St Michael & All Angels Church, Thornhill.
Conservation report on the internal monuments
Section 1
The basis of the report and an analysis of the general environmental conditions of the church.

Prepared for:

Thornhill Parish Church Council
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Contents

The Brief;

The following is extracted from the Potts Parry Ives & Young (architect Stephen Parry) letter dated 9th February 2010 outlining the requirement of the conservation survey;

"…..inspecting the monuments in question and providing a written report upon their condition and your recommendations for their cleaning and conservation, as well as any repairs that you consider to be necessary.

I enclose photographs of the monuments concerned and I confirm them to be as follows:

> *The Sir George and Lady Anne Savile monument, sited within the north arcade of the chancel and facing both the Chancel and the Savile Chapel. This is a very large monument and it is suffering structural movement in its arched canopy. A number of details have also been lost from the carved figures.*
>
> *Three wall fixed monuments sited at high level within the base of the Tower. That on the south side is ornate; the two on the North are in the form of large plaques.*
>
> *Four wall fixed monuments on the south wall of the South Choir aisle.*
>
> *Two wall fixed and one floor standing (N.E. corner) monuments in the Savile chapel."*

The survey.

An on site visual survey was carried out on the 8th and 9th June 2010.

Access was from ground level, and from using a combination of step ladders and an extending ladder placed against the walls where it was safe to do so.

The report.

The following details the 11 monuments to be covered under the requirement of the brief;

The Savile Chapel monuments.

1 ***Sir George Savile (died 1614) and his wife Lady Anne Savile.***
North arcade of the chancel which also forms the south side of the Savile chapel.

2 ***Sir George Savile Bart of Rufford (died 1743).***
North east corner of the Savile Chapel.

3 **Anne Savile (1878) and Henri Savile (1881).**
North wall of the Savile Chapel, west end.

4 ***Sir George Savile 8th Bart (1784)***
North wall of the Savile Chapel between the square headed windows.

The Tower Monuments

5 ***Thomae Radcliffe Armigeri***
South wall of the tower.

6 ***John Pollard (1737) and his wife Elizabeth (1736)***
North wall of the tower, west side.

7 ***Rev John Michell (1793) and his brother Gilbert Michell (1792)***
North wall of the tower, east side

The South Chapel.

8 **William Elmsall (1817)**
South wall of the south chapel, western end.

9 ***The Elmsall Family memorial.***
South wall of the south chapel, western end.

10 ***William Toone (Steward to the Savile family) died 1850***
South wall of the south chapel, eastern end.

11 ***Johannes Coply Armiger***
South wall of the south chapel, eastern end.

The following list details the other main monuments in the church not included within this report;

12 ***Sir George Saville (1622) by Maximillan Colt.***
North Wall of the Savile chapel

13 ***Sir Thomas Savile and his wife (1449)***
Adjacent to the north wall of the Savile chapel

14 ***Sir John Savile (1449) and his two wives (Oak Memorial)***
South side of the Savile chapel.

15 ***Lord Savile (1931)***
Alabaster christening font south side of the Savile Chapel

16 ***Sir John De Thornhill (1322)***
On the floor adjacent to the 1622 Sir George Memorial.

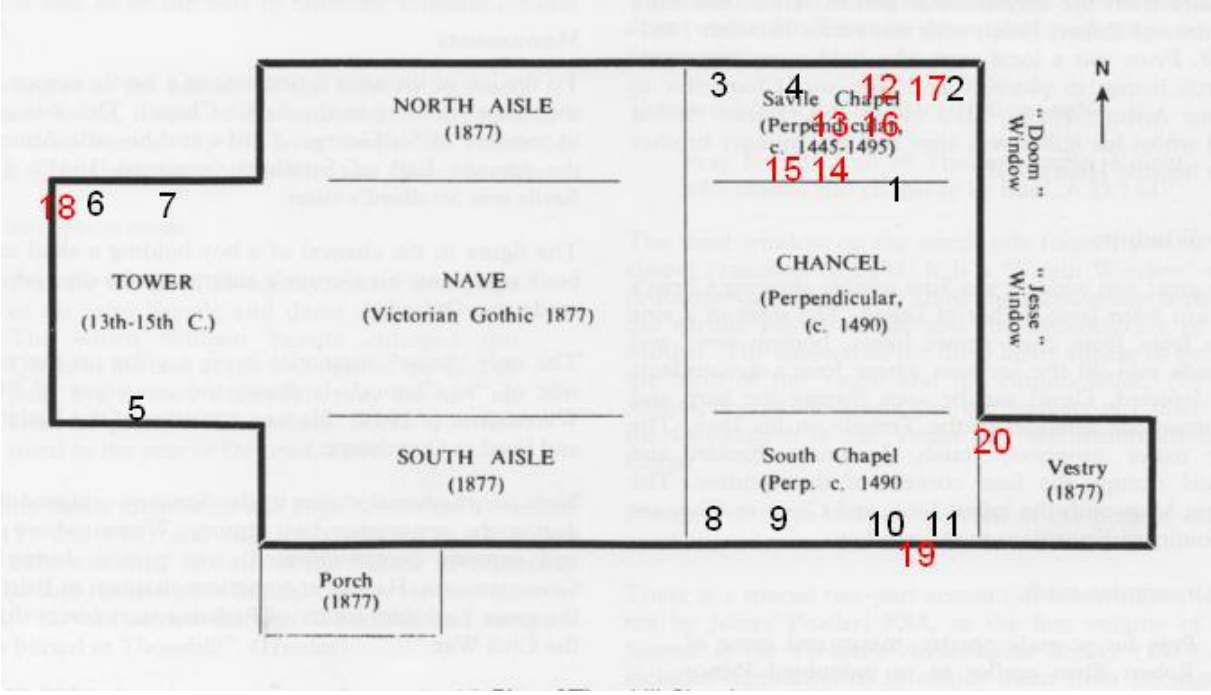
17 ***Ricardus Henricus Lumley***
North wall of the Saville chapel

