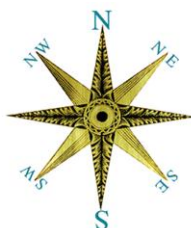


VOLTAGE OPTIMISATION UNITS
ROYAL BOTANIC GARDENS KEW
LONDON BOROUGH OF RICHMOND UPON THAMES
TW9 3AB
AN ARCHAEOLOGICAL WATCHING BRIEF



October 2011

COMPASS



ARCHAEOLOGY

VOLTAGE OPTIMISATION UNITS

ROYAL BOTANIC GARDENS KEW
LONDON BOROUGH OF RICHMOND UPON THAMES
TW9 3AB

AN ARCHAEOLOGICAL WATCHING BRIEF

SITE CODE: KEW 11

NGR: Hebarium TQ 1873 7756)
East of the Jodrell Laboratory TQ 1900 7729
South of the Marianne North Gallery TQ 1866 7636

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October 2011

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Abstract

An archaeological watching brief was undertaken during groundworks for the installation of three new Voltage Optimisation Units in three locations across the Royal Botanic Gardens Kew between 3rd and 10th October 2011.

The three new Voltage Optimisation Units will each be contained within a shed-type cabinet adjacent to existing electrical buildings. The first unit was located just to the south of the Hebarium (at approximately TQ 1873 7756), the second on the Kew Road boundary immediately east of the Jodrell Laboratory (TQ 1900 7729) and to the third, south of the Marianne North and Shirley Sherwood Galleries (TQ 1866 7636).

The groundworks for the Voltage Optimisation Units were very small-scale and were closely monitored by an archaeologist, no archaeological finds or features were encountered in any of the three locations. Archaeologically the works represented surface clearance and did not penetrate to a depth where archaeological remains might be expected to survive.

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- 2.3 The other two units are sited just to the north of Kew Lane (now Kew Road). The Marianne North Gate (MNG) Unit is on land that in the mid 18th century formed part of the gardens of the White House (*cf.* Figs 3 & 4): this area appears little changed on the 1839 map although the House itself was demolished in 1802.
- 2.4 The Jodrell Unit site is on land once owned by the Earl of Essex and subsequently leased to the White House (*ibid.*). The area was broken up into a series of smaller plots, primarily kitchen gardens and orchards with some glasshouses, frames, *etc.* (*cf.* Fig 4). The brick foundations of one of these large later 18th century buildings, possibly a peach house or vinery, was investigated just to the southwest of the new unit in October 2007 and is discussed in Section 2.5 below (*cf.* Fig 5 and Compass Archaeology 2008). By 1839 two narrow east-west aligned buildings had also been constructed close to the VO unit area, and this whole area is described as *Her Majesty's Kitchen Garden*. A similar picture (though now with three adjacent buildings aligned east to west) is shown on the plan of 1851 (Fig 7).

