

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

Fiji Case Study
Consultant's Report





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Abbreviations

ADB	Asian Development Bank
CIC	Construction Industry Council
NBCF	National Building Code of Fiji
PRIF	Pacific Region Infrastructure Facility





1. Introduction

The Regional Diagnostic Study on the Application of Building Codes in the Pacific investigates the capacity of Pacific island countries to apply their building codes or building construction specifications and standards and to provide guidance in assistance initiatives related to building codes updates.

The study conducts a detailed assessment in three countries with experience in post-cyclone reconstruction (Fiji, Solomon Islands, and Vanuatu) using site interviews and a participatory workshop with infrastructure ministries and local construction consultants and contractors.

The interviews and workshop aim to:

- identify the main constraints that prevent application of building code requirements;
- explore actions and activities to improve application of the codes and better align or integrate them 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 future building code updates appropriate to country capacity to apply them, and align them with other initiatives to improve resilience, including integration with emergency guidelines or other climate adaptation initiatives; and
- prioritize areas of support for Pacific countries to guide assistance programs supported by development partners.

This report documents the first in-country mission to Fiji, during 12–27 January 2019, undertaken by Rhys Gwilliam, the Senior Building Expert contracted by Pacific Region Infrastructure Facility. Section 6 of the report outlines the consultation and methodology.

Based on the key themes that emerged from the Fiji consultation, as documented in section 3, enabling and constraining factors are identified, actions and activities proposed, and an action plan of initiatives recommended. It suggests areas of support that PRIF development partners could provide to enable the action plan.

2. Context

2.1 Building Regulations, Legislation, and Standards

Status of the National Building Code of Fiji

The National Building Code of Fiji was developed in the late 1980s under an Australian Aid program and published in 1990, with no updates since then.

Construction manuals related to the National Building Code

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

The Home Building Manual of Fiji fully conforms with the structural requirements of the NBCF. The manual does not cover vernacular construction. There have been no updates to the NBCF since publication in 1990.

Figure 2-1: Fiji - National Building Code and Home Building Manual



Building control legislation and parties responsible for applying, administering, and enforcing building regulations and standards

The NBCF is regulated under the Public Health (National Building Code) Regulations 2004 and administered by the Central Board of Health as per the Public Health Act 1934, section 39.

No guidelines in the Public Health (National Building Code) Regulations 2004 or the Public Health Act 1934 section 39 outline how the regulations are to be administered, compliance enforced, or regular technical reviews managed.

Obtaining a building permit and establishing a committee to coordinate and facilitate the building permit process is regulated under the Regulation of Building Permits Act 2017.

Links between the building control acts and related acts such as the Environmental Management Act (2005) and Trade Standards and Quality Control Act 1992 are not defined.

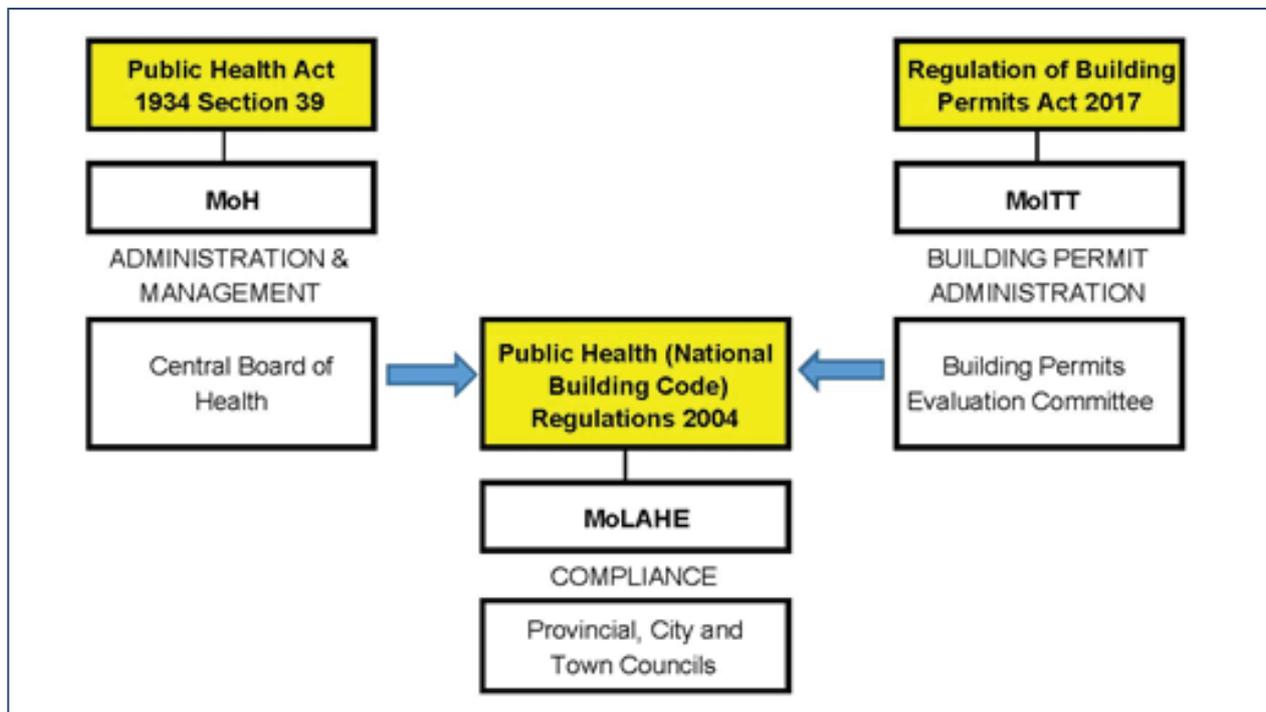
The Ministry of Health—Central Board of Health is responsible for Administration of the 1934 Act and 2004 regulations.

The Ministry of Industry, Trade and Tourism is responsible for Administration of the Regulation of Building Permits Act 2017 and establishing a Building Permits Evaluation Committee.

The Ministry of Local Authority, Housing and Environment, through provincial, city and town councils, is responsible for building permits approval, inspections, compliance enforcement, and issuing completion certificates. Fiji is divided administratively into four divisions plus the self-governing island of Rotuma. The divisions are subdivided into 14 provinces, 10 town councils and 2 city councils (Suva and Lautoka)

The links between the three building control acts/regulations, the assigned ministries, and the agencies responsible for administration, management, and compliance are illustrated in Figure 2-2.

Figure 2-2: Link between building control acts/regulations and agencies



MoLAHE – Ministry of Local Authority, Housing and Environment

Source: Author provided

The Construction Industry Council (CIC) is the umbrella organization for the:

- Fiji Association of Architects
- Fiji Institute of Engineers
- Fiji Master Builders Association
- Fiji Institute of Quantity Surveyors
- Fiji Building Design Association

Members of these organizations are responsible for applying the National Building Code of Fiji.



The Insurance Council of Fiji requires insured buildings to be cyclone certified in accordance with Australian Standard AS4055 by a council-approved engineer. It is estimated that less than 10% of buildings in Fiji are insured. Compliance with the NBCF is not an Insurance Council of Fiji requirement.

Buildings to which the legislation applies

The 1934 Act and 2004 regulations require that the NBCF apply to all buildings in Fiji for all classes of occupancy. However, due to the high cost of building construction, NBCF compliance has in effect only been made mandatory within the town and city council boundaries and those buildings in rural areas requiring cyclone certification.

Building standards

The NBCF 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 and New Zealand Standards referenced under the NBCF have been withdrawn or superseded and some of them are not adopted by Fiji. The Ministry of Industry Trade and Tourism is adopting, updating, and reviewing the building standards.

The Ministry of Industry Trade and Tourism, Department of National Trade Measurement and Standards have a memorandum of understanding with Standards Australia which enables Fiji to use and adopt Australian standards. The Department of National Trade Measurement and Standards modifies Australia/New Zealand standards, as per Fiji's needs. The Trade Standards and Quality Control Act 1992 legislates the publishing of Fijian standards. Under this act, standards are published as voluntary or mandatory.

There is a private sector building material testing laboratory owned and operated by Entec Engineering Ltd. However, the scope of lab accreditation is limited.

The Ministry of Industry Trade and Tourism is recruiting a director, Department of National Trade Measurement and Standards. The position is responsible for the development of policies and effective management of the Department of National Trade Measurement and Standards. The position will provide technical and policy advice on matters related to consumer protection, standards (including building standards), and metrology and the enforcement of relevant laws.

2.2 Institutionalization

Technical and vocational institutes where construction technology is taught include:

- Fiji National University
- Australia Pacific Technical College
- Vocational and Trade Colleges

The curriculum at these institutes does not include the introduction and application of the NBCF.

2.3 Training, Capacity Building, and Promotion

The Fiji government does not have courses to train building inspectors or programs to build the capacity of the regulatory bodies to administer and monitor compliance with the NBCF. Strategies



to promote the NBCF to the public, builders, professional users, and technical and vocational institutions have not been developed.

