

JRPP Ref. No.:	2012SYW078
DA No.:	DA11/1445
PROPOSED DEVELOPMENT:	Lawn Cemetery, Memorial Gardens, Associated Buildings and Crematorium
PROPERTY ADDRESS	2207-2223 Elizabeth Drive Luddenham
DEVELOPMENT CATEGORY	Integrated Development
APPLICANT:	Stimson Consultant Services Pty Ltd
REPORT BY:	Gurvinder Singh - Senior Environmental Planner
RECOMMENDATION	Refusal

Assessment Report

Executive Summary

Council is in receipt of a development application for a lawn cemetery incorporating a memorial garden, crematorium, chapel, associated buildings and car parking on the subject site.

The land is zoned RU2 Rural landscape under the provisions of Penrith Local Environmental Plan 2010. The proposed development is defined as 'Cemetery and Crematorium' which are permissible uses in this zone with Council's consent.

The application was advertised in the local newspapers and notified to adjoining and nearby property owners and occupants in the Penrith and Liverpool Local Government Areas. The exhibition period was from 20 January 2012 and extended to 9 March 2012. Council received 511 letters of objection including petitions from the concerned residents. These concerns related to environmental impacts of the proposed development on the surrounding area. These concerns are addressed in this report.

The application as made did not adequately address matters related to air quality, groundwater contamination, land contamination, wastewater and effluent disposal, bio security matters, noise, waste management and compliance with public health legislation. The applicant was requested to respond to these matters. After receiving the applicant's response which included an amended proposal and additional information, the application was placed on public exhibition for a second period from 17 to 31 July 2012. Council received further submissions from the concerned residents.

Council appointed an independent consultant (GHD) for a peer review and assessment of some of the environmental impacts related to the proposal. The development application was reported to the Joint Regional Planning Panel (JRPP) on 27 November 2012. The JRPP made the following decision:

'The Panel is not in a position to give an approval or refusal at this meeting. The Panel is disappointed that a matter of this nature has been brought to the Joint Regional Planning Panel missing a number of essential items of information sought by Council long ago, e.g. to state just one of the many items - detailed information about the long term management and financing of the operation.

The Panel defers the decision on this application for the following reasons:

- 1. Necessary information needed for the assessment of this application and sought by council has not been supplied and the Panel expects a full response to the Council's letter to the applicant dated 6 March 2012.*
- 2. The applicant has not had sufficient time to respond to the GHD report/peer review commissioned by council and upon which council relies, and seeks time to do so.*
- 3. The Panel is concerned about more than a response to the GHD material and also requires further additional material, namely: a full visual analysis from relevant places where the site can be viewed as suggested by Ms Sacha Vukmirica on behalf of No Cemetery and Crematorium in Luddenham Action Group and*
- 4. Fully dimensioned plans of all structures proposed for the site so as to be able to achieve a true visual analysis and understanding of the impact on the rural character of the area. The visual analysis to be undertaken by the applicant must include both words and clear representation. [The Panel finds the concept approach of the application to be entirely unsatisfactory.]*
- 5. The Panel will accept the additional information only if received at Council by 21 February 2013.'*

The applicant submitted additional information to Council in response to the above decision. However, the applicant has further amended the development application mainly by reducing the total number of burial plots from 75887 to 38,000 and one chapel instead of three chapels proposed earlier.

The development application was placed on public exhibition for a third time due to the amendments carried out by the applicant. Submissions were invited from 25 March to 24 April 2013. Council received numerous submissions objecting to the proposed development. These submissions are addressed in this report.

Council appointed another independent consultant (JBS) to overview the matters relating to groundwater contamination and air quality. The consultant has provided their comments which are included in this report.

An assessment under Section 79C of the Environmental Planning and Assessment Act 1979 has been undertaken and the following issues - discussed in detail in this report - have emerged as a result of this assessment process:

- Inconsistencies with the objectives of the zone
- Land contamination
- Air quality
- Groundwater contamination
- Land use conflicts
- Bio security impacts and food safety
- Rural character and visual impacts
- Accessibility
- Social and economic impacts
- Loss of productive agricultural land in the Sydney Basin.

The proposed development is not consistent with some provisions of the Environmental Planning Instruments and Development Control Plan applicable to the subject site. The likely environmental impacts of the proposed development will be adverse for the neighbouring residents, businesses including poultry farms and other horticultural farms in the vicinity of the site. The site is not considered suitable for the proposed development and the proposal will not be in the public interest. This report recommends that the development application be refused.