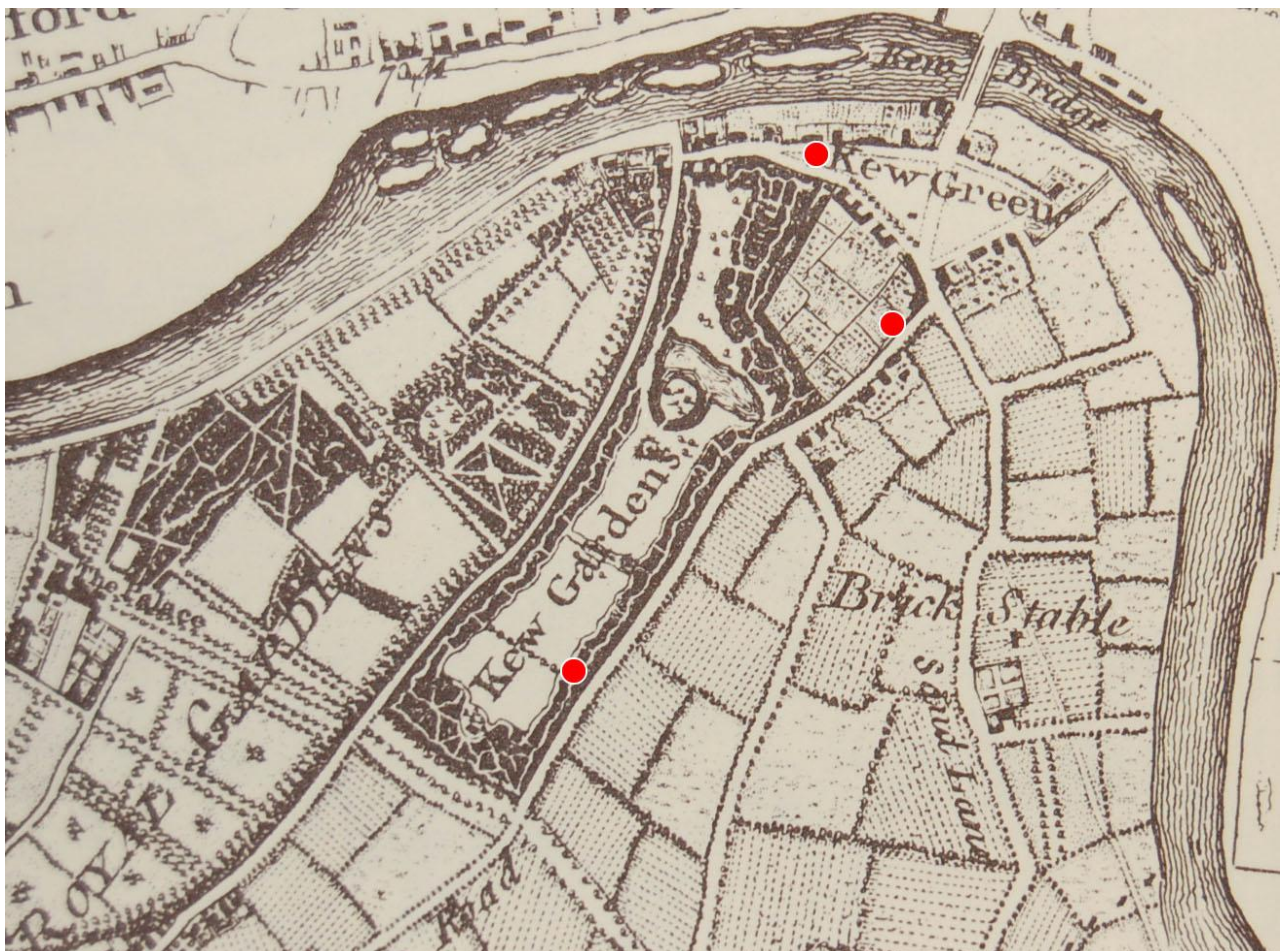


Fig 3: Approximate location of the proposed groundworks in relation to the Rocque & Andrews survey of c 1770.



Fig 4: Extract from the ‘*Plan of the Royal Manor of Richmond, otherwise West Sheen..taken under the direction of Peter Burrell Esq. His Majesty's Surveyor-General by Thomas Richardson*’ dated 1771 showing the approximate location of the groundworks².

² This map was kindly provided by the RBG Kew Archives and is a digital copy of the 1771 original plan from the Royal Library Windsor Castle (Neg. E9037, Order no. 328/92)

2.5 In late Summer 2007, during groundworks for sixteen new student vegetable plots near the School of Horticulture (TQ 18959 77245), Compass Archaeology excavated the foundations of a complex rectangular red brick greenhouse or 'forcing house' dating from the late 18th century and measuring approximately 21.5m east-west by 4.6m north-south, with fragmentary evidence suggesting the existence of a further building to the north (Fig 5). The walls indicated at least two phases of construction, with the northern wall apparently being rebuilt or strengthened at a later stage, additionally areas of burnt residue indicate the presence of a central stove or heating source with a similar structure at the western end. The drainage regime was also indicated by a complex series of cavities and drains in the southern and internal walls. Internal brick divisions divided up the greenhouse. Very few finds were present, but documentary and cartographic analysis revealed that the greenhouse probably belonged to land originally in the ownership of the Earl of Essex (the Capel family) and first shown on maps dating to 1771 (Fig 4).

