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BUILDING CODE OF AUSTRALIA 2012 COMMENTS

161 SUSSEX STREET REDEVELOPMENT

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Introduction

At the request of GL Investmentco Pty Ltd GL No.1 Trust we offer comments and recommendations in respect to Building Code of Australia 2012 compliance for the Redevelopment at 161 Sussex Street Sydney.

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As there is entertainment proposed the function centre will need to take into account the NSW provisions for use as an Entertainment Venue.

The documentation assessed are Architectural drawings prepared by Cox Architects numbered: A-DA-0200(F), A-DA-0201(G), A-DA-0202(F), -DA-0203(F), A-DA-0204(F), A-DA-0205(E), -DA-0206(E), A-DA-0207(E), A-DA-0208(F), -DA-0209(F), A-DA-0210(F), A-DA-0211(E), A-DA-0301(E), A-DA-0302(E), A-DA-0304(C), A-DA-0401(B), A-DA-0402(E), A-DA-0403(E), -DA-0404(B).

Background

The Hotel is within the Darling Harbour precinct, which is identified as a State Significant Site. As the proposed development will have a capital investment value of more than $10 million it is declared to be a State Significant Development.

The overall design and functional intention of the Four Points Sheraton Hotel Expansion Project is to:

- Increase the quantum of hotel accommodation in Darling Harbour;
- Significantly improve convention facilities;
- Remedy the current functionality of the hotel (both front and back of house areas);
- Improve the experience of the hotel and convention facilities for patrons; and
- Augment the hotel/convention facilities with new commercial office tenancies on the site

The Four Points Sheraton Hotel Expansion project will comprise a Twenty five (25) Storey Tower – consisting of:

- New Hotel Rooms and Suites in the lower 14 levels
- Commercial Office Space for the 7 levels above the Hotel levels;
- Convention space with associated Pre Function Areas;
- New / Upgrade Back of House areas to serve these new convention / ballroom venues;
- New Meeting Rooms, acting as breakout venues serving the Convention/ Ballroom Functions;
- An activated Slip Street and re-activated Corn Exchange Building;
- A heritage interpretation strategy to re-inforce the historical fabric of the site (trade and maritime);
- A direct, safe through site link to Darling Harbour; and
- New breakout areas and dining venues to accommodate the increase hotel accommodation

Executive Summary

We have assessed the concept architectural drawings with respect to the Building Code of Australia 2012. The design can comply with a combination of either the performance or deemed to satisfy provisions of Building Code of Australia 2012.

Building Code of Australia 2012 Comments

1. **Building Assessment** –

Building Classification(s)	Class 5 Office, Class 6 Retail and Dining areas , Class 7a Carpark, Class 9b Function Rooms, Class 3 Residential Suites
Rise in Storeys	25
Type of Construction	Type A
Effective Height (m)	81.35 (L22 RL 84.65 – LG RL 3.30 – is greater than 25m)
Section J Climate Zone	5

Section C – Fire Resistance / Compartmentation / Separation

2. **Type of Construction** – All new works to the existing multistory building are required to be of not less than Type A construction. *The new floors, slabs and columns need to comply with BCA Table 3 for Type A Construction (See appendix A).*

3. **Fire Compartmentation:**

   Lower ground, Ground and Mezzanine levels have a combined fire compartment floor area total of approx 12,000m^2 which exceeds the fire compartment size Type A limits for Class 6 and 9b parts (5000m^2 max). Seek an alternative fire engineered solution or additional means of fire separation.

   Three levels may be connected in a sprinkler protected building as long as the lowest storey is at ground level - complies.

4. **Fire Resistance**

   The following Table 3 requirements of Specification C1.1 must be incorporated in the design of the buildings.

   - Entire complex and car parking to be Type A construction. The overall building having an effective height of greater than 25m;
   - External walls and incorporated structural members of the Buildings are generally located 3m clear of side boundaries and more than 6m away from adjacent buildings and where this is not the case fire rated walls must be used.
   - Clause C2.13 requires full segregation of emergency electricity supply within switchboards. Electrical consultant to comment at the Construction Certificate stage.

