

Part 1:

In Search of Dunfermline Abbey's lost medieval choir: history, liturgy and ground-penetrating radar.

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The many visitors to Dunfermline Abbey and Palace in Fife typically encounter a church of two halves. To the west stands the medieval nave and, until 1821, parish church. Stripped of its post-Reformation pews and lofts and re-presented as a stunning Romanesque-Gothic stone shell, it still conveys much of the misty spirituality of its Benedictine monastery dedicated to the Holy Trinity. Its elegant columns speak to its former scale and status and its strong links with Benedictine Durham Cathedral Priory through the 11th and 12th centuries.



Fig 1: Dunfermline Abbey's buttressed medieval nave (west) and modern Abbey Church (east) [© Robert Cutts, CC BY 2.0]

However, of the later medieval monastic choir to the east (and the cloisters) little remains. The great east-end of this church was left ruinous by the iconoclasm of the Reformation. Like its nave, it had been home to successive royal and aristocratic burials and the cult of the queen of Malcolm III, St Margaret (d.1093), canonised in 1249. Long used after the Reformation as a romantic burial ground by local townspeople, known as the 'Psalter' churchyard, the choir

ruins were eventually cleared and overbuilt c.1817-21 to make way for a new Presbyterian ‘Abbey Church’ of Dunfermline parish, conjoined to the nave.



Fig 2: The fossiliferous marble base of St Margaret's feretory shrine within her east-end chapel, outside the Abbey Church vestry [Author's photograph].

Of the settings and fittings of the choir's interior few traces survive. What scholarly attention there has been has focussed on the far-eastern marble base of St Margaret's feretory shrine of c.1250, excluded by the walls of the new Abbey Church [Fig 2] and, even more so, on a central grave and skeletal remains found during the site-clearing of 1818 and believed to belong to Scotland's hero-king, Robert I/Bruce (1306-29). Since the mid-20th century these fascinating remains have been used by no less than four facial reconstruction projects 'in search of the face of Robert the Bruce' and, in 2014, a digital recreation of Bruce's lost marble monumental tomb and effigy. The latter was engineered by Historic Environment Scotland's Dr Ian Fraser, in collaboration with Glasgow School of Art, from fragments found in the vicinity of the 1818 'Bruce grave' and its central position directly before the high Trinity altar of the abbey.

Thus, for modern visitors, Bruce remains by far the most important figure interred at Dunfermline. However, as a living medieval church the choir was host to numerous royal burials of which those of St Margaret and her husband, Malcolm III, and son, David I (1124-53), who converted his parents' priory into a full abbey in 1128, were certainly the most important. Robert I himself visited the abbey on 16 November 1314 – St Margaret's feast day and shortly after his victory at Bannockburn – to thank the church for its support of his cause and to declare his intention to be buried there alongside his royal ancestors. Bruce's own entombment, perhaps beside his queen, Elizabeth de Burgh (d.1327), was to be followed by the interment of many of his immediate family and supporters within a northern Lady Chapel extension to the choir. This included Guardians/Regents Thomas Randolph earl of Moray (d.1332) and Sir Andrew Murray (d.1338), as well as the first two Stewart queen consorts. This

which should equate Dunfermline with the great Benedictine cult and mausoleum churches of royal England and France, Westminster and St Denis (both also dedicated to the Holy Trinity).

Perhaps unsurprisingly, the evidence of Scottish medieval chronicles is often brief and ambivalent about Dunfermline's royal tombs. Of Bruce's tomb the canon of Scottish Latin chroniclers John of Fordun (fl-1383) and Abbot Walter Bower of nearby Inchcolm (1385-1449) state only that he was buried 'in the middle of the choir.' This seems to coincide with the central 1818 grave found before the lost high altar but does not reflect the full east-west and north-south extent of this great church's central monk's choir, paved presbytery and stepped sanctuary/chancel. Chronicle descriptions of the manner and location of other royal burials are usually just as vague.

Similarly, Dunfermline's extant charter material reveals little of the physical form, position, or meaning of the choir's many tombs, chapels, altars and relics. We learn more from a long-lost 13th-century collection of over forty miracles of St Margaret. This reveals approximate nave and choir burial sites for Margaret and Malcolm, including an 1180 translation (unknown to the chronicles) before the move to the great east-end feretory, and their importance as stations for veneration and vigil in what emerged as a great pilgrimage ambulatory church. Yet there is still so much we do not know or may neglect in our distraction with Bruce. The explorations and observations of Georgian and Victorian antiquarians do add several important details to our knowledge, including some physical finds. But all too often these were recorded without precise measurement or illustration and are just as open to divergent interpretation.

It was in this context that a project to try to apply ground-penetrating radar (GPR) to Dunfermline's lost monastic choir took shape. There is a real commitment shared by the present-day staff and congregation of the Abbey Church to investigate, understand and disseminate the full architectural, political and denominational history of the abbey. It was in this spirit that our project team was welcomed and assisted in our field work from 2016. Our two subsequent radar scanning seasons were in turn enthusiastically supported, too, by Fife Council and Historic Environment Scotland (under the umbrella collaboration of the Dunfermline Heritage Partnership).

