New Zealand standards referenced in the document need to be checked for updates and ammendments from 1990.
4. The following is the list of Australian & New Zealand Standards within the “S.I.B.C” (1990);

NZS 4210, 4203, 4229, 4230, 3103, 3109, 3124, 3404, 3603, 3604, 3622, 4223, 4232, 4121, 4122, 4510, 4503, 4504, 4512, 6742, 4541, 4561.

AS 3700, 3600, 3500, 1530, 1170, 1664, 1720, 2870, 2159, 1694, 2057, 1860, 2601, 3000, 1736, 1903, 1904, 2904, 1668, 2818, 1926, 1735, 2185, 1657, 1428, 1670, 1668, 2293, 2665, 2870, 1038.

Testing; TR 440, and ASTM E-695-79 (1985)

Building Code implementation

If this Code has been adopted in to Law and is presently being used, to purpose, the appropriate Solomon Islands Regulatory Authority responsible needs to obtain a complete and updated library of all of the Australian and New Zealand Standards referenced in the “S I B C” document.

If these Standards are not available in the “Consent or Permit Approval Dept;” then the Building Code is not complete and is unable to operate in a legal manner. To check plans and specifications to approval or refusal, to issue Building Consent, or Permit, is not possible without these standards as they contain much of the information needed to verify acceptable solutions submitted.



Compliance and Enforcement

After approval the major part of compliance is enforcement. This can only be achieved with a comprehensive inspection regime, set up and used on all projects. To this purpose the Regulatory Authority needs a well schooled, experienced Inspectorate team, *(At least the leader or Manager with some overseas experience or training)* who have the full backing and support of their employers. If the “S I B C” is to be enforced it must apply to all western style buildings, without fear or favour. Compliance also includes the removal or demolition of buildings not compliant, or not approved, since the introduction of the “S I B C” in to law. Offenders must be given reasonable written notice for such actions. Similar written notices should apply to non-compliant situations on projects that have been issued with Building Consent or permit.

Building non-compliance also needs to be supported by an operative system of legal fines and penalties set up within the Judicial system.

Obviously in some situations “**Traditional Buildings**” are built.

Whilst the “S I B C “ objectives remain the same in respect of these buildings, the structural requirements of the referenced Australian and New Zealand Standards can not be practically applied, they just wont work *(the buildings should still be visually Inspected for suitability)*. However these buildings should still require a building permit approval if they are within a comprehensive residential community. They need to still comply with the “S I B C “ health, safety and siteing compliance with local planning constraints, eg siteing , height and daylighting requirements etc;

Public Sector

In general designers, those preparing plans and specifications, for proposed buildings must provide full comprehensive details of compliance, it is not enough for them to quote A/NZ standards, without providing drawn details. *(Recently in PNG i had an Engineer/Architect, not provide enough steel re-bar details or require window flashings to windows, on an 8 million Kina project)*

It is not enough to have good building regulations without having a “Public Sector”, both major and minor on board with the need for compliance. This can only be achieved by public education, seminars for all sectors, designers, builders, plumbers, drain-layers and electricians. By dividing the “S.I.B.C.” in to principal subjects eg; Structure, Safety, Water, Plumbing, etc; making each subject of an individual seminar.

Arnold Hawkins. retired Building Inspector (21yrs) and previous V.S.A. Volunteer



Annex 2

Drafting Instructions for Building Related Provisions of an Infrastructure Management Bill

Drafting instructions for building-related provisions of a Infrastructure Management Bill

Background

Provisions requiring application and permission for buildings in Solomon Islands and the requirement to build to a particular standard are currently contained in a series of Provincial Ordinances, and to some extent the Planning and Development Act and Environment Act.

Building Ordinances

Building Ordinances have been found for the following Provinces:

- Honiara City Council [Building By Laws 1960, consolidated 1996];
- Malaita Province [The Malaita Province Building Standards Ordinance 1995];
- Western Province [Western Province Building Standards Ordinance 1991, consolidated in 1999];
- Choiseul Province [Choiseul Province Building Standard Ordinance 1998].

There is no evidence of building Ordinances being created for the other six provinces.

These Ordinances include standards for the various elements of a building, such as the foundations, floor, walls, and roof. They also include the application and permit process, enforcement provisions, forms for staged completion of a building and the application fees.