Hard copies of the National Building Code are not readily available. However, a soft copy in PDF format is available online.

Until Cyclone Winston in 2016, the National Building Code and Home Building Manual were not widely known or used.

After Cyclone Winston in 2016 the National Building Code and Home Building Manual were promoted by government and the private sector, widening appreciation of the existence of the NBCF and its application. Most public buildings being reconstructed through the Ministry of Economy Construction Implementation Unit's Cyclone Winston reconstruction program more or less comply with the 1990 code.

Figure: 2-3: Cyclone Winston Devastation



Source: Author provided.

However, CIC members remain concerned that the National Building Code is not being used at all or is inadequately applied in many private reconstruction situations and new builds, leading to poor quality and non-resilient infrastructure. Many buildings being designed are using a mish-mash of the Australian and New Zealand codes, because the NBCF, at 30 years old, is outdated.

3. Fiji Consultation Process and Methodology

3.1 Bodies Consulted

Key bodies responsible for administering the building code and managing infrastructure in Fiji are the:

- Ministry of Economy—Construction Implementation Unit
- Ministry of Infrastructure and Transport—Public Works Department
- Ministry of Industry Trade and Tourism

- Ministry of Local Authority, Housing and Environment
- Ministry of Health
- Construction Industry Council
- Fiji Master Builders Association
- Fiji Institute of Engineers
- Fiji Association of Architects
- Fiji Building Designers Association
- Insurance Council of Fiji

The CIC is the umbrella organization for the Fiji construction industry and is made up of all operators involved. Members of CIC include architects, engineers, project managers, quantity surveyors, property developers, real estate valuers, building designers, building contractors/builders including electricians, and plumbers and similar trades. The Fiji Master Builders Association, Fiji Institute of Engineers, Fiji Association of Architects, Fiji Building Designers Association, and Insurance Council of Fiji are all represented on the council.

3.2 One-on-One Site Interviews

One-on one site interviews were held with many of the representatives of these key bodies as per the consultation schedule below. All key bodies, except the Insurance Council of Fiji and Ministry of Health (who were invited but unable to attend), were represented at the participatory workshop.

All PRIF members are involved with infrastructure projects in Fiji. The Asian Development Bank, the Japan International Cooperation Agency, and the World Bank sent representatives to the workshop. Separate on-site interviews were held with consultants managing Department of Foreign Affairs and Trade of Australia (Palladium-Richard Warren) and the United States Agency for International Development (Pacific Climate Ready Project –Noa Seru-Jerry Cole) reconstruction and climate adaption projects. The Forum Secretariat sent an observer to the workshop. The Pacific Community and European Union were involved in identifying workshop participants, but were unable to send representatives.

Table 3-1: One-on-One Consultation Schedule

16-Jan-19	Warren Yee—Past president, Fiji Institute of Engineers
17-Jan-19	Gordon Jenkins—CIC president
	Conway Architects –CIC member
	Andrew Pene—government architect
18-Jan-19	Richard Warren - Department of Foreign Affairs and Trade of Australia engineer, Cyclone Winston reconstruction program
21-Jan-19	David Fay—Asian Development Bank
	Vijay Naidu CEO, Construction Industry Council
23-Jan-19	Participatory workshop
25-Jan-19	Fraser Clark Architects, former president, Fiji Institute of Architect (FIA),
	Adish Naidu
	Shah Mohamed Ministry of Economy, Construction Implementation Unit
31-Jan-19	Pacific Climate Ready Project –Noa Seru-Jerry Cole (by skype)

3.3 Participatory Workshop

The one-day participatory workshop was held at Novotel Lami-Suva on 23 January 2019. The list of participants is attached as **Annex 2**. Participant breakdown is as follows:

- 30 construction practitioners
- 6 observers
- 4 media organizations
- 4 women (13%).
- 13 government sector (43%) and 17 private sector (57%)

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 invaluable for reaching consensus on challenges and issues, agreeing solutions, and planning practical and achievable interventions.

The Fiji Participatory Workshop sought opinions and recommendations from construction practitioners and government regulators on how Fiji's National Building Code and its administration and compliance enforcement procedures can be improved in light of lessons from recent disasters in the region.

The outcomes and key themes from the workshop have informed the action plan as section 5 of this document, and will help formulate a guidance document for the PRIF that will guide future assistance initiatives related to building codes updates for all Pacific countries targeted under this study.

The workshop's four sessions included:

- Session 1: Adequacy of the National Building Code
- Session 2: National Building Code Improvements
- Session 3: Home Building Manual
- Session 4: Guidance Document and Road Map

The workshop PowerPoint is attached as **Annex 3**, and workshop outcomes as **Annex 4**. A draft of the workshop outcomes was circulated to all participants and the final document attached has been amended to include their comments.

The CIC organized an extensive media program to promote the study. A media management company, Pacific Reach, was appointed to manage this promotion and prepare a media release for the local papers. Fiji TV, Fiji Radio, Fiji Sun, and Fiji Times were all present at the workshop. Fiji TV produced a short video which was played on Fiji TV the evening after the workshop. Copies of articles published in the Fiji Sun and Fiji Times are attached as **Annex 5**.

3.4 Key Themes

Themes from the consultations and participatory workshop are grouped under six headings:

- i. Adequacy of the NBCF
- ii. Building standards
- iii. NBCF administration and compliance
- iv. NBCF training and capacity building
- v. NBCF awareness and promotion
- vi. Insurance

The points raised can be summarized as follows:

- i. Adequacy of the National Building Code of Fiji
 - The NBCF is a legal document. All buildings must comply, not just public buildings.
 - A major constraint is that the NBCF has only been applied to certain areas and certain constructions. It needs to apply to all buildings at all locations.
 - There is no consideration in the NBCF for traditional construction methods and materials. Information on affordable housing and construction should be developed for inclusion in the NBCF.
 - The structural standards set out in the NBCF should not be compromised. Cyclone ratings and wind speeds need to be reviewed. Structural requirements for Category 4 and 5 should be included but the minimum Category 3 retained, as raising the cyclonic category requirements would have cost implications for everyday people. Provision should be made in the NBCF for structural conformity standards to be regularly reviewed based on current data. Structural standards must be properly enforced.
 - New Zealand and Australian seismic provisions should be harmonized.
 - The NBCF is not user friendly, it needs to be simplified and made more readable. The NBCF needs to include an introductory page and flow charts.
 - The NBCF needs to be web-based and interactive with a mobile phone applications to allow people to share comments on the updated code.
 - The 1990 NBCF was passed into law in 2004 under the *Public Health (National Building Code) Regulations Act 2004*. However, the 1990 NBCF has never been reviewed even though there is a requirement in the NBCF for *regular reviews*. The CIC or a designated government agency needs to be empowered and funded to bring in technical expertise to carry out regular reviews of the NBCF.
 - The NBCF needs to be updated to accommodate current building technology.
 - The cost to comply with the NBCF is too high for many building owners. Many building owners do not use the NBCF as it requires qualified Structural Engineers, who are scarce and expensive. The NBCF review needs to propose appropriate strategies that address this issue.
 - Climate data is continually evolving, an updated NBCF will need to include provisions to ensure that it is regularly reviewed to take account of the most recent climate data. Rainfall intensity provisions should be revised in accordance with the latest data and changing weather patterns. The NBCF should refer to the Environmental Impact Assessment Act for environmental provisions. Climate adaptation measures should be included.

- For OHS provisions the NBCF should refer to the Health and Safety Act.
- Accessibility for handicapped persons must be adequately addressed.
- The Home Building Manual should be part of the NBCF. It could form one component of a suite of compliant workbooks or manuals targeted at different levels of the building industry, ranging from sophisticated high rise to village housing. However, the NBCF would remain the overriding legal document and compliant manuals would still need to meet structural standards set out in the NBCF.
- The Home Building Manual could form one pillar of a three-level code. For example:
 - a. Gold: Buildings designed to the NBCF requiring certification by a university-trained engineer.
 - b. Silver: Building designed in accordance with the Home Building Manual with assistance from a construction practitioner with a technical qualification.
 - c. Bronze: Building constructed by owner in accordance with a simple pictorial guide to housing standards.

Workshop participants agreed that while this approach has merit, the silver and bronze versions should be subsidiaries of the gold version and the structural standards set out in the gold version should not be compromised. If silver and bronze versions are included in an updated building code, their legal status would need to be determined. There was disagreement on whether bronze and silver codes that would apply to community housing should or should not be exempt from the NBCF.

