PURCELL

WOKING PALACE

CONSERVATION MANAGEMENT PLAN

January 2013
[Issue 2]

APPENDIX C
CONDITION SURVEY

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CONDITION REPORT 4

PURCELL

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CONDITION REPORT (DRAFT)

January 2013

Stephen Elliott

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1.0.0 INTRODUCTION

1.1.0 SCOPE

This report summarises the materials, construction and general condition; recent repairs and further recommendations for repair and conservation, together with the urgency and cost of such work.

Identification of work carried out since the last survey and adherence to the maintenance plan is necessarily limited to visual observation and the level of information provided relating to previous surveys and maintenance schedules.

1.2.0 PURPOSE

To provide the client with a condition assessment of the prioritised sustainable recommendations for the preservation of the fabric and significance of the asset.

1.3.0 DEFINITIONS

Definitions as EHS004/2

2.0.0 COMMISSION DETAILS

2.1.0 BRIEF

Purcell were commissioned by Woking Borough Council (WBC) to undertaken a periodic condition survey of the standing and visible remains of Woking Palace and to provide prioritised recommendations for action with associated costs.

2.2.0 SITE DETAILS

Site Name	Woking Palace
Location	Woking Palace is located one mile downstream of St Mary's Church, Old Woking, on an alluvial flood plan of the River Wey just South of the east end of Carters Lane in the Parish of Woking, Surrey.

2.3.0 SITE TYPE AND DESCRIPTION

The site which sits immediately to the north of the River Wey comprises of flat grassland divided into four quadrants surrounded by partial moats with an arm dividing the site centrally. The four quadrants comprise:-

- North east quadrant (buried remains of outbuildings and lodgings of palace).
- South east quadrant (standing remains of vaulted chamber and brick service building with buried remains of palace).
- South west quadrant – The King's Garden
- North West quadrant (The Copse formerly the Orchard with fish ponds)

The site was a Royal Manor held by Edward the Confessor before the Norman Conquest and it was Sir Alan Basset who established a residence on the site after being granted the site by Richard I. In 1503 Henry VIII transformed the residence into a Royal Palace and Henry VIII completed

the Great Hall in 1511 and extended and enlarged the Palace between 1532 and 1542.

Following the death of Henry VIII the Palace was less used and finally abandoned in the 1620's, and the land turned over to farmland.

All that remains above ground on the site today are:-

- The vaulted Building (1450-1500) single storey vaulted undercroft with modern lightweight pitched roof above.
- Tudor Service Block (16th Century) free standing brick walls that formerly served as a roofed service building adjacent to the kitchens.
- Low level exposed wallhead remnants of the South Wall of the Great Hall and the two storey oriel window to the light the table at the end of the Great Hall.
- Minor wall remnants at the Gatehouse and along the moat dividing the North East and North West Quadrants.

2.4.0 PROGRAMME

The survey was commissioned in May 2012 and the survey was carried out on Monday 11th June 2012.

2.5.0 ACCESS TO THE FABRIC

Inspection of the buildings and site was carried out from ground level.

2.6.0 HEALTH AND SAFETY

The identified risks on the site are deep water and trip hazards.

The survey was carried out with two people being present and Jane Horsfield of WBC introduced the two surveyors to the site.

Any items of a health and safety concern are mentioned in the body of the report

3.0.0 EXECUTIVE SUMMARY

3.1.0 The Vaulted Building is in an overall structurally stable condition however there are several defects that require actioning in the short term and several suggestions for long term action which may improve the presentation of the building.

The modern mineral felt roof has a gutter-less dripping eaves to the south and an upvc eaves gutter to the north, that has an open end intended to discharge the water clear of the building. The gutter has been dislodged and the water run-off is falling onto the building façade causing algae growth and dampness at the base of the walls. The gutter requires immediate action to re-fix and it is suggested that new polyester powder coated aluminium eaves gutters with outlet spouts at 90° are fixed to discharge water clear of the building. The horizontal ship lap boards to the gables have 4 no. timber ventilation louvers which are degrading. In the long term it is suggested that either the roof structure is strengthened and the mineral felt replaced with handmade clay tiles or a new lower pitched roof is installed with a sedum covering which will both enhance the appearance of the vaulted building within the site, be ecologically beneficial and limit the run off rainwater that is dampening the lower walls.

Externally the walls appear sound however there are numerous cracks that have previously been filled and there is a slight outward bow to the south elevation. The upper sections of the flint gables have sand cement pointing which has a poor appearance and is accelerating erosion to the masonry and should be replaced with lime mortar filling. Several of the chalk lintels to the north elevation have cracks that require pinning and the 15th century moulded chalk door surround should have a lime shelter coat applied to protect it from water erosion.

Internally the barrel vaults appear to be dry and stable since the temporary lightweight roof covering has been added. There are however, various historic cracks through the brick joints that have been monitored recently and appear to only suffer from slight seasonal movement. These cracks should be consolidated with injected resin. The brick vaults would also benefit visually from poultice cleaning to remove lime bloom and salt from the surface and the iron work ties and spring arches treating with bituminous paint.

The cast concrete infill to the vault of bays 1 and 2 (at the east end of the building) although appearing stable would benefit visually in the long term by replacement with brick.

The moulded chalk ribs have been badly fractured over the centuries probably as a result of frost action and possibly a degree of vandalism. In the short term a scaffold should be erected to allow inspection of the ribs to take down any loose fragments and secure other sections by pins set in polyester resin where possible. The long term visual appearance of the ribs would be enhanced by a combination of lime mortar plastic repairs on copper armatures to reinstate the profile of damaged ribs and reinstatement of totally missing ribs.

The lime rubble walls of the vault sit on a brick plinth and there are several areas of wall and chalk lintels with cracks that need consolidating and several areas of brick plinth require cutting out and piecing in with new handmade brick, a stockpile of which is stored within the building.

The walls and the vault ribs should be given a protective coat of limewash which will contrast with the bricks of the barrel vaults.

The floor is protected by a layer of puddled clay which apparently is laid over the original Tudor floor under the surface. A long term aspiration may be to replace this protective puddled clay floor with a new stone flag floor to make the space more usable for a range of activities.

The tall free standing west and north brick walls of the Tudor Service building appear to be stable with the west facing, previously external face being very weathered back. The pointing to the walls is a mixture of sand cement mortar and old and more recent soft lime mortar which has been applied using a variety of sands which give a patchy appearance and requires standardisation of mix and materials informed by analysis of the original. Areas of hard cement mortar should be carefully cut out and replaced with lime mortar.

There are numerous areas of new handmade brick patching to the gable walls and over the coming years further patching in will be required to eroded areas of brick.

The wall heads appear to have been capped with white cement sand mortar which although protecting the wall head from water ingress has the effect of congregating rain water run-off onto the upper faces of the facades which attract algae growth and will suffer from frost action. It is suggested that a projecting soft turf capping may be beneficial to act as a sponge to prevent rainwater run-off, protect the wall head from water ingress and be sympathetic to the setting of the building. The walls heads being accessible from a ladder will allow maintenance of the soft capping to weed out any self-seeded saplings.

There are remnants of lime plaster to the inner faces of the walls which have previously been consolidated around the edges but areas appear hollow. Lead or lime protective hoods would be susceptible to theft or vandalism and it is therefore suggested that a conservator reconsolidate any edges that are exposed and micro-inject the plaster in areas where it appears to be hollow.

There are several areas of low level wall remains to the south end of the Great Hall site and although the site has been extensively excavated the vast majority of walls have been re-buried to protect them.

The lime mortar that has been used to consolidate the exposed walls have been fractured by frost action and unless hard mortar is used it is likely that further frost action to the mortar will be likely. It is therefore recommended that an NHL5 (eminently hydraulic lime) is used to consolidate the wall heads and on-going repointing is programmed.

A long term aspiration to interpret the site may be to lay out timber edgings with fine gravel infill on top of the buried walls. This would require Scheduled Monument Consent and have to be carried out under archaeological supervision and would also carry a higher maintenance burden in terms of grass cutting and weed suppression.

The site generally is not widely advertised to the public and is maintained as a meadow which is cut twice per year. The site is accessed from the end of Carters Lane where there is a limited amount of car parking. The site itself is accessed through a fieldgate with a passgate and over a timber bridge over the shallow water filled moat. There are 3 no. oak interpretation signboards on site all of which are in reasonable condition except for one of the gateposts which has rot in the base and the latch to the pass gate that requires adjusting.

It should be noted that much of the proposed works will be subject to Scheduled Monument Consent and will require the input of Historic Buildings Architect and in some instances input from Structural engineers.

3.2.0 GENERAL CONDITION OF THE BUILDING

The general condition of the historic fabric is FAIR.

3.3.0 CONDUCT OF THE SURVEY

The building was surveyed and is reported in in the following order.

- Site and Low level remnants
- Vaulted Building (Internal and external)
- Tudor Service Building)

Elevations were surveyed from top down and in anti-clockwise manner reporting left to right. Geographical orientation is used throughout and elevations are referenced according to the direction in which they face eg North elevation faces North. Internal walls are referenced according to the position of the wall in relation to the building eg. South wall refers to the north face of the building South Wall.

3.4.0 ACKNOWLEDGEMENTS

The survey was carried out by Stephen Elliott (AABC accredited Architect of Purcell) and Rik Fox of The Morton Partnership Structural Engineers. Jane Horsfield of Woking Borough Council provided access to the site and explained the site to the surveyors.

3.5.0 SURVEY CONDITIONS

The survey was carried out on Monday 11th June 2012 between 10am and 3pm and there was persistent rain throughout the survey.

3.6.0 LIMITATIONS

All areas were accessed to carry out the survey with the exception of the loft space above the vault which was inaccessible.

Due to the wet conditions which made access to the water edge unsafe it was not possible to inspect the the moat edge wall remnants.

The quantities set out in the summary of costs are very approximate and are for the purpose of approximate budget costs only.

3.7.0 PROTECTION DESIGNATIONS AND CONDITION CRITERIA

Scheduled Monument number 12752 under Section 1 of the Ancient Monuments and Archaeologists Areas Act 1979 as amended by the National Heritage Act 1993.

This monument is scheduled under the Ancient Monuments and Archaeological Areas Act 1979 as amended as it appears to the Secretary of State to be of national importance. This entry is a copy, the original is held by the by the Department for Culture, Media and Sport.
Name : Woking Palace moated site, fishponds and ruins at Oldhall Copse
List entry Number : 1019366

Location
The monument may lie within the boundary of more than one authority.

County	**District**	**District**	**Type**	**Parish**
Surrey	Woking	District	Authority	

National Park: Not applicable to this List entry.

Grade: Not applicable to this List entry.
Date first scheduled: 11th March 1953
Date of most recent amendment : 07-Sep-2000

LEGACY SYSTEM INFORMATION

The contents of this record have been generated from a legacy data system.

Legacy System: RSM
UID : 12752

ASSET GROUPINGS
This list entry does not comprise part of an Asset Grouping. Asset Groupings are not part of the official record but are added later for information.

LIST ENTRY DESCRIPTION
Summary of Monument

Legacy Record – This information may be included in the List Entry Details.

