HARON ROBSON
lightmatters wattmatters avmatters

10 December 2010

Capital Corporation Pty. Ltd.
Suite 705
Norwest Central
12 Century Circuit
BAULKHAM HILLS NSW 2153

Attention: Adam Wheat

RE: 2 AUSTRALIA AVENUE, SYDNEY OLYMPIC PARK – STAGE 1
ELECTRICAL SERVICES OVERVIEW REPORT

Please find attached the Haron Robson Electrical Services Overview Report for the above project.

Should you have any questions on this matter please do not hesitate to contact Greg Reardon o the undersigned at this office.

Yours faithfully
HARON ROBSON PTY LTD

Glen Haron
Group Director

gharon@haronrobson.com.au

Attachment (1) Haron Robson Electrical Services Overview Report

Copy to Attention
Architectus Pty. Ltd.
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WE UNDERSTAND AUDIO VISUAL, LIGHTING, ENERGY AND ELECTRICAL SYSTEMS AND ADVISE ON THESE ISSUES WORLDWIDE.

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Electrical Services Overview Report

For

2 Australia Avenue, Sydney Olympic Park
Stage 1

This report, dated 10 December 2010, has been prepared by Haron Robson Pty Ltd for Capital Corporation Pty Ltd for the development at 2 Australia Avenue, Sydney Olympic Park NSW 2127.

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Issued: 10December 2010

2 AUSTRALIA AVENUE, SYDNEY OLYMPIC PARK - STAGE 1
ELECTRICAL SERVICES OVERVIEW REPORT

INTRODUCTION

The development at 2 Australia Avenue Homebush Bay is a mixture of commercial and retail areas. The development consists of Three (3) Stages, consisting of Two (2) Tower Buildings with commercial and retail tenancies, high-level atrium area and outdoor podium/circulation area. Tenancies, Clients and Customers will be provided with Two (2) levels of basement area carparking.

Haron Robson have been engaged as Electrical Engineering Consultants by Capital Corporation Pty Ltd to advise on the electrical services installation and overall master planning of the site services required for the development.

The stage one works consists of the development of one of the towers with a high-level atrium, outdoor podium/circulation area, Two (2) levels of basement area carparking and construction of a partial road to allow access to the carpark.

The stage 2 works consists of the extension of the stage 1 tower and further expansion of the outdoor podium/circulation area and Two (2) levels of basement carparking.

The stage 3 works consists of the development of the second tower with further expansion of the outdoor podium/circulation area and Two (2) levels of basement carparking plus the establishment of two complete roads dividing the development.

This overview document is a general statement of the aims and inclusions of the electrical services installation for the Stage 1 works only.

ELECTRICAL SERVICES

The electrical services component of this development comprises many and varied electrical and electronic systems. The briefing stage of this project will involve the collection of detailed information about the areas and the equipment to be installed so that we can detail appropriate allowances for each space. We shall also address the electrical requirements of the other active systems in the development such as air conditioning and hydraulic services during the detailed design process.

We shall assist in addressing the functional requirements of the users of the buildings by locating power outlets for general use, and connections for installed electrical equipment. We shall design the electrical reticulation system so that it has sufficient capacity to provide reliable and safe power to the development. We shall design the lighting system so that it is efficient, uniform and of appropriate illumination levels with intelligent lighting control. All systems shall be designed to exceed the requirements of the relevant Australian Standards.

OUTLINE OF PROVISIONS

1 General

Electrical services will be provided to comply with all relevant mandatory Australian Standards and the requirements of Statutory Authorities having jurisdiction in the matter including the Building Code of Australia.

2 Electricity and Telecommunications Authorities

All relevant authorities will be consulted with respect to the provision of services to the site and the street reticulation to service the development.

All involved authorities will be notified of the details of the development in an orderly time to allow service arrangements to be carried out without incurring delay.

