

HIGH-LEVEL TACTILE INSPECTIONS

SAMPLING PHASE 1
REPORT
Arbroath Abbey
PIC006



HISTORIC
ENVIRONMENT
SCOTLAND

ÀRAINNEACHD
EACHDRAIDHEIL
ALBA

CONTROL SHEET

Document Control

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Version	Date	Status	Prepared by	Amendments
V0001	02/08/2021	Draft	[REDACTED]	First draft
V0100	05/08/2021	Approved	[REDACTED]	Approved
V0200	27/08/2021	Approved	[REDACTED]	Identified Risk drawings revision A

HLTI Sampling: Report - Introduction



PIC ID # ↓	PIC006	Site name	Arbroath Abbey		
Inspection start	20/07/2021	Inspection end	29/07/2021	Submission	30/08/2021
Lead HBFA	[REDACTED]				
Sample Inspectors	[REDACTED]				

Introduction:

As a result of findings on the first four full site High Level Tactile Inspections, SMT endorsed an accelerated programme that will see high-level tactile sample inspection carried out initially to 16 sites identified as having a high risk potential. The Sample inspection for Arbroath Abbey was carried out in accordance with HES Management of Risk Procedures as set out in High-level Fabric Policy and High level Tactile Inspection Procedures.

The Sample Inspection Report only reports on high level fabric risks within pre-determined areas and does not provide any assessment of risk in other areas on site.

Tactile inspections of two sample areas (Regality Tower and Northwest elevation) agreed in advance by the T1 team and the Region) and two further areas (Regality Range North face and South nave doorway) were carried out and completed from MEWPs.

HLF Inspection Risk Matrix:

HES-T1C-HLF-RAS-X-X-V0200-RiskMatrix

Consequence \ Probability		1	2	3	4	5
		No injury	Minor injury	Moderate injury	Major injury	Fatal or life-altering injury
5	Fabric fall almost certain	5	10	15	20	25
4	Fabric fall highly likely	4	8	12	16	20
3	Fabric fall likely	3	6	9	12	15
2	Fabric fall unlikely	2	4	6	8	10
1	Fabric fall highly unlikely	1	2	3	4	5

RISK RATING	RISK SCORE RANGE
High	15-25
Medium	10- 14
Low	1-9

HLTI Sample Areas:

