Implementing Best Practice in Hospital Project Management Utilising EVPM Methodology

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2. Implementing Best Practice in Hospital Project Management utilising EVPM methodology

2.1. Abstract

- Implementing best practice in hospital project management through the use of a Project Office
- Formal definition and control of interfaces between the architect, builder and the client hospital
- Metric based Project Management Utilising the PMIBOK
- Earned value tracking
- Bottom Line focus
- Case Studies: Latrobe Regional Hospital & A Major NSW Rehabilitation Hospital

2.2. Case Study - LRH Project Background

The Latrobe Regional Hospital (LRH) originally operated on three campuses located in Moe and Traralgon in the Latrobe Valley of Victoria. It served the community within the Valley well for many years. However, as time has past the hospitals aged, and together with duplication of health services across campuses, the ability to continue to provide high standards of health service and care became limited within existing funding frameworks.

The original LRH hospital provided the following services,

- Acute Health Services
- Accident and Emergency Services
- Aged Care Services
- Mental Health Services
- Maternity Services
- Community Based Services

2.3. Case Study – A major NSW Repatriation Hospital

A major NSW Repatriation hospital undertook a large scale reconstruction project during what has proved to be one of the wettest periods in Sydney. Attempting to keep to the project schedule and indeed forecasting the availability of the new wards for occupation proved to be quite a challenge. The use of EVPM techniques enabled the project manager to forecast the likely occupation dates with a much better degree of accuracy than is the normal case.
3. Implementing Best Practice in Hospital Project Management

3.1. Introduction

The impact of Project Management on an organisation's competitive capability has not normally been seen as a benefit in the Healthcare services sector. The ability to muddle through a project using "me-too" products has placed a major premium on Healthcare providers' abilities to develop the support infrastructure to enable new government program initiatives to be taken rapidly from development to delivery.

The Federal and State Governments' push in cost reduction processes, has led to a growing appreciation of the need for a project management culture as business-critical care projects have come increasingly under the spotlight -- a process accentuated by legislation-driven systems demands. Thus there is now a growing demand for project management within the industry, which must be met by companies who have a good understanding of all of the issues faced in Healthcare provision. The most important aspect besides achieving delivery on time and on budget is to ensure that all the inherent risks have been properly defined and will be well managed.

So what do we mean by Project Management and what does it consist of? In itself Project Management means many things to many people and is a huge subject and so I will outline some of what I believe to be the more important elements due to the limitations of time of this presentation.

3.2. What Project Management Standards Should be Used?

3.2.1. Project Management Methodology

Project Management covers a wide area of skills and consists of a number of major elements as defined by the Project Managers Body of Knowledge, generally known as the PMBOK. These major elements are defined as:

- Project Management Context
- PM Integration Process
- PM Scope Management
- PM Time & Scheduling
- PM Cost/Accounting & Finance
- PM Methodology and Tools
- PM Quality Management
- PM HR Management
- PM Communications Management
- PM Risk Management

The diagram below – Figure 1, shows the relationship between the various elements within a project. It highlights the Risk Management area.
3.2.2. What is a Project?

A project may be defined as:

"an enterprise in which people, material and financial resources are organised, in special way, to embark on a unique scope of work, from a defined specification, within the constraints of cost and time and resources, so as to achieve a beneficial outcome defined by quantitative and qualitative measures.

The most important features of a project are its uniqueness and the need generally for special organisation to achieve an advantageous change. Projects need to be evaluated against expected gains before the project is initiated. Many projects, which are not planned properly at the outset, are doomed to failure before they even commence and so carry a great business risk.

Project Management has also been defined as a combination of Tools and Techniques such as PERT, CPM, EVPM, PRINCE/2 and managerial control methods. The tools of Project Management are more advanced than that of managerial control and projects often fail due to the disproportionate amount of effort placed on these systems. Structured Project Management techniques provide a framework for Project Management Tools to operate. They concentrate on the definition of the project objective, determining the Project Organisation, problem solving and life cycle structures and the correct level of information for each part of the project structure. When an organisation defines a specific standard set of procedures for its projects we call this process a "methodology". This methodology then manifests itself in the Project Charter, a singularly important document for the project manager.

