

# INTRODUCTION OF A SYSTEMATIC PROCESS FOR BUILDING CONTROL IN SRI LANKA

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## ABSTRACT

*Building Control (BC) contributes significantly to the national economy as well as to the social wellbeing of the public of a country by ensuring the quality of its buildings and their health and safety, structural stability and energy efficiency and by imposing building rules and regulations related to the construction industry of the country. Building work must be properly regulated and monitored by the local authorities during the Plan Approval Process (PAP) by strictly adhering to the relevant building rules and regulations. However, BC in Sri Lanka is fragmented and not well managed due to the low involvement of professionals in the building work and poor supervision of building plan submissions and other related tasks. This condition has led to corruption and malpractices. Therefore, there is a vital need for professionals to get involved in the field, if the existing practises in Sri Lanka are to be changed. The aim of the research was to propose a suitable mechanism for building control in Sri Lanka which will have the involvement of professionals of the country. The effectiveness of the existing system was ascertained through the research objectives. A qualitative research approach was adopted to achieve the research aim through semi structured interviews conducted with 15 professionals coming under five categories. Content analysis was used to analyse the findings and to finally propose a suitable mechanism for building PAP by considering the existing process, identifying the weaknesses in the local practices so that the unfavourable impacts on the current PAP in Sri Lanka could be reduced and corruption and malpractices mitigated.*

**Keywords:** *Building Control (BC); Building Rules and Regulations; Corruption and Malpractices; Plan Approval Process (PAP); Professionalism.*

## 1. INTRODUCTION

A good quality building should be adaptive, long-lasting, energy efficient, habitable and secure by providing a safe and comfortable internal environment to its occupants (Lowe and Bell, 2000). According to Foolkes (2015), Building Control (BC) can be explained as a quality assurance process that exists from the inspection of the plan to the assessment of the completed work on site, and also as a process that will meet the relevant standards and functional requirements of building regulations. Through BC, building codes and regulations of a building can be identified, the main requirement to ensure the health and safety of the public (Gwin and Seow, 2000). Beggs and Moodley (1997) discuss about the requirement for an environmentally friendly building in order to eliminate its impact on the environment and Pannell (2016) emphasizes on low energy building design technologies in order to minimize energy usage through the use of BC.

Elson (2015) states that the rules and regulations have to be well established in order to maintain the quality and the standards of the buildings introduced under the BC Act. Rumary (2015) emphasizes that apart from establishing rules and regulations, there is also a need to establish a professional body to make BC function more effectively in an accountable and responsible manner. BC bodies are third party accreditors who design, develop, examine and control construction work (Kremer, 2015). According to Morgan (2016), a building surveyor is a unique professional in the construction industry who is in a position to advice and comment on many problems and matters related to sustainability, energy conservation and safety of buildings.

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A knowledgeable professional body has to be established to improve and make the existing procedures more efficient and responsible. "There is a responsibility to shape both the role and the perception of the profession in the wider construction industry" says Foolkes (2015, p.15). According to Conlon (2014), a good education and training will produce professionals of good quality who will be in a position to implement BC well in the construction industry.

Buildings are becoming more and more complex and multifaceted as the complexity of the human needs increases and as the technology advances. Therefore, it is essential to verify whether the new buildings or new construction works are suitable to their locations. Internationally, there has been research done on several aspects of BC such as the training and development of building surveyors in Malaysia (Ali and Woon, 2012), private certification of BC (Pitt, 1984), BC with NHBC (Mills, 1987) and certification of BC in the Netherlands (Meijer and Visscher, 2008). This previous research and also journals have not covered the BC relevant to Sri Lanka. Therefore, there is a necessity for addressing the effectiveness of BC in Sri Lanka and there is also an industry need for research on BC and the need for professionalism in it. Therefore, this research was required to address the literature gap and the industry need.

