

Preparing a maintenance plan

Introduction

The regular expenditure of a small amount of maintenance funds is much better for a building, and more cost effective, than large injections of capital every 20 years or so. People often think that once a building has been 'restored' it doesn't need to be looked at again for many years. But many major repairs to historic buildings could have been prevented if simple things like leaking down-pipes and gutters had been cleaned out or repaired quickly.

What is maintenance?

Maintenance is defined by the *Burra Charter*¹ as the continuous protective care of the fabric, contents and setting of a place. Maintenance can be categorised according to why and when it happens, as:

corrective maintenance

- work necessary to bring a building to an acceptable standard (often as recommended by a conservation plan) such as treatment for rising damp; or

planned maintenance

- work to prevent failure which recurs predictably within the life of a building, such as cleaning gutters or painting; or

emergency corrective maintenance

- work that must be initiated immediately for health, safety, security reasons or that may result in the rapid deterioration of the structure or fabric if not undertaken (for example, roof repairs after storm damage, graffiti removal or repairing broken glass). A daily response system detailing who is responsible for urgent repairs should be prepared.

1. The Australia ICOMOS *Charter for the Conservation of Cultural Significance* (*The Burra Charter*) gives definition for terms used in heritage conservation, discusses acceptable conservation processes and establishes the best practice for achieving the heritage conservation of a particular item.



Photograph by Peter Phillips

Poor maintenance has resulted in damage and deterioration to this building

Building maintenance can also be categorised according to who carries out the maintenance work:

housekeeping maintenance

- carried out by property managers; or

second line maintenance

- carried out by specialist building tradespeople.

Equipment and plant installed within a building also need routine servicing and the replenishment of consumables to keep them in working order. They usually have specific servicing and maintenance requirements which are provided through a service contract, often with the supplier.

When buildings are neglected, defects can occur which may result in extensive and avoidable damage to the building fabric or equipment.

Why have a maintenance plan?

The main reason for a maintenance plan is that it is the most cost-effective way to maintain the value of an asset. The advantages of a plan are:

- the property is organised and maintained in a systematic rather than ad-hoc way;
- building services can be monitored to assist their efficient use;
- the standard and presentation of the property can be maintained;
- subjective decision making and emergency corrective maintenance are minimised.

When buildings are neglected, defects can occur which may result in extensive and avoidable damage to the building fabric or equipment. Neglect of maintenance can also give rise to fire and safety hazards, which could result in building owners being found legally liable for any injuries.

Total asset management is aimed at improving value for money ...

Total asset management

For NSW Government agencies, the maintenance plan forms part of a total asset management strategy. Total asset management is aimed at improving value for money from public sector assets. (Refer to *Heritage Asset Management Guidelines*, 2nd edition, published by NSW Department of Public Works and Services in 1996.)

Whether in public or private ownership, good management of heritage assets should include effective conservation planning aimed at retaining heritage values, and effective maintenance programs to direct money effectively and wisely.

Recording the asset

As a building manager, you need to know and record in detail what you are managing. Without this information you cannot decide on a maintenance policy or estimate your expenditure for a budget.

Basic information that a building manager needs to have includes:

- plans, showing location of all elements, easements and construction details
- age and condition of the building
- services details
- maintenance requirements
- names and contacts of those responsible for maintenance
- dimensions and areas of accommodation
- local council requirements
- heritage listings
- reports on the building, including a conservation management plan
- details of previous conservation works.