In the first instance, this was to be a pilot survey and non-invasive to the extent of not lifting any modern pews or shop-fittings etc. The GPR fieldwork and data interpretation were undertaken by Erica Carrick Utsi of EMC Radar, assisted in 2016-17 by Dr Oliver O'Grady of OJT Heritage, and in 2019 by Alex Birtwistle of Atlas Geophysical. The methodology applied would see multiple frequency scan lines applied at 25cm intervals (half the norm recommended by English Heritage). In the end, we applied a Ground Vue 3_1 radar with first a 250MHz then a 400MHz antenna. We are very pleased to acknowledge the financial support of the G.W.S. Barrow Award, the Strathmartine Trust, the Hunter Memorial Trust, the Royal Society of Edinburgh and the University of Stirling.

There were several immediate difficulties to overcome, not least scanning down through a modern wooden floor and deep [7'-9'] foundations of unknown materials and subsequent utility intrusions in search of the medieval depths (on a south-sloping, flood-prone site). In 1818, architect William Burn was just starting a career which would see him establish a reputation for honesty and discretion in both 'restoring' and innovating urban church and country house design: he would also fund Robert Billings' magisterial four-volume survey of *The Baronial and Ecclesiastical Antiquities of Scotland* (1845-52). Yet Burn's few surviving

plans give no practical clues as to his working methods in preparing the Dunfermline site. Nevertheless, if successful, it was felt these GPR scans might provide some fresh evidence for the architecture, fittings, burials and thus liturgy of the late medieval monastic choir, cult church and mausoleum c.1250-c.1560. Not least they might answer in part one leading question – were there no more medieval remains visible or just below the surface which might have been recorded in 1818? These potential findings could then be used to reassess the medieval written and antiquarian evidence.

This will seek to add to the discussion generated by several other recent research projects focussed on Dunfermline Abbey and, in particular, the Bruce remains: a Dunfermline Community Heritage graveyard excavation and recording project (now part of a Fife Council-led Dunfermline Abbey Burial Ground conservation project); HES's striking *Lost Tomb of Robert Bruce* exhibit, now permanently housed within the Abbey Church north aisle; and a University of Glasgow-led facial reconstruction project some of whose arguments about the location and meaning of Bruce's burial this GPR project does seek to question (not least in relation to the all the other elements of this complex lost church).



Fig 4: Composite GPR scan areas of the overbuilt Dunfermline Abbey choir, 2016 [1, 2], 2017 [3, 4, 5] and 2019 [6] [© Atlas Geophysical]

Pilot Survey I (2016) - The North Transept/Aisle and the vestry

This area [Fig 4, 1] was chosen for our opening pilot scan as the largest open space within the Abbey Church and as it lay atop the overbuilt northern 'Lady aisle' of the medieval choir. The latter bordered along the central paved presbytery with evidence from the Kirk Session records that Burn had been urged to reuse medieval column bases to site his own. This area also took

in the spot marked as ‘K’ on Burn’s 1818 ground-plan marking the local tradition that had long held that a king was buried under each of six slabs: Bruce was said to lie under the largest to the west. On Burn’s ground-plan these slabs lie within the medieval Lady Chapel, a spot now beneath the (former) Abbey Church North Transept gift-shop. This test area would also allow us some scans across the central heart of the whole site, running north-south just west of the modern dais and communion table (across what would have been the choir’s presbytery).

Our pilot proved that it was possible, despite an upper floor raft airgap, poured pitch and unknown utilities, and using both the 250MHz and 400MHz antennas, to penetrate to the approximate medieval depths (down to at least 2m). We were then able to identify potential subsurface burial and architectural features. Both frequencies returned broadly similar results (with the scans rotated here 90° for easier understanding).

