

# Risk-Based Building Classification and Inspection Guidelines



INTERNATIONAL  
BUILDING  
QUALITY CENTRE

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## About the International Building Quality Centre

The IBQC is a collaboration of international public and private sector professionals with expertise relating to the regulation of the building and construction industry.

The IBQC intends to be a sounding board or point of reference for law reformers, policymakers and stakeholders intent on designing building regulation that provides the greatest opportunity for the realization of codes and laws that maximize:

- Public safety;
- Cost-effective and efficient construction systems; and
- Sustainability within the context of the built environment.

The IBQC provides a medium through which comparative analyses can be applied to reforming jurisdictions to enable the peer review of proposed concepts.

The paramount vision of the organization is that, through its research and its members, the IBQC will have a positive and material impact on building regulation and practices in jurisdictions across the world.

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## INTRODUCTION

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These guidelines are in two parts. Part 1 comprises a building classification methodology that classifies buildings according to their potential risk consequence.

Part 2 comprises a mandatory inspection regime that calibrates the number and sequence of inspections with potential risk consequence categories in the building classification methodology.

The guidelines were developed by a coalition of preeminent experts in an IBQC subcommittee all of whom are named at the end of these guidelines.

The experts include renowned fire engineers, structural engineers, design-review engineers, construction lawyers and a past civil servant of high office. They hail from the United States of America, Canada, New Zealand, Australia, Sierra Leone, England and Germany.

## PURPOSE

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The IBQC *Principles for Good Practice Building Regulation*<sup>1</sup> include at Principle Two the need for a single technical code or standard which clearly sets out technical requirements.

At Principle Seven, the *Principles for Good Practice Building Regulation* provide for a mandatory statutory process, which includes rigorous inspections by appropriately qualified skilled practitioners.

The IBQC Risk-Based Classification and Inspection Guidelines tease these two principles out further to provide a model for governments, authors of building codes, regulators and those with a commitment to good practice building regulation, to be considered in the design and on-going improvement of the building regulatory ecology within their jurisdiction.

All building codes are designed around a framework of risk management, typically with a focus on occupant health and safety. As articulated previously by the IBQC, however, good practice building regulatory systems also support two other goals: regulatory efficiency and innovation.

These guidelines represent a likelihood and consequence methodology as the basis for classifying buildings, with a commensurate scaling of building inspections by competent practitioners. The risk posed by the intended occupation of the building, associated with a range of other criteria such as height, size and complexity, enables a proportionate inspection regime to apply in parallel, which promotes safety, efficiency and innovation.

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<sup>1</sup> [IBQC Principles for Good Practice Building Regulation](#)

# Potential Consequence Building Classification Definitions

## Low Potential Consequence

Buildings and other structures posing low risk to human life,<sup>2</sup> where the economic, social or environmental costs,<sup>3</sup> should the building fail,<sup>4</sup> are small or negligible.<sup>5</sup>

- Single occupancy detached house, not exceeding 2 storeys, and limited to 400 sq m.
- Ancillary buildings not for human habitation.<sup>6</sup>
- Minor storage facilities<sup>7</sup> - with a maximum height of 5m and which do not require automatic fire sprinklers to be installed under another part of the relevant building code.
- Agricultural buildings where people do not normally work (e.g.: storage buildings, greenhouses)<sup>8</sup> and with no more than one emergency exit required by the relevant building code.
- Provided no part of the building is closer to another building or area where people go than a distance of 1 ½ times the building height.

2 EN 1990: Eurocode – Basis of structural design (EN 1990)

3 Building (Building Code: Fire Safety and Signs) Amendment Regulations 2012, Schedule 1- New Zealand (NZ)

4 Ibid

5 Eurocode – Basis of structural design

6 Building Code: Fire Safety and signs

7 Ibid

8 Eurocode – Basis of structural design



## Medium Potential Consequence

Buildings of higher societal and community benefit<sup>9</sup> and other structures, which require increased performance due to<sup>10</sup> the levels of risk towards human life, economic, social or environmental loss<sup>11</sup> elevated by larger numbers of people congregating, vulnerable populations, or occupants with other risk factors.<sup>12</sup>

- Includes hotels, serviced apartments and the like up to 18 metres in height from the floor of the lowest storey to the floor of the topmost storey, intended for not more than 250 occupants, provided there are mandatory automatic fire sprinklers to be installed under another part of the relevant building code.
- Commercial and industrial buildings that accommodate greater than 250 people congregating in one area.
- Schools, childcare and daycare facilities with a capacity greater than 250 people<sup>13</sup> and exceed more than one storey in height.
- Tertiary or adult education facilities with a capacity for greater than 500 people.<sup>14</sup>
- Any health care facilities that house people who require special care on account of disability, without emergency or surgery facilities, to a capacity of no greater than 50 residents.<sup>15</sup>
- Any assisted living facilities that house semi-permanent or permanent elderly people, provided there are mandatory automatic fire sprinklers to be installed.

