

THE CROWN ESTATE

BLAIRFINDY CASTLE, GLENLIVET



*REPORT ON CONDITION OF THE RUIN
AND
PROPOSED CONSERVATION WORKS*

APRIL 2016

addison conservation + design

consulting engineers

	<i>PAGE</i>
<i>I. INTRODUCTION</i>	<i>1</i>
▪ <i>METHODOLOGY</i>	<i>2</i>
▪ <i>SUMMARY OF CONCLUSIONS</i>	<i>3</i>
<i>II. LOCATION</i>	<i>4</i>
<i>III. DESCRIPTION OF CONDITION OF THE RUIN</i>	
1. <i>GENERAL INFORMATION</i>	<i>5</i>
2. <i>TOWER</i>	<i>6</i>
3. <i>MAIN WING</i>	<i>9</i>
4. <i>CONCLUSIONS FROM CONDITION SURVEY</i>	
▪ <i>OBSERVATION ON MAJOR CRACKS</i>	<i>13</i>
▪ <i>MASONRY CONDITION GENERALLY</i>	<i>15</i>
<i>IV. PROPOSED CONSERVATION WORKS</i>	
1. <i>APPROACH TO DESIGN AND EXECUTION OF WORKS</i>	<i>16</i>
2. <i>COST ESTIMATES</i>	<i>17</i>
3. <i>PHILOSOPHY OF PROCUREMENT FOR CONTRACTORS AND PROFESSIONAL SERVICES</i>	<i>17</i>

APPENDIXES

- 1. SPECIFICATION FOR WORKS*
- 2. DRAWINGS*
- 3. PROPOSED PATH – PRELIMINARY SPECIFICATION AND SECTION BY SPECIALIST*
- 4. WRITTEN SCHEME OF ARCHAEOLOGICAL INVESTIGATION BY FAS ARCHAEOLOGY*

Our Ref 15-788
Your Ref

Bush House
Room F4
Edinburgh Technopole
Milton Bridge
nr Penicuik
EH26 0BB

Tel 0131 445 8624
Fax 0131 445 8625

BLAIRFINDY CASTLE, GLENLIVET

REPORT ON CONDITION OF THE RUIN AND PROPOSED CONSERVATION WORKS

I. INTRODUCTION

Addison Conservation + Design was instructed by The Crown Estate in November 2015 to make an assessment of the condition of the ruin of Blairfindy Castle, prepare a scope of conservation works for Scheduled Monument Application and grant applications purposes.

This report consists of the following sections:-

- Description of the ruin with observations from the condition survey highlighting the issues to be addressed by conservation works
- Policies to be adopted in the proposals
- Description of the proposed conservation works
- Estimated costs and fees
- Appendix 1 contains a detailed specification of the proposed works
- Appendix 2 contains our drawings
- Appendix 3 contains Archaeological Work produced by FAS Archaeology
- Appendix 4 contains preliminary drawing and specification for the proposed path in the castle vicinity

Appendices may be used as “stand-alone” documents for Schedule Monument Consent and Tendering Processes.

■ ASSESSMENT METHODOLOGY

The methodology employed in the preparation of this report was as follows:

- (1). Desk Study to assess previous opinions on the condition of the ruin and to provide historical background to its structural conditions
- (2). Site Surveys and photographic record of the site – to assist with the assessment of its physical condition
- (3). Review of technical condition of the ruin
- (4). Assessment of threats to the castle

A survey of the physical condition of the ruin was carried out over two site visits.

A preliminary desk study was assisted by the material obtained from the Crown Estate, the Royal Commission of Ancient Monuments and Sites for Scotland and our own collection. We have not explored the history of the ruin or its architectural merits in great detail as it is not part of our brief. However, in this report we make some comments on these subjects, as we believe they are relevant.

The costing for these works has been prepared on the basis of past experience of projects of similar nature and tested by consultation with specialist contractors familiar with this type of work. Contractors experienced in such works are few in number and those who have to specify, direct and control their work have to be very experienced, use expert knowledge and judgement, and must be able to instruct all the work involved with cost control also at their fingertips. This level of expertise is assumed in the costing provided by this Report.

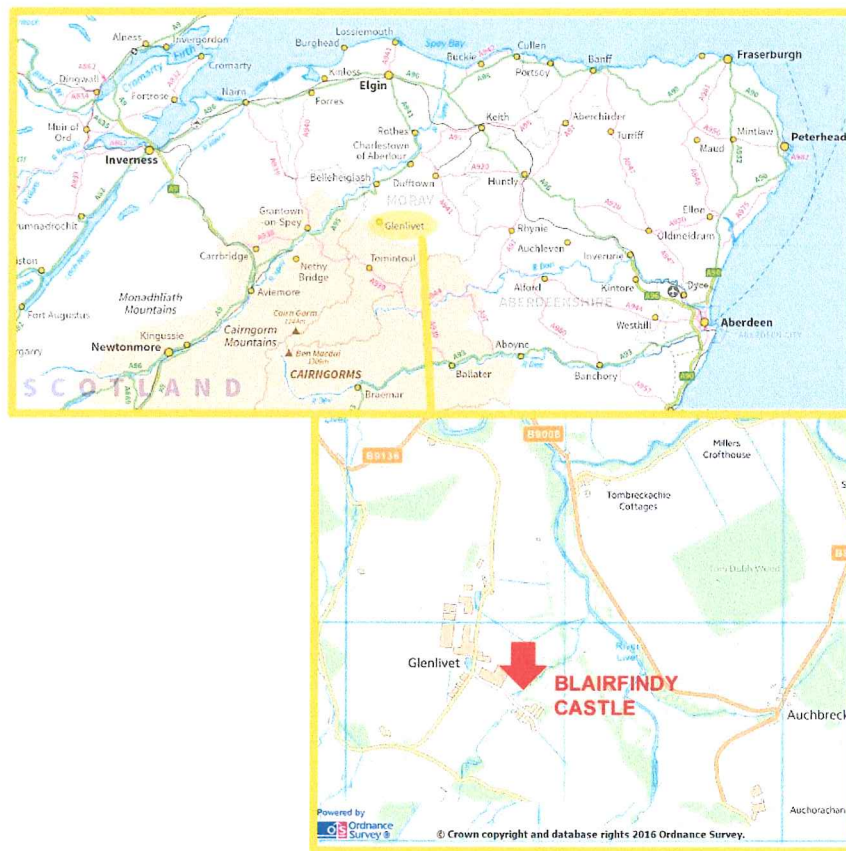
An outline of the necessary conservation policies have also been prepared. These have to be relied on as fundamental criteria to be satisfied at every stage of the project.