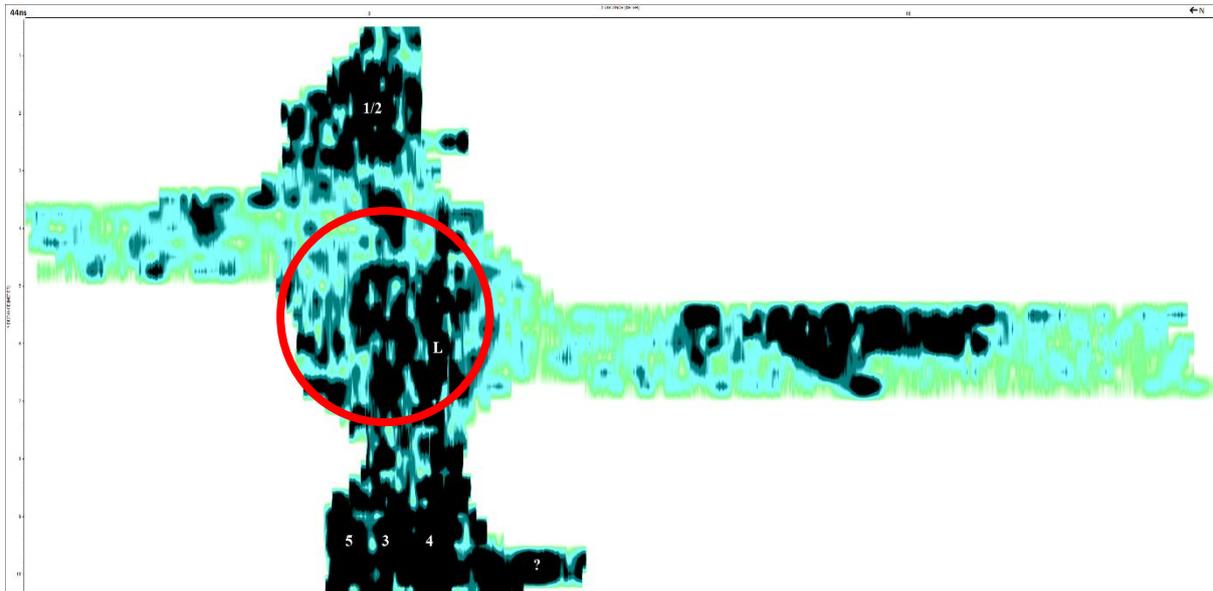


Fig 5: Time Slice extracted at 30ns from the 250MHz data showing possible pairs of burials east [1/2] and west [3/4] of the North Transept; ringed area possible disturbance from excavation of six kings’ slabs to the north [© EMC Radar].

The most striking features here lay to the east and west of our aisle scan area. In both spots, potential pairs of substantial graves, lying east-west, were identified [Fig 5, #1/2, 3/4]; to the west further burial spaces may lie to the north and south [Fig 5, #5/?]. Roughly half-way between these features a more disturbed area may indicate a similar set of burials disturbed in the past [Fig 5, ringed in red]. If so, this area lies just south of the edge of the location of the six kings’ slabs and may represent spoil from their excavation by antiquarian John Graham Dalyell in 1807 (discussed in more detail in Part 2).

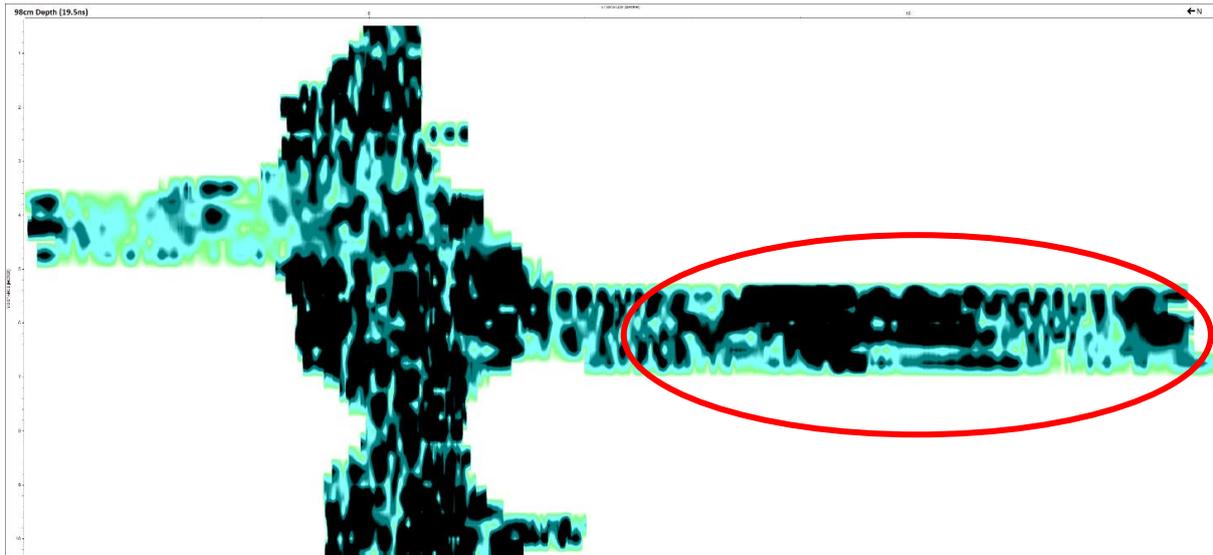


Fig 6: Time Slice extracted at 19.5ns (98cm depth) from the 250MHz data showing potentially large horizontal architectural feature [ringed in red] running north-south across the church [© EMC Radar].

In addition to some probable modern architectural or utility features at shallower depths, this scan also returned a large architectural (rectangular?) structure running north-south through the centre of the choir site [Fig 6]. This narrow central series of scan lines also confirmed the greater presence of moisture over to the south side of the church site.

Pilot Survey I (2016) - The Vestry

Fig 4 area 2 was also chosen for scanning in 2016 as it lies atop the retro-choir of the high altar and would have formed part of the sanctuary pavement of St Margaret's great feretory shrine of c.1250 (which now lies just outside the vestry windows to the east). It was felt that strong results here might give us some understanding of the relative medieval and modern levels.