3 Electricity Supply

Electricity supply to the stage 1 development shall be from one (1) New Padmount Kiosk Substation to be constructed on the site. An additional Kiosk substation would be required to supply the future stages of the development. The kiok substations would be constructed on separated locations on the site. Applications will soon be submitted to Energy Australia, where negotiations can be initiated regarding the establishment of the stage 1 substation and associated high voltage network to same plus planning for the supply of the future stages.

Low Voltage Electrical Supplies (Service/Consumer Mains) from the Kiosk Substation to the development shall be installed via Underground Heavy Duty UPVC Conduits and/or Suspended Cable Ladders to the Electrical Main Switchroom of the development. Low Voltage Electrical Supply cables have a 2 Hour Fire Rated capacity to maintain Emergency and Essential Electrical Supply Provisions to the development for the Emergency and Essential Services Equipment.

4 Building Services

The electrical services installation within the development will be designed and installed such as to comply with the Building Code Of Australia (BCA), Australian Standards AS/NZS 3000, AS/NZS 3008, AS/NZS 2293 and AS 1670, Australian Communication and Media Authority (ACMA) Regulations and other relevant standards/authority requirements.

Electrical Supplies to Emergency and Essential Equipment will be 2 Hour Fire Rated, as required by the Building Code Of Australia and Australian Standard AS/NZS 3000.

Automatic Smoke Detection System and Building Occupant Warning System in accordance with the Building Code Of Australia and Australian Standard AS 1670.

Emergency and Exit lighting will be provided throughout the buildings and basement carpark, complying with Australian Standard AS 2293.

5 Telecommunications Provisions

Incoming Lead-In Cable Entry Provisions will be provided for the Copper and Fibre networks of Telstra, Optus and One (1) additional future carrier.

Arrangements will be made for Telstra to provide a network supply to the buildings to cater for future communications needs.

All work shall be carried out to comply with the Australian Communications and Media Authority's requirements and regulations. Spacial provisions shall be provided within the Main Communications Room(s) to accommodate the Nominated Telecommunications Carrier's Active Distribution Equipment.

Provisions shall be made within the development for a Copper Network and Fibre Optic Network of Backbone (Vertical) Cabling to each tenancy within the development, to allow each tenant access to the Nominated Telecommunications Carrier's Copper Network and Fibre Optic Network Communications Networks.

6 Extent of Work

The following items will be arranged to be supplied and installed by the relevant Third Parties and Authorities:-

- High Voltage Network Mains to Substations
- Substation Equipment
- Electricity Supply Authority Tariff Meters
- Incoming Copper Lead-In Telecommunications Cables
- Incoming Fibre Optic Lead-In Telecommunications Cable
- Telecommunications Main Distribution Frame Terminal
- Nominated Telecommunications Authority's Active Distribution Equipment.

The following items will be supplied and installed by the Engaged Electrical Contractor.

- Consumer Mains from the Point of Supply to the nominated Main Switchboard
- Main Switchboards including Protective and Control Devices
- Power Factor Correction Equipment
- Energy Monitoring Equipment in accordance with BCA Section J8 requirements
- Electrical Submains to local Distribution Boards and other Building Services Control Panels
- Electrical Final Subcircuit Cabling and Protection
- General Power Services in accordance with BCA Section J6 requirements
- General Lighting Services in accordance with BCA Section J6 requirements
- Emergency Lighting and Illuminated Exit Sign Services in accordance with BCA and AS 2293
- Communications and Data Services Copper and Fibre Optic Backbone (Vertical) Cabling
- Communications and Data Services Copper and Fibre Optic Distribution Equipment
- Communications and Data Services Distribution (Horizontal) Cabling as nominated
- Master Antenna Television (Free-To-Air [FTA] and Satellite [SAT]) Cabling and Distribution Equipment
- Automatic Smoke Detection and Sound Systems and Intercom Systems for Emergency Purposes in accordance with BCA and AS 1670 requirements
- Standby Power System for emergency services
- Security, Access Control, Intercom & CCTV Systems Services
- ESD Design Principles

These items are listed in further detail below.