- Building consultants should be engaged in a participatory exercise to review the NBCF and Home Building Manual. The consultant team should include an architect, structural engineer, building services engineer, mechanical engineer, electrical engineer, fire engineer, senior building inspector, and legal expert.
 - The review should ensure that building standards are not compromised for the sake of making it more affordable and easier on the construction industry.
 - Views differed on the practicality of the NBCF being translated into Fijian languages.
 - The NBCF review should consider what building codes upgrades have been undertaken in neighboring countries, eg, the impact of the Christchurch earthquake on the New Zealand code.
 - Relevant other construction related legislation, such as environment, health, and safety, etc., should be reviewed and the revised code should harmonized with this legislation.
 - The NBCF needs to address building construction ethical standards.
 - Guidelines for the application and compliance enforcement of the codes for institutional, commercial, and private building works should be included in the NBCF.
- ii. Building Standards
- The main issue is not the NBCF but the inadequacy of standards around building materials being used in Fiji. Existing standards referred to in the code should be updated.
 - There are no uniform standards applied to all buildings.
 - The NBCF refers to Australian and New Zealand standards separately; they should be harmonized.
 - Suppliers need to show proof that materials are certified to meet NBCF materials standards.
 - Local builders lack skills mobility and ethics.

- A robust compliance system to monitor product standards is needed. Owners, suppliers of building materials, and products should be accountable.
- Builders have no qualification requirements. A national certification and accreditation by government and private enterprise should be considered. Annual licensing should be considered for all construction personnel, including consultants, contractors, project managers, and trade people.
- There should be standard marks on all building materials identifying the standard that the building material is manufactured to. Ideally, a materials testing lab should be built at the Fiji National University and be part of its teaching facilities.
- Accredited materials testing labs should be established (these could be outside Fiji).

iii. NBCF Administration and Compliance

- The NBCF is not being enforced. Inspections and supervision by building inspectors is lacking, and compliance enforcement needs to be improved.
- The whole building approval and enforcement process lacks clarity. A Building Board to administer building construction and the compliance of building permits is needed in Fiji to replace the Central Board of Health. Notably, on 14 July 2017, the Fiji Parliament enacted the Regulation of Building Permits Act 2017, which aims to streamline the process of obtaining a building permit and establishes a committee to coordinate and facilitate the building permit process.
- Members of this Building Board Committee should have building related qualifications.
- The administration and compliance regime supporting the NBCF needs to have its processes, responsibilities, and authority clearly defined.
- The time to obtain a building permit is currently too long. Processes need to be put in place to reduce this time.
- The enforcement of the NBCF needs to be changed from the Ministry of Health to Ministry of Local Government via boards and councils or another ministry or independent body, and the governing body overseeing the NBCF needs to change from Ministry of Industry and Trade to Ministry of Local Government or Ministry of Infrastructure and Transport.
- The NBCF is currently enforced through insurers and underwriters.
- Noncompliance should attract heavy penalties and fines (currently the maximum fine is FJ\$200)
- All building sites, whether commercial or residential, should have qualified building inspectors regularly identifying compliant and non-compliant buildings.
- To improve compliance and enforcement private regulators/inspectors could be used.
- A Building Code Review Committee to be established in concurrence with government agreed terms of reference. This committee is to collect data, initiate dialogue, review existing codes, and recommend code updates.

iv. NBCF Training and Capacity Building

- Capacity building and training for building professionals and inspectors need to be offered.
- Training programs should be developed in consultation with local construction practitioners.
- Joint fellowship programs are lacking to enhance and share knowledge of the NBCF. Fellowship programs should be included in the suite of training initiatives.

- A fellowship program led by the CIC could help promote the NBCF and train construction practitioners in building design, NBCF administration, and compliance enforcement.
- Establish construction industry programs for building professionals and general practitioners organized through the CIC.
- Establish specific programs to promote industry best practice of reconstruction and new-build infrastructure.
- CIC to arrange annual conferences for the industry.
- Urgent need to educate and upskill builders.
- Guidelines for building workers qualification requirements.
- The bond between educators, government, and the private sector has been lost. A new updated NBCF needs to be included as part of the building professionals and trades workers training curriculum.
- The CIC or a designated government agency needs to be empowered and funded to bring in technical expertise to implement proposed industry reforms.
- There is a lack of qualified structural engineers; more need to be trained.

v. NBCF Awareness and Promotion

- The NBCF and Home Building Manual are not readily available to the public. Published and online versions of the NBCF need to be readily available to both the construction industry and the public.
- Public awareness of the NBCF and Home Building Manual is lacking and they are poorly understood. NBCF awareness strategies are needed and delivered on a regular basis.
- NBCF advocacy, awareness, and workshops should be through the CIC.
- Most Fijian families have a lifetime investment in their homes. It is therefore to their advantage to ensure their homes comply with NBCF standards. One reason many did not was lack of NBCF awareness and the long term financial advantages of complying with the code standards. An ongoing awareness program promoting the NBCF and Home Building Manual to Fijian homeowners would be worthwhile.

vi. Insurance

The influence of insurance companies on building structural design was discussed. It was noted that to obtain insurance on a building the structural design had to be certified by a structural engineer approved by the Insurance Council of Fiji. This was an expensive exercise for homeowners and was one reason most building owners did not insure their properties (only 6% of properties in Fiji are insured). The option of reducing this onerous requirement should be discussed with the Insurance Council of Fiji.

PRIF noted it is finalizing a consultancy which has as one of its objectives the exploration of the capability of local insurance companies to offer greater and cheaper disaster risk insurance protection in the Pacific.



4. Issues and Outcomes

4.1 Building Legislation

Enabling factors

- Building control legislation has been enacted for the regulation of the NBCF and obtaining a building permit.
- The Trade Standards and Quality Control Act 1992 legislates the publishing of Fijian standards.

Constraining factors

- Building Control legislation dates from 1934 and is outdated.
- The Regulation of Building Permits Act 2017 only covers the process of obtaining a building permit and not the compliance process.
- Building control legislation is not harmonized with other related legislation.

Proposed actions and activities

A legal expert should review the building control Acts of Parliament.

Suggested legal activities would include:

- i. Review of how the NBCF could be better administered, including consideration for changing administrative responsibilities from the Ministry of Health to the Ministry of Infrastructure and Transport or the Ministry of Local Authority, Housing and Environment.
- ii. Review of how the NBCF could be better maintained from a technical perspective including consideration for changing technical management responsibilities from Ministry of Health to Ministry of Infrastructure and Transport.
- iii. Approval authorities responsible for processing and approving building permits and enforcing compliance to be defined.
- iv. Administration, management, and compliance guidelines defined.
- v. Definition of which buildings the act will apply to. For example will the act apply to private housing outside a city or town council boundary?
- vi. The legislation should be rationalized and the building acts harmonized with related legislation, such as the Environmental Management Act and Trade Standards and Quality Control Act.

4.2 Building Regulations, National Building Code

Enabling factors

- A National Building Code of Fiji exists and has been legislated.

Constraining factors

- The NBCF dates from 1990 and has not been reviewed or updated.
- Accessing Australian and New Zealand Standards, referenced in the NBCF, is difficult and costly.

Proposed actions and activities

A building consulting firm should be engaged in a participatory exercise to review and update the NBCF, building standards, and associated legislation.

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 an NBCF 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 1**. The estimated cost is around \$375,000.

The review should include the following activities:

- i. Explore options for a three level code with gold, silver and bronze editions.
- ii. Update building standards, in particular structural wind and seismic standards.
- iii. Work with the National 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. Address accessibility guidelines for people with disabilities.
- v. Develop an online, interactive version of the code with a mobile phone application.
- vi. Address affordable housing.
- vii. Reference occupational health and safety (in particular work safety, timber treatment and asbestos issues).

The Insurance Council of Fiji and Fiji Bankers Association should be encouraged to adopt the updated NBCF as the standard for approving building insurance and building loans.

4.3 Building Standards

Enabling factors

- The NBCF references Australian and New Zealand building design and building product standards.
- The Ministry of Industry Trade and Tourism is currently adopting, updating, and reviewing the building product standards.
- The Department of National Trade Measurement and Standards has a memorandum of understanding with Standards Australia that enables Fiji to use and adopt Australian standards.
- There is a private sector building material testing laboratory owned and managed by Entec Engineering Ltd.
- The Ministry of Industry Trade and Tourism is recruiting a Director – Department of National Trade Measurement and Standards.

Constraining factors

- No mechanism is 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 NBCF, can be difficult and costly for members of the building professions.
- The private sector building material testing laboratory has limited accreditation.

Proposed actions and activities

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

- i. Update the list of acceptable building product standards in a revised NBCF.
- ii. Enable copies of relevant building standards available through the Department of National Trade Measurement and Standards to be readily accessible to building professionals.
- iii. Include in the Building Inspectors Duty Statement the monitoring of building products on site.
- iv. Legislate penalties for importing non-complying building materials.
- v. Support Entec Engineering Ltd to expand its materials testing accreditation, establishing an independent materials testing laboratory, e.g., at the Fiji National University Engineering School or identify 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 annual licensing for all construction personnel (consultants, contractors, project managers, and trades people). The private sector, through the CIC, 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 NBCF Administration and Compliance, Training, and Capacity Building

Enabling factors

- Legislation exists for administering and enforcing compliance of the NBCF.
- Local authority by-laws exist to determine building permit requirements.
- Some town and city councils have planning and building departments and employ building inspectors.