▪ **SUMMARY OF CONCLUSIONS**

1. The ruin is cracked, distorted, settled and in relatively poor condition, and fragile. It still has a lot of robustness however as a defensive castle but this is now compromised by historic foundation movements and extensive erosion of the architectural elements (ie around windows, flues etc). It required urgent conservation works by masons specialising in historic masonry.
2. We are satisfied that the source of major cracking within the walls of the castle is historic and related to the natural geology of the site.
3. The historical and architectural significances of the Castle and its setting, recognised in its important status as an Ancient Monument of national importance fully justifies its commitment to its preservation.
4. The significance of Blairfindy Castle as an integral part of the history and culture of Moray and its location in such proximity to Glenlivet Distillery, has to be recognised and interpreted in a wide perspective. It has enormous potential to become a tourist attraction. This potential justifies financial support from the public bodies.
5. The estimated costs of the works described in this report is approximately £385,000 excluding VAT but including professional fees, costs of archaeological and ecological recording and monitoring, and contingencies.
6. Although there is a need for some initial works, this needs to be carefully managed. For example, so attempt should be made to remove vegetation from the masonry or fallen debris from the ruin prior to the conservation works.

II. LOCATION

Blairfindy Castle is sited as shown on the map below and is located next to the private road leading to Castleton of Blairfindy from the public road passing Glenlivet Distillery.



III. DESCRIPTION OF CONDITION OF THE RUIN

1. GENERAL INFORMATION

The castle is based on a typical L-shape plan with a stair tower in the south west corner of the main wing. It has been in ruinous condition for several centuries. The ground floor vaults have collapsed since the MacGibbon and Ross survey in the second half of the 19th century.

Most of the elevations display cracking which were clearly recorded by MacGibbon and Ross.

Most of them are clearly related to the early foundation movements caused by consolidation of the porous soils of the Livet valley. The consequence of this is discussed in Item 4 of this chapter. However throughout the castle there are evidence that the corners were separating from the main mass of the castle causing severe cracking and exposing architectural features to exacerbated erosion.

Several attempts to stabilise the ruin were made in historic times and more recently by the installation of steel ties and stitches.

The castle is built in random rubble masonry in lime mortar with an extreme variety of type, shape and size of stone. Larger and more regular stones were inserted only around the corners and openings. It was harled originally and the historic harling can be seen in several areas.

Some attempts of consolidation were made using cementitious mortars. These are localised however.

The survey was carried out during the winter months with the vegetation growth very limited. We are assuming that some of the growth was removed during the installation of metalwork few years ago.

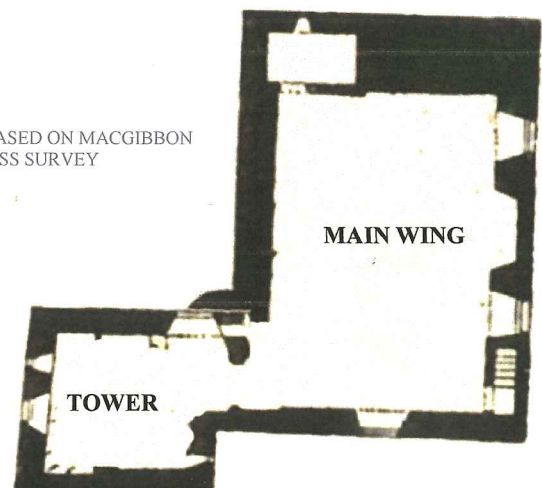


GENERAL VIEW OF THE CASTLE



TYPICAL ALLUVIAL DEPOSITS IN THE VICINITY OF THE RUIN

PLAN BASED ON MACGIBBON AND ROSS SURVEY



2. TOWER

A. SOUTH WALL

The main part of the south wall of the Tower is in good condition, apart from the erosion of joints. On the window line, there is a vertical crack related to the geotechnical issues of the site which are discussed in this report separately. It corresponds with the distortion, bowing and lean of the west wall. At upper level, the crack is exacerbated by the erosion at the wallhead.

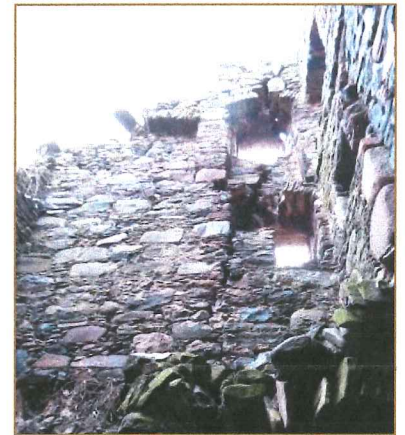
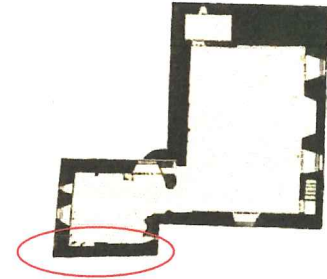
The wall has also experienced tilt due to settlement.

Internally, there are loose stones and missing voussoirs of the upper window arch with a large stone wedged between parts of masonry. This area is particularly vulnerable and the stone is likely to fall if the erosion is allowed to progress further. The lower window was altered and part of the arch was removed or collapsed.

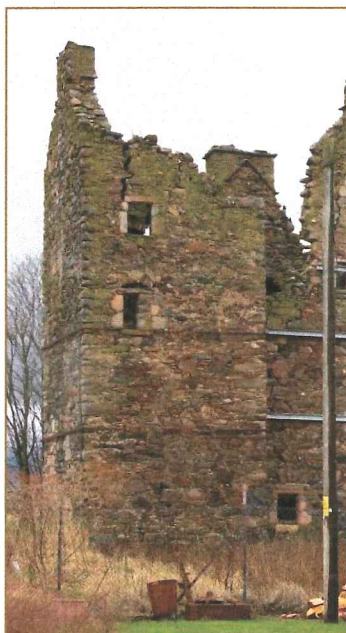
Another fragile area is on the junction with the main wing of the castle at wallhead level where only one part of the arched recess or fireplace remains.

Some of the springer stones of the ground floor vaults and of the recess are loose.

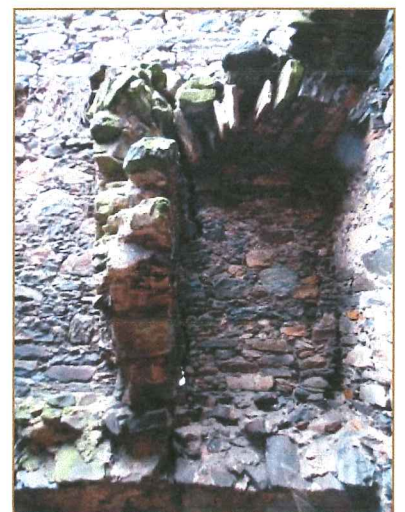
Externally, apart from the wallhead level, the masonry is in good condition. At the wallhead, there are numerous loose stones clearly visible.



