

GREENWICH PARKS FORUM



4 July 2022

Dear Councillor Khaireh

I am writing on behalf of the Greenwich Parks Forum to express its support for the Royal Borough of Greenwich's plans to restore and refurbish the Winter Garden.

The Forum is a network of the 28 Friends of Parks groups in the Borough, committed to maintaining and extending the amenities and ambiances of these much valued parks, pleasaunces and commons. Avery Hill has a particularly significant profile as a park, in that it is graced by the presence of the Winter Garden conservatory, second only to Kew in its size and importance.

The Forum has given its support to the Save Avery Hill's campaign to save the Winter Garden, and it is gratified that there is widespread backing for the future survival and sustainability of this unique historical asset. Restored to its former glory, the Winter Garden has the potential to become a vibrant hub for cultural, educational and community events. The Winter Garden is well loved within the local community across all generations, and its revival will increase its attraction to visitors from outside the local Eltham area. The widening of its appeal will enhance the conservatory's role in the area's economic, social and cultural life, opening opportunities in employment and education for local people. External funding will ensure that the Winter Garden fulfils this role, and gives it the means of sustaining its impact well into the future.

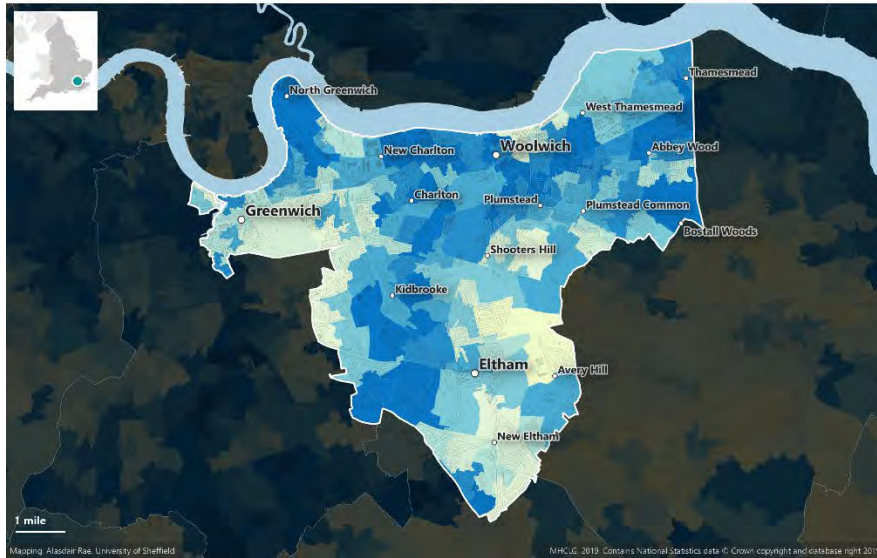


Chair

Greenwich Parks Forum

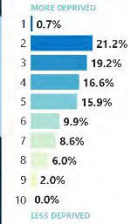
English Indices of Deprivation 2019

GREENWICH



Local deprivation profile

% of LSOAs in each national deprivation decile



What this map shows

This is a map of Indices of Deprivation 2019 data for **Greenwich**. The colours on the map indicate the deprivation decile of each Lower Layer Super Output Area (LSOA) for England as a whole, and the coloured bars above indicate the proportion of LSOAs in each national deprivation decile. The most deprived areas (decile 1) are shown in blue. It is important to keep in mind that the Indices of Deprivation relate to small areas and do not tell us how deprived, or wealthy, individual people are. LSOAs have an average population of just under 1,700 (as of 2017).