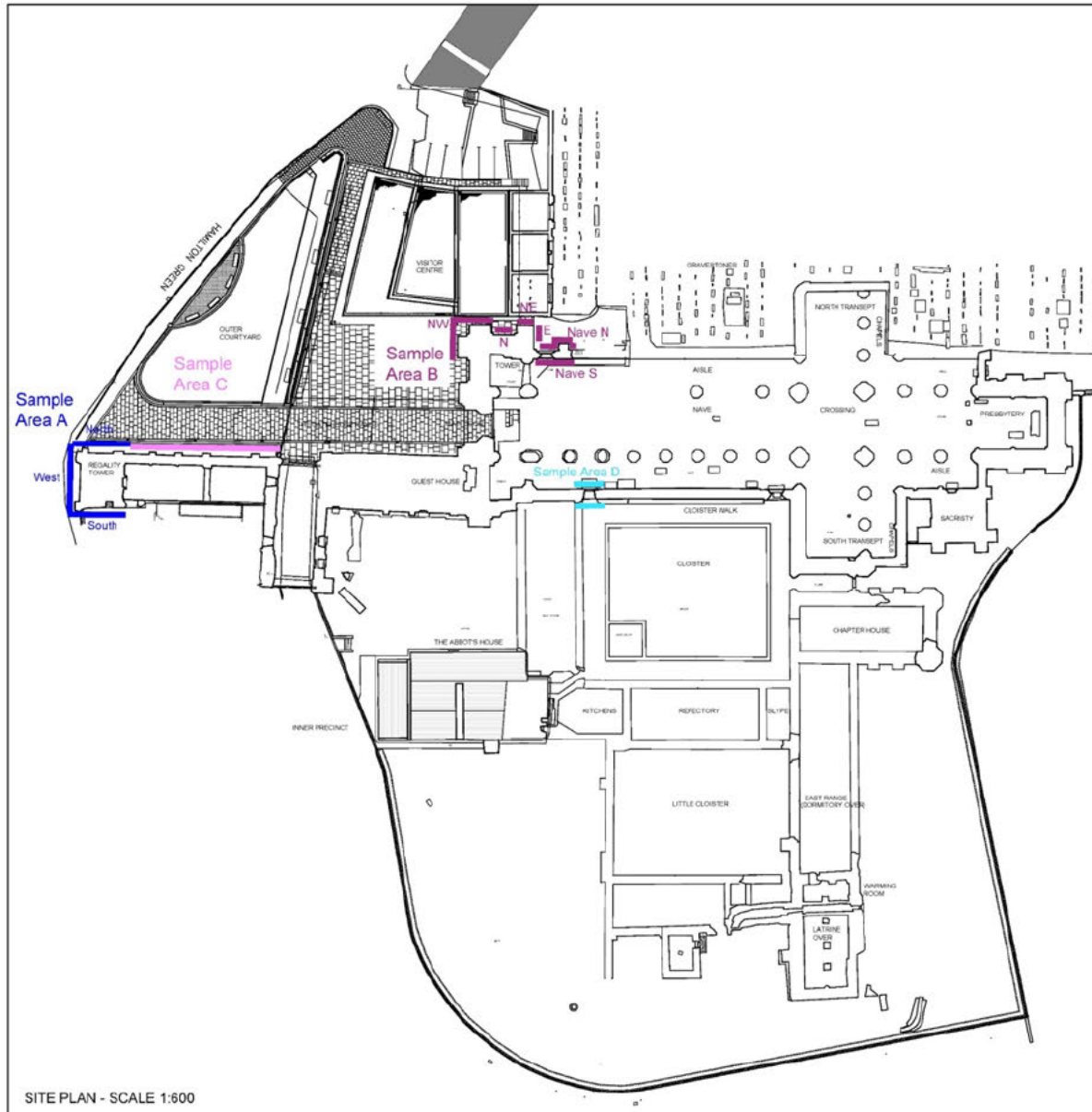
HLTI Sampling: Report - Introduction



<i>Area:</i>	<i>Colour:</i>	<i>Sample Area Name:</i>
A	Blue	Regality Tower
B	Maroon	North elevation of West front
C	Pink	Regality Range
D	Cyan	South Nave West Entrance



Click on link to open drawing in PDF viewer: [PIC006-SKE-V5-SampleAreas.pdf](#)



SITE PLAN - SCALE 1:600



LOCATION PLAN - SCALE 1:2500

SAMPLE AREAS

MONUMENT	ARBROATH ABBEY
PROJECT	HLTI Sampling Site Plan

	HISTORIC ENVIRONMENT SCOTLAND	ÀRAINNEACHD EACHDRAIDHEIL ALBA

PROJECT DRAWING NUMBER		PIC006-SKE-V5-SampleAreas PDF	
SCALE	1:600@ A3	RWM	
DATE	June 2021	DRAWN BY	[REDACTED]
ARO-FILE NUMBER			

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HLTI Sampling: Report - Summary dashboard



PIC ID#	PIC006	Submission	30/08/2021
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Select Sample area of which data should be displayed ↓	A
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Number of observations	51
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Identified Risk



Residual Risk



Inspection Action:

Class V Report = Fabric detached during tactile inspection	Access Restriction = Risk of fabric falling and causing harm			Monitor Observation / Plan Repairs = No immediate action
	High = Full site closure	Medium = Partial site closure	Low = Minor access restriction	
5	3	1	0	45

Inspection types:	Tactile	51	Visual	0
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Key comments:



The abbey and associated structures are predominantly constructed from soft fluvial sandstone (devonian red sandstone) with conglomerate inclusions. Surface scaling, bossing and stone delamination along bedding planes are the common symptoms of decay with many surfaces being severely eroded, at times exposing harder pebble inclusions of varying sizes. Most surface scaling is likely to occur in relatively small and thin sections which are unlikely to cause a potential risk to life . However, face bedded stones may suffer larger sheet delaminations e.g. from lintels and mullions as well as tracery.

The top of the North towers of the Abbey West front (Sample Area B) could not be reached from the MEWPs (approx. 2-5 metres short). However, visual inspection from a few metres below the top did not identify any obvious areas of decay beyond the ubiquitous surface scaling.

The projecting corbels of the Regality Towers (Sample Area A) were found to be delaminating but as the stones are edge bedded, these are unlikely to fall in the near future. No issues were identified with the roof but this could only be visually inspected. The elevations suffer surface scaling, window putty is generally cracked and loose. Large structural cracks are evident on the South and West elevation, which are being monitored by HES Engineers.

