

# Understanding Building Pathology and the role of BS7913

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CIOB Policy Board member***

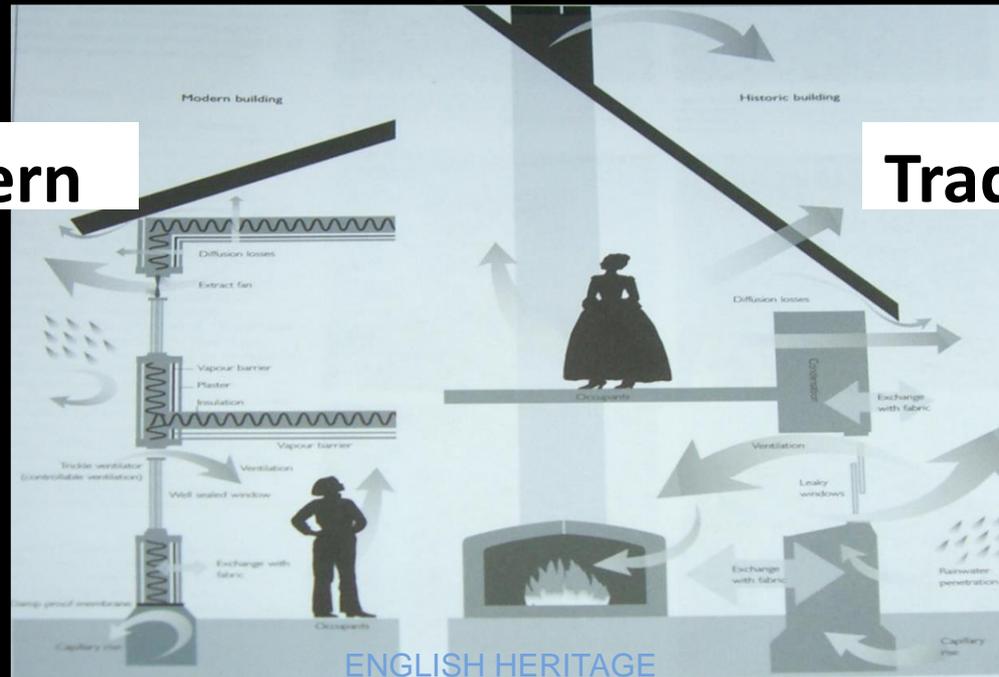


# At the very beginning...

These buildings are the different

Modern

Traditional



They perform differently



# What is an historic building?

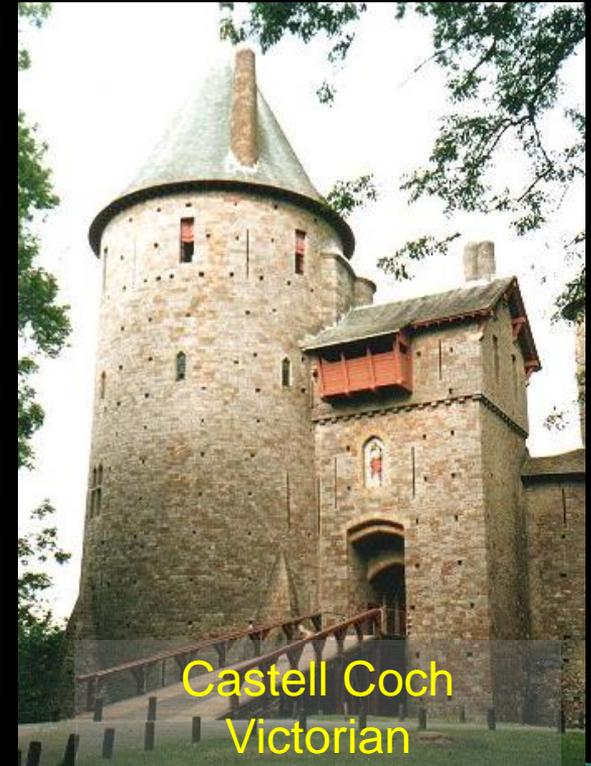
## DOES IT MATTER?

- Similar design~
- Similar Construction ~
- Similar performance
- Requires Similar Repairs
- Same understanding!
- **Significance....**

Un-designated

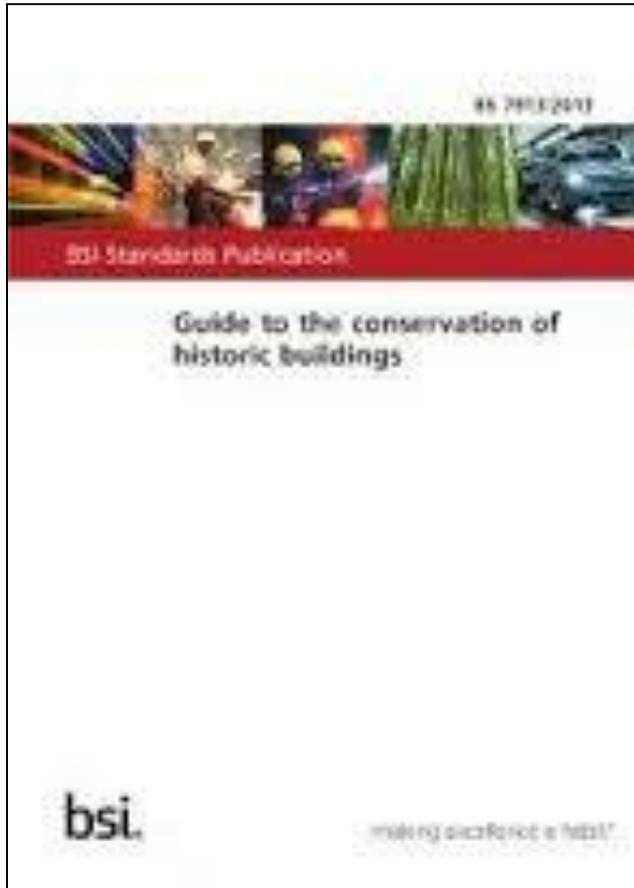


Grade 1 Listed



# Authoritative Guidance

## BS 7913: 2013



based on managing  
significance

Embracing international  
standards and charters



# BS 7913: 2013

## 0 Introduction

### 0.1 General

(3) ...*“decisions justified on social, cultural, economic and/or environmental grounds, and usually a combination of these”*.

