

# Conserving Cardiff Castle



John Edwards

Cardiff Castle Surveyor to the Fabric and Project Manager

# Award Winning Project



The House at Cardiff Castle was established in the 15<sup>th</sup> century, but contains elements that are Roman. Generally it is the lighter local Blue Lias limestone that represents the oldest parts of the structure, with the darker Forest of Dean sandstone representing the Victorian additions by William Burges. The exterior work to the House and Clock Tower has won two major awards to date.

## RICS Wales Conservation Award 2007

*"This is an exemplary project incorporating learned research and painstaking investigation brought about with great skill and craftsmanship..."*



Receiving the RICS Award

## British Building Maintenance Awards 2007: Outright Winner

*"A most impressive submission... "The understanding of building pathology and applying this knowledge into the.....specification was evident"*

# Background



This document provides an overview of the background to the multi-million pound Cardiff Castle project.

For nearly 20 years I headed conservation at Cardiff Castle. My responsibilities also included initiating and managing the Castle's most intensive investment programme since the time of the Bute family, who gifted the site to the people of Cardiff in 1947.

In the past 20 years Cardiff Castle has seen some major achievements. There is now a real understanding of the place; the history is well known, but we now also have an understanding of its historic and cultural significance.

We undertook in depth examinations into how structures were built and the techniques used in the finest of craft and artistic works, together with a real understanding of building pathology. Conservation, refurbishment and new development have all been based upon appropriate conservation strategy, a strategy balanced with sound business economics and maximisation of visitor access and income.

I am proud to have led and developed this award-winning project; the biggest conservation project in Wales and the largest art conservation project of its type in the UK. Key to this success was the formation of a most expert team. The project has also resulted in laying the foundations for future professional and sustainable care. I hope you enjoy reading about this small piece of history.

**John Edwards, MA, DipBldgCons, CEnv, FRICS, MCIQB, IHBC**  
**Cardiff Castle Surveyor to the Fabric**  
**Project Manager: Conservation and Development**

**March 2008**

# Cardiff Castle ~ the History



Cardiff Castle was founded by the Romans in around AD 55, and development has continued ever since. The Norman development is well illustrated by the 12th Century Keep. The House was established in the 15th Century, and was altered and extended in the 16th, 18th and most notably in the 19th Century, with some further changes in the 1920's.

The Roman Fort was only discovered in 1889, and from 1890 to 1925 the Neo Roman Fort was built, with the integral Barbican Tower completed in 1926.

As a Scheduled Monument with a number of Grade 1 listed structures, there is no doubt that Cardiff Castle is a most important historic site, and probably the most prestigious and best known Castle in the whole of Wales.

Cardiff Castle is also an international visitor attraction, which since the extensive site work began in 2000, has seen visitor numbers increase from about 170,000 per annum to nearly 230,000 today.

**Roman Fort ~ Norman Castle ~ Victorian House**

# Surveys and Project Planning

Bad news for Cardiff Castle, or a reality check? Well it was certainly bad news for Cardiff Council. In taking responsibility for Cardiff Castle, one of the first things I wanted to do was understand exactly what it was, what state it was in, what its problems were, what was needed to put them right, at what cost and in what priority order. The 1992 survey did just that.

This was the first major intensive survey undertaken of Cardiff Castle maybe since the William Burges survey for the 2<sup>nd</sup> Marquis of Bute in 1866. This survey wasn't just about the historic asset but also about asset management.



South Wales Echo headlines: 1992

The only way such an extensive and complex survey could be conducted, was through a team approach, managed as a project. The various areas and elements that make up Cardiff Castle were divided up, and briefs prepared for those who undertake the survey. This included my own staff and also specialist consultants. My role was to lead and manage the survey and draft the report.

The final survey report allowed decisions to be taken on the basis of knowledge, for the very first time. However, Cardiff Council who own Cardiff Castle did not have the £5.8 million required to undertake the work.

In 1995 I suggested to Cardiff Council that an application should be made to the Heritage Lottery Fund. This was accepted. I reviewed the 1992 survey with the help of a mechanical and electrical engineer and this formed the basis of a scheme submitted to the Heritage Lottery Fund in 1996. In 1998, the Heritage Lottery Fund approved a grant subject to a Conservation and Management Plan being developed.

I also successfully applied for funding from Cadw and the Wales Tourist Board (now known as Visit Wales) with Cardiff Council providing the remainder of funding.

# Conservation Planning ~ Heritage Management

Ten years ago, we were given a task of commissioning a 'Conservation and Management Plan'. At that time, very few people knew what these were and there was no UK written guidance. Nevertheless, with expert support from Kate Clark, then of English Heritage, we developed a brief, a procurement process and commissioned the Plan.