REPORT

MAY 2021

AVERY HILL WINTER GARDENS - CONDITION SURVEY

AVERY WINTER GARDENS SURVEY
RIDER LEVETT BUCKNALL

Prepared By



Associate Building Surveyor



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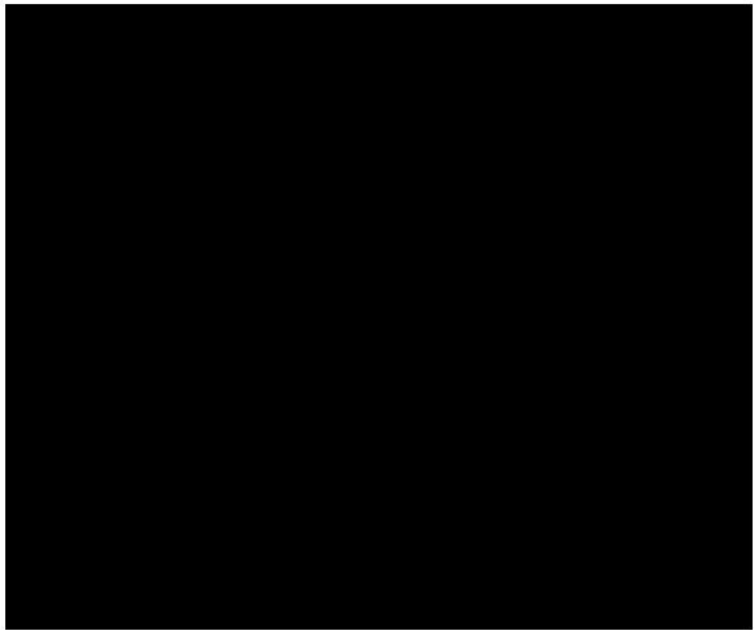
APPENDICES

Appendix A: Photographs

Appendix B: Plan View

AUTHORISATION

This report has been prepared by:



and authorised for issue by:

REVISION HISTORY

REVISION	REVISION DATE	SUMMARY OF CHANGES	CHANGES MARKED
A	07/06/2018	Additional costs inputted into summary table	07/06/2018
B	04/05/2021	Update report to current condition	04/05/2021

1.0 EXECUTIVE SUMMARY

This report relates to the requirement for a condition survey of Avery Hill Winter Gardens situated within Avery Hill Park, London. The report is for the winter gardens only and includes all associated roofs, external fabric and internal.

The building is currently being utilised as winter garden conservatory with tropical trees and plants as well as a flower garden with pond. We have identified various defects with the existing building fabric, a summary of which is provided below. All recommended remedial works have been labelled as Priority 1 (highest) to 4 (lowest).

We understand the building is Grade II listed. As such, consultation with the local authority and Historic England prior to any remedial works which may affect key architectural features and the character of the building will be required.

In its current condition the building is classified as heritage at risk by Historic England. Historic England describes the building as “suffering from water ingress and considerable deterioration of the fabric’.

As a result of our survey, we advise that the following remedial works should be carried out. These remedial works will enable the building to be used for its intended purpose and to minimise premature deterioration. Budget costs for the remedial works have been provided. Please note the caveats for these costs which are detailed in section 3 of this report.

A summary of the principal building fabric remedial works are as follows:

- Domed roofs to the Temperate, Tropical and Bird Room are a mixture of float, hexagonal chicken wire and Georgian wired glass. The glazing is cracked/ discoloured throughout and requires renewal as well as associated repairs to the window frame.
- Lead work to the Temperate, Tropical and Bird Room roof is in a poor condition, with regular fissures and lifted areas throughout. Replacement of all existing lead is required as part of the roof glazing renewal.
- Timber cupolas, entablatures and architectural details to the domed roofs are weathered with widespread rot and decay of the timber. Replacement of timberwork is required to each roof as well as repairs to existing timber details.
- Water ingress is common throughout the internal areas as a result of leaking rainwater goods. Ogee styled cast iron gutters are corroded throughout and require widespread renewal and maintenance.
- External and internal masonry walls are subject to extensive spalling to all elevations, as well as along the horizontal entablature, specifically the brick cornice bands spanning the perimeter of the structure. Brickwork replacement, repairs and re-pointing is required.
- Structural cracking to the dental course of the brick arches was noted to the South elevation of the Tropical Room wall. Permanent structural repairs/ reinforcement should be implemented to regain the structural integrity of the arches.