National Building Code

Meanwhile, a Solomon Islands National Building Code was drafted in 1990, with the assistance of the Australian Government, with expertise from Solomon Islands, Fiji, Australia, New Zealand and the United States of America. The Code comes under the authority of the Architecture section of the Ministry of Infrastructure Development, although it was never brought into law and has not been amended since 1990 to take account of recent research on building construction and extreme weather events. Nevertheless, the Code is the most modern and comprehensive guide as to how buildings should be constructed in Solomon Islands in order to be structurally sound. Unlike the Ordinances, it does not include an application process – it is simply a building code.

Draft Infrastructure Management Bill

An Infrastructure Management Bill was drafted in approximately 2014 under the direction of the Ministry of Infrastructure Development. This Bill includes new provisions to recognise the National Building Code as the building standard for Solomon Islands. A number of flaws were identified in the Bill, and it made no reference to the Planning and Development Act or Environment Act or existing provincial Ordinances.

Proposed building provisions for inclusion in a new Infrastructure Management Bill

One uniform building standard for Solomon Islands

The National Building Code (NBC) is to become the sole standard for building construction in Solomon Islands. It will be referred to in the Bill as such. National law prevails over Provincial Ordinances, so if there are inconsistencies between the NBC and Provincial Ordinances, the NBC will prevail. There would, however, undoubtedly be confusion and potentially nit-picking if there are particular provisions in an Ordinance that might not be directly related to parts of the NBC. Rather than continue with a national building standard and (some) parallel provincial building standards, the provincial building standards shall cease.

The Provincial Government Act and Honiara City Act need to also be amended to remove building standards as a matter that the City Council and Provincial Governments have authority to control (i.e. “building standards” are a Schedule 4 matter under the Provincial Government Act, meaning they are within the legislative competence of Provincial Governments subject to devolution order, and “building regulations / codes” is a Schedule 5 Part 1 matter in the Honiara City Act, meaning they are a function that the city council may perform).

Ability to amend the NBC over time

National building codes should be subject to regular review and amendment in light of advances in building materials and research. There needs to be a process whereby the NBC can be amended, subject to approval of the relevant Minister and subject to notification in the Gazette.

Marrying the NBC to the Planning and Development Act

By eliminating the Honiara and Provincial Ordinances, this also eliminates the application process, permit process, the fees and enforcement provisions – but provisions such as these need to be retained. These are all existing provisions of the Planning and Development Act as well, so in Honiara and some provinces there has been a 2-track application process in place for some time. This dual application process is unnecessary, and can continue as a single process under the Planning and Development Act, subject to certain provisions of the Ordinances being transferred across to the Planning and Development Act, and reference being made to the NBC in the Planning and Development Act. The provisions under the Environment Act shall continue for “prescribed developments” under that Act, and those provisions are a stated prerequisite to application and approval under the Planning and Development Act. As such, the following is proposed:

- a. “Building” and “building operations” are already adequately defined in the Planning and Development Act, and the carrying out of building operations is already defined as “development” under that Act, and thus an application is required and the Board’s approval is required for building operations (other than maintenance, improvement or internal alterations).



- b. The Planning and Development Act shall be amended to require that any application involving building operations must comply with the NBC, and must not be approved by the Board unless the Board is satisfied that the plans submitted with the application comply with the NBC.
- c. An applicant will not be allowed to appeal under s.19 of the Planning and Development Act against a refusal based on non-compliance with the NBC, or any condition that requires compliance with the Code.
- d. For permits involving building operations, a permit shall be subject to a compulsory condition that the permit holder must inform the building inspector for the relevant authority that certain stages have been reached in construction, to the same effect as per cl.14(3) of the Western Province Building Standards Ordinance. Likewise, provisions to the effect of paragraphs (4) and (5) are to be provided in the Act. Failure to meet this requirement shall trigger the enforcement provisions under the Act.

Annex 3

List of Workshop Participants

Date: Tuesday 28 May 2019 **Venue:** King Solomon Hotel **Time:** 8.30am

TABLE 1: PRIVATE SECTOR CONSULTANTS AND UTILITIES

Lemuel Siosi	Principal Engineer – LBS Engineering
Chaminda	Engineer LBS
Antoinette Wickham	Project Manager
Andrew Fraser	Solomon Water
Jane Romero	Project Engineer PRIF

TABLE 2: GOVERNMENT DEPARTMENTS AND SINU

Henson Makoani	Department of Education and Human Resources
Jerry Kwalu	Ministry of Finance Treasury (Procurement Department)
Mathew Walekoro	Ministry of National Planning & Development Coordination
Jessie Tewa'ani	Valuer's Association
Kenneth Boo	SINU Property Manager