VIEW ON UPPER PARTS OF THE WALL INTERNALLY, VISIBLE DAMAGE TO MASONRY AT THE LOWER WINDOW DUE TO HISTORIC ALTERATION



SOUTH WALL OF TOWER EXTERNALLY



OVERHANGING REMAINING PARTS OF VAULT AND RECESS UNDER STAIRS WITH VISIBLE CRACK

B. WEST WALL

The wall is clamped with a steel ties at its lower part, where there is a vertical crack through the wall on the line of an old flue. At the upper level, the crack splits into two, one leading towards the cill a small window and another one following the flue line. Probably, the crack initiated as part of the foundation settlement recorded elsewhere. However its erosion over time and the corresponding weaker parts of the masonry initiated further movements.

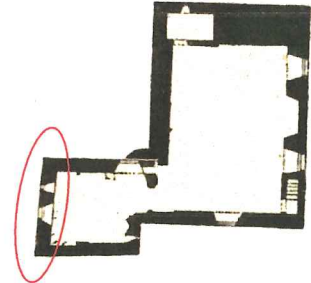
There is a distinctive bow of this wall in the centre of its height which is particularly looking from the north side.

This wall is complex with several changes in wall thickness due to flues, recesses, stairs, remains of vaulted ceiling and, possibly, alterations. There are numerous overhangs, especially at the top level with several areas of unbalanced and loose stones.

The wallhead appears to be eroded with missing stones. There appears to be a sort of capping on part of this chimney with loose stones lying on top.



ELEVATION – NOTE FRAGILE AND ERODED MASONRY ALONG THE FLUE LINE AND AT THE WALLHEAD



VIEW ON UPPER PARTS OF THE WALL. NOTE LINE OF THE FLUE TWICE CHANGING IN DIRECTION. THE MAIN CRACK FOLLOWS THIS LINE. ALSO, NOTE THE ERODED AND OVERHANGING STONES AROUND THE FLUE AT THE TOP FLOOR AND SPLIT ARCH OF THE RECESS



THE FLUE STARTS JUST ABOVE THE GROUND FLOOR VAULTS; NOTE LOOSE AND ERODED MASONRY AROUND.

C. NORTH WALL AND JUNCTION WITH THE MAIN WING

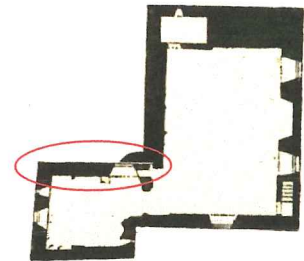
This wall is particularly fragile on the intersection with the main wing at the circular stairs and at the top level where an original passage was built within the wall.

There is an instability of a large part of the masonry above the small top floor window. This area has separated from the corner with the north wall by a distinctive cracking of geotechnical origin, and internally corresponds with the thick area of masonry above the top floor arched recess. The arch is shallow and unresolved due to missing springers and cracking.

A similar recess is one level below, also with an unresolved shallow arch.

Another line of significant cracking follows the junction with the circular stairs. There are numerous overhanging stones in this area and a block of masonry is fragilely supported on a door lintel and jamb stones. This area however has not separated cleanly from the main wall so there is some relatively effective corbelling there. This cannot be relied on for much longer, however.

A coat of arm stone is located above the doorway. Its condition should be assessed by a stone conservator once access is provided.



NORTH WALL OF TOWER INTERNALLY
VIEW ON UPPER LEVELS SHOWING
UNRESOLVED ARCHES AND PARTIALLY
COLLAPSED PASSAGE



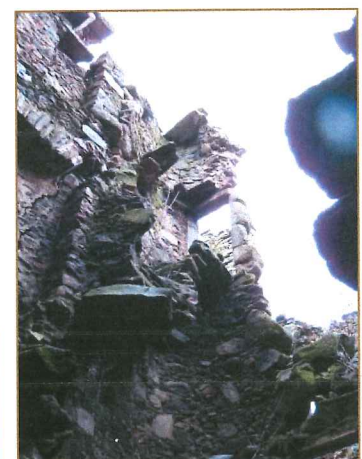
JUNCTION AT THE BEGINNING OF
CIRCULAR STAIRS AT FIRST FLOOR



NORTH WALL OF TOWER
EXTERNALLY; NOTE INSTABILITIES
AT THE UPPER LEVEL



ERODED VAULT AND STAIR REMAINS
ABOVE THE DOOR



JUNCTION WITH THE CIRCULAR
STAIRS WITH A LARGE CORBELLING
CHUNK OF MASONRY ABOVE LINTEL

3. MAIN WING

A. SOUTH WALL

The lower levels of this wall are in relatively good condition apart from the characteristic erosion and weathering, particularly around the springers of the collapsed ground floor vaults, windows etc

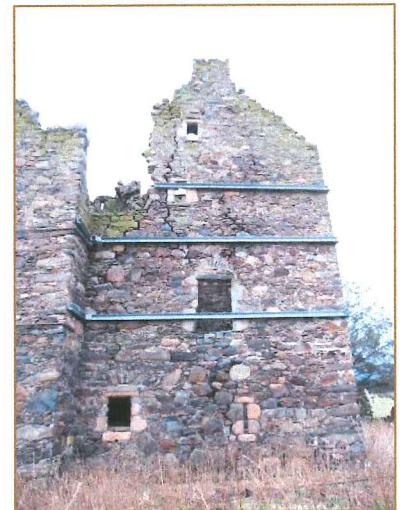
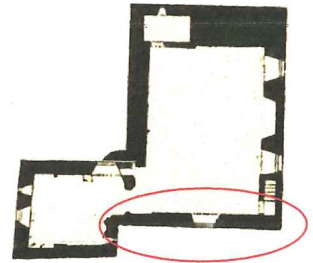
There is also erosion of the wallhead, masonry around the flues and missing capping of the chimney.

The upper parts of this wall are banded with a recent metal channel and tie assembly.

However, a particularly vulnerable area exists at the junction with the Tower. Although it is not obvious from ground level, this area would possibly have had a bartisan type feature which collapsed a long time ago. Such a feature was common for this type of castle and could have accommodate a stair to the attic floor or communication passage to the Tower.

The pattern of cracks and the geometry of the missing masonry could indicate this.

Regardless of the source, the severe undercut of the masonry at the top steel channel, internally and externally, and its relation with the cracks radiating from this point suggests an instability which should be addressed very soon. In this case, the connection of the steel channel to the masonry is proving to have a negative impact.



SOUTH WALL ELEVATION – NOTE EXTENSIVE CRACKING AND INSTABILITY AT THE JUNCTION WITH TOWER.



INTERNAL VIEW OF THE SOUTH WALL – NOTE UNDERCUT PIER OF THE TOP FLOOR WINDOW AND EROSION OF THE CHIMNEY

B. WEST WALL

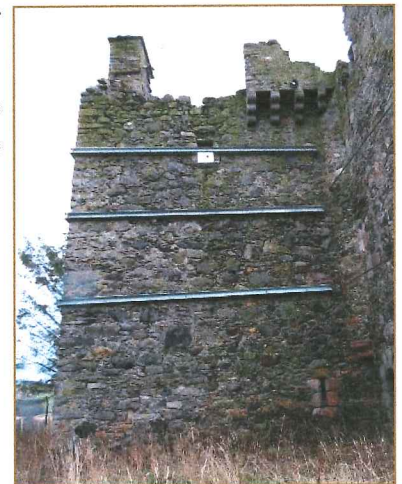
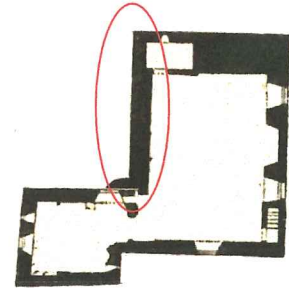
This wall, apart from erosion of the joints and wallhead, is in relatively good condition. There is more extensive erosion of the window arch at the top floor, however the stability of this arch is not compromised.