Constraining factors

- Legislation does not set out guidelines for regulating or providing technical management of the NBCF.
- The present procedures for obtaining a building permit, involving input from a variety of institutional bodies, are not very effective and are time consuming.
- There are insufficient building inspectors to manage the building permit process and enforce compliance.
- Building inspectors have not received any or only limited training on NBCF compliance procedures.
- Building inspectors based in the provinces do not have funds for logistical support.

Proposed actions and activities

A strategy to strengthen NBCF application, building control, administration, and compliance enforcement procedures should be developed.

The strategy should include the following actions:

- i. A human resource consultant appointed to undertake a gap analysis of the current building control regulatory human resource environment.
- ii. Authorities responsible for processing building permits and monitoring compliance to be appropriately funded, including funds for logistical support, such as vehicles.
- iii. A “one-stop-shop” approach should be considered for processing building permits.
- iv. In consultation with the CIC and local construction practitioners, training opportunities associated with applying the NBCF to be offered to building professionals. Joint fellowship programs led by the CIC should also be considered.

The gap analysis would include the following activities:

- Complete a baseline study on the number of building inspectors, where they are located, and their skill level.
- Based on the amount of building completed in Fiji over the past 3 years, determine the number of building inspectors required and in what locations.
- Complete a gap analysis to determine the gap between the number of Building Inspectors required by location and the baseline study numbers.
- Prepare a building inspector duty statement appropriate for Fiji.
- Undertake a skills gap analysis of the current cohort of building inspectors against the building inspector duty statement.



Based on the outcome of the gap analysis:

- Additional building inspector positions may need to be established and building technicians recruited to fill the positions.
- The Fiji 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.

Consideration could also be given to outsourcing building inspections to the private sector, as is done in Australia.

4.5 Institutionalization

Enabling factors

- Technical and vocational institutes exist in Fiji where construction technology is taught at university, technical, and vocational colleges.
- Training institutions support the concept of institutionalizing the updated NBCF by incorporating its training elements into ongoing programs.

Constraining factors

- The NBCF is almost 30 years old.
- The curriculum at these institutes does not include the introduction and application of the NBCF.

Proposed actions and activities

The newly updated NBCF should be included as part of the building professionals and trades workers training curriculum at:

- Fiji National University
- Australia Pacific Technical College
- vocational and trade colleges

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

4.6 NBCF Awareness and Promotion

Enabling factors

- One outcome of cyclone Winston was that the Fijian public became more aware of the need to cyclone-proof buildings.
- The National Disaster Management Office has a disaster management awareness program that could also promote the NBCF.

- The CIC has organized conferences, which have promoted the Fijian construction industry and have been supported by many of the PRIF partners.

Constraining factors

- No NBCF public awareness programs have been delivered since the publication of the NBCF in 1990.
- Technical and financial resources are lacking to fund preparation and delivery of appropriate public awareness programs.
- Published versions of the NBCF, Home Building Manual of Fiji, and associated building standards are not readily available to the public.

Proposed actions and activities

An NBCF awareness and promotion strategy should be developed.

The strategy should consider the following:

- i. Published versions of the NBCF 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 NBCF needs to be web-based and interactive with a mobile phone application.
- iii. Funding should be made available to deliver the programs regularly. This could involve the CIC, National 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 a key element in all promotional activities.
- v. Support should be provided to the CIC to organize annual national conferences that include promotion of the NBCF, best industry practice, and construction ethics.

5. Action Plan

One of the strongest messages to come out of the consultation process was that improvement in the quality of Fiji's construction standards was dependent on the administration and compliance monitoring of the NBCF being significantly improved. Without this improvement an updated NBCF, while useful to professional designers, would have little relevance to the vast amount of building work currently undertaken in Fiji for the Fijian public by unqualified designers and builders.

Consequently, improvement in NBCF administration and compliance monitoring will require a strong commitment from the Fijian government to enforce an updated NBCF and commit to improving the capacity of government to apply the NBCF.

This commitment could involve a statement that would set out an action plan and timeline for short-term and long-term support for the NBCF review, management, compliance, training, and promotional activities.



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

Short term

- i. Engage a legal expert to review and rationalize current building control legislation and harmonize the legislation with other related legislation.
- ii. Engage a building consulting firm to review and update the NBCF, including associated manuals (silver and bronze versions). Refer to **Annex 1** 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 building control regulatory human resource environment to identify shortfalls in regulatory resources and skills.
- iv. Commit the Ministry of Industry Trade and Tourism Department of National Trade Measurement and Standards to improving building material quality control by updating the list of acceptable building product standards in a revised NBCF, reviewing building standards legislation, and developing an appropriate system to monitor and enforce building material quality compliance.
- v. Engage the CIC, National Disaster Management Office, appropriate NGOs, and a private sector media management company to develop an awareness program to promote the launching of an updated NBCF and associated manuals and deliver the program to the general public in urban and rural areas.
- vi. Publish hard copies of the updated NBCF and associated manuals and identify outlets where they can be purchased.
- vii. Develop a NBCF website that can be easily accessed by the Fijian public.

Long term

- i. Develop, fund, and deliver appropriate training courses targeted at building professionals who apply the NBCF and building inspectors who monitor compliance.
- ii. Address quality control of building material testing by either:
 - a. establishing a materials testing laboratory in Fiji, e.g., at the Fiji National University Engineering School, and/or
 - b. identifying an acceptable regional testing laboratory, and/or
 - c. committing funding to the private sector to develop existing materials testing facilities.
- iii. Support the CIC to hold annual conferences and to instigate joint fellowship programs between government and the private sector and Fijian industry and industry sectors in other countries.
- iv. Support the integration of the updated NBCF into the curriculum of Fijian teaching institutes, such as Fiji National University, Australia/Pacific Technical Coalition, and trade colleges, 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 NBCF promotional activities so they are delivered regularly.



To facilitate this action plan a national NBCF coordinator should be appointed for 2-year term to be based in the ministry responsible for managing the NBCF. The co-ordinator to work closely with consultants engaged to carry out the action plan activities and providing support to both the NBCF approval authorities and the CIC to implement the plan.

6. Potential Areas for Support By PRIF Partners

PRIF development partners could provide material support to the Government of Fiji 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 NBCF national co-ordinator could be a member of a team of NBC national co-ordinators based in other Pacific countries, all working under the umbrella of a regional co-ordinator.
- ii. Fund a legal expert to review building control related legislation.
- iii. Fund a team of building experts to review and update the NBCF and develop associated building manuals.
- iv. Fund a human resource consultant to undertake a gap analysis of building control human resources and skill levels and develop appropriate training programs.
- v. Fund the delivery of appropriate training programs to building inspectors and private building professionals over a 2-year period.
- vi. Fund an NGO and/or media management company to assist the CIC and National Disaster Management Office to develop and deliver an NBCF launching program.
- vii. Fund the publishing and printing of the updated NBCF.
- viii. Fund an NGO and/or media management company to assist the CIC and National Disaster Management Office to develop and regularly deliver an NBCF 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

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
FIJI 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	24	25	
1 INCEPTION REPORT	2																										
. Establish Consultancy Team																											
. Desk review of Current FNBC and HBM																											
. Desk review current Building code literature																											
. Skype hook up with Fiji CIC																											
. Finalise review methodology																											
. Prepare work plan																											
Gof / donor approve inception report	2																										
Donor/Gof prepares mission approvals																											
2 FIJI CONSULTATION	2																										
. Briefing with CIC/Gof/Donor																											
. Site interviews with individual Stakeholders																											
. Consultative workshop with all stakeholders																											
. Follow up site interviews																											
3 FNBC / HBM REVIEW	5																										
. Record of findings from consultations																											
. Initial recommendations																											
. Draft review presented to Stakeholders for comment																											
. Draft review incorporates Stakeholder comments																											
Gof / donor approve Review	2																										
4 FIJI BUILDING CODE SUITE REWRITE	8																										
. FNBC rewritten																											
. Building Manuals written																											
> HBM																											
> Simplified Handbook for Village buildings																											
. Draft FBC Code presented to Stakeholders for comment																											
. Draft incorporates Stakeholder comments																											
Gof / donor approve Final NBC	2																										
5 PROJECT COMPLETION REPORT	2																										
. Record of NBC review and rewrite																											
. Evaluation of review and rewrite process																											
. Lessons Learned																											
. Follow up steps for implementing the NBC																											