The Plan was produced by a team, led by an external consultant with contributions from a wide range of consultant experts and others. I fulfilled the client role and also contributed to the Plan. As an 'intelligent' client, I was determined that the plan would be a working document that would help me make good decisions about the care of Cardiff Castle in a planned way. It has done this very well. Through the Plan we can now identify Cardiff Castle with three main grades of significance, which are detailed below:

## Cardiff Castle ~ significance

### ***International significance***

**The present Burges scheme, which is an unsurpassed example of 19th Century Gothic expression and medieval fantasy**

### ***National significance within the United Kingdom***

**Unique resource reflecting 2000 years of history and an early attempt at interpreting and presenting archaeology**

### ***Regional significance***

**A focal point for civic pride and Welsh culture**

**A centre for spiritual and political expression**

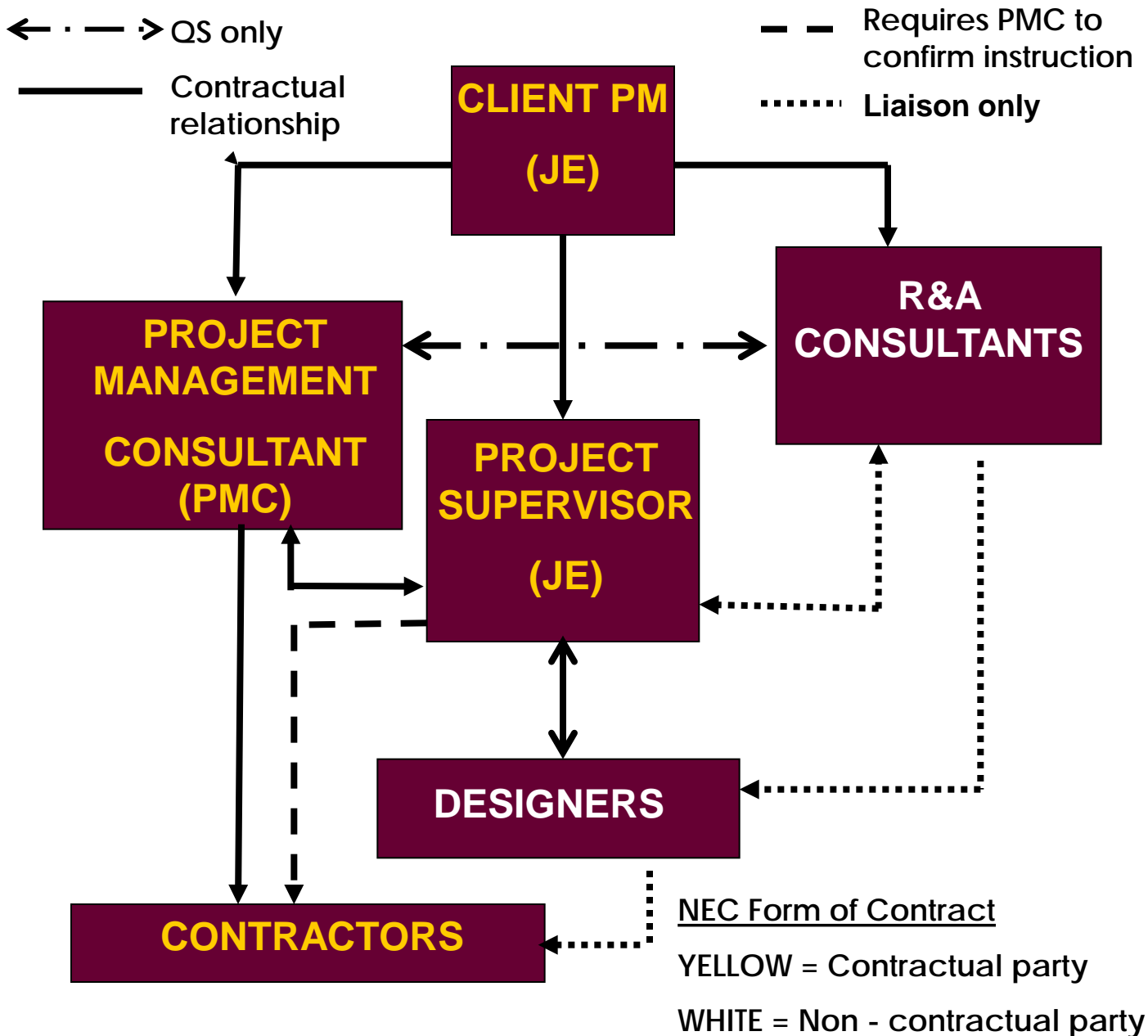
**The reason for the siting of the present city of Cardiff, the capital city of Wales**

Cardiff Castle Conservation and Management Plan 2000

Conservation policies produced by the Plan continue to be used to guide all decisions and Heritage Impact Assessments are also undertaken if necessary. A consistency of approach has been achievable through the Surveyor to the Fabric position. This has brought about a consistent application of conservation philosophy.