The aim of the research was to propose a building control mechanism suitable for Sri Lanka with the objectives of identifying the building control practices used by the local authorities in Sri Lanka, identifying the weaknesses in the existing system and to propose suitable suggestions and strategies

## **2. LITERATURE FINDINGS**

### **2.1. CONCEPT OF BUILDING CONTROL**

BC is an important aspect in the construction industry (Wood and McGahey, 1995). It covers a wide area relating to building work in the construction sector towards upgrading the living standards of the public and ensuring their health and safety (Thompson, 2015). According to Everall (2015), BC is a process which provides a large package of services to ensure the structural stability of buildings, the health and safety of the public and the sustainability of the buildings.

Energy efficiency buildings (Smith, 2016), sustainable buildings and environmentally friendly buildings (Beggs and Moodley, 1997) are the buildings that come under BC and ensure energy saving. According to Sariola and Kukkonen (2006), by limiting the impact of buildings on the environment and highlighting the areas where the use of scarce resources could be reduced or minimized, it may be possible to ensure the quality of a building. Building codes (Gwin and Seow, 2000, p.23), resistive designs and the recognition of dangerous structures (Edmonds, 2015) are other attainable objectives of BC that will ensure public health and safety, and also the general welfare of the occupants of a building. Bridgland (2015) explains that the health and safety of the public mainly depends on the building standards and on the reliability of the assessments done on building services and building work. Therefore, in order to ensure these, a regulatory body will have to be established for BC.

### **2.2. LEGAL BACKGROUND**

According to Baiche *et al.* (2006), regulations and standards are a dominant part of BC that will conserve and uphold the quality and performance of new or existing constructions. BC surveyors should follow building regulations and legislation to ensure that houses, commercial buildings and other buildings are designed and constructed so as to ensure the safety of the public (Wood and McGahey, 1995). BC regulations should cover areas such as public health, building pathology, energy conservation and sustainability, fire safety and building accessibility (King, 2016).

### **2.3. BUILDING CONTROL PROCESS**

Aarons (2014) argues that BC involves an application process, commencing from the submission of the planning application and ending with the issuing of the BC completion certificate which has to be before the commencement of the construction work. It can be identified mainly as PAP.

As stated by Wilson (1988) and Pitt (1984), the BC procedure identified as PAP initially includes an approved inspection procedure and three alternative BC options for the developers. According to Pitt (1984) and

Billington (1986), PAP in BC may differ from one country to another as it depends on the rules and regulations of the country concerned, and may consist basically of the initial notice submitted, approving of the plan, issuing of the building permit, inspection of the site, and finally the issuing of the certificate of conformity to certify that the construction has been completed successfully.

According to Marsh (2015), before approving the plans for any building or before issuing the completion certificate, the local authority or an appointed inspector has to make sure that the building meets the functional and relevant safety requirements. Therefore, as explained by Baiche *et al.* (2006) it is crucial during the inspection of building construction to assess whether all site operations comply with the building regulations of the country. Pedro *et al.* (2010) explained the types of building control systems that are different from the conventional approving procedure and available for plan approval and site inspection depending as to who is responsible for the work, i.e., a private or a public authority - public building control where public authorities are responsible for plan approval and site inspection, mixed building control where public authorities and private parties share responsibilities and dual building control where the applicant can choose the party who has to conduct the process. Therefore, PAP is mainly concerned about the upcoming construction work in order to maintain the development pattern of the country and to ensure the social well-being of the public.

### 3. RESEARCH METHODOLOGY

A qualitative approach was adopted for this research as it was necessary to assess subjective data such as professional opinions. Furthermore, to propose a suitable building control mechanism for Sri Lanka with the involvement of professionals, the opinions of professionals were necessary. Therefore, a quantitative approach with rankings and categorization was not necessary for this research as it was based on subjective data. Thus, the qualitative approach was selected as the research approach for this study instead of the quantitative approach or the mixed approach. Two main techniques were adopted to collect data, namely interviews and a document review. The document review was carried out mainly by referring to several documents published by the Urban Development Authority and the local authorities on their approval processes. The intention of the document review was to identify the BC that is currently being practiced in the country and to distinguish its stages, parties involved, and the rules and regulations.