TABLE 3: PRIVATE SECTOR CONSULTANTS

Daniel Tucker	Country Manager Kramer Ausenco
Leona Eka	Architect Kramer Ausenco
Warwick Sitana	MAURITEWA
John Fegan	JF Consulting
Flori Gatu	GW Associates Group Pty Ltd
Rick Bagby	Project Manager

TABLE 4: PRIVATE SECTOR CONSULTANTS AND HONIARA CITY COUNCIL

Chaniel Sani Papane	Secretary to Planning and Development Board Honiara CC
Kenneth Bulehite	Engineer Honiara City Council
David Torrance	South Pacific Design
Adam Williams	South Pacific Design
Don Boykin	Pacific Architects
Ken Grossman	Nambawan Architects



TABLE 5: MINISTRY OF INFRASTRUCTURE DEVELOPMENT AND HOUSING


Geoffrey Samuel	Solomon Housing Ltd
Steve Urariua	Solomon Housing Ltd
Joan Toitona	Director of Housing
Paul Hoiasi	MID Architect
Patrick Fataga	MID Architect
Ismael Alulu	MID Deputy Director QA

TABLE 6: BUILDERS AND SUPPLIERS

Ricky Fuo'o	Tropic Group Builders
Paul Manepuri	MP Construction
Joe Sika Manuopangai	Tongs Builders Warehouse
Jay Bartlet	Managing Director Hatanga Construction
Dereck Kolly	QS Hatanga Builders
Enaly Fifiri	Solomon Construction

Annex 4

Workshop PowerPoint



Pacific Region Infrastructure Facility

**REGIONAL DIAGNOSTIC STUDY OF
CONSTRAINTS IN THE APPLICATION OF
BUILDING CODES IN THE PACIFIC**

SOLOMON ISLANDS PARTICIPATORY WORKSHOP
Tuesday 28 May 2019

BACKGROUND

Pacific Regional Infrastructure Facility (PRIF) through the Asian Development Bank (ADB) are funding a study in 13 Pacific Island Countries to:

- Identify the major barriers that oppose or constrain the operationalisation of their building codes
- Provide guidance in future assistance initiatives related to building codes updates, capacity building, training and promotion



PACIFIC REGION INFRASTRUCTURE FACILITY (PRIF)

The Pacific Region Infrastructure Facility is a multi-partner coordination, research and technical assistance facility for improved infrastructure in the Pacific. The 8 PRIF Members are:

- Asian Development Bank
- Australian Department of Foreign Affairs and Trade
- European Union
- European Investment Bank
- Japan International Cooperation Agency
- New Zealand Ministry for Foreign Affairs and Trade
- World Bank Group
- US Department of State

OBJECTIVES OF THE SOLOMON ISLANDS STUDY

- Identify gaps in the capacity of Solomon Islands construction practitioners and government agencies to apply and promote the National Building Code of Solomon Islands (NBCSI)
- Provide recommendations on how the current 1990 version of the NBCSI can be improved
- Recommend areas of support needed by Solomon Islands to guide future NBCSI administrative and compliance assistance programs supported by the PRIF development partners



WORKSHOP PURPOSE

To seek opinions and recommendations from construction practitioners and government regulators on how a National Building Code can be best administered, technically managed and compliance enforced.

WORKSHOP STRUCTURE

Introduction

Session 1: National Building Code and the Home Builders Manual

- The relevance and adequacy of the current 1990 NBCSI and the Home Builders Manual within Solomon Islands's current construction environment and recommendations on future building code updates.



Session 2: Administration and Compliance

- The capacity of Solomon Islands construction practitioners and government agencies to apply and promote the NBCSI and the Home Builders Manual and how the NBCSI can be best administered, technically managed and compliance enforced

Session 3: Guidance Document and Road Map

- Recommendations for a suite of initiatives that can be included in a Guidance Document for consideration by PRIF partners for funding support



SOLOMON ISLANDS SITUATION

- The 1990 National Building Code of Solomon Islands and (NBCSI) Home Building Manual of Solomon Islands (HBMSI) were developed in the late 1980s under an Australian Aid program and were published in 1990
- The NBCSI was reviewed in 2016
- The NBCSI has not been legislated
- Because the NBCSI has not been legislated it cannot be enforced and use of the NBCSI by SI construction practitioners is therefore no mandatory.