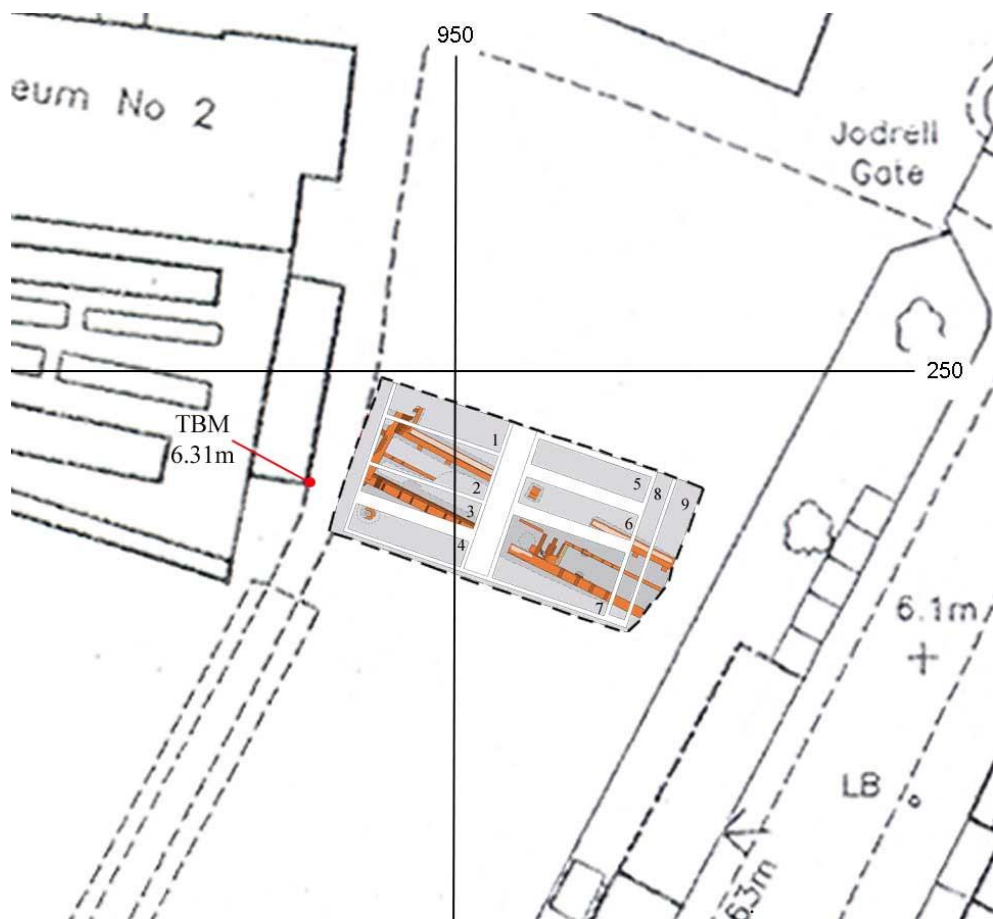


Fig 5: Plan showing the large 18th century red brick greenhouse or 'forcing house' discovered close to the Jodrell Gate VO Unit in 2007. The area shown in orange represents the structure, the areas in grey show the individual Guild Student Plots as they exist today. The VO Unit is located just to the northeast of the Jodrell Gate (Fig 1). *Reproduced from the OS map with the permission of the Ordnance Survey on behalf of The Controller of HMSO. © Crown Copyright. All rights reserved. Compass Archaeology Ltd., London SE1 1RQ, licence no. AL 100031317*

The building discovered in 2007 does not appear on Rocque's *Exact Survey* map of 1746 (not illustrated) or his later map of c 1770 (Fig 3) although a date to the middle of the 18th century does seem most likely, which also makes this building contemporary with the nearby School of Horticulture (Museum No 2) building. The early function of these two buildings was as part of the kitchen garden serving the White House (the Capel family home) and predating the inclusion of this land into the Royal Botanic Gardens. Later map evidence in 1840 and documentary evidence indicates that the structure may have been a 'peach house' or 'vinery' and was part of the kitchen garden for the royal family at Kew; the building being last shown on a map of 1851 (Fig 7). The site is now preserved *in situ* under the Kew Guild plots. No archaeological deposits relating to the 18th century garden complex were encountered in the new VO unit excavations, because the groundworks did not penetrate beneath the existing concrete foundation in this area and it therefore remains possible that archaeological deposits could survive here, but at a greater depth.

