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NSW GOVERNMENT Health
Hunter New England
Local Health District

9 September 2016

Kate Masters
Planning Officer
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Dear Ms Masters

Former Hydro Aluminium Smelter, Kurri Kurri - Demolition and Remediation (SSD 14_6666)

I refer to the Environmental Impact Statement (EIS) exhibited on the NSW Department of Planning & Infrastructure web site in relation to the former Hydro Aluminium Smelter, Kurri Kurri - Demolition and Remediation, (SSD 14_6666).

The works include the demolition of a number of buildings and structures, the construction of a Containment Cell for the ongoing management of contaminated wastes previously generated by smelting activities, site remediation, leachate and groundwater treatment. The Works are anticipated to take approximately 3 years to complete. Hydro land includes the smelter site and a surrounding buffer zone. Eventually the smelter site is intended for industrial zoning with a mix of residential, conservation recreation and industrial use in the surrounding buffer zone.

Hunter New England Population Health (HNE Health) has reviewed the Environmental Impact Statement (EIS) report paying particular attention to the management of air quality, noise, soil, water and issues which may have an impact on public health. Provided the Environmental Protection Authority is of the opinion that a containment cell is the most appropriate method of dealing with the hazardous industrial waste found on site, the following points are discussed and should be considered in the approval process for this project.

Air Quality

The EIS indicates Air Quality as an issue during the demolition and remediation process. Dust levels for TSP, PM 10 and PM 2.5 at the nearest residential property are predicted to be lower than the assessment criteria sourced from NSW DEC *Approved methods for the modelling and Assessment of Air Pollutants in NSW (2005)and WHO (2005) Air Quality Guidelines Global Update.* Estimates of airborne pollutant levels for the project were reduced based on assumptions of emission control by watering during project activities.

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HNE Health notes that predicted cumulative annual dust concentrations for at least one residential property exceeded the health based air quality guidelines for chromium, fluoride and PAH's. The report advises that health risk estimates are lower as residents are unlikely to occupy the household 24 hours a day for an entire year. Demolition by explosives is planned for three concrete stacks and a water tower.

Variations in weather conditions may increase both dust and particulate concentrations and result in higher values or impacts on other residences and sensitive receptors proximal to the site. Therefore all dust mitigation and particulate control measures including monitoring as identified in the Air Quality Impact Assessment, (Appendix 6) should be undertaken during construction, demolition and remediation to limit human health impacts. Specifically, for demolition by explosives, the measures stated in the Air Quality Impact Statement should be carefully adhered to.

Significant dust deposition has occurred from the smelter activities in buildings on the site, elevated concentrations of metals and PAH's were found in some structures. These materials will need to be contained and managed to ensure there are not significant releases in to the environment of these pollutants.

The Human Health Risk Assessment (HHRA) (Appendix 12) indicates that in the capped waste stockpile concentrations of ammonia gas are present whilst concentrations of phosphine, hydrogen sulphide and hydrogen cyanide have reduced over time below detectable levels. The Ammonia gas is anticipated to dissipate rapidly once released so is thought not to pose a health risk to off-site receptors. The HHRA states that real time ambient air monitoring would occur when the Capped Waste Stockpile is exposed and will monitor at a minimum for ammonia and cyanide gases.

Asbestos, friable and bonded has been identified both in the Capped Waste Stockpile and in the smelter buildings. Hydro intends to continue with asbestos removal using contractors licensed with Safe Work NSW. Air quality monitoring for the presence of respirable asbestos fibres should take place prior to any activity to assess (background) levels; during demolition, construction and remediation works (exposure and control); following the works (clearance) and action taken on elevated findings.

Noise

Environmental noise can have negative impacts on human health and well-being and trigger ongoing community complaints about annoyance, sleep disturbance and stress. Evidence concerning the adverse health effects of environmental noise is detailed in a number of publications, for example, the World Health Organization Night Noise Guidelines for Europe (2009) and the WHO Guidelines for Community Noise (1999). For the benefit of Ramboll Environ (P.36 of the HHRA) these documents can be found at http://www.euro.who.int/__data/assets/pdf_file/0017/43316/E92845.pdf and http://www.euro.who.int/en/health-topics/environment-and-health/noise/policy respectively.

Receivers in the locality surrounding the Hydro site are residential, recreational, educational and commercial. In the HHRA, sensitive receptors have been identified and locations displayed on a map.

Hydro acknowledges that the standard construction hours are 7:00am to 6:00pm Monday to Friday and 8:00am to 1:00pm Saturday but intends to conduct some works during standard evening hours. The Noise and Vibration Impact Assessment identified a number of activities that could be undertaken outside of standard construction hours that would allow the Works to continue in accordance with the *Interim Construction Noise Guideline* (DECC, 2009). The Noise and Vibration Impact Assessment (Appendix 7) identifies machinery that could be operated outside of standard construction hours and

allow the Works to comply with the criteria. Utilising standard evening hours would enable hydro to keep to project deadlines and minimise local traffic impacts.

HNE Health recommends that work activities do not occur during standard hours night time (10pm to 6am), Saturday afternoon and evening, Sunday and Public Holidays. Work should be minimised during standard evening hours (6-10pm). Compliance noise monitoring should occur at the localities identified in the EIS to indicate exceedances. Noise mitigation measures as stated in the EIS should be implemented.