   <u>Residential</u>

   - The party walls between residential levels sole occupancy units to be not less than 90/90/90 Fire Resistance Level (FRL) or -/60/60 if non-loadbearing. Class 3 Suites structural slabs and columns to be 90/90/90 FRL.
   - *The current length of the existing public corridors on Levels 1 to 10 without smoke partitioning is up to 160m in lieu of 40m maximum contrary to Clause C2.14 – Upgrading will likely be required.*
   - *The length of public corridors on new south end extension Levels 1 to 14 without smoke partitioning is up to 70m in lieu of 40m maximum contrary to Clause C2.14.*

   <u>Dining Areas and Function rooms</u>

   - The dining areas are Class 6 and all part of the Function room area (Class 9b) – hence need to incorporate the higher Class 6 180/180/180 FRL throughout. Note - this generally results in new columns being 400mm thick as per AS3600. Structural engineer to confirm dimensions.
   - All stair and lift shafts require an FRL of not less than 180/120/120 when passing through the Ground and Mezzanine levels.

   <u>Commercial office levels</u>

   - The structural slabs and columns to the Class 5 commercial offices on Levels 16-22 must be not less than 120/120/120 FRL throughout.

   Fire Hazard Properties – All new surface finishes, assemblies and linings are to comply with BCA Clause C1.10 (Specification C1.10 with regard to Fire Hazard Properties. Any new carpet installed to the hotel rooms and corridors must meet BCA Spec C1.10 and have a critical radiant flux level of not less than 1.2kW/m^2.

Section D – Access and Egress

5. **Access and Egress**:

   Hotel Lobby, Dining and Function areas
   Travel distance to a point of choice must not exceed 20m (D1.4). If two or more exits are required, the distance must not be more than 40m The distance between exits measured through the point of choice must not exceed 60m (D1.5). The alternative paths of travel must be at least 6m apart. *Egress does not meet the deemed satisfy requirements in areas on the ground and mezzanine levels. Seek fire engineered alternative solution/s with the Construction Certificate.*

   The distance of travel from parts of the meeting rooms at ground level and the function rooms at Mezzanine level is up to 60m to a single exit in lieu of 40m.

   At ground and mezzanine levels, the travel distances between alternative exits to the north west part of the are up to 87m in lieu of 60m max.

   The travel distances to a point of choice to 2 different exits in the south west function areas are up to 25m in lieu of 20m.

   With the Construction Certificate, amendments will be required to show doorways to the proposed Ground level staff cafeteria, production kitchen, storage area and plant rooms and at Mezzanine level to the Function room area, servery kitchen, chillers and back of house area all in the new south end.

   Hotel Suites
   Travel distances do not comply to Levels 4-14 residential levels in the SE corner of the new tower extension having 10m to a point of choice in lieu of 6m. Seek fire engineered alternative solution.

6. **Aggregate exit widths:** The approximate populations and required exit widths of the levels is shown below:
   - Ground Level = approx 2345 persons. A minimum of 24m aggregate exit width required. *(approx 30m provided)*

   - Mezzanine Level = approx 2606 persons. *A minimum of 26m of exit width required. Only 20m of exit width is available – does not comply. An alternative solution will be required.*

   - Commercial Levels 16-21 has approx 820m2 of office space / 10 = 82 persons. A minimum 1m of exit width required. At least 2m is available – complies.

   - A 1m clear path of travel must be retained throughout the building and in all exit paths – compliance readily achievable

7. **Discharge of exits –** The discharge of exits to comply with Clauses D1.7 and D1.10. *Details required with the Construction Certificate.*

   Pursuant to NSW Clause D1.10 in an entertainment venue, not more than 50% of the population must discharge through the main entrance or adjacent to main entrance and the remaining via other exits – Details to be provided with a Construction Certificate.