Reasons for Designation
Around 6,000 moated sites are known in England. They consist of wide ditches, often or seasonally water-filled, partly or completely enclosing one or more islands of dry ground on which stood domestic or religious buildings. In some cases the islands were used for horticulture. The majority of moated sites served as prestigious aristocratic and seigniorial residences with the provision of a moat intended as a status symbol rather than a practical military defence. The peak period during which moated sites were built was between about 1250 and 1350 and by far the greatest concentration lies in central and eastern parts of England. However, moated sites were built throughout the medieval period, are widely scattered throughout England and exhibit a high level of diversity in their forms and sizes. They form a significant class of medieval monument and are important for the understanding of the distribution of wealth and status in the countryside. Many examples provide conditions favourable to the survival of organic remains.

Woking Palace is of particular importance because of its excellent survival, high diversity, enormous archaeological potential both on the island itself and in the waterlogged moats and particularly because of its historical association with royalty and the amenity value which it is afforded by this association.

History
Legacy Record - This information may be included in the List Entry Details.

Details
The moated site at Woking Palace includes the earthworks of the moat and its surviving inner bank, the area within the moat which contains ruined and standing buildings and, within the copse on the north west side, a group of fishponds. This unusually large moated site was a royal residence dating from at least 1272 which was used by Edward IV and Henry VIII and which was the birthplace of Mary Tudor in 1514.

The monument features at its centre a stone building with a 14th century doorway and a brick barrel vault with some original stone ribs. The ruins of a brick-built barn of 16th century date adjoin this stone building, while to the east are the brick and stone foundations of further buildings, some or all of which belong to the medieval or early post-medieval manor.

Around the perimeter, except to the south, is a moat which is seasonally water-filled. The southern limit itself is formed by the River Wey, an area of which contains a submerged timber structure believed to be a contemporary wharf. This was discovered and recorded in the northern half of the river at the east end of the monument in 1996. On the western side of the monument the moat is bounded by a slight outer bank and a substantial inner bank which in turn has an inner narrower moat. It was from this inner moat that water was directed into the two parallel rectangular fishponds, thence to a third and now partly infilled pond and finally into an internal projection of the moat which led northwards from the centre of the monument to the main moat circuit. The causeway entrance at the mid-point of the eastern moat arm is likely to have been the original access point.

All fences and gates are excluded from the scheduling, although the ground beneath them is included.

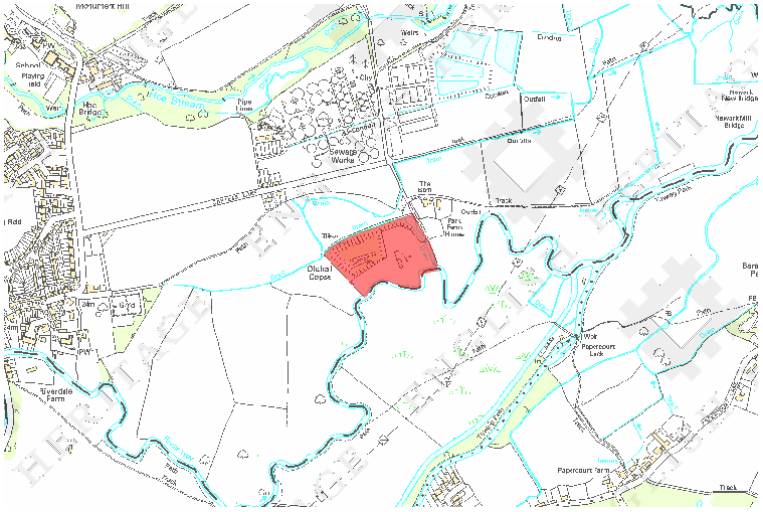
MAP EXTRACT The site of the monument is shown on the attached map extract.

Selected Sources

1. **Book Reference** - *Title:* Surrey Antiquity 463 - *Type:* SMR
2. **Book Reference** - *Title:* Surrey Antiquity No. 463 - *Type:* SMR
3. **Book Reference** - *Author:* Darvill, T. - *Title:* MPP Single Monument Class Descriptions - Moats (1988) - *Date:* 1988 - *Type:* DESC TEXT
4. **Book Reference** - *Author:* Kettering L - *Title:* AM 107 - *Date:* 1979 - *Type:* DESC TEXT

National Grid Reference: TQ 02911 57083

Map



3.8.0 SCHEDULE OF WORK UNDERTAKEN SINCE PREVIOUS SURVEY

By reference to The Management Plan Woking Palace 3rd Edition October 2009 and visual inspection it appears that the following works have been carried out most of which were recommended by the structural report by Hockley and Dawson dated 19/5/07.

- Geotextile membrane and Breedon Gravel laid within walls of Tudor Service Building.
- Re-routing of grass and footpaths around the site to limit foot traffic on buried remains.
- Piecing-in replacement bricks and re-pointing. Consolidation of exposed wall ends.
- Installation of part oak lintels to North doorway of Tudor Service Building.
- Installation of timber steps to North doorway of Tudor Service Building.
- Rendering of blockwork blockings to doors and windows.
- Consolidation of gable ends to protective roof with softwood shiplap boarding.
- Installation of wire mesh in low level pockets in wall to prevent birds or vermin entering Vaulted Building.
- Installation of monitoring studs to west wall of vaulted chamber and carrying out monitoring (only small seasonal movement reported).
- Felling of large ash tree.
- Photovoltaic cells have been installed on the South facing roof slope with batteries installed in a free standing glass fronted cabinet within the vaulted undercroft and surface mounted conduit has been installed with the intention of providing lighting to the vault. The lights are yet to be installed.

3.9.0 SCHEDULE OF WORK IDENTIFIED, BUT NOT UNDERTAKEN SINCE PREVIOUS SURVEY

By reference to the Management Plan Woking Palace, 3rdEdition October 2009 incorporating Structural Report by Hockley and Dawson 19/03/07 and visual inspection it appears that the following works that were recommended have not been carried out:-

- Strengthening of the roof timbers and replacing the felt roof covering with handmade clay tiles to give a better presentational appearance.

- Re-ordering of window blockings to avoid more ventilation of slow down rate of decay to steel arch supports.

3.10.0 SPECIALIST SURVEY

The Management Plan Woking Palace 3rd Edition October 2009 makes reference to the following surveys having been carried out:-

- Limited archaeological excavations in 1993 and 1998.
- Larger scale archaeological excavations in 2009, 2011.
- Habitat Management Plan. Report for Woking Palace, Oldhall Copse, 2008 (attached appendix of Management Plan Woking Palace 3rd Edition October.

3.11.0 ECOLOGICAL VALUES

As there is a high likelihood of bats being present within the standing ruins and in particular the vented under-croft or attic space above it is recommended that a bat survey be carried out and reviewed prior to any proposed works being carried out.

4.0.0 SUMMARY OF FINDING

4.1.1 CONDITION

General condition categories

CONDITION	DESCRIPTION
GOOD	STRUCTURALLY SOUND, WEATHER-TIGHT, AND WITH NO SIGNIFICANT REPAIRS NEEDED.
FAIR	STRUCTURALLY SOUND, BUT IN NEED OF MINOR OR LOCALISED REPAIR, OR SHOWING SIGNS OF LACK OF GENERAL MAINTENANCE.
POOR	DETERIORATING STRUCTURE, BREACHED WEATHER-TIGHTNESS AND/OR WHERE ROOFED, LEAKING ROOF AND/OR DEFECTIVE RAINWATER GOODS, USUALLY ACCOMPANIED BY DRY ROT OUTBREAKS WITHIN AND GENERAL DETERIORATION OF MOST ELEMENTS OF THE BUILDING FABRIC, INCLUDING EXTERNAL JOINERY; OR WHERE THERE HAS BEEN A FIRE OR OTHER DISASTER.
VERY BAD	STRUCTURAL FAILURE OR WHERE THERE ARE CLEAR SIGNS OF STRUCTURAL INSTABILITY; WHERE, FOR ROOFED BUILDINGS, THERE HAS BEEN LOSS OF SIGNIFICANT AREAS OF ROOF COVERINGS, LEADING TO MAJOR DETERIORATION OF THE INTERIOR; OR WHERE THERE HAS BEEN A FIRE OR OTHER DISASTER AFFECTING MOST OF THE BUILDING.

VAULTED BUILDING

DESCRIPTION
The vaulted under-croft that sits on an east west axis is rectangular on plan measuring approximately 11m x 7m and was probably constructed between 1450 and 1500. The arched vault consists of six roughly equal bays with chamfered chalk clunch ribs with brick infill. The upper floor which was supported by the vault possibly housed a chapel but the upper floor is now gone and a wooden lightweight dual pitched felted roof with UPVC eaves gutters now sits over the vault protecting it from the elements. There are signs that the vaulted under-croft originally had additional bays to the east and west as the gable walls are constructed from rougher knapped flint work with mortar/render infill as opposed to the long walls supporting the vault that are faced externally with square faced course rubble stone (Heathstone) sitting on a chamfered plinth.

INTERNAL
VAULT

DESCRIPTION
The 5 no. chalk clunch vault arches which originally had a chamfered profile spring from chalk clunch moulded spring stone bricks set into the wall. The arches don't appear to be giving support to the vault itself and merely act as dividing arches between the 6 no. bays of curved brick vaulting. In the 1920's failure of the brick vaulting in the two eastern bays led to reinstatement of the northern half of both these vaults with reinforced concrete with 2 no. spring arches formed with flat iron bars giving additional support adjacent to the stone arch ribs. A round section iron/steel tie rod with S-plates was also added to each of the end vaults to prevent any movement caused by outward thrust by the vault structure.

At the time of these works the fill to the top of the brick vault above the springing point of the vault was dug out and infilled with concrete (pers.com Jane Horsfield).

CONDITION
The moulded chalk clunch arch ribs are very badly fractured with the projecting section of the ribs being weathered back to the face of the brick vault in many areas (see below from east to west).

Rib 1	South Section	Eroded back to face of brick with only 600mm long protruding rough section. Spring Stone 90% intact
	North Section	Completely gone and replaced with concrete. Sprint stone intact.
Rib 2	South Section	Completely eroded back to face of brick and beyond. Badly eroded spring stone.
	North Section	Protruding rib intact but very rough and weathered spring stone intact.
Rib 3	South Section	Protruding rib intact but 50% badly weathered spring stone in good condition.
	North Section	Protruding rib badly eroded with 600mm section sound. spring stone virtually gone
Rib 4	South Section	70% of rib eroded back to face of brick with 305 protruding Spring stone worn back to face of wall..
	North Section	Rib very badly eroded and delaminating at base with

		only 25% protruding but rough. Spring stone virtually gone.
Rib 5	South Section	Protruding rib intact but very worn. Spring stone in good condition.
	North Section	30% of protruding rib intact but weathered the remainder weathered back. Spring stone in good condition.

It is likely that this apparent fracture damage was caused over the centuries by frost action to the soft chalk emanating from water ingress through the top of the vault when there was no adequate protection from a temporary roof. There could also have been acts of vandalism. The vault is now adequately protected by a lightweight roof and the vault windows and doors are adequately sealed to keep out the weather. There is however a degree of fracturing to some areas of the stone ribs most notably the bottom of rib 4 northern spring point and falling sections of fractured rib have recently been reported by volunteers.

