

Project Star Building Services Report

Building Services Report

Sydney Harbour Casino Properties Pty Ltd.

1 August 2008

Document No.: H.DA_M.1000 C.DA_M.1000

Building Services Report

Prepared for

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ABN 22 004 873 634

1 August 2008

60045227

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Quality Information

Document Building Services Report

Ref 60045227

Date 1 August 2008

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Reviewed by Dennis Grech

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
0	12/06/2008	DA Submission	David Towers Associate	
A	17/06/2008	DA Submission	David Towers Associate	
B	20/06/2008	DA Submission	David Towers Associate	
C	25/06/2008	DA Submission	David Towers Associate	
D	30/06/2008	DA Submission	David Towers Associate	
E	02/09/2008	DA Submission	David Towers Associate	

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Executive Summary

1.1 AIR CONDITIONING SYSTEM

- Type
 - Central Chilled Water System with chilled water fan coil and/or air handling units serving individual zones.
- Design Capacity (Casino) Gaming Areas
 - Lighting - 25 W/m²
 - Equipment - 80 W/m²
 - 3.5 sqm per person
- Design Capacity (Casino) Retail Areas
 - Lighting - 25 W/m²
 - Equipment - 20 W/m²
 - 5.0 sqm per person
- Design Capacity (Casino) Restaurant Areas
 - Lighting - 25 W/m²
 - Equipment - 150 W/m² – Kitchen Areas
 - 1.5 sqm per person – Dining Areas
- Design Capacity (Casino) Ballroom/Conference Areas
 - Lighting - 25 W/m²
 - Equipment - 10 W/m²
 - 1.5 sqm per person
- Design Capacity (Casino) BOH Office Areas
 - Lighting - 10 W/m²
 - Equipment - 15 W/m²
 - 10.0 sqm per person
- Design Capacity (Hotel) Suites
 - Lighting - 12 W/m²
 - Equipment - 15 W/m²
 - 2 people per suite
- Design Capacity (Hotel) Conference Areas
 - Lighting - 25 W/m²
 - Equipment - 10 W/m²
 - 1.5 sqm per person
- Retail Kitchen Exhaust
 - 2,000 l/s – café
 - 3,000 l/s – restaurant
 - 5,000 l/s – large restaurant, > 500 sqm
- Fresh Air
 - As per AS 1668.2
- Toilet Exhaust
 - As per AS 1668.2
- Control
 - Direct Digital Controls with Building Management and Controls System.

1.2 ELECTRICAL SYSTEM

1.2.1 Power

Casino Project

Total new additions ~ 2,5 MVA

Hotel Project

Total new Hotel requirements ~ 2,7 MVA

- Lighting – Generally discharge lamp sources for back of house areas and circulation areas. Low voltage tungsten halogen, LED, fluorescent and metal halide lamp sources for the casino/hotel areas.
- Emergency Lighting to suit the prescriptive requirements of the BCA and AS2293.
- Emergency power – 20% of Project Star's requirements plus emergency lighting. Security and carpark lighting requirements for the Hotel Project.
- Photovoltaic system – Roof mounted PV system may be considered for ESD initiatives.
- Communication – Secure communications risers.

- Fibre Optic provisions to be incorporated throughout development.

Security System

- Surveillance – CCTV
- Additional surveillance via CCTV within existing and new carparking areas to be investigated.
- Specialist CCTV system allocated to gaming floor area.
- Access Control
 - Proximity Cards at Lifts, Main Entrances and Carpark Entry
 - Floor by Floor Access Control system

Our investigations and discussions with relevant authorities undertaken thus far have not identified any impediments to the development from a mechanical and electrical services perspective.

2.0 AIR CONDITIONING AND VENTILATION SYSTEMS – SCOPE

The air conditioning and ventilation systems to the refurbished and expanded casino project will essentially be served by the existing mechanical services with suitable modifications. These modifications will include:

- Relocation of existing diffusion equipment – both supply and return/exhaust,
- New existing diffusion equipment – both supply and return/exhaust,
- Modifications to existing ductwork systems
- Rebalancing of air flows to suit new layouts
- Adjustments to the fresh and exhaust air rates to meet the latest codes.