9 Building Code: Fire Safety and Signs

10 Eurocode – Basis of structural design

11 Ibid

12 Building Code: Fire Safety and Signs

13 Ibid

14 Ibid

15 Ibid



## High Potential Consequence

Buildings and other structures that exceed storey/capacity numbers of low/medium potential consequence, including those where the height exceeds the ability of fire authorities to fight fires from the exterior, or where loss of human life or economic, social or environmental consequences would be very great.<sup>16</sup>

- Includes residential apartment buildings above 2 storeys.
- Includes hotels and other residential buildings greater than 18 metres in height from the floor of the lowest storey to the floor of the topmost storey, intended for more than 250 occupants.
- Where more than 5,000 people congregate in one area<sup>17</sup> – lecture hall, airport, grandstands, stadiums.
- Buildings designed as “essential facilities”<sup>18</sup> for post-disaster recovery.
- Dams, Power generating stations, communication towers and other utilities required as emergency backup facilities.<sup>19</sup>
- Extremely hazardous facilities, including those which manufacture, process, handle, store, use or dispose of such hazardous, combustible or toxic fuels, chemicals, or waste, which are sufficient to pose a threat to the public if released.

Potential risk consequence default mechanism:

- Where an identified building type **exceeds** the criteria provided in the category it appears, it is elevated to the next potential consequence category.
- Where an identified building type is **below** the criteria provided in the category it appears, it can be treated in the next lower potential consequence category.
- Where a building type is **not** listed in the low, medium or high categories, it will default to the high potential consequence category.

<sup>16</sup> Eurocode – Basis of structural design

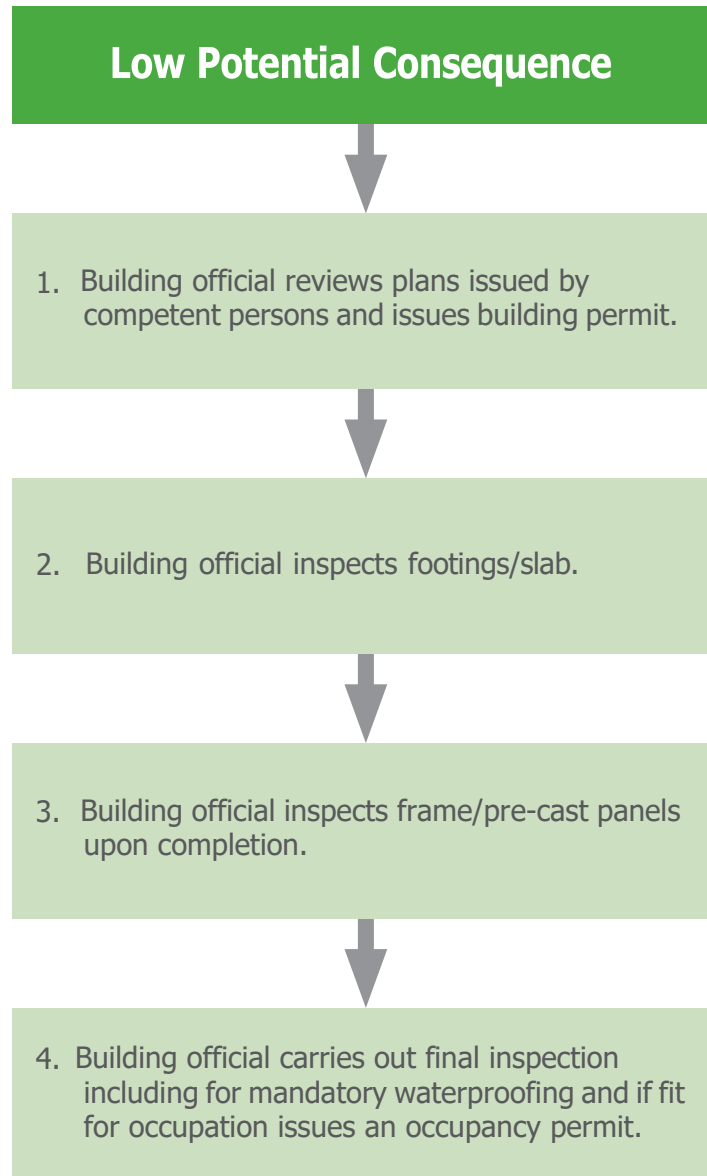
<sup>17</sup> Building Code: Fire Safety and Signs