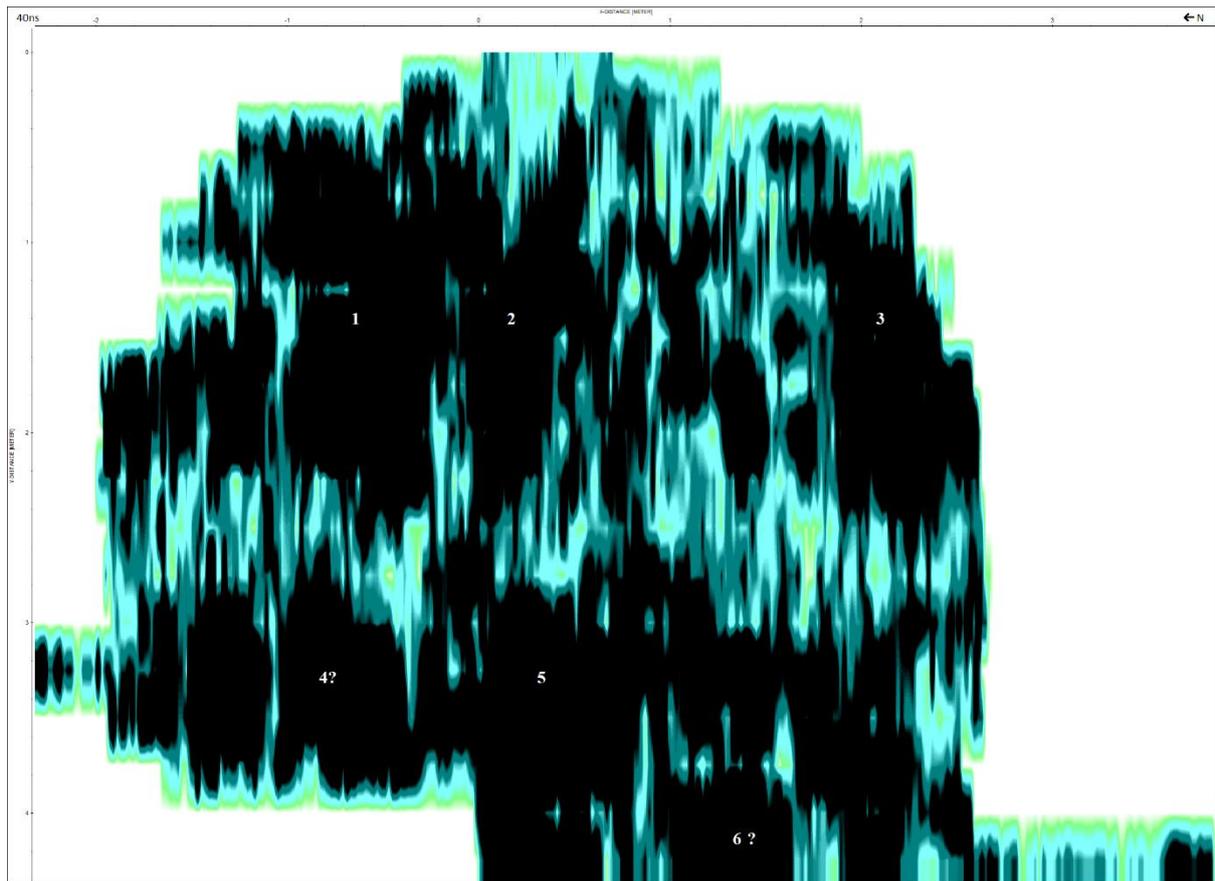


Fig 7: Time Slice extracted at 40ns from the 400MHz data showing several potential east-west orientated burials beneath the vestry floor [© EMC Radar].

As Erica Utsi's data report makes clear, our scans with both frequencies found a 'crowded burial space...a high density of graves [and] the possibility of some graves intercutting...and there is also evidence in both surveys to suggest more than one level of burial', perhaps extending down through as much as 2m in depth. All these burials [Fig 7] appear orientated with heads to the west in typical Christian fashion. But it is their great number in this sacred space so close to Margaret's body shrine which suggests a desire for burials in her immediate presence (both before and after the Reformation).

Pilot Survey II (2017) - The North Transept (East)

Our first scan for 2017 [Fig 4, 3] took us outside (in dry June weather) to spaces contiguous to the North Transept of the Abbey Church. This exterior surface is a mixture of asphalt paths and grass burial ground. At least 2' nearer to what may be medieval levels, it lies atop what would have been the east end of the 14th-century Lady Chapel extension of the choir, if Burn's 1818 ground-plan record of the medieval walls is accurate. As well as searching for features of this important liturgical and burial chapel, our results here might also allow us to better interpret our interior results of 2016 and, again, sharpen understanding of the different period levels.