7 Regulations and Authorities

The Electrical Services Installation will be carried out strictly in accordance with the following Standards, Code and Regulations:-

- Building Code Of Australia
- New South Wales Service and Installation Rules
- EnergyAustralia Electrical Supply Standards and Network Standards
- AS/NZS 3000 – Wiring Rules
- AS/NZS 3008 – Electrical Installations – Selection Of Cables
- AS 1670 - Fire Detection, Warning, Control and Intercom Systems
- AS/NZS 1680 - Interior Lighting
- AS 2293 - Emergency Escape Lighting and Exit Signs For Buildings
- Australian Communications and Media Authority Regulations including ASA/ACIF 009
- AS 3080 - Telecommunications installations - Generic Cabling for Commercial Premises
- AS 3084 - Telecommunications installations - Telecommunications Pathways and Spaces for Commercial Buildings
- AS 3085 - Telecommunications installations - Administration of Communications Cabling Systems - Basic Requirements
- All other requirements of all other Authorities having jurisdiction over the works.

8 High Voltage Mains

Existing High Voltage Network Mains will require alterations and additions for the connection of the Padmount Kiosk Substation in the nominated location of the development.

The nominated Level 3 Accredited Service Provider will carry out this electrical design works. The nominated Level 1 Accredited Service Provider will carry out these installation works.

9 New Padmount Kiosk Substation

The development will require the installation of One (1) New 1500kVA Padmount Kiosk Substation in the nominated location of the development for stage 1. The 1500kVA Padmount Kiosk Substation shall have a 400V Three (3) Phase, 4 Wire, 50 Hertz, Low Voltage Output of approximately 2100 Amps per phase.

This proposal is based upon the utilisation of a Gas-Fired VRV Plants being utilised within the development, as a reduction measure to the anticipated Electrical Maximum Demand for the Development. The Electrical Maximum Demand for the stage 1 works with Electrically Powered VRV Plants installed would be in the vicinity of 1,756 kVA (2,460 Amps per Phase). With a Gas-Fired VRV installed, this figure would be reduced to the vicinity of 1,229 kVA (1,720 Amps per Phase).

Should the Developer wish to utilise an Electrically Powered VRV Plants, the Padmount Kiosk Substation arrangement would require a revision to Two (2) 1000 kVA Padmount Kiosk Substations for stage 1 works and an additional two (2) for the future stages.

The nominated Level 3 Accredited Service Provider will carry out this electrical design works. The nominated Level 1 Accredited Service Provider will carry out these installation works. The Project Manager shall carry out the Padmount Kiosk Substation site preparation and civil/structural works, in accordance with EnergyAustralia requirements.

10 New Service/Consumer Mains

New Service/Consumer Mains will be run from the New Padmount Kiosk Substation to the nominated Main Switchboard of the development. New Service/Consumer Mains shall be 2 Hour Fire Rated in accordance with the Building Code Of Australia and Australian Standard AS/NZS 3000 for the sustained operation of the Emergency and Essential Services Equipment within the development.

New Service/Consumer Mains Cabling and Installation Accessories (i.e. Conduits) shall be nominated as Green Building Council Australia (GBCA) Approved Products sourced from a GBCA Approved Supplier/Distributor.

The Engaged Electrical Contractor shall carry out the New Service/Consumer Mains installation works, in accordance with EnergyAustralia requirements, NSW Service and Installation Rules, Building Code Of Australia and Australian Standard AS/NZS 3000.

11 New Main Switchboard

The Stage 1 works will require the installation of One (1) New Main Switchboard which will be located within the nominated Main Switchroom location. Future stages shall require an additional Main Switchboard.