8. **Exit doors –** All new room doors need to be provided with a free lever latch located at 900-1100mm high as per BCA Clause D2.21. *Note that the entertainment venue / function areas require minimum 1m wide doors and panic bars and must swing in the path of travel*;

9. **Balustrades –** All new balustrades must comply with D1.6 and NSW D1.6 – internally to not be more than 1m high and externally to not be less than 1.2m high (if external) to the function / entertainment areas.

10. **Access for people with disabilities** – Access for disabled persons is to meet the requirements of AS 1428.1 and the Access to Premises Standards 2010. Comments are as follows:

    a) Access via the principal public entrances will be required. All lifts must comply with BCA 2011 Clause E3.6 **-** *this will necessitate the installation of Braille and Tactile buttons to the existing lifts (cars and lobbies).*

    b) The circulation space at doorways must comply with AS 1428.1 - 530mm latchside clearance required as per AS1428.1

    c) The door schedule will need to show the clear opening widths to all new doors are not less than 850mm. To achieve this, a minimum 920mm wide door leafs are required.

    d) All new disabled accessible unisex sanitary facilities must comply with AS 1428.1. – Provide section drawings with dimensions to assess compliance with AS1428.1;

    e) Braille and tactile signage complying with AS 1428.1 is required to all sanitary facilities.

    f) All new stairs, ramps and escalators will require tactile surface indictors.

    g) The new stairs will need to comply with AS1428.1-2009. As such all risers must be opaque, the treads should have contrasting strips and compliant handrails.

    h) Hearing Augmentation will be required to the meeting room and function rooms as per Clause D3.7;

    i) Any full height glazing to have 75mm solid strip vision bands at 1m high. *Note - this will apply to the new entry glazing.*

    j) The new south end tower will comprise approx 190 new hotel suites with access required to and within 8 suites. The doorways to these 8 rooms are required to have minimum 920mm door leafs to provide a minimum 850mm clear width. The toilets in these rooms are to be made to comply with AS1428.1-2009 ie be a 2.3 x 2.7m to ensure the toilet and shower have sufficient clearances.

    k) The carpet pile height or pile thickness shall not exceed 11 mm and the carpet backing thickness shall not exceed 4 mm;

Section E – Services and Equipment

11. **Fire Hydrants –** The building must be served with fire hydrants complying with the requirements of BCA Clause E1.3 and AS 2419.1-2005. Fire hydrant coverage will be achievable via a full upgrade to current AS2419.1-2005. Any discretion will be dependant on NSW Fire and Rescue under Clause 188 of the EPAR 2000.

12. **Fire Hose-reels –** The building modifications must be provided with hose-reel coverage complying with the requirements of BCA Clause E1.4 and AS 2441-2005. Existing Hose Reels are generally located within 4m of an exit or an internal fire hydrant/s, however many will need to be modified at ground and mezzanine levels. s achievable. Hydraulic Consultant details required with the Construction Certificate.

13. **Fire Control Centre, Smoke detection, Sprinklers –** The current location of the Fire Control Room, Hydrant and Sprinkler pumps will need to be assessed. The aged Sprinklers, Fire Detection & Alarm

system will likely need to be upgraded. Any discretion to be sought through NSW Fire and Rescue under Clause 188 of the EPAR 2000.

14. **Extinguishers –** Fire extinguishers must be provided to all locations which are deemed a potential risk to the occupants of the building, i.e. areas such as main switchboards. No changes envisaged;

15. **Smoke Hazard Management:** Where the floor area of a Class 6 / 9b parts of a fire compartment is more than 2000m^2, the fire compartment, including the enclosed common walkway or mall, must be provided with an automatic smoke exhaust system complying with Specification NSW E2.2b.

    The total fire compartment floor area will be approx 12,000m^2 (exceeds 2000m^2), hence a smoke exhaust system is required to the Lower, Ground and Mezzanine areas. The existing system details to be provided. Levels 16-20 Offices will require Zone Smoke Control as per AS/NZS1668.1-1998.

16. **Lift Installations –** The new passenger lifts must comply with the requirements of BCA Clause E3.6. Emergency lifts required to the new south end tower.