SOLOMON ISLANDS BUILDING CODE LEGISLATION

- The Infrastructure Management Bill is with the Attorney General and is Draft only.
- The Bill covers both transport and the National Building Code of the Solomon Islands (NBCSI).
- The Honiara City Council and two other provinces have their own Building Ordinances.
- Once the new Bill is enacted the Building Ordinances will need to align with the NBCSI.



- It is 5 years since the first Draft Infrastructure Management Bill was prepared after an extensive consultation process.
- For various reasons the draft Bill has not been accepted by the Attorney General's office in its original format.
- Currently the Attorney General's office is waiting for the outcome of the HCC elections so that there can be a consultation with HCC before the Bill is legislated.

- The intension is to have the Bill legislated by the end of the year.
- The NBCSI cannot be enforced until the Bill is enacted
- Currently the HCC appoints private consultants to vet building approvals for commercial buildings. Public buildings are vetted by MID.



NATIONAL BUILDING CODE REVIEW

The Code was reviewed in 2016 by a NZ VSA sponsored retired Building Inspector. Key conclusions from the review were:

- The document is well written, researched and is still appropriate for 2016, with some minor improvements and the updating of the Australian and NZ standards.
- Once adopted in to Law the appropriate Solomon Islands Regulatory Authority responsible needs to obtain a complete and updated library of all of the Australian and New Zealand Standards referenced in the NBCSI.

- Enforcement of NBCSI compliance can only be achieved with a comprehensive inspection regime, set up and used on all projects.
- Building non-compliance needs to be supported by an operative system of legal fines and penalties set up within the Judicial system.
- Exceptions need to be made for traditional buildings.



SESSION 1: NATIONAL BUILDING CODE AND THE HOME BUILDERS MANUAL

- Gaps in the NBCSI and HBMSI
- Parts of the NBCSI and HBMSI which need to be reviewed
- Suggestions on how weaknesses with the NBCSI, HBMSI and associated building standards can be addressed.
- How the codes could be better integrated with national disaster emergency guidelines and other climate adaptation initiatives.
- How a revised code could accommodate consideration of cross cutting issues such as the environment, disability and accessibility and OHS
- Value and practicality of a three level code:
 - Gold:** Buildings designed to the NBC requiring certification by a university trained engineer
 - Silver:** Building designed in accordance with the HBM with assistance from a construction practitioner with a technical qualification
 - Bronze:** Building constructed by owner in accordance with a simple pictorial guide to housing standards

SESSION 2: ADMINISTRATION AND COMPLIANCE

- Potential weaknesses in the administration and compliance enforcement procedures, including enforcement of building standards, once the MBCSI legislation is enacted.
- Public and Private Sector Capacity and training constraints
- Initiatives to improve Public and Private Sector capacity and training
- NBCSI promotion and training weaknesses
- NBCSI promotion and training initiatives



SESSION 3: GUIDANCE DOCUMENT AND ROAD MAP

Recommendations for a suite of initiatives that can be included in a Guidance Document for consideration by PRIF partners that will:

- Guide future assistance initiatives related to building code updates, building code administration and enforcement, training and promotion
- Improve infrastructure resilience and preparedness to future climate change events
- Help to develop a culture of “Build Back Better” for both reconstructed and new-build infrastructure



Annex 5

Workshop Outcomes

REGIONAL DIAGNOSTIC STUDY ON THE APPLICATION OF BUILDING CODES IN THE PACIFIC -VANUATU PARTICIPATORY WORKSHOP

Date: Tuesday 28 May **Venue:** King Solomon Hotel **Time:** 8.30am

Overview

Refer attached Annex 1 LIST OF PARTICIPANTS. Participant breakdown as follows:

- 33 construction practitioners and regulators attended.
- 5 (15%) of the participants were woman.
- 10 (30%) of the participants were from the government sector, 3 (10%) from Government enterprises and 20 (60%) from the private sector,
- All private sector engineering and architectural consulting firms in Solomon Islands were represented.
- 3 builders and one building materials supply merchant were represented.
- Ministries of Infrastructure, Finance, Education, Housing and National Planning and development were represented.
- 18 construction practitioners or regulators invited to the workshop were unable to attend, however most had their views represented by other participants whom they had nominated.
- PRIF, ADB and USAID visited as observers. Australia, New Zealand, World Bank and Japan were invited to send observers.