There are 8 appendices to this report, as detailed below:

- Appendix No. 1 – Locality Plan
- Appendix No. 2 - Site and Architectural Plans
- Appendix No. 3 – Statement on long term maintenance and funding
- Appendix No. 4 –General Terms of Approval by NSW Office of Water
- Appendix No. 5 – Penrith DCP 2010 Development Control Table
- Appendix No. 6 - Submissions from Poultry Companies
- Appendix No. 7 – Photo Montages
- Appendix No. 8 – Landscape Master Plan

Background

Council has previously refused a development application (DA10/1208) received on 22 November 2010 from AAC Lucas for a concept plan of a cemetery, crematorium, memorial gardens and associated buildings and car parking at the above site. The development application was refused on 1 March 2011 for the following reasons:

1. *The application was not satisfactory for the purpose of Section 78A of the Environmental Planning & Assessment Act 1979 as the development application did not comply with the requirements of Clause 50 of the Environmental Planning and Assessment Regulation 2000 in that the development application:*
 - a) *did not contain all of the information and documents, specified in Part 1 of Schedule 1 of the Environmental Planning and Assessment Regulation 2000, and*
 - b) *was not accompanied by the fee prescribed by Part 15, determined by the consent authority, and*

- c) *was not accompanied by a list of any authorities from which concurrence must be obtained before the development may lawfully be carried out, and*
 - d) *was not accompanied by a list of any approvals of the kind referred to in section 91 (1) of the Act that must be obtained before the development may lawfully be carried out, and*
 - e) *was not accompanied by a correct estimated cost of the development.*
2. *The application was not satisfactory for the purpose of Section 79C (1) (c) of the Environmental Planning & Assessment Act 1979 as the site was not suitable for the proposed development due to its likely adverse impact on the quality of the groundwater.*
 3. *The application was not satisfactory for the purpose of Section 79C (1) (b) of the Environmental Planning & Assessment Act 1979 due to the likely adverse impact on the residential amenity and natural environment.*
 4. *The application was not satisfactory for the purpose of Section 79(1) (e) of the Environmental Planning & Assessment Act 1979 as the proposal would not be in the public interest due to matters raised in the submissions.*

The current development application was lodged on 23 December 2011. The applicant did not attend a pre lodgement meeting.

The proposed development as reported to the JRPP on 27 November 2012 included the following key elements:

- Use of the land as a lawn cemetery incorporating a crematorium.
- An administration building located towards the frontage of the land and to the north of the existing farm dam. A café and florist was also proposed adjacent to this building.
- A cluster of 3 chapels around the crematorium with this building located generally central to the site and having a total seating capacity of 200.
- Maintenance building to be located adjacent to the eastern boundary and central to that boundary.
- Below ground burial areas (14782 plots), above ground burial areas (46183 plots) and memorial plaques (10862 plots) and tombs/columbariums (4060 plots). Total numbers of plots were 75887.
- Access to the site from Elizabeth Drive via an upgraded intersection treatment.

- Principal access circulation road and car parking adjacent to the administration and chapel buildings. A total of 334 parking spaces were proposed.
- Landscaping over the site including plantings to all boundary setbacks.
- Demolition of the existing dwelling and associated outbuildings.

The development application was accompanied by the following documents:

- Statement of Environmental Effects prepared by Stimson Consultant Services dated December 2011
- Traffic, Access and Car Parking Assessment prepared by Transport and Urban Planning dated July 2010
- Air Quality Impact Assessment prepared by Pae Holmes dated 16 December 2011
- Groundwater Contamination Assessment prepared by Geotechnique Pty Ltd dated 21 November 2011
- Supplementary Groundwater Contamination Assessment prepared by Geotechnique Pty Ltd dated 6 July 2011
- Preliminary Contamination Assessment prepared by Geotechnique Pty Ltd dated 22 November 2011
- Unexpected Finding Protocol prepared by Geotechnique Pty Ltd dated 22 November 2011
- Geotechnical Assessment of Onsite Effluent Disposal System prepared by Geotechnique Pty Ltd dated 26 October 2011
- Noise Impact Assessment prepared by Renzo Tonin and Associates dated 23 May 2011
- Stormwater and Effluent Management Strategy prepared by J Wyndham Prince dated November 2010
- Waste Management Plan prepared by Stimson Consultant Services dated December 2011
- Site and Vegetation Assessment prepared by Horticultural Management Services dated 3 December 2007

The development application has been amended by the applicant. The amended proposal is detailed in a further section of this report.

Site and Surrounds

The site is located on the northern side of Elizabeth Drive around 500 metres west of its intersection with Luddenham Road, Luddenham. It is an irregular shaped lot with a frontage of 176 metres to Elizabeth Drive. The total area of the land is 36.62 hectares. The land falls from north to south. The site is currently used for rural residential purposes with low intensity grazing. A single dwelling and associated buildings exist on the site. The surrounding area is characterised by poultry farms, market gardens, grazing land and rural residential living.