The bricks forming the arched vault are generally fully pointed and the bricks largely free from degradation but there is a lime bloom to much of the brick surface. The brick vaulting appears to be structurally sound however the following defects were noted that require remedial action.

- Cracking through brick joints in south section of bay 6 probably caused when un-lintelled window opening was inserted in the 1920's.
- Cracking through brick joints in south section of bay 1.
- Cracking in north section of bay 6 where vault appears to have moved out slightly.
- Cracking through brick joint in north section of bay 5 due to window lintel settlement.
- Edge of brick vault abutting north section of rib 2 and 3 is exposed where stone ribs have weathered back beyond face of brick.
  The 1920's concrete repair to the northern section of the vault in bay 1 and 2 appears to be sound and the iron spring supports appear to be sound and tight, however the iron is corroding and a thin crust of concrete on the face of the springs is likely to detach and fall presenting a possible hazard.

  The 2 no. iron tie rods are slightly rusting but the tension still appears to be tight.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 1

- Erect scaffold to inspect ribs for loose sections, make safe and consolidate ribs and edges of brick vault.
- Limewash/shelter coat ribs
- Resin inject cracks in brick vault
- Poultice brick vaults to remove salts/lime bloom
- Apply bituminous paint to iron springs and ties

PRIORITY 5

- Carry out conservation repair and reinstatement to damaged ribs and springing stones.
- Remove concrete section of vault and reinstate with brick.

INTERNAL WALLS
SOUTH WALL

DESCRIPTION
The wall is constructed from squared chalk blocks that are roughly coursed that sit on a flush brick plinth approximately 600mm high. The chalk and brick appears to have had a limewash finish. There were no original window openings in the wall however in bay 6 an un-lintelled window aperture was cut into the wall in the 1920's probably for agricultural use. The aperture has been infilled with cement rendered blockwork. There is a small square vent hole through the wall in bay 1.

CONDITION
The chalk walls are well pointed and appear to be intact. There are eroded bricks notably to the west end of the wall that require replacing.

The unlimited window aperture has caused settlement cracking to the brick vault and has temporary timber shoring in the aperture.

PROPOSED REMEDIAL WORKS
(SEE PRIORITIES FOR ACTION)
PRIORITY 1

- Install 3 no. oak lintels and support posts to window opening.

WEST GABLE

DESCRIPTION
The wall is constructed from squared chalk blocks that roughly coursed that sit on a flush brick plinth approximately 600mm high. The chalk appears to have a thin lime slurry coat is only intact for 2/3 height. There are several eroded bricks to the plinth and there is a crack void in the wall to the south end.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 3

- Cut out and piece in 12 no. eroded bricks in plinth.
- Apply slurry coat to top part of gable and limewash all walls
- Open up blocked vent.
- Consolidate vertical crack and void in south of wall with small pieces of chalk and lime mortar.

NORTH WALL

DESCRIPTION
The wall is constructed from squared chalk blocks that are roughly courses. The plinth is brick and the brick extends up around the window and door jamb. There are window openings to bay 3 and 5 and a door opening to bay 1 all with chalk stone lintels and cement rendered blockwork infill. There is a blocked fireplace in bay 4. There is a small square vent hole.

CONDITION
The chalk and brick walls are reasonably well pointed with several areas requiring pointing. There are quite a number of eroded bricks in the plinth course. All of the 3 no. chalk lintels have cracks or sections missing and the masonry under both windows has voided areas.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 3

- Cut out and piece-in 30 no. eroded bricks in plinth.
- Consolidate area of wall under 2 no. window cills with brick.
- Isolated pointing to area of wall
- Carry out repairs and consolidation of 3 no. chalk lintels
- Limewash wall

EAST GABLE

DESCRIPTION
The wall is construction from squared chalk blocks that are roughly coursed and set on a flush brick plinth approximately 600mm high. The chalk appears to have a thin lime slurry coat. There is a central doorway with a slightly arched chalk lintel and there is a new steel door and frame fixed to an oak sub-frame which has very skilfully been made to look like a vertical boarded door.

There are 3 no. low level and 1 no. high level small square vent holes one of which is blocked.

CONDITION
The chalk and brick appear to be well pointed and the slurry coat is only intact up to 2/3 height. There are several eroded bricks to the plinth and three previously filled vertical cracks above the door, the central crack continuing through the lintel. The bottom of the southern door joint has a void in the masonry and there is a vertical crack/void to the south end of the wall.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 3

- Cut out and piece in 18 no eroded bricks to plinth
- Cut out and refill 3 no. cracks and slate pack lintel end.
- Consolidate vertical crack to south end of wall
- Apply lime slurry coat to top part of gable and limewash all wall

FLOOR

DESCRIPTION
The floor consists of puddled clay that is reported to be laid over the Tudor floor.

CONDITION
The floor is slightly uneven with minor dimpling but otherwise appears intact.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 5

- Remove protective puddled clay floor and lay flag stone floor over original Tudor Floor.

VAULTED BUILDING EXTERIOR
ROOF

DESCRIPTION
The vault of the undercroft is protected from the water ingress by a lightweight duo-pitched roof with overhanging eaves and with a mineral felt finish. The southern eaves discharges water directly to the ground where the surface is grassed. The northern eaves has a half round black upvc gutter that projects beyond the gables with an open end to discharge rainwater to the grassed areas and gravelled area. It is assumed that this detail was to avoid having rainwater downpipes. The gables have horizontal ship lap boarding with 2 no. timber louvre vent in each gable. One of the vents in the east gable is a hatch.

The south slope of the roof has recently had photovoltaic cells added to provide an energy source for internal lighting, yet to be installed.

CONDITION
The felt roof and photovoltaic cells appear to be in good condition, however the upvc gutters on the north elevation have become detached either due to winds or vandalism and water is discharging onto the projecting chimney breast. Likewise the open ended gutter at the east end is discharging directly onto the low wall remains below. The rainwater discharge will be contributing to the erosion of the internal plinth brickwork. The 4 no. timber louvers are degrading and the shiplap boarding requires staining.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 1
Re-fix dislodged UPVC guttering.

PRIORITY 2
- Replace UPVC gutters with black polyester powder coated cast aluminium eaves gutter with stop ends to north and south elevations with outlet pipes projecting 90° to gutter to throw water well clear of north and south elevations.

- Replace 4 no. timber louvres and re-stain shiplap boarding.

PRIORITY 5
Option 1 Replace roof with new lower pitch roof structure with Sedum roof covering.

Option 2 Strengthen existing roof structure and replace mineral felt with handmade clay tiles.

SOUTH ELEVATION

DESCRIPTION
The wall is faced with square faced coursed Heathstone with a stone chamfered plinth stone at the base. The upper section of the wall has stones of a slightly different size which suggest that it may have been rebuilt at some stage. There are iron S-plates either end which secure the internal tie rods.

There is an un-lintelled window to the west end with a cement rendered blockwork blocking.

CONDITION
The wall appears to be well pointed with the exception of a few open joints in the plinth and the stone is not suffering from any erosion. There is a previously filled vertical crack down the centre of the façade and the wall has a slight outward bulge on plan but is vertical. The south east corner has a vertical stack of masonry missing where the Heathstone south elevation and flint gable meet.

The combination of open joints to the plinth and rainwater discharge from the roof may be accelerating the erosion of the internal plinth brickwork.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 1

- Re-point open joints to plinth.
- Re-build missing corner with brick and lime render finish

EAST GABLE

DESCRIPTION
The gable wall which is believed to have been built when the vault was shortened is constructed from flint with rubble stone areas at higher level.
The lower levels of flint walling have a soft lime render fill and the upper sections have been patched in with harder sand cement mortar. There is a 14th century moulded chalk stone doorway which has been shelter coated. There are 3 no. low level square vent holes and 1 no. high level.

CONDITION
The flint and rubble stone wall has a patched rough appearance and there are areas with open pockets. The sand cement mortar at high level is having a deleterious effect on the rubble stone and cavernous erosion is apparent.

The 14th century moulded chalk door surround has suffered from mechanical damage especially the hood moulding and the lower right hand jamb.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 3

- Remove sand cement pointing and consolidate upper part of wall with lime sand mortar.
- Apply lime shelter coat to moulded door surround.

NORTH ELEVATION

DESCRIPTION
The wall is faced with squared coursed Heathstone blocks. In the centre of the elevation is a later added projecting chimney breast with Heathstone to the lower section and exposed limestone rubble corework to the upper section protected by a roof overhang. To the east of the chimney breast is a moulded chalkstone door opening with cement rendered blockwork. Either side of the chimney breast is a window with moulded chalkstone surrounds.

There is an iron s-plate at either end of the façade that connects to the internal tie rods.

CONDITION
The Heathstone and limestone corework appear to be generally well pointed and in good condition but there are some small areas of open joints and green algae on the wall due to the non-performance of the eaves gutter.

The western window has a cracked and settled lintel and the stone cill is missing. The eastern window has a fine crack through the lintel.

The moulded limestone door surround is degraded at the bottom right hand jamb and one half of the arched lintel stone has various cracks and has slightly settled. There is a missing Heathstone from the relieving arch above the door moulding.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 3

- Pin cracks to 3 no. lintels with stainless steel pins set in resin and point cracks.
- Piece in 1 no. Heathstone to relieving arch.
- Re-point open pockets in masonry in isolated areas.
- Replace 1 no. chalkstone window cill.

WEST GABLE

DESCRIPTION
The gable wall which is believed to have been built when the vaulted undercroft was shortened is constructed from flint with rubble stone areas at high level.

The lower level of the flint walling has a soft lime mortar/render fill and upper area has been consolidated with harder sand cement.

There are 4 no. small square openings at high level which probably vent the void on top of the vault. The Heathstone walling on the north and south elevations return around the corner as stepped quoins.

CONDITION
The majority of the central section of the wall has an even appearance where the deep soft line mortar filling is present. The higher areas are less well consolidated and the hard cement mortar is having an erosive effect on the rubble stone.

There is a previously filled vertical crack down the south end of the gable.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 3

- Remove sand cement pointing and consolidate upper part of wall with lime sand mortar.

TUDOR SERVICE BUILDING
WESTERN WALLS

DESCRIPTION
The 16th century handmade free standing brick wall which abuts the north elevation of the vaulted building is thought to have originally been a service building to the kitchens, later taking on use as a barn which was roofed until the mid-20th century. The brick arch which was over the door in the centre of the wall has since collapsed and the wall now stands as two distinct sections. The west face of the walls which used to be the external face has open joist holes at regular centres near the top of the wall and the irregular shaped exposed wall

head looks to have been recently capped with an 'overcoat' of white mortar which may be cementitious.

The west face of the walls which used to be internal has remnants of lime render to the northern section of wall.

CONDITION
The exposed wall heads appear to have been over capped with a white sand cement mortar overcoat which may be performing well in terms of keeping water out of the core of the wall but it is concentrating the collected water at the top face of the wall where the wall appears damp and algae is growing and the upper bricks will ultimately erode. This capping is visible from the ground where the wall head pitches up and it is unsightly. There are weeds and grass forming at the perimeter of the capping.