The project organisation and the conflicts it brings to the functional structure of a hospital have been highlighted in the past. A key role of the Project Manager is to come to terms with the fact that they rarely have the authority to call on resources as required and they must negotiate with Departmental
Managers for their co-operation. As there is little political kudos to be gained by the Departmental Manager this proves to be a major hurdle to effective Project Management.

Health Projects do go wrong. However, project problems are normally due to a lack of clear objectives, poor organisational design, informal communication methods and inadequate structured planning and risk control processes. A project could be considered to be similar to a badly behaved infant. It may well behave itself when your full attention is being given but misbehave the moment your back is turned leaving you to wonder where you went wrong.

3.2.3. Risk Management

One of the most important areas of Project Management within the hospital arena, which is not well understood as often as it should be, is the Risk Management process within a project, which also includes Risk Analysis for which the project manager needs to be practised. The HealthCare professional is well versed in Risk Mitigation as it applies to the care and well being of patients etc, but do not necessarily apply the same view when it comes to the non HealthCare areas. There are a number of risk analysis techniques, but few, if any properly documented Risk Management techniques. Risk analysis techniques included sensitivity tools such as Sensitivity models, Monte Carlo Analysis, PERT analysis, Decision Trees and Risk Models.

As stated before, many projects invariably will go wrong. We know that the role of a project manager is to predict the potential risks to the success of the project and manage their effects before they become overwhelming. However, good decision making and management does not guarantee a good outcome - it only improves the chances.

The management of risk in a project begins with its identification and analysis. This is where products such as PREDICT Risk Analyser prove their worth. The project manager can minimise the management risks in the project by ensuring that the right level of project scope and objectives, organisation, planning, co-ordination and control have been defined in a Project Charter. A major section of the Project Charter will provide a definition of the project brief and is a core element of effective Risk Management.

It does not take too much intellectual thought that a project is a great risk if the scope and definition is not right and is not developed properly, if its objectives, standards, technical base and general strategic planning are inadequately considered or poorly developed. More so if its design and construction is not firmly managed in line with the strategic plans. Many major hospital projects have failed over recent years due to the continual scope creep that is allowed to occur as the project steering committee is made up of health professionals with competing requirements. Thus the project charter is critical to the success of the project.

The project charter must also clearly annunciate both effects and affects of the project in its external environment (such as politics, community views, economic and site conditions, availability of financing and project phasing and duration. In the HealthCare industry many requirements are soft and as the health professionals change during the project so do the requirements).

The project charter will also contain all the necessary definitions, interaction with those external financial and other matters. Its implementation indicates that the project will be much harder to manage and may be seriously prejudiced if the attitudes of the HealthCare professionals essential to success are not positive and supportive.

It cannot be over-emphasised that the importance of good project management practice in the management of risk. However, as we know, some of the risks in Healthcare projects are unique to that industry. For example ensuring Infection Control programs produce the desired results quickly and do not cause a delay in the availability of operating theatres. However similar projects may appear there will always be differences in the environment and the effect it has.

Best practice project management suggests that the project manager must separate the role of risk analysis from that of management. However, it is not intended to suggest that one process follow the
other and when complete should not be considered again. Project planning, risk analysis and management is an on-going process that is best tackled as near to the event in time. This does not mean that risks should be ignored until the risk event occurs, rather that it should consider the problems of tomorrow with more effort than that spent on the problems that might occur further down the track.

Risk Management must consider the importance of contingency planning, for both financial and time. Such planning included the assignment of responsibilities, multi-level responses and risk trigger setting. The importance of regular reviews and tracking is a must along with a reporting mechanism, which will ensure that all the interested project parties are fully appraise of the projects status. The project manager must understand the plethora of regular meetings that occur within a hospital and ensure that the reviews do indeed take place.

The project manager must keep the right balance on the amount of effort applied in the Risk Management of the project. Like planning and scheduling we run into the law of diminishing returns with project Risk Management. Doubling the time spent on risk analysis does not mean that the overall risk will be minimised by a further 50%. You are all familiar with the old 80/20 ie 80% of the benefit for 20% of the effort. This tells us that you should consider risk analysis and management on all projects. The process of examining risk will provide great benefits for the minimum of effort.

