

Planned Maintenance

Initiation and Routine Appraisal Method for Higher Education

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1 Overview

Introduction

The Planned Maintenance Initiation and Routine Appraisal (PMIRA) method is a disciplined approach to setting up and operating a rigorous, robust planned maintenance regime for assets in the estates of institutions in Higher Education, within the context of the Maintenance Strategy. It focuses on three key questions:

- Which are the assets that require planned maintenance and what are the planned maintenance activities that should be carried out on a regular basis?
- Where planned maintenance procedures are in place, are the maintenance activities taking place as planned?
- How can the knowledge gained from performing planned maintenance activities be used to improve the stewardship of the institution's assets?

The PMIRA method should not be viewed as a set of rigid rules, rather a framework of practical procedures applicable to each stage of a planned maintenance regime, whether the method is being used to set up planned maintenance procedures for the first time or to evaluate the effectiveness of those already in place.

The method is based on real-life experience and is designed to be easily accessible to Estates Directors, Maintenance Managers and their staff. PMIRA is equally applicable to Mechanical & Electrical (M&E), Fabric and Grounds maintenance, whether the institution uses direct labour to carry out maintenance activities, contractors or a combination of the two. It supports a pragmatic approach to the implementation of planned maintenance, allowing an institution to progress in manageable phases, rather than having to go through the pain of a 'big bang' approach.

PMIRA does not assume that any particular computer system or software is in place, although the method itself is best supported by some form of computer system, as the volumes of data likely to be handled and the need for reporting lend themselves to the use of some form of software system.

Why use the PMIRA Method?

Any Higher Education institution wanting to adopt a rigorous approach to the planned maintenance of assets in its estate will benefit from using the PMIRA method. The advantages are:

- A set of integrated procedures showing typically what has to be done to set up, run and maintain a rigorous, managed, planned maintenance regime;
- Guidance on pitfalls to avoid and good practice to adopt when setting up planned maintenance activities;
- A firm basis for constructing workable procedures for planned maintenance activities;
- A clear statement on roles and responsibilities for setting up and operating a successful planned maintenance regime;
- A means of modelling the costs of planned maintenance, allowing the impact of decisions from the maintenance strategy to be tested in advance of action being taken;
- Defined reporting standards that demonstrate compliance with maintenance plans;

- A mechanism to evaluate the results of previous planned maintenance tasks and use the data to inform and improve future planned maintenance activities;
- Improved stewardship of the estate's assets;
- Justifiable data to support asset renewal and replacement proposals, based on the identification of unreliable plant and components, along with life cycle costs to inform future procurement.

When to use the PMIRA Method

The PMIRA method can be used at a variety of times, dependent upon an institution's needs:

- (i) To support the implementation of software for asset management.
- (ii) When progressing to a more disciplined approach to planned maintenance.
- (iii) To assess the strengths and weaknesses of current planned maintenance routines and activities.

Process Structure

The PMIRA method sets out the actions required to put in place a disciplined, well managed process for planned maintenance as five linked stages, as shown in the following diagram, overlaid with a reporting framework:



Each stage represents a unit of work characterised by clearly defined objectives and pre-defined outputs. In summary, the stages are as follows:

Data acquisition:	capturing data about the institution's assets and the work schedules needed to maintain those assets, to enable the planned maintenance regime to be put in place. This data often exists within the institution though is held in diverse forms by a variety of people.
Initiation:	using the data gathered during data acquisition to create planned maintenance tasks that will be carried out over a pre-defined, finite period of time.
Operations:	scheduling the planned maintenance tasks and allocating them to the artisans who will carry them out, then capturing data about the completion of those planned maintenance tasks.
Routine appraisal:	comparing the planned maintenance activities with those that actually took place, then adjusting the planned maintenance tasks as necessary.
Change management:	responding to changes through asset, building and site acquisitions and disposals, refurbishment or internal reconfiguration.
Reporting:	covering all stages of the method, reporting uses the data acquired, the planned tasks and actual work carried out to demonstrate compliance with statutory duties, meet the needs of funding bodies and validate proposals for change.