There is a vertical crack close to the corner with the north wall which is a result of early settlement

The wall is tied and strapped with the steel channel and tie assembly.

The corbelling part of masonry above the lintel in the circular stair area is discussed elsewhere in this report.

There is no safe access to the bartisan at the junction with the Tower and its condition will have to be assessed once the scaffolding is provided.



WEST WALL EXTERNALLY



WEST WALL INTERNALLY - NOTE CORBELLING OVERHANG AND EXPOSED TO EROSION UPPER WINDOW ARCH; OTHERWISE, APART FROM USUAL EROSION THE WALL IS IN RELATIVELY GOOD CONDITION

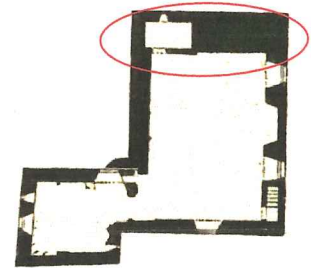
C. NORTH WALL

This wall displays severe cracking and separation of the north west corner arising from geotechnical origins but is exacerbated by the masonry weakened by a combination of flues and recesses which reduce the overall robustness of the wall.

Almost all of the internal face of the main and secondary flues have disappeared leaving exposed and heavily eroded feathery. At the top level, the masonry has created a natural arch supporting the chimney but this is a very fragile and has unreliable stability.

Another weak area is at the door to the bartisan which should be assumed to be in similarly poor condition.

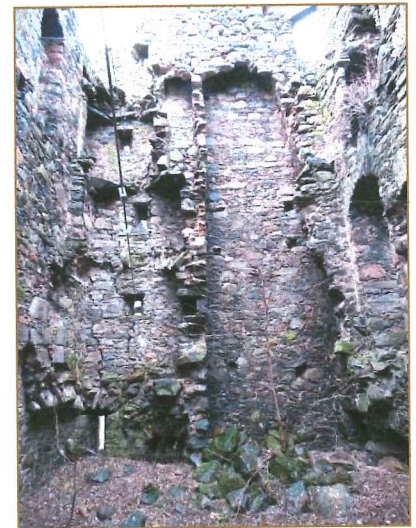
There are many loose stones on vertical overhangs and wallheads.



CHIMNEY SUPPORTED BY ARCHING MASONRY; THE ARCH SPANS BETWEEN TWO DELICATE AND HEAVILY ERODED PIERS



EXTERNAL FACE OF THE NORTH WALL
VISIBLE LARGE CRACKS



INTERNAL VIEW OF THE NORTH WALL.
VISIBLE ERODED AND FRAGILE FLUE
FEATHERS AND RECESSES

D. EAST WALL

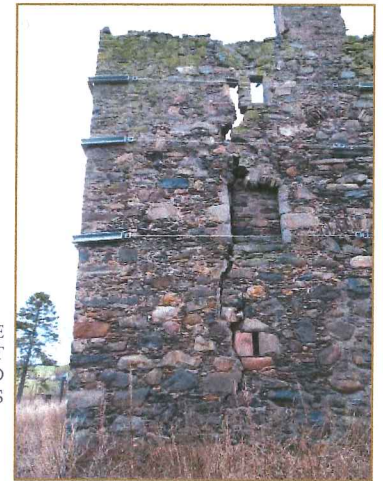
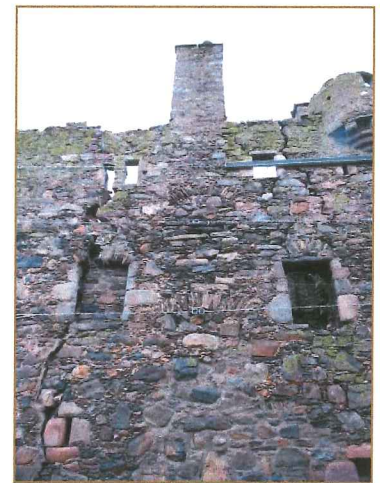
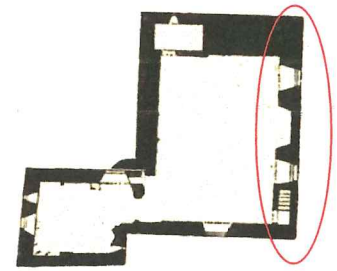
East Wall has similar complexity. In its centre there is a large fireplace of the original great hall and its massive flue, the weight of which was meant to be spread through two relieving arches on the external elevation. The main, most likely highly decorative, lintel of the main fireplace is missing. The fireplace was flanked by two large windows, one of which was built up at a later date. Further, the wall was weakened by a stair carved into the south east corner.

The initial cracking of the castle due to soil consolidation has been increased by erosion and weathering causing localised collapsing of parts of masonry and further secondary cracking.

There are many areas of overhanging corbelling masonry, unstable piers and unresolved arches. To the south of the chimney, there is a very distorted part of wall which appears to be "tied" with some ropes to the lintels below.

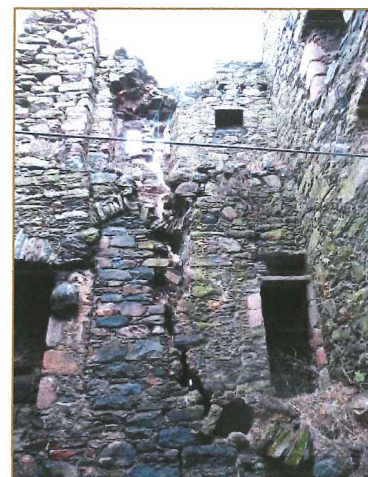
Stability of the bartisan in the north east corner of the wall will have to be assessed further once safe access is provided.

There is also extensive erosion of the flue masonry with the back of the main fireplace having been consolidated relatively recently with cementitious mortars.



TWO PHOTOGRAPHS SHOWING THE EXTERNAL ELEVATION OF THE EAST WALL WITH ITS CRACKING AND LOCALISED INSTABILITIES

THREE PHOTOGRAPHS BELOW SHOW THE CONDITION OF THE EAST WALL INTERNALLY



4. CONCLUSIONS FROM CONDITION SURVEY

▪ OBSERVATION ON MAJOR CRACKS

The walls of Blairfindy Castle have experienced a fairly significant outward rotation at the corners. These are related to historic time-related natural consolidation of the underlying glacial deposits under the relatively high concentrated loads from the heavy weight of the thick masonry walls and the vaulted floors. The softer deposits can be seen on the face of the eroded banks of the nearby River Livet. The level of the compressed layers are deep seated however. Softened surface subsoil would not produce movement of this nature and magnitude.