PRIF-ADB: Diagnostic study on the capacity of Pacific Island						
Countries to apply their building codes						
FIJI NATIONAL BUILDING CODE - BUILDING CODE REVIEW						
INDICATIVE TRAVEL COSTS						
Mile stone		RATE	NO	SUB-TOTAL	TOTAL	
2	FIJI CONSULTATION					\$24,785
	return economy flights (AUS/NZ/US - Fiji)	\$1,200	11	\$13,200		
	MTE	\$150	11	\$1,650		
	hire vehicle (day)	\$80	21	\$1,680		
	perdiem	\$205	27	\$5,535		
	insurance	\$70	11	\$770		
	communications	\$50	9	\$450		
	Workshop venue	\$1,500	1	\$1,500		
3	PRESENT NBC REVIEW TO STAKEHOLDERS					\$4,395
	return economy flights (AUS/NZ/US - Fiji)	\$1,200	1	\$1,200		
	MTE	\$150	1	\$150		
	hire vehicle (day)	\$80	5	\$400		
	perdiem	\$205	5	\$1,025		
	insurance	\$70	1	\$70		
	communications	\$50	1	\$50		
	Workshop venue	\$1,500	1	\$1,500		
4	PRESENT NBC REWRITE TO STAKEHOLDERS					\$4,395
	return economy flights (AUS/NZ/US - Fiji)	\$1,200	1	\$1,200		
	MTE	\$150	1	\$150		
	hire vehicle (day)	\$80	5	\$400		
	perdiem	\$205	5	\$1,025		
	insurance	\$70	1	\$70		
	communications	\$50	1	\$50		
	Workshop venue	\$1,500	1	\$1,500		
				TOTAL		\$33,575
				15% MARGIN		\$5,036
						\$38,611

PRIF-ADB: Diagnostic study on the capacity of Pacific Island Countries to apply their building codes																														
FIJI NATIONAL BUILDING CODE - BUILDING CODE REVIEW																														
INDICATIVE PERSONAL INPUTS AND COSTS																														
ACTIVITY DESCRIPTION	Week																									Total	Rate USD	total USD		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	days				
TEAM LEADER (ARCHITECT/BUILDING ENGINEER)	5	5			5	5	5	5	5	5	5			5	5	5	5	5	5	5			5	5		95	\$670	\$63,650		
STRUCTURAL ENGINEER																											25	\$630	\$15,750	
ELECTRICAL/MECHANICAL ENGINEER																											19	\$630	\$11,970	
ENVIRONMENTAL ENGINEER (HEALTH AND AMENITY)																											19	\$630	\$11,970	
FIRE ENGINEER (FIRE RESISTENCE-ACCESS AND EGRESS)																											19	\$630	\$11,970	
SENIOR BUILDING INSPECTOR																											29	\$630	\$18,270	
DISABILITY EXPERT																											15	\$630	\$9,450	
CLIMATE CHANGE ADAPTION EXPERT																											18	\$630	\$11,340	
ENVIRONMENTAL SAFEGUARDS EXPERT																											15	\$630	\$9,450	
IT EXPERT																											13	\$630	\$8,190	
ILLUSTRATOR																											22	\$550	\$12,100	
																											289		\$184,110	
																												mangement fee	60%	\$110,466
																												trips:		\$38,611
																												Contingency		\$16,000
																												total USD		\$349,187

Annex 2

List of Workshop Participants

Date: Wednesday 23 January 2019 Novotel Lami

**TABLE 1: FIJI GOVERNMENT - MINISTRY OF INFRASTRUCTURE AND TRANSPORT
MINISTRY OF INDUSTRY TRADE AND TOURISM MINISTRY OF EDUCATION**

Mr Andrew Pene	Acting Director Building and Government Architect MoIT
Ms Makereta Tuivabea	Principal Work Study Officer MoIT
Mr Zahidiul Islam	Chief Engineers Structure MoIT
Ms Ajeshni Lata	Standards Officer Ministry of Industry and Trade
Mr Serupepeli Udre	Director Asset Management Unit Ministry of Education
Mr Muneshwar Prasad	Principal Education Officer Ministry of Education

**TABLE 2: FIJI LOCAL GOVERNMENT – NATIONAL DISASTER MANAGEMENT OFFICE
CONSTRUCTION INDUSTRY COUNCIL**

Mr Peni Gavidi	Local Government Committee Chair
Mr Ravind Prasad	Director Town and Country Planning
Mr Krishnal Swamy	Suva City Council City Planner
Mr Sunia Ratulevu	Principal Disaster Management Services NDMO
Mr Vijay Naidu	CEO CIC
Mr Gordon Jenkins	President CIC

TABLE 3: PRIVATE SECTOR ENGINEERS – THE UNIVERSITY OF THE SOUTH PACIFIC

Mr Mervyn Leper	Director Buildings USP
Ms Tokase Bakabaka	Building Services Co-ordinator USP
Mr Vijay Krishnan	Engineered Designs
Mr Abhinesh Chand	Chand Engineering
Mr Alfred Macmac	Erasito Consultants
Mr Anil Kapadia	Kapadia Consultants
Mr Warren Yee	Irwin Alsop Pacific

TABLE 4: ARCHITECTS

Mr Stuart Huggett	Architects Pacific
Ms Amitia Huggett	Architects Pacific
Mr Conway Begg	Conway Architects
Mr Kolinio Jiten	LHM
Mr Peter Rankin	AAPi Design

TABLE 5: PRIVATE SECTOR ENGINEERS, BUILDERS, BUILDING DESIGNERS AND FIJI NATIONAL UNIVERSITY

Mr Stephen Hallacy	Hallacy Project Management, CIC Secretary
Mr Pratarp Singh	Entec
Mr Arvin Prasad	Fiji Building Designers Association
Mr John Grey	Fiji Building Designers Association
Mr George Rubine	Pacific Reach Ltd
Mr Niranjwan Chettiar	Director Capital Projects and Infrastructure Fiji National University

OBSERVERS

Ms Jane Romero	PRIF
Ms Teea Tira	Forum Secretariat
Ms Atsumi Kani	JICA
Ms Chand	JICA Program Officer
Ms Habiba Gitay	World Bank
Mr David Fay	ADB

MEDIA

Mere Tuqiri – Pacific Reach

Fiji TV

Fiji Sun

Fiji Times

APOLOGIES

(Confirmed invitation but were unable to attend on the day)

Ministry of Economy Construction Implementation Unit

Fiji National Fire Authority

SPC

HKL Jacob Engineers

Sharma Designs Architects

Adish Naidu Architect

Ministry of Health

Insurance Council of Fiji

Annex 3

Workshop PowerPoint



Pacific Region Infrastructure Facility

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

FIJI PARTICIPATORY WORKSHOP
Wednesday 23 January 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 FIJI STUDY

- Identify gaps in the capacity of Fijian construction practitioners and government agencies to apply and promote the Fiji building code.
- Provide recommendations on future building code updates appropriate to the capacity of Fiji to apply them and align them with other initiatives to improve resilience.
- Prioritise areas of support needed by Fiji and other Pacific Countries to guide future assistance programs supported by development partners.



FIJI SITUATION

- The 1990 Fiji National Building Code (NBC) and Home Building Manual (HBM) were developed in the late 1980s under an Australian Aid program
- The NBC and HBM were published in 1990
- The Code was legislated in 2004 as the Public Health Act 2004
- Due to the high cost of building construction, NBC compliance was not made mandatory and the NBC was only applied within the urban boundaries and those needing cyclone certification
- Until Cyclone Winston in 2016 the NBC and HBM were not widely known or used

POST CYCLONE WINSTON

Positives

- The NBC and HBM were promoted by Government and the Private Sector and there is now a wider appreciation of the existence of the NBC and its application.
- Most of the public buildings now being reconstructed through the Ministry of Economy's Construction Implementation Unit's Cyclone Winston reconstruction program are more or less compliant with the 1990 Code.



Concerns

- the NBC is not being used at all or is inadequately applied in many private reconstruction situations and new builds leading to poor quality and non-resilient infrastructure.
- Many buildings currently been designed are using a mish-mash of the Australian and New Zealand codes due to the NBC now being 30 years old and out dated

WORKSHOP PURPOSE

To seek opinions and recommendations from construction practitioners and government regulators on how Fiji's National Building Code and its administration and compliance enforcement procedures can be improved in light of the lessons learned from recent disaster activity in the region.



WORKSHOP STRUCTURE

- Session 1: Adequacy of the National Building Code
- Session 2: National Building Code Improvements
- Session 3: Home Building Manual
- Session 4: Guidance Document and Road Map

SESSION 1:

ADEQUACY OF THE NATIONAL BUILDING CODE

- Main constraints that prevent the application of the building code's requirements
- Gaps in the Code within the context of current issues facing the local building industry
- Parts of the code which need to be reviewed
- Legal impediments
- Weaknesses in the administration and compliance enforcement procedures
- Capacity and knowledge constraints



SESSION 2:

NATIONAL BUILDING CODE IMPROVEMENTS

- Indicative suggestions on how NBC weaknesses identified in Session 1 can be addressed.
- Measures to improve administration and compliance enforcement procedure
- NBC promotion and training initiatives
- How the codes could be better aligned or 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 occupation, health and safety

SESSION 3: HOME BUILDING MANUAL

- How useful is the Home Builders Manual, which accompanied the 1990 National Code
- Indicative suggestions on how the HBM could be improved including measures to make buildings more resilient to climate change events
- 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 4:

GUIDANCE DOCUMENT AND ROAD MAP

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

- Guide future assistance initiatives related to building codes 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 4

Workshop Outcomes

REGIONAL DIAGNOSTIC STUDY ON THE APPLICATION OF BUILDING CODES IN THE PACIFIC

FIJI PARTICIPATORY WORKSHOP Wednesday 23 January 2019m - Novotel Lami

Refer attached list of participants. Participant breakdown as follows:

- 30 construction practitioners attended to workshop
- 6 Observers attended
- 4 media organisations attended
- 4 of the participants were woman (13%)
- 13 of the participants were from the government sector (43%) and 17 from the private sector (57%)

Participants were grouped into 5 tables, each table representing a sector of the construction industry.