Do not underestimate the impact of good Risk Management techniques on the project team. Acceptance of the risks and the fact that analysis has taken place and that they will be managed effectively will engender confidence in the project team. This will ensure that they accept the consequence of risk as a natural part of project management and by using good software tools to overcome, or at least minimise the effects, it enables the project manager and the project team to be in control of their own destinies. The results may not always be exactly what the project manager would wish but the level of stress and burn out in a situation is always reduced if people feel they have some control.

Many people try to manage a project without risk analysis or project management – but empirical evidence as detailed by both KPMG and the Standish Group clearly shows that they have no control over the project and they fail. The project manager will increase their chances of successful delivery by using both Project and Risk Management techniques but by failing to do so hope to perform by leaving things to chance!

One of the major reasons for the success of the new Latrobe Regional Hospital was that the Executive Director placed great store on the management of the risks across the total project and ensured that any risk identified was analysed and mitigated as quickly as possible.

### 3.2.4. Negotiation and Arbitration

There are many types of negotiations and arbitration that need to take place throughout the life cycle of a project, and in which the Project Manager will take a prominent role. Therefore it follows then that the ability to negotiate is one of the many skills that a successful Project Manager must possess. A great deal of a project manager’s time is taken up in making deals with various vendors, sub contractors, the client themselves etc, in order to keep the project on track. The number of conflicting needs and territorial claims of HealthCare professionals can test a project managers ability to successfully negotiate.

As we know negotiation is about bargaining to reach a mutually acceptable outcome. This is commonly called the Win/Win concept. The following illustrates some of the more important aspects when negotiating a health project:

- Good preparation is essential if you are to achieve your objectives.
- Take time to plan your outcome that is do not rush the process.
- Maintain the bargaining balance and remain neutral for as long as possible
- Be clear in your objectives but also be able to see things from their point of view.
- Ensure all the parties concerned are aware of the overall objectives.
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- Avoid arguments and do not allow a 'no deal' situation to develop. You must however stand firm in balancing the needs and desire of the State Government Health Department’s as well as those of your own client HealthCare network
- Keep to the point

It is well worth pointing out that a good negotiator has to learn and practice the skill of negotiation, the bargaining objectives are often lost by a single careless act.

3.3. **What is Earned Value Performance Management?**

Earned Value Performance Management (EVPM) is designed to provide Senior Management with an accurate overview of corporate performance. It builds on the information provided by traditional scheduling techniques to plan and measure the overall productivity of a system or a project. EVPM through the Performance Measurement Baseline provides focus on the bottom line assessment as to whether the plan is being implemented effectively or not and highlights problems at an early stage allowing effective management intervention. It is an objective measurement of how much work has been accomplished on a project.

Earned Value Performance Measurement, Management by Objectives, and Cost Schedule Control Systems are synonymous terms. These terms have been defined in US DODI 5000.2R, BS6079 and Australian Def(AUST) 5655.

Earned Value Performance Management is an objective measurement of how much work has been accomplished on a project

Using the earned value performance management process, senior management and other members of management can easily compare how much work has been actually accomplished. It enforces the discipline of planning upon the project manager, as well as the budgeting, resourcing and scheduling of authorised work scope in a time phased plan. This disciplined approach will provide management with the Budgeted Cost of Work Scheduled.

The time-phased plan shows the incremental cost of resources and produces a cumulative cost curve against time and is defined as the Performance Measurement Baseline. As work is progressed and or reported completed it is “earned” using the same selected budget duration or time period. Earned Value compared with the Planned Value provides a work accomplished against plan. Thus any variation between the plan and the actualise is defined as a “Schedule Variance” or a “Cost Variance”

The corporate accounting system should provide an accumulation of actual costs for the project in hand. The Actual Cost of Work Performed is then compared with the Earned value to denote any under or over run to the project.

The Budgeted Cost of Work Scheduled, the Earned Value and Actual Cost of Work Performed provide objective metrics of performance which enable management to carry out trend analysis and evaluate the cost estimate at completion, better known as Estimate at Completion at all levels of the project.

Additional variances are calculated to provide management with a set of cost and time performance metrics to enable them to confidently predict the successful outcome of the project.