Consolidation (as opposed to compaction) is a long term very slow exclusion of "pore" moisture and air from the mineral matrix in the clay/silt deposits. In the case of a small castle, the weight of the building are distilled into concentrated loads occurring at the corners, and when settlement occurs there is an inevitable outward rotation of the corners because of restraints to free settlement elsewhere. A building will not sink uniformly unless it is on fully homogeneous layers of soft ground. Glacial material is never like this especially sited on the side of a valley with groundwater seeping towards a river.

It is clear from the amount of measured rotation and the shape of the "cracks" that the phases of of movement were over and done with a long time ago. Most of the original cracks have been widened by weathering of the surfaces, natural decay from years of exposure to the weather without a roof or floors, and stones falling out of the walls around weaker points around windows and flues.

It is possible (but unlikely?) that the castle was built over an earlier earthwork. This would create a similar settlement profile, however as such an earthwork would be of identical natural materials only an archaeologist might be able to identify such deposits.

The cracks are very apparent from drawings made by McGibbon and Ross in their 1887 publication "The Castellated and Domestic Architecture of Scotland ". This provides credible evidence that the ruin as recorded back then has further eroded around the old cracks with loss of vaults, bartisans and general masonry neglect. Since then, most of the decay and loss of structure is related to fragmentation of the masonry and not to ongoing foundation problems.

The recently installed steelwork was designed as a means of restraining the corners but this would not be effective in geotechnical terms given the risk of adding high local stresses on the masonry at the steel tie bearing points. That said, the corners will not need such restraint once the masonry has been consolidated under conservation methods.

Masonry consolidation will add robustness and some additional continuity of the structure. It will hugely reduce the rate of erosion and the loss of local stability in some areas.

In this basis, our plan is to remove the recent steelwork after using it to help restrain a working scaffolding.

Leaving the tumble where it is inside will keep the foundation pressures as they are. This is conservation policy.

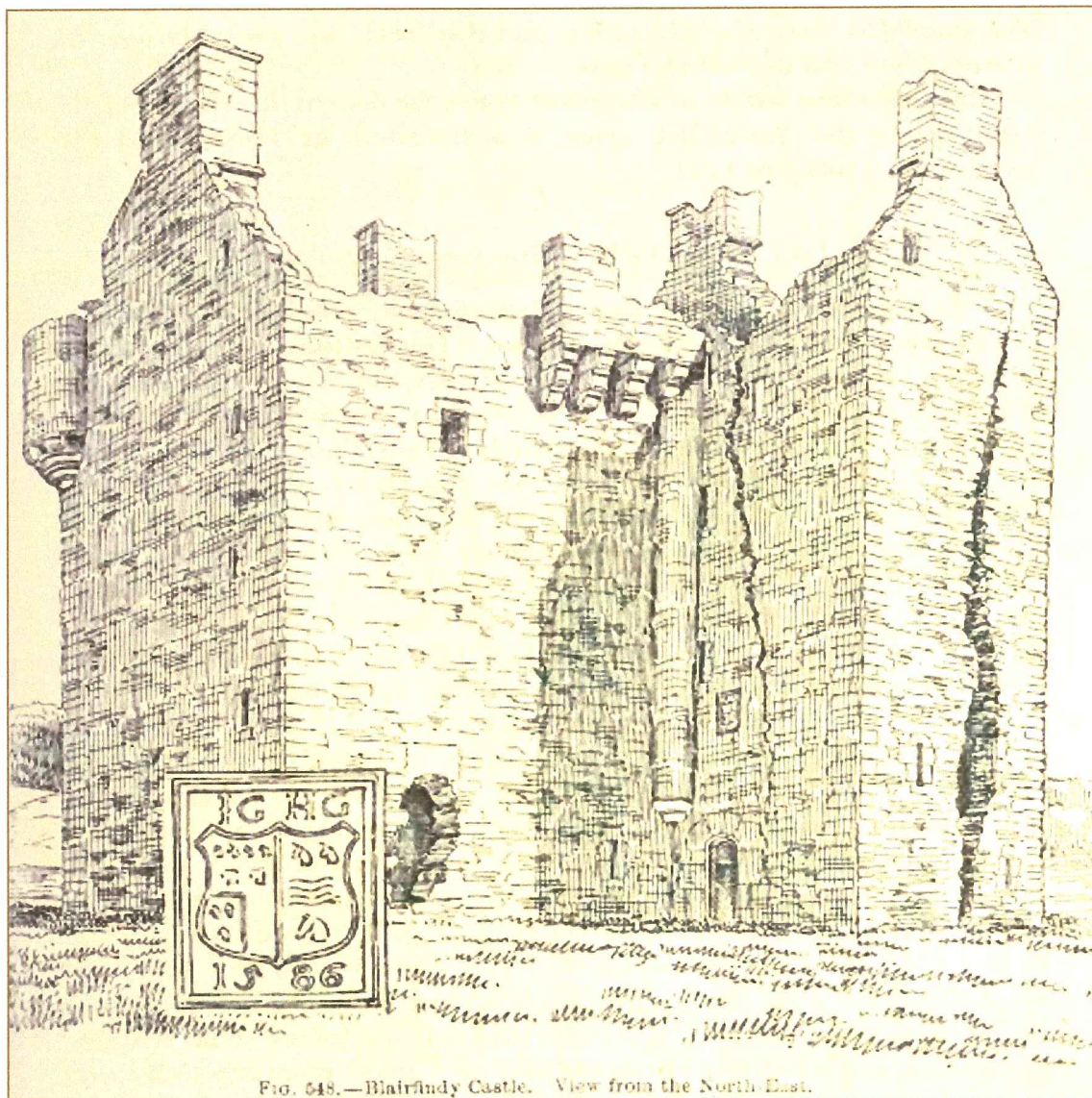


FIG. 548.—Blairfindy Castle. View from the North-East.

**VIEW OF BLAIRFINDY CASTLE - CASTELLATED AND DOMESTIC
ARCHITECTURE MACGIBBON AND ROSS VOL 2**

NOTE SEVERE CRACKING AND LOSS OF MASONRY

- **MASONRY CONDITION GENERALLY**

Condition of masonry generally varies throughout the ruin from very good considering the long exposure to elements, to very fragile and extensively eroded with localised instabilities and loose stones.

There are several areas at high levels which have to be investigated further once safe access is provided.

The ruin can be stabilised and consolidated successfully in a safe manner if careful and focused approach to the works on site is adopted. Appointment of a very experienced contractor will be crucial to the success. Our philosophy for the procurement is presented below.

