

Church Care  
Building Performance Conference

# Little and Often: maximising life expectancy of building fabric and reducing long term costs

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Content:

How long will building fabric last?

Can small scale regular maintenance prolong the life of building fabric?

The role of quinquennial building surveys in taking a long term view

How long will building fabric last?

Building fabric should last in perpetuity with regular planned maintenance

*Evidence?*

Our rich and diverse built historic environment

Our cathedrals, castles, houses, ancient monuments

How long will building fabric last?

Repair and replacement is reduced by minimising long term decay and erosion

*Primary cause of accelerated decay and erosion are:*

1. Uncontrolled water movement through building fabric

- Leaking roofs and rainwater drainage
- Water ingress through open and decayed mortar joints
- Rising damp
- Wetting and drying cycles in porous masonry materials
- Salt crystallisation

2. Atmospheric pollution


- Acid gases and particulate matter in urban and metropolitan environments

How long will building fabric last?



Copper roofs have an indefinite life and copper roofs of over 700 years exist, however in practice life expectancy is limited by substrate and design





How long will building fabric last?

North aisle roof replaced after approximately 60 years of life because of inadequate original detailing.

Bitumen felt underlay and small size cross seam joints which were pulling apart



How long will building fabric last?



Weathering and decay of limestones and sandstones



How long will building fabric last?



Ketton limestone cornice and parapet above recommended for replacement because it had reached the end of its 'serviceable life'



How long will building fabric last?



Generally 6mm of erosion to exposed surfaces (over 140 years) and greater localised areas of decay at mortar perpendicular joints



How long will building fabric last?



Continued erosion of the stone at current decay rates would provide a further 460 years of life before architectural probably 600 to 800 years before functional performance was lost



How long will building fabric last?



Refilling open and decayed mortar joints, limited masonry repair and installation of a lead weathering to reduce long term decay and maintenance



Can small scale regular maintenance prolong the life of building fabric?



Blocked rainwater parapet gutters



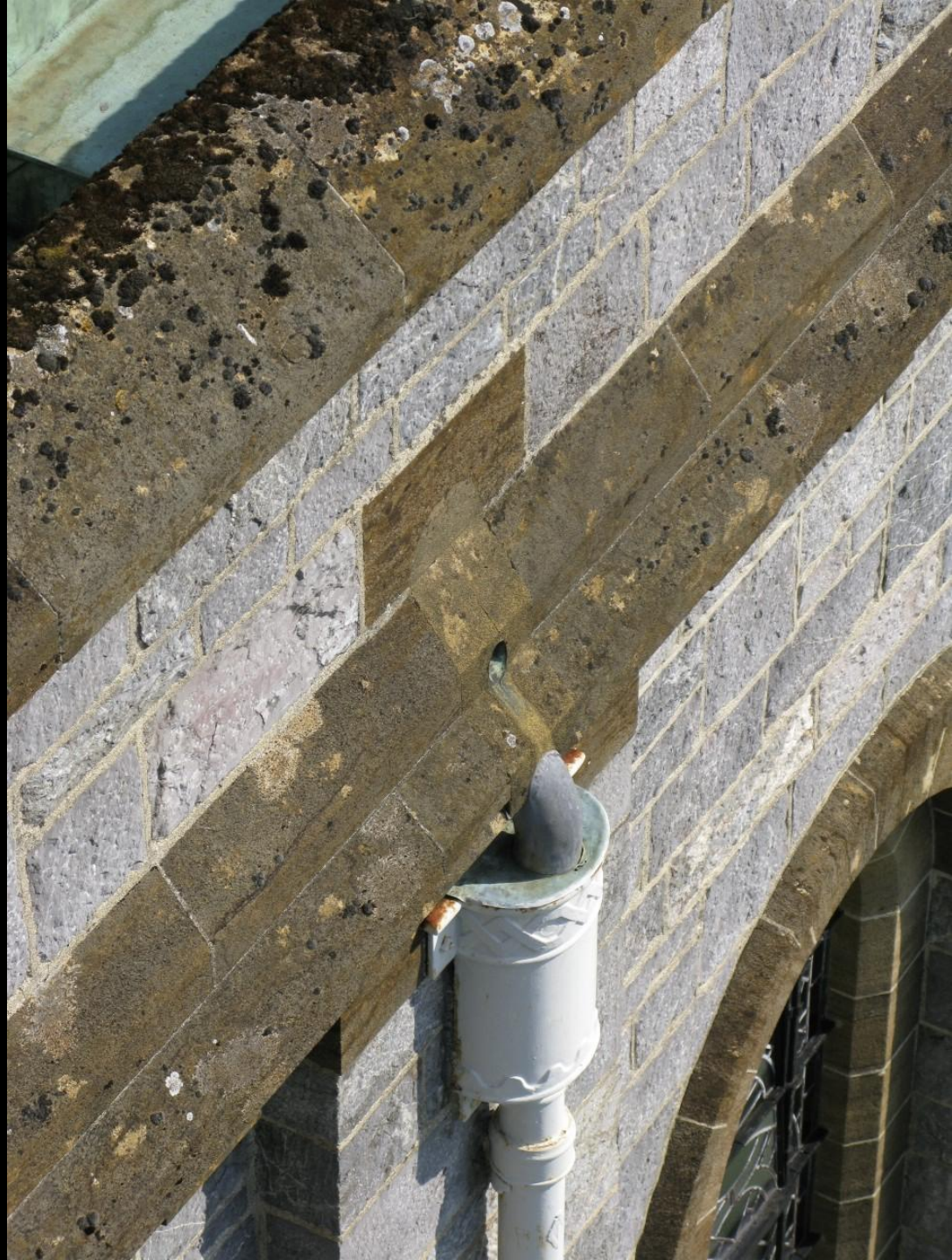
Can small scale regular maintenance  
prolong the life of building fabric?