Subsequently, interviews were carried out with fifteen professionals with experience in the construction industry, who came under five categories, i.e., town planners, architects, engineers, quantity surveyors and lawyers. Three professionals from each category were selected to study the BC used by the local authorities in Sri Lanka. The interviews were used to identify the BC currently being practiced in Sri Lanka along with its weaknesses and to propose a suitable new process for building control by addressing the weaknesses of the existing process. The findings from the interviews and the document review were analysed using content analysis software, NVivo (version 11). The scope of the research was confined only to building control in the plan approval process in the pre-contract stage. This study mainly focused on new construction projects and not on projects dealing with renovation or refurbishment.

### 4. RESEARCH FINDINGS

#### 4.1. EXISTING PROCESS OF BUILDING CONTROL

The existing process of PAP was identified through interviews and a document review to achieve the first research objective. Table 1 illustrates the procedure and parties involved at each sub stage along with the activities related to each stage.

Table 1: Existing Process of Building Control

Steps	Procedure
Stage 1 Start of the process	Obtaining clearance from the relevant authorities by the applicant
Stage 2 Submission for preliminary planning clearance	Submitting multiple clearance reports along with the application to the Urban Development Authority or the local authority as the case may be, based on the project scope

Steps	Procedure
Stage 3 Approval for plan clearance by the Urban Development Authority/ local authority	Obtaining the approval from the Urban Development Authority / local authority if the documents have complied with the relevant standards
Stage 4 Submission of the plan for approval	Getting the design certified by professionals such as town planners, architects and engineers
Stage 5 Scrutiny of the application and other documents	Obtaining reports from the relevant government officials (Technical Officer, Public Health Inspector etc.)
Stage 6 Approval (by the Local Authority)	Obtaining the approval for commencement of the work with the concurrence of the Commissioner, Public Health Inspector, Planning Officer, Technical Officer etc., if the documents have complied with the relevant rules and regulations
Stage 7 Approval (Regional Authority/ UDA) by the Planning Committee	Getting the final decision (approval or disapproval) from the special committee comprising the Town Planner, Engineer, Architect, Urban Commissioner and a representative of the relevant authority after considering any problem or an issue that has arisen
Stage 8 Issuing of the building permit	Getting the building permit from the local authority
Stage 9 Issuing of the Certificate of Conformity	Getting the Certificate of Conformity (CoC) from the local authority

According to the findings of the literature review, the Plan Approval Processes used differs from country to country. The basic stages and the work that is carried out under those stages are however almost similar. Furthermore, the parties and the organizations involved in the PAP varied as there was private sector involvement in PAP in other countries.

At present, the applicant has to obtain, in advance approvals from the relevant authorities or the department under whose jurisdiction the building is located, and submit them along with the application to the local authority to obtain preliminary planning clearance. At this stage, the applicant may have to deal with many issues because of the difficulties in obtaining the relevant clearances from the different departments. Thereafter, the design has to be developed and signed by a qualified architect with a qualified engineer certifying the structural and technical details. After the design and other relevant documents have been submitted, the technical officer may conduct an audit to provide a substantiated opinion regarding the extent to which the design has conformed to the technical requirements and the public health inspector may conduct site inspections to verify the health and safety aspects of the new construction work. The opinions of other authorities and design auditors will also be considered, and if the relevant building authority is satisfied, a building permit will be granted to carry out the construction work.