The immediate neighbouring property to the south east of the site is a poultry farm having large sheds for poultry and a residence. The property to the south of the site across Elizabeth Drive is also a poultry farm having large sheds for poultry and a residence. Around sixty head of sheep graze this land. The two poultry farms have a capacity of around 230,000 chickens every eight weeks. The immediate neighbouring property to the north east of the site has an olive farm having numerous olive trees. This property has recently been approved for a Go Kart and Paint Skirmish recreational facility. The Model Park society that runs automotive/air models is located to the east of the site. The immediate neighbouring property to the south west of the site is a residence and a fig farm. Various other strawberry farms and honey farms are located within the vicinity of the site. Luddenham village is located further to the south west of the site. The nearest residence is around 70m from the western boundary of the site.

The site has a slope of around 15 degrees and generally slopes downward from north to south. A few creeks traverse the site generally from north to south. The site is highly visible from Elizabeth Drive the Northern Road, and all surrounding properties in Luddenham. Rural residential areas of Liverpool Council are located to the south of the site across Elizabeth Drive.

Proposed Development

The proposed development as amended involves use of the land as a lawn cemetery incorporating a crematorium. The amended plans indicate the following key elements:

- A revised burial layout. Below ground burials plots totalling 25,000. Columbariums accommodating 13,000 plots. Total capacity of 38,000 burial plots.
- Relocated chapel and crematorium building to be situated centrally on the site. A revised chapel and crematorium building accommodating one chapel with a 60 seat capacity and one crematorium furnace.
- Adaptive re-use of the existing dwelling and garage to accommodate the administration, florist and maintenance functions of the facility.
- An overall reduction in the road network and ancillary development required for the operation of the facility.
- A mercury scrubber system

The submitted revised plans comprise:

- A site plan, showing proposed structures, infrastructure and general usage of the site
- A site plan, floor plan and elevations for the administration, chapel, crematorium, florist and maintenance buildings

- An expression of burials, identifying below ground burials and above ground columbarium/niche walls. This plans details the burial plot arrangements, and details of the columbarium walls
- An entry statement plan

Additional documents that form part of the development application include:

- Plan of Management
- Groundwater, Geotechnical, Waste Water and Salinity Assessment by Martens Consulting Engineers
- Stage 1 and 2 Environmental Site Assessment by Martens Consulting Engineers
- Visual Impact Assessment by Richard Lamb and Associates
- Landscape Plan by Taylor Brammer Landscape Architects
- Acoustic statement by Renzo Tonin and Associates
- Response to air quality concerns (both specifically by Pacific Environment Limited and throughout the work undertaken by Martens Consulting Engineers) and supplementary air quality report by Pacific Environment Limited (PEL 2013)
- Documents provided by Essential Facilities Management and HWL Ebsworth Lawyers relating to the long term maintenance and management of the facility.

Planning Assessment

The proposed development has been assessed against the relevant heads of consideration contained in Section 23G, Section 79C and Section 91 of the *Environmental Planning and Assessment Act 1979*, and based on this assessment, the following issues have been identified for further consideration:

Section 23G – Joint Regional Planning Panels (JRPP)

Under Clause 13B of the *State Environmental Planning Policy (Major Development) 2005*, a regional panel has the function of determining certain development applications. The subject development application was forwarded to the JRPP on a request from the applicant as 120 days had lapsed after the submission of the application to Council and the application remained undetermined. The Sydney West Region Joint Planning Panel accepted the request of the applicant to determine the development application in accordance with Section 23G of the *Environmental Planning and Assessment Act 1979*.

Section 91 – Integrated Development

The proposed development is an Integrated Development under Section 91 of the *Environmental Planning and Assessment Act 1979* and approval was sought from the following state government authority in accordance with relevant legislation:

- NSW Office of Water – Section 91 of the *Water Management Act 2000* (Controlled Activity Approval to undertake works within 40m of a watercourse)

The NSW Office of Water has assessed the proposed development under the *Water Management Act 2000* and raised no objections to the proposal subject to General Terms of Approval (GTAs) (refer to Appendix No. 4 for a copy of the GTAs).

Section 79C(1)(a)(i) – Any Environmental Planning Instrument

State Environmental Planning Policy No. 55 (SEPP55) - Remediation of Land

The objectives of SEPP 55 are as follows:

- *to provide for a state wide planning approach to the remediation of contaminated land and*
- *to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.*

Pursuant to SEPP 55, Council must consider the following matters:

- *whether the land is contaminated*
- *if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the proposed use.*

Geotechnique Pty Ltd (GPL) undertook a Phase I Preliminary Contamination Assessment for the applicant. This report accompanied the original development application and provided a summary of the site setting, land uses, potential for contamination and conclusions and recommendations to assess if the site presents a risk of harm to human health and the environment.