# Project Strategy ~ Project Management

The project strategy was developed to ensure that the project objectives were achieved. This meant dividing the project into manageable units, and deploying a methodology that suits the optimum project management of those units. In accordance with PRINCE 2 methodology, even Targeted Specialist Investigations (TSI's) and feasibility studies have been managed as individual projects. In essence the project is a programme of projects, the main ones being: Research and Analysis ( numerous TSI's); Roman Fort and Entrance Towers; Exterior of Clock Tower and House; Internal Refurbishment of the House; Conservation of the Burges Interiors; the Keep and Ladies Walk; and the Interpretation Centre.

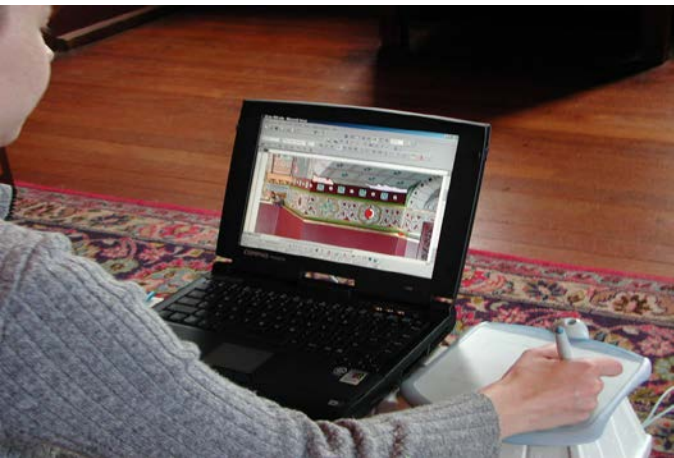


# Conservation Strategy

A conservation strategy must be based upon the utmost of knowledge and be innovative in determining the optimum methods of repairing the site for today, and ensuring that it is sustained into the future. This must include the technicalities of repairs, a sound conservation philosophy, well managed visitor access, good interpretation and management that balances the well-being of the site with sound business economics.

The management approach must be designed to meet the above criteria. This has meant the development of a wide-ranging plan, that involves a diverse team of professions. As Project Manager I appointed professionals ranging from archaeologists, geophysicists, architectural paint researchers, to engineers, architects, interpretative designers, cost consultants and business tourism experts. I have led individual teams, contributed to teams and have brought these teams together.

This strategy has included Conservation Based Research and Analysis (CoBRA) as a prerequisite to the design of conservation work and master planning, in a way that balances conservation with other issues and a project management methodology that is the optimum to deliver the objectives.



**Condition survey**



**Rectified photography**



**Geophysical survey**



**Architectural paint research**



# Research and Analysis

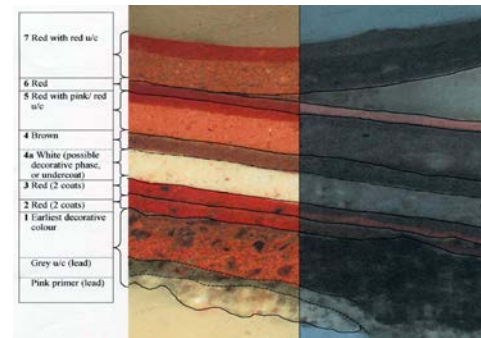
The conservation strategy has involved layering of information. From the 1992 survey and its 1996 review, I subsequently carried out my own programme of TSI's. This primarily focused on environmental monitoring, dampness and mortars. It was the information and knowledge generated from this research that identified what was needed and what could realistically be achieved from a more detailed TSI programme.

Most of the TSI programme was focused on the House. Generally, the walls are too thin, and the almost impervious decoration was suffering from poor environmental conditions. Also, this very important interior decoration had suffered from many detrimental interventions.

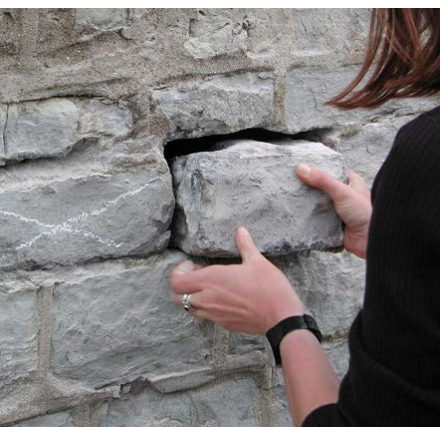
Over a period of eighteen months I led an interdisciplinary team of expert consultants that considered issues including: Environmental monitoring; mortar and masonry; architectural paint research; technical paint research; material analysis; and building services engineering. I filled in any technical gaps and ensured a consistent application of conservation philosophy. The detailed research fed into the overall programme for the ongoing care of the site.



Paint research



Architectural paint research



Masonry research



Environmental monitoring



Mortar research

# Spreading the Word !



There has been a staggering amount of interest in the Cardiff Castle project. Numerous press stories, television and radio coverage has given the project a profile. We have also proactively promoted it and used it as a vehicle to promote awareness of architecture, heritage, conservation and best practice care of the ordinary home.