There are areas that require new air conditioning and ventilation systems as itemised below;

- The extension of the casino main gaming floor into the new adjacent hotel foot print,
- New extensions to the Ballroom,
- New dedicated restaurant air conditioning systems,
- New restaurant kitchen exhaust systems,
- New Back of House (BOH) utility areas as per code requirements,
- New entry atrium (mixed mode system).

In general the air conditioning systems are and will be based on chilled and hot water air handling units and fan coil units connected the building central energy plant for both heating and cooling via reticulated pipework systems.

Outside air, exhaust and other ventilation rates will be designed to comply with AS1668.

Central Energy Plant

The existing cooling energy plant consists of four equal capacity Trane centrifugal chillers, providing chilled water to built-up and/or packaged air handling units, via a primary/secondary chilled water pumping and reticulation system.

Heat rejection for the chillers is provided by an existing sea water cooling plant consisting of pumps and heat exchangers connected the chillers' condensers. The continuation of this plant in the new development is under review to optimise the current efficiency and provide additional capacity and may be supplemented with conventional cooling towers.

The additional cooling heating requirements, due to the new areas of the expansion, will be proved by expanding the existing chiller plant by the integration of new smaller chiller machine into the central plant. Consequent increase in heat rejection will be provided by integration into whatever heat rejection plant is finally adopted.

Heating for the building is provided by two gas fired heating hot water boilers and a hot water pumping and reticulation system. Heating hot water is provided to the domestic hot water calorifier, to the heating coils of the air handling units and to hot water trim heating coils on the floors.

The additional cooling heating requirements due the new areas of the expansion will be proved by expanding the existing heating plant by the integration of new smaller boilers into the central plant.

Smoke Management Systems

In general the casino will be served by the existing smoke management system as provided as part of the original building and as designed by the then Fire Engineering Report carried by the CSIRO. The existing system will be modified as required by the applicable Fire Engineering Report being prepared for this development. New smoke management systems required for the extensions will be designed as required by this same applicable Fire Engineering Report.

Stair pressurisation systems to AS1668 will also be provided as required to minimise the ingress of smoke to the fire stairs to allow safe egress of occupants from the fire affected floor.

3.0 BMCS

The existing building monitoring and control system will provide the required control and monitoring for the new and modified mechanical services within the building and monitor selected new and modified electrical, fire and hydraulic services. The BMCS maybe upgraded as part of this expansion works.

4.0 POWER SUPPLY INFRASTRUCTURE

4.1.1 Mains Power Supply Arrangement

High voltage cabling supplies the site via a ring main arrangement off the Pymont zone substation.

These HV feeder supply the site via 4 off Energy Australia substations in a firm rated arrangement. An additional chamber type substation is planned for the Hotel development over the existing switching yard. It is intended that a substation shall be provided for the Hotel with another substation provided for the Casino extension.

We confirm that discussions with Energy Australia commenced some time ago and Energy Australia are presently in the process of responding to the following items:

1. Are there any Energy Australia street feeders supplied off the existing substations. If so, could EA advise the number and circuit protective device for each supply detailing which substation bus that it is supplied from.
2. As a part of the above question, please confirm the firm rating of the four existing substations,
3. We require details of the low voltage supplies from the A and B Bus off each of the four substations,
4. % Capacity of Casino supply vs street supplies for each substation,
5. Substation servicing requirements. Is servicing required to the switchgear relays requiring shutdowns of the substation?

Refer to the attached correspondence from Energy Australia in Appendix 1 at the rear of this document.

4.1.2 Standby Diesel Generators

In addition to the above mentioned substations the Casino site also boasts 3 off 1,750kVA standby diesel generators. These generators supply approximately 20% of the Casino site requirements under a loss of supply scenario.

An additional standby diesel generator is being reviewed for the Hotel development. This genset is intended to supply specific dedicated services including security and carpark lighting. This generator will be independent of the Casino array and sized at approximately 300kVA.

4.1.3 Photovoltaic Systems

Additionally, an array of roof mounted solar panels may be considered as part of the development. These panels would not be intended to supply a large electrical load but would assist in light loads such as a small air conditioning system or a feature lighting arrangement.

4.2 COMMUNICATIONS INFRASTRUCTURE

4.2.1 General

The existing Casino development consists of a Building Distributor and MDF located on level 4. This building distributor distributes both fibre and copper cabling throughout the site.

Bassett Consulting Engineers have commenced negotiations with Telstra on the necessity to augment any street infrastructure. At this stage Telstra have not indicated that any areas in the network requiring enhancement or augmentation.