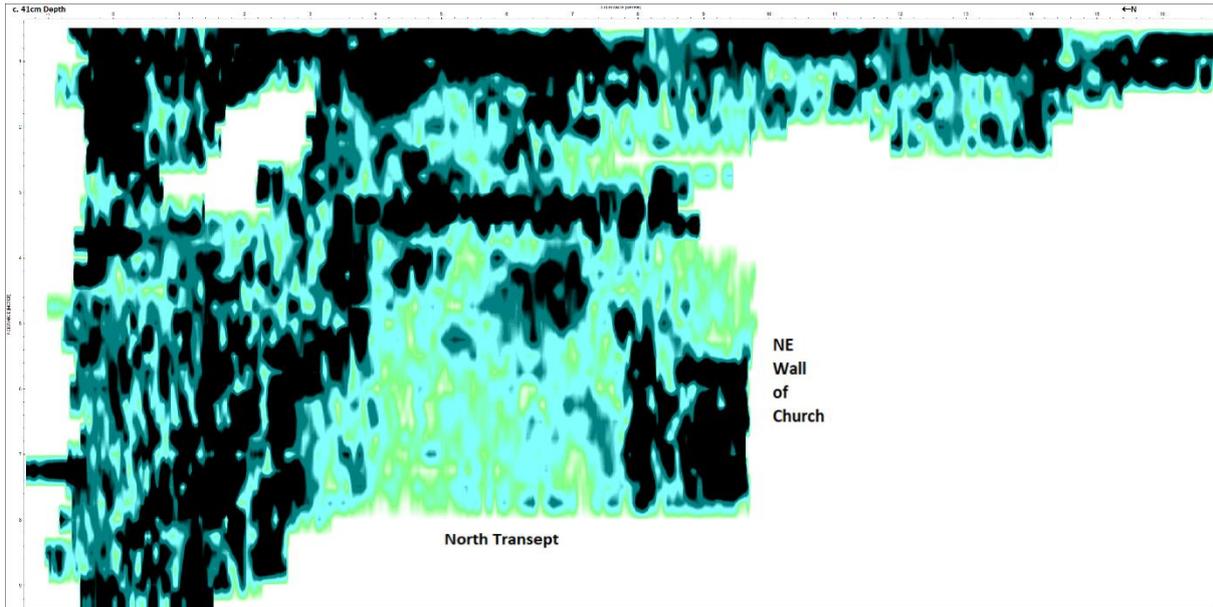


Fig 8: Time Slice extracted at c.41cm depth [400MHz], north-east corner of North Transept [© EMC Radar].

Both frequencies returned convincing evidence for broken courses of the walls of the medieval Lady Chapel, as well as some internal features at varying levels [Figs 8-9]. Some of the latter may have been medieval but others may relate to ‘Psalter’ churchyard burials of wealthy townspeople c.1560-c.1818. The Bruce Earls of Elgin are known to have had a large railed family crypt, c.50’ x 20’, in this general area. In 1766, while preparing ground for the translation of Elgin family remains, workmen found a polished, stone-lined medieval double grave space with female remains in one half, up against the east wall of the Lady Chapel/choir. These human remains were believed to belong to Bruce’s queen, Elizabeth de Burgh, and were translated to a new Abbey Church south-side Elgin crypt by 1819. Burn marked this grave on his 1818 plan as ‘P’, now buried beneath the Abbey Church organ installed in 1882, roughly in line east-west with the potential medieval burials located by our 2016 scan of area 1 (the northern Lady aisle).

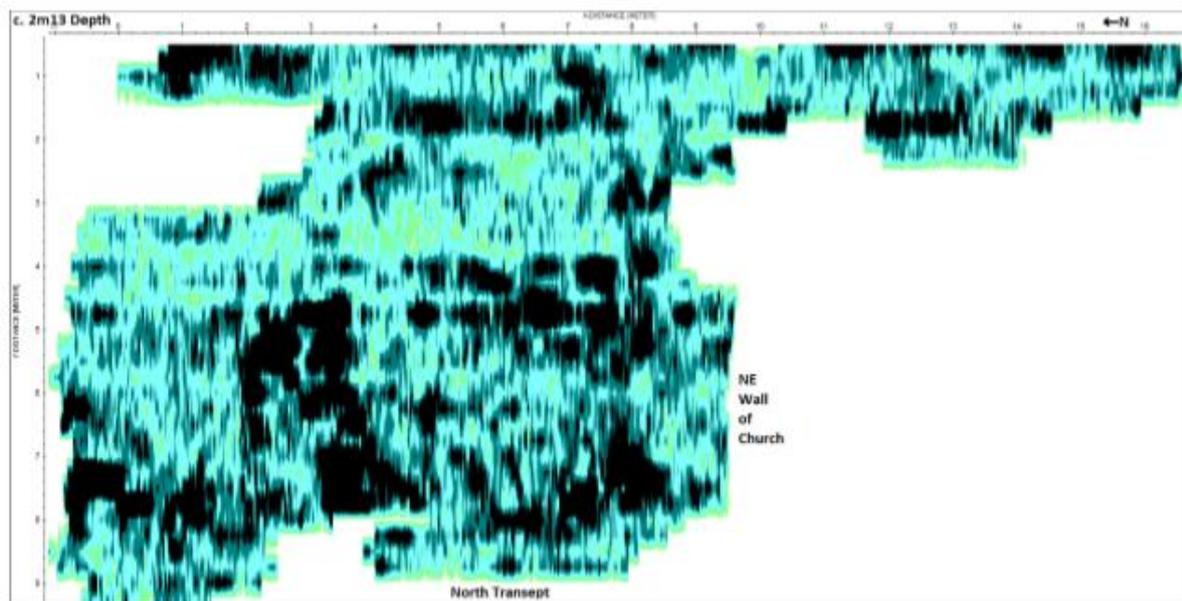


Fig 9: Time Slice extracted at 2.13m Depth [250MHz], north-east corner of North Transept [© EMC Radar].