I have spoken at conferences as far a field as China, organised the 2003 symposium which presented the Cardiff Castle research and analysis, and most importantly put together the Burges event series in 2005.

This ten event series included a major conference on the Victorian Terraced House and a three week interactive exhibition. The latter focused not just on the work of William Burges, but also on the ordinary Victorian home, the influence on its architecture and how they should be cared for today. With material drafted by myself and Matthew Williams, the Cardiff Castle Curator and Keeper of Collections, this will form the basis of the future Burges Exhibition at Cardiff Castle.

**Free Entry- Events/Demonstrations Every Day for 3 weeks**

**Architecture**

**Conservation**

**Your Home**

**Themed Events/Demonstrations**

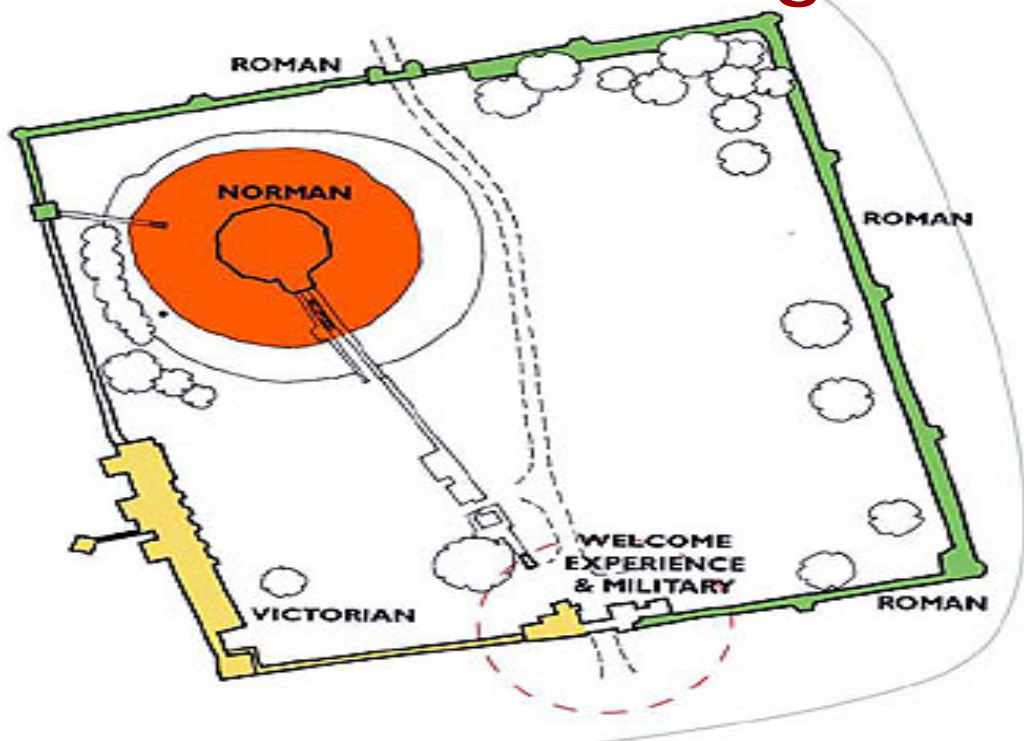
Restoration 8-9  
Your Period Home 15 - 16  
Grand Designs of Burges 22 - 23

**The Burges Exhibition**

2005 Cardiff Castle The Old Library, The Hayes, Cardiff  
8 - 29 October 10 - 4 daily  
Tel: 029 2087 2087 [www.cardiff.gov.uk](http://www.cardiff.gov.uk) [www.william-burges.co.uk](http://www.william-burges.co.uk)

M CIOB THE VICTORIAN SOCIETY RICS

# Conservation Strategy ~ Master Planning



Conservation isn't just about repairing structures, it is also about providing access and ensuring adequate interpretation to allow visitors to be informed by what they see. This is the basis of the Cardiff Castle conservation strategy, but it also includes economic sustainability. Visitor numbers to Cardiff Castle are increasing all the time, and it is a case of managing visitors so that they are informed, that they enjoy their visit but do not harm the site in the process.

In planning this, it was important to bring on board an experienced tourism business expert, a visitor attraction operations expert and interpretation designer. These areas of expertise were supplemented by my own, covering conservation, conservation strategy and facilities management and areas of expertise held by others at Cardiff Castle as well as other consultants.

The Master Plan concluded that Cardiff Castle should be presented and developed as a place with 2,000 years of historical development set in three time or history zones: Roman (see above in green), Norman (orange) and Victorian (yellow). This allows for increasing visitor numbers, dispersing them around the site, including to areas that have never previously received public access such as the mural galleries. It also included high quality interpretation to make such areas attractive to visitors, and a building to welcome visitors, orientate them and provide an introduction to the 2,000 years of history. This was developed on the basis that there would be one ticket covering the whole site, except the most vulnerable House interiors, for which a visitor will have to pay a little more.