- High level timber cupola windows are subject to weathering and rot. Complete replacement of cupola windows is required as well large-scale repairs to retained timber.
- External and internal joinery and metal work decoration is in a poor condition throughout. Redecoration to previously decorated surfaces should be carried out.
- Window opening mechanisms are original throughout; as a result, they are operating with fault, resulting in regular fixing failure. The existing mechanism should be replaced throughout.
- External glazed Venetian style double doorsets to the Tropical Room are weathered as well as showing signs of rot. The door set should be replaced to match existing.
- The intumescent/ decorative coatings to the riveted cast iron frame with round arches supporting the glazing is flaking throughout as well as displaying signs of corrosion. The existing finish should be removed, metal substrate treated, and a new coating applied.
- The grey/ blue textured block paving to all internal areas is soiled, lifted tiles are prominent particularly to the perimeter of the rooms, and these should be lifted and re-laid. Tiles to the centre of the Temperate room are damaged beyond repair and should be replaced.
- To the Temperate Room North elevation wall two brick piers have been partially demolished at low level. The brick piers should be renewed where damaged.
- The existing mechanical heating supply has been largely removed, existing pipework in place is corroded and it is advised this is renewed to a standard acceptable by Historic England.
- There is a dedicated electrical distribution board within the mansion block plantroom which feeds into a three-phase electrical sub-distribution board located in the Tropical Room.

2.0 CONFIRMATION OF INSTRUCTION

In accordance with the original e-mailed instruction issued by The Royal Borough of Greenwich to Chris Harrington and the follow up instruction issued to Chris Bowles of Rider Levett Bucknall; we have undertaken an inspection at Avery Hill Winter Gardens situated at Avery Hill Park. We understand that the Royal Borough of Greenwich is looking to ascertain the present condition of Avery Hill Winter Gardens. We have carried out a survey looking at the condition of the existing building and requirement for remedial works for the purposes mentioned above.

Appendix I contains general photographs of the building and any particular defects of note.

3.0 LIMITATIONS AND CAVEATS

Our original inspection was undertaken on 08 May 2018, the weather was dry and sunny at the time of our inspection. A further inspection was carried out on 24 May 2021, the weather was heavy rain at the time of our inspection. All comments within this report are based on a visual inspection only by ourselves and information supplied by the building user.

Whilst the survey was thorough, it was not possible, without causing damage or severe inconvenience, to inspect those parts of the premises which were covered, enclosed or obscured by fixtures, fittings internal linings and the like. We are therefore unable to categorically state that such areas are free from defects.

Our inspection of the Tropical Room was limited at the time of the survey due to the vast majority of the area being cordoned off due to broken hanging glass above.

At the time of the inspection the scaffold was erect to front elevation of the Temperate Room limiting access to these areas.

We have not arranged for exposure works to be carried out to the superstructure or below ground or carried out testing for the presence of deleterious materials, but where appropriate will seek further instruction for these to be carried out for an additional charge.

The costs provided for the works assume a competitive tender and do not include for the following:

- VAT
- Contractor preliminaries
- Access requirements to complete remedial works
- Professional fees
- Out of hours working

Specific exclusions from the Report are as follows:

- Asbestos survey
- External fences, railings and boundary walls
- The condition of trees and shrubs in the garden areas

4.0 SITE SURVEY AND RECOMMENDED WORKS

4.1 GENERAL BUILDING OUTLINE AND PRIORITY CATEGORIES

Avery Hill Winter Gardens is located in the north-eastern corner of Avery Hill Park, adjoined to the existing mansion block currently used by The University of Greenwich.

The existing building is believed to have been constructed circa 1889 and was originally used for residential accommodation. The glasshouse was used as a temperature-controlled garden open for public viewing.

The building comprises a single storey structure with three designated rooms titled: Tropical Room, Temperate Room and Bird Room. The Tropical Room is currently vacant; a temporary timber partition has been formed to the side of the room creating a store. The Temperate Room comprises of a number of planters and currently contains a range of tropical trees and plants. The Bird Room again comprises of planters as well as a feature pond to the centre of the room; the mansion block can also be accessed from this room.