Preventive maintenance costs markedly less than repairing extensive damage or building failures

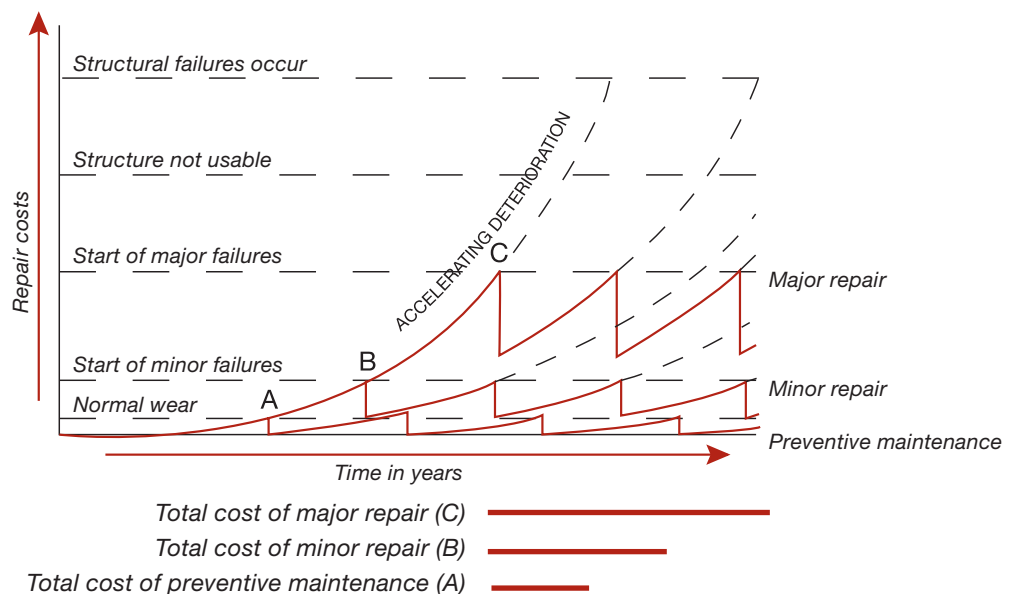


Diagram from *Preventive Maintenance of Buildings*, Van Nostrand Reinhold, New York, 1991.

The Heritage Office building in Parramatta, originally constructed as the Kings School in 1836, is an example of a carefully conserved and maintained historic building.



The following tools can assist with the recording of information.

Heritage study inventory sheet

These are often prepared by the local council, although owners with a number of heritage assets often prepare their own. The inventory sheet usually includes a description of the item, information on architectural style, historical significance and heritage listings and a photograph. Data sheets are usually accessible on a database and can be expanded to any level of detail. They can include not only buildings but trees, individual rooms, furniture, artworks and objects.

Day log book or diary

The diary is for recording reported defects, injuries and daily expenses.

Maintenance log book

This records all maintenance work carried out, including a description of the work, date of completion, estimated and actual cost, contractor and warranties. A cross-reference system should enable details of treatments such as fungicides, paint types and colours to be readily accessible in the future. As the log book includes the actual price for work done, it is a valuable source for future budgeting.

Periodic inspection survey

All properties should be inspected at regular intervals to identify any deterioration and required maintenance work, including cleaning.

Records show the history of an item's condition, and are a guide to likely future problems and costs. They indicate whether a property is being over- or under-maintained or misused, and can show if previous maintenance was inappropriate or if there are design or material defects. All records should be readily available on site.

It could be advantageous to record the long-term performance of repair materials and procedures in order to assess their suitability for future maintenance work. Where there may be changes in maintenance personnel, the failure to keep detailed records could result in a repetition of previous mistakes. The usefulness of written records will often be enhanced by taking photographs periodically to illustrate detrimental changes in the performance of the repair.

Preparing a budget

Annual budgeted expenditure on maintenance can be of three kinds:

- **committed expenditure**, which includes tasks that occur every year as part of planned maintenance, such as maintenance contracts;
- **variable expenditure**, which includes regular tasks within an overall program of planned maintenance that may not occur every year. The building manager exercises some discretion and decides on priorities for these tasks;

As the log book includes the actual price for work done, it is a valuable source for future budgeting.

- **managed expenditure**, which relates to unplanned maintenance works carried out entirely at the building manager's discretion – primarily emergency corrective maintenance.

The aim of a maintenance budget is to reduce managed expenditure over time as far as possible and replace it with variable expenditure. Regular inspections can help by identifying how components are performing and when they might fail.