(4) ...*“conflicting pressures need to be **balanced**”*.

(5) ...*“sound research **evidence base** and the use of **competent advisors and contractors...**”*



# BS 7913: 2013

## 1 Scope

(1) .... *“best practice in the management and treatment of historic buildings. It is applicable to historic buildings with and without statutory protection. It is not applicable to below ground archaeology or any other type of heritage asset such as movable objects or vehicles”.*

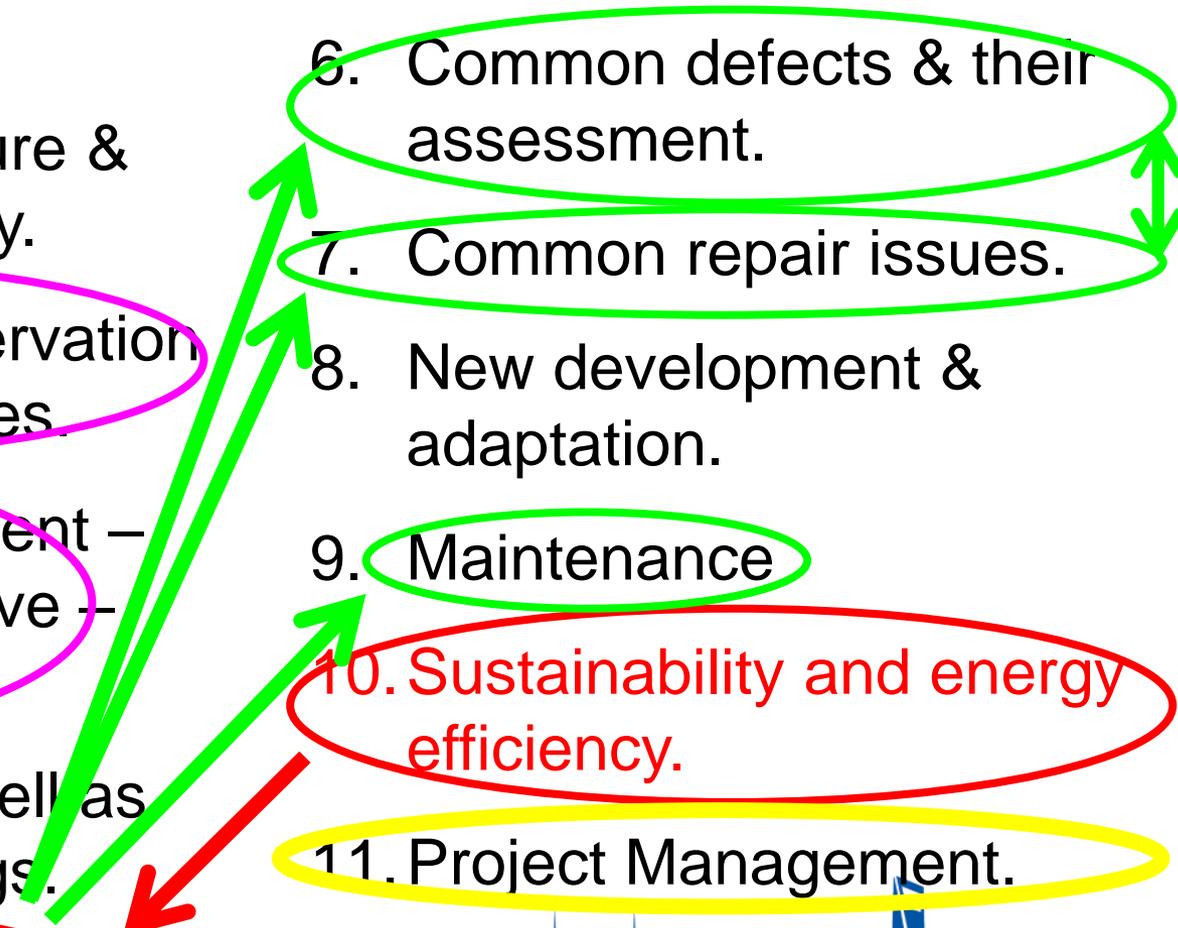


# BS 7913: 2013 – what it covers...

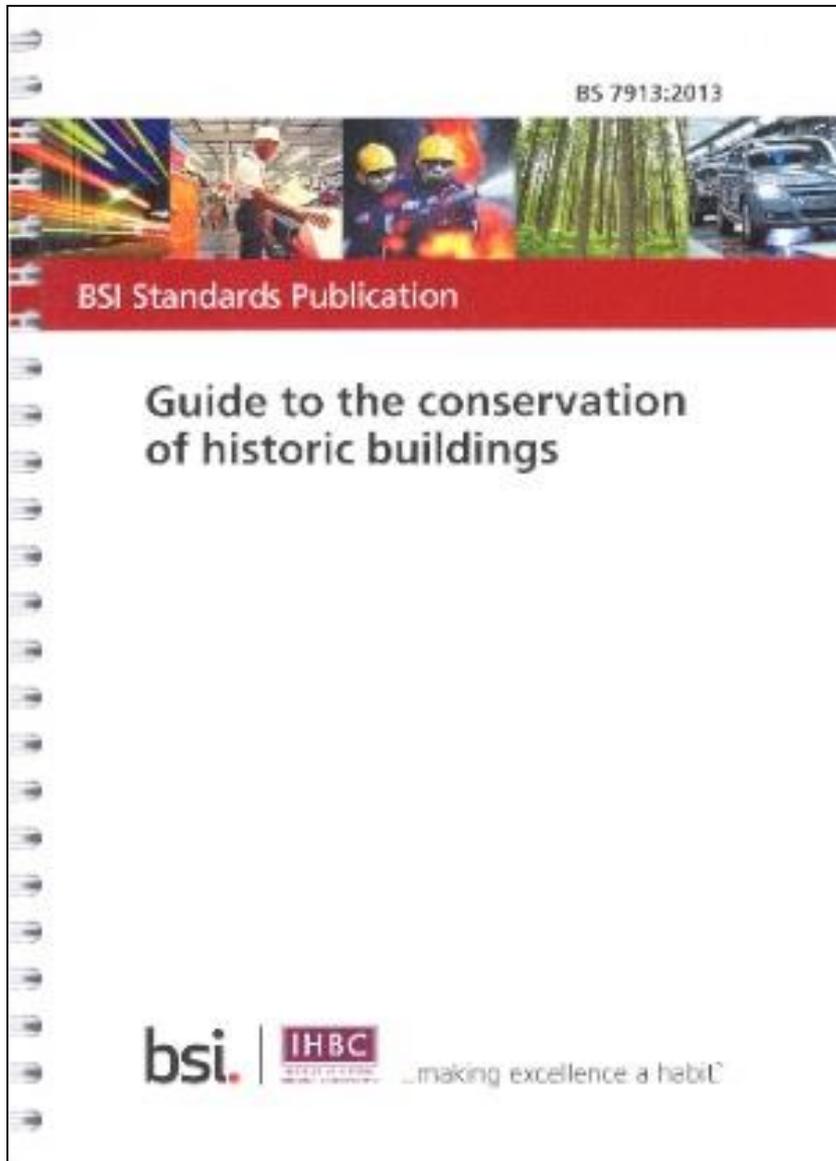


1. Description of buildings/Architecture & conservation history.
2. Significance, conservation principles and values.
3. Heritage management – pro-active & re-active – reconciling values
4. Historic areas as well as structures / buildings.
5. Condition surveys, inspections, investigations and pathology
6. Common defects & their assessment.
7. Common repair issues.
8. New development & adaptation.
9. Maintenance
10. Sustainability and energy efficiency.
11. Project Management.
12. Project Supervision
13. Competence & Accreditation

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- 

# BS 7913: 2013



**Wide ranging  
authoritative guidance  
for all old buildings...**

**The most authoritative  
UK wide....guidance  
according to the IHBC –  
a ‘must have’.**



# BS 7913: 2013

## Contents

### 0. Introduction

Includes the Conservation Process, History of Building Conservation.

### 1. Scope

### 2. Normative References

### 3. Terms and definitions

### 4. Heritage Values and Significance

Use of significance, Values contributing to significance, Assessment of significance.