The external walls are of traditional construction with a red clay brick and matching red mortar used throughout. Walls are defined by brick pilasters supporting entablature with brick mouldings. Large arched steel windows set in timber sub-frames are used throughout each elevation. Central round arched doorways with side lights provide access to the Tropical and Temperate Room.

The roof is divided into three sections above each room. The Temperate Room roof is formed by low pitched glazed panels to outer parts, a tall central glass dome with moulded wood cornice and console bracketed soffit. To the centre of the roof is a timber cupola. To each of the return wings forming the Tropical and Bird Room a similar style dome glass roof covers the areas with small, square cupolas.

This condition survey has for the purposes of this report been split into three sections:

1. The Roofs
 - a. Roof Coverings
 - b. Timber Cupola, Architectural Details & Joinery
 - c. Rainwater Goods
2. The External Elevations
 - a. Walls
 - b. Windows
 - c. External Doors
3. The Internal Areas
 - a. Floors

- b. Walls
- c. Frame & Structure
- d. Internal Doors
- e. Internal Windows
- f. Joinery & Metal Work
- g. Vermin Infestation

4. Services

4.2 CONDITION AND PRIORITY RATING

This condition survey contains priority codes which are defined below. The condition rating refers to the condition at the time of inspection and our perceived concerns if the matter is deferred.

Condition Rating	Definition	Undertake Within	Probable Outcome of Deferral
1	In a hazardous condition. Works are needed to comply with Health & Safety or other statutory obligations.	0 - 1 Years	<ul style="list-style-type: none"> - Failure to meet legal responsibilities. - Possible closure of section of property. - Danger to property users and to public.
2	In poor condition or reaching the end of its useful life. Comprehensive repair or replacement needed.	2 Years	<ul style="list-style-type: none"> - Property or element will become unfit for its purpose. Maintenance and running costs will escalate.
3	In fair or serviceable condition with evidence of wear and deterioration. Repair or partial replacement needed.	3 - 5 Years	<ul style="list-style-type: none"> - Property or element will become unfit for its purpose. - Maintenance and running costs
4	In good condition. No immediate or significant repair or replacement necessary.	N/A	<ul style="list-style-type: none"> - Deferral of repair or replacement over lifespan of property or element could result in lower standards and decrease of asset value.

4.3 THE ROOFS

4.3.1 GENERAL DESCRIPTION AND CONDITION

4.3.1.1 Roof Coverings/ Space, Chimney Stacks and Parapet Walls

Avery Hill Winter Gardens roofs are divided into three sections as described below:

Temperate Room Roof

Covering the central Temperate Room is a low-pitched roof set in a square formation to the outer parts, with a tall central glass octagonal dome with moulded wood cornice and console bracketed soffit. To the centre of the roof is a timber cupola. The roof covering is clad in a combination of original float glass, hexagonal chicken wire and Georgian wired glazing. Glazing is supported by folded lead T-sections and more recent aluminium angle replacements to the internal face. Lead flashings line abutments throughout the roof. The roof discharges rainwater into a perimeter ogee style cast iron gutter, which in turn discharges into cast iron down pipes. A stepped lead valley gutter can also be seen to the Eastern elevation. Ogee guttering to the cupola discharges into what appears to be lead downpipes.

The glazed roof covering is in a poor condition throughout and is generally discoloured with concentrated areas of lichen growth noted. Cracked glazing is prominent throughout however a phased replacement of cracked glazing was being undertaken at the time of the survey. Existing fenestration has been re-used where replacement glazing has been installed.

From an internal inspection taken from the scaffold erect at the time, the frame/ glazing bars supporting the glazing was noted to be in a fair condition. Minor spot corrosion was noted to isolated fixings as well as flaking finishes where the frame has been decorated.

Lead 'T-section supports have slipped internally and externally; lead support is in a poor condition throughout and requires complete replacement. Lead flashing to the entire roof covering is in a poor condition with cracked/ failed lapping joints.