# Project Management ~ Quality Management

The project strategy enabled me to properly manage the project from the very beginning to the very end. Having undertaken the initial survey, inputted into and signed off the Conservation and Management Plan, implemented and led TSI's meant that I was comprehensively familiar with the site and the project in all respects. I was therefore perfectly placed to ensure the consistent application of conservation philosophy, and also to ensure that the data and conclusions of the TSI's were fully utilised in the design and implementation of the work.



**Project Supervision on most projects was provided by John Edwards, who personally concentrated on complex and decorative elements. Also managed input of Clerk of Works and design consultants as appropriate.**

The Engineering Form of Contract was considered to be the most appropriate form of contract for use in almost all contracts. As the Client Side Project Manager I had overall responsibility for the projects, but my Project Supervisor role also allows for my more detailed input. For most projects this meant not just the development and application of a Quality Management System, but a role that has been enhanced beyond the Project Supervisor role described within the ECC form of contract. Duties therefore included: Management of the design process; management of variations in liaison with the consultant project manager (contract administrator); management of significance (including Heritage Impact Assessments); and the management of post contract input of design consultants. My role slightly varied on each individual project and included the interface with the building users.

# Project Management ~ Team Approach

From the very beginning of my involvement, the team approach was crucial to success. This ensured the appropriate ingredients of skills and expertise were deployed at the appropriate time. My duties included leading the 1992 survey team, contributing to the team that produced the Conservation and Management Plan, leading the team that produced the integrated programme of TSI's and leading the team that implemented the project. From the development of a strategy and overall projects briefs, I produced individual detailed project briefs and appointed some excellent consultants.



**A large project like Cardiff Castle can never be down to one individual. It takes a diverse range of professionals, crafts people and conservators.**

## Procurement

Most works and services have been of a size that has warranted advertising in the European journal. In line with this, I devised a method of procurement involving the initial selection of contractors and consultants based upon the EFQM (European Foundation for Quality Management) model. I developed quality price mechanisms for most appointments, thus ensuring that these were made on an assessment of both cost and other issues. This commenced at a time when Cardiff Council did not have centralised procurement operation.

# Cardiff Castle House and Clock Tower Exterior Conservation

The Cardiff Clock Tower is Wales' most ornate architectural icon, and as a composition of decorative elements, it is unique in the UK. Built between 1869 and 1873, it is the first William Burges building to be built at Cardiff Castle and at 132 feet tall it was the tallest structure in Cardiff when it was first built.

Like most Victorian structures at Cardiff Castle, it is built in Forest of Dean sandstone, and the walls are very thin. This means that they provide a very poor thermal buffer between external and internal environments.

As a result of the TSI programme, a multi-pronged means of minimising the problems was formulated, and that included mortars formulated for use at certain locations, such as at the Clock Tower.



Architectural paint research and restoration of the decorative elements of the Clock Tower were undertaken by a specialist contractor under my direction. This has changed the whole appearance of the Clock Tower, which had seen its original gold leaf gilding and ornate decoration gradually disappear over time.

# Cardiff Castle House and Clock Tower Exterior Conservation



As a result of the TSI's, work was carried out based on fact, not rule of thumb or what somebody did last time. It is an award-winning approach that properly relates the outside of the House with the inside using a combination of traditional skills, innovation and 21<sup>st</sup> Century technology.

# Cardiff Castle House and Clock Tower Exterior Conservation

The Roof Garden is situated within the Bute Tower and was created by William Burges in the 19th Century. Until 1985 it was open to the elements, but had a long history of allowing water to enter into Lord Bute's bedroom below.



**Roof Garden Before**



**Roof Garden After**



**Clock Tower Restored**

The roof enclosure of 1985 was of an inappropriate appearance and was in poor repair. After a detailed options appraisal led by the Architect, an ETE pillow roof was installed. This is basically a plastic balloon, and is the same type of roof used at the Eden Project and Olympic Stadia in Beijing. It allows a clear span and does not fool visitors into thinking that it is part of the original architecture.



# Internal Refurbishment of the House

The internal refurbishment of the House included everything that was required to put it into good internal repair, improvements to ensure modern safety standards were met as well as providing new and refurbished facilities.

It also included refurbishment of some very important areas but excluded conservation of the Burges interiors, which followed on as the last phase of work.