Participants were grouped into 6 tables, each table representing a sector of the construction industry.

Each group nominated a presenter and a scribe. Each group had 30 minutes to discuss each topic and the scribe recorded the groups agreed opinions and recommendations. At the completion of the session each group presenter presented the group's opinions and recommendations to the whole workshop.

Group comments:

SESSION 1: NATIONAL BUILDING CODE AND THE HOME BUILDERS MANUAL

The relevance and adequacy of National Building Code and the Home builders Manual within Solomon Island's current construction environment and recommendations on future building code updates.



TABLE 1: PRIVATE SECTOR CONSULTANTS AND UTILITIES

- The NBC does not include civil design.
- Cyclone and earthquake design needs to be updated and included as separate sections.
- Leaf hut and buildings built with traditional or semi-permanent materials are not covered.
- Building discharge from surface run-off is not covered.
- New NBC needs to include a section on solar and energy ratings.
- Section needs to be included on building material standards and quality compliance that is relevant to Solomon Islands.
- A building materials standards section needs to take account of affordability issues.

TABLE 2: GOVERNMENT DEPARTMENTS AND SINU

- Cyclone and earthquake design needs to be updated and included as separate sections.
- Fire and Health amenity should be separate sections.
- A section is needed on building standards with specifications guidelines.
- Building standards need to clarify distinctions between traditional materials and manufactured materials.
- An updated code needs to capture the changes to construction materials and techniques since the original code was published in 1990.
- The three level code (Gold-Silver-Bronze) proposed at the Fiji Workshop would also be appropriate for Solomon Islands.
- The Bronze level should include a traditional materials manual.

TABLE 3: PRIVATE SECTOR CONSULTANTS

- An updated NBCSI should include guidelines in the form of a flowchart on how the NBCSI is to be used.
- A tiered approach is required for the classification of buildings targeted under the NBCSI.
- Guides are required showing how builders should use an updated NBCSI.
- A list of building materials available in the Solomon islands together with indicative cost rates would be a useful annex to the Home Builders Manual.

TABLE 4: PRIVATE SECTOR CONSULTANTS AND HCC

There are many gaps in the current building code including:

- Does not accommodate multi storey structures.
- There are cross clauses which cause confusion.
- Water supply restrictions, lack of water pressure and fire hydrant issues are not addressed.
- The fire section needs to be updated including fire panel links to the fire brigade.
- AS/NZS standards referenced are not readily available to most NBCSI users. The references need to include a short paragraph of how the standard is to be applied.
- Better references are required to the wind and earthquake standards.
- A demolition section should be include which would include reference to asbestos removal.
- SIEA input is required to the electrical section.

- A section on services and equipment is required with reference to fire panels and smoke detection.
- Storm surge, tsunami and climate change need to be addressed, in particular for coastal locations.

TABLE 5: MINISTRY OF INFRASTRUCTURE DEVELOPMENT AND HOUSING

- Consideration needs to be given to covering urban (registered areas) and rural (planning areas) separately.
- The main consideration for an updated NBCSI is coverage of fire, earthquake, wind and flood events.
- An updated NBCSI needs to include construction materials standards for soils, concrete, timber and steel.
- An updated NBCSI should cover universal access and disability.

TABLE 6: BUILDERS AND SUPPLIERS

- The NBCSI must be legislated as soon as possible, The 1990 NBCSI and HBMSI reviewed and updated and the public and builders made aware of the importance of the NBCSI.
- Currently most Solomon island builders are unaware that a building code exists.
- There is no training at SINU, RTCs or Secondary schools on the NBCSI. Builders need to be trained on how to use and apply the NBCSI.
- Once legislated and updated the NBCSI should be the basis of Solomon Islands construction industry.
- An Updated Code will include Construction and Building Material standards that take account of affordability and costs and will include Compliance and enforcement procedures and the roles of the agencies responsible for administering and managing the code.
- The code should be tiered noting the differences in standards between rural and urban environments.
- The code must be regularly reviewed and training and awareness strategies developed.
- Industry groups such as SIPEBA need to be supported to promote construction best practice and make the public aware of the benefits of adopting the NBCSI.

SESSION 2: ADMINISTRATION AND COMPLIANCE

The capacity of Solomon Islands construction practitioners and government agencies to apply and promote the Solomon islands National Building code and the Home builders Manual and recommendations on how administration and compliance can be improved.

