Level 1, 48 Alfred Street,
Milsons Point, NSW, 2061 Australia
Tel: +61 2 8424 7000
Fax: +61 2 8424 7099
www.cundall.com.au

Tom Sloane

Ref: JST Theatre Machinery Upgrade DA - ESD Letter of Support
Date: 23rd June 2016

Project Director, Building Renewal
Sydney Opera House
Bennelong Point
GPO Box 4274 Sydney NSW

Dear Tom,

RE: Sydney Opera House (SOH) Theatre Machinery Project
Ecologically Sustainable Design (ESD) Statement

This Ecologically Sustainable Design (ESD) Statement supports a State Significant Development (SSD) application for the Joan Sutherland Theatre (JST) Theatre Machinery Project (TMP), Sydney Opera House, under section 89E of the Environmental Planning and Assessment Act 1979 (EP&A Act). The scope of the TMP forms part of the Sydney Opera House Building Renewal Program and involves the replacement of end-of-life equipment, elimination of high-risk safety hazards and related structural work in the Opera Theatre (Joan Sutherland Theatre).

The Secretary's Environmental Assessment Requirements (SEARS) Application number SSD 7639 state the following under Key Issue 8: Ecologically Sustainable Development (ESD): *Identify how the development will incorporate ESD principles in the design, construction and operation phases of the development*.

Cundall are the ESD consultants appointed for the SOH Building Renewal Projects and previously developed a project specific Building Renewable Sustainability Plan (BRSP) to ensure sustainability principles and targets were included in each of the building renewal projects. The BRSP provides a framework for reporting sustainability initiatives at key project milestones throughout the design and construction.

Cundall has reviewed the relevant project documents and confirm the following with regards to ESD for the proposed Theatre Machinery Upgrade works:

Greenhouse gas (GHG) emissions & energy efficiency

The expected energy consumption (and consequently GHG emissions) of the theatre machinery has been estimated by Theatreplan. The calculations indicate that the standby power is the dominant power use, comprising 97% of annual expected energy consumption.

Theatreplan advise that '*the existing flying system is never switched off as power-cycling is considered damaging to the old electronics. Although we have no accurate standby current figures for the old system it is reasonable to assume that it is at least as much as we have calculated for the new system…..because 20-year old drives and electronics are unlikely to be as energy efficient.'*

The new system incorporates a 'deep-standby' mode which greatly reduces standby energy used by the hoists however due to the time required to 'wake' from this mode of operation it is not practical to switch to this mode between every use of the system. Therefore Theatreplan propose that the system be switched to deep-standby mode between the hours of 11pm and 8am and on Sundays when not required. The estimated energy savings are approximately 35% or 20MWh per year. This equates to 17tCO_2.

Hazardous materials

Process for management and disposal of hazardous materials is detailed in other documents including the Hazardous Materials Register maintained by the SOH which documents all asbestos contaminated materials (ACM), hexavalent chromium and lead paints within the building. Dealing with hazardous materials is managed by the Sydney Opera House Asbestos Risk Management Plan (Hibbs & Associates Pty Ltd 2013) and the Sydney Opera House Hazardous Materials Action Plan (2015).

Removal and disposal of any hazardous materials will comply with all relevant laws, regulations and guidelines including, but not limited to, Protection of the Environment Operations Act 1997, Protection of the Environment Operations (Waste) Regulation 2014 and Protection of the Environment Operations (Illegal Waste Disposal) Act 2013.

Environmental management

A detailed and project specific Environmental Management Plan (EMP) will be developed by the Contractor engaged to undertake the project.

The Contractor will be required to have an Environmental Management System certified to ISO14001 as required by NSW Government Environmental Management System Guidelines. https://www.procurepoint.nsw.gov.au/before-you-supply/environmental-management-system-accreditation

Waste management and recycling of removed equipment and material

The project is targeting a minimum rate of 80% diversion from landfill for all waste resulting from the TMP works in construction. This is considered a best practice target for recycling in the construction industry.

It is expected that the project will generate several waste types, including:

- Brick / concrete materials.
- Steel and steel cable.
- Lighting, fittings and electrical equipment.
- Redundant winches and control equipment.
- Services waste.
- General waste.

Bins will be provided on site to segregate waste for recycling and surveys will be carried out to identify representative pieces of significant machinery that may be archived.

A detailed Waste Management Plan will be developed by the Contractor engaged to undertake the project. The plan will be prepared in accordance with relevant NSW legislation and the principles of the waste management hierarchy as set out in the NSW Waste Avoidance and Resource Recovery Strategy 2014-21. The Plan will:

- Identify requirements for waste avoidance, reduction, reuse and recycling.
- Provide procedures for handling, stockpiling and reuse of wastes.
- Provide procedures for disposal of hazardous materials, including asbestos, lead paint and PCBs.
- Identify disposal sites as well as transport options.

Should you have any queries, please do not hesitate to contact the undersigned.

Yours Sincerely
For and on behalf of
Cundall

Hannah Morton
Associate

email: h.morton@cundall.com
tel: 8424 7017