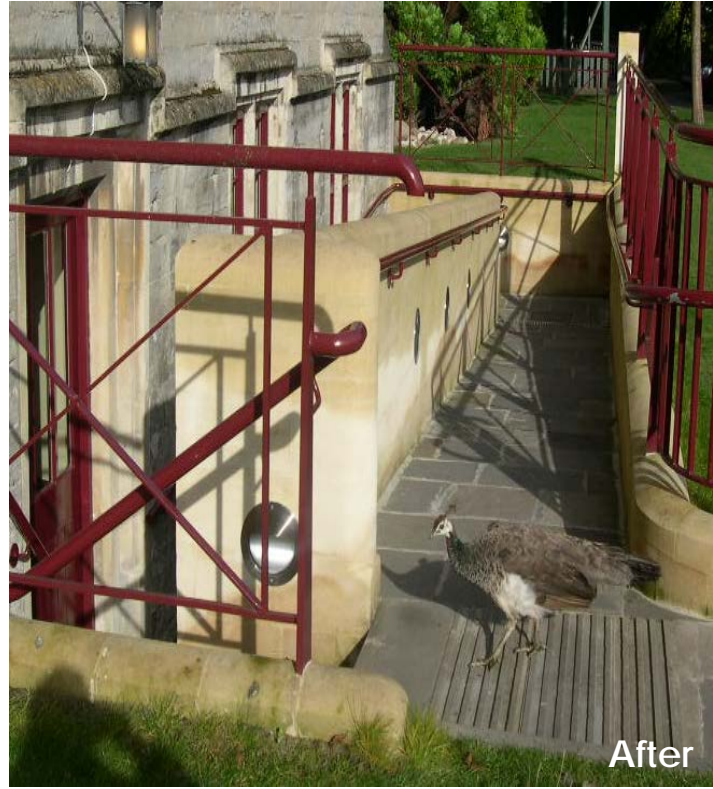


**All archaeology is important! Old remaining in place whilst new is installed alongside.**

A major challenge was to undertake work, valued at £1.5 million, within eight months, whilst at the same time keeping the building open to visitors, and allowing staff to remain at their normal place of work. Work was undertaken within every single space within the house. Building services were refurbished, including a new fire alarm system. The aesthetics of the interiors involved my working closely with the electrical design engineer. Bulky white smoke detectors have now been replaced with almost invisible air aspirators. Structural improvements, such as the strengthening of floors (below), were also necessary.



# Internal Refurbishment of the House



For the very first time wheelchair users have been given access to the House. I commissioned a DDA auditor who had expertise in historic sites, and from that possible means of disabled access were looked at closely with our Architect. An archaeological excavation (above) was necessary for the construction of a ramp. The creation of an education centre was necessary in order that school visits could be facilitated, which also had a sound business case. It was created by research into the 'down stairs' spaces in order to provide an interior with a sense of authenticity. That was balanced with research into what a modern education centre would require. This new facility (below right) was created from what was a tea room (below left) and store rooms.



Before

After

# Internal Refurbishment of the House ~ Facility and Design Influences

The 'Welsh Banquet' Bar, occupies a space that was originally a kitchen, converted in 1973, when the basement commenced its use as an entertainment venue (right). The refurbishment meant a re-evaluation of space use. In 1996, the theme changed from 'Medieval Banquet' to a 'Welsh Banquet', and the only venue in Wales where one can experience Welsh song, music, language, dance, comedy, food and drink.

As a local authority owned site, the business case also had to explore issues that were outside the sole commercial aspects of Cardiff Castle's Business Plan. More than half the visitors to 'Welsh Banquets' are from overseas, and the venue, which receives the majority of its customers via tour operators, is intrinsic in the persuasion of tour operators to have an overnight stay in Cardiff. The business case for the retention of its use was therefore confirmed.

There were many issues to consider in the design of the interior. Conservation ethics and compliance with the Cardiff Castle conservation policies have to be balanced with Wales Tourist Board 'Sense of Place' tool kit and the commercial requirements of the operator. I commissioned an interpretative concept, which was then used in discussions with the operator and the architect. Team work was key in developing a scheme that suited the broad range of requirements. The new bar, a modern piece of architecture, is in harmony with its historic surroundings. Made of Welsh slate, Welsh steel, resting upon a Welsh quarry tiled floor and set against a Roman Wall. The bar is a modern addition that cannot be confused with the original use of this room.



# Internal Refurbishment of the House ~ Which Design is Right ?



Before

Many issues have to be considered in determining an appropriate approach and content for design in such important historic environments.

Leading the team that undertook this meant an understanding of design ethics in an historic building environment, balanced with commercial reality and the tourism product that is to be delivered.

The 15<sup>th</sup> Century Undercroft is the oldest room in the House. Before refurbishment above and after to the right.

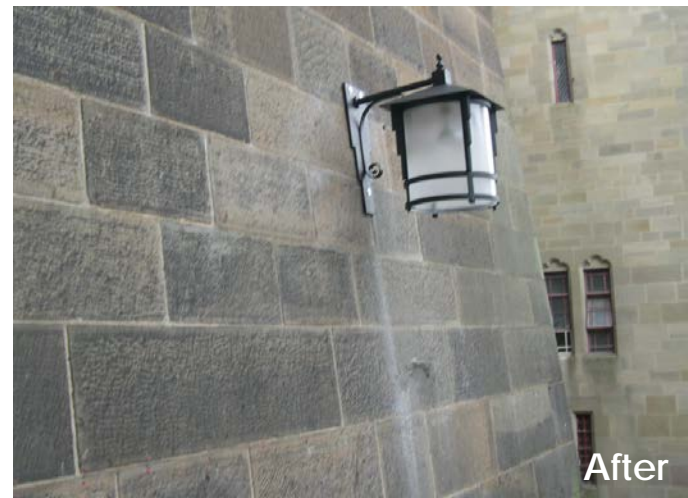
Sometimes, a very small investment can bring about a vast improvement. This can be seen below where modern bulkheads have been replaced not with a 'London Lantern', but one specifically designed for the site.



