

CASE STUDY ENVIRONMENT HEALTH & SAFETY

THIS CASE STUDY DRAWS ON THE CIRCUMSTANCES RELATED TO A MAJOR FIRE INCIDENT AT THE LENDLEASE BARANGAROO SOUTH CONSTRUCTION PROJECT IN MARCH 2014.

The incident event was analysed to determine focus areas for emergency response and fire preparedness for a major event fire to highlight opportunities for improvement in practices across the Australian commercial construction sector.

THE BARANGAROO FIRE INCIDENT EVENT

On the 12th March 2014 at approximately 2.00pm a fire occurred within an area of the Barangaroo South Project Tower 3 construction project known as column C3. Around the time of the fire steel reinforcement installation works were being undertaken at ground floor level around column C3. The fire caused extensive damage to the ground floor area of the construction project and to its basement levels.

Fire & Rescue NSW attended the scene and their subsequent investigation concluded that hot work being carried out in the proximity of column C3 and combustible material at that point of origin (Column C3) resulted in an accidental fire.

INCIDENT OUTCOMES

Following an initial attempt by workers to suppress the fire within the C3 Column (hose and fire extinguisher) the emergency alarm was activated. The size of the fire when discovered at the base of the 4 metre C3 column meant that existing fire deterrents became ineffective as it became too dangerous to attempt to extinguish.

As a result, the project's emergency response plan, including evacuation of the site, was enacted. All site personnel were evacuated within 15 minutes, with fire wardens walking the site to ensure all workers had evacuated. Evacuated workers were accounted for at the emergency assembly area, however, some workers departed the site and did not go to the assembly area and these required an additional two hours to verify they had left the site and were safe.

At the time of the fire the Barangaroo South Construction Project consisted of five construction projects within the precinct and approximately 1,800 workers were working across these sites. As a precaution, the entire precinct was evacuated.

LESSONS FOR INDUSTRY

A variety of opportunities for reflection and improvement were identified based on the fire event and practices across the commercial construction industry in general.

These include:

- Refresher training in permit to work implementation and first attack fire response for those undertaking hot works and those supervising such works.
- Consideration of design of large column steel reinforcement cages (e.g. 1,600mm or more in diameter) and the location of steel stiffening rings along the column's length (for transport and lifting), to prevent any clash with the stiffening rings and the desired horizontal steel reinforcement installation at a slab level.
- Use of pneumatic cutting tools to prevent hot works around timber formwork and other combustible materials.

- Consideration of fire-retardant properties in the design of column form tubes.
- Building Code of Australia E1.9 requirements for operational fire risers and hose reels provided for buildings/structures greater than 12m and maintained two storeys below the effective height of the building/structure.
- The process for assessing design change for any new or alternative products proposed within major subcontractor packages.
- Training of site personnel in emergency response planning.
- Evacuation drills and the use of credible scenarios to test emergency preparedness and identify improvement opportunities and training.
- Worker education on emergency evacuation and the importance of presenting to the evacuation assembly area to enable each worker to be accounted for.

1: NSW Fire & Rescue Crew attempting to extinguish the flames which spread to the base of the tower crane. Source: *Sydney Morning Herald*

2: Formwork and flammable materials on fire surrounding the C3 Column and the extent of the fire around the column, which extended to the basement below. Source: *Sydney Morning Herald*