Some of our radar returns for the sub-surface northern wall of the Lady Chapel may also evidence later intrusion by modern graveyard walls and burial lairs: such structures can be seen on the 1854 Ordnance Survey map of Dunfermline and the Kirk session's 1855 burial ground plan (as well as early photographs). However, the substantial nature of the medieval chapel walls beneath should not be doubted. Indeed, several 18th-century sketches of the choir ruins all depict four standing Lady Chapel arched windows. Burn's workers presumably either removed these stones to an unknown fate - our scan down to 2.13m suggests their partial robbing out - or used them in situ to strengthen the new build's foundation.

Pilot Survey II (2017) - The North Transept (West)

Fig 4, area 4, the western counterpart to our first scan of 2017, produced broadly similar results, although this was clearly a space more extensively disrupted by northern and 'Psalter' graveyard activity and, after 1821, modern utilities.

Nevertheless, our scans returned potential radar evidence for the walls of the Lady Chapel on that side, again perhaps partly robbed out [Fig 10]. There is also no indication that there had been a northern medieval transept chapel extending only from the crossing between choir and nave. In that regard, the scans thus far did seem to confirm the accuracy of Burn's 1818 ground-plan record of their position and function.

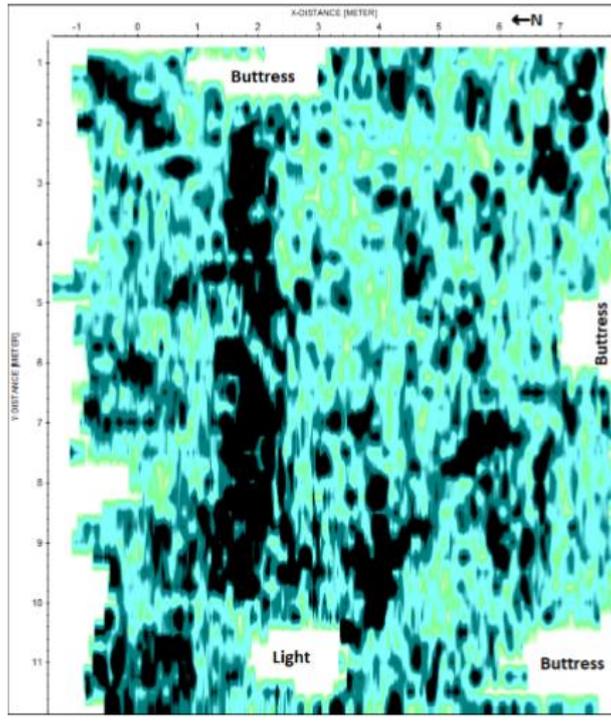


Fig 10: Time Slice extracted at c.78cm depth [400MHz], north-west corner of North Transept [© EMC Radar].

However, scans in this area may also provide evidence for rather more internal Lady Chapel features than were located at the east end of the same space [area 3]. This includes potential burial structures, one of these perhaps quite large [Fig 11, #3]. This may fit with the east end being reserved as the site of the Lady altar while royal and aristocratic burials - recorded in brief in this chapel by Scottish chroniclers - occurred to the west: i.e. such important figures as Guardian Thomas Randolph, or Robert II's queen, Euphemia Ross.

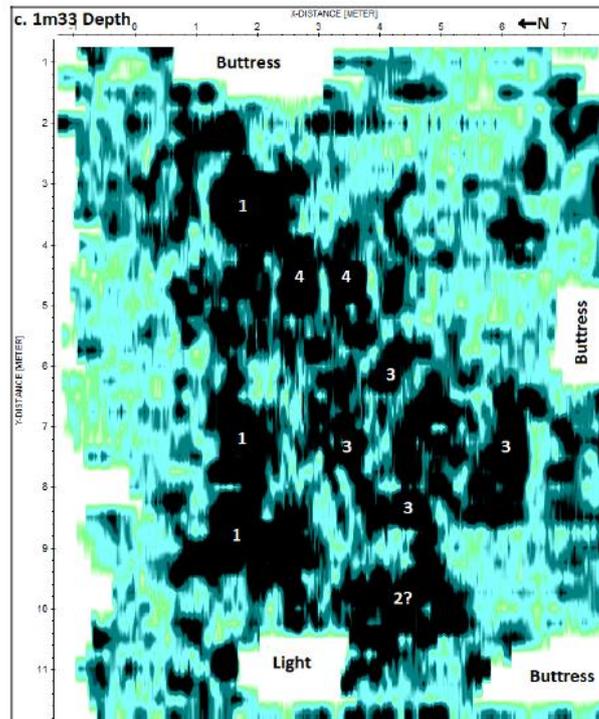


Fig 11: Time Slice extracted at c.1.33m depth [250MHz], north-west corner of North Transept [© EMC Radar].

Pilot Survey II (2017) – the central dais area between Vestry and Pulpit (including the ‘Bruce grave’)

This was undoubtedly the area [Fig 4, 5] of greatest interest to be scanned during our pilot due to the presence in this central space of the ‘Bruce grave’ discovered in 1818 and reinterred in 1819. Yet radar will not scan through metal thus our scans would not penetrate beneath the brass incised plaque placed above the Bruce grave in 1889 [Fig 12].