For Sessions 1, 2 and 4 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: ADEQUACY OF THE NATIONAL BUILDING CODE OF FIJI

TABLE 1: FIJI GOVERNMENT MINISTRY OF INFRASTRUCTURE AND TRANSPORT (MOIT) MINISTRY OF INDUSTRY AND TRADE MINISTRY OF EDUCATION

- Major constraint is that the NBCF only applies to certain areas and certain constructions.
- There is no consideration in the NBCF for traditional construction methods and materials.
- There is no awareness program to promote the NBCF.
- The wind speeds and standards in the NBCF need to be reviewed.
- Compliance enforcement needs to be improved.
- Suppliers need to show proof that materials are certified to meet the NBCF materials standards.
- Training opportunities for building inspectors need to be offered.

TABLE 2: FIJI LOCAL GOVERNMENT – NATIONAL DISASTER MANAGEMENT OFFICE (NDMO) CONSTRUCTION INDUSTRY COUNCIL (CIC)

- The NBCF is not user friendly.
- There is a lack of knowledge about the NBCF and HBM.
- It is recommended a Professional Consultant comprising “corporate members of a recognised professional institution (Not specific to Fiji)” be engaged to review the NBCF and HBM.
- The NBCF and HBM are not readily available to the public.
- The NBCF needs to be simplified and made more readable.
- The NBCF and HBM have not been reviewed since their inception in 1990, even though there is a requirement in the NBCF for regular reviews.
- Many building owners do not use the NBCF as it requires qualified Structural Engineer who are scarce and expensive.
- The NBCF needs to be applied to the whole country.
- There are no uniform standards applied to all buildings.
- There needs to be a Building Board to administer building construction in Fiji to replace the Central Board of Health (Table 4 noted that on 14 July 2017, the Fiji Parliament enacted the Regulation of Building Permits Act 2017 (“**RBPA**”) which aims to streamline the process for obtaining a building permit).

TABLE 3: PRIVATE SECTOR ENGINEERS – THE UNIVERSITY OF THE SOUTH PACIFIC (USP)

- The NBCF is out of date.
- There have been no NBCF revisions since 2004 when the NBCF was passed into law. (Public Health (National Building Code Fiji Islands Regulations 2004).
- The NBCF refers to Australian and New Zealand standards separately, they should be harmonised.
- There are no qualification requirements for builders.
- There is a lack of clarity in the whole building approval process.
- The NBCF needs to include an introductory page and flow charts.
- The NBCF needs to be more user friendly.
- There is a lack of public awareness of the NBCF and HBM.
- There is a lack of inspections and supervision by building inspectors.
- There is a lack of skills mobility and ethics among local builders.

TABLE 4: ARCHITECTS

- The main issue is not the NBCF but the inadequacy of standards around building materials being used in Fiji.
- There is a lack of NBCF awareness and enforcement.
- The NBCF is not up to date with current building technology.
- The HBM should be part of the NBCF.
- The cost to comply with the building code is too high for many building owners.
- The time to obtain a building permit is too long.



TABLE 5: PRIVATE SECTOR ENGINEERS, BUILDERS, BUILDING DESIGNERS AND FIJI NATIONAL UNIVERSITY (FNU)

- The NBCF is not widely known and is poorly understood.
- Indexing of the NBCF is not easy to follow.
- There needs to be an interactive electronic version of the NBCF available on line.
- The NBCF needs to be updated in accordance with new building technology.
- The NBCF should address current environmental challenges.
- Cyclone ratings and wind speeds need to be reviewed.
- Accessibility for handicapped persons is not adequately addressed.
- The NBCF is currently enforced through insurers and underwriters.
- The Public Health (National Building Code (NBCF) Fiji Islands) Regulations 2004 is not being enforced.
- The enforcement of the NBCF needs to be changed from the Ministry of Health to another Ministry or independent body.
- There is a lack of joint fellowship programs to enhance knowledge of the NBCF.
- There needs to be capacity building of building professionals and inspectors.

SESSION 2: NATIONAL BUILDING CODE IMPROVEMENTS

TABLE 1: FIJI GOVERNMENT MINISTRY OF INFRASTRUCTURE AND TRANSPORT (MOIT) MINISTRY OF INDUSTRY AND TRADE MINISTRY OF EDUCATION

- Building materials and product standards should be included.
- Existing standards referred to in the Code should be updated.
- There should be a robust compliance system to monitor product standards.
- Owners, suppliers of building materials and products should be accountable.
- Accredited materials testing labs should be established.
- NBCF should be translated into Fijian languages.
- The NBCF needs to be simplified and include flow charts and diagrams.
- Structural requirements for Cat 4 and 5 should be included.
- Information on affordable housing and construction should be developed for inclusion in the NBCF.

TABLE 2: FIJI LOCAL GOVERNMENT – NATIONAL DISASTER MANAGEMENT OFFICE (NDMO) CONSTRUCTION INDUSTRY COUNCIL (CIC)

- The NBCF needs to be more user friendly, fonts and index need to be reviewed
- Published versions of the NBCF need to be readily available to both the construction industry and the public.
- Administration of the NBCF should be through the Ministry of Local Government via Boards and Councils.
- NBCF advocacy, awareness and workshops should be through the CIC.
- Building consultants should be engaged in a participatory exercise to review the NBCF and HBM. The consultant team should include an Architect, Structural Engineer, Building Services



Engineer, Mechanical Engineer, Electrical Engineer and Fire Engineer. (Maybe also Legal expert and Senior Building Inspector).

- The review should ensure that the building standards should not be compromised for the sake of making it more affordable and easier on the construction industry.
- There is a lack of qualified structural engineers, more need to be trained.
- Annual licensing should be introduced for all construction personnel including consultants, contractors, project managers and trade persons.
- The NBCF review should take into consideration what building codes upgrades have been undertaken in neighbouring countries, eg the impact of the Christchurch earthquake on the NZ code.
- Relevant other construction related legislation, such as environment, health and safety etc, should be reviewed and the revised code should be harmonised with this legislation.

TABLE 3: PRIVATE SECTOR ENGINEERS – THE UNIVERSITY OF THE SOUTH PACIFIC (USP)

- New Zealand and Australian Seismic provisions need to be harmonised.
- Rainfall intensity provisions to be revised in accordance with the latest data and changing weather patterns.
- Climate data needs to be analysed before NBCF minimum standards are finalised
- Wind design loadings need to be reviewed with the Minimum Cat 3 retained, as raising the cyclonic category requirements would have cost implications for everyday people.
- HBM should have a modified version for village settings.
- All construction should abide by the NBCF and HBM and compliance should be enforced.
- Noncompliance should attract heavy penalties and fines.
- NBCF should be web based with a mobile phone application.
- Strategies should be developed to ensure mass media awareness.
- Training programs should be developed in consultation with local construction practitioners.
- The NBCF should refer to the EIA Act for environmental provisions.
- Disability access to be included.
- For OHS provisions the NBCF should refer to the Health and Safety Act.

TABLE 4: ARCHITECTS

- The NBCF needs to be more accessible and interactive. This could be achieved by having an interactive version of the NBCF online.
- The administration and compliance regime supporting the NBCF needs to have its processes, responsibilities and authority clearly defined.
- The revised NBCF needs to address environment, accessibility and OHS.
- The NBCF needs to be simple and should not require armies of bureaucrats to administer it.

TABLE 5: PRIVATE SECTOR ENGINEERS, BUILDERS, BUILDING DESIGNERS AND FIJI NATIONAL UNIVERSITY (FNU)

- The NBCF is a legal document. All buildings must comply, not just public buildings.

- CIC stakeholders at the CIC conference in June 2018 voted that CIC should be tasked with reviewing the NBCF. However CIC does not have the funds to undertake the task and has approached donors for support.
- All building Sites, whether commercial or residential, should have highly qualified building inspectors identifying compliant and non-compliant building on a daily basis.
- To improve compliance and enforcement private regulators/inspectors could be used.
- A fellowship program led by the CIC could assist with promoting the NBCF and provide training to construction practitioners involved in building design, NBCF administration and compliance enforcement.
- A revised NBCF needs to address natural disaster and climate change adaption
- The NBCF needs to address building construction ethical standards.

SESSION 3: HOME BUILDING MANUAL

For this session a general discussion was conducted among all participants.