Budgets need to include costs for inspections, replacement of materials or finishes, cleaning and any unforeseen breakdowns or repairs. Budgeting for these items will become more accurate over time if detailed records of maintenance expenditure are kept.

Budgets need a simple control system, with regular and frequent reports on actual and committed expenditure.

Preparing a program

At least two levels of programming are required:

- **long term maintenance**, up to and including the first painting cycle, which can extend to 50 years for a building with a slate roof or 100 years for a building with stonework;
- **annual maintenance**, a schedule can be compiled by assessing the annual inspection survey, day log book or diary and work carried over from the previous year. The daily response system for carrying out urgent maintenance should be upgraded annually.

Invariably, the cost of all desirable works in any one year will exceed the budget. The building manager then has to decide what is necessary this year to maintain the asset within the funds available, and what could be carried forward to the following year.

This implies setting priorities for different works. Some of the factors affecting priorities are:

- occupational health and safety
- security of premises
- statutory requirements
- vandalism
- increased operating costs
- loss of revenue
- disruption to business operations
- likely failure of critical building fabric
- policy decisions.

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The effectiveness of the maintenance work that has been carried out should be reviewed regularly.

Regular inspections are crucial to effective maintenance of heritage buildings.



Photograph by Robyn Conroy.

Inspecting your property

Regular inspections are basic to planned maintenance. They ensure continuing serviceability and economy of labour and materials. Inspections should be carried out using standard forms to assist comparison with previous inspections. It is desirable to use the same people over a long period to aid continuity with maintenance assessment.

If carrying out inspections, you need to develop your skills in detecting the first signs of failure. Do not attempt to carry out work or inspections that may expose you or others to danger, and seek the help of relevant specialists if necessary.

The inspection schedules in the appendix should guide you in what to look for, and how often you need inspections to maintain your property. The schedule gives an *average* life expectancy for materials or elements, but remember that location, micro-climate and orientation will affect the rate of deterioration. You will need to monitor life expectancy and adjust it annually based on your inspections.

There is no general rule on how often maintenance surveys need to be carried out. Frequency will be influenced by the rates of decay and deterioration of various building elements. One of the main purposes of a maintenance plan should be to provide guidance on this subject.

Clearly some elements may deteriorate more rapidly than others. For example, storm water drainage is likely to require inspections and attention at closer intervals than joint or roof repairs. When the maintenance plan is introduced it is sensible to err on the conservative side and carry out some inspections at shorter intervals, for example six or twelve months. Gradually, after background data has been collected, it may be found appropriate to extend the intervals between inspections and maintenance procedures of the various building elements.

While many defects can be easily seen, others may require instrument or laboratory testing for an early indication of rot or termite infestation in timber, dampness in walls, or decay beneath a painted surface.

Maintenance review

The effectiveness of the maintenance work that has been carried out should be reviewed regularly. An important part of the maintenance planning for a building is to improve the previous decisions to maintain the asset so that subsequent maintenance expenditure will be more effective. Issues to consider when reviewing the work include:

- was it necessary or appropriate
- the timing and standard
- time frame of the planned maintenance work.

This can form part of the annual inspection when the fabric condition is being assessed.

EXTERNAL PROGRAM/ESTIMATE SCHEDULE											
Building Element	Year										
	1	2	3	4	5	6	7	8	9	10	Total
1. Roof covering Iron/battens Flashing Inspection											
2. Roof Drainage Galvanised iron Cast iron Inspection											
3. Eaves Timber Birdproofing Inspection											
4. Fabric Galvanised iron Brickwork Timber Stone Inspection											
5. Structure Timber Inspection											
6. Joinery Windows Doors Inspection											
7. Painting Generally Window sills Door-frames Balustrade Inspection											
8. Services Stormwater Inspection											
9. External Works Timber fence Steel fence Concrete Paving Bitumen paving Inspection											
10. Urgent maintenance											
TOTAL \$											

Note: Frequency of inspections will be influenced by the rates of decay and deterioration, particularly to buildings recently purchased or poorly maintained.

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