The New Main Switchboards will incorporate the following:-

- Dead Front
- Free-Standing with Front Access (Rear where applicable)
- Ingress Protection Rating of IP42
- Form 3b Construction in accordance with Australian Standard AS 3439.1
- Service Protection Device on the Incoming Electrical Supply to the Main Switchboard
- Surge Protection Devices
- Power Analysing Devices and Equipment
- Sealed Compartments for Electrical Supply Authority Tariff Metering Requirements
- Non-Essential, Essential and Emergency Services Sections in accordance with Building Code Of Australia requirements
- Outgoing Circuit Breakers for House Distribution Boards, Tenancy Distribution Boards and Building Services Control Panels
- Energy Monitoring Equipment in accordance with Building Code Of Australia Section J8

12 New Electricity Supply Authority Tariff Metering

The Main Switchboard shall have Sealable Compartments for the installation of Current Transformer to facilitate the Tariff Metering of the House Services and Major Tenancies from the Main Switchboard. The Sealable Compartments for Current Transformers shall be in accordance with the Electricity Supply Authority's requirements.

Provision shall be made for the Electricity Supply Authority to supply and install their Tariff Meters and Associated Equipment within the Main Switchroom for the House Services and Tenancies.

13 New Submain Cabling

Submain Cables will be reticulated from the New Main Switchboard via cable ladders, conduits, vertical risers and service riser cupboards to each Distribution Board, Building Services Control Panel and Associated Equipment.

Submain Cabling shall be 2 Hour Fire Rated, where they are servicing Emergency and Essential Services Equipment.

New Submains Cabling shall be nominated as Green Building Council Australia (GBCA) Approved Products sourced from a GBCA Approved Supplier/Distributor.

Each Submain will generally be designed to have 20% spare capacity over and above the designed final maximum demand for the normal usage of that section of installation being supplied by the respective submain cable.

14 New Main Switchboard Energy Monitoring Equipment

The New Main Switchboard shall be supplied and installed with New Energy Monitoring Equipment in accordance with Building Code Of Australia Section J8.

The New Energy Monitoring Equipment shall individually monitor the following:-

- Artificial Lighting
- Appliance Power
- Hydraulic Central Hot Water Plant
- Mechanical Air Conditioning Plant
- Internal Transport Devices (Elevators, Escalators, Etc)
- Other Ancillary Plant

15 New Distribution Boards

New Distribution Boards shall be supplied and installation within the development for the distribution of General Lighting, Emergency Lighting and Illuminated Exit Sign Services and General Power.

New Distribution Boards shall be Split Chassis (Separate Light Chassis and Power Chassis) for compliance with Building Code Of Australia Section J8 requirements. New Distribution Boards shall incorporate Main Isolating Switch, Miniature Circuit Breakers (MCBs) and Energy Monitoring Facilities.

16 Final Subcircuits

Generally all cabling for general power and general lighting sub-circuits will be run in Thermoplastic (PVC) Sheathed Cable concealed in the false ceilings or wiring installation accessories (i.e. conduits, ducting). Conduits will be provided where necessary for protection of cables in structural walls.

All final subcircuits shall be installation utilising Residual Current Circuit Breakers with Over-Current Protection (RCBOs) on all sub-circuits in accordance with Australian Standard AS/NZS 3000 Clause 2.6 requirements.

New Final Subcircuit Cabling shall be nominated as Green Building Council Australia Approved Products sourced from a GBCA Approved Supplier/Distributor.

17 General Lighting Services

The General Lighting Services installation involves both Interiors and Exteriors and will be designed to co-ordinate and enhance the architecture, interiors and landscape, whilst providing lighting for the safe movement of occupants throughout the development. ESD principles shall be applied. The General Lighting Services shall be designed in accordance with Building Code Of Australia Section J6 requirements.

General Lighting Services installation within the Tenancies will be a base building installation, to facilitate fit-out works within the tenancy, including local lighting control device.

The General Lighting Services will incorporate intelligent programmable lighting control systems for the control and compliance of the lighting installation. This shall include Daylight Harvesting (self-adjusting lighting to maintain consistent lighting levels in the installation), Time Clock and Photoelectric Control of the Exterior Lighting Installation and Passive Infra-Red (PIR) Movement Sensors throughout the installation.