The Regality Range (Sample Area C) showed similar decay symptoms of scaling and boss surfaces.

It is important to note that this Sample Inspection report only reports on high level fabric risks inside these pre-determined areas and does not provide an indication of risk in other areas on site. In the case of Arbroath abbey, areas of potentially high risk were noted visually in other parts of the abbey, e.g. along the South nave wall (potentially loose wall head stones), the west entrance arch and the face bedded tracery of the presbytery and South transept.



Click on link below image to open Interactive PDF in PDF viewer. In PDF viewer, the drawing is an interactive PDF, click on the labels to open the relevant OBS form for further information.

Sample Area A

INTERACTIVE PDF
Click on label to open relevant OBS form

KEY

- Low identified risk label
- Medium identified risk label
- High identified risk label
- Medium identified risk label (Mark removed under Class V label (See marked tag))
- High identified risk label (Mark removed under Class V label (See marked tag))

Labels: A-N01, A-N02, A-N03, A-N04, A-N05, A-N06

Notes:

- Class V Sample Area showing no further intervention
- Access Restrictions in place at High Risk areas, unless fabric is removed under Class V
- Indicative location of Risk
- Refer to Observation Form for precise locations & views of risk in situ
- Direction is as 'View 01' created by the Digital Documentation team from 2017 laser scan data

HIGH-LEVEL FABRIC TACTILE SAMPLE INSPECTION
2607/0921 to 2607/0921

IDENTIFIED RISK

A 2609/021 Class V label added & changes to colour palette

PIC006 Arbroath Abbey
High Level Tactile Sample Inspection
Identified Risk - Area A - North Elevation

HISTORIC ENVIRONMENT SCOTLAND | ARBROATH ABBEY

PIC006-HLR-SI-A-North Rev A
15 @ A | July 2021

[PIC006-HLR-SI-A-North Rev A](#)

INTERACTIVE PDF
Click on label to open relevant OBS form

KEY

- Low identified risk label
- Medium identified risk label
- High identified risk label
- Medium identified risk label (Mark removed under Class V label (See marked tag))
- High identified risk label (Mark removed under Class V label (See marked tag))

Labels: A-W01, A-W02, A-W03, A-W04, A-W05, A-W06, A-W07, A-W08, A-W09, A-W10, A-W11, A-W12, A-W13, A-W14, A-W15, A-W16, A-W17, A-W18, A-W19, A-W20, A-W21, A-W22, A-W23, A-W24, A-W25, A-W26

Notes:

- Class V Sample Area showing no further intervention
- Access Restrictions in place at High Risk areas, unless fabric is removed under Class V
- Indicative location of Risk
- Refer to Observation Form for precise locations & views of risk in situ
- Direction is as 'View 01' created by the Digital Documentation team from 2017 laser scan data

HIGH-LEVEL FABRIC TACTILE SAMPLE INSPECTION
2607/0921 to 2607/0921

IDENTIFIED RISK

A 2609/021 Class V label added & changes to colour palette

PIC006 Arbroath Abbey
High Level Tactile Sample Inspection
Identified Risk - Area A - West Elevation

HISTORIC ENVIRONMENT SCOTLAND | ARBROATH ABBEY

PIC006-HLR-SI-A-West Rev A
15 @ A | July 2021

[PIC006-HLR-SI-A-West Rev A](#)

INTERACTIVE PDF
Click on label to open relevant OBS form

KEY

- Low identified risk label
- Medium identified risk label
- High identified risk label
- Medium identified risk label (Mark removed under Class V label (See marked tag))
- High identified risk label (Mark removed under Class V label (See marked tag))

Labels: A-S01, A-S02, A-S03, A-S04, A-S05, A-S06, A-S07, A-S08, A-S09, A-S10, A-S11

Notes:

- Class V Sample Area showing no further intervention
- Access Restrictions in place at High Risk areas, unless fabric is removed under Class V
- Indicative location of Risk
- Refer to Observation Form for precise locations & views of risk in situ
- Direction is as 'View 01' created by the Digital Documentation team from 2017 laser scan data

HIGH-LEVEL FABRIC TACTILE SAMPLE INSPECTION
2607/0921 to 2607/0921

IDENTIFIED RISK

A 2609/021 Class V label added & changes to colour palette

PIC006 Arbroath Abbey
High Level Tactile Sample Inspection
Identified Risk - Area A - South Elevation