IV. PROPOSED CONSERVATION WORKS

1. APPROACH TO DESIGN AND EXECUTION OF CONSERVATION WORKS AND POLICIES

The following principles have been adopted in the specifications for the conservation works:-

- The work should focus on preventing any further loss of historic fabric as the most vulnerable elements are those which have archaeological and architectural significances
- The purpose of the specified works is to arrest the erosion and decay through careful consolidation, although it may be necessary to rebuild some of the fallen masonry where it is endangering the stability of other elements.
- A minimal disturbance of the existing masonry is critical for conservation and safety reasons.
- Archaeological monitoring and recording of the ruin and the works is required including any 'new' discoveries.
- The intention is to use only "low-tech" traditional masonry techniques. In this, we will ensure compatibility of material and methods with the original.
- Our proposed work will be identifiable from the original through the design of mortars which will be distinctively different in composition from the original one and placing dated stones in strategic location
- Our aim, at the end of the project, is to remove the most recent steelwork.
- The work on site will require highly skilled masons familiar with working on fragile ruinous masonry. It will be necessary for the possible contractors to demonstrate that the necessary skills are on site at all time.

The proposed scope of work (Appendix 1 and 2) represents everything necessary to ensure the survival of the ruin in its current shape. It is urgent.

Our concern is to ensure that the erosion and decay should not accelerate out of control with the risk of further loss of historic fabric. This is particularly important because the most vulnerable elements are those which are of particular archaeological and architectural importance.

There are numerous very localised instabilities and loose stones which could trigger a chain reaction of collapse. These areas are the biggest threat and have to be treated in a careful and sensitive manner.

The majority of work will be of traditional masonry type with only minor areas where introduction of metal "stitching" might be required.

The works will address general deep erosion of the masonry and will involve consolidation of all the remaining parts, removal of vegetation from the wall faces and core, packing and pinning of voided joints (voids deeper than some 100mm). Some stones may have to be removed temporarily to allow for consolidation of the core behind and later reinstated to their original position. In some areas, stabilisation might involve partial rebuilding of masonry to provide supports or buttressing to vulnerable areas.

2. COST ESTIMATES

Based on our surveys and assessment and on the basis of our experience in leading many similar works, we are of the opinion that a budget of £384k+VAT should suffice to stabilise and consolidate the Castle. This includes some contingencies, professional fees, any costs of archaeological recording and monitoring

It excludes any works to the path, car park, tree cutting, surface treatment around the castle, interpretation and fences.

3. PHILOSOPHY OF PROCUREMENT FOR CONTRACTORS AND PROFESSIONAL SERVICES

In our experience, the best project in terms of value, cost, quality, timescales and preserving contractual relationships have been 'those which have been tackled in the manner of Partnering' (Egan et al), whether on a formal or informal basis, with the Contractor in the co-ordinating role but with costs, risks and profit issues all laid bare tackled on an 'open-book' basis. The objective of all personnel is to do their best for the monument and to combine with their team members to achieve this.

The very specific nature of this project, due to the condition of the castle and how all the past interventions have affected it, is so critical that only a small team of very experienced masons shall be allowed to work on it. No changes of personnel can be allowed without compensating actions and very detailed planning and briefing during the contract.

Moreover it is not a project where a contractor can "throw" a large workforce at it just to do mortar pointing in the shortest possible time.

Realistically, there are few contractors with the right temperament, experience, sensitivity, and ethics to approach, but we believe that such a Team must be put together to steer the project through the right course. The best projects are always the ones where individuals have the confidence to set aside their 'contractual' stations and work in the best interest of the Client and his Project.

Unfortunately, it is extremely difficult for the institutional funders and financial systems to realise that the lowest tender for this unique sort of work often arises from pricing based on the cheapest possible site and welfare establishment, doubtful attitude to quality and lack of experience. This often can reflect a poor attitude to health and safety and a worker's well being. Also it reflects a disregard to conservation principles through lack of experience in this type of work.

Such attitude often results in an inability to foresee the time required to achieve the aims of the project or to fulfil the requirements of the Scheduled Monument Consent.

Similarly, the same inexperience and lack of familiarity with conservation and lack of commitment to the aims of the project can result in an unreasonably high price putting at risk the whole feasibility and therefore the preservation of the important monument.

Strict cost control on such project, where the type of work is mostly priced on “time and materials” basis requires extensive experience on both sides of the contract to avoid costs spiralling out of control during the works, claims and extensions of contract period.

From our experience we are acutely aware of the need to procure the right contractor under philosophically appropriate Conditions of Contract.

It should be noted that the success of our approach and its specifications for this monument depends on our continued involvement in the siteworks contract stage where we will direct all the detailed conservation and verify the many assumptions which we have had to make at this stage. Moreover, the estimated costs are based on our current assessments and our opinion on this is based on our method of direction and delivery on site. The SMC is therefore also dependent on our continuing input and is therefore a condition of it being consented.

We can accept no responsibility for the ruin, the work on it and its costs if for whatever reason, the site stage is taken over to be managed and directed by others.

Design work on ruins is an ongoing dynamic process and a change of designer is therefore a Risk to the Project.

Bush House
Room F4
Edinburgh Technopole
Milton Bridge
nr Penicuik
EH26 0BB

Tel 0131 445 8624
Fax 0131 445 8625

BLAIRFINDY CASTLE

REPORT

APPENDIX 1

SPECIFICATION FOR CONSERVATION WORKS

BLAIRFINDY CASTLE

SPECIFICATION FOR CONSERVATION WORKS

1. GENERAL REQUIREMENTS

1.1. BRITISH STANDARDS, CODES OF PRACTICE AND ANCIENT MONUMENT ACT

Any British Standards and Codes of Practice, Parliamentary Acts referred to in the documents relating to the Contract shall be held to be the latest edition, published six weeks prior to the return of the completed Tenders unless otherwise agreed between the Client/CA and the Contractor.

1.2. COMPLIANCE WITH STANDARDS/ANCIENT MONUMENT ACT

All relevant conditions in British Standards, Codes of Practice and Ancient Monument Act relating to method of working, standards of materials, quality and workmanship shall be complied with, and except if otherwise noted, all tests specified shall be conformed to.

The works shall being carried out to an agreed programme with the formal consent of Scottish Ministers through Historic Scotland and there should be no deviation of any form from what has been agreed without prior agreement with Historic Scotland and to the instruction of the CA.

1.3. GENERAL STANDARDS

In cases where no particular specification is given for any article or material to be used under the Contract, the rule of Best Practice shall apply throughout.

2. SPECIFIC WORKING CONDITION

The ruin and its grounds are a Scheduled Monument of historical importance and interest. This includes architectural features, masonry in general and underlying archaeology. Therefore the avoidance of any damage to the historic fabric is of the utmost importance. The Contractor is to take the greatest possible care, by protective works, method of works, handling materials and by such selection of his workforce and supervision as to ensure that no damage occurs caused by operations on site, and should any occur, it is to be made good by methods approved by and to the entire satisfaction of the CA and at the Contractor's expense.