18 ***John Tym (1770)***
West wall of the Tower

19 ***Dr Lacy (1671)***
South wall niche of the south chapel

20 ***Coply Memorial***
East wall of the south chapel.

Locations of the Monuments.



The plan with dates is taken from "A History of Thornhill" by Barbara H. Nuttall. 1995 Kirklees Cultural Services and Thornhill Church Council. Annotations relating to the numbering of the monuments are by Holden Conservation.

The black numbers correspond to the monuments covered by the report and the red numbers are the other main monuments in the church not included within the report.

The building dates of the various parts of the church can be seen in the above illustration.

Overview of the external and internal environmental factors affecting the monuments.

The locations of the monuments are as follows;

Monuments 1 and 2 are situated on the floor of the church; monuments 3 to 11 are fixed to walls.

Monument 1 is constructed within the eastern arch of the north arcade of the chancel. It has direct connection with the masonry of the arch columns to the east and west sides. On the north side of the monument there are two stone pillars each connecting the top of the monument with the underside of corbels supporting the roof of the chapel: This will be looked at in greater detail later within the report.

Monument 2 is constructed across the north east corner of the Savile chapel with masonry linking it to the wall structure on both the north and east elevations.

Monuments 3 and 4 are fixed against and in direct contact with the north wall of the Savile chapel.

Monument 5 is fixed at high level and in direct contact with the south wall of the tower.

Monuments 6 and 7 are fixed at high level and in direct contact with the north wall of the tower.

Monuments 8 and 9 are fixed in direct contact with the south wall west of the south chapel door.

Monuments 10 and 11 are fixed in direct contact with the south wall east of the south chapel door.

09/329
North east corner of the church.

In this view it can be seen that there has been movement in the wall: Indicated by the fresh lime pointing in the settlement joint running vertically adjacent to the north jamb of the east window of the Savile chapel (white arrow).

It is not known when the pointing was carried out but there was no sign of further movement within this joint.

09/334

09/335

There is evidence of the settlement also on the north elevation of the Savile chapel wall.

Brief discussion with the church structural engineer indicates that the settlement is not considered to be an ongoing major concern. This comment will need to be reviewed following issue of the engineer's full report.

The blocked up windows would indicate that previously there existed a crypt to the Savile Chapel.

