1 PRINCIPLE SITE WORKS

11kV Supply

The incoming 11kV supply to the existing Energy Australia substation is installed underground from the Epping Highway. The cable should not be affected by the construction of the development.

Existing Substation

The existing surface chamber type substation will be demolished during the first stage of the development.

New Substations

Three (3) new 1,000kVA kiosk type substations will need to be established to serve the development.

- Substation Number 1 would be on the Epping Highway side of the Woodward Building.
- Substation Number 2 would be on the Epping Highway side of the Cutler Building.
- Substation Number 3 would be on the Epping Highway side of the Loftus Building.

Telecommunications

New telephone and data cabling will be installed to replace the cabling affected by the new building works.

2 SUPPLY

Supply to the project will be derived from three (3) Energy Australia Kiosk type substations to be established on the site to suit the staging of the works.

3 MAIN SWITCHBOARDS

Four main switchboards will be provided as follows:–

No. 1 – To serve the Hunter and Woodward Buildings.

No. 2 – To serve the Cutler Building.

No. 3 – To serve the Young and Martin Buildings.

No. 4 – To serve the Loftus and Darling Buildings.

Each main switchboard will be of the totally enclosed sheetmetal cubicle type incorporating moulded case circuit breakers for the control of outgoing submains. Each switchboard will be of Form 3 construction to AS3439. Main switchboards will be installed in fire rated Main Switchrooms located at the upper basement carpark level.

4 CONSUMERS MAINS

Consumers mains cabling will comprise fire rated polymeric cabling installed from the respective substation to each building main switchboard. The cabling will be installed underground to the carpark and then be run on cable tray.

5 POWER RETICULATION

The main reticulation system and switchboards in each building will be as follows:

Distribution Boards Outside Residential Units

Distribution boards installed outside residential units will be of the sheetmetal cubicle type incorporating moulded case and miniature circuit breakers for the control of outgoing circuits.

Distribution Boards in Residential Units

Distribution boards in residential units will be of the PVC enclosure type incorporating DIN rail mounted miniature circuit breakers for the control of outgoing circuits. An earth leakage type circuit breaker will be incorporated on each distribution board.

The distribution boards will be installed within each unit in a position to be agreed with the Architect.

Submains Cabling

Submains cabling will generally comprise PVC insulated and sheathed copper cables installed on cable tray. Fire rated polymeric insulated cables will be installed for essential services.

6 METERING

Separate Energy Australia metering will be provided for all residential units, for each of the commercial tenancies and each stratum house service. Generally, metering for the new residential units will be established in several central locations in each of the residential lobbies.

Private metering will be provided as necessary to meet the requirements of Section J of the Building Code of Australia and the Generator rating.

7 LIGHTING

The lighting throughout the building will be designed to suit the requirements of the Interior Designers and the Architects and to comply with the relevant requirements of Section J of the Building Code of Australia. In general the following types of luminaires will be installed:

Carpark and Services Areas:	Surface mounted fluorescent luminaires with covers where exposed to potential damage.
External Building Perimeter:	Weatherproof and vandelproof luminaires incorporating fluorescent or other long life discharge lamps.
Entrance Foyer and Lift Lobby:	Light Emitting Diode (LED) luminaires comprising recessed downlights and decorative wall sconces.
Typical Floor Lift Lobbies and Corridors:	LED ceiling and wall mounted luminaires.
Residential Units:	Generally, recessed luminaires with LED pelmet lighting to kitchen and bathrooms. Terrace lighting will be by wall brackets. The type of lamps is to be determined after a costing exercise and will be either the compact fluorescent or light emitting diode (LED) type.
Gymnasium/Pool Areas:	These areas would be illuminated by a combination of downlights, recessed fluorescents and wall lights. The selection of the luminaries will be made to suit the final architectural and interior design planning.
Commercial Space:	The office areas will be equipped as a normal office fitout that is recessed low brightness type fluorescent lighting utilising T5 type fluorescent lamps.
Child Care Centre:	Recessed compact fluorescent downlights would generally be used with normal fluorescents used in office and utility areas.

8 EMERGENCY LIGHTING

The building will be equipped with an emergency and EXIT lighting system complying with AS2293 utilising separate self contained battery packs. Generally exit signs would be of the recessed ‘edgelit’ type with surface mounted types installed in utility type areas.

9 LIGHTING SWITCHES

The lighting will be controlled by a mixture of local control and automated controls via time switches and motion detectors for common areas.

High impact slimline PVC covers will be installed to switches in the kitchens, bathrooms of residential areas or where exposed to view. Lighting switches in plant and utility spaces will be of the Clipsal Series 2000 type with high impact PVC flushplates.

10 GENERAL POWER OUTLETS

General Power Outlets

General power outlets will be of the same make and type as lighting switches. High impact slimline PVC covers will be installed to the GPO's in residential areas.