Earned Value improves on the "normally used" spend plan concept (budget versus actual incurred cost) by requiring the work in process to be quantified. A major element in the definition of work to be measured is the Work Breakdown Structure

A Work Breakdown Structure (WBS) may be used to segregate the work scope requirements of the program into definable product elements and related services and data. The WBS is a direct representation of the work scope defined in the program statement of work and breaks that work scope into appropriate elements for cost accounting and work authorisation. It is a multi-level hierarchical
breakdown that shows how program costs are summarised from the lower elements to the total program level. The extent of decomposition and levels in the WBS will be determined by program management needs and contractual arrangements.

Thus by implementing the earned value process, management can simply compare how much work has actually been completed against the amount of work planned to be accomplished. Earned Value requires the project manager to plan, budget and schedule the authorised work scope in a time-phased plan. The time phased plan in the form of a critical path network is the incremental "planned value" culminating into a performance measurement baseline. As work is accomplished, it is "earned" using the same selected budget term. Earned Value compared with planned value provides a work accomplished against plan. A variance to the plan is noted as a schedule or cost deviation.

Normally the established accounting system provides accumulation of actual cost for the project. The actual cost is compared with the earned value to indicate a over or under run condition.

Planned Value, Earned Value, and Actual Cost data provides an objective measurement of performance, enabling trend analysis and evaluation of cost estimate at completion within multiple levels of the project.

Earned Value Performance Management should be applied to every project where the owners of the final product wish to ensure that the expended resources were used efficiently. On major projects the application of good project management tools will aid in the selection of the right course when managers need to make financial and time allocation decisions.

The key elements of performance measurement are:

1. The measurement of absolute figures or just variance does not give an indication of the current status of the project.
2. The value of the work obtained for the effort and resource consumed is the only true measure of project progress.
3. The use of the WBS allows the project manager to focus on the parts of the project that are showing the greatest deviation. Care should be taken when considering the project as a whole. Often large negative deviations in one area are smothered by cumulative small positive deviations in other areas.
4. Performance measures can be used to predict the final success, or otherwise, of the project at completion. Trend analysis is a vital component of the project manager's toolbox.
5. Performance analysis is dependent on the accuracy of the tracking measures used. The only effective progress monitoring system is one in which physical deliverables are accepted against agreed quality criteria.
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6. Before implementing EVPM it is important that all members of the project team understand the principles and interpretation of results.

7. Beware of the calculation of the Estimate to Complete (ETC) of a project or task using the reduced formula.

8. The procedural elements required in the implementation are
   • The processes involved in implementing a EVPM system in the hospital sector
     • Developing the Work Breakdown Structure
     • Developing the plan
     • Establishing a resource driven schedule
     • Accounting for various cost types
   • What Earned Value provides
     • Work progress
     • Relationship of planned cost and schedule to actual achievement
     • Valid, timely, auditable results
     • Basis for Estimate at Complete (EAC)
     • Summaries developed at the lowest practical WBS level
   • Cost and Schedule Earned Value
     • The metrics required to measure project progress and status are:
       • Planning Package schedule status
       • Budget at Completion
       • Budgeted Cost of Work Scheduled
       • Budgeted Cost of Work Performed
       • Actual Cost of Work Performed
       • Estimate at Completion
   Estimate to Completion

9. For cost/performance measurement to work certain systems must exist. They are:
   • A time based plan
   • A work breakdown structure
   • A costs collection system
   • An objective method of assessing progress
   • A responsibility/authority matrix

3.4. **The need for Control and Coordination**

It should be remembered that the HealthCare industry is generally a ‘Reactive” industry and as such some organisations are well versed in the process of control and coordination, however many are not. For a project manager to have effective control of a project then control and coordination methods need to be implemented and there are some critical criteria that it should meet. The following lists illustrate the primary areas that must be addressed by the project planning and control methodology.

