

## Residents maintenance priority & reasons for sustainable maintenance management of heritage building in Nasik, India

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**Abstract-** Sustainable development and heritage conservation has become guiding principles for our today's modern society and its growth. In order to achieve a sustainable management of heritage building conservation in Nasik, maintenance takes an important role in conserving the heritage values of the buildings. Maintenance has been identified as a key intervention in protecting heritage building by prolonging its lifespan & it is also helpful to pass on the heritage values of our culture which our forefathers gave us to the future generation. Some studies have shown that resident's participation in terms of observing & reporting building defects is an important aspect in improving the existing building conditions and in avoiding deterioration of the heritage building. So the need of the study is to protect heritage of Nasik, Improving quality of life as well for socio-economic growth for Nasik with the objectives to understand various factors of maintenance priority & reasons of maintenance & Analysis of collected factors of maintenance through Relative importance index(RII).

**Keywords-** Heritage building; Maintenance management; Maintenance priority preference; Conservation; Maintenance; Sustainable; Nasik

### I. INTRODUCTION

A heritage building has architectural, aesthetic, historic, social, economic, spiritual and symbolic values and shall be preserved and should be pass on to the future generation to understand our culture and history and their values as well. With the growth of modernization in every field the heritage building losing their values so as to preserve them sustainable maintenance management is a key tool to protect them. Maintenance is identified as a means on prolonging the lifespan of the heritage building by reducing or eliminating all negative effects. Without proper and systematic maintenance works, the heritage buildings will deteriorate and becoming dysfunctional as well as unfit to be used [5].

Nasik is an important pilgrim centric heritage city of Western India. Developments of past two decades have completely transformed this traditional pilgrimage centre into a vibrant modern city and it is poised to become a metropolis with global links. In the recent years the development along the historic fabric has gone beyond its capacity increasing the pressures on the infrastructure. It is observed during the survey that many of the old Wadas are being pulled down due to lack of awareness, lack of maintenance and management, lack of heritage protection guidelines, etc. Some inappropriate usage of material like cement is also evident which is harmful for the original stone construction. During the fast growth period, it is critical that the city's heritage does not get sacrificed for monitory advantages. There is pressing need to preserve the Heritage of Nasik, so the heritage buildings require sustainable maintenance management that are essential in extending the life of the buildings and avoiding the need for potentially expensive and disruptive repair works, which may damage the buildings heritage value [8].

## II. METHOD

There is no doubt that the residents do not possess the same level of maintenance knowledge as obtained by officers from the maintenance department or management agency who is responsible and directly involved in the maintenance work [4].The studies have shown that resident's participation reporting & monitoring building defects is an important aspect in improving the existing heritage building conditions and in avoiding deterioration. So the objective of this study is to examine the resident's maintenance priorities on the competing maintenance demands with suggestions from experts, a survey was conducted on the 10 no. of residents of heritage buildings in Nasik to understand the public approach towards heritage building as well as to understand the Maintenance Priority Preference & Reasons of residents towards maintenance of heritage building.

In survey a four-point scale was used ranging from 1 = Not important; 2 = Less important; 3 = Important; 4 = Very Important to understand the priorities and reasons of maintenance of heritage building. The investigated various factors of maintenance priorities & reasons of maintenance were rank according to importance by using formula of relative importance index i.e.

$$\text{Relative Important Index (RII)} = \frac{4d + 3c + 2b + 1a}{4(d + c + b + a)}$$

Where; a = number of respondents who answered Not important, b = number of respondents who answered Less important, c = number of respondents who answered Important, d = number of respondents who answered Very Important.

The study consists of residents of the heritage building such as wadas in Nasik. The respondents chosen are the heads of the household's. As well as to understand the public approach towards heritage building general questionnaire survey is done on various aspects such as importance of heritage building, maintenance approach-current practices, follow up of regulations & guidelines, financial factors.