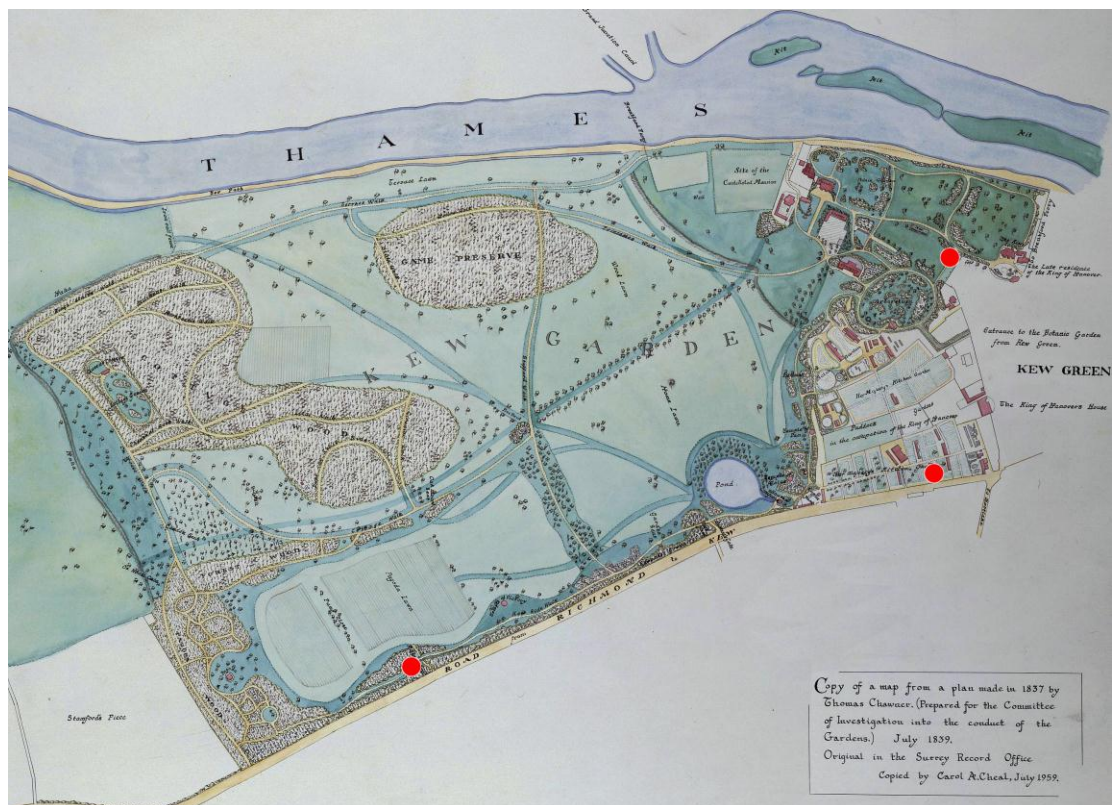


Fig 6: Approximate location of the groundworks in relation to a copy (1959) of Thomas Chawner's plan of 1837. Reproduced with kind permission of the Archives, RBG Kew.



Fig 7: Location of the proposed Hebarium and Jodrell Units in relation to ‘Map of Kew Gardens and Park in the County of Surrey’, 1851, (illustrator unknown) c 1851. Reproduced with kind permission of the Archives, RBG Kew.

3. The Archaeological Programme

The field and post-excavation work was carried out in accordance with English Heritage guidelines (in particular, *Standards and Practices in Archaeological Fieldwork, Guidance Paper 3*)³.

Works also conformed to the standards of the Institute of Archaeologists (‘IfA Standard and Guidance for Archaeological Watching Briefs’). Overall management of the project was undertaken by a full Member of the Institute. The recording system followed the procedures set out in the Museum of London recording manual: by agreement the recording and drawing sheets used are directly compatible with those developed by the Museum.

³ The work was also carried out in accordance with the draft GLAAS standards 2009 for reporting and fieldwork.

3.1 Fieldwork

3.1.1 Methodology

The three Voltage Optimisation Units are similar in design, and each is housed in an enclosed structure of rendered blockwork built adjacent to existing electrical facilities (Figs 2, 8, 13 and 17).

The footprint of the Herbarium and Jodrell enclosures measured just over 3m by 1m in plan; that of the MNG Unit slightly smaller at 2m by 1m. In each case the foundation comprised a 100mm reinforced concrete slab, over a minimum of 100mm compacted MOT Type 1 crushed stone. The actual depth of this primary deposit depended upon the existing firmness of the underlying ground, and was determined on site, see the notes below.

All groundworks took place using hand excavation and exposed deposits were recorded and cleaned in stratigraphic sequence. The principal groundworks were described on *pro-forma* sheets by written and measured description, and related to the general site plan and to the OS grid. The fieldwork record was supplemented as appropriate by digital photography.

3.2 Post-Excavation

3.2.1 The fieldwork was followed by off-site assessment and compilation of this report. A short summary of the project is appended using the OASIS Data Collection Form, and in paragraph form suitable for publication within the 'excavation round-up' of the *London Archaeologist*.

4 Report procedure

Copies of the report will be supplied to the Client, English Heritage (GLAAS), the local planning authority and the local studies library.

The level of reporting depended upon the results of the fieldwork. This summary report has been prepared, with an appended a copy of the OASIS Report Form and a note suitable for publication within the 'excavation round-up' of the *London Archaeologist*.

5 The site archive

An ordered site archive will be compiled in line with the MoL *Guidelines for the Preparation of Archaeological Archives*. This will be deposited in the Museum of London Archaeological Archive as part of the ongoing programme of archive preparation.