<sup>18</sup> International Building Code 2021 (IBC 2021)

<sup>19</sup> Building Code: Fire Safety and Signs



## Risk Correlated Mandatory Inspection and Regime







## Medium Potential Consequence

1. Building official reviews plans issued by competent persons and issues building permit.

2. Building official inspects footings/slabs. Structural engineer inspects footings/slabs and foundations prior to building official approval.

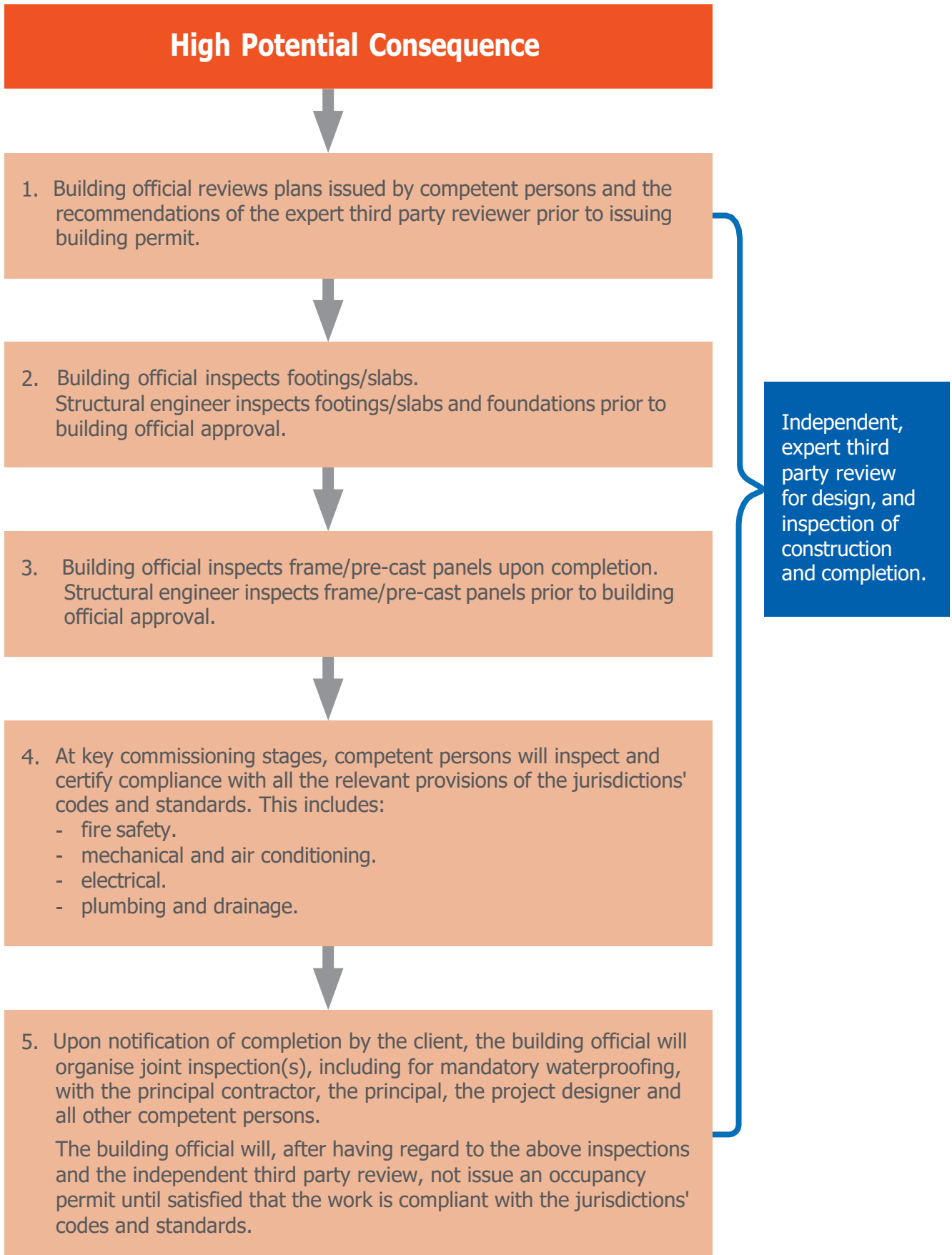
3. Building official inspects frame/pre-cast panels upon completion. Structural engineer inspects frame/pre-cast panels prior to building official approval.