GPL identified potential current and historical sources of contamination at the site using a combination of historical aerial photographs, title deeds and a site walkover. The reported potential contamination sources included:

- Current: garage and metal workshop, fibro building, soil stockpiles and dumping (scrap metal, wooden pallets and old car bodies); and
- Historical: market garden activities and poultry farming activities.

Based on the current and previous land uses, it was reported by GPL that the contaminants of potential concern (COPC) included: metals, organo-chlorine pesticides (OCP), organo-phosphate pesticides (OPP), total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylene (BTEx), polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), phenols and asbestos.

GPL provided the following conclusions and recommendations within the Phase I:

- *It is considered that the site has only a low potential for contamination based on the current and historical land uses*

- *Undertake sampling and analysis, post demolition and prior to redevelopment, to assess the potential contamination and confirm the contamination status*
- *Prior to demolition of the existing buildings, undertake a hazardous materials survey, by a licensed contractor; and*
- *Undertake further investigation, analysis and assessment if latent contamination is identified.*

GPL prepared an *Unexpected Findings Management Plan / Protocol* during the proposed development works and during excavation of proposed gravesites. The plan/protocol provides details on the management of asbestos cement pieces and friable asbestos; management of suspect materials and management of groundwater or seepage water. With the exception of asbestos management, the protocols for the last two items are limited to engagement of an environmental consultant and potential abandonment of the grave site respectively.

In Section 4.1.1 of the Statement of Environmental Effects (SEE) Stimson Consultant Services (SCS) provide a statement detailing the following:

“The subject site is not contaminated as demonstrated in the accompanying contamination report. Accordingly it is submitted that the site is suitable for the proposed use and that this SEPP is not applicable”. Further in Section 4.6.4 of the SEE, SCS provides a statement detailing that *“based on the Dent guidelines the soil type represents the best types for decomposition and decay product retention”.*

The GPL report submitted with the application was assessed by Council Officers and the independent consultant appointed by Council. The following comments made by Council Officers and the consultant were reported to the JRPP meeting of 27 November 2012:

- The Phase I assessment has made no reference as to the assessment of risk to human health and the environment from the proposed land use and the potential contaminants relating to the future burials at the site. Further, no conceptual site model has been developed including potential source-pathway-receptor pollutant linkages present at the site, based on current or proposed land uses
- The north-eastern portion of the site is likely underlain by Quaternary Deposits comprising fine grained sand silt clay; these deposits were not discussed in the GPL reports, although appear to be recorded in the GPL investigations (as residual/alluvial deposits)
- Given that there are three GPL investigations provided (and a further investigation referenced), the Phase I assessment has made limited commentary on the subsurface soil, geology and hydrogeological conditions. Two of the investigations have recorded the presence of Sandstone at the site, with the greatest observed thickness being observed as exceeding 8.3 m. The presence of Sandstone has not been discussed in the GPL reports in

terms of the subsurface soils. Sandstone and Shales have different physico-chemical characteristics, and contaminants have the potential to behave differently (in terms of migration of contaminants / groundwater, adsorption etc) within each stratum

- The Phase I does not provide information on the presence of licenced or unlicensed groundwater abstractions near to the site; nor the abstraction uses. An independent review of the information provided on the NSW Office of Water website has indicated the following:
 - Four onsite boreholes: Three with no data and one licensed (GW072774). The licensed borehole was used for exploration, and was drilled to 30 m in 1994
 - Thirteen off-site boreholes: One licenced (GW105016). This borehole is approximately 600 m south and is used for domestic stock purposes; it was drilled to 95 m in 2003.
- There are two GPL reports that provide assessments on the permeability of water through the underlying Residual Soils / Shale. There are no specific details on the methodology (field data collection, calculation or summarised rates) for either of the methods utilised in the assessment. Further there appears to be disparities in the site specific data reports and the GPL interpretation of the data. In the GPL reports the underlying strata is generally described as very low permeability to impermeable.

Council's independent consultants compared the site specific data with published hydraulic conductivity for the rates. The site specific calculated hydraulic conductivities indicate that the soils tested are typical of silt, sand or silty sand strata, which are considered as permeable to moderately permeable which contradicts that stated by GPL. Based on the visual description of the subsurface strata (i.e clayey soils) and the independent consultant's local knowledge of the subsurface profile in this area of Sydney the hydraulic conductivities more commonly associated with the Shale / clayey deposits would be much lower generally than estimated by GPL. There is therefore a disparity between the site specific data, the visual descriptions and the published hydraulic conductivities.

- The SEE provides a statement that the subsurface soils have been assessed against those provided in the Boyd Dent Thesis. None of the reports provided by the applicant have assessed the subsurface soils in detail against the recommendations within this thesis.

There is therefore insufficient information provided by the applicant especially in