### 5. Using Significance as a framework for managing the historic environment

Strategic and operational management in asset management, Heritage Management, Sustainability, Materials, Strategic Plans, Conservation Management Plans, Conservation and Historic Areas Appraisals and Management, Process of Planning Major Change Affecting Historic Buildings, Heritage Impact Assessments.



## Contents

### **6. Significance as part of operational care and other interventions**

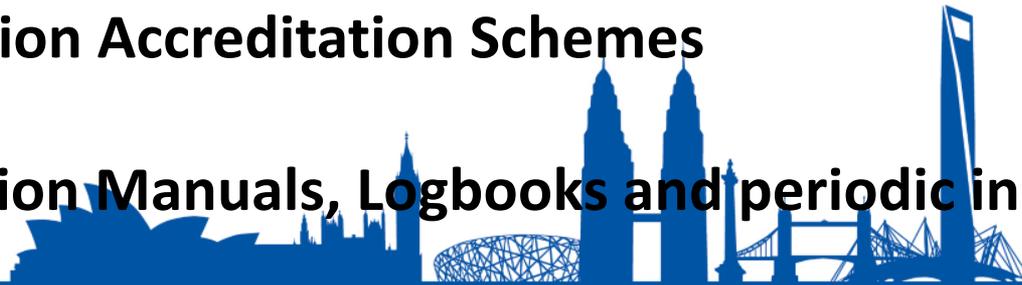
Asset Management, Condition surveys and inspections, Assessment of performance and pathology, Investigation techniques and equipment, common defects and approaches to assessment, Fire strategy, Repair, Lost features, Damp and fungi, Intervention and judgment, Environmental values and sustainability, New development, Design, Context and setting, Adaptation, conversion and extension, Alterations.

### **7. Maintenance**

### **8. Heritage and Project Management – with Project Supervision**

#### **Annexe A – Conservation Accreditation Schemes**

#### **Annexe B – Conservation Manuals, Logbooks and periodic inspections**



# It is based on...

## SIGNIFICANCE

- Significance analysis
- Conservation Plans (and Conservation Management Plans)
- Heritage Impact Assessments

## TECHNICAL

- Surveys (Condition, Quinquennial, etc.)
- Inspections
- Targeted Specialist Investigations

## PROCESS

- Project management, Heritage Management & Supervision
- Maintenance management & FM



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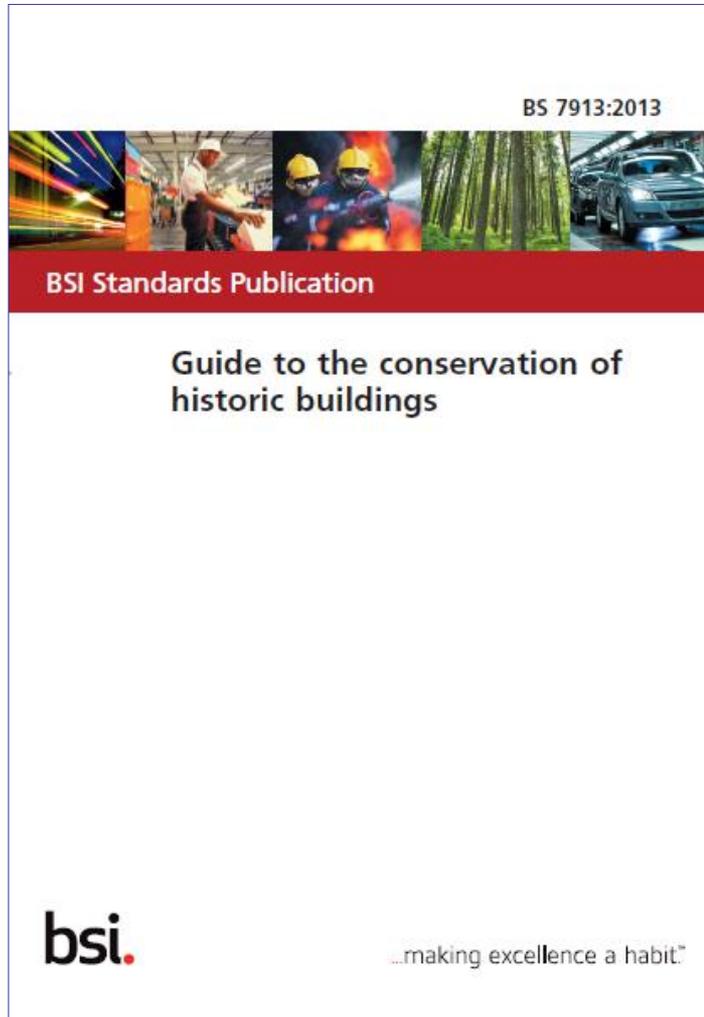
and it requires...