HISTORIC ENVIRONMENT SCOTLAND | ARBROATH ABBEY

PIC006-HLR-SI-A-South Rev A
15 @ A | July 2021

[PIC006-HLR-SI-A-South Rev A](#)



Sample Area B

INTERACTIVE PDF
Click on label to open linked Excel OHS Form

KEY

- Low identified risk label
- Medium identified risk label
- High identified risk label
- Medium identified risk, fabric removed under Class V label (see residual risk)
- High identified risk, fabric removed under Class V label (see residual risk)

Label reference
A: Sample Area, P: A, B or C, N: Direction, E: N, E or W, ST: OHS number, E.g. 01/01/01

Notes

- Site Sample Area drawing for location of observation.
- Access/Restrictions in place to all High Risk areas, unless noted as removed under Class V.
- Indication location of Risk.
- Refer to Observation Form for precise locations & details of risks & details.
- Element is an "OHS" if covered by the Digital documentation team from 2017 laser scan data.

HIGH-LEVEL FABRIC TACTILE SAMPLE INSPECTION
26/07/2021 to 30/07/2021

IDENTIFIED RISK

A: 26/08/2021 Class V label added & changes to colour palette

PIC006 Arbroath Abbey

High-Level Tactile Sample Inspection
Identified Risk - Area B - East Elevation

HISTORIC ENVIRONMENT SCOTLAND ARANNACHD EACHRACHAIDH ALBA

PIC006-HLR-SI-B-East Rev A

Sample Area B
Arbroath Abbey - East End - West Elevation

[PIC006-HLR-SI-B-East Rev A](#)

INTERACTIVE PDF
Click on label to open linked Excel OHS Form

KEY

- Low identified risk label
- Medium identified risk label
- High identified risk label
- Medium identified risk, fabric removed under Class V label (see residual risk)
- High identified risk, fabric removed under Class V label (see residual risk)

Label reference
A: Sample Area, P: A, B or C, N: Direction, E: N, E or W, ST: OHS number, E.g. 01/01/01

Notes

- Site Sample Area drawing for location of observation.
- Access/Restrictions in place to all High Risk areas, unless noted as removed under Class V.
- Indication location of Risk.
- Refer to Observation Form for precise locations & details of risks & details.
- Element is an "OHS" if covered by the Digital documentation team from 2017 laser scan data.

HIGH-LEVEL FABRIC TACTILE SAMPLE INSPECTION
26/07/2021 to 30/07/2021

IDENTIFIED RISK

A: 26/08/2021 Class V label added & changes to colour palette

PIC006 Arbroath Abbey

High-Level Tactile Sample Inspection
Identified Risk - Area B - North Elevation

HISTORIC ENVIRONMENT SCOTLAND ARANNACHD EACHRACHAIDH ALBA

PIC006-HLR-SI-B-North Rev A

Sample Area B
Abbey West End - North Elevation

[PIC006-HLR-SI-B-North Rev A](#)

INTERACTIVE PDF
Click on label to open linked Excel OHS Form

KEY

- Low identified risk label
- Medium identified risk label
- High identified risk label
- Medium identified risk, fabric removed under Class V label (see residual risk)
- High identified risk, fabric removed under Class V label (see residual risk)

Label reference
A: Sample Area, P: A, B or C, N: Direction, E: N, E or W, ST: OHS number, E.g. 01/01/01

Notes

- Site Sample Area drawing for location of observation.
- Access/Restrictions in place to all High Risk areas, unless noted as removed under Class V.
- Indication location of Risk.
- Refer to Observation Form for precise locations & details of risks & details.
- Element is an "OHS" if covered by the Digital documentation team from 2017 laser scan data.