After



Before

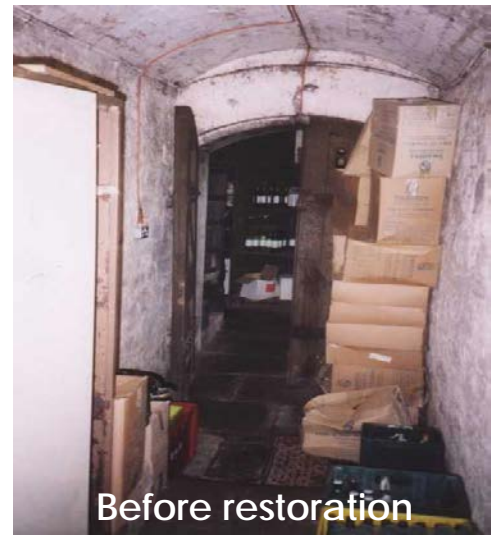


After

# Restoration of the UK's First Commercial Winery



Wine tasting at the most perfect venue



Before restoration



The circular vat room

Wine was made at Cardiff Castle from 1877 until 1914. Until the restoration, the winery, which extends under the drive leading to the House, was used as a caterers' store. The restoration of this winery required research into how the winery would have operated. I met and visited many wine making experts to build a clear picture. The restoration involved minimum intervention, and removal of many years of clutter. It now has a more appropriate use and is the most perfect venue for wine tasting.



The original wine press



Brought back to a more appropriate use !

# Refurbishment of the Guest Tower Suite



**Walnut Room before refurbishment**



**After refurbishment the Walnut Room (above), rear room (below) and the corridor (below right).**



The refurbishment of the Guest Tower Suite has transformed an area that was largely characterless, except of course for the ceiling and chimney piece within the Walnut Room, the largest room within the suite.

Painstaking research was undertaken at the Castle and at other archives as well as architectural paint research. Unfortunately this didn't reveal an understandable Burges scheme of decoration. However, the new decorative scheme provides a Burges feel and has been developed by taking elements of decoration from the Castle's principal Burges interiors.

This refurbishment provides an interpretation of a Burges interior and is in perfect harmony with the architecture of the House. This attractive space earns an income which will help pay for future conservation at Cardiff Castle. It also provides customers with an alternative to holding a function in a principal Burges interior, thus contributing to their conservation care.



# Interpretation Centre

The Cardiff Castle Interpretation Centre Building is an essential part of the strategy that will permit the ever increasing number of visitors to be accepted in a managed way. It will welcome visitors undercover, provide them with an introduction to 2,000 years of history and orientate them around the site. It will also permit disabled access to the building itself, as well as other parts of the site, including the House (part of a later development).

At my suggestion we applied for and obtained consent for a basement. This meant removing and recording all archaeology. The largest archaeological dig in Wales has told us so much more about the site, including the first pre Roman occupation located in the centre of Cardiff. Having gone through the process of obtaining Planning, Listed Building and Scheduled Monument Consent, I project managed this building out of the ground and handed the finishing of the superstructure and fit out to Cardiff Council's Head of Commercial Development.



**The site before construction. A 1960's garage and 1970's ticket kiosk were demolished, together with the removal of an earth embankment substantially from the 1920's was also removed.**



**New building with a grass roof (above)**



**Archaeological dig (above) and demolition of the mural gallery structure.**



**New building adjoining Barbican Tower (above)**

# Roman Fort

The Romans established Cardiff Castle in about AD55 and built four forts. The foundation of the enclosing walls of the Castle that we see today is from the 4<sup>th</sup> Roman Fort dating to about AD250. In some locations the Roman fortification rises well above ground level and in other areas it is the core of the Roman fortification that survives within Norman and later masonry. The Roman Fort was only discovered in 1889, but by 1890 work had begun on the Neo Roman Fort on



**Roman North Gate**

top of the original fort. Built in stone and reinforced concrete, the Neo Roman Fort was completed in 1925. It is highly regarded with National Significance as a rare late 19<sup>th</sup> /early 20<sup>th</sup> Century interpretation of Roman architecture and antiquity, and is indeed the largest re-constructed Roman Fort in Europe.