Due to the sensitive nature of the site, excavations or any other disturbance of the ground, except where specified/ instructed by CA, is not permitted. This includes any displacement of stone tumble overlying ground. All excavations, dismantling of architectural features are to be carried out under direct supervision of the Archaeologist.

Prior to any works, archaeological recording shall be completed.

Due to fragile condition of the masonry, only highly skilled and experienced masons, with proven track record, can be allowed to work on site.

For Health & Safety reasons, CA and Principal Designer might seek to limit the workforce to four men on site at one time.

3. MATERIALS AND WORKMANSHIP

3.1. MATERIALS GENERALLY

All materials shall comply with the relevant British Standards and Codes of Practice. They shall be of good quality and fit for the purpose intended, free from faults and damage. They shall be suitably stored and used in accordance with manufacturer's instruction and general good practice.

3.2. WORKMANSHIP GENERALLY

All the work shall be carried out by competent tradesmen, experienced in working on ancient masonry and ruins to the highest standards as appropriate for the important historic monument and generally in accordance with the best practice of the trade.

3.3. MATERIALS

3.3.1. *Lime*

Hydraulic lime NHL 2 Otterbein is to be used as a base for all mortars/grouting mixes as specified.

Hydraulic lime NHL 5 Otterbein is to be used as a base for all concrete mixes as specified

3.3.2. *Sand/Aggregate*

(a) Sand is to be well graded free from impurities, Durham Beach as supplied by Masons Mortars or from any other approved source.

(b) Sand for 'grouting' and filling voids to be kiln dried Blackhill to arrive on site in sealed bags and open just prior to operation.

(c) Aggregate for lime concrete – well graded up to 20mm – to be approved by CA

3.3.3. *Mortars/Grouts/Limework*

Mortar mix for general masonry works 2 parts of lime (NHL 2) : 1 part of clay powder: 5 parts of sand, remixed after 12hrs

Concrete mix for lime concrete 1 part of lime (NHL 5): 1 part of aggregate

Admixtures (plasticisers) to be approved by Engineer.

Mix for grouting 1 part of lime (NHL 5) : 3 parts of sand

3.3.4. *Clay*

- Puddle clay, where specified on the drawings, to be an approved source
- Bentoline, where specified on the drawings, to be SS100 from Water-line Solutions, Orchard House, Glebe Road, Huntingdon, PE29 7DL, Tel 0800 587 8309, or equal approved
- For mortars – calcium bentonite in powder from approved source

3.3.5. *Stone/Salvaged Stone*

New stone is to match existing in colour and properties, shall be from approved quarry. It should be sound, free of vents, shakes, soft beds, clay pockets or any other defects whether natural or caused by inappropriate handling.

Salvaged stone is a preferable option in lieu of quarried stone. It is to match existing in colour and properties. Stone shall be sound, free of vents, shakes, soft beds, clay pockets or any other defects whether natural or caused by inappropriate handling and cleaned of old mortar.

Stone from tumble may be used only with approval from the CA

3.3.6. *Stainless Steel*

Where specified on the drawings be grade 316.

3.3.7. *Timber*

Greenheart from approved source or equal approved, where on the drawings or instructed

3.3.8. *Samples*

Samples of all materials and workmanship shall be submitted for approval as instructed. All the materials supplied for the works and workmanship must be equal to the approved samples.

3.3.9. *Masonry Works – General Requirements*

- (a) Reinstating masonry where previously taken down as part of operation (eg removal of vegetation) – the stones should be reinstated in exactly the same position as original, bedded on lime mortar kept away from the face of stone; do not allow mortar to ‘overflow’.
- (b) New masonry infills – this should be built, generally, as random rubble ‘core’ recessed from the original wall face as instructed on site, samples to be made for approval
- (c) Consolidation - detailed description of the method of working is described on the drawings; generally it involves removal of vegetation and debris and ramming new mortar into voids with adequate pinnings to prevent shrinkage; there is no intention to ‘point’ open joints or cracks. New mortar should stop some 3mm from the edge of stone unless instructed otherwise

- (d) Filling open joints or cracks – clean joints, crack of debris and vegetation; do not remove soft mortar from the joints – push it back as much as possible, insert stone or lime wedges as appropriate keeping away from the masonry face – samples to be made for approval.
- (e) Historic mortar should be preserved as much as possible. It should only be replaced where it is no longer performing its intended function. Where open cracks and fissures are being infilled with new masonry, this should be recessed from the general wall face so that it is identifiable on close inspection. Samples will be required for approval.
- (f) Adequate protection and curing of new limework/stonework shall be in place to suit weather condition, including winter working.