## Competence!

*Numerous references to  
'competence'*

*"Carried out by **competent persons** with knowledge of traditional materials, construction techniques and decay processes"*

*6.2 Condition surveys and inspections*



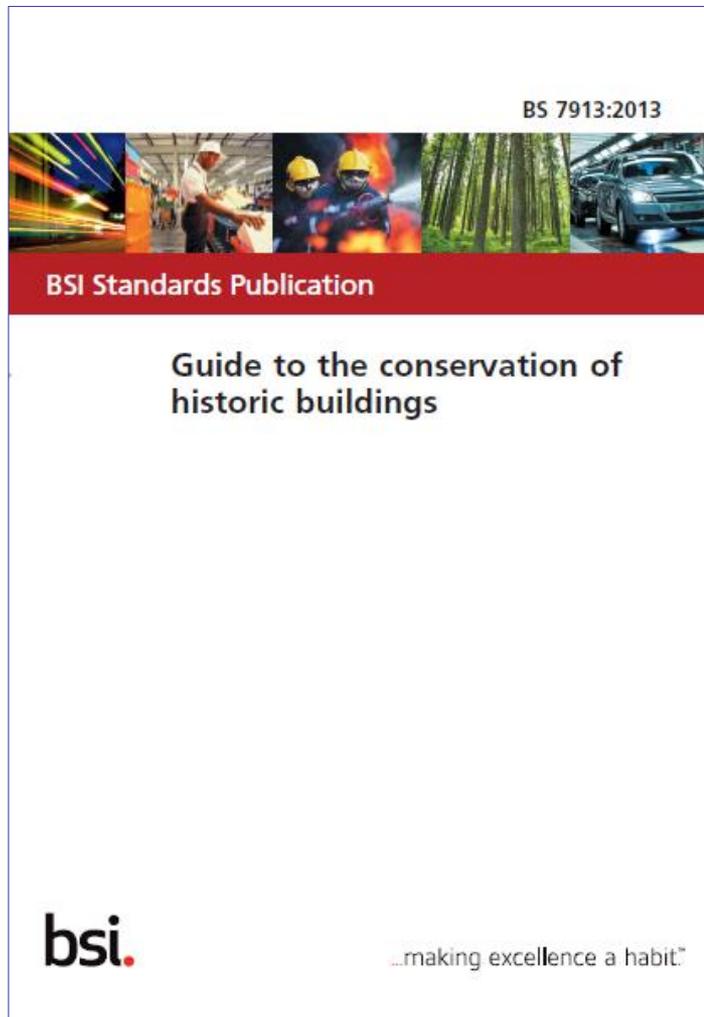
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## Competence!

*Numerous references to  
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*"Unbiased advice from  
**competent persons** based on  
best practice should be  
sought..." Understand  
significance.*

*7.1 Maintenance guidance*

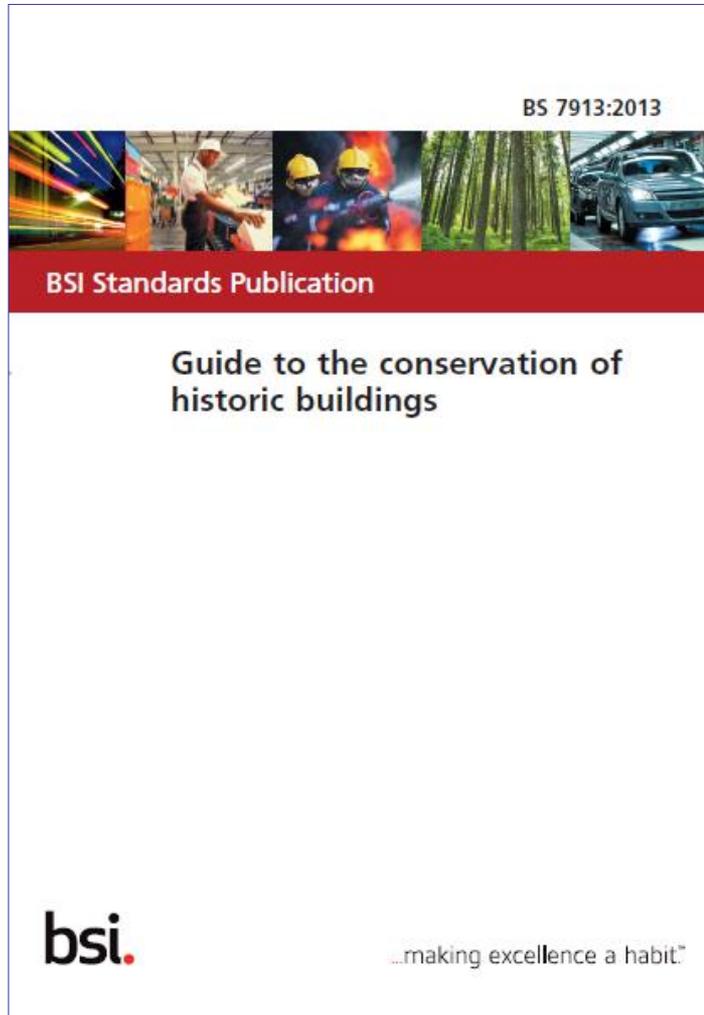


and it requires...

## Competence!

*Numerous references to  
'competence'*

*"There are a number of  
conservation accreditation  
schemes that identify  
individuals who have  
achieved a **recognized level  
of competence** in building  
conservation"*



demonstrating...