TABLE 1: PRIVATE SECTOR CONSULTANTS AND UTILITIES

- Training programs are required for those involved in design, approval, inspections and non-compliance.
- MID to revive the Solomon Islands Built Environment Professionals Association (SIBEPA). Some of the inspection duties could be outsourced to private members of this association.
- Professional development courses should be established to control and manage the competency of SIBEPA members contracted to carry out NBCSI approval, inspections and non-compliance.



TABLE 2: GOVERNMENT DEPARTMENTS AND SINU

- An updated Code should mandate the responsibilities between MID, HCC and the private sector.
- The lack of technical capacity of inspectors at MID, HCC and the provinces needs to be addressed.
- The qualifications of those technicians responsible for certifying compliance needs to be outlined in an updated Code and training support needs to be provided to those technicians.
- Training in the NBCSI needs to be provided to SINU, RTC and Secondary School technical teachers as well as building Inspectors and Compliance Officers.
- The NBCSI needs to be promoted and the Public and Construction Contractors need to be made aware of the benefits of using the NBCSI.

TABLE 3: PRIVATE SECTOR CONSULTANTS

Following legislation and updating of the NBCSI the following needs to be actioned:

- The capacity of the HCC and provinces to administer and enforce the code needs to be assessed.
- Inspections need to be mandated.
- Consideration should be given to certification of private sector certifiers.
- An independent National Building Board should be established.
- SIBEPA needs to be registered as a professional organisation with sub-categories for Architects, Engineers, QS, Valuers etc.
- Capacity building training workshops to be undertaken on a regular basis for building inspectors and SIBEPA members.
- Building contractors should be licenced.

TABLE 4: PRIVATE SECTOR CONSULTANTS AND HCC

- An updated NBCSI needs to clearly indicate the administration and compliance enforcement roles of the MID, HCC, provinces and the private sector (SIBEPA).
- Currently HCC has insufficient resources, trained officers and budget restrictions to inspect and enforce compliance.
- More training is required for HCC building inspectors, training to be carried out on a regular basis.
- A building code authority needs to be established and should include members of SIBEPA.
- A system generating building inspection fee income to pay for inspections needs to be established.
- A Bi-Annual system for certifying building professionals needs to be established.
- A system for monitoring the quality of imported building materials needs to be established.
- Outside funding needs to be found for training.

TABLE 5: MINISTRY OF INFRASTRUCTURE DEVELOPMENT AND HOUSING

- A national building board to be established and to include representatives from MID, HCC and the provinces.

- Training is required for the building code administrators, inspectors and builders.
- SIPEA to be reactivated.
- The NBCSI to be reviewed on a regular basis.
- The NBCSI to be incorporated in the SINU curriculum
- The NBCSI to be available on-line.

TABLE 6: BUILDERS AND SUPPLIERS

Once a sound foundation has been established with an updated NBCSI systems will need to be put in place to:

- Improve building standards.
- Encourage insurance companies to recognise the NBCSI in their risk analysis of building insurance.
- Promote the NBCSI with provincial authorities.
- Develop awareness programs that highlight to the public the benefits of adopted the NBCSI to improving social standards and long term cost saving.
- Roll out Capacity development programs for building professionals, builders and compliance inspectors and regulators on a regular basis
- Regulate and certify builders and building professionals.

SESSION 3: GUIDANCE DOCUMENT AND ROAD MAP

Recommendations for a suite of initiatives that can be for included in a Guidance Document for consideration by PRIF partners for funding support.

TABLE 1: PRIVATE SECTOR CONSULTANTS AND UTILITIES

1. The NBCSI must be legislated as soon as possible. The minister for the MID will need to push this.
2. The 1990 NBSI must be reviewed and updated
3. Once legislated and the NBCSI is reviewed and updated there will need to be an implementation process which will include the following components:
 - Education
 - Training/Legislation/Licencing
 - Industry awareness
 - Public awareness
4. Bodies and organisations (National Building board, SIBEPA) will need to be established to oversight implementation.
5. Funding will be required for the initial set-up and ongoing support to training, capacity building, awareness and promotion initiatives.
6. The updated NBSI must be readily available to the industry and public in both hard copy and electronically (on-line)

The proper implementation of the NBCSI will revolutionise the Solomon Islands building industry and provide confidence to potential donors.