Bush House
Room F4
Edinburgh Technopole
Milton Bridge
nr Penicuik
EH26 0BB

Tel 0131 445 8624
Fax 0131 445 8625

BLAIRFINDY CASTLE

REPORT

APPENDIX 2

DRAWINGS

Title

BLAIRFINDY CASTLE CONSERVATION PROJECT PROPOSED WORK LOCATION PLAN

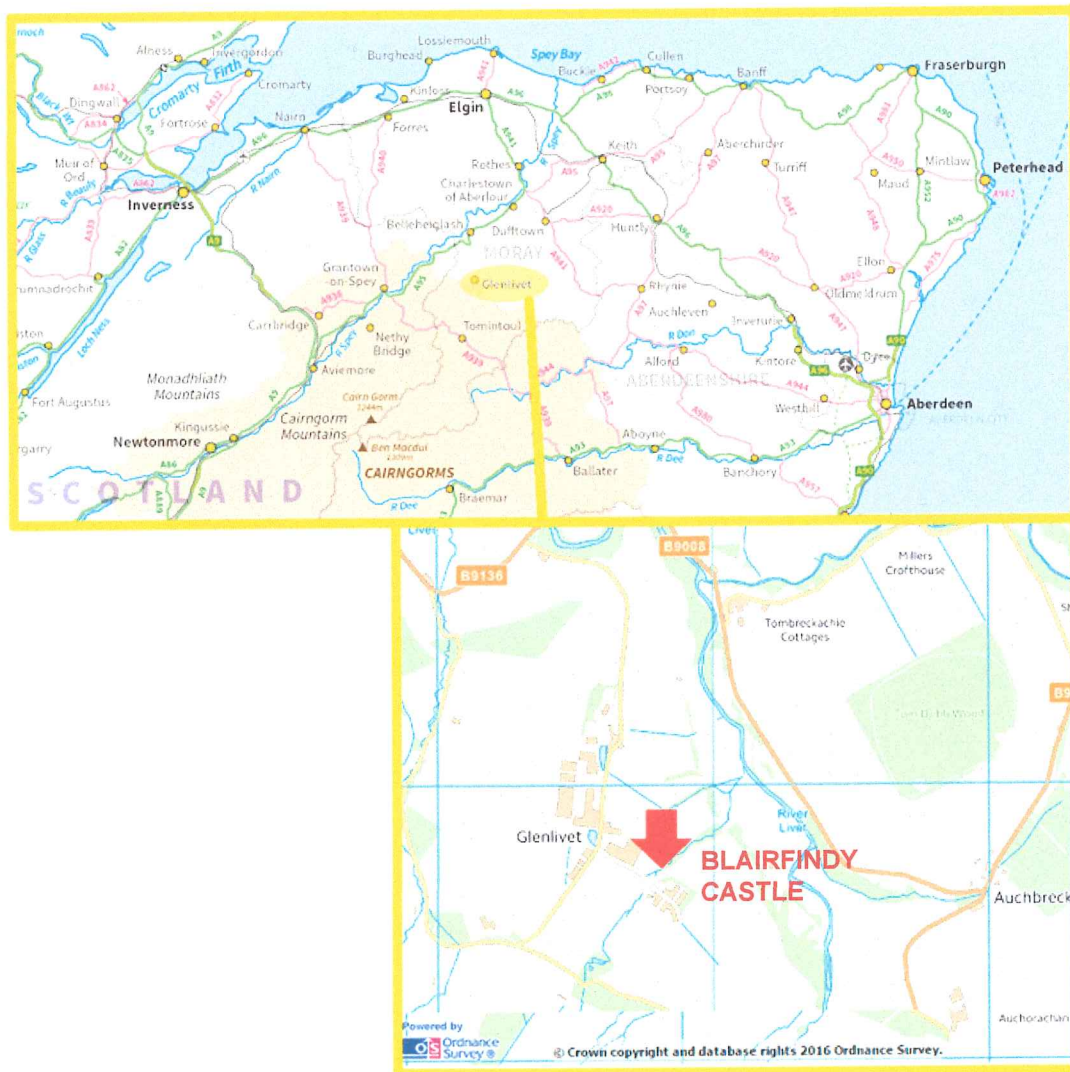
addison conservation + design

consulting engineers

Bush House
Edinburgh Technology
Milton Bridge
E126 088

Tel 0131 445 8624
Fax 0131 445 8625

Drawn	Checked	Scale	Project No	Drawing No	Rev	Status
APRIL 2016	KP	NTS	15-788	SK/01		SMC



Title

**BLAIRFINDY CASTLE
CONSERVATION PROJECT
PROPOSED WORK
SITE PLAN**

addison conservation + design

consulting engineers

Bush House
Edinburgh Technopole
Milton Bridge
EH26 0BB

Tel 0131 445 8624
Fax 0131 445 8625

APRIL 2016

Drawn
KP

Checked

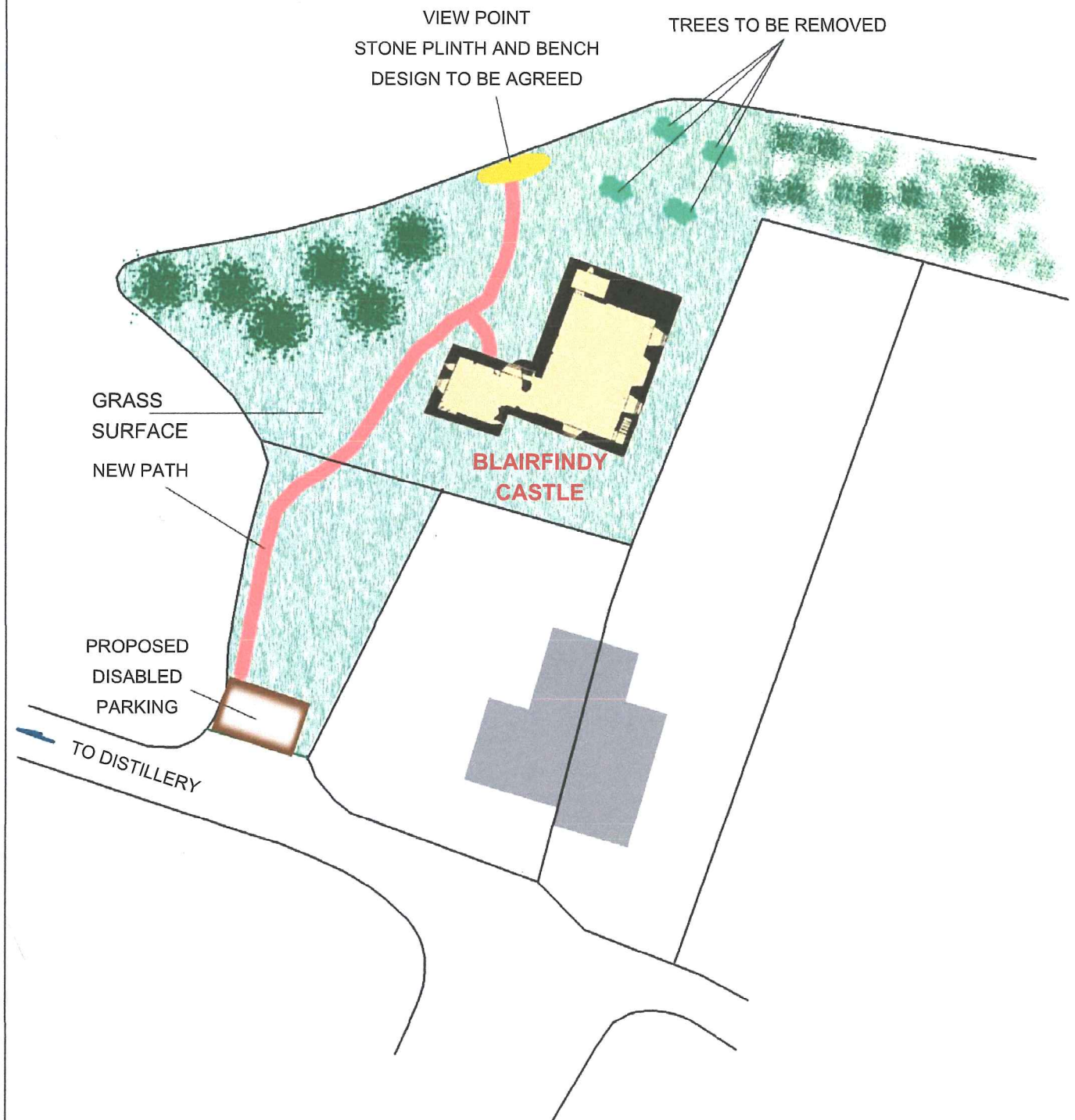
Scale
NTS

Project No
15-788

Drawing No
SK/02

Rev

Status
SMC



Title

**BLAIRFINDY CASTLE
CONSERVATION PROJECT
PROPOSED WORK
GENERAL PLAN SHOWING DRAWING REFERENCE**

addison conservation + design

consulting engineers

Bush House
Edinburgh Technology
Milton Bridge
EH26 0BB

Tel: 0131 445 8624
Fax: 0131 445 8625

Date APRIL 2016	Drawn KP	Checked	Scale APPR 1:100	Project No 15-788	Drawing No SK/03	Rev	Status SMC
--------------------	-------------	---------	---------------------	----------------------	---------------------	-----	---------------