4. At key commissioning stages competent persons will inspect and certify compliance with all the relevant provisions of the jurisdictions' codes and standards. This includes:

- fire safety.
- mechanical and air conditioning.
- electrical.
- plumbing and drainage.

5. Upon notification of completion by the client, the building official will organise joint inspection(s), including for mandatory waterproofing, with the principal contractor, the principal, the project designer and all other competent persons.

The building official will, after having regard to the above inspections, not issue an occupancy permit until satisfied that the work is compliant with the jurisdictions' codes and standards.



## GENERAL DEFINITIONS

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### *Potential Consequence:*

'Potential consequence' refers to the magnitude of prejudice to life, limb, and economic impacts that are likely to flow from compromised construction outcomes. The potential consequence-based mechanism is designed from the outset to be read and operate in conjunction with mandated inspection regimes. It follows that its promulgation as a codified regulatory classification system would not occur until statutory administrative regulations are amended and promulgated simultaneously.

### *Building Permit:*

A building permit is the legislative instrument that will be issued by the building official when the building official is satisfied that designs provided by competent building practitioners comply with the relevant building code.

### *Competent Persons:*

A competent person must be an appropriately registered and prescribed person pursuant to the applicable legislation or regulations of the relevant jurisdiction. The competent person will be the building practitioner that prepares construction designs and carries out inspections that culminate in the issue of compliance certificates that verify the fitness for purpose of that which they certify.

The competent persons will include building professionals such as, but not limited to:

- Engineers in the categories of structural, electrical, geotechnical and fire.
- Architects.
- Waterproofing envelope specialists.
- Plumbers and gasfitters.
- Air conditioning contractors.

Whenever we are referring to building practitioners, be they building officials, engineers, quality assurance engineers, proof engineers, architects, builders or designers, they are taken to be licensed and competent.

### *Principal contractor:*

The principal contractor is the builder responsible for construction of the building.

### *Occupancy Permit:*

An occupancy permit is the statutory instrument that is issued by the building official when the building official is satisfied that the completed building work is fit for occupation.

### *Building Official:*

Building official is an independent person or authority required to act in the public interest pursuant to statute, to assume the key responsibility for issuing building permits, overseeing mandatory inspections, and issuing occupancy permits. The building official is often referred to as a building surveyor, building inspector and/or building official depending on the jurisdiction.

### *Independent Reviewer:*

An appropriately qualified and competent specialist expert appointed independent of the building official, client and other contracted practitioners, to review the design and construction of a building's fire, mechanical, electrical, plumbing and drainage systems.



*Inspections:*

For the purpose of this document, where reference is made to an inspection, it is intended that this involves a licensed building official conducting necessary examination of important construction features at appropriate intervals during construction to enable certification.

## FOOTNOTE

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In so far as these guidelines relate to emerging economies, they are designed to operate in engineered solutions settings. Such settings include central urbanised paradigms, which feature buildings that are akin to the more complicated and larger utility structures in developed economies.

The guidelines should be read in conjunction with two other IBQC guidelines that relate to emerging economies, namely the [IBQC Good Practice Guidelines and Principles for the Development of Building Regulations in Low Income Countries](#) and [IBQC Good Practice Building Inspector Guidelines for Emerging Economies](#).

It is recognised that the classification system does not have contextual relevance to wider vernacular buildings in more informal settlements. These definitions of “vernacular buildings” and “informal settlements” can be found in the [IBQC Good Practice Guidelines and Principles for the Development of Building Regulations in Low Income Countries](#).

## Regard can be had to other IBQC Guidelines

- ❖ [IBQC – Good Practice Guidelines for the Development of Construction Dispute Resolution Tribunals and Decision-Making Institutions](#)
- ❖ [IBQC Principles for Good Practice Building Regulation](#)
- ❖ [Good Practice Building Inspector Guidelines for Emerging Economies](#)
- ❖ [Building Product Performance Part 2 – Good Practice Regulatory Framework](#)
- ❖ [IBQC Good Practice Guidelines and Principles for the Development of Building Regulations in Low Income Countries](#)

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