• Control begins at the inception of the project not just before implementation. A clear, and authorised Project Charter, is the foundation of any good control system. Without it, the whole project is destined to fail.
• When work is planned it will need to be controlled. The effective project manager considers, for each work package, what elements are critical to completion and applies controls accordingly.
• The control system should be targeted at the agreed critical success factors not on the assumptions of the project manager.
• Control systems are a combination of on-going monitoring and Control point acceptance and review (Go/No go) through the vehicle of a Project Steering Group
• The milestone plan allows the project manager to define the go/no go control points in the project and the start and finish criteria for each work package.
• The responsibility matrix allows the project manager to communicate clearly the needs of the project and accountabilities for completion of tasks.
• The control system needs to be balanced with the objectives of a project. These will have been defined in the Project Scope & Objectives document.
• Who will control and coordinate and how and on what contractual terms must be defined at inception not implementation.
• A coordination system is generally defined in the Project Charter document.
• Effective control systems are based on the measurement of performance not just on the variation from the standard. It will incorporate trend analysis that allows the project manager to predict what would occur if there was no intervention from the project team.
• In a project the project manager is normally a supplier, to the project sponsor, and a customer to the project team. In the role of customer he should provide the same service that he expects from his project sponsor - support, commitment and clear objectives.
4. Case Study – The New Latrobe Regional Hospital

The original LRH hospital was a registered public hospital under the Victorian Health Services Act 1988 and functioned as part of the Victorian Department of Human Services.

The diseconomies in the structure of the old LRH resulted in the Victorian State Government (through its Infrastructure Investment Policy for Victoria) to create a new health service facilities in the Latrobe Valley to be provided via a Build, Own & Operate model of private sector service delivery.

This new facility was constructed at a greenfield site at Morwell East Victoria, and was being built by Multiplex Constructions Pty Ltd and is operated by Australian Hospital Care Ltd (AHCL) Victoria’s largest and Australia’s second largest private hospital group.

Even though the new LRH is managed privately, it operates as part of the Victoria public health care system and is the Regional Referral Hospital for Gippsland. The funding for the new LRH will continue to be based on the current methodology for Victorian public hospitals ie Casemix funding.

In January 1997 the Victorian Government signed contracts with Australian Hospital Care Limited (AHCL) to build the new privately owned hospital to provide hospital services to public patients. An integral part of AHCL’s bid was to assume immediate management of the existing public facilities during the construction phase of the new facility.

A Transitional Management Agreement (TMA) was developed to enable Australian Hospital Care Ltd to introduce itself to the staff and the local community and to ease the transition into the new facility. It was thought that this period would allow the new management to commence not only the structural changes that were inevitable but also commence work on the cultural changes that would be necessary.

I am sure you would agree that it would be a difficult enough task to manage a large and complex organisation over multiple sites. To do this and to undertake the complex and difficult task of bringing about cultural and structural change and at the same time become actively involved in the construction of a new Hospital was always going to be a big ask. It was the acknowledgment of these unreasonable demands on the Executive that led to the decision to seek the support of external consultants with expertise in project management. MPI Pty Ltd was appointed to assist with the project and one of our first decisions was to establish a Project Office.

The function of the Project Office was to carry out the planning, scheduling and project management of the move from the original three campuses to the new location so that it became operational from 1st September 1998. There were significant contractual imperatives for this to occur. During the initial phase of the project the role of the project office was expanded to provide support services to the builder and the introduction of an Issues Management system as well as Milestone Reports.

During this transitional period it was imperative that the contracted level of health care services to the community are maintained by the existing LRH. Through the Project Office the project schedule was managed to ensure that this was the case.

4.1.1. Standards from the Start –

As one of Australia’s leading Healthcare services provider - AHCL understood that acceptance of the vital need for quality project management was a critical factor in the establishment of its new facility, the Latrobe Regional Hospital.

And, according to its senior management, the use of project management disciplines aided by effective project management software played a significant part in the successful opening of the new Latrobe Regional Hospital five weeks ahead of schedule and on budget.

The go ahead to start building the new Latrobe Regional Hospital was given in 1996 and, from the beginning, all efforts were directed contractually towards an opening date of 1st September 1998.
Under Executive Director Stuart Rowley, the construction of the new LRH was a Greenfield start-up operation. A major complication was that at the same time the old LRH hospital had to continue operations and convert from a public hospital management to a private hospital management model. All this occurring across three campuses up to 25 km. apart, with the new site located within the same area.

A relationship was established with many of the Heads of Department in the old LRH who then delegated unit managers to form “working parties” to cover all the aspects of the relocation of the old hospital and all its services from three campuses to the new campus. All this work had to be carried out in addition to regular duties.