6 The Archaeological Watching Brief

The results of the watching brief are described below in relation to the three areas investigated.

6.1 The Herbarium (VO Unit 1)

This VO unit and enclosure is sited on the front elevation of the Herbarium Switch Room, which is located on the Herbarium service road just to the south of the Herbarium (approx. TQ 1873 7756 *cf.* Fig 8). The enclosure was built immediately adjacent to the existing switch room, as there was limited space available around the switch room without interfering with vehicular access, and access to the standby generator. The photographs in Figures 9 to 12 show the location of the VO unit at the Herbarium Switch Chamber and the limit of ground reduction, which measured 3.06m x 1.01m in plan and only penetrated 25mm into the existing topsoil layer.

The new unit had minimal impact to this part of the site as it was constructed on already disturbed ground and only involved ground reduction by 25mm on the southern end of the chamber and the rest of the chamber base was built up to level the slope.

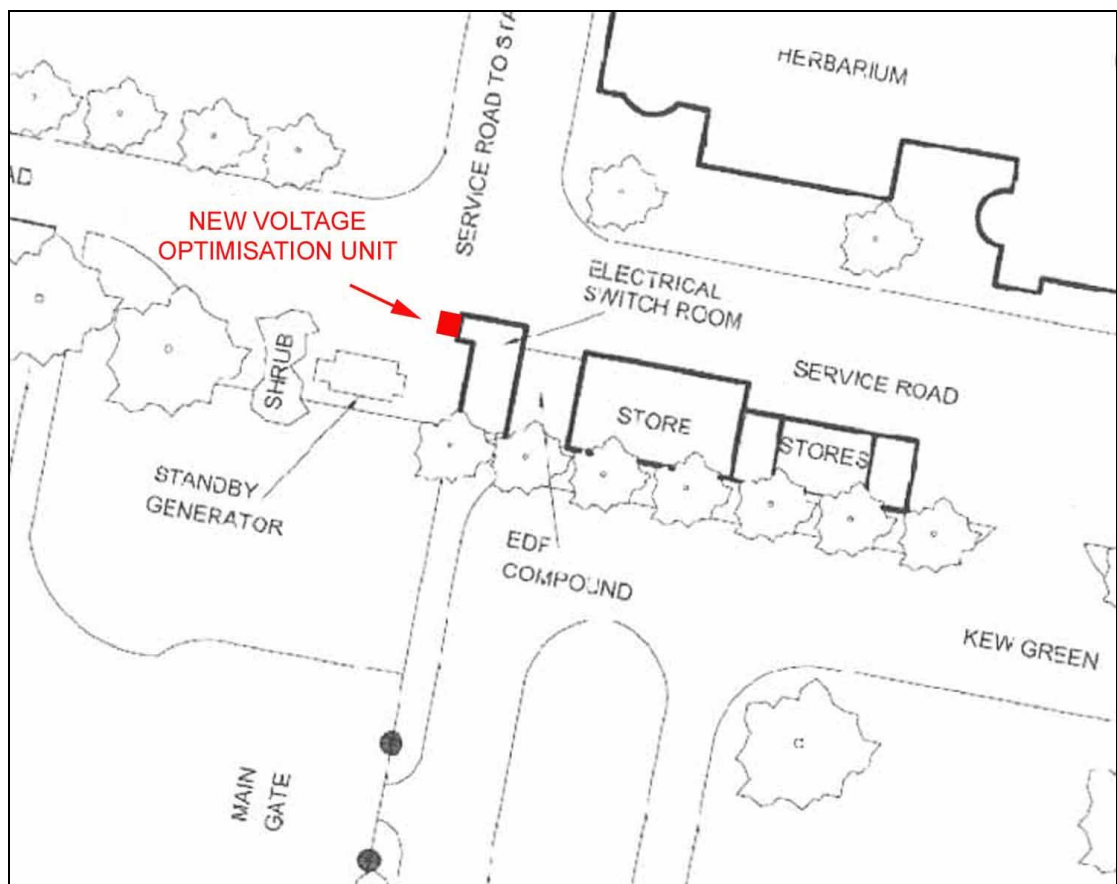


Fig 8 Extract from a survey of the gardens showing the location of the Herbarium VO Unit. © RBG Kew.



Fig 9 Location of the VO unit at the Herbarium Switch Chamber.



Fig 10 After completion of ground reduction of 25mm in depth at the southern end (near the scale 0.5m).



Fig 11: Detail of groundworks and maximum impact was only 25mm into recent topsoil deposits.



Fig 12 Total impact of groundworks at the Herbarium, representing surface clearance at the southern end and cutting of the adjacent paving slabs.