09/330

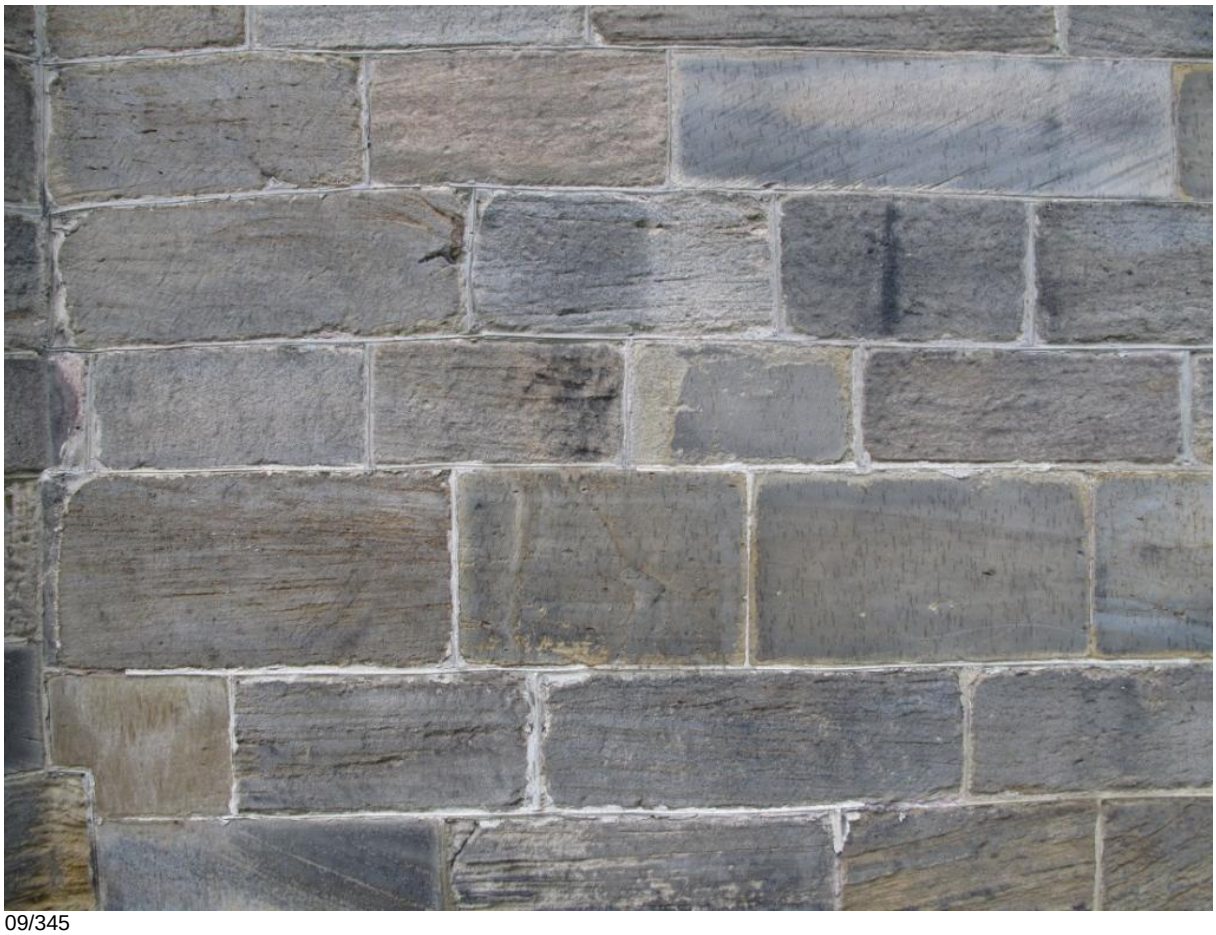
North elevation of the Savile chapel.

The eastern bay (indicated by the arrows), is an addition dating from about 1490, while the two western bays, (corresponding to the two square headed windows), date from about 1445.

09/332

09/333

It appears that some relatively recent pointing has been carried out on this elevation but the upper east section has either subsequently moved or was not properly repaired as there are open joints as indicated by the white arrows.



09/345

09/332

It would appear that there has been more than one re-pointing on this elevation and it is of mixed quality. Overall the pointing is in fair condition but some may be a little too hard. It would be of benefit to detail the mortar joints and ascertain if there would be any benefit to reducing moisture in the walls further by replacing some of the mortar where it is missing, defective or inappropriate.

Location of the detailed photograph above.

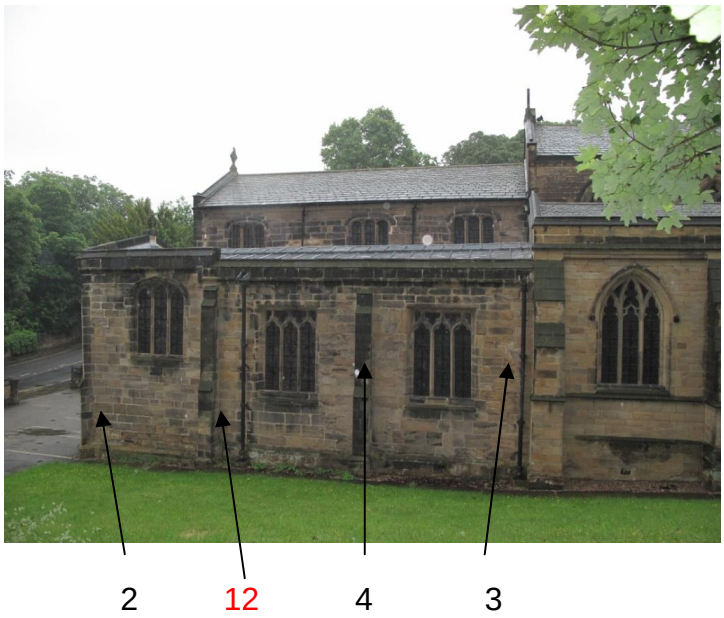
09/331

General view of the north elevation of the church showing the ground rising higher to the west.