After the completion of the work, the final site inspection has to be carried out before the local authority can issue the certificate of conformity certifying that the construction has been completed successfully. Nevertheless, lack of skills and knowledge of building regulations on the part of building inspectors as well as their ignorance of the required regulations and standards can lead to mistakes. Therefore, the building control inspector needs to be suitably qualified and be ethical in his work to ensure the effectiveness of the building control process and the quality of the work. The degree of involvement of politicians of the local authority in building control is presently high and this can affect the efficiency and the effectiveness of the local authorities concerned making the standard and the quality of buildings questionable. It was revealed that the involvement of professional parties in the Plan Approval Process in Sri Lanka is at a lower level compared with other countries and that there is no specific professional body in the country handling building control. In most of the other countries, there are well recognized bodies called building control surveyors who are responsible for all the stages of PAP and the granting of the final approval for the building.

Due to lack of sufficient manpower in the local authorities, it has become difficult for them to check all the building plans they receive and carry out site inspections prior to the commencement of respective building work. Due to the large number of applications received, small local authorities are unable to manage and handle the building control process in an effective manner and the quality of their inspections could be affected as a result. However, BC in Sri Lanka is fragmented and is not well managed despite the national government as well as the local governments being the authorities responsible for it. As a result, corruption and malpractices have become widespread in the country. Due to its significance to the national and local economies as well as to the social wellbeing of the public, BC has to be properly regulated and monitored. Otherwise, there could be bribery and corruption which is increasingly becoming a concern in the country.

#### 4.2. PROCESSES SUITABLE FOR BUILDING CONTROL DURING PRE-CONTRACT STAGE

The existing practice of building control was first identified from the data published by the authorities, and from the documentary review and was verified thereafter through the interviews. Even though, the building control process is already being practised in Sri Lanka, most of the interviewers stated that the existing PAP needs amendments in order to control the corruption and malpractices in the industry. Through this, several suggestions and strategies were recognized that can enhance the existing practice and thus fulfil the final objective of the research. The PAP that was developed is illustrated in Table 2 and Figure 1 by highlighting the special features obtained through the interviews.

Table 2: Proposed Process for Building Control

Steps	Suggested Procedure
Step 1 Start the process	One stop shop
Step 2 Submission for preliminary planning clearance	One single submission for the preliminary plan approval
Step 3 Approval for plan clearance by the local authority	Obtain the approval from the local authority, if the documents comply with the relevant standards
Step 4 Submission of the plan for approval	Assign the responsibility for the design and construction to the signatories, such as the Town Planner, Architect and Engineer.
Step 5 Scrutiny of the application and other documents	Appoint a third party reviewer to ensure effective results, after receiving the reports from the Technical Officer, Public Health Inspector etc..
Step 6 Approval (by the Local Authority)	Obtain permission to carry out the work by getting the approval from the Commissioner, Technical Officer, Planning Officer, Public Health Inspector etc., if the documents comply with the relevant standards
Step 7 Approval (In Regional Authority/UDA) by the Planning Committee	Getting the final decision (approval or disapproval) in concurrence with the Town Planner, Architect, Engineer, Urban Commissioner and the representative of the relevant authority by considering the issues that have arisen
Step 8 Issuing of the building permit	Authorize private authorities to continuously monitor the process
Step 9 Issuing of the Certificate of Conformity	Make the Building Control Surveyor to be in charge of issuing the Certificate of Conformity