TABLE 2: GOVERNMENT DEPARTMENTS AND SINU

1. The NBCSI must be legislated as soon as possible (Fast and Furiously!). It may be necessary to produce a supplementary Bill of Building regulations once the NBCSI has been updated.
2. The 1990 NBSI and Home Builders Manual must be reviewed and updated.
3. Training should be provided under the umbrella of SINU.
4. Training and awareness programs to be targeted at all sections of the building industry and incorporated into the SINU curriculum
5. Building professionals and Builders should be registered

TABLE 3: PRIVATE SECTOR CONSULTANTS

1. Donors should be identified to assist with the final drafting of the Building Act. This may involve a final series of reviews/peer reviews with both the industry and regulators.
2. SIBEPA to be reactivated and funded. SIBEPA should include a full time secretariat.
3. SIBEPA to be mandated to assist with the regulatory process, including building applications, planning approvals and licencing.
4. Retired overseas building professional volunteers provided through organisation such as NZ VSA should be used to provide capacity building to the Solomon Island building professionals and builders.
5. Materials suppliers should be mandated to only provide materials that comply with the standards in the SINBC.
6. A program of professional training workshops should be implemented.
7. The NBCSI should be available on line and should be interactive so that questions from building professionals, builders and the public can be answered and issues addressed.
8. SIBEPA and MID should have regional connections so that lessons learned regionally can be incorporated into reviews of the NBCSI.

TABLE 4: PRIVATE SECTOR CONSULTANTS AND HCC

1. A training and support centre for the NBCSI and the construction industry generally should be established within SINU.
2. Workshops and awareness programs should be undertaken to upgrade the NBCSI and should cover:
 - Climate change adaption
 - Disaster management mitigation
 - Traditional materials
 - OHS (eg bamboo scaffolding)
3. The Building Industry and the Public should have better access to the NBSI and the building standards using a digital version available online with app access.
4. The needs to be regular training workshop and industry conferences to promote the NBCSI, good design and construction practice, proper use of building materials and the industry generally.
5. The NBCSI must be legislated as soon as possible.



TABLE 5: MINISTRY OF INFRASTRUCTURE DEVELOPMENT AND HOUSING

Funding is required for the following activities:

1. Technical training.
2. Finalisation of legislation.
3. Update and support the MID materials lab for competency testing of building materials.
4. Climate change programs and incorporated into an updated NBCSI.
5. An NBCSI interactive website.

TABLE 6: BUILDERS AND SUPPLIERS

A roadmap to a workable and adjusted NBCSI and HBMSI will involve:

1. Review and update of the NBCSI and HBMSI including identifying objectives.
2. Establishing a working committee to update the NBCSI and ongoing review.
3. Identifying the relevant bodies responsible for applying and implementing the NBCSI and allocating responsibilities and resources.
4. Insuring that what is proposed in the NBCSI is cost effective.
5. Identifying all stakeholders involved in the review of the NBCSI process.
6. Schedule regular meetings for all stakeholders to provide input into updating and reviewing the NBCSI.
7. An awareness program needs to accompany the NBCSI review and update process.
8. A National building Authority needs to be established.
9. The legislation should include building regulations (this can be a supplementary bill after the NBCSI has been reviewed and updated).

A timeframe needs to be set for having a reviewed and updated NBCSI implemented.



Annex 6

Indicative Program, Inputs, and Costs for a Building Code Review

PRIF-ADB: Diagnostic study on the capacity of Pacific Island Countries to apply their building codes
SOLOMON ISLANDS NATIONAL BUILDING CODE - BUILDING CODE REVIEW
INDICATIVE WORK PLAN

ACTIVITY DESCRIPTION	total Week	wks																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1. INCEPTION REPORT	2																								
. Establish Consultancy Team																									
. Desk review of Current NBC and HBM																									
. Desk review current Building code literature																									
. Skype hook up with local consultants																									
. Finalise review methodology																									
. Prepare work plan																									
. Gosl/ donor approve Inception report	2																								
. Donor/Goslprepares mission approvals																									
2. SOLOMON ISLANDS CONSULTATION	2																								
. Briefing with Consultant representatives/Gosl/Donor																									
. Site Interviews with individual Stakeholders																									
. Consultative workshop with all stakeholders																									
. Follow up site interviews																									
3. NBCSI / HBMSI REVIEW	4																								
. Record of findings from consultations																									
. Initial recommendations																									
. Draft review presented to Stakeholders for comment																									
. Draft review incorporates Stakeholder comments																									
. Gov / donor approve Review	2																								
4. SOLOMON ISLANDS BUILDING CODE SUITE REWRITE	7																								
. NBCSI rewritten																									
. Building Manuals written																									
. > HBM																									
. > Simplified Handbook for traditional buildings																									
. Draft NBCSI presented to Stakeholders for comment																									
. Draft incorporates Stakeholder comments																									
. Gosl / donor approve Final NBC	2																								
5. PROJECT COMPLETION REPORT	2																								
. Record of NBCSI review and rewrite																									
. Evaluation of review and rewrite process																									
. Lessons Learned																									
. Follow up steps for implementing the NBCSI																									