Tropical Room Roof

The Western wing of the glasshouse comprises the Tropical room. The roof configuration is similar to that of the Temperate Roof. The West wing however is formed of only one segmental arch vaulted/ domed roof with a smaller cupola running along the central line. The roof profile to the south elevation is that of a half dome, to the North the roof adjoins a more recent extension albeit of the same construction. Internally a semi-circular glazed gable separates the original glasshouse from the extension. The roof covering is again clad in original float glass, hexagonal chicken wire and replacement Georgian wired replacement panels. Glazing is supported by folded lead T-sections as well as aluminium angles where panel renewal has taken place. Rainwater discharges into ogee style cast iron gutters as well as a stepped lead valley gutter to the Eastern elevation where the Temperate and Tropical room roofs meet.

Equally with the other roof coverings on the glasshouse the glazed panels are discoloured throughout. Cracked roof glazing appears more regular to the Western elevation of the Tropical room which

subsequently runs alongside the public footpath. Internally, evidence of stones and other projectiles can be seen which may suggest vandalism as a cause to the more regular cracked glazing. Broken glazing is allowing pigeon infestation to the Tropical Room.

An inspection of the window frame/ glazing bars was taken from ground floor level. The frame was in a similar condition to the Temperate Room with minor corrosion noted. Externally, to the Eastern face of the dome roof new, larger profiled fenestration has also been installed as part of the replacement Georgian wired glazed panels. The aluminium support angle appears to have slipped also from the above pane of float glass. To the glazing above the low cupola a number of fenestration bars have corroded and require replacement.

Lead work throughout is in a poor condition. Lead skirting to the underside of the glazing has slipped throughout and is generally life expired.

Bird Room Roof

The Bird Room roof to the East wing of the glasshouse is of a similar configuration to the Tropical Room roof with a small cupola to the centre. The Bird Room abuts the mansion block however with a dome to each elevation. As with the other roofs the dome is clad in original float and Georgian wired glazed panels. Glazing supported as before with folded lead T-sections as well as aluminium angles where panels have been renewed. Rainwater discharges into ogee style gutters as well as a stepped lead valley gutter to the Western elevation where the Temperate and Bird Room roofs meet.

Heavy discolouration can be seen to the glazed panels throughout. Cracked panels are less regular than the other roofs.

An inspection of the frame/ glazing bars was taken from ground floor level. Minor corrosion was noted as with the other roofs.

Lead was noted to be in a poor condition. Lead skirtings and T-sections have slipped throughout, allowing a greater passage of water ingress.

4.3.1.2 Timber Cupola, Architectural Details and Joinery

Temperate Room Roof

The base of the central domed roof at the peak of the lower pitched roof sees timber scrollwork supporting a moulded wood cornice. Isolated members of timber scrollwork are severely rotten and require complete replacement. Decorations to other timber members are in a poor condition and require complete redecoration to prevent further breakdown of the material.

Timber fascia's, soffits and moulded cornice details are showing extensive signs of rot throughout. Replacement of rotten members should be carried out with a timber care treatment to all remaining timbers. Decorations were also noted to be poor to all joinery. Decorations to all new and retained timber should be carried out to mitigate future spread of rot.

The low central wood cupola to the top of the roof appears to be in a similar condition with widespread rot to all joinery. Replacement of rotten timber is recommended.

Tropical Room Roof

A low-level timber cupola runs along the length of the Tropical Room roof ridge. Widespread rot to the timber was noted leaving the majority of timber beyond reasonable repair. Replacement with treated timber should be carried out as well as renewal of all decorations.

Bird Room Roof

The timber cupola to the Bird Room Roof incorporates the same design as the Tropical Room Roof. The cupola is heavily weathered with extensive levels of rot and flaking finishes noted. Replacement of the timber and renewal of the decoration is required.

4.3.1.3 Rainwater Goods

The rainwater goods serving each of the domed roofs throughout are a combination of ogee style cast iron gutters and stepped lead valley gutters. Rainwater is discharged from roof level via primarily cast-iron downpipes although some lead pipework has been utilised to the upper cupolas.