## Competence



## *CIOB Building Conservation Certification Scheme*

*Launching 22<sup>nd</sup> June 2017  
Cardiff*



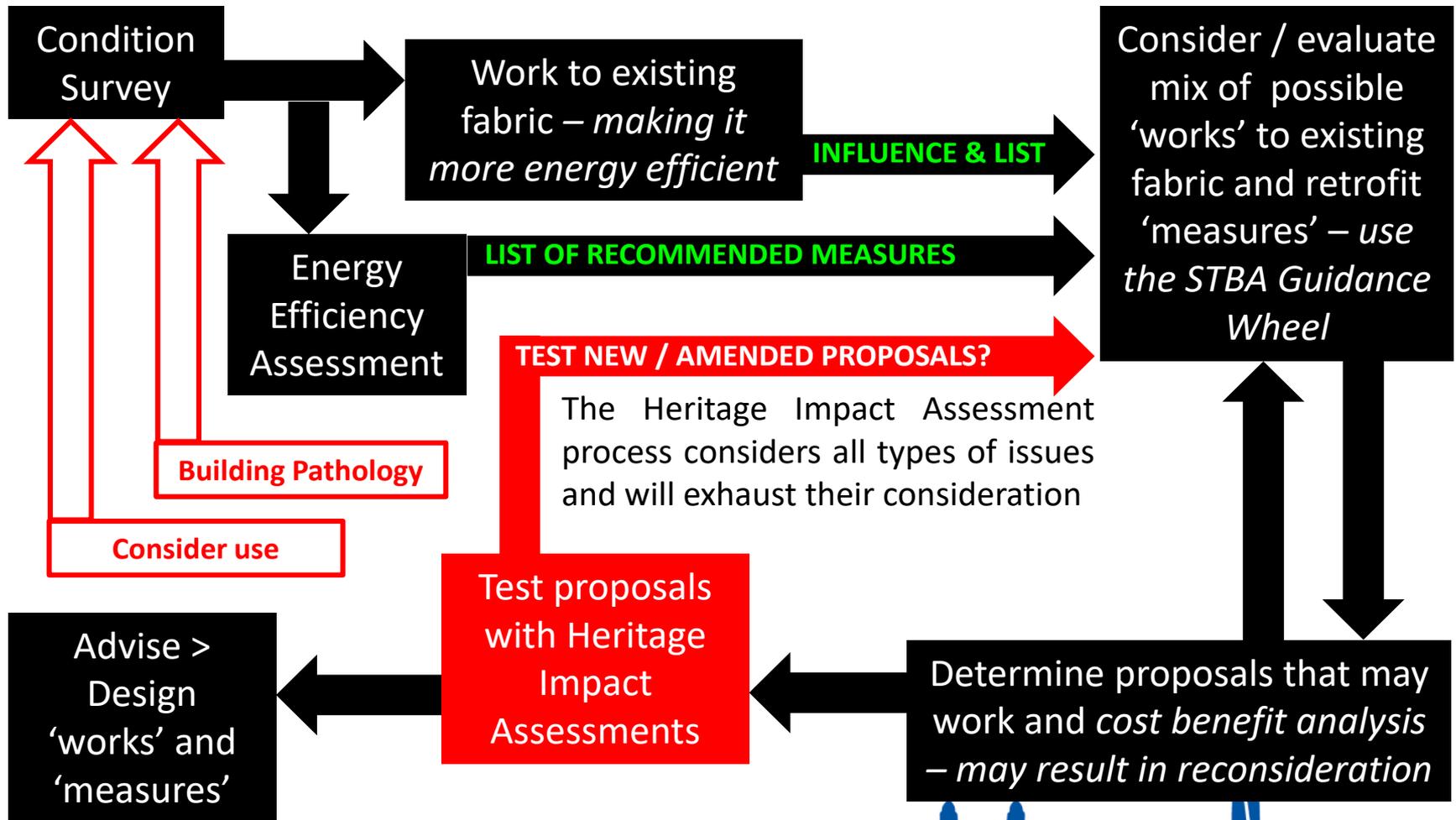
# BS 7913: 2013

*and where it makes a difference..*

- Significance
- Competence
- Building Pathology
- Quality Management
- Referenced by Building Regulations