6.2 The Jodrell Laboratory (VO Unit 2)

This VO unit and enclosure was sited on the side elevation of the Jodrell Switch Chamber and adjacent to the entrance to the chamber, which is located on the Kew Road boundary immediately east of the Jodrell Lab (TQ 1900 7729; Figs 13 and 15). The enclosure was built directly on to the existing switch room as there was limited space available around the switch room without interfering with vehicular access. The photographs in Figures 15 and 16 show the location of the VO unit and the extent of the watching brief.

Upon excavation of the concrete base adjacent to the switch room it became apparent that the area had been disturbed by several phases of modern concrete, tarmac and Type 2 deposits. The groundworks measured 3.10m x 1.10m and penetrated to a depth of 250mm, overlying an earlier surface of a reinforced metal mesh for the overlying concrete and above a layer of tarmac and Type 2 infill. It was decided that this was a suitable surface for the construction of the new chamber. Works therefore did not penetrate below the existing reinforced metal grid discovered at a depth of *c* 250mm and therefore, had no impact on potential archaeological deposits in this area.

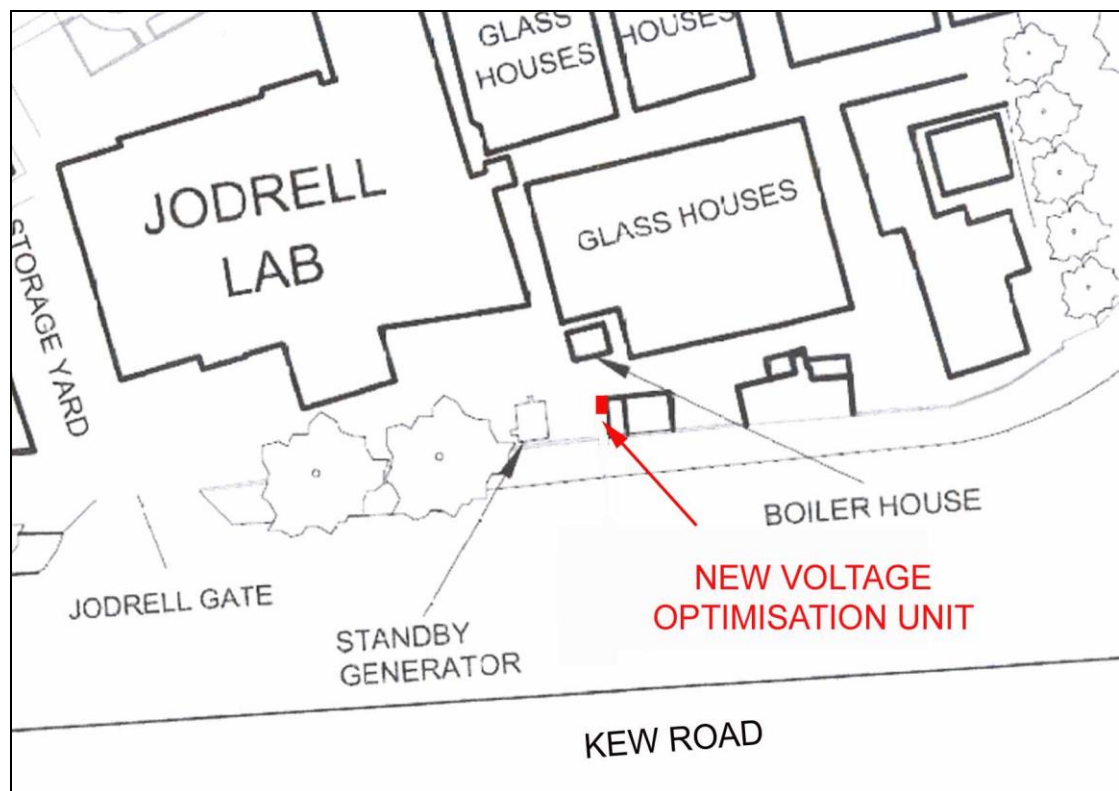


Fig 13 Extract from a survey of the gardens showing the location of the Jodrell Laboratory VO Unit. © RBG Kew.



Fig 14 General images of the Jodrell Laboratory VO Unit under excavation. Top left: removal of the concrete slab to the required concrete foundation depth. Top right and below: after concrete removal to required depth the underlying deposits were also revealed to be tarmac and concrete, therefore, no impact on possible buried archaeological deposits.



Fig 15 Location of the VO unit at the Jodrell Switch Chamber.



Fig 16 The VO Unit under construction.