Commentary on the usefulness of the HBM and indicative suggestions on how it could be improved:

1. The structural standards set out in the NBCF should not be comprised.
2. The HBM could form one component of a suite of deemed to comply workbooks or manuals targeted at different levels of the building industry, ranging from sophisticated high rise to village housing. However The NBCF would remain as the overriding legal document and the deemed to comply manuals would still need to meet the structural standards set out in the NBCF.
3. The value and practicality of a three level code:
 - a. Gold: Buildings designed to the NBCF requiring certification by a university trained engineer
 - b. Silver: Building designed in accordance with the HBM with assistance from a construction practitioner with a technical qualification
 - c. Bronze: Building constructed by owner in accordance with a simple pictorial guide to housing standards

was debated. It was agreed that while this approach has its merit, the silver and bronze versions should be subsidiaries of the gold version, similar to the suite of documents described under item 2, and that the structural standards set out in the Gold version should not be compromised.

4. It was noted that most Fijian families have a lifetime investment in their homes. It was therefore to their advantage to ensure their homes complied with the NBCF standards. One of the reasons many did not was due to typical Fijian householders being unaware of the NBCF and the long term financial advantages of complying with the Code standards. An ongoing awareness program promoting the NBCF and HBM to Fijian home owners would be a worthwhile exercise.
5. The influence of insurance companies on building structural design was discussed. It was noted that to obtain insurance on a building the structural design had to be certified by an A grade structural engineer approved by the Insurance Council of Fiji. This was an expensive exercise for home owners and was one of the reasons for most building owners not insuring their properties (it was noted that only 6% of properties in Fiji are insured). The option of



reducing this onerous requirement should be discussed with the Insurance Council of Fiji. PRIF noted that ADB are currently in the process of finalising a consultancy which has as one of its objectives exploration of the capability of local insurance companies to offer greater and cheaper disaster risk insurance protection in the Pacific.

SESSION 4: GUIDANCE DOCUMENT AND ROAD MAP

This session was conducted after lunch. Some of the participants were unable to attend the afternoon session so the number of groups was reduced from 5 tables to 4 tables.

Groups were asked to agree a list of what they considered were the main activities to be included in a road map to a more sustainable approach to National Building Code administration and compliance and encouraging a culture of Build-Back-Better.

TABLE 1: FIJI LOCAL GOVERNMENT – NATIONAL DISASTER MANAGEMENT OFFICE (NDMO) - CONSTRUCTION INDUSTRY COUNCIL (CIC)

1. The government in consultation with the Private Sector to establish a mutually agreed authority approval system.
2. A Building Code review committee to be established in concurrence with government agreed Terms of Reference based on current fact.
3. Establish a building industry unit or board consisting of building professionals and supported by government to administer the compliance of building permits.
4. Licence all construction personnel.
5. Establish construction industry programs for building professionals and general practitioners organised through the CIC.
6. Introduce national certification and accreditation by government and private enterprise.
7. Upgrade structural conformity standards which are regularly reviewed based on current data and are properly enforced.
8. Establish specific programs to promote industry best practice of reconstruction and new-build infrastructure.
9. Resolve insurance issues with the insurance industry.
10. Ensure the NBCF is harmonised with related legal Acts and documents.
11. Harmonise the NBCF with other countries in the region.
12. CIC to arrange annual conferences for the industry.

TABLE 2: PRIVATE SECTOR ENGINEERS – THE UNIVERSITY OF THE SOUTH PACIFIC (USP)

1. Change the governing body overseeing the NBCF from Ministry of Industry and Trade to Ministry of Local Government.
2. Form an organisation or group of professionals to collect data, initiate dialogues, review existing codes and make recommendations on code updates.
3. Issue an amendment and supplement to the code, in particular earthquake, rainfall, wind, fire and health.
4. Enforce guidelines for the application of the codes for institutional, commercial and private building works.
5. All new structures must comply with the code.
6. Urgent need to educate and upskill builders.

- 
7. Promote fellowship programs.
 8. Guidelines for building workers qualification requirements.
 9. Building Committee established with members who have building related qualifications.

TABLE 3: ARCHITECTS- FIJI GOVERNMENT MINISTRY OF INFRASTRUCTURE AND TRANSPORT (MOIT)

1. Noted that there was a new Act of Parliament passed in July 2017 – the Regulation of building Permits Act, which establishes a committee to coordinate and facilitate the process for obtaining a building permit, all building professionals should be aware of this Act.
2. If Silver and Bronze versions are included in an updated building code their legal status would need to be determined.
3. The bond between educators, government and the private sector has been lost, a new updated NBCF needs to be included as part of the building professionals and trades workers training curriculum.
4. Climate data is continually evolving, an updated NBCF will need to include provisions to ensure that it is regularly reviewed to take account of the most recent climate data.

TABLE 4: PRIVATE SECTOR ENGINEERS - BUILDERS, BUILDING DESIGNERS -FIJI NATIONAL UNIVERSITY (FNU) - MINISTRY OF INDUSTRY AND TRADE MINISTRY OF EDUCATION

1. NBCF needs to be web based and interactive to allow people to share comments on the updated code.
2. CIC needs to be empowered and funded to bring in technical expertise to implement proposed industry reforms.
3. Fellowship programs for knowledge sharing need to be introduced, in particular to district areas.
4. Bronze and Silver codes should be introduced for community housing that is exempt from the NBCF.
5. A house design should be considered that has a cyclone resistant bunker at its core with sacrificial outside surrounding structures connected to it. One in five village homes should be built like this.
6. There should be standard marks on all building materials identifying the standard that the building material is manufactured to. Ideally a materials testing lab should be built at the FNU and be part of its teaching facilities.

Annex 5

Media Coverage

Fiji Times 23/1/19

Guide for facility

Workshop to focus on code review

By MONIKA SINGH

A WORKSHOP organised to enable Fijian building professionals and government regulators to provide guidance to Pacific Regional Infrastructure Facility on future assistance initiatives related to building codes updates, capacity building, training and promotion that will help ensure that future buildings constructed in Fiji are better built and more resilient is being held in Suva today.

Construction Industry Council president Gordon Jenkins yesterday said the focus of the workshop would be the review of the National Building Code which was the premium docu-

ment for all licensed builders, engineers, architects, surveyors and it defined the minimum standards for the construction of buildings and the materials that are used in the construction industry.

Mr Jenkins said the workshop would be facilitated by New Zealand architect Rhys Gwilliam who brought 30 years of experience in managing projects throughout the South Pacific including Fiji, with his most recent work being a member of the World Bank team that prepared the Post Disaster Needs Assessment for Tropical Cyclone Winston and he will be in Fiji until January 27.

According to a statement from

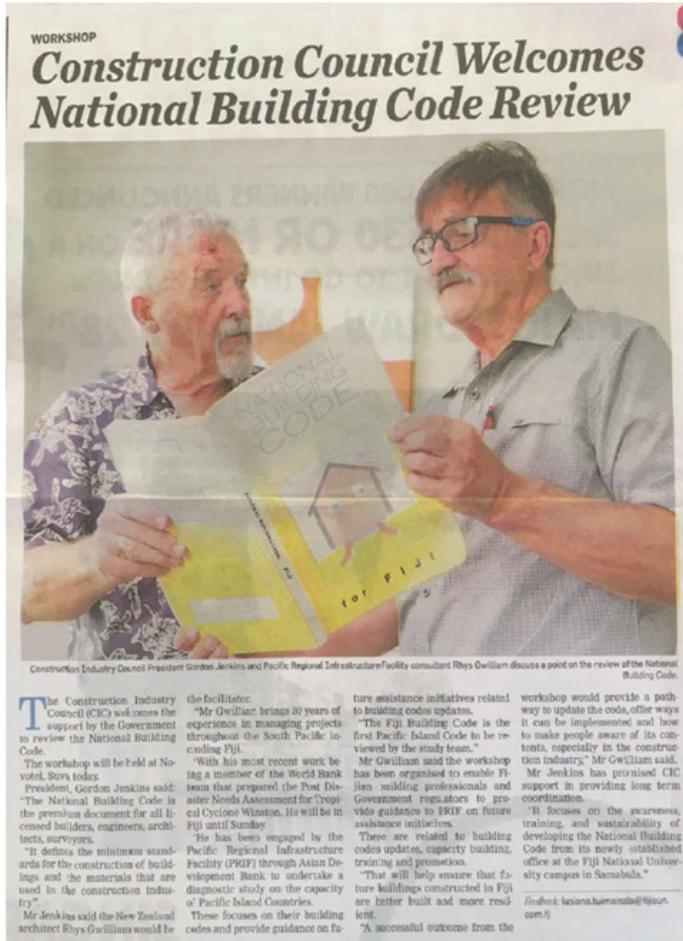
CIC, Mr Gwilliam has been engaged by PRIF through ADB to undertake a diagnostic study on the capacity of Pacific Island countries to apply their building codes and provide guidance on future assistance initiatives related to building codes updates and the Fiji Building Code is the first Pacific Island Code to be reviewed by the study team.

"A successful outcome from the workshop would be for it to provide a pathway to update the code, offer ways it can be implemented and how to make people aware of its contents, especially in the construction industry," Mr Gwilliam said.