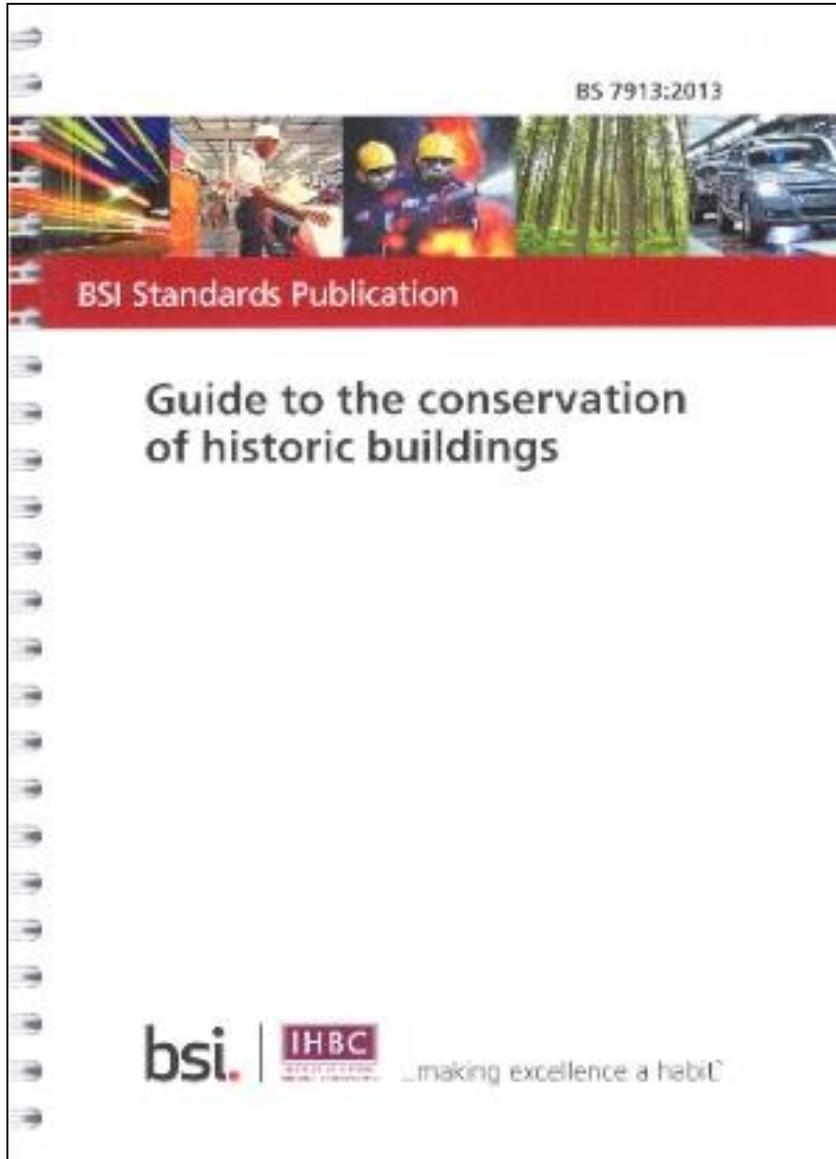
# The Retrofit Process



Following BS 7913: 2013 up to the advice and design stage



# Part of the retrofit process



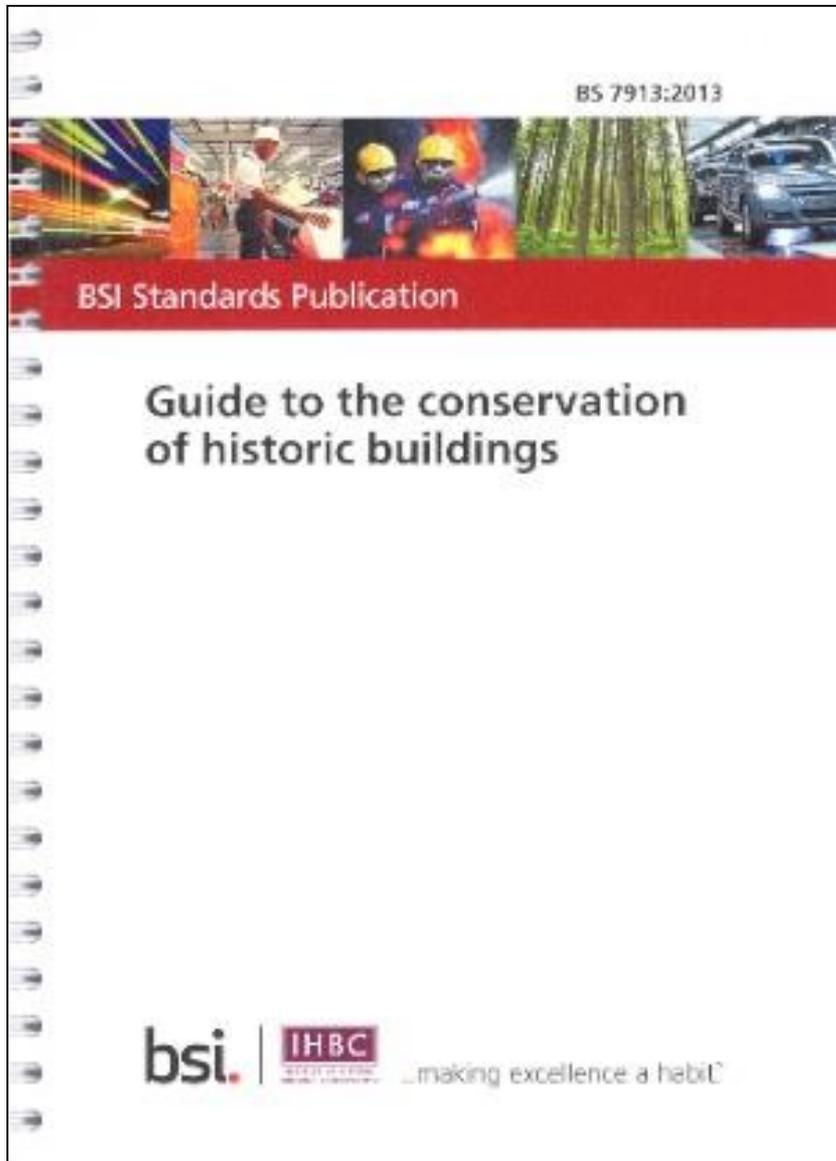
## 6.2 Condition surveys and inspections

(6) Carried out by **competent persons** with knowledge of traditional materials, construction techniques and decay processes.

NOTE Conservation Accreditation schemes.



# Part of the retrofit process



## 6.2 Condition surveys and inspections

(10) There should be a **consistent and logical process** for the inspection, recording and reporting (see Annex B for further information).



# Part of the retrofit process

## BS 7913: 2013: Sect 6.2 Condition surveys and inspections

(11) Surveys and inspections can conclude with the need for more detailed analysis, often termed “**targeted specialist investigations**” (TSI). Examples include, timber decay assessment, structural movement monitoring and environmental monitoring for dampness and humidity.

NOTE TSI’s usually go beyond a visual inspection - involve destructive and non-destructive equipment and processes, involving data collection and assessment over a period in time. Can lead to a reconsideration of the ongoing use...



# Part of the retrofit process

## **BS 7913: 2013: Sect 6.3 Assessments of performance and pathology: 6.3.1 General**

**Cause of problems and not just the symptoms.**

*“Knowledge of the pathology of materials and the agents of decay should be sought so that corrective, preventative and remedial measures can be taken that allow the retention of original historic fabric and ensure its longevity”.*



# Part of the retrofit process

## **BS 7913: 2013: Sect 6.3 Assessments of performance and pathology: 6.3.2 Core principles and dynamics**

*“Pathology is broader than the decay of materials. It also encompasses the way the components interact and, how the spaces are used”.*

**Ventilation is important** - chimney flues, sub floor vents and cupolas. Disruptions and consequences identified.

*“**Some decorative** features are also functional, for example over sailing eaves, string courses and hood mouldings. Reinstatement of such features can fulfil a repair need”.*



# Part of the retrofit process

**Need to properly assess dampness – methods and processes that would comply with BS 7913: 2013**

***Experienced (COMPETENT) building pathologist – using appropriate methods and equipment***

- *Thermography*
- *Electric capacitance meter*
- *Electric resistance meter*
- *Gravimetric method*
- *Carbide meter*
- *Hygrometer*



# BS 7913: 2013 - Condition Surveys



# BS 7913: 2013 - Condition Surveys



# BS 7913: 2013 – it GUIDES us...



## Section: 5.31 Sustainability

.....“Elements such as walls can be over a third less energy efficient if damp. Some energy efficient measures can have an adverse effect on sustainability. The actual energy efficiency of historic buildings and their potential energy efficiency with the addition of energy efficient measures should be taken in account at the outset (see 6.3). The need for energy efficiency and low carbon might also influence the selection of materials and work methods as they can impact on thermal performance and weather resistance. Building materials and products should be sourced and procured in a sustainable manner” .....