Fig 12: View west from Abbey Church vestry door showing pulpit atop brass Robert Bruce grave plaque (1889), carpeted dais and communion table [Author’s photograph].

However, the contiguous space lies atop the site of the medieval sanctuary/chancel with its high altar and other liturgical elements, the whole screened as a church-within-a church for the sanctity of the mass. Since the 19th century, a number of scholars have debated whether or not the expansion of the choir east to accommodate St Margaret's new feretory chapel c.1250 would have seen the Trinity altar moved a marked distance east, perhaps creating more central space for burials. We must also be sensitive to the ever-present possibility of 'Psalter' era burials of c.1560-c.1818 having intruded into this sacred space.

Both frequencies again returned similar results. Several possible features [Fig 13, #s 1-7] seem to fence in the Bruce grave space to the east and south. Rather than being distinct burials, however, these may be the footings of the altar screening which such a prestigious church as Dunfermline would have created, perhaps reusing the apsidal end of the original David I-era choir (of c.1128-c.1220s).

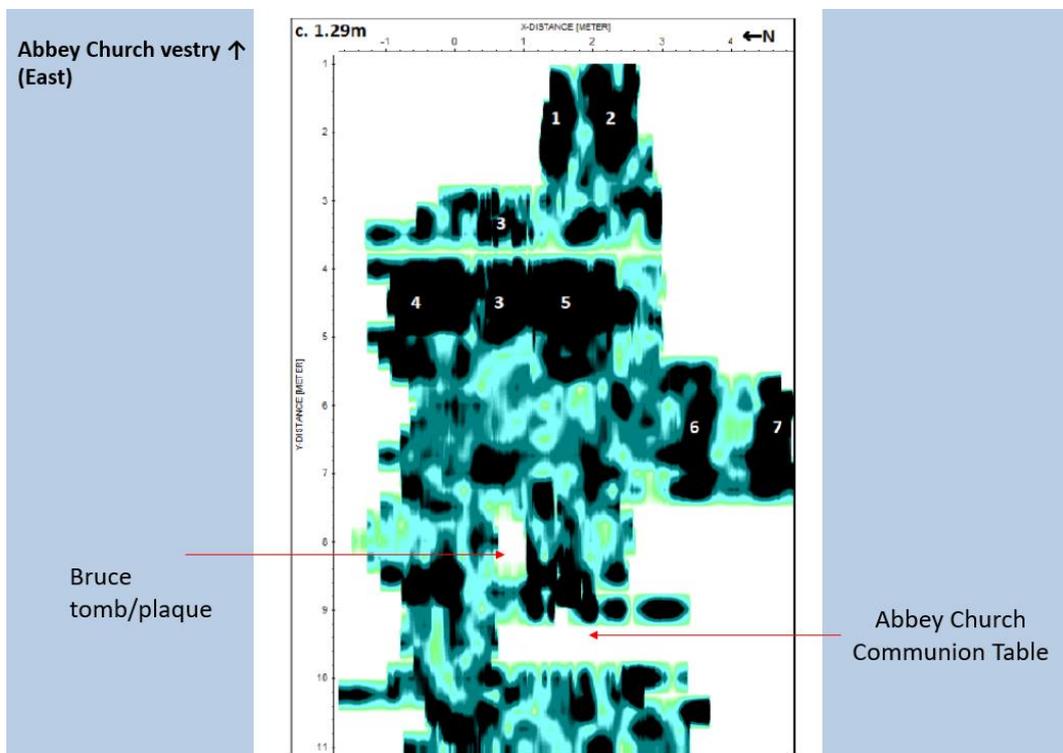


Fig 13: Time Slice extracted a c.1.29m [250MHz], central dais area [© EMC Radar].

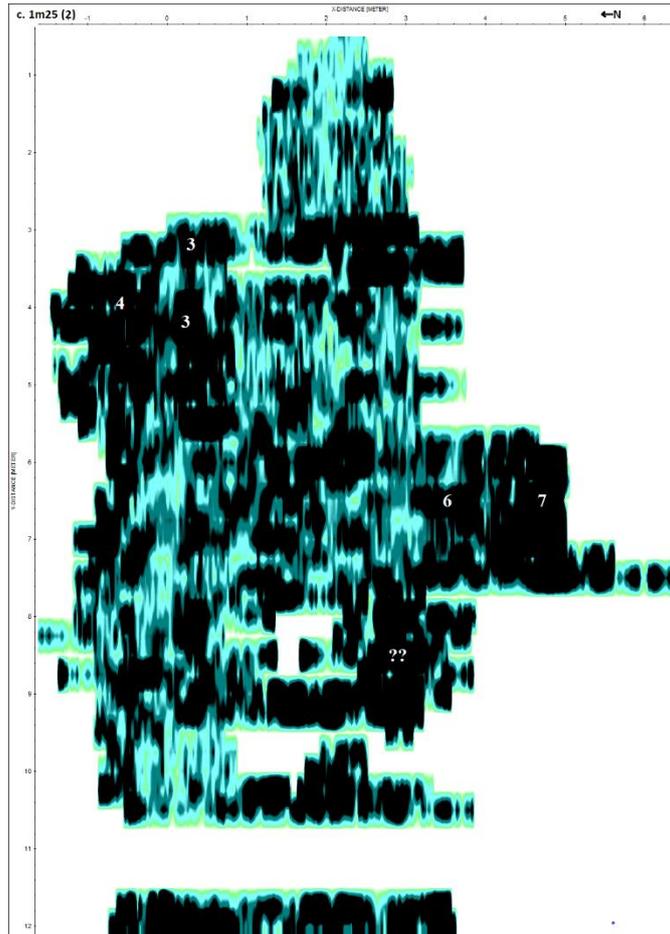


Fig 14: Time Slice extracted at 1.25m depth, with added gain [400MHz] central dais area [© EMC Radar].