## III. DATA COLLECTION & ANALYSIS

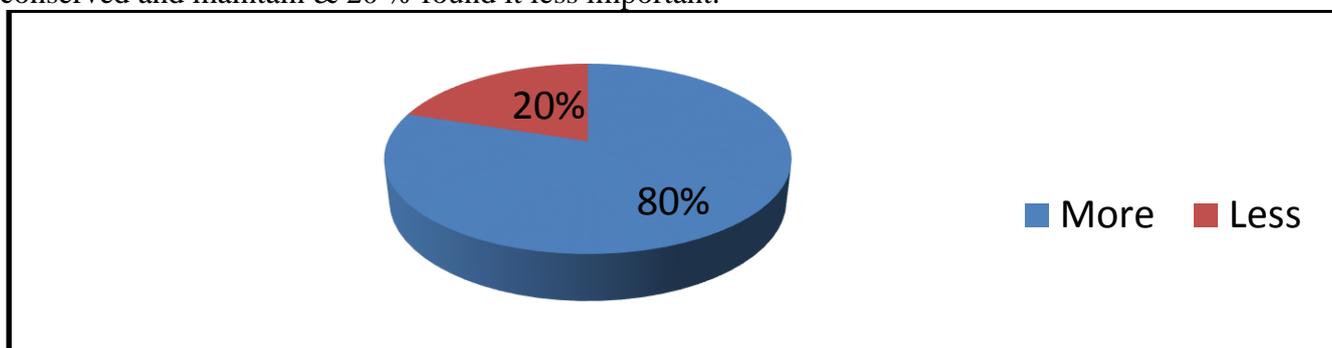
The selection of the samples is based on the information obtained from related organizations involving in maintenance management of historical buildings in Nasik. Each sample is selected based on the status of the building itself which is categorized as heritage building and have undergone the conservation and preservation works.The data collected for the analysis is done through a questionnaire survey.

### 3.1. Public approach towards heritage building:

To understand public approach 10 respondents which are residents of heritage buildings in Nasik were asked to answer about the following aspects.

#### 3.1.1. The Importance of Historical Buildings:

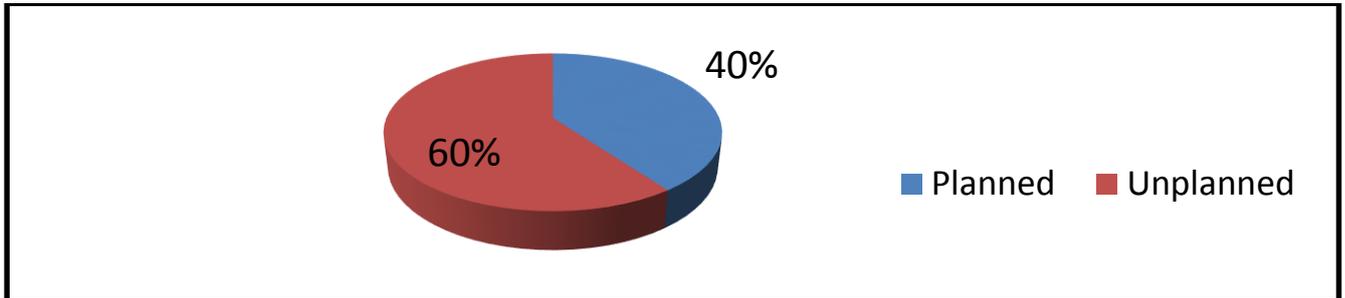
There are 80% who agreed that it is such an important factor for heritage buildings to be conserved and maintain & 20 % found it less important.



*Figure 1. Importance of Heritage Building*

### 3.1.2. Maintenance Approach – Current Practice:

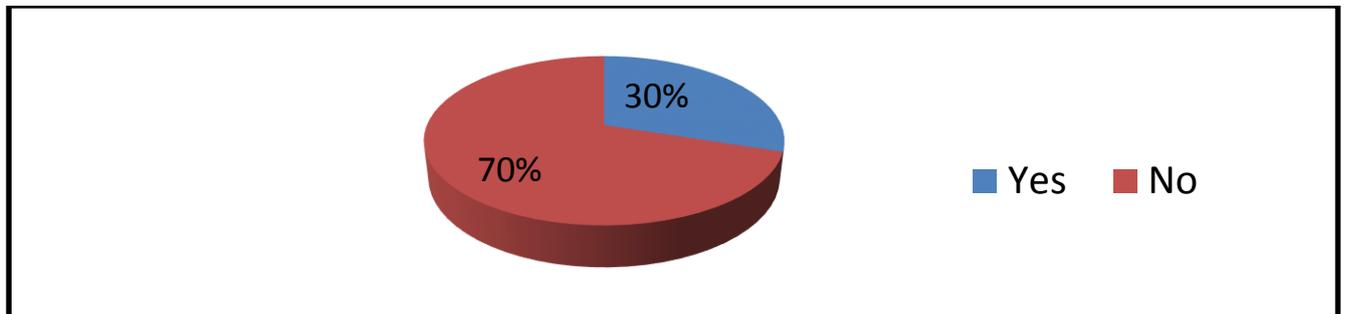
40% of respondents claimed that they adopted Planned Maintenance Programme for their buildings, while another 60% confirmed that Unplanned Maintenance Programme is practiced.