18 Emergency Lighting and Illuminated Exit Sign Services

Emergency Lighting and Illuminated Exit Signs shall be installed to comply with the Building Code Of Australia and Australian Standard AS 2293 throughout the development.

Emergency Lighting Test Switches shall be supplied and installation in accordance with Australian Standard AS 2293 on all Distribution Boards supplying circuits with Emergency and Exit Sign Lighting incorporated.

Emergency Lighting and Illuminated Exit Signs within the Tenancies will be a base building installation, to facilitate compliance of the development at the time of occupancy.

19 General Power Services

The General Power Services installation will be provided in common areas for maintenance and servicing purposes (i.e. cleaning), and as nominated for ancillary equipment and building services equipment.

Tenancies will be provided with a base building power services allowance to facilitate fit-out works within the tenancy, including a local Distribution Board and General Power Outlet.

20 Automatic Smoke Detection and Sound Systems and Intercom Systems for Emergency Purposes

An Automatic Smoke Detection & Sound Systems and Intercom Systems for Emergency Purposes shall be installed throughout the development as required by the Building Code Of Australia and the Fire Engineered Report (where applicable) for the development to the requirements of Australia Standard AS 1670

The Automatic Smoke Detection & Sound Systems and Intercom Systems for Emergency Purposes shall be integrated into other Building Service's Smoke Detection and Fire Control measures including Australia Standard AS 1668 Mechanical Ventilation and Hydraulic Fire Suppression Equipment (i.e. Fire Hydrants, Fire Hose Reels, Fire Sprinklers).

21 Security, Access Control, Intercom & CCTV Systems

There will be an option for an Intruder Security System to be provided for the monitoring of the common service areas, external fire isolated stairway exits.

An Access Control and Intercom System will be provided for the external entry points to provided access for tenants, clients and customers to the development.

There will be an option for provisions of a Closed Circuit Television System to be provided to monitor key security areas and vision would be recorded in digital form on to digital video recorders for later playback.

There will be an option for a Secure Telephone Point (Mode 3) to be provided within all tenancies to facilitate Third Party Security System Providers to install their services within the tenancies in the future, if required by the tenant.

22 Telecommunications Lead-In Cabling

Cabling Provisions will be provided to allow Telstra, Optus and One (1) Future Carrier to reticulate Copper and/or Fibre Optic Cabling from their local network to their distribution equipment to be located within the Nominated Communications Room within the development.

These provisions shall be in accordance with Australian Communications and Media Authority's requirements and Australian Standards AS 3080, AS 3084 and AS 3085.

23 Telecommunications Main Distribution Frames / Campus Distributors

Spacial Provision will be provided within the Main Communications Room within the development for the installation of Main Distribution Frame / Campus Distributor and Telecommunications Carrier's Active Distribution Equipment to provide the required telecommunications requirements to the tenants within the development.

The Main Distribution Frame / Campus Distributor will be adequately sized in capacity to accommodate the current and anticipated requirements of the tenants of the development.

These provisions shall be in accordance with Australian Communications and Media Authority's requirements and Australian Standards AS 3080, AS 3084 and AS 3085.

24 Telecommunications Vertical (Backbone/Trunk) Cabling

Copper (Cat.3 Voice , Cat.6 Voice/Data) and Fibre Optic (Data) Telecommunications Vertical (Backbone/Trunk) Cabling will be provided throughout the development to each tenancy meet to Voice and Data Telecommunications requirements of the development's tenants.

Telecommunications Vertical Cabling shall be installed within Conduits, on Cable Ladders and concealed spaces (i.e. riser cupboards and ceiling spaces.

New Telecommunications Vertical Cabling shall be nominated as Green Building Council Australia Approved Products sourced from a GBCA Approved Supplier/Distributor.

These provisions shall be in accordance with Australian Communications and Media Authority's requirements and Australian Standards AS 3080, AS 3084 and AS 3085.