PRIF-ADB: Diagnostic study on the capacity of Pacific Island					
Countries to apply their building codes					
SOLOMON ISLANDS NATIONAL BUILDING CODE - BUILDING CODE REVIEW					
INDICATIVE TRAVEL COSTS					
Mile stone		RATE	NO	SUB-TOTAL	TOTAL
2	SOLOMON ISLANDS CONSULTATION				\$26,405
	return economy flights (AUS/NZ/US - SI)	\$1,200	11	\$13,200	
	MTE	\$150	11	\$1,650	
	hire vehicle (day)	\$80	21	\$1,680	
	perdiem	\$265	27	\$7,155	
	insurance	\$70	11	\$770	
	communications	\$50	9	\$450	
	Workshop venue	\$1,500	1	\$1,500	
3	PRESENT NBC REVIEW TO STAKEHOLDERS				\$4,695
	return economy flights (AUS/NZ/US - SI)	\$1,200	1	\$1,200	
	MTE	\$150	1	\$150	
	hire vehicle (day)	\$80	5	\$400	
	perdiem	\$265	5	\$1,325	
	insurance	\$70	1	\$70	
	communications	\$50	1	\$50	
	Workshop venue	\$1,500	1	\$1,500	
4	PRESENT NBC REWRITE TO STAKEHOLDERS				\$4,695
	return economy flights (AUS/NZ/US - SI)	\$1,200	1	\$1,200	
	MTE	\$150	1	\$150	
	hire vehicle (day)	\$80	5	\$400	
	perdiem	\$265	5	\$1,325	
	insurance	\$70	1	\$70	
	communications	\$50	1	\$50	
	Workshop venue	\$1,500	1	\$1,500	
				TOTAL	\$35,795
				15% MARGIN	\$5,369
					\$41,164

PRIF-ADB: Diagnostic study on the capacity of Pacific Island Countries to apply their building codes																													
SOLOMON ISLANDS NATIONAL BUILDING CODE - BUILDING CODE REVIEW																													
INDICATIVE PERSONAL INPUTS AND COSTS																													
ACTIVITY DESCRIPTION	Week																							Total	Rate	total			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	days	USD	USD			
TEAM LEADER (ARCHITECT/BUILDING ENGINEER)		5	5		5	5	5	5	5	5			5	5	5	5	5	5			5	5			5	5	85	\$670	\$56,950
STRUCTURAL ENGINEER			3			5	2	2		1			3	2	1	1	1	1									23	\$630	\$14,490
ELECTRICAL/MECHANICAL ENGINEER				2		5	2	1		1			2	1	1	1	1	1									18	\$630	\$11,340
ENVIRONMENTAL ENGINEER (HEALTH AND AMENITY)					2		5	2	1		1		2	1	1	1	1	1									18	\$630	\$11,340
FIRE ENGINEER (FIRE RESISTENCE-ACCESS AND EGRESS)					2		5	2	1		1		2	1	1	1	1	1									18	\$630	\$11,340
SENIOR BUILDING INSPECTOR						3		5	2	2			3	2	2	1	2	1									26	\$630	\$16,380
DISABILITY EXPERT						1		5	1	1			1	1	1	1	1	1									14	\$630	\$8,820
CLIMATE CHANGE ADAPTION EXPERT						1		5	2	1			2	1	1	1	1	1									17	\$630	\$10,710
ENVIRONMENTAL SAFEGUARDS EXPERT						1		5	1	1			1	1	1	1	1	1									14	\$630	\$8,820
IT EXPERT													1		5	3	3										12	\$630	\$7,560
ILLUSTRATOR													1	5	5	3	3										17	\$550	\$9,350
TOTAL PERSON DAYS																							262						
																								management fee	60%	\$100,260			
																								trips:		\$41,164			
																								Contingency		\$16,000			
																								total USD		\$324,524			



Pacific Region Infrastructure Facility