



Cessnock Correctional Centre Upgrade

Report of Environmental Factors/effects(REF) for Building Services

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1 Design Philosophy

1.1 General

Meinhardt has been engaged to undertake the Services engineering design for the redevelopment of the Cessnock Correctional facility in NSW. The proposals at the present time consist of a proposed 320 bed maximum security unit, a 280 bed minimum security unit, new car park and external hard standing areas outside the front of the site and an access road (realigned Alunga Avenue) with an intersection junction on Lindsay Street. In addition new proposed 400 bed unit which is to be located to the south-west of the existing facility.

1.2 Project Background

The site is located in Cessnock, NSW. Additional prisoner capacity needs to be provided by Corrective Services NSW in terms of accommodation and consequently any associated infrastructure works also need to be provided. This will include upgrading of sewer water and electricity to the site to cope with the additional loads for:

- 320 bed maximum security unit
- 280 minimum security unit
- 400 bed unit

2 Report of environmental factors/effects (REF) Building Services Building

2.1 Hydraulic Services

2.1.1 Water

Existing connection currently supplied from Cessnock 1 Reservoir via onsite storage tanks connected to a 150mm watermain located on Kerlew Street. Due to pressure and flow limitation in this area, the facility can receive a maximum allowable flow rate from Hunter water of 11L/s.

New 200mm watermain from mount View 1 Reservoir the main will provide sufficient flow to the entire correctional facility and the proposed Minimum facility, Maximum facility and 400 bed, without the requirements for pumps and storage tanks

Isolation valves will be provided to allow periodic or emergency maintenance without disruption to the wider network.

Cold water will be supplied to the fixtures fittings and localized hot water units

2.1.2 Hot water

Hot water will be generated locally with pipe work reticulation in a flow and return system to reduce the lengths of dead legs and improve efficiency.

Tempered water will be provided by a Thermostatic mixing valve to all fixtures and fittings

2.1.3 Reuse water.

Not required as direction from Project manager.

2.1.4 Natural gas

Natural gas will be supplied to the entire correctional facility and the proposed Minimum facility and Maximum facility only from a connection to the existing site wide reticulated infrastructure. Isolation valves will be provided to allow periodic or emergency maintenance without disruption to the wider network.

Natural gas will be supplied to the hot water generators only in a low pressure arrangement

2.1.5 Sanitary drainage

The existing facility is currently connected to Cessnock 1 Waste Water network pump station which pumps directly to the Cessnock Waste Water Treatment Work (WWTW). According to Hunter water, there is insufficient capacity in the waste water network for the connection new facilities.

Sewer Infrastructure

Infrastructure of 350mm sewer main pump station, and riser main up to Cessnock Waste Water Treatment Work (WWTW) to be carried out by credited designer hunter water (public work) this new sewer infrastructure system

will have sufficient discharge to the entire correctional facility and the proposed Minimum facility, Maximum facility and 400 bed.

2.2 Electrical Services

This assessment has been undertaken in accordance with the concept plan and the environmental factors is the supplied of new pad mounted substation to serve the proposed development. This impact would alter the existing electrical distribution company infrastructure and will have minimum power affect associated with the existing community services.

The existing facility is connected to the Ausgrid network via three pad mount sub stations

- TX56960 (800kVA) – serves the existing maximum security site
- TX56967 (1000kVA) and TX57535 serve the newer 250 bed facility

In addition to the above a smaller substation, TX50906, serves the cottages along the site entrance road

According to Ausgrid the two substations serving the existing 250 bed are under utilized and after discussions with Department of Justice they would like to look at relocating these two sub stations to an area south west of the existing 250 bed gatehouse and then use these two substations to feed both the 250 bed and the new maximum security 320 bed facility. Department of Justice has provided this proposal to Ausgrid for their consideration. This is also being investigated further by Meinhardt with electrical loading hourly profiles being reviewed as the DoJ max demand calc is considerable lower than that carried out by Meinhardt (and previously by Jacobs)

It is proposed that a multi-staged approach to providing power supply to the site be scheduled which will cater for infrastructure works to serve the adjacent 400 bed facility. This is ongoing at the moment with the adjacent 400 bed facility also reviewing their maximum demand calculations. The DoJ submitted an energy application for the adjacent 400 bed facility which is lower than the figures being submitted by the 400 bed designers.

Ausgrid design information packs have not as yet been received so detailed design works are not able to proceed without risk of re-work.

In accordance with the electrical authority requirement an easement is to be establishment to cater for the pad mounted substation and HV inground cables pathway.

Security lighting will be provided however base on the buildings proposed location, we anticipate this will have minimum or no impact to existing community areas including provision of new indoor site main switchboard, diesel generator, un-interrupted power supply, LV distribution, lighting protection, general lighting/emergency lighting system and power.

2.3 Fire Services

The fire protection services will have no environmental effect on the site. The fire protection services (sprinkler and hydrants) are supplied by existing on site water tanks considered sufficient for the scope. There are no other special hazard system (i.e. foam) or gas suppression system required on site.