Like all phases of work, research and analysis was carried out before anything else. This included a geophysical survey within the Fort enclosing walls. The Roman Fort is delineated from the Neo Roman Fort with a red band of local stone (below left). Mural galleries were also built into the Neo Fort (below), in some areas at two levels. As a result of this project, not only has the Roman Fort been repaired but the Neo Roman Fort has been rescued from structural failure (see new structural reinforced concrete slabs being cast below). The work also allows future access provision into all mural galleries and also into one of the North Gate Towers, where a 2,000 year view can be seen - a Roman Fort, with a view of the Norman Keep, the Victorian Clock Tower in the background, and the Millennium Stadium beyond.



**North Gate**



**Mural Gallery**



**Neo Roman Fort**



**A view of 2,000 years**



# Burges Interior Conservation

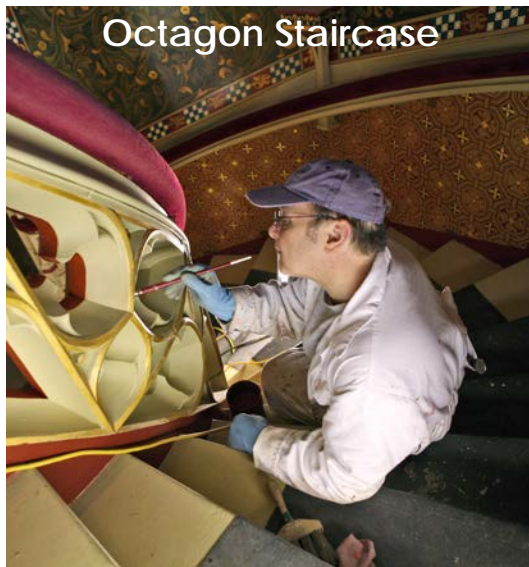


Banqueting Hall

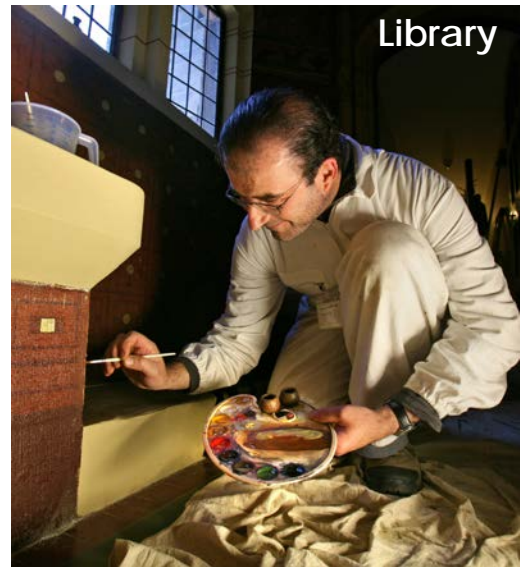
This is the first major conservation programme to these internationally acclaimed interiors. It was master planned on the basis of a sound and well respected conservation strategy, that involved painstaking research of the interiors themselves and all associated issues. It also involved very careful project planning, which involved an appropriate project management methodology and procurement route.



Library



Octagon Staircase



Library

# Understanding Architecture ~ and the Work of Burges !

Although I studied architectural conservation at a post graduate level, my twenty year association with Cardiff Castle has certainly enhanced my appreciation and understanding of architecture, historic interiors and conservation.

Making sure that we made the right decisions at Cardiff Castle was critical, there wouldn't be a second chance!

The key to success - putting together an excellent team is essential, undertaking as much research as possible, including other buildings with very fine Victorian interiors. Research into buildings such as the Palace of Westminster, St. Pancras Chambers, the Foreign and Commonwealth Office and other Burges Buildings such as Castell Coch and St. Mary Studley Royal enabled me to find out what treatment these other interiors had received, and what reasons were behind the decisions taken. Both this and the experience of Cardiff Castle has provided me with an excellent understanding of Burges architecture, its proper care and the complexities of conserving historic interiors.



Octagon Staircase



Banqueting Hall Vestibule

# Consents ~

## a Heritage Management Approach

Cardiff Castle is afforded the highest degree of legal protection, and over a period of nearly 20 years I have applied for Planning, Conservation Area, Listed Building and Scheduled Monument consents. Consent applications have varied from repairs to the Scheduled structures to an application for a new building. My responsibilities have included public inquiry main witness and co-ordinating an application to a public inquiry with our planning consultant.

Processes have been developed and deployed to ensure a rigorous and well balanced approach to decision making. Strategies that address proof of need in all respects, and that identify all possible options have proven to be vitally important. but also taking account of the possible views of consultees to a an application. Taking time to fully explain proposals has enabled some very complex issues to be fully understood by the wide ranging consultees that have been involved in some of the major decisions taken at Cardiff Castle. All of this relates to sound heritage management practices, which have been developed in the past ten years.



After removal of the 1960's extension to the Barbican Tower in order to construct a new building, the Tower was left scarred (top). The repair method, meant recording the previous attachment to the Tower in the form of the repair, as seen immediately above.

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March 2008