Blocked and fractured cast iron rainwater  
downpipes



Can small scale regular maintenance  
prolong the life of building fabric?



Can improvements be made to reduce  
the maintenance burden?



Can small scale regular maintenance  
prolong the life of building fabric?



Increasing the size of overflow spouts to  
reduce likelihood of blockage and provide  
an early warning



Can small scale regular maintenance prolong the life of building fabric?



Clean debris from gutters on a 3 to 6 monthly cycle

Install stainless steel debris screen which prevents downpipes becoming blocked but allows water to overflow through spouts

Install 'mansafe access systems' to allow safe access for maintenance work



## The role of quinquennial building surveys in taking a long term view

### Key points:

- Decay and deterioration normally occurs over decades
- Sudden failure is rare
- It is essential to decay and erosion rates
- Understanding the rate(s) of decay and erosion allows accurate understanding of life expectancy and the optimal time for intervention
- Maintenance (preventative conservation) reduces decay and erosion
- Optimising the time of intervention will reduce long term costs
- Reviewing past quinquennial survey reports and priorities as part of current surveys is essential – ideally review reports over a 20 to 25 year period

The role of quinquennial building surveys in taking a long term view

Quinquennial building surveys are detailed surveys carried out at 5 yearly intervals

However;

Quinquennial surveys can be effectively completed at 10 yearly intervals because of the relatively slow rates of decay

Therefore;

Complete quinquennial surveys at 10 yearly intervals and carryout a 'review inspection' of high priority items on a 5 yearly basis (and in some cases more frequently)



## The role of quinquennial survey?

### Short term view

### Long term view

A	Urgent, requiring attention immediately	1	Urgent. Defects which present an immediate or immanent risk to health and safety
B	Requires attention within 12 months	2	For completion within 2 years
C	Requires attention within 18-24 months	3	For completion within 5 years
D	Requires attention within quinquennial period (5 years)	4	For completion within 10 years
E	A desirable improvement with no timescale	5	Major item of repair or replacement beyond 20 years
M	Routine items of maintenance		

## The role of quinquennial survey?

QQ report summary for ease of planning:

item	Description	Priority	Report Ref.	Task Category	Cyclical Period (years)	Next Event Date	Cost £
1	Clear blocked parapet gutter outlet	1	2.1.1	B	-	-	200
2	Clean and maintain parapet gutters (3 monthly cycle)	2	2.2.8	STC	0.25	2013	400
3	Repoint open and decayed mortar joints	3	3.1.4	LTC	60	2079	25,000
4	Replace lead roof to Sacristy	5	4.1.7	LTC	120	2039	45,000

Task Categories:

B = Backlog (items of work which are overdue and/or not completed from past QQ survey)

OF = One off event, for example further investigation work is required

STC = short term cyclical work, typically on cycles of less than 10 years

LTC = long term cyclical work, typically requiring repair/replacement in the long term for example 20, 50 or 60 years

IMP = improvement work to correct inherent problems or reduce long term decay



### Summary:

Small amounts of regular maintenance can save significant costs in the medium and long term

Intervention must be based on site based evidence and review of past survey reports to determine decay rates, life expectancy, and timescales for conservation, repair, and replacement

## **Ingram Consultancy Limited**

*Consultants in the Conservation and Repair of Historic Buildings, Ancient Monuments and their Sites*

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