25 Telecommunications Horizontal (Distribution/Branch) Cabling

Copper (Cat.3 Voice) Telecommunications Horizontal (Distribution/Branch) Cabling will be provided for the Essential Services (Fire Indicator Panel, Lift Panels, Security and Access Control System to facilitate the operations of the development.

Telecommunications Horizontal Cabling shall be installed within Conduits, on Cable Ladders and concealed spaces (i.e. riser cupboards and ceiling spaces.

New Telecommunications Horizontal Cabling shall be nominated as Green Building Council Australia Approved Products sourced from a GBCA Approved Supplier/Distributor.

Where nominated, Copper (Cat.6 Voice/Data) and Fibre Optic (Data) Telecommunications Horizontal Cabling will be provided to nominated tenancies as part of the base building fit-out.

26 Master Antenna Television System (Free-To-Air and Pay TV)

A Master Antenna Television System will be installed throughout the development to distribute Free-To-Air (FTA) and Pay TV (Satellite/Cable) Television Broadcast Signals.

Master Antenna Television System Cabling shall be installed within Conduits, on Cable Ladders and concealed space (i.e. riser cupboards and ceiling spaces.

Where nominated, Master Antenna Television Cabling to the supply of Free-To-Air (FTA) Signals will be provided to nominated tenancies as part of the base building fit-out.

New Master Antenna Television Cabling shall be nominated as Green Building Council Australia Approved Products sourced from a GBCA Approved Supplier/Distributor.

27 Standby Power System

The development shall be provided with a Standby Power System by means of a permanent diesel powered electrical generator plant located within a plant room on the roof.

The Standby Power System shall be design to provide a suitable alternative power supply to operate required safety systems, including sprinkler systems and fire hydrant pumps, air handling systems, alarms, warning and communication systems and emergency lighting circuits as required by the Building Code of Australia.

28 ESD Design Principles

The aim of our detailed design solutions will be to minimise the greenhouse gas emissions associated with building materials (embedded energy) and building operations as well as to minimise running and maintenance costs.

The new installation will be designed to effectively address the functional and safety requirements of the users and particular considerations will be:

- Energy Efficient Lighting Design (Efficient Light Source Distribution), High Efficiency Lamps and luminaires with Electronic Ballasts EEI=A2(Non-Dim) and EEI=A1(Dim), Efficiency Base Controls such as Dimming Devices, Area Occupancy Sensors, Photo-Electrical (PE) Cells and Time Clock (TC) Controls in accordance with Building Code Of Australia Section J6 requirements
- To provide Intelligent Controls on other Building Services Systems which seek to minimise the use of energy in other Building Services Systems Operations, (e.g. Mechanical Air-Conditioning and Ventilation System).

Detailed solutions proposed include:

Building Material Products

Building Material Products being utilised throughout the development's Electrical Services Installation shall be nominated as Green Building Council Australia (GBCA) Approved Products sourced from a GBCA Approved Supplier/Distributor.

The Electrical Services Contractor where possible shall minimise their waste produced during the construction phase.

Lighting Systems

- Windows and glass walls should be incorporated to maximise natural light utilised throughout the development.
- Low Wattage, High Efficiency Fluorescent Luminaires will generally be used throughout the development.
- Light Emitting Diodes (LED) Luminaires will be used in some areas of the development.
- High Frequency Electronic Lighting Ballasts to be utilised throughout the development.
- Switches will be easy to access and use allowing for a high degree of control by users.
- Occupancy sensors, time clocks and daylight sensors will be used in key areas to minimise energy waste from lighting when it is not required

Lighting Control Systems

Building control systems will be installed within the common areas that will allow automated control of lighting systems within the common areas. These systems will allow control and programming of lighting systems within the building to minimise energy consumption.

Energy Monitoring and Reporting Facilities

The Electrical Services Installation will incorporate facilities for the monitoring and reporting of energy consumption throughout the common areas of the development, along with the individual tenancies. These facilities will allow the development's management to adjust and configure the Building Services Operations to best reduce energy wastage throughout the development, creating greater efficiency of the development.