Consultation with the community is important, thus the 24 hour contact line and a procedure to deal with issues as identified by Vipac (2015) in Appendix 7 is to be included in the measures. HNE Health recommends that the surrounding community be advised of larger noise impacts such as likely to occur during demolition using explosives, for example of the three stacks and the water tower.

Drinking Water

The HHRA states that drinking water is supplied to residents in the area by Hunter Water. The water is sourced from Chichester Dam, which air quality modelling indicates is unlikely to be impacted by dust deposition.

Rainwater Tanks

Dust generated during the demolition and remediation process may be deposited on the roofs of residences close to the site. The HHRA identifies an exposure pathway for offsite residential receptors through potable use of tank water. Predicted cumulative dust concentrations for at least one residential property exceeded the health based air quality guidelines for chromium, fluoride and PAH's. Dust collections containing metals and PAH's found in buildings also need to be considered when assessing the potential impact on rainwater quality. Whilst the calculated increase in dust deposition is lower than NSW DEC Approved *methods for the modelling and Assessment of Air Pollutants in NSW (2005)* provided in the HHRA, there may be resultant accumulations in rainwater tanks.

The HHRA discusses the use of first flush devices. The provision of first flush devices is not a requirement of rainwater tank installation and enHealth's *Guidance on use of rainwater tanks* advises that first flush devices are not always effective in preventing contaminants from entering tanks. Whilst microbiological contamination is a primary concern in the use of rainwater for drinking, occupants may use methods of control such as disinfection which would not have an impact on dust and particles. The HHRA recommends that off-site residential receptors should utilise the guidelines provided by enHealth. It is further recommended that Hydro notify the residential receptors identified in the HHRA (P.23) of the potential for dust and particulate matter deposition and recommend that rainwater is not used as a potable source during the Works activities.

Surface Water

The smelter is located in low lying land with swampy land, surface water creeks and drainage ponds predominantly to the east. A gentle slope exists from West to East towards the water courses. Interception trenches located at the Capped Waste Stockpile allow for diversion of leachate, surface water and groundwater to an East Surge Pond and the North Dam. Testing at these water bodies for pH, Cyanide and Fluoride have found elevated fluoride levels. These water bodies should be considered in the remediation plan, to ensure that contamination does not exist for future intended uses.

Operators should ensure there is minimal impact from the proposed development on the water quality of the surrounding natural waterways, particularly from stormwater runoff. All disturbed areas of contamination and stockpiles of earth should be contained so as to limit runoff. The EIS advises that the water treatment plant at the Capped Waste Stock Pile will remain in operation until all contaminated material is removed from the Stockpile and leachate affected water is treated. Erosion and sediment control measures are to be implemented.

Ground Water

The EIS identifies that groundwater has been affected by leachate from the Capped Waste Stock Pile. Under the Smelter Buildings, in groundwater samples shallower than 1.5m below ground level, total petroleum compounds including benzo pyrenes have been measures at levels higher than health based criteria.

Leachate from the stock pile has the potential to mix with surface waters, currently the leachate is treated at a water treatment plant prior to being irrigated to the Clay Borrow Pit. All groundwater should be treated so as to ensure contaminants do not present a health risk.

The Containment Cell is planned in an area where it is intended not to be affected by surface or groundwater. The EIS advises that a water treatment plant will be installed if required; any water that does enter the containment cell would need to be adequately treated for removal of contaminants prior to disposal. A contingency plan needs to be developed in advance of water entry occurring.

Soil

The EIS advises that the Capped Waste Stock Pile contains mixed wastes comprised of spent pot lining and to equal extent amounts of other solid wastes generated at the smelter including cryolite, alumina, carbon steel shot, cement, small amounts of other materials including plastic, wood, lead based paint and both friable and bonded asbestos. Hazardous materials from the Stock Pile will be moved to the Containment Cell.

Information provided in the EIS indicates the spent pot lining currently stored in on-site sheds will be removed from the smelter prior to or following the Works activities. HNE Health understands this to mean that these hazardous wastes will be effectively transported and managed at a facility off-site.

The EIS identifies that groundwater has been affected by leachate from the capped waste stock pile. Currently the leachate is treated at a water treatment plant prior to being irrigated to the Clay Borrow Pit. Historically the leachate has been irrigated to a number of sites around the smelter and buffer zone. The end quality of the water that was applied to some areas in previous years may not meet current environmental standards. Portions of the Smelter area including the Clay Borrow Pit was filled with materials including refractory brick and concrete used in the smelter process. Some materials contain alumina, fluoride and PAH's. Since the eventual plan is for portions of the smelter site and buffer zone to be used for industrial, recreational and residential purposes then all areas of the site should be assessed against their intended use, soil sampled and appropriate remediation undertaken to ensure environmental and human health impacts are mitigated for the future.

Social

HNE Health is of the understanding that long term storage of hazardous wastes in the constructed Containment Cell may not be favoured by some community members and local Councils. The impact of the development being approved on the mental health of the community would need to be considered. Community engagement activities should continue with an awareness of potential social impacts.

If you require any further information please telephone Allison Garrett, Environmental Health Officer on 4924 6476

Yours Sincerely

Dr David Durrheim
Service Director - Health Protection
Hunter New England Population Health