Roles and Responsibilities

Successful planned maintenance regimes require co-operation between all those involved in the process. The matrix below highlights the responsibilities of the various roles at each stage:

	Maintenance Manager	Supervisor	Artisan
Data acquisition	Р	А	С
Initiation	Р	С	
Operations - task scheduling	А	Р	
Operations - perform tasks		А	Р
Routine Appraisal	А	Р	С
Change Management	Р	А	С
Reporting	Р	С	

A = Assist C = Consult P = Perform

The roles are defined as follows:

Maintenance Manager:

has overall responsibility for ensuring that the assets owned (or used) by the institution are well maintained and fit for purpose. Supervisor:manages artisans and is responsible for maintaining groups of assets
owned (or used) by the institution.Artisan:is responsible for carrying out the planned (and reactive) maintenance
tasks and reporting their completion, along with any adjustments that
should be made to the work schedules. Artisans may be directly
employed by the institution or may be subcontractors.

Benefits from Applying the PMIRA Method

The benefits to the institution and its Estates Department from operating a rigorous, robust planned maintenance regime - the output of applying the PMIRA method - are extensive:

- Improved management of the estate, delivering a consistent service to customers the users of the buildings and assets being maintained;
- Maintaining up-to-date, accurate details of the asset base, allowing the impact of change to be assessed with confidence;
- Understanding and modelling the cost of maintaining the asset base, both repair and renewal costs, so that limited financial resources can be targeted at those areas where they can be used to best effect;
- Constraining the uncontrollable cost of reactive maintenance, including the inconvenience and hidden cost of breakdown;
- Providing evidence of compliance with statutory requirements, through reporting on the outcomes of planned maintenance activities;
- Providing definitive justification for expenditure on asset replacement and renewal, with grounds for whether the new asset should be to a higher or lower specification than the one being replaced;
- Demonstrating a professional approach to stewardship of the institution's assets.

Getting Started

Successful planned maintenance regimes operate within the context of a Maintenance Strategy that is supported by the institution's senior management and which provides a clear mandate for action. Though not a mandatory prerequisite for setting up planned maintenance procedures, an agreed Maintenance Strategy will help both to determine which activities are appropriate for the institution and support requests for expenditure.

The PMIRA method describes a process, rather than an outcome, so does not require everything to be carried out all at once. For example, if more is known more about the fabric of the estate than its mechanical and electrical (M&E) assets, then start with the planned maintenance routines for Fabric, get these in place and then move on to M&E. Similarly, if knowledge of certain buildings is sparse then leave them out of the initial implementation and come back to them in a second phase.

Whether a planned maintenance regime is being implemented for the first time or the method is being used to review existing procedures and practices, the key issue to decide up front is what information will be reported and how, because this will inform decisions concerning the way in which data about the estate and its assets is recorded and stored. While third party organisations such as HEFCE and BSRIA give some guidance in this respect, as does this document, reporting is ultimately the institution's decision, which will be made in the light of the Maintenance Strategy.

Plan with routine appraisal in mind. At the outset, do not expect to be able to get the 'right' answer for every question. For example, if there is uncertainty about how long a particular planned maintenance task will take, a 'best guess' should be made during the data acquisition stage with the figure being refined later as part of the routine appraisal process.

If direct labour is used for some or all planned maintenance tasks, a cost per hour (including 'on' costs) for the direct labour force will need to be derived. This will allow the calculation of overall maintenance costs, including contract and direct labour costs. However, once again this figure (or figures) does not need to be 'right', rather a reasonable and justifiable estimate of the hourly cost.

Decide how artisans will be required to measure the time spent on a planned maintenance task. Does this include the time spent travelling to the asset's location or not? Is the artisan expected to arrive with the materials and spares that may be required to complete the planned maintenance task, or will they be collected as required? While on the face of it these look like trivial questions, how they are answered will have a profound effect on the meaning of the data collected from planned maintenance activities.

Decide the period (in years) over which the maintenance tasks will initially be planned (the recurrence period). If the recurrence period is set too long, then routine appraisal may never take place. On the other hand if it is set too short then the routine appraisal process could become overly onerous. In general, a recurrence period in the range three to five years is recommended.

Structure of this Document

Each section of this document covers one stage in the method and includes the following:

- An overview of the stage;
- The deliverables from the stage;
- Details of the steps that will need to be taken to complete the stage;
- Hints and tips, plus key considerations that should be taken into account when carrying out the work in each stage. These hints and tips are shown highlighted in the text.

As the interpretation of the various terms used can vary, this document also includes a glossary where all of the main terms are defined.