*Figure 2. Maintenance approach*

### 3.1.3. Regulations and Guidelines:

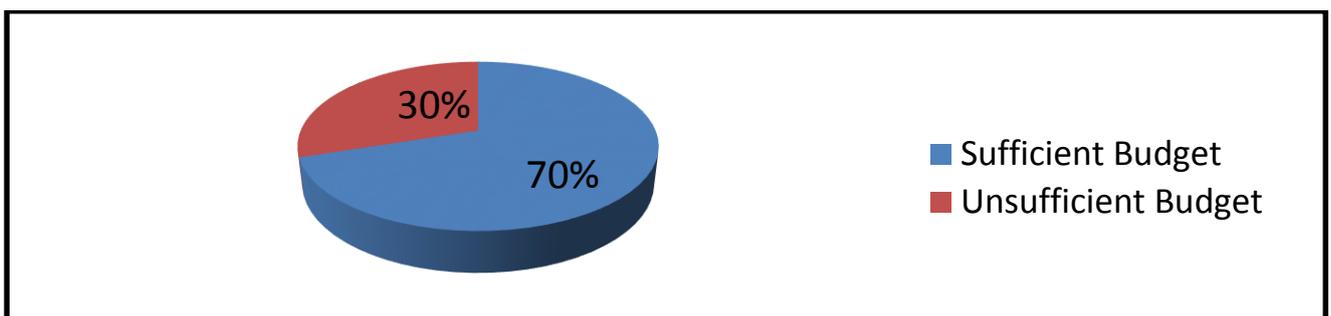
Findings regarding regulations and guidelines had confirmed that only 30% or 3 buildings did refer to some guidelines in doing their maintenance works, somehow another 70% or 7 buildings said they did not refer to any guidelines.



*Figure 3. Follow of Regulations and Guidelines*

### 3.1.4. Financial Factors:

In terms of financial factors, 70% or 7 buildings had confirmed that they have sufficient budget for carrying out all maintenance works, while another 30% or 3 buildings did not have adequate budget.



*Figure 4. Financial Factors*

### 3.2. Maintenance Priority Preference & Reasons of maintenance:

Priorities and reasons for maintenance were found out by questionnaire survey & ranked by using Relative importance index (RII).

### 3.2.1. Maintenance Priority Preference:

The various priorities that were ranked as per their preferences for maintenance work according to the respondents.

*Table 1. Maintenance Priority Preference*

Rank	Maintenance Priority Preference
1	Wall plaster failure
2	Brickwork failure
3	Damaged ceiling
4	Pipes linkage/ Damaged painting
6	Electrical faults
7	Sanitary appliance failure
8	Wooden work failure (beam, galleries)
9	Floor tile failure
10	Damaged door and window
11	Damaged door & windows frame
12	Damaged taps
13	Blocked drain

### 3.2.2. Reasons of maintenance:

The various Reasons of maintenance that were ranked as per their preferences for maintenance work according to the respondents.

*Table 2. Reasons of maintenance*

Rank	Reasons of maintenance
1	Work necessary to maintain the safety
2	Repair of building material
3	Work necessary to maintain the health of residents
4	Work necessary to keep buildings operable
5	Work necessary to keep property habitable
6	Emergency failure
7	Preventive maintenance
8	To maintain the environment of building

## IV. CONCLUSION

By the study it is found that heritage buildings have environmental sustainability benefits so the need to conserve & protect becomes a necessary point. Conservation by maintenance promotes sustainable development by conserving the embodied energy in the existing heritage buildings. In order to achieve a sustainable management of heritage building conservation in cities like Nasik, it is vital that maintenance with proper management can play an important & useful role in conserving the heritage values of these old buildings. Nasik heritage buildings have valuable assets to the tourism sector due to its strong influence in attracting foreign tourists to visit the city which can also promote the tourism and can be a source for revenue generation. Therefore, it is important to conserve these heritage buildings by continuously caring and protecting them from being destroyed so as to prolong their life span, functions and utility by regular and proper maintenance by considering all residents priority because they are ultimate users of these buildings. It is mainly through heritage conservation that we can pass onto future

generations what is currently identified as being of cultural identity today, and this would be difficult to achieve if the sustainable maintenance management of heritage buildings is not fully adopted.

Through study it is found that there are such factors which should be considered while taking any maintenance work of heritage building so that it can be effectively and sustainably conserved. Overall it is found that residents of heritage building wanted to preserve these buildings to maintain its value but there is lackness in proper maintenance management plan & programme to preserve this heritage building sustainably & there is a need a proper sustainable maintenance management with proper guidelines to carry out the maintenance work in Nasik.

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