## Section: 5.31 Sustainability

.....“The most effective way of ensuring energy efficiency and sustainability is to keep historic buildings in good repair so that they last as long as possible, do not need replacement and **do not suffer from avoidable decay that would require energy and carbon to rectify.** They should provide occupancy in an efficient manner, involving minimal production of carbon and use of energy without harming significance or the physical performance of the historic fabric. Using natural ventilation and light, and proper temperature and humidity control for individual rooms are ways of minimizing energy usage that respect the building’s material characteristics”.....



# BS 7913: 2013 – it GUIDES us...



## Section: 5.31 Sustainability

.....“Elements such as walls can be over a third less energy efficient if damp. **Some energy efficient measures can have an adverse effect on sustainability.** The actual energy efficiency of historic buildings and their potential energy efficiency with the addition of energy efficient measures should be taken in account at the outset (see 6.3). The need for energy efficiency and low carbon might also influence the selection of materials and work methods as they can impact on thermal performance and weather resistance. Building materials and products should be sourced and procured in a sustainable manner” .....





# Part of the retrofit process

## BS 7913: 2013: Section 5.9 Heritage impact assessments (HIA's)

- Measure impact of proposals on significance and determine mitigation.
- Must understand and articulate the 'significance' value.
- *"HIAs can be carried out at various levels of scale and complexity, from the effects of building works on a small structure to the effects of major development in a world heritage site"*.

*This requires an understanding of significance...*



# Part of the retrofit process



## **BS 7913: 2013: Section 4.3 The assessment of significance**

A wide range of factors contribute to significance and their relative importance varies:

- **Physical components,**
- Immediate and wider **setting,**
- **Use and associations** (e.g. with a particular event, family, community, or artist and those involved in design and construction).



# Part of the retrofit process

## BS 7913: 2013: Section 4: Heritage values and significance

### 4.1 Use of significance in the management of the historic Environment

*“Significance represents a public interest...”*

*“Research and appraisal into the heritage values and significance of the historic building should be carried out to ensure that decisions resulting in change are informed by a thorough understanding of them”. This is proportionate.*

*“Understanding the significance of a historic building enables effective decision...”*



# Part of the retrofit process

## **BS 7913: 2013: Individual heritage values:**

- 1) architectural, technological or built fabric value;
- 2) townscape characteristics;
- 3) spatial characteristics;
- 4) archaeological value;
- 5) artistic value;
- 6) economic value;
- 7) educational value;
- 8) recreational value;
- 9) social or communal value;
- 10) cultural value;
- 11) religious value;
- 12) spiritual value;
- 13) ecological value;
- 14) environmental value;
- 15) commemorative value;
- 16) inspirational value;
- 17) identity or belonging;
- 18) national pride;
- 19) symbolic or iconic value;
- 20) associational value;
- 21) panoramic value;
- 22) scenic value;
- 23) aesthetic value;
- 24) material value; and
- 25) technological value

# Part of the retrofit process

*So what would stop this?*



# Part of the retrofit process

## *Test Proposal with a Heritage Impact Assessment*

### EWI

1. Why?
2. Necessary?
3. **Alternatives?**
4. Impact on significance?
5. Mitigate impact – if its possible – how?



# Part of the retrofit process

## *Test Proposal with a Heritage Impact Assessment*

### EWI

1. Why?
2. Necessary?
3. Alternatives?
4. **Impact on significance?**
5. Mitigate impact – if its possible – how?



# Part of the retrofit process

**What makes it SIGNIFICANT and what could be effected:**

- 1. Architectural – is it special?**
- 2. Townscape characteristics – is the homogenous appearance important? Is it the only street left without EWI in the locality**
- 3. Economic value – will it effect property values?**
- 4. Commemorative value – why were they built?**
- 5. A sense of identity or belonging for community**
- 6. Material value – are they special?;**