Considerable executive management energy was focused on hitting the contract date target by establishing a Project Steering Group at AHCL’s corporate office and so every part of the project was evaluated according to its Criticality to the readiness and ability to open on time. The steering group was made up of representatives of Silver Thomas Hainley (the architect), Multiplex (the builder), the Victorian Department of Human Services the Quantity Surveyor, an Independent Certifier; members of the Establishment Project Office, the Corporate Risk Manager as well as the Executive Director of LRH, Mr. Stuart Rowley. Regular "go - no /go" reviews were conducted, this ensured that all of the staff involved with the project knew what was occurring with the project as well as what was expected of them. Extensive training sessions in the new practices and protocols were also given and formed an important part of the project plan.

4.1.2. Success

"A major factor in the successful opening of the new hospital " Stuart Rowley explains, "was the early implementation of quality project management processes and standards." The chosen project planning software was Micro Planning International's X-Pert for Window (XPW). It uses a variety of "views" of project data, including Gantt charts and Critical Path Networks and is particularly strong in resource modelling, tracking and scheduling., as well as Earned Value Performance Management. The old LRH initial priorities were to make the company's first high-level plans more robust and, crucially, to validate plan dates. The project management consultants because of its ease of use selected the software, and because its reporting and plan consolidation capability allowed the rapid pin-pointing of "hot-spots" (e.g. resource deficiencies) that required attention if the contract launch date was to be met.

4.1.3. Consequences

"At start-up we were not well equipped technologically and by establishing the EPO we were able to develop a positive project based culture. The emphasis on good project management undoubtedly contributed to the team working and a "can-do" attitude amongst staff," says Stuart Rowley. Within LRH today, cross departmental projects are the norm with the three Care Programs now well in place with marketing, finance, Y2K compliance and IT activities becoming ever more inter-related. The LPMG Project Office (colloquially known as the EPO) mainly manages these, which is based at the hospital. The processes that were developed during the establishment of the new hospital have become a de facto standard and are used by some of the major "Corporate Projects" within the AHCL group of hospitals.

4.1.4. Establishment Project Office

A central unit - the Establishment Project Office (EPO), supports project management throughout LRH. This performs the function that in many organisations would be handled by a Programme Manager. Typically, this type of function will take high-level project plans from operating departments and help to anticipate and resolve potential resource conflicts, using the company's overall business objectives as the benchmark to determine priorities. However, at LRH, the EPO also works closely with the AHCL Corporate Project Managers. Although project sponsors were ultimately responsible for delivering the project's business benefits, the Corporate Project Managers are expected to drive their projects forward proactively. The EPO works through the Corporate Project Managers to apply "best practice" standards in project management across AHCL.
Typically, this involves encouraging the sharing of expertise amongst the company's pool of project managers and "mentoring" new entrants to the project management profession. In addition, the EPO sought to ensure consistency in the way elements of the project management process were handled throughout the organisation, all of which helps to build an effective project management culture.

4.1.5. Benefits

According to Stuart Rowley, the development of a project management culture via the EPO has brought significant benefits to LRH. The primary one being the defined involvement of all parties (users and developers alike) in the planning process - they are actively encouraged to challenge the assumptions on which the plans are based.

Additionally, the EPO is generally advised well in advance of a project's inception, so that plans can be aggregated early and resource profiling and forecasting carried out with far greater sophistication.

"Above all", says Stuart Rowley, "we have a continuous feedback loop whereby Micro Planner plans are produced in great detail for the first phase of a project, with plans for subsequent phases being refined according to experience. This process is continued beyond project completion into subsequent planning, to establish an on-going cycle of project improvement."
5. Typical Reports Produced by the Project Office

The following reports illustrate the typical information provided to corporate management;

5.1. The Critical Path Network for the Commissioning and Relocation Sub project

The above critical path network shows the relationship between the tasks involved with the commissioning of the new hospital and relocation tasks from the old hospital campuses. Where a task has been achieved it is shown crossed out.

Also included in this diagram is a small scale layout of the new hospital.
5.2. Project Steering Group Report

This report was specifically designed (it became colloquially known as the “Arthurgram” so named after the chairman of the Project Steering Group) to provide a high level summary of the most critical as well as the most important milestones within the project.