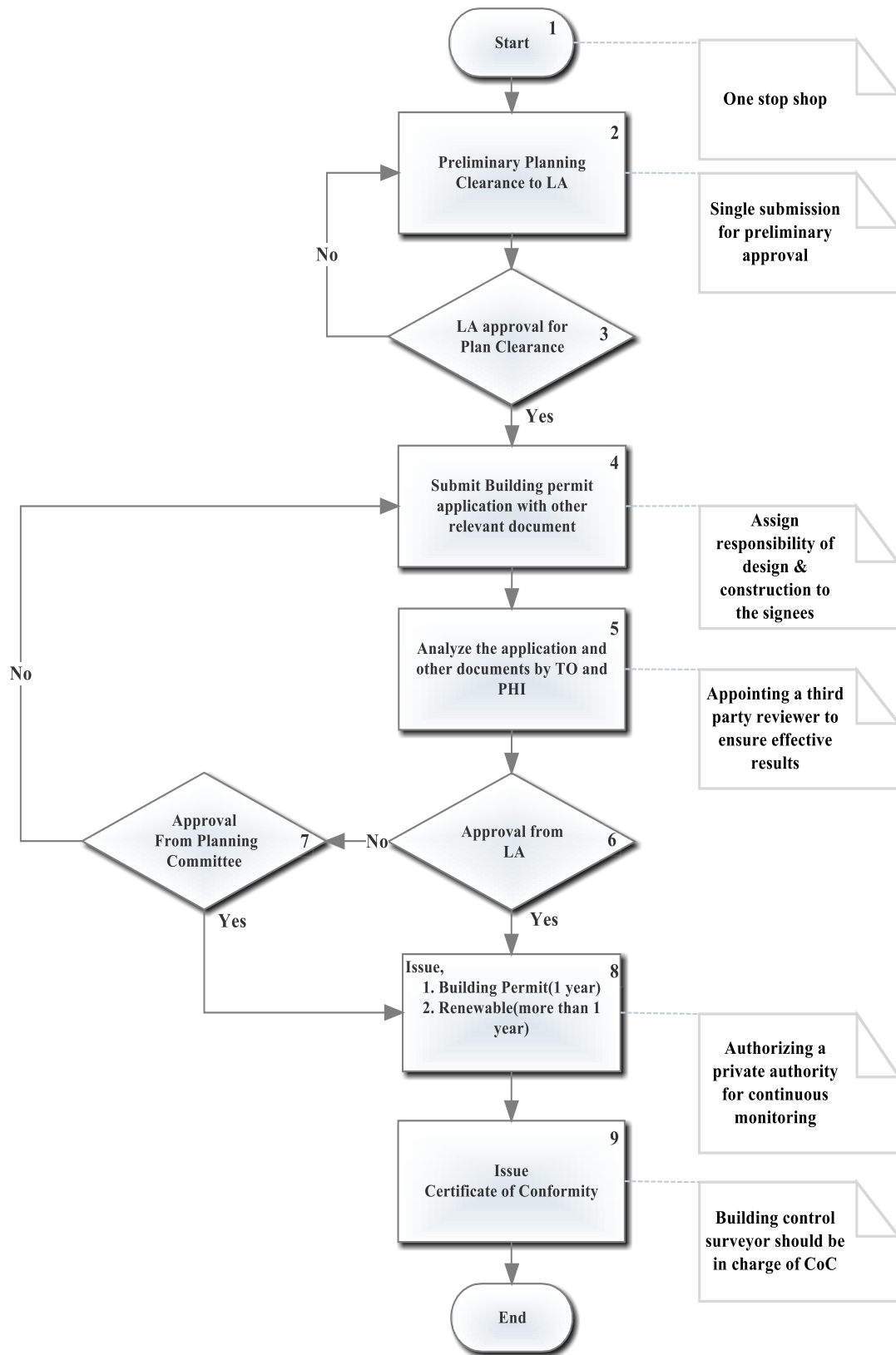


Figure 1: Proposed Plan Approval Process

One stop shop concept has to be practiced as an integrated process with the involvement of all relevant authorities seated at one table, in order to obtain the relevant approvals from one single place and provide written instructions to the applicant. This may increase the effectiveness of the process and provide the approval with the concurrence of all relevant parties after considering all aspects of the building and mitigating malpractices and corruption.

If all the documents comply with the relevant standards, approval will be granted by the local authority. The application for the building permit can be submitted subsequently along with the other relevant documents. There will be high transparency in the approval process at this stage due to the proposed concept of one stop shop. In the current practice, though the design has to be developed and certified by a qualified architect and the structural and technical requirements by a qualified engineer, the architect or the engineer do not have to bear any responsibility or obligation for any future actions related to the design. Therefore, the responsibility for the construction work will not be there, though the design has been developed and certified by a qualified architect and a structural engineer. In order to overcome this issue, the responsibility for the whole construction work from its inception to completion has to be assigned to them. A code of ethics has to be enforced which will provide for blacklisting or punishing of wrongdoers in order to avoid negligence and carelessness on the part of those professionals.