Significant vegetation build up was noted to all rainwater goods causing blockages of outlets. Rainwater goods should be cleared of vegetation and rodded through to run freely. Drainage outlet covers are positioned sporadically, where used covers are corroded and would benefit from renewal.

The ogee style cast iron gutters appear aged throughout. Gutters to Temperate, Tropical and Bird Room cupolas are in a poor condition and are subject to heavy corrosion, where treatment/ repair is not possible replacement is recommended. The internal run of all ogee gutters is corroded allowing for the potential of the gutter substrate to breakdown substantially. Significant leaks were noted to most runs of gutter where joints have failed. To prevent further corrosion of the gutters it is recommended that they are lined with a liquid applied system throughout.

Lead capping forming the stepped valley gutters to roof abutments is tired. Significant water ingress internally would suggest fissures in the surface of the lead. It is recommended that the valley gutters are renewed in their entirety to prevent moisture ingress. Valley gutters discharge into internally routed swan-necked cast iron square section downpipes; joints should be sealed.

Decorations to all gutters and downpipes appear tired, with substrates becoming exposed. It is recommended that decorations are renewed to mitigate future corrosion/ decay of materials.

4.3.2 RECCOMEDED REMEDIAL ACTION

4.3.2.1 Priority 1 Works

Location	Condition	Remedial Works Required	Cost (£)	Building & Fabric Category
Temperate, Tropical & Bird Room Roof Coverings	Roof glazing cracked/ discoloured throughout with lead fixing failure regular.	Renew defective glazing and isolated sections of frame throughout each roof covering removing asbestos and all associated deleterious materials.	£482,300.00	1.1.1 – Roof Repairs
Temperate, Tropical & Bird Room Roof Lead Flashings	Lead capping's/ flashings split throughout where lead has become brittle.	Renew lead flashings as part of the glazed roof covering renewal.	£112,635.00	1.1.1 – Roof Repairs
Temperate, Tropical & Bird Room Roof Timber Architectural details.	Isolated timber cornice, scrollwork, cupola frames, fascia's and soffits subject to extensive rot.	Renew rotten timber detailing throughout. Carry out isolated timber repairs to less effected timber and treat all remaining.	£41,700.00	1.1.2 – Roof Timber Details
All Rainwater Goods	Vegetation giving rise to leakages in localise areas.	Allow to clear all rainwater goods throughout (including isolated repairs to seals) to prevent blockages and leakages.	£3,947.00	1.1.3 - Rainwater Goods
All Rainwater Goods	Decorations to rainwater goods poor albeit structurally sound, decoration required to mitigate risk of corrosion.	Allow to redecorate all rainwater goods.	£11,983.00	1.1.3 – Rainwater Goods
Tropical and	Lengths of cast iron gutters are	Allow to replace isolated lengths of	£6,411.00	1.1.3 – Rainwater Goods

Location	Condition	Remedial Works Required	Cost (£)	Building & Fabric Category
Temperate Roof Cast Iron Ogee Gutters	corroded to the internal and external face.	cast iron guttering where repairs are not possible.		
Cast Iron Ogee Gutters	Corrosion to surface of gutters leading to leaks in localised areas.	Allow to line gutters with a liquid applied system throughout.	£17,492.00	1.1.3 – Rainwater Goods

4.3.2.2 Priority 2 Works

Location	Condition	Remedial Works Required	Cost (£)	Building & Fabric Category
Temperate, Tropical & Bird Room Roof Joinery & Metalwork	Decorations weathered throughout leading to rot and corrosion of materials.	Redecorate newly restored and protected timber to match existing.	£21,577.00	1.1.5 – External Decorations
All Lead Valley Gutters	Lead cracked/ brittle throughout giving rise to leakages in localised areas.	Allow to replace all lead work throughout valley gutters to prevent future leakages.	£7,865.00	1.1.3 – Rainwater Goods