6.3 The Marianne North Gallery/Gate (MNG VO Unit 3)

This VO unit is sited on the right hand side of the existing MNG Switch Chamber which is located in the Ruined Arch Intake Compound; to the south of the Marianne North and Shirley Sherwood Galleries MNG (TQ 1866 7636). At the MNG unit the ground works involved the excavation of an area 1m x 2m in plan to a depth of approximately 350mm below the current ground surface and this did not penetrate beneath the existing modern topsoil layer. The enclosure was built approximately 500mm away from the MNG Switch Chamber to allow adequate ventilation to the existing airbricks. The photographs in Figures 17 to 24 show the location of the VO unit and the extent of the watching brief.

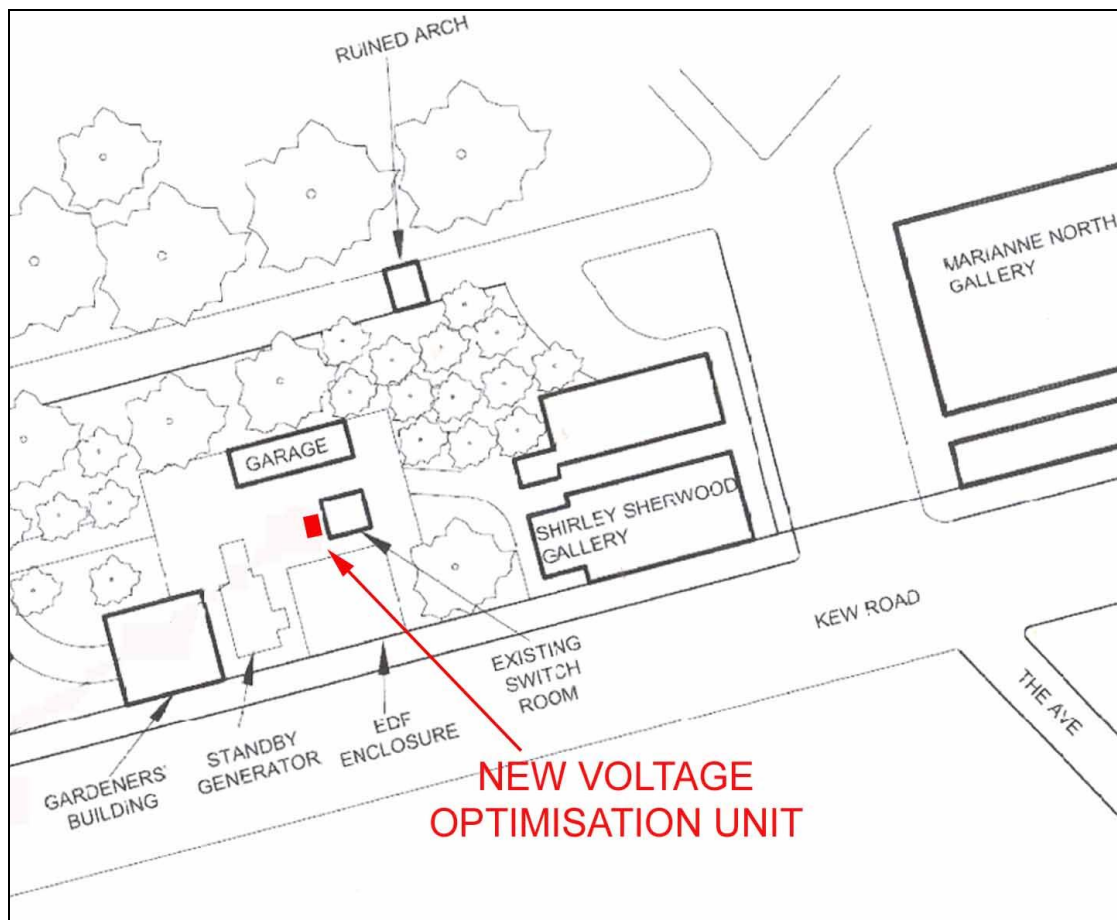


Fig 17 Extract from a survey of the gardens showing the location of the Marianne North Gallery VO Unit. © RBG Kew.



Fig 18 Location of the VO unit at the MNG Switch Chamber (after excavation).



Fig 19 Ground reduction of surface topsoil for construction of the VO Unit.



Fig 20 Clearance of mounded soil and compost in the area of the new VO chamber.



Fig 21 After ground reduction for the VO Unit. Excavation depth in the area was a maximum of 420mm on the northern side of the trench and 300mm on the eastern side. The works did not penetrate the overlying recent topsoil in this area and at the base of the trench a series of modern electrical cable runs were noted. At this location also, the groundworks only represent surface clearance and any archaeological deposits are not affected by these works.