The main duty of the technical officer would be to check the compliance of the design of the proposed building against the building rules and regulations and the main duty of the public health inspector would be to verify the health and safety aspects of the building. Most of the malpractices and corruption take place during this stage. Therefore, the appointment of a third-party reviewer to overcome this issue will ensure the accuracy of the work done by the technical officer and the public health inspector by verifying same and may also help to mitigate corruption and bribery.

A private sector party can get involved to issue the building permit and do site inspections in place of the technical officer or the public health inspector, since most of the other countries get the private sector involved to carry out the building control process and this is found to be more effective in maintaining the standard of the buildings. Those private sector parties have to be registered or should have the authority to issue building permits and carry out site inspections in order to ensure that the construction work complies with the rules and regulations of the country. The quality of the process will have to be assured by means of certifications and therefore a professional such as a Building Control Surveyor has to be introduced to maintain the quality of the final product by getting him to issue the certificate of conformity. It might mitigate the unfavorable impacts when there is little involvement of professionals in the process.

Therefore this research is intended to offer a solution to the problems of building control that are currently being experienced and to mitigate bribery and corruption that exists.

#### ***Proposed Alternative System – Online System***

According to the literature findings, computer intelligence is essential for developing building control in order to increase the latter's effectiveness, share the knowledge and open up communication facilities all over the world. An online system for PAP was suggested by several interviewees to mitigate corruption and malpractices. The main advantage of introducing an online system is the reduction of paper work that will avoid errors in the documentation and also its ability to make quick updates of the documents whenever they need amendments. Moreover, an online system may help to ensure a specific time period for the PAP and it may also provide the opportunity for an applicant to track the status of his application. An online system may highly influence the effectiveness of the process by making it highly transparent and reducing the likelihood of corruption and bribery. Such a system may provide detailed guidelines for proper documentation and preliminary clearance from the relevant authorities without having to waste time on collecting those documents. It was revealed that there are limitations at present for an online system by way of people's skills and facilities/ logistics. Therefore, this system will be very expensive and will need an initiative from the government for its implementation.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

Proper BC with the involvement of professionals has become essential for Sri Lanka. With the development of the construction sector, buildings are getting more and more complex and the corruption and malpractices in the construction sector are on the increase. Therefore, BC will ensure the success and quality of a project.

The current practice related to BC in Sri Lanka was identified with respect to the parties involved, rules and regulations and the process itself, by studying the published documents and through a document review and interviews. Nine main stages were identified in the existing building control process. The research subsequently focussed on identifying the ineffectiveness of the current process in Sri Lanka along with corruption, malpractices, health and safety issues, and technical matters that are prevalent. In order to develop a suitable BC mechanism, the role of the professionals in the process was ascertained by obtaining the opinions of the professionals in the construction industry. If the corruption and malpractices are to be mitigated, a proper BC mechanism will have to be ensured by encouraging the professionals to get more involved in the process. Therefore, for each stage a modified version was discussed and an alternative system was introduced. It is recommended to adopt the developed and modified building control process (Refer Figure 1 for the proposed building control process) which comprises of critical suggestions such as: one stop shop, a single submission for preliminary approval, assignment of the responsibility for the design and construction to those who certify them, appointment of a third party reviewer to ensure effective results, authorisation of a private authority for continuous monitoring of the process and having a Building Control Surveyor to be in charge of the issuing of the Certificate of Conformity to mitigate corruption and malpractices and to enhance the effectiveness and transparency of the building control process. To improve transparency, effectiveness and efficiency, it is recommended to increase the involvement of professionals and technically qualified staff at different levels. It is also recommended to have a proper document control and management system.

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