17. **Exit and emergency lighting and warning systems** - Exit signs, Emergency Lighting and EWIS must be provided throughout the proposed works area in accordance with AS 2293.1-2005.

Section F – Health and Amenity

18. **Sanitary Facilities –** Calculations to be provided upon confirmation of the population numbers from Architect / client.

    The number of sanitary facilities required for class 9b function centre based on the assumption of 2000 patrons + 100 staff per floor (assume total population to be 1050 Male / 1050 Female) to be accommodated –

Ground and mezzanine levels(each) Class 9b - function rooms or the like	Pans	Urinals	Washbasins
Male patrons (incl. staff)	6	13	7
Female patrons (incl. staff)	14	-	7

    The quantity proposed will comply. Details needed with the Construction Certificate

19. **Accessible Sanitary Facilities** - An accessible sanitary facility is now required on each altered level. Persons with Ambulation Disability (PAD) facilities are now needed to be provided for males and females at toilet banks as per AS1428.1. Complies

20. **Ceiling Heights** – Function / meeting room areas with more than 100 persons require minimum 2.7m ceiling heights. To comply.

21. **Light –**Artificial lighting must comply with Clause F4.4 of the BCA and AS/NZS 1680.0-1998.

22. **Mechanical ventilation –** Mechanical ventilation must comply with AS 1668.2.

23. **Sound Transmission and Insulation** – Acoustic requirements as per Part F5 apply to the new residential suites to Levels 4-14.

Section H – Special Use Buildings (NSW Appendix)

24. The requirements of NSW Part H101 will need to be complied with in regards to seating, sprinklers, exits doors, main switchrooms, lighting and the like. Details to be provided with a construction Certificate.

Section J – Energy Efficiency

25. **Energy Efficiency (Part J) –** This section is mandatory for Class 5 to 9 projects. The building is within Climate Zone 5 and will be required to comply with *Parts J1 (Insulation for walls and ceilings), J2 (Glazing), J5 (mechanical services) and J6,(electrical services). J7 (Hydraulic Services). A Section J report will be required at CC stage.*

Conclusion

We have assessed the concept architectural drawings with respect to the Building Code of Australia 2012. The design can comply with a combination of the performance or deemed to satisfy provisions of Building Code of Australia 2012.

Appendix A

Table 3 - TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	**Class of building-FRL: (in minutes)**			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	**5, 7a or 9**	**6**	**7b or 8**
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is-				
For loadbearing parts				
Less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3m	90/60/60	120/90/90	180/180/120	240/240/180
3m or more	90/60/30	120/60/30	180/120/90	240/180/90
For non-loadbearing parts				
Less than 1.5m	-/90/90	-/120/120	-/180/180	-/240/240
1.5 to less than 3m	-/60/60	-/90/90	-/180/120	-/240/180
3m or more	-/-/-	-/-/-	-/-/-	-/-/-
EXTERNAL COLUMN not incorporated in an external wall, where the distance from any fire-source feature to which it is exposed is-				
Less than 3m	90/-/-	120/-/-	180/-/-	240/-/-
3m or more	-/-/-	-/-/-	-/-/-	-/-/-
COMMON WALLS and FIRE WALLS-	90/90/90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS				
Fire- resisting lift and stair shafts-				
Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120
Non-loadbearing	-/90/90	-/120/120	-/120/120	-/120/120
Bounding public corridors, public lobbies and the like-				
Loadbearing	90/90/90	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/60/60	-/-/-	-/-/-	-/-/-
Between or bounding sole-occupancy units-				
Loadbearing	90/90/90	120/-/-	180/-/-	240/-/-
Non-loadbearing	-/60/60	-/-/-	-/-/-	-/-/-
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of combustion				
Loadbearing	90/90/90	120/90/90	180/120/120	240/120/120
Non-loadbearing	-/90/90	-/90/90	-/120/120	-/120/120
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES				
and COLUMNS-	90/-/-	120/-/-	180/-/-	240/-/-
Floors	90/90/90	120/120/120	180/180/180	240/240/240
Roofs	90/60/30	120/60/30	180/60/30	240/90/60