Fig 22 General view after excavation



Fig 23 The nearby Gardeners' Building dating to 1934.



Fig 24 The MNG VO Unit under construction.

7. Summary and Conclusions

- 7.1** The groundworks for the three units only involved surface reduction and did not penetrate modern stratigraphy, no archaeological finds or features were encountered during the works and no archaeological finds or features were compromised by the construction of the three new units.

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Appendix I OASIS Recording Form.

Project details

| | |
|--|---|
| Project name | Voltage Optimisation Units, Royal Botanic Gardens Kew |
| Short description of the project | Compass Archaeology undertook a watching brief in October 2011 to monitor the installation of three new Voltage Optimisation Units, each of which was to be contained within a shed-type cabinet adjacent to existing electrical buildings at the Royal Botanic Gardens Kew. The units were located just to the south of the Hebarium (approx. TQ 1873 7756), on the Kew Road boundary immediately east of the Jodrell Laboratory (TQ 1900 7729) and to the south of the Marianne North and Shirley Sherwood Galleries MNG (TQ 1866 7636). The watching brief took place at the Marianne North Gallery area on 3rd October 2011, at the Jodrell Gate on 6th October 2011 and at the Herbarium on the 10th October 2011. At the Herbarium the groundworks measured 3.06m x 1.01m in plan and only penetrated 25mm into the existing topsoil layer. At the Jodrell Laboratory the groundworks measured 3.10m x 1.10m in plan and penetrated to a depth of 250mm, overlying an earlier surface of a reinforced grill for the overlying concrete and above a layer of tarmac and Type 2 infill. At the MNG unit the ground works involved an area 1m x 2m in plan excavated to a depth of approximately 350mm below the current ground surface and this did not penetrate beneath the existing modern topsoil layer. At the all locations the groundworks did not penetrate beyond modern deposits and no archaeological finds or features were noted or affected by the construction of these three new units. |
| Project dates | Start: 03-10-2011 End: 10-10-2011 |
| Previous/future work | No / No |
| Any associated project reference codes | KEW 11 - Site code |
| Any associated project reference codes | 11/2161/FUL - Planning Application No. |
| Type of project | Recording project |

| | |
|--------------------|----------------------|
| Site status | World Heritage Site |
| Current Land use | Other 15 - Other |
| Monument type | GARDEN Post Medieval |
| Significant Finds | NONE None |
| Investigation type | 'Watching Brief' |
| Prompt | Planning condition |

Project location

| | |
|-------------------|---|
| Country | England |
| Site location | GREATER LONDON RICHMOND UPON THAMES RICHMOND AND KEW Royal Botanic Gardens Kew |
| Postcode | TW9 3AB |
| Study area | 15.00 Square metres |
| Site coordinates | TQ 1873 7756 51.4840184298 -0.289883377841 51 29 02 N 000 17 23 W Point |
| Site coordinates | TQ 1900 7729 51.4815346849 -0.286087328136 51 28 53 N 000 17 09 W Point |
| Site coordinates | TQ 1866 7636 51.4732469159 -0.291294341550 51 28 23 N 000 17 28 W Point |
| Lat/Long Datum | Unknown |
| Height OD / Depth | Min: 6.00m Max: 7.00m |

Project creators

| | |
|------------------------------|--|
| Name of Organisation | Compass Archaeology |
| Project brief originator | English Heritage/Department of Environment |
| Project design originator | Compass Archaeology |
| Project director/manager | Gill King |
| Project supervisor | Gill King |
| Type of sponsor/funding body | Royal Botanic Gardens Kew. |

Name of funding body Royal Botanic Gardens Kew

Project bibliography 1

Publication type Grey literature (unpublished document/manuscript)

Title Voltage Optimisation Units, Royal Botanic Gardens Kew, London Borough of Richmond upon Thames, TW9 3AB An Archaeological Watching Brief.

Author(s)/Editor(s) King, G.

Date 2011

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Entered on 12 October 2011

Appendix II: London Archaeologist Summary

Site Address: Voltage Optimisation Units, Royal Botanic Gardens Kew
TW9 3AB

Project type: Watching brief

Dates of Fieldwork: 3rd to 10th October 2011

Site Code: KEW 11

Supervisor: Gill King

NGR: Hebarium TQ 1873 7756)
East of the Jodrell Laboratory TQ 1900 7729
South of the Marianne North Gallery TQ 1866

Funding Body: Royal Botanic Gardens Kew

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At the all locations the groundworks did not penetrate beyond modern deposits and no archaeological finds or features were noted or affected by the construction of these three new units.