4.3.2.3 Priority 3 Works

Location	Condition	Remedial Works Required	Cost (£)	Building & Fabric Category
Lead Pipework	Decorations to lead pipework heavily weathered although pipes appear sound.	Allow to redecorate to match existing.	£1,336.00	1.1.5 – External Decorations
Rainwater Goods Drainage Outlets	Drainage outlet covers corroded throughout and are at risk of failing.	Replace drainage outlet guards throughout.	£378.00	1.1.3 – Rainwater Goods

4.4 EXTERNAL ELEVATIONS

4.4.1 GENERAL DESCRIPTION AND CONDITION

4.4.1.1 Walls

The external walls are of solid masonry construction; red clay brick laid in Flemish bond has been used throughout the glasshouse. The walls are defined by rusticated brick pilasters supporting entablature with brick mouldings. Structural semi-circular brick arches with moulded stone architraves and pilasters to each bay are spread across the single storey elevations to windows and doors.

To the Southern elevation of the Tropical room stepped cracking was noted to the dentil course at the top of three number arches above the steel fanlights. The most Western brick arch has been braced with a steel tie bar to both the external and internal face. Elsewhere tell-tale gauges have been installed to monitor the movements of the crack, it could not be established the length of time in which these were in place. Where significant cracking has occurred structural repairs/ reinforcement should be carried out. A structural engineer should be engaged to establish the scale of repairs.

Spalling of brickwork is common to all elevations. Age should certainly be considered a factor to have caused the spalling however it was noted that red pointing, assumed to be cement based, has been pointed over existing lime-based mortar. In turn the cement mortar has prevented the passage of interstitial moisture causing the brickwork to spall. It is recommended that spalled brickwork is repaired where possible and replace any bricks beyond repair with a suitable match. It is also advised that loose red mortar has been hacked off and replaced with a lime-based mortar.

Significant damage was noted to high level brickwork running along the horizontal entablature, specifically the brick cornice band. Damaged bricks should be carefully cut out and replaced with bricks to match existing.

To the perimeter of the arched bay windows it was noted that the flaunching had failed in a number of places and was crumbling/ missing in large sections. To prevent moisture ingress beyond the timber sub-frame the existing loose flaunching should be carefully hacked out and replaced.

Efflorescence and minor algae build up was noted to all elevations at high and low level. Brickwork should be carefully brushed/ cleaned to remove staining. To the Southern elevation of the Temperate Room rising damp was noted to the external and internal face. The assumed bitumen DPC appears to have been breached where the external flower bed is set against the wall. The external soil level should be lowered where possible.

Minor efflorescence was also noted to the newly re-built brick pediment above the main entrance. Due to the age of the brickwork this is expected; the brickwork should be carefully brushed/ cleaned to remove staining.

Copper lightning protection serving the building appears original with lack of maintenance noted. It is recommended that the lightning protection is renewed as part of the works.

The concrete steps leading to the Temperate Room were noted to have minor surface cracks and impact damage. It is recommended that concrete repairs are carried out to prevent the steps breaking down further.

4.4.1.2 Windows

The windows throughout elevations of the building comprise single glazed casement units of steel construction set in timber subframes, applied with a painted finish. Alternate windows units have openable fanlights and low-level top hung casement windows. Windows are controlled via internal operating levers and cranks that appear original. The bottom lights to the Tropical Room each have a pin and casement stay. To the Temperate, Tropical and Bird Room Cupola's there are openable timber fanlights again operated by the internal window mechanisms.

The arched window units to each elevation are generally in a poor condition. Isolated panes of glazing are cracked and should therefore be replaced with new single glazed units. The decorative finish to the steel openable window and timber sub-frames are flaking/ failing throughout. Previous finishes should be removed followed by complete redecoration of the units.

The Temperate, Tropical and Bird Room windows are subject to extensive rot due to lack of maintenance/ failing finishes. Timber repairs, treatment and redecoration should be carried out in small areas of rot to retain the existing units. Where rot is too extensive window units should be replaced to match existing.

The window operating mechanisms appear original. It was advised that the operating system is poor and that fixings are regularly failing. It is recommended that the window controls are replaced throughout.

The stone window cills and architraves were generally noted to be in a fair condition with no major repairs required. Isolated spalled areas were noted, minor concrete repairs should be carried out to prevent further breakdown of the materials.