HIGH-LEVEL FABRIC TACTILE SAMPLE INSPECTION
26/07/2021 to 30/07/2021

IDENTIFIED RISK

A: 26/08/2021 Class V label added & changes to colour palette

PIC006 Arbroath Abbey

High-Level Tactile Sample Inspection
Identified Risk - Area B - West Elevation

HISTORIC ENVIRONMENT SCOTLAND ARANNACHD EACHRACHAIDH ALBA

PIC006-HLR-SI-B-West Rev A

Sample Area B
Arbroath Abbey - West End - West Elevation

[PIC006-HLR-SI-B-West Rev A](#)

INTERACTIVE PDF
Click on label to open linked Excel OHS Form

KEY

- Low identified risk label
- Medium identified risk label
- High identified risk label
- Medium identified risk, fabric removed under Class V label (see residual risk)
- High identified risk, fabric removed under Class V label (see residual risk)

Label reference
A: Sample Area, P: A, B or C, N: Direction, E: N, E or W, ST: OHS number, E.g. 01/01/01

Notes

- Site Sample Area drawing for location of observation.
- Access/Restrictions in place to all High Risk areas, unless noted as removed under Class V.
- Indication location of Risk.
- Refer to Observation Form for precise locations & details of risks & details.
- Element is an "OHS" if covered by the Digital documentation team from 2017 laser scan data.

HIGH-LEVEL FABRIC TACTILE SAMPLE INSPECTION
26/07/2021 to 30/07/2021

IDENTIFIED RISK

A: 26/08/2021 Class V label added & changes to colour palette

PIC006 Arbroath Abbey

High-Level Tactile Sample Inspection
Identified Risk - Area B - Nave South Elevation

HISTORIC ENVIRONMENT SCOTLAND ARANNACHD EACHRACHAIDH ALBA

PIC006-HLR-SI-B-NaveSouth Rev A

Sample Area B
Arbroath Abbey - East End - Nave South Elevation

[PIC006-HLR-SI-B-NaveSouth Rev A](#)



Sample Area C

INTERACTIVE PDF
Click on report to open latest Excel OHS Form

KEY:

- Low identified risk label
- Medium identified risk label
- High identified risk label
- Medium identified risk, fabric removed under Class V repair (over-repair risk)
- High identified risk, fabric removed under Class V repair (over-repair risk)

(A.R.01) Label reference:
 At Sample Area: E.g. A.8 or C
 N: Direction: E.g. N, S, E or W
 01- OHS number: E.g. 01 to 30

Notes:

- See Sample Area Drawing for location information.
- Access Restrictions in place at all high risk areas unless fabric is removed under Class V.
- Indicate location of risk.
- Note to Classification Form for precise locations & details of risks & defects.
- Location is an "IRIS ID" created by the Digital Information team from 2017 report work.

HIGH-LEVEL FABRIC TACTILE SAMPLE INSPECTION
26/07/2021 to 30/07/2021

IDENTIFIED RISK

A.2018/2021 Class V label added & changes to glass panels

IRIS PIC006 Arbroath Abbey

IRIS High Level Tactile Sample Inspection Identified Risk - Area C - North Elevation

HISTORIC ENVIRONMENT SCOTLAND **ARANRACHAIDH EACHRACHAIDH ALBA**

PROJECT: PIC006-MLK-SI-C North Rev A

IRIS Not to issue: [redacted]

IRIS August 2021: [redacted]

IRIS [redacted]

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PIC006-MLK-SI-C-North Rev A

Sample Area D

INTERACTIVE PDF
Click on report to open latest Excel OHS Form

KEY:

- Low identified risk label
- Medium identified risk label
- High identified risk label
- Medium identified risk, fabric removed under Class V repair (over-repair risk)
- High identified risk, fabric removed under Class V repair (over-repair risk)

(A.R.01) Label reference:
 At Sample Area: E.g. A.8 or C
 N: Direction: E.g. N, S, E or W
 01- OHS number: E.g. 01 to 30

Notes:

- See Sample Area Drawing for location information.
- Access Restrictions in place at all high risk areas unless fabric is removed under Class V.
- Indicate location of risk.
- Note to Classification Form for precise locations & details of risks & defects.
- Location is an "IRIS ID" created by the Digital Information team from 2017 report work.

HIGH-LEVEL FABRIC TACTILE SAMPLE INSPECTION
26/07/2021 to 30/07/2021

IDENTIFIED RISK

A.2018/2021 Class V label added & changes to glass panels

IRIS PIC006 Arbroath Abbey

IRIS High Level Tactile Sample Inspection Identified Risk - Area D - Elevations

HISTORIC ENVIRONMENT SCOTLAND **ARANRACHAIDH EACHRACHAIDH ALBA**

PROJECT: PIC006-MLK-SI-D South Rev A

IRIS Not to issue: [redacted]

IRIS August 2021: [redacted]

IRIS [redacted]

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PIC006-MLK-SI-D-SNave Rev A