It is understood that there has been a history of dampness in the church as a consequence of the location; it is believed water has a tendency to run along the line of bedrock under the foundation of the building. Various steps have been taken to mitigate the impact of this on the interior of the building and previous works have been carried out including re-laying some floors and adjusting levels between the Savile chapel and the north aisle and the nave.

09/343

Along the north elevation a French drain has been installed recently and it appears to be in good order.



09/344

North elevation of the Savile chapel showing the roof to be lead with a shallow pitch.

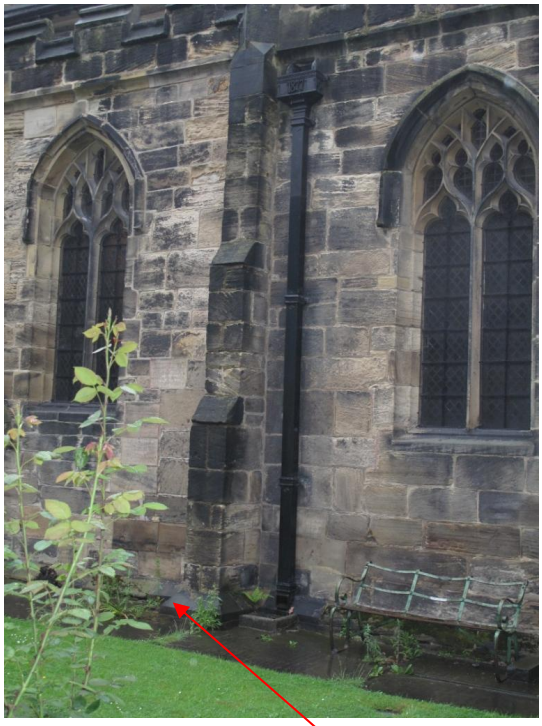
No inspection was made of the roof but it is known to have been replaced relatively recently following theft of the lead covering and it is assumed to be in good order.

The numbers indicate the locations corresponding to the monuments on the interior.

09/336

General view of the external elevation of the south chapel.

Note the ground level is high effectively setting the church in a valley with the ground rising on the south, west and north elevations. On the east side of the church the ground slopes away very steeply.



09/337

Detail of the eastern buttress on the south chapel wall

Note the area adjacent to the walls is paved and the level of plant growth would indicate a moderately high level of moisture. Moisture will easily penetrate the paved areas through the joints and it is not known how the general soil will drain. There is a risk that this will increase the levels of moisture in the fabric of the church walls.

09/338

The arrow indicates the same location in the two photographs viewed from different angles.

At the time of the survey it was raining and the drains appeared to function well with the exception of one that appeared to be superficially blocked by leaf matter.

External environmental factors.

In general steps have been taken to reduce moisture within the building fabric by maintaining the roofs, gutters, down pipes and drains in particular by introducing the French drain on the north elevation. It might be worth considering introducing a French drain on the south elevation, at least in the area corresponding to the south chapel as there is an issue of dampness in the wall on the interior as will be shown later in this report.
The pointing is in fair condition and the stone work itself generally fit for purpose. As referred to above it would be worth undertaking a detailed survey of the pointing to ascertain if the mortar is both suitable (not too hard) and in good condition.

Internal environmental conditions.

There is evidence of dampness rising within the floors and the walls of the church affecting the monuments in the Savile Chapel and the south Chapel. The monuments in the tower are high on the wall and do not appear to be suffering from rising dampness.

The chancel floor is currently covered in carpet with a breathable underlay. However the floor surface beneath the carpet appears to be glazed tiles dating from the 19th century which will present a relatively impermeable finish.

During the site survey there was dampness in the edges of the carpet adjacent to the Sir George and Lady Anne Monument.

08/013

The area of floor between the main monument and the base of the western pilaster base.

Note the damp stains on the carpet.

08/014

Lifting the carpet reveals the underlay to be retaining very high levels of moisture.