4.4.1.3 External Doors

The Temperate, Tropical and Bird Room are all accessed via Sets off arched panelled timber Venetian styles double doors with glazed vision panels in keeping with the design of the bay windows throughout.

Located on the South elevation of the Tropical Room a set of double doors has been removed. The doors were previously noted to be rotten. The doorset should be replaced to match existing.

The Bird Room set of double doors is in a good working order. Localised rot was noted at low level to the external face of the left-hand leaf. Impact damage was noted at low level to the right-hand leaf internal face. It is recommended that timber repairs are carried out to the doorset.

Decorations to each doorset were noted to be in a poor condition. It is recommended that each door is decorated to prevent further spread of rot. It was noted that varying ironmongery had been used on each door. An overhaul of the ironmongery should also be carried out to ensure they operate freely.

4.4.2 RECCOMENDED REMEDIAL ACTION

4.4.2.1 Priority 1 Works

Location	Condition	Remedial Works Required	Cost (£)	Building & Fabric Category
Tropical Room South Elevation Wall	Stepped cracking noted to dentil course at the top of three number arches above the fanlights. Most western brick arch braced with a steel tie bar to both the external and internal face.	Structural repairs/ reinforcement required to cracked arches. Structural engineer to be engaged to specify works required.	£30,422.00	1.1.4 – External Walls

4.4.2.2 Priority 2 Works

Location	Condition	Remedial Works Required	Cost (£)	Building & Fabric Category
All Elevations	Significant spalling to brickwork throughout increasing the risk of moisture ingress.	Allow to carry out repairs and replacement of spalled/ damaged clay brickwork.	£19,233.00	1.1.4 – External Walls
All Elevations	Brickwork damaged to brick cornice band to running to the perimeter of the glasshouse.	Allow for cutting out and replacing damaged/ missing bricks carrying out repairs where necessary.	£5,788.00	1.1.4 – External Walls
All Elevations Timber Doors	Timber doors in a poor decorative condition and would benefit from re-coating to prevent future degradation	Allow to redecorate timber doorsets to match existing.	£1,780.00	1.1.7 - Doors
All Elevations windows	Glazing to steel windows are generally in a poor condition with the Tropical Room West elevation window cracked.	Allow to replace cracked glazing with new single glazed panels.	£1,484.00	1.1.6 - Windows
All windows	Steel windows and timber subframes in a poor decorative condition and are therefore at risk of corrosion and rotting of timber.	Allow to redecorate steel window frames and timber sub-frames to match existing.	£15,953.00	1.1.5 – External Decorations

Location	Condition	Remedial Works Required	Cost (£)	Building & Fabric Category
All windows	Flaunching degraded to all timber sub frame surrounds increasing risk of water ingress and rotting of timber sub frame.	Allow to rake out defective flaunching and re-point using approved mortar mix.	£4,749.00	1.1.6 – Windows
Temperate Room, Bird Room & Tropical Room Windows	Steel windows operated by window opening mechanisms throughout which appear aged.	Allow to replace all window controls.	£52,712.00	1.1.6 – Windows
Temperate, Tropical and Bird Room Cupola Windows	Timber windows to cupolas are showing extensive signs of rot.	Allow for replacement of units beyond repair with isolated timber repairs carried out where possible.	£48,972.00	1.1.6 - Windows
Temperate Room South Elevation	Concrete entrance steps cracked/ spalled to edges.	Carry out repairs to defective steps.	£1,038.00	1.1.4 – External Walls
Tropical Room South Elevation Double Doorset	Panelled timber door rotten at low level and is beyond reasonable repair.	Timber double door set, inclusive of ironmongery, should be replaced with new to match existing.	£3,710.00	1.1.7 – Doors
Bird Room South Elevation Double Doorset	Low level rot noted to the right-hand leaf of the external double door. Damage noted to the panel trim on the internal face of the left-hand leaf.	Allow for isolated repairs of the timber doorset.	£1,039.00	1.1.7 - Doors