PRIF is a multi-partner co-ordination, research and technical

assistance facility for improved infrastructure in the Pacific. PRIF members are the 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, and the US Department of State.

Mr Jenkins has promised CIC support in providing long-term co-ordination of the awareness, training, and sustainability of developing the National Building Code from its newly established office on the campus of the Fiji National University in Samabula.



The Construction Industry Council (CIC) welcomes the support by the Government to review the National Building Code. The workshop will be held at Nvotel Suva today. President, Gordon Jenkins said: "The National Building Code is the premium document for all licensed builders, engineers, architects, surveyors. "It defines the minimum standards for the construction of buildings and the materials that are used in the construction industry". Mr Jenkins said the New Zealand architect Rhys Gwilliam would be

the facilitator. "Mr Gwilliam brings 30 years of experience in managing projects throughout the South Pacific including Fiji. "With his most recent work being a member of the World Bank team that prepared the Post Disaster Needs Assessment for Tropical Cyclone Winston. He will be in Fiji until Sunday. "He has been engaged by the Pacific Regional Infrastructure Facility (PRIF) through Asian Development Bank to undertake a diagnostic study on the capacity of Pacific Island Countries. These focuses on their building codes and provide guidance on fu-

ture assistance initiatives related to building codes updates. "The Fiji Building Code is the first Pacific Island Code to be reviewed by the study team." Mr Gwilliam said the workshop has been organised to enable Fijian building professionals and Government regulators to provide guidance to PRIF on future assistance initiatives. These are related to building codes updates, capacity building, training and promotion. "That will help ensure that future buildings constructed in Fiji are better built and more resilient. "A successful outcome from the

workshop would provide a pathway to update the code, offer ways it can be implemented and how to make people aware of its contents, especially in the construction industry," Mr Gwilliam said. Mr Jenkins has promised CIC support in providing long term coordination. "It focuses on the awareness, training and sustainability of developing the National Building Code from its newly established office at the Fiji National University campus in Samabula." (fijiherald.kasana.hamamab@fijiherald.com.fj)



NATIONAL NEWS

Overseas experts for review

By ARIETA VAKASUKAWAQA

THE Pacific Region Infrastructure Facility is looking to assist governments by getting in overseas technical experts in the construction industry to assist in reviewing the outdated national building code. Speaking at a national building code workshop at Nvotel Suva Lami Bay in Lami yesterday, Facility technical officer Jane Romero said they were the coordinating body of the Asian Development Bank, ECL World Bank, US, New Zealand and Australia. "The assistance provided will be delivered in an effective manner, in Fiji it should always be about the resilience of buildings, we will try to look at that. We need to see whether the building codes are relevant to the current change in weather patterns and the occurrence of natural disasters. "Having the task to bring in experts, the technical experts of the building code somehow are still relevant," she said. Mrs Romero said discussions were in progress with the World Bank, focused on what's at stake houses. "We don't have a specific time frame when they are coming in. We are looking at the road map on the review that is needed. The reviewing of the building code doesn't solve all the problems, we also have the local building codes but if it's not enforced, it will not solve the problems," she said.

By ARIETA VAKASUKAWAQA

ALL building sites, whether commercial or residential, should have highly qualified building inspectors who are out on the field identifying compliant and non-compliant building practices on a daily basis. This was the view of construction industry council secretary Stephen Halliday during a workshop

on the national building code at the Nvotel Suva Lami Bay yesterday. The former building inspector said it was their role to carry out inspections at construction sites on a daily basis to ensure that building code sectors were doing the right thing. "Building inspection is a profession, it's important that statutory authorities and municipal councils

have each people in their staff who are moving out on to the field and proactively making inspections. "I am now a project manager and have been practising in Fiji for about 20 years and a former builder too. During my years of experience, I've seen this is quite common in town, there seems to be no intention to identify some growth — development — in terms

of buildings that are being built without any consideration of proper setbacks. "To have building inspectors to very important and foundational. If they aren't proactively going out there we will find people taking advantage of the situation and getting away basically with what they want. It's unfortunate we need regulations in place to make them



Jane Romero shares her ideas during the workshop. Picture: JONACANI LALAKOBAU



Vijay Krishnan presents their group work to participants at a workshop in Suva on the national building code yesterday. Picture: JONACANI LALAKOBAU

'Need to test imported building material'

By ARIETA VAKASUKAWAQA

THERE'S a need to establish a national laboratory to test all imported building materials before they are used, says Construction Industry Council president Gordon Jenkins.

He said if such an institution was in place it would prevent damages in buildings in the long term and other future problems.

However, Mr Jenkins said such an institution should have qualified technical expertise in order to fully execute its role in making sure the building materials were safe to use.

He said establishing such mechanisms would be an expensive exercise, but it was important because most of the building materials in Fiji were imported.

"All imported building materials should meet the standards because majority of our building products are imported. With the lab we will get to know whether we should use the building materi-

als or reject them if they aren't up to standards, we should ensure they are viable," Mr Jenkins said during a workshop on the national building code at the Novotel Suva Lami Bay yesterday.

Australian consultant and workshop facilitator

Rhys Gwilliam said the objective of the workshop was to get feedback from the construction practitioners and Government about the current building situation in Fiji.

He said the national building code was outdated and needed to be revised.



Facilitator Rhys Gwilliam, standing left, engages in a group discussion with participants during a workshop on the national building code at the Novotel Suva Lami Bay yesterday.

Picture: JONACANI LALAKOBAU

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inspections

work and also the consumer wants value for their money. The engineers want safety, they sign off on buildings and they cannot be there on a 24-hour basis so the building inspectors play a role that support the process of development," Mr Hallacy said.

He said they should have the ability to penalise those who did not comply with the building standard codes.

Mr Hallacy also highlighted the availability of Fiji's national building code and that a lot of people couldn't access the document.

"It's not a widely known document and you don't find it in libraries and it's not available in electronic copy so the accessibility needs to be improved.

"It's not a very easy-to-use document and doesn't have a proper index where you can research topics to find a section where you have an interest so the reader's accessibility needs to be improved," he said.

Have your say 

Write to us at letters@fijitimes.com.fj to share your views on this topic

Gavidi: No compromises

By ARIETA VAKASUKAWAQA

REGULATORS reviewing Fiji's national building code should ensure that building standards aren't compromised for the sake of making it affordable and easier for the construction industry, says Local Government committee chair Peni Gavidi.

Speaking at a workshop on the national building code review at the Novotel Suva Lami Bay yesterday, he said quality and viable building standards should be put in place for the sake of people owning residential properties.

"We cannot compromise building standards and we need one that can withstand natural disasters. As you all know that most people in Fiji will invest in houses for the sake of their family. The same house is then passed down from one generation to another, we need building standards to ensure that homes can last for a lifetime.

"Now the value of residential properties is increasing every year so this can be a reason why people invest so much in residential properties," he said.

Mr Gavidi said there was an urgent need to review the outdated national building code that was established in 1990.

Construction Industry Council secretary Stephen Hallacy said building standards should be one of the most important features of reviewing the national building code.

He also said the institution which handled the national building code should be independent.

All imported building materials should meet the standards because majority of our building products are imported.

— GORDON JENKINS



must read

COMPLIANCE, IMPLEMENTATION KEY TO BUILDING CODE

"While the revision of the National Building Code is the easiest, the implementation, compliance, monitoring, ensuring its quality and correct interpretation is a long-term process," says Jane Romero of the Pacific Regional Infrastructure Facility (PRIF). Ms Romero made the comment following the one-day workshop that was held in Suva recently to review the National Building

Code. Thirty-seven delegates across the private and public sectors that included construction practitioners and observers from donor agencies were in attendance.

"We would want the next level of assistance from different donors to address these steps to ensure progress," she added.

The workshop sought opinions and recommendations from participants on how Fiji's National Building Code and its administration and compliance procedures can be improved in

light of the lessons learned from recent disaster activity in the region.

Issues discussed

Issues discussed included awareness of the Building Code and the Home Builders Manual, building standards, and compliance.

It was facilitated by Building Consultant, Rhys Gwilliam, who was engaged by PRIF through the Asian Development Bank.

Mr Gwilliam said one concern of the Building Code was that it was either not being used at

all or is inadequately applied in many private reconstruction situations; and new builds leading to poor quality and non-resilient infrastructure.

The Fiji Building Code is the first Pacific Island code to be reviewed by the study team. The same exercise is to be repeated in Vanuatu and Solomon Islands.

The President of the Construction Industry Council (CIC), Gordon Jenkins, said he was "pleased at how the workshop turned out.

There may have been some differences in opinion in detail, but

everyone seemed to be heading in the same direction and I look forward to a positive outcome from the study team."

Architect Stuart Huggitt, who was one of the original contributors to the National Building Code said "As it stands, the current Code is adequate, but placing the document online, making it accessible interactive, and properly referenced to the Australian and New Zealand standards, would be an excellent idea."

Source: Construction Industry Council

Fiji Sun, Friday 15.02.19