# IWI – Is it undertaken properly..

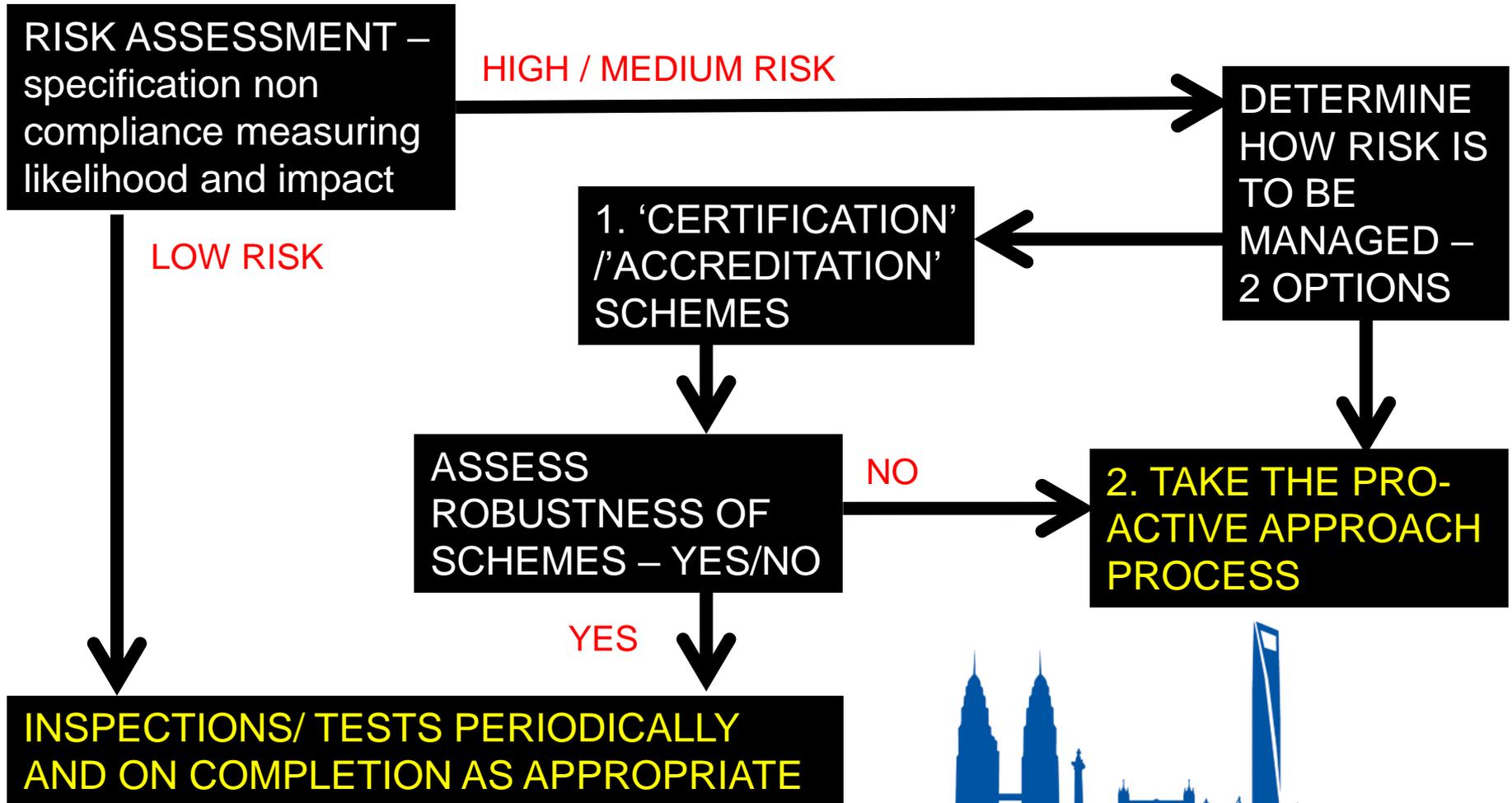


**HOW  
DO WE  
MAKE  
SURE?**



# Quality Management

*Consider using Competency Schemes...*



# Quality Management

## BS 7913: 2013: Proactive Approach

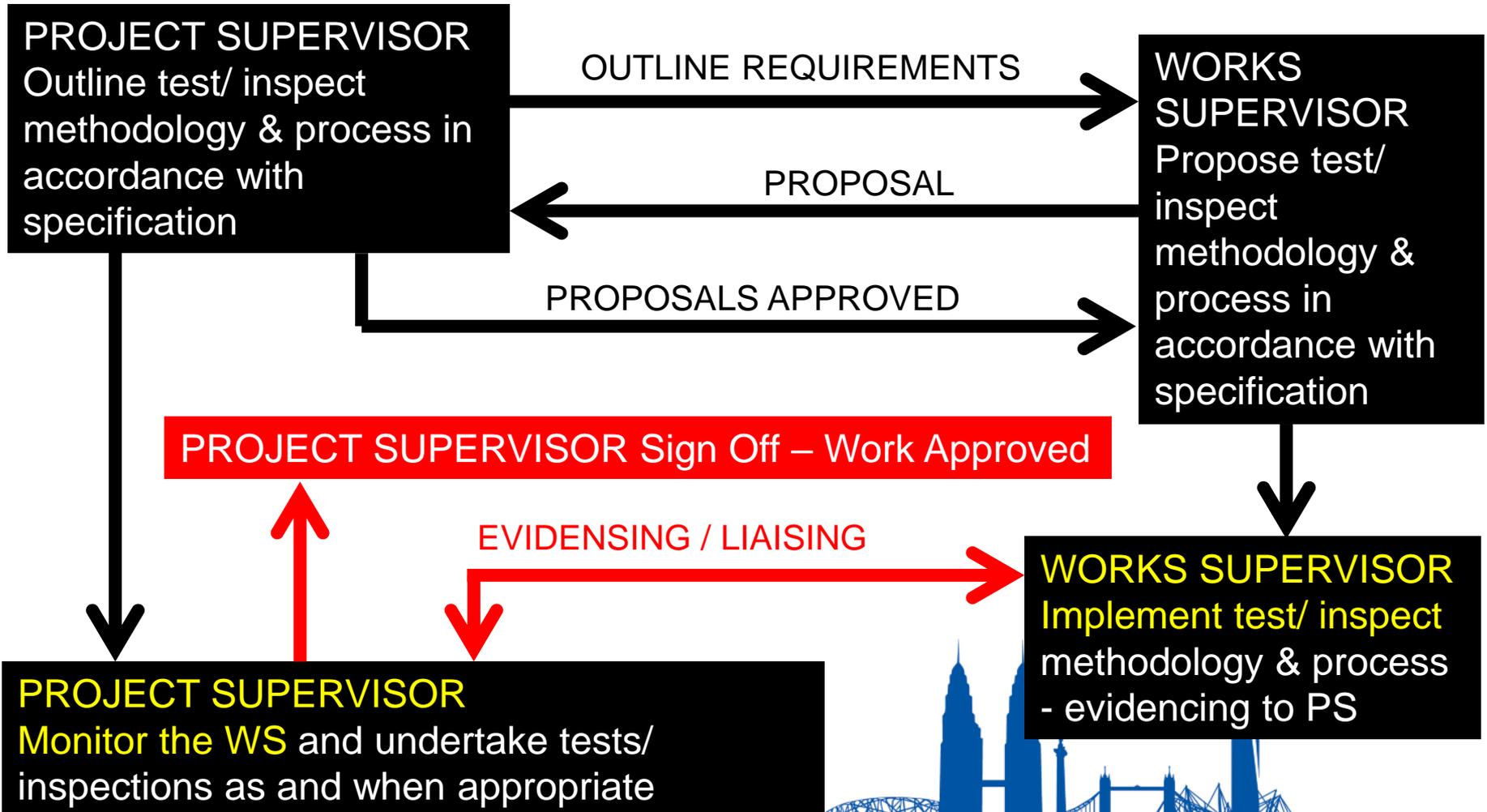


1. Breaking down the specified work into activities.
2. Work out the critical stages when it can go wrong.
3. Determine what can be done to mitigate risk of specification non compliance



# Quality Management

## BS 7913: 2013: Proactive Approach



# Quality Management



**No competence – No standard - No process – No quality**



# All this is covered in....



## *A FREE 2 day course*

# Energy Efficiency and Retrofit of Pre-1919 Traditional Buildings

- Achieves a Level 3 SQA Award – qualification
- Independently accredited by SQA
- July in North Wales
- September in West Wales
- FREE for anyone in the UK
- [www.environmentstudycentre.org](http://www.environmentstudycentre.org)



# Understanding Building Pathology and the role of BS7913

## THANK YOU

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