Telstra have stated that the nearest exchange they would use to service the site (Star City Casino) is the Glebe exchange. This exchange is located on the corner of Campbell Street and St Johns Road. Access to the site from the Glebe exchange will be via a Telstra node located on Union Street. Discussions with Telstra confirm that there is currently 200 copper pairs available within the street for connection to this site.

4.2.2 Hotel Communications

A new building distributor (MDF) is planned for the new Hotel building. This building distributor is to be serviced via a new copper / fibre optic connection via the conduit network located in Union Street.. A copper telephony service shall be initially provided for this development. Fibre Optic cabling may be provided once the need for data services to the site is established.

Refer to the attached correspondence from Telstra in Appendix 2 at the rear of this document.

4.2.3 Casino Communications

It is anticipated that additional copper cabling shall be required to meet the demands of the Casino extension. The extent of the increased requirements is presently under review and being negotiated with Telstra. Fibre Optic cabling may be provided once the need for data services to the site is established.

Refer to the attached correspondence from Telstra in Appendix 2 at the rear of this document.

4.3 EXTERIOR LIGHTING

The nature of the project dictates a lighting system of a dramatic and unique nature. Exterior lighting in Sydney is required to meet the requirements of not only AS4282 (Control of the obtrusive effects of outdoor lighting) but regulators are continually under pressure to have the approval of the International Dark Sky Society as well as meeting the new restrictions on energy consumption and switching of exterior lighting.

Special unique exterior lighting installations require special unique negotiations in a win/win arrangement to satisfy all stakeholders. We have been involved with the writing of AS4284, and we have the technical expertise and experience in negotiating this process to a satisfactory result for

projects to proceed. The design will comply with the intent of codes of practice and the agreed requirements of Authorities.

4.3.1 Lighting Control

The lighting system shall be controlled by the use of a lighting control system complete with time scheduling functions and daylight sensors. This will enable multi zone control occurs automatically with the change in seasons. This system is to be controlled via a 'head end' computer located with the property offices.

4.4 EMERGENCY LIGHTING

Emergency and exit lighting is to be installed in accordance with AS2293. The emergency and exit lighting is to be computer based system to manage and perform automatic centralised testing of the emergency and exit signs.

This system is to be interfaced to the existing system in the Casino to allow integration between the existing and the new.

4.5 SECURITY SYSTEM

The existing security system is to be adjusted to provide coverage to the new gaming areas and to comply with the Casino Control Authority (CCA) requirements.

Additional security and closed circuit television (CCTV) system infrastructure shall also be provided within the existing and new carparking areas with lighting levels and illuminated signage to be reviewed to suit the enhanced security and CCTV system requirements.

Pushbutton help points shall be provided in nominated visible locations near lifts and exit points. These help points shall be linked to the main security system for duress assistance.

5.0 APPENDIX 1 – Energy Australia

5.1 Email Correspondence received 17th June, 2008

David,

I can confirm that consultation between Bassett Consulting Engineers and Energy Australia has commenced with regards to the development works at Star City Casino, Sydney.

Energy Australia is in the process of providing information to assist in determining the necessary upgrades to the existing electricity supply for the development.

Kind regards,

Scott Abbott

*Engineer - Planning
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6.0 APPENDIX 2 – Telstra

6.1 Email Correspondence received 17th June, 2008

David

Telstra has sufficient cable capacity to supply copper cable and Fibre cable to meet your requirements for Star Project and 300 bedroom Hotel at 24-28 Union St Pyrmont.

As discussed Telstra has an existing Telstra Manhole located in Union St approximately 30m from corner of Pyrmont St and 47m from Edward St. Please provide cable tray from your communication room and 2 x 100mm PVC white Telstra conduits at property entry point near the existing Telstra Manhole in Union St. Telstra will extend these conduits to intercept Telstra network.

At this stage a 200 pair copper cable will be terminated on your MDF when installed, additional cable will be supplied and installed when and if required, Optical Fibre cable will be installed when the customer submits a request To Telstra for Wideband services, please allow sufficient space for Optical Fibre equipment in your communications room (suggested communication room size 2.5m x 1.5m x 1.8m high).

It should be noted that 20 working days notice is required to allow for Telstra to order material and program work to the field, in general the first Telephone services required are for lift phones and fire lines.

Regards,

Paul Quin

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