The walls themselves appear to be plumb however the west (external) face of the brickwork has eroded back significantly from the original face line as can be seen by projecting bricks which suggest the original face line.

The west facing wall has a mixture of pointing types, some which appear to be hard cementitious mortar with a reasonable appearance, although having an erosive effect on the brick; some of which appears to be older soft lime mortar and some which appears to be recent lime mortar. There are isolated areas where badly eroded bricks will need replacement and other areas where new handmade bricks have been patched in.

The west facing northern section of wall has hard mortar at low level which is quite weathered back and is causing face erosion of the brick and the upper part of the wall appears to have soft mortar.

It is apparent that the sand being used is the new pointing and indenting of new brick varies and this has a poor visually effect, especially where very yellow and is used.

There is ivy beginning to establish itself on the stepped wall end to the north.

The east (internal) face of the walls are less eroded and similarly have a mix of new and old pointing. This face of the wall has also had patches of new brick pieced in and an area of new pointing to the southern section has been very badly finished. There is a lot of algae growth at high level caused by water being shed off the top of the wall.

There are remnants of lime render to the east face of the north section of wall which have had their edges consolidated with stiff mortar but some areas appear hollow.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 1

- Remove ivy from north end of wall and weed growth from wall heads with systemic killer.
- Conservator to re-consolidate edges of render and micro inject render to consolidate.

PRIORITY 3

- Take samples of original mortar from within wall to inform mix and types of sand/aggregate for new pointing works.
- Cut out and piece in 30 no. bricks at low level.
- Cut out hard sand cement mortar from areas causing erosion to bricks and repoint with lime sand mortar.
- Consider removal of sand cement capping from wall heads and introduction of soft turf capping.

NORTHERN WALLS

DESCRIPTION
As with the western walls of the Tudor Service Building the wall consists of a tall free standing brick wall that enclosed the Service Building/latterly barn. The wall has a raised doorway to the west and that has recently had oak lintels and posts to support the brickwork above the opening. The northface of the wall has remnants of a thin cementrious tender and the south face (former internal face) has high level around the edges.

CONDITION
The wall appears to be reasonably well consolidated and is plumb and the bricks are now in reasonably good condition and have had patched areas with new handmade brick to both sides of the wall.

The wall head is quite irregular and has probably been hard capped, however grass and weeds are establishing on the wall head and algae on the north face due to rainwater run-off.

The remnants of the lime render on the south face of the wall although they have been consolidated around the edges with white cement mortar have areas that sound hollow.

Further low level piecing in of small areas of brickwork will probably be required in 5 years time.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 1

- Remove grass and weeds from wall heads with systemic weed killer.
- Conservator to re-consolidate edges of tender and micro-inject render to consolidate.

PRIORITY 3

- Cut out and piece-in 30 no. bricks at low level on both side of wall.
- Consider removal of sand cement capping from wall heads and introduction of soft turf capping.

EASTERN WALL

DESCRIPTION
The low brick wall remains consist of a north and a south section separated by a gap that used to be a door opening in the centre of the wall.

The northern section is slightly higher than the southern section and steps down from the north wall. The walls have been substantially capped with new brick.

CONDITION
The northern section of wall has weeds and grass establishing in the top and the wall has been badly consolidated with lime mortar using different types of sand, the yellow sand mortar being particularly intrusive. The new handmade brick consolidation at the end of the northern section of wall is poorly executed and the bricks have visible frogs laid upwards which emphasises the fact that they are new bricks and they will also hold water.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 1

- Remove weed and grass growth from wall with systemic weed killer.

PRIORITY 3

- Rake out yellow sand mortar and re-point.
- Re-consolidate south end of northern section of wall with any frogs concealed.

LOW LEVEL CONSOLIDATED WALL HEADS TO TUDOR GREAT HALL

DESCRIPTION
Through the site has been extensively archaeologically excavated there are only 2 no. small areas of low level walls that formed part of the south end of the Tudor Great Hall that remain exposed and consolidated. The remaining areas of the excavated walls have been re-burned to protect them from the elements.

CONDITION
The buried remains are protected by being buried and footpaths through the long grass have been cut to avoid foot traffic over sensitive areas. The plan form of the buried remains is not interpreted to the public area other than on site information boards. The visible wall heads have been consolidated with lime sand mortar however this mortar has been fractured by frost action and small areas of stone are becoming loose. If lime mortar is used then eminently hydraulic lime should be used NHL5, but it may be necessary to periodically repair it. Some of the wall heads have been surrounded by rope and timber posts to keep members of the public from walking on the wall heads and dislodging stones.

Winter protection using insulated covers may not be practical as the site is not manned and these could be subject to vandalism.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 3

- Carry out repairs/reconsolidation to wall heads.

PRIORITY 5

- Consideration should be given to delineating the outline of the buried walls with timber edgings with gravel infill to interpret the site.

GATEHOUSE AND CENTRAL MOAT LOW LEVEL REMAINS

DESCRIPTION
The low level gatehouse wall remains were not visible during the survey nor were the remnants of the precinct wall that run along the central moat which are enveloped in the tree roots.

CONDITION
Not known.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 5

- Arboculturist/Ecologist/Archaeologist to carry out study to determine whether it would be permissible/beneficial to remove any trees and roots to allow further study and consolidation of wall.

SITE AND SITE FURNITURE

DESCRIPTION
The site is accessed along a gated track from Carters Lane where there is a concrete hardstanding. There is an oak interpretation signboard supported on oak legs at the entrance gate to the site which consists of a field gate and a pass gate.

The gate has notices advising that the site is a Scheduled Ancient Monument with penalties for causing damage; advising hazards (deep water, trip hazards and sudden drop) and advising that fishing is private.

The gate leads onto a timber bridge over the shallow water filled moat with grass topping and timber and rope balustrades with woven hazel infill panels. There is a further oak interpretation signboard set within the Tudor Service Building.

CONDITION
The bridge and interpretation sign boards are generally in sound condition however 1 No. field gate post is beginning to rot at the base and the latch to the pass gate requires adjustment.

PROPOSED REMEDIAL WORKS (SEE PRIORITIES FOR ACTION)
PRIORITY 1

- Replace rotten timber gatepost.

PRIORITY 3

- Replace rotten timber gatepost.

Roof of vaulted building	21st century	Fair
External elevations of vaulted building	16th century	Fair
Internal elevations of vaulted building	16th century	Fair
Vault structure	16th/20th century	Fair/poor
Vaulted building floor	20th century	Fair
Tudor Service building. Free standing walls	16th century	Fair/poor
Low level wall remains, Gatehouse, Great Hall, Moat	16th century	Fair/poor

4.1.2 PRIORITIES FOR ACTIONS

Priority	Time-Scale for Action	Recommended Work
0	URGENT	This category must only be used to indicate work required urgently for health and safety reasons, to confirm to statutory requirements and/or to prevent imminent damage or to arrest rapid deterioration.
1	IMMEDIATE/ESSENTIAL WITHIN MONTHS OR A YEAR AT MOST	Work essential on the basis that a failure to act would most likely result in significant further damage or deterioration and increased cost.
2	NECESSARY WITHIN 2 YEARS	Work necessary to keep the asset in good repair and to maintain its significance and functionality.
3	NECESSARY WITHIN QUADRENNIAL CYCLE (2-4 YEARS)	
4	NECESSARY DURING SUBSEQUENT QUADRENNIAL CYCLE (5-8 YEARS)	
5	LONG TERM/DESIRABLE	Repeat cyclical maintenance or longer term planned repairs.

PRIORITIES FOR ACTION **Quantity**

The following recommendations for action will in many cases require the input of an Historic Buildings Architect to produce a Specification and in some cases to produce drawings. Much of the work which is beyond simple like for like repair will require Scheduled Monument Consent.

PRIORITY 0
No Action

PRIORITY 1 (within months of a year at most)
VAULTED BUILDING INTERIOR

Carry out bat survey prior to embarking upon any repair works

Erect scaffold deck internally to allow close inspection of ribs, take down any loose fragments, resin inject any fine cracks and pin any fractured sections. Hack off thin sand cement facing to iron straps. — Item

Mechanically brush down 2 no. iron springs and 2 no. tie rods to bare metal and coat with bituminous paint. — Item

Inject cracks through joints in brick vault with polyester resin and repoint with lime mortar. — 12 lin m

Consolidate/point void/gap between brick vault and ribs 1 and 3 with lime mortar. — 3 lin m

Apply protective limewash shelter coat to 5 no. chalk ribs and 10 no. spring stones. — 30 lin m

Apply 3 no. successive layers of poultice to face of brick vaults to remove lime bloom and salts. — 45m□

Install 3 no. 100 x 100 oak lintels with 100 x 100 oak posts at either end to window to south elevation of bay 6. Pack top of lintel with slate and point. — Item

VAULTED BUILDING EXTERIOR Re-fix dislodged UPVC eaves gutter to north elevation.	Item
Re-fix point open joints in south elevation plinth.	2 lin m
Consolidate South East corner 215 x 215 with brickwork tied into existing masonry and finish with lime render flushed in with existing facades.	3 lin m
TUDOR SERVICE BUILDING Remove ivy growth from north end of western walls and weed growth from top of western and northern walls.	Item
Remove grass and weed growth from north and east wall with systemic weed killer.	Item
Conservator to reconsolidate any loose edges of lime render remnants on inside of West and North walls and micro-inject render to consolidate hollow areas.	6m☐
SITE FURNITURE Adjust latch to pass gate at entrance.	Item
PRIORITY 2 (necessary within 2 years) VAULTED BUILDING EXTERIOR Replace UPVC gutters with black polyester powder coated cast aluminium eaves gutters with stop ends to north and south elevations with outlet pipe projecting at 90° to gutter to throw water well clear of north and south elevations.	22 lin m
Replace 4 no. timber louvres complete with bird and insect mesh.	4 no.
Re-stain shiplap boarding to roof gables.	24m☐
VAULTED BUILDING INTERIOR Cut out eroded bricks from internal plinth and piece in with new handmade bricks to match: South Wall plinth – 25 no. West gable plinth – 12 no. North wall – 30 no. East gable – 18 no.	85 no.
Limewash brick plinth and chalk walls including window and door surrounds: South wall 24m☐ North wall 24m☐ East gable 18m☐ West gable 18m☐	84m☐
Apply lime slurry coat to interior upper part of west gable and east gable.	14m☐
Consolidate vertical crack/void to interior south end of west gable.	1m☐
Open up blocked vents in west gable 1 no., east gable 1 no. to improve ventilation.	2 no.