The number of general purpose outlets in a typical residential unit will be as follows:

Master Bedroom	3 off
Study	4 off
Second and Third Bedrooms	3 off
Lounge/Living Room	3 off
Laundry	2 off
Bathrooms	1 off
Dining Room	1 off
Balcony	Nil
Kitchen	2 off for general use
	1 off for microwave
	1 off for refrigerator
	1 off for cooktop
	1 off for dishwasher
	1 off for rangehood

All power outlets installed for general use will be of the double type.

Fixed Power Outlets

Fixed power outlets will be provided to major items of electrical equipment. In the residential units, outlets will be provided for the oven and the air conditioning unit.

The quantities of outlets noted are indicative and will be adjusted to suit final planning.

11 PROVISIONS IN RETAIL/COMMERCIAL TENANCIES

The commercial tenancies will be provided with the following facilities:

- Distribution board with single phase 63 amp supply.
- Telephone final distribution point (10 pair).
- Fluorescent troffer lighting.
- One (1) general purpose outlet.

12 TELEPHONES

Lead–in Cabling

Provision will be made for the Tesltra lead–in copper and fibre optic cable to each building. Provision for the future installation of cabling from a second carrier will be provided. This provision will comprise underground conduits, which will be sized to accommodate both copper and fibre optic cabling.

Main Distribution Frame

The main telephone distribution frame for each building will be installed in a Communications Room to be established at the Upper Basement Carpark Level of each building. The frame will include provisions for the connection of the incoming Telstra cabling as well as that from a second carrier. Space will be provided for fibre optic service equipment.

Block Cabling

A telephone block cabling system will be installed in each building with distribution frames installed on selected levels to serve outlets in each residential unit and as required throughout each building.

A 10 pair telephone frame will be installed in each residential unit and retail tenancy.

Telephone Outlets
Telephone outlets will be installed in the following locations of each residential unit:

1 outlet in Living/Dining

1 outlet in the main Bedroom

1 outlet in the Study

The telephone outlets will comprise an RJ45 socket outlet and will be connected by Category 6 unshielded twisted pair (UTP) cable to the respective distribution frame.

13 PROVISIONS FOR DATA CABLING IN RESIDENTIAL UNITS

General
A system of Category 6 unshielded twisted pair UTP cable will be provided to enable the creation of a network for the connection of personal computers in each residential unit. RJ45 socket outlets will be installed in each bedroom and living/dining room and will be connected by UTP cable to the Study where they will be terminated in RJ45 sockets grouped on a common wall plate.

Provision for Future Broadband Outlets
Provision for future Broadband services to each residential unit would be installed in the service areas of each unit where it would be terminated ready for connection to a future National Broadband Network backbone cabling system.

14 MASTER TELEVISION SYSTEM

A master antenna television system capable of distributing both Foxtel and free–to–air television signals will be installed in each building. The system will serve outlets in the Living/Dining Room and main bedroom of each Residential Unit.

Provision will be made for the wall mounting of a “plasma screen” where MATV outlets occur of the residential units.

Each outlet would comprise a dual outlet with a telephone point. Each outlet would be connected to the main distribution system via dual RG 6 co–axial cables.

15 SMOKE DETECTORS

Each residential unit will be equipped with smoke detectors complying with AS3786. The Fire Contractor will provide all other fire services.

16 VIDEO INTERCOM SYSTEM

Each building will be equipped with a colour video intercom system to enable residents to allow guests access to the building. Outlets will be installed in the following locations:

- The Living/Dining Room of each Residential Unit
- Residential Entry to Carpark
- Each Residential Entry Lobby

The system will be linked to the access control system and the lift control system so that residents can unlock the main entry doors open the Carpark roller shutter and override the lift security system as required to enable guests access to the building.

17 SECURITY

Each building will be equipped with an electronic security system incorporating access control using proximity card readers to enable residents to gain access to the building. Readers will be installed as follows:

- Main Entry
- Each Residential Unit
- Residential Car Park
- Entry and Exit through roller shutters within the Carpark

- Lifts

Common areas, lift lobbies, of the ground level of each building etc shall be equipped with PIR detectors.

All fire stair doors will be alarmed using reed switches.

The security and CCTV systems shall be interconnected.

18 CLOSED CIRCUIT TELEVISION SYSTEM

General

In each building closed circuit television system will be provided to monitor the following spaces:

- Residential Carpark Entry and Exit
- Lift Lobbies at the Ground Floor and Car Park Levels
- Carpark Levels
- Gymnasium and Pool Areas

Cameras

The cameras will be of the digital, colour type housed in vandal–resistant polycarbonate domes.

Digital Video Recorder

The cameras will be connected to a digital video recorder. The recorder will be programmed to record pictures from each video camera when movement occurs in the respective field of vision. The recorder will be capable of storing minimum of fourteen (14) days of pictures after which time the memory will be overwritten.

The recorder will incorporate a monitor, which will be capable of displaying the pictures from any selected cameras on a full seven or quad–seven basis.

The recorder will be located in the complex's Building Manager's Office.