As can be seen it spans the total project from the commencement of the Transition Management Agreement in 1997 to the AHCS EQuIP certification requirement date at the end of 1999.

As the project progressed the “Arthurgram” was updated each fortnight to highlight the current project status.
5.3. **Milestone Gantt Charts**

This report was designed for the HR manager and provided the HR department with their specific milestones, which had to be met in order to ensure that sufficient staff would come through from the old system to the new system.

It was produced in Gantt form, which provides a rapid visual picture of the major milestones and their relationship in time. However, some managers preferred the data in the form of a table, which is shown below

### 5.4. **Milestone Tables**

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Description</th>
<th>Baseline Date</th>
<th>Achieved Date</th>
<th>Schedule Date</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRH23961</td>
<td>Catering Department - Relocation Plan Completed</td>
<td>05-Apr-99</td>
<td>06-Apr-99</td>
<td>06-Apr-99</td>
<td>0.0</td>
</tr>
<tr>
<td>LRH23962</td>
<td>Menu Completed</td>
<td>05-Apr-99</td>
<td>06-Apr-99</td>
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<td>0.0</td>
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<td>LRH23967</td>
<td>Equipment Completed</td>
<td>06-Apr-99</td>
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<td>0.0</td>
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<td>Staff Completed</td>
<td>06-Apr-99</td>
<td>06-Apr-99</td>
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<td>0.0</td>
</tr>
<tr>
<td>LRH23976</td>
<td>Staff Completed</td>
<td>06-Apr-99</td>
<td>06-Apr-99</td>
<td>06-Apr-99</td>
<td>0.0</td>
</tr>
<tr>
<td>LRH23980</td>
<td>HACCP Completed</td>
<td>06-Apr-99</td>
<td>06-Apr-99</td>
<td>06-Apr-99</td>
<td>0.0</td>
</tr>
<tr>
<td>LRH23982</td>
<td>Reports &amp; Protocols Completed</td>
<td>14-Apr-99</td>
<td>14-Apr-99</td>
<td>14-Apr-99</td>
<td>0.0</td>
</tr>
<tr>
<td>LRH23977</td>
<td>Computers Completed</td>
<td>04-May-99</td>
<td>04-May-99</td>
<td>04-May-99</td>
<td>0.0</td>
</tr>
<tr>
<td>LRH23989</td>
<td>Operating New and Existing Kitchens Completed</td>
<td>11-May-99</td>
<td>04-May-99</td>
<td>04-May-99</td>
<td>+50</td>
</tr>
<tr>
<td>LRH23999</td>
<td>Standards for Measure</td>
<td>11-May-99</td>
<td>04-May-99</td>
<td>04-May-99</td>
<td>+50</td>
</tr>
</tbody>
</table>
5.5. Task Reports

<table>
<thead>
<tr>
<th>Task Id</th>
<th>Task Description</th>
<th>Budgeted Cost</th>
<th>Actual Cost to Date</th>
<th>Planned End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRH98012</td>
<td>Certificate - Fire Hydrants &amp; Hose Reels - Installation/Flow Rates</td>
<td>$10,000</td>
<td>$7,500</td>
<td>15-Jun-99</td>
</tr>
<tr>
<td>LRH98013</td>
<td>Certificate - Mechanical Systems Comply Drawings, BCA &amp; Codes</td>
<td>$12,000</td>
<td>$9,000</td>
<td>15-Jun-99</td>
</tr>
<tr>
<td>LRH98014</td>
<td>Certificate - Glass Installed to AS 1288 (1994)</td>
<td>$8,000</td>
<td>$6,500</td>
<td>15-Jun-99</td>
</tr>
</tbody>
</table>

Many of the various unit managers utilised the standard task report format, which shows the name of the task, its duration, when it is scheduled to commence and finish as well as cost analysis information. As progress occurred the actual progress date was also entered which enabled the project office to monitor actuals against planned dates. The report shown above was the most commonly used one during the day to day management of the project.

5.6. Cost Profiles

The report below shows the results from the Performance Baseline Management process. The project was managed using EVPM techniques and the planned budget and actual cost profiles are shown as S-Curves.