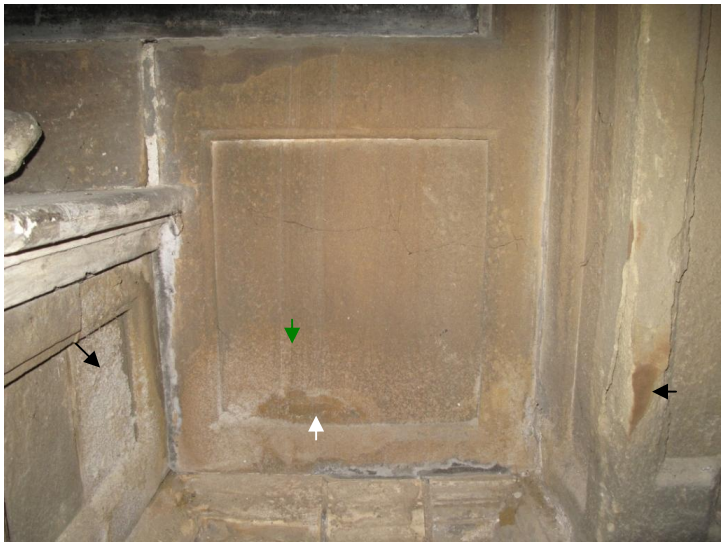
08/015

The floor under the carpet and the underlay is glazed tiles. There was considerable dampness on the surface of the tiles and it was noticeably greater at the margin adjacent to the base of the tomb. Note the extent of the corrosion occurring on the metal component of the gripper rods.

These observations indicate that the monument itself may be wicking moisture from the sub floor more easily than the tiled floor area thus causing the migration of water and soluble salts through the stone of the monument. Testing by touch only the moisture level appeared to reduce further from the monument.

It would appear that the carpet is a relatively recent addition. Consideration needs to be given to whether it has changed the ambient conditions in the adjacent monument in a detrimental way.

Moisture mapping of the area around the monument might further indicate the source of moisture.



08/020

At the corresponding location on the east side of the monument can be seen strong evidence of soluble salt efflorescence on the surface of the stone (black arrow).

The general pock marking (green arrow) as a consequence of salt efflorescence and mineral discolouration (white arrow) also indicate ongoing moisture and salt movements.

The indications are strongest at low level and decrease with height up the monument therefore indicating the ground as the most likely source of both the salts and the moisture.

Within the Savile chapel there is further evidence of moisture within the floor.

08/150

A general view of the western end of the Sir George and Lady Anne monument from within the Savile chapel.

The stone floor has many marks consistent with moisture penetration through the stone over a long period of time.

There is mineral discolouration and salt efflorescence generally on all the stone floor surfaces as shown in this photograph and as detailed in the photograph below.

08/151

The floor in the chapel appears to breathe more generally thus avoiding the concentrations of moisture as observed in the margins of the floor within the chancel.

There is evidence of salt efflorescence within the stone of the monument but perhaps not as severe as in the south elevation.

08/155

The eastern end of the Sir George and Lady Anne monument.

The floor in this area carries the signs of penetrating moisture as discussed above and there is a strong indication of an ambient moisture evaporation level line as indicated by the white arrows.

This feature is typical of damage caused when moisture reaches a natural evaporation level within stone causing salts to be deposited where they sub-florescence and/or effloresce causing damage to the stone surface.

As can be seen below the salts are present generally within the stone but a dominant feature has formed.

08/157

09/262

Detail of monument number 11, eastern end of the south chapel.

There are indications of humidity and moisture affecting this area of the church.

Note the salt efflorescence in the stones surrounding the adjacent window; (black arrow).

The internal cramps are corroding with rust stains evident on the surface of the monument (white arrow).

The water marks across the surface may be condensation over a period of time of from water leaks in the roof above; (green arrow)

This monument is relatively high on the wall but moisture is able to rise, most likely from the ground outside, to this level within the fabric and the wall memorial.

It might be worth undertaking analysis on the various salts apparent within the building to ascertain a possible source and to establish if they are deliquescent as this would exacerbate the situation. There is a possibility that such salts once disturbed will continue to move within the stone under the influence of ambient humidity within the atmosphere of the building. This might mean that previous rising dampness could have transported salts to a point in the stone where ambient humidity is sufficient for a cycle of dissolution and efflorescence to occur. Removal or reduction of such salts from the ambient zone in the stone could reduce the problem. However the evidence of moisture in the floor on this side of the monument and generally elsewhere as noted above and in the following detailed reports indicates that there is likely to be a continuing issue about ground moisture affecting the monuments, walls and floors and therefore the identification of the salts is of interest but may not affect the outcome for recommended treatments.