Burn's 1818 ground-plan again suggests as much. The somewhat indistinct GPR feature to the immediate south of the 'Bruce grave' [Fig 14, #??] may furthermore be spoil traces of the 1819 inspection and digging out of the 'Bruce grave'. This was a process which the Deputy King's Remembrancer, Henry Jardine, reported as involving the stone crypt's replacement with a double-lined brick crypt to hold a new rectangular lead coffin for Bruce's bones (which were also enveloped in molten pitch).

Pilot Survey III (2019) - The South Transept

The exact nature and dating of the interior features identified by the GPR discussed thus far remains debateable. However, the GPR does seem to have confirmed one key medieval element, the choir walls recorded on Burn's 1818 ground-plan. This raises the possibility of a fascinating new addition to our understanding of Dunfermline Abbey's lost east end. All later 19th- and 20th-century antiquarian and heritage depictions of the Abbey choir's ground-plan from c.1250- present the south side of the choir as essentially flat. However, Burn's plan clearly depicts a large south-side chapel matching the Lady Chapel to the north. It thus became desirable to extend our GPR pilot and to survey the exterior spaces around the Abbey Church South Transept [Fig 4, area 6].

Wet weather and ground conditions in August 2019 rendered our 400MHz scan unusable. There were also further practical difficulties to factor in, including a sloping site, numerous post-1820s burials, modern steps and the underground crypt to the west built for the Bruces of Elgin. Nevertheless, down below c.90cm the 250MHz scan did pick out features which were, as Erica Utsi concluded, ‘strongly suggestive of the outline of a former building which, having been destroyed, has then been either backfilled or its remains spread over an area in order to provide a level surface [or hard-core raft] for later construction’ [Fig 15].

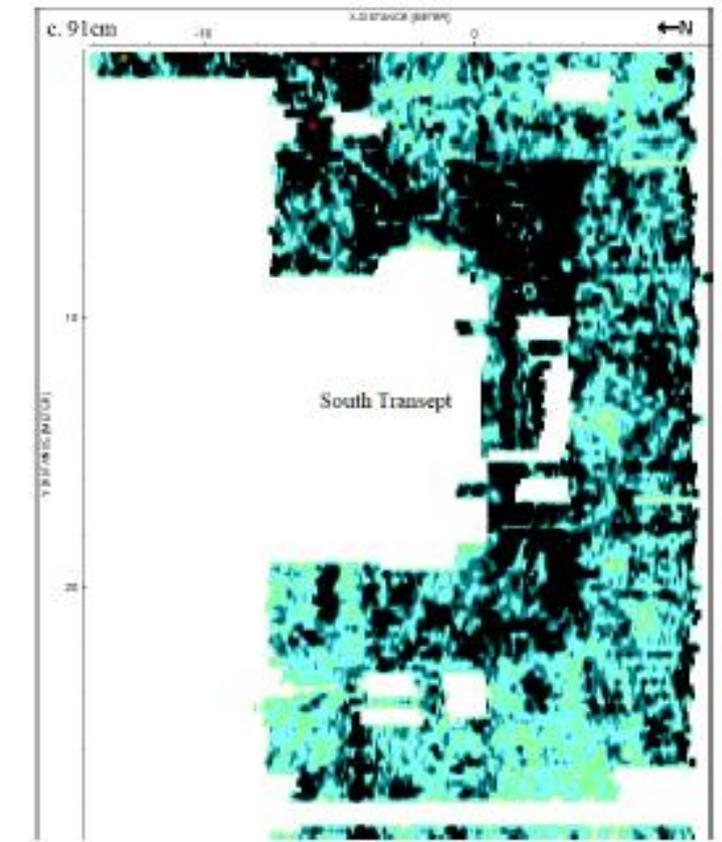


Fig 15: Time Slice extracted at c.91 cm depth [250MHz] around South Transept [© EMC Radar].

Its detectable proportions do roughly match the scale indicated on Burn’s plan. Moreover, no Kirk session records c.1560-c.1818 or any 18th-century sketches indicate an intermediate building which may account for the radar evidence.

This may then be evidence of a much larger and symmetrical choir (c.110’ across), with a full pilgrimage ambulatory in and out of St Margaret’s shrine. This may also mean that medieval chronicle references to burials in ‘the middle of the choir’ could refer to interments within a wider space, the central paved core of a true cruciform church with large matching north-south transept chapels and aisles as well as a central east-west axis. These and our earlier GPR findings might now be used in Part 2 to reassess our understanding of the lost choir’s appearance and spirituality in the later middle ages.