Consolidate/infill internal void areas of masonry under north wall windows with brick.	1m☐
Carry out isolated pointing to inside face of north wall.	15m☐
Piece in half of missing chalk stone lintel to inside face of west window in north wall, bay 5, and secure with stainless steel pins set in resin.	Item
Consolidate missing back section of chalk lintel to inside face of central window in north elevation, bay 3, with brick and lime render face.	Item
Carry out small lime mortar plastic repair to underside of inside face of door lintel in bay 1 of north elevation where lintel previously repaired.	Item
Cut out and refill 3 no. vertical cracks in internal face of east gable and pack lintel bearing with slate.	4.5 lin m
Consolidate/infill internal void area of masonry to internal jamb of door and at south end of east gable with brick.	1m☐
Commission laser scan survey of internal space to record fabric priory to embarking upon repair works and to monitor future changes in condition.	Item
VAULTED BUILDING EXTERIOR Commission laser scan survey of exterior of vaulted building to record fabric prior to embarking upon repair works and to monitor future changes in condition.	Item
Cut out sand cement mortar filling to upper part of east and west gable and repoint flush with deep pointed lime sand mortar.	30m☐
Apply lime shelter coat to moulded doorway in south elevation.	Item
Pin cracks in 2 no. window lintels and 1 no. door lintel on north elevation and repoint open joints.	3 no.
Piece in 1 no. Heathstone above door on north elevation.	1 no.
Point isolated open joints in north elevation.	1 m☐
Supply and fit 1 no. limestone cill to window on north elevation.	1 no.
TUDOR SERVICE BUILDING Take samples of original mortar from within walls and send for analysis to inform mix and type of sane/aggregate for new pointing works.	Item
Cut out and piece in 30 no. new handmade bricks at low level,	30 no.
Cut out hard sand cement mortar from areas causing erosion to brick and repoint with lime sand mortar.	45m☐

Consider removal of sand cement hard capping from wall heads of west and north walls and introduction of soft turf capping to alleviate concentration of damp at top face of wall and provide a visually unified appearance to ruins.	33 lin m
TUDOR SERVICE BUILDING Commission laser scan survey of exterior walls of service building to record fabric prior to embarking upon repair works and to monitor future charges in condition of building.	
Cut out and piece-in 30 no. bricks at low level on both side of North wall.	30 no.
Rake out yellow sand mortar from east wall and re-point.	2m☐
Reconsolidate south end of northern section of wall with any frogs concealed.	0.5m☐
SITE FURNITURE Replace rotten gate post to field gate (150 x 150)	1 no.
No action.	
PRIORITY 5 (long term/desirable) VAULTED BUILDING INTERIOR Carry out reinstatement and consolidate work to 5 no. vault ribs and 10 no. springing stones to reinstate profile of ribs below surface of brick vault whilst retaining original fabric (5 no. ribs @ 6 lin m each).	
Retain as existing ribs that retain their basic profile.	3 lin m
Where rib profile does not project below soffit of brick vault pin new profiled section of rib to body of existing with stainless steel pins set in resin.	15 lin m
Where rib profile projects below soffit of brick vault but in partly missing or the profile is partially weathered back, rebuild profile and fill voids with lime mortar plastic repair on copper armatures.	12 lin m
Carry out lime mortar plastic repairs on copper armatures to rebuild spring stone profiles to 5 no. spring stones.	5 no.
Limewash shelter coat 5 no. vault ribs.	30 lin m
Limewash shelter coat 10 no. spring stones.	10 no.
Carefully remove concrete infill to vaults and iron springs to Bay 1 and 2 and reinstate vault in handmade brick to match.	9m☐

Remove protective paddled clay floor and lay flag stone floor over original Tudor Floor.	
VAULTED BUILDING EXTERIOR	
Option 1 – Replace existing roof structure with new lower pitch roof structure within sedum roof. This solution will provide a more sympathetic roof covering and reduce water discharge around building.	88m□
Option 2 – Strengthen existing roof structure and replace mineral felt roof with handmade clay tiles.	100m□
LOW LEVEL CONSOLIDATED WALL HEADS TO TUDOR GREAT HALL	
Consideration should be given to delineating the outline of the buried walls with tantalised timber edgings fixed with steel pins and infilled with fine bound gravel on geotextile membrane. All to be carried out under archaeological supervision and with Scheduled Monument Consent. Assume 600mm wide walls.	300 lin m
GATEHOUSE AND CENTRAL MOAT WALL REMNANTS	
Arboculturist/Ecologist/Archaeologist to carry out study to determine whether it would be permissible/beneficial to remove any trees and roots from moatside to allow further study and consolidation of wall remains.	Item 60 lin m

4.1.2 RECOMMENDED FURTHER ASSESSMENTS

It is recommended that the following specialist assessments are made:-

- Commission laser survey of all buildings inside and outside prior to any further works to record fabric and to monitor future changes in condition.
- Carry out a bat survey
- Take mortar samples from wall to analyse original mortar mix and inform mix and source of line and sand for consistency of future mortar and pointing.
- Study by arboculturist/ecologist/archaeologist to determine whether it is permissible/desirable to remove some trees and roots from central moat to allow further study and consolidation of precinct wall remains.
- Assessment by plaster conservator to see whether hollow areas of lime plaster remains can be further consolidated by micro-injection.

APPENDICES

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Registered in England No. 2727193

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STRUCTURAL ASSESSMENT OF WOKING PALACE CARTERS LANE OLD WOKING, SURREY

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Date: June 2012

Reference: RF/CE/REP/14096~srep 01

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A Photographs

1.0 Introduction and Architects Brief

We have been requested, by exchange of emails between Mr David Hills of Purcell and Mr Edward Morton of this practice, to undertake a structural condition survey of the standing remains of Woking Palace.

1.2 We are to carry out a structural survey and provide recommendations and a specification for repairs to assist Purcell in formulating their own report.

1.3 The property was visited on Monday 11th June 2012 in company with Mr Stephen Elliott of Purcell. The weather was wet with persistent rain throughout.

1.4 We would like to thank Ms Jane Horsfield for providing access to the site and for providing commentary on the buildings.

2.0 Brief Description

2.1 The masonry remains of Woking Palace consist now of just a vaulted undercroft and some isolated, but attached, standing brick walls.

2.2 The original buildings were transformed into a Royal Palace by Henry VIII in 1503, completion of the Great hall in 1511 and further extensions and enlargements between 1532 and 1542.

2.3 The buildings were abandoned in the 1620's and fell into disrepair.

2.4 The standing remains which form the subject of our survey are the Vaulted Building (late 15th Century) and the Tudor Service Block (16th Century).

2.5 The standing remains are part of a scheduled Monument which covers the whole site.

2.6 The vaulted undercroft has a lightweight felted timber roof to prevent water ingress to the vault below. Windows have been blocked to prevent access.

2.7 Geographical notations have been used throughout and elevations are referenced according to the direction in which they face. Internal walls are referenced according to the position of the wall in relation to the building.

3.0 Structural Survey Detail

3.1 Vaulted Building – Internal

3.1.1 The undercroft consists of 6 bays running from east to west with 5 chalk clunch vault arches separating brick vaults. The north section of the first vault arch no longer exists, nor does the brick vaulting on the north side of the first 2 bays. All has been replaced by concrete with iron bands (photographs 1, 2 & 3).

3.1.2 The brick vaulting of bays 1 and 2 on the south side appears to be in good order (photographs 4, 5, 6 & 7)

3.1.3 The brick vaulting to bay 3 appears to be in good order (photographs 8, 9, 10 & 11).

3.1.4 The brick vaulting to bay 4 appears to be in good order (photographs 12, 13, 14 & 15)

3.1.5 On the north side of bay 5 the lintel to the doorway has cracked and moved. This has caused the brick vault to crack and we recommend that this be injected with polyester resin (photographs 16 & 17).

3.1.6 The brick vault on the south side of bay 5 appears to be in good order (photographs 18 & 19).

3.1.7 The brick vault on the north side of bay 6 has settled above the spring point on the wall and this appears to have caused longitudinal cracking in the vault (photographs 20 & 21). These cracks continue across the crown of the vault and then appear as diagonal cracks where a window has been inserted without the insertion of lintels (photographs 22 & 23). These cracks too should be injected with polyester resin.

3.1.8 The chalk ribs are in poor aesthetic condition but are still working structurally. There are likely to be a few loose portions of stone which should either be removed or pinned into position to prevent falls. A close inspection from a scaffold is recommended.

3.1.9 The north wall is in reasonable condition with one door opening in bay 1 and window openings in bays 3 and 5. All three chalk lintels have cracks or missing sections (photographs 24, 25, 26, 27, 28 & 29). The lintels should be pinned to reinstate their integrity.

3.1.10 The west gable too appears to be in reasonable condition but with a vertical crack and voids at the southern corner (photographs 30, 31, 32, 33 & 34). The crack should be consolidated by polyester resin injection and the voids filled with small pieces of chalk and lime mortar.

3.1.11 The south wall is in reasonable condition with a window opening in bay 6 which has no lintels (photographs 35, 36, 37, 38, 39 & 40). The window opening should be supported by oak lintels from short oak posts.

3.1.12 The east gable contains the doorway into the room. It too appears to be in reasonable condition. There is a vertical crack at the southern corner together with three previously repaired cracks above the door (photographs 41, 42 & 43). The vertical crack should be consolidated by polyester resin injection. The other cracks should be carefully raked out and also resin injected. A void at the end of the door lintel should be packed with slate.

3.2 **Vaulted Building – External**

3.2.1 The felted roof appears to be in good condition but rainwater disposal leaves a lot to be desired since it is not shedding water away from the building.

3.2.2 The south elevation is in reasonable condition. There is a previously repaired crack in the centre of the wall and a bulge around the middle third of its length. There are two S-shaped pattresse plates, one at each end, which are secure to the masonry. A window in bay 6 has been blocked up (photographs 44, 45 & 46). There is masonry missing from the south-east corner (photograph 47) and this should be replaced with bricks and lime mortar.

3.2.3 The west elevation too is in reasonable structural order. There is a previously filled nearly vertical crack at the southern end, (photographs 48, 49 & 50) together with a minor vertical crack between the quoins and the flint walling (photographs 51 & 52) which does not require attention.

3.2.4 The north elevation is a mixture of construction by the insertion of a projecting chimney (photographs 53, 54, 55 & 56). Either side of the chimney are windows, whilst at the east end there is a doorway. Two S-shaped pattresse plates are visible, which match the two on the south elevation. To the right of the chimney at high level, there is a new panel of brickwork. Below this there is a diagonal crack which runs through the blocks of stone, down the joint with the chimney and finishes with the cracked window lintel (photographs 57 & 58). The crack should be injected with polyester resin and the lintel pinned together.

3.2.5 There is a similar discontinuity down the left hand side of the chimney (photograph 59) but it is considered that this does not require any attention.

3.2.6 The base of the chimney is eroded (photographs 60 & 61) and these should be built back in suitable masonry.

3.2.7 The arched doorhead has dropped and there is a missing stone from the relieving arch above the doorhead (photograph 62). The missing stone of the relieving arch should be replaced and the chalk doorhead pinned back together.

3.2.8 The east elevation is a flint and rubble stone wall (photograph 63). It appears to be in good condition.

3.3 **Tudor Service Block**

3.3.1 The standing remains are in two distinct sections. The western wall is in two parts with the southern section attached to the vaulted undercroft.

3.3.2 The western face of the southern section of the west wall is eroded in places but nevertheless structurally sound due to its robust thickness (photographs 64 & 65).
The eastern face too appears to be in sound structural order (photographs 66 & 67) but water discharge from the roof of the vaulted undercroft has allowed a massive algal growth and caused some erosion of bricks at the junction between the two walls (photographs 68 & 69). If this is allowed to continue, frost will create further damage. No structural repairs are envisaged.

3.3.3 The western face of the northern section of the west wall is eroded in places but nevertheless structurally sound due to its robust thickness (photographs 70, 71 & 72). The north end of the wall tapers away to ground level and is covered by vegetation. Protection should be considered to prevent water ingress into the exposed masonry beds. The eastern face too appears to be in sound structural order (photographs 73, 74, 75 & 76). No structural repairs are envisaged.

3.3.4 The north face of the north wall is in sound structural condition (photographs 77, 78, 79 & 80). There are several areas of patched repairs but no structural repairs are envisaged. The doorway at the west end has been repaired with oak lintels. The south face of the north wall is also in sound structural condition (photographs 81, 82 & 83) and again no structural repairs are envisaged. The eastern end of the wall slopes down and both this end and the top of the wall would benefit from protection to prevent water ingress into mortar beds.

3.3.5 The east wall is low level. There is erosion of brickwork on the eastern face and evidence of repairs to the south end, (photographs 84, 85 & 86). Here again no structural repairs are envisaged but the top of the wall would benefit from protection to prevent water ingress into mortar beds.

4.0 Conclusions

4.1 The building and standing remains are considered to be in reasonable structural condition. No repairs are envisaged to the standing remains.

4.2 For the vaulted undercroft the cracks in the masonry should be injected with polyester resin and then repointed in lime mortar. The chalk ribs should be inspected and loose parts either removed or pinned back into place.

4.3 Stone lintels which are cracked should also be pinned to retain stability.

4.4 The most recent of the windows which has no lintel, should be supported by new oak lintels, in turn supported by oak posts.

5.0 Limitations

5.1 It should be stated that we have not inspected woodwork or other parts of the structure unless specifically detailed in the report, which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.

5.2 This report has been carried out to the Client's requirements and no liability is intended or will be accepted from any third party whatsoever.

5.3 The limits of liability are restricted to the contents of this report. No opening up or investigation of foundations etc was carried out, the inspection being visual only.

5.4 No checks on load bearing capabilities have been carried out.

Yours sincerely
FOR THE MORTON PARTNERSHIP LIMITED

R. Fox BEng (Hons) CEng. MICE. IHBC

APPENDIX A

Photographs

Photograph 1:

Photograph 2:

Photograph 3:

Photograph 4:

Photograph 5:

Photograph 6:

Photograph 7:

Photograph 8:

Photograph 9:

Photograph 10:

Photograph 11:

Photograph 12:

Photograph 13:

Photograph 14:

Photograph 15:

Photograph 16:

Photograph 17:

Photograph 18:

Photograph 19:

Photograph 20:

Photograph 21:

Photograph 22:

Photograph 23:

Photograph 24:

Photograph 25:

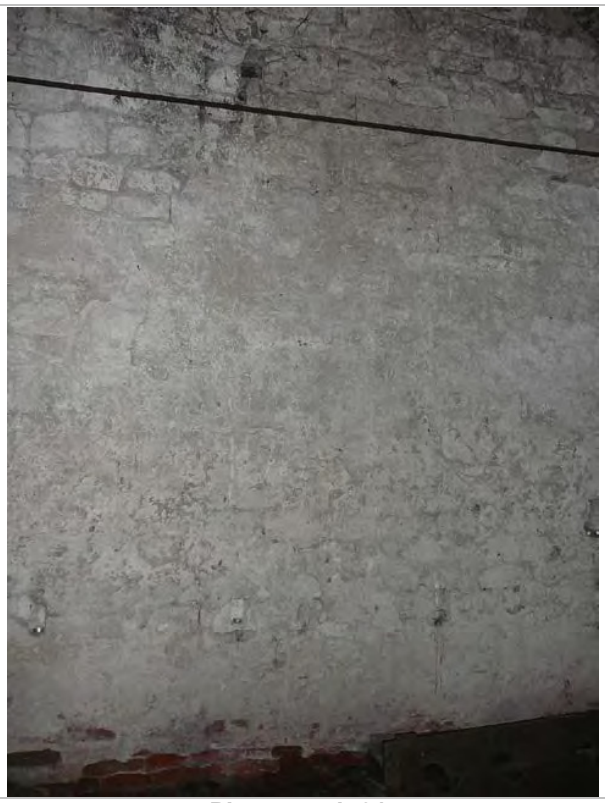
Photograph 26:

Photograph 27:

Photograph 28:

Photograph 29:

Photograph 30:



Photograph 31:

Photograph 32:

Photograph 33:

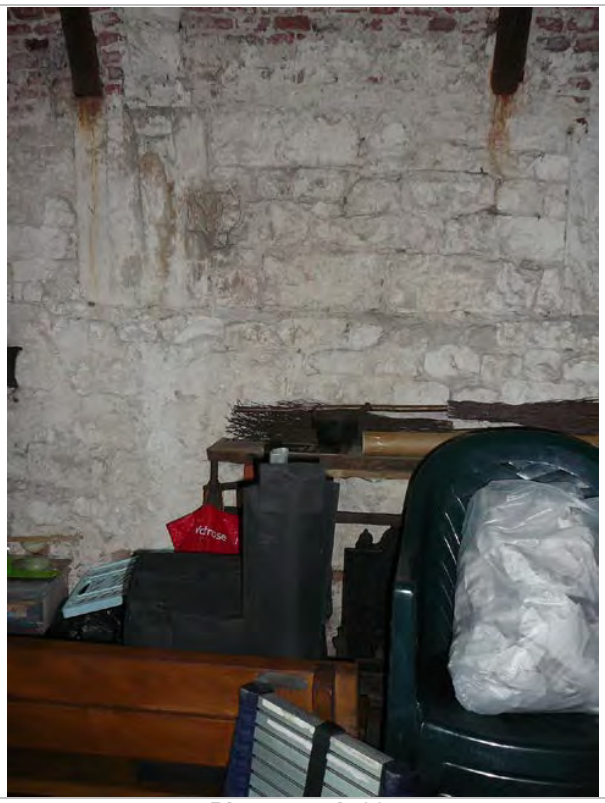
Photograph 34:

Photograph 35:

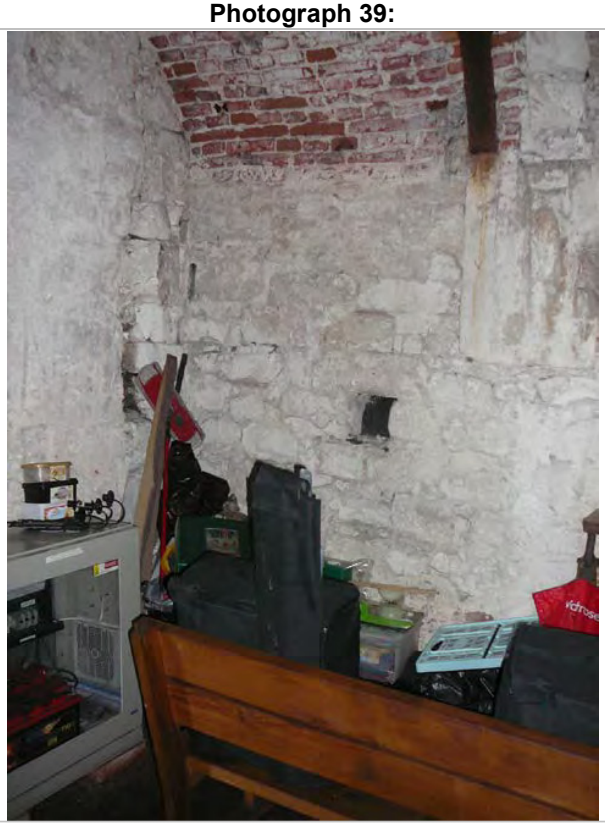
Photograph 36:

Photograph 37:

Photograph 38:

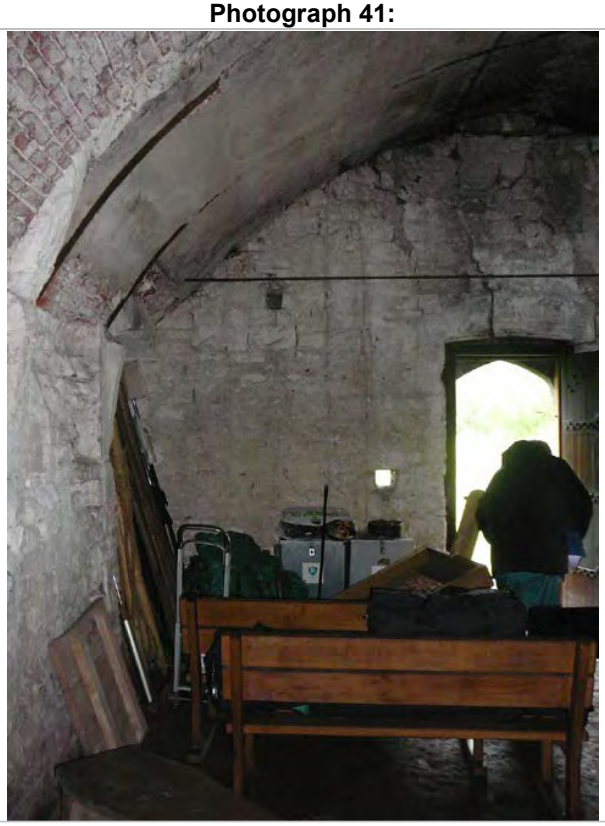


Photograph 39:



Photograph 40:

Photograph 41:



hotograph 42:

Photograph 43:

Photograph 44:

Photograph 45:

Photograph 46:

Photograph 47:

Photograph 48:

Photograph 49:

Photograph 50:

Photograph 51:

Photograph 52:

Photograph 53:

Photograph 54:

Photograph 55:

Photograph 56:

Photograph 57:

Photograph 58:

Photograph 59:

Photograph 60:

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Photograph 71:

Photograph 72:

Photograph 73:

Photograph 74:

Photograph 75:

Photograph 76:

Photograph 77:

Photograph 78:

Photograph 79:

Photograph 80:

Photograph 81:

Photograph 82:

Photograph 83:

Photograph 84:

Photograph 85:

Photograph 86:

Condition Survey Costings

Project: Woking Palace

For: Purcell

At: Woking Palace

Revision 1

Document created for:
David Hills

Prepared by:
Martin Stockwell

Client:
Purcell

Date:
8 August 2012

Job Nr:
B/5431

PURCELL

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CONTENTS

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PRIORITY 3 WORKS	8
PRIORITY 4 WORKS	14
PRIORITY 5 WORKS	15

WOKING PALACE
CONDITION REPORT COSTS

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SUMMARY OF COSTS AND GENERAL PRICING NOTES

PRIORITY 0 URGENT	PRIORITY 1 IMMEDIATE WITHIN 1 YEAR	PRIORITY 2 WITHIN 2 YEARS 1-2 YEARS	PRIORITY 3 WITHIN QUADRENNIAL PERIOD 2-4 YEARS	PRIORITY 4 WITHIN NEXT QUADRENNIAL PERIOD 5-8 YEARS	PRIORITY 5 LONG TERM DESIRABLE
£0.00	£16,280.00	£2,836.80	£18,390.00	£0.00	£82,404.00

GENERAL PRICING NOTES:-

1 By nature of the work some assumptions have had to be made in assessing the costs. Further investigations and structural survey may be required.
2 It is assumed that all works within each priority category will be carried out at the same time.
3 The above costs include an allowance for general preliminary costs.
4 No allowance has been included for contingencies or VAT.
5 All works are to be tendered.
6 Costs are based on current day rates and no allowance has been included for increased costs for when the works are assumed to be carried out.
7 The above excludes Professional, local authority or statutory fees, Planning fees etc. It would be anticipated fees would be in the region of 15% of the construction value.

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PRIORITY 0

Ref	Description	Quantity	Unit	Rate	Total	Comments
	Location					
1	No Action					

Priority 0 - Carried to Summary	**£0.00**

WOKING PALACE
CONDITION REPORT COSTS

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PRIORITY 1

Ref	Description	Quantity	Unit	Total	Comments
	VAULTED BUILDING INTERIOR				
1	Carry out bat survey prior to embarking upon any repair works.	1	Item	£500.00	
2	Erect scaffold deck internally to allow close inspection of ribs, take down any loose fragments, resin inject any fine cracks and pin any fractured sections. Hack off think sand cement facing to iron straps.	1	Item	£6,072.00	Assumed building footprint 12 x 6m approx, plus 4 man days for inspection and removal of cement and £500 allowance for repairs.
3	Mechanically brush down 2 no. iron springs 2 no. tie rods to bare metal and cost with bituminous paint.	1	Item	£288.00	Access included above.
4	Inject cracks through joints in brick vault with polyester resin and repoint with lime mortar.	12	lin m	£576.00	Access included above.
5	Consolidate/point void/gap between brick vault and ribs 1 and 3 with lime mortar.	3	lin m	£144.00	Access included above.
6	Apply protective lime wash shelter coat to 5 no. chalk ribs and 10 no. spring stones.	30	lin m	£360.00	Access included above.
	Carried Forward			£7,940.00	

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PRIORITY 1

Ref	Description	Quantity	Unit	Total	Comments
	Brought Forward			£7,940.00	
7	Apply 3 no. successive layers of poultice to face of brick vaults to remove lime bloom and salts.	45	m²	£5,076.00	Access included above. By Specialist - 2 men 6 days.
8	Install 3 no. 100 x 100 oak lintels with 100 x 100 oak posts at either end to window to south elevation of bay 6. Pack top of lintel with slate and point.	1	Item	£360.00	
9	Remove ivy growth from north end of western walls and weed growth from top of western and northern walls.	1	Item	£696.00	Assumed 2 man days.
	TUDOR SERVICE BUILDING				
10	Remove grass and weed growth from north and east wall heads with systemic weed killer.	1	Item	£264.00	Assumed a half man day.
11	Conservator to reconsolidate any loose edges of lime render remnants on inside face of west and north walls and micro-inject render to consolidate hollow areas.	6	m²	£1,872.00	Access included above. By Specialist - 2 men 2 days.
12	Adjust latch to pass gate at entrance.	1	Item	£72.00	
	Priority 1 - Carried to Summary			**£16,280.00**	

WOKING PALACE
CONDITION REPORT COSTS

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PRIORITY 2

Ref	Description	Quantity	Unit	Total	Comments
	VAULTED BUILDING INTERIOR				
1	Cut out eroded bricks from base of wall and piece in with new handmade bricks to match:	22	lin m	£1,884.00	
2	Replace 4 no. timber louvers complete with bird and insect mesh.	4	m²	£660.00	
3	Re-stain shiplap boarding to roof gables	24	m²	£292.80	
	Lime wash brick and chalk walls including window and door surrounds:				
	Priority 2 - Carried to Summary			**£2,836.80**	

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PRIORITY 3

Ref	Description	Quantity	Unit	Total	Comments
	VAULTED BUILDING INTERIOR				
1	Cut out eroded bricks from base of wall and piece in with new handmade bricks to match: South Wall plinth – 25 no. West gable plinth – 12 no. North wall – 30 no. East gable – 18 no.	85	no	£1,932.00	Assumed free issue of hand made bricks from Client stock.
2	Lime wash brick and chalk walls including window and door surrounds: South wall 24m² North wall 24m² East gable 18m² West gable 18m²	84	m²	£1,812.00	
3	Apply lime slurry coat to interior upper part of west gable and east gable.	14	m²	£336.00	
4	Consolidate vertical crack/void to interior south end of west gable.	1	m²	£408.00	
	Carried Forward			£4,488.00	

WOKING PALACE
CONDITION REPORT COSTS

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PRIORITY 3

Ref	Description	Quantity	Unit	Total	Comments
	Brought Forward			£4,488.00	
5	Open up blocked vents in west gable 2 no., east gable 1 no. to improve ventilation.	3	no	£216.00	
6	Consolidate/infill internal void areas of masonry under north wall windows with brick.	1	m	£204.00	
7	Carry out isolated pointing to inside face of north wall.	15	m	£480.00	
8	Piece in half of missing chalk stone lintel to inside face of west window in north wall, bay 5, and secure with stainless steel pins set in resin.	1	Item	£300.00	
9	Consolidate missing back section of chalk lintel to inside face of central window in north elevation, bay 3, with brick and lime render face.	1	Item	£300.00	
10	Carry out small lime mortar plastic repair to underside of inside face of door lintel in bay 1 of north elevation where lintel previously repaired.	1	Item	£132.00	
	Carried Forward			£6,120.00	

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PRIORITY 3

Ref	Description	Quantity	Unit	Total	Comments
	Brought Forward			£6,120.00	
11	Cut out and refill 3 no. vertical cracks in internal face of east gable and pack lintel bearing with slate.	4.5	lin m	£108.00	
12	Consolidate/infill internal void area of masonry to internal jamb of door and at south end of east gable with brick.	1	m²	£138.00	
13	Commission laser scan survey of internal space to record fabric priory to embarking upon repair works and to monitor future changes in condition.	1	Item	£360.00	Assumed carried out as one operation i.e. Items 13, 14 and 25.
	VAULTED BUILDING EXTERIOR				
14	Commission laser scan survey of exterior of vaulted building to record fabric prior to embarking upon repair works and to monitor future changes in condition.	1	Item	£1,200.00	Assumed carried out as one operation i.e. Items 13, 14 and 25.
15	Cut out sand cement mortar filling to upper part of east and west gable and repoint flush with deep pointed lime sand mortar.	30	m²	£1,740.00	
	Carried Forward	3	m²	£9,666.00	

WOKING PALACE
CONDITION REPORT COSTS

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PRIORITY 3

Ref	Description	Quantity	Unit	Total	Comments
	Brought Forward			£9,666.00	
16	Apply lime shelter coat to moulded doorway in south elevation.	1	Item	£60.00	
17	Pin cracks in 2 no. window lintels and 1 no. door lintel on north elevation and repoint open joints.	3	no	£540.00	
18	Piece in 1 no. Hearthstone above door on north elevation.	1	no	£204.00	
19	Point isolated open joints in north elevation.	1	m²	£60.00	
20	Supply and fit 1 no. limestone cill to window on north elevation.	1	Item	£300.00	
	TUDOR SERVICE BUILDING				
21	Take samples of original mortar from within walls and send for analysis to inform mix and type of sane/aggregate for new pointing works.	1	Item	£600.00	Provisional Sum
22	Cut out and piece in 30 no. new handmade bricks at low level.	30	no	£540.00	
	Carried Forward			£11,970.00	

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PRIORITY 3

Ref	Description	Quantity	Unit	Total	Comments
	Brought Forward			£11,970.00	
23	Cut out hard sand cement mortar from areas causing erosion to brick and repoint with lime sand mortar.	45	m²	£2,160.00	
24	Consider removal of sand cement hard capping from wall heads of west and north walls and introduction of soft turf capping to alleviate concentration of damp at top face of wall and provide a visually unified appearance to ruins.	33	lin m	£1,884.00	
25	Commission laser scan survey of exterior walls of service building to record fabric prior to embarking upon repair works and to monitor future changes in condition of building.	1	Item	£1,200.00	Assumed carried out as one operation i.e. Items 13, 14 and 25.
26	Cut out and piece in 30 no. bricks at low level on both sides of north wall.	30	no	£540.00	
27	Rake out yellow sand mortar from east wall and repoint.	2	m²	£96.00	
28	Reconsolidate south end of northern section of wall with any frogs concealed.	0.5	m²	£60.00	
	Carried Forward			£17,910.00	

WOKING PALACE
CONDITION REPORT COSTS

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PRIORITY 3

Ref	Description	Quantity	Unit	Total	Comments
	Brought Forward			£17,910.00	
29	Remove existing mortar covering to 5 nr low level walls adjacent to east wall and repoint and reconsolidate	3	m²	£360.00	
	SITE FURNITURE				
30	Replace rotten gate post to field gate (150 x 150)	1	Item	£120.00	
	Priority 3 - Carried to Summary			**£18,390.00**	

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PRIORITY 4

Ref	Description	Quantity	Unit	Rate	Total	Comments
	LOCATION					
1	No Action					

Priority 4 - Carried to Summary	**£0.00**

WOKING PALACE
CONDITION REPORT COSTS

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PRIORITY 5

Ref	Description	Quantity	Unit	Total	Comments
	VAULTED BUILDING INTERIOR				
1	Carry out reinstatement and consolidate work to 5 no. vault ribs and 10 no. springing stones to reinstate profile of ribs below surface of brick vault whilst retaining original fabric (5 no. ribs @ 6 lin m each). Retain as existing ribs that retain their basic profile.	1	Item	£3,600.00	Allowance for access only. Assumed building footprint 10 x 6m approx
2	Retain as existing ribs that retain their basic profile.	3	lin m	£0.00	Assumed no costs required.
3	Where rib profile does not project below soffit of brick vault pin new profiled section of rib to body of existing with stainless steel pins set in resin	15	lin m	£8,280.00	Access included above.
4	Where rib profile projects below soffit of brick vault but in partly missing or the profile is partially weathered back, rebuild profile and fill voids with lime mortar plastic repair on copper armatures.	12	lin m	£5,280.00	Access included above.
5	Carry out lime mortar plastic repairs on copper armatures to rebuild spring stone profiles to 5 no. spring stones.	5	no	£1,680.00	Access included above.
	Carried Forward			£18,840.00	

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PRIORITY 5

Ref	Description	Quantity	Unit	Total	Comments
	Brought Forward			£18,840.00	
6	Lime wash shelter coat 5 no. vault ribs.	30	lin m	£180.00	Access included above.
7	Lime wash shelter coat 10 no. spring stones.	10	no	£60.00	Access included above.
8	Carefully remove concrete infill to vaults and iron springs to Bay 1 and 2 and reinstate vault in handmade brick to match.	9	m²	£9,960.00	Access included above.
9	Remove puddle clay protective floor and lay protective flagstone floor over exiting Tudor floor	60	m²	£10,800.00	
10	Remove blocking up from 3nr openings to north wall and fit iron bars and timber/steel shutters to windows and timber/steel door	60	m2	£7,728.00	
	VAULTED BUILDING EXTERIOR				
11	Option I – Replace existing roof structure with new lower pitch roof structure within sedum roof. This solution will provide a more sympathetic roof covering and reduce water discharge around building.	88	m²	£28,896.00	Provisional subject to roof structure design and sedum covering.
	Carried Forward			£76,464.00	

WOKING PALACE
CONDITION REPORT COSTS

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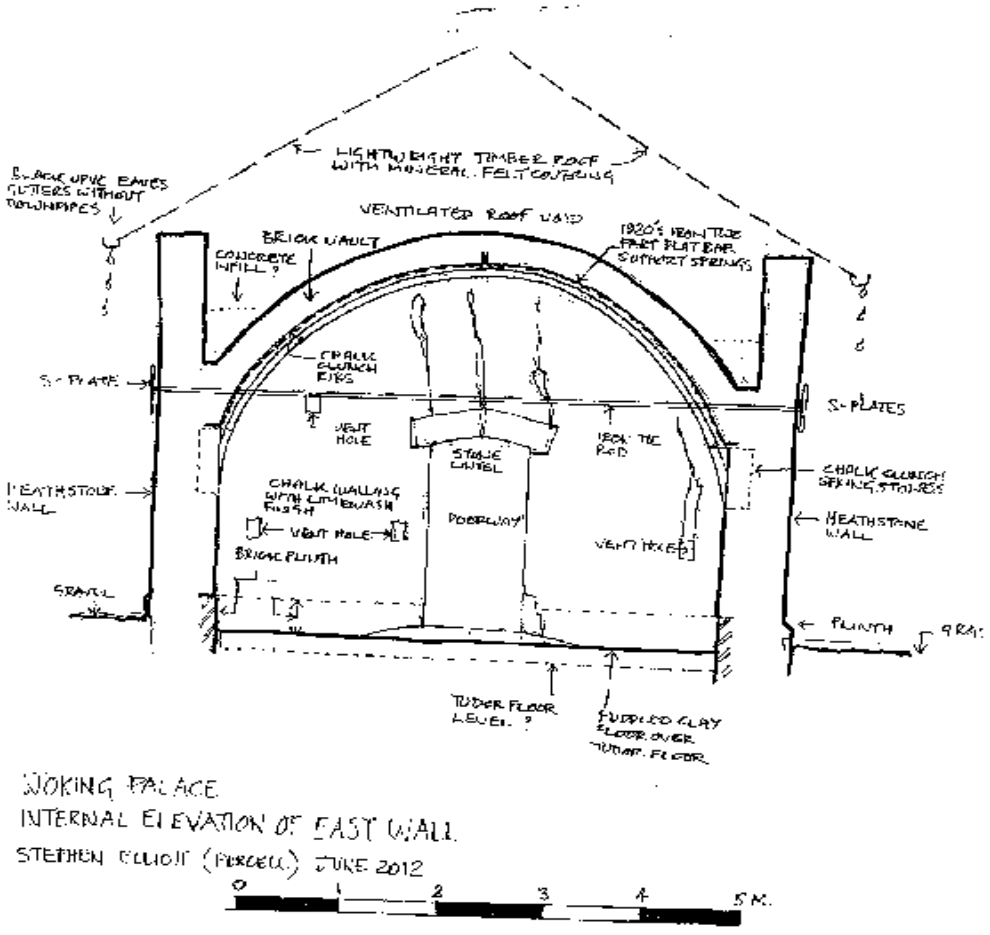
PRIORITY 5

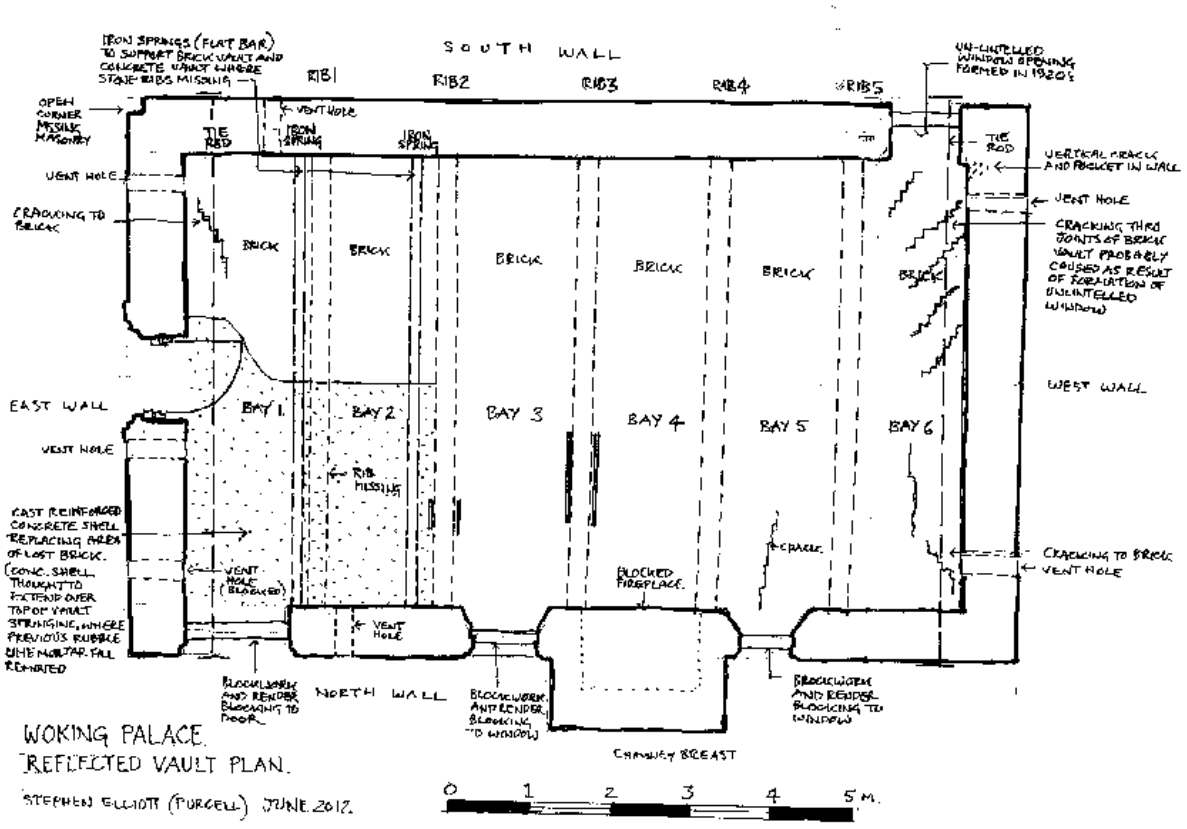
Ref	Description	Quantity	Unit	Total	Comments
	Brought Forward			£76,464.00	
12	Option 2 – Strengthen existing roof structure and replace mineral felt roof with handmade clay tiles.	100	m²	£1,080.00	Extra Over costs of the above.
	LOW LEVEL CONSOLIDATED HEADS TO TUDOR GREAT HALL				
13	Consideration should be given to delineating the outline of the buried walls with tantalised timber edgings fixed with steel pins and in filled with fine bound gravel on geotextile membrane. All to be carried out under archaeological supervision and with scheduled monument consent. Assume 600mm wide walls.	300	lin m	£3,960.00	
	GATE HOUSE AND CENTRAL MOAT WALL REMNANTS				
14	Arborculturist/Ecologist/Archaeologist to carry out study to determine whether it would he permissible/beneficial to remove any trees and roots from moat side to allow further study and consolidation of wall remains.	60	lin m	£900.00	Allowance for report only.
	Priority 5 - Carried to Summary			**£82,404.00**	

WOKING PALACE

INTERNAL ELEVATION OF EAST WALL



WOKING PALACE
REFLECTED VAULT PLAN



22.06.12 ABr Woking Condition Report Photos

Figure 1. View of vaults looking East showing fractured chalk ribs and concrete repairs to end two bays of vault.

Figure 2. Cracking through brick vaults in bay 6 caused by insertion of window without lintel in 1920's.

Figure 3. Circa 1920's replacement of brick to northern section of vault bay 1 and 2 with in situ concrete. Thin layer of concrete to face of rusting steel springs could detach.

Figure 4. Eroding bricks to plinth within vault chamber caused by ground water at base of wall exacerbated by water falling from eaves.

Figure 5. Good example of intact chalk spring stone and small vent opening.

Figure 6. Lime Slurry coat and brick plinth to West Gable.

Figure 7. Iron bar supporting remaining half of chalk lintel to window in north wall of bay 5.

Figure 8. Previously filled cracks above door in East Elevation.

Figure 9. East Elevation of Vaulted Building showing hard cement mortar packing to upper section of elevation.

Figure 10. Missing stack of masonry from South East corner of Vaulted Building.

Figure 11. 15th century moulded chalk door surround to South East Elevation with Lime Shelter Coat finish.

Figure 12. South Elevation of Vaulted Chamber showing photo voltaic cells on felted roof and 1920's window insertion without lintel.

Figure 13. West Eelvation of Vaulted Building and Free Standing Brick Wall remains to Service Building.

Figure 14. West Elevation of Vaulted Building showing hard sand cement mortar packing to upper section of flint walling and degrading timber louvers.

Figure 15. North Elevation of Vaulted Building showing algae growth on walls due to damaged and inadequate gutter system.

Figure 16. Cracked and settled moulded chalk door lintel on North Elevation of Vaulted Building and missing Heathstone voussoir to relieving arch.

Figure 17. West Elevation of Service Building Wall remains showing unsightly white cement mortar capping to wall head and dampness concentrated at wall head due to rainwater run-off.

Figure 18. West face of brick wall of Service Building (former external elevation) showing extent of erosion to brick.

Figure 19. Consolidated wall end to West Wall of Service Building showing ivy growth which should be removed. Also recently installed timber lintels and steps to door opening.

Figure 20. Norther Section East Face of Service Building West Wall showing remnants of lime plaster.

Figure 21. Southern Section East Face of Service Building West Wall showing unsightly white cement mortar capping to wall head and dampness concentrated at wall head due to rainwater run-off; pooly finished area of recent re-pointing in lime mortar.

Figure 22. North Face of North Wall of Service Building showing remnants of thin cementitious render and algae caused by rainwater run-off from hard capped wall head.

Figure 23. South Face of North Wall of Service Building showing remnants of thin lime render which has hollow sections, recently patched in areas of new handmade brick and new oak lintels, props and brickwork to doorway.

Figure 24. East Face of East Wall of Service Building showing very poor consolidation work. Varying colouration of pointing due to uncontrolled sourcing of sand and bricks to wall end with frogs exposed on upper face of bricks.

Figure 25. Oak notice Board at entrance to site

Figure 26. Low wall head remains to South End of Great Hall that have been consolidated with lime mortar that has been degraded by frost action.

Figure 27. Hazel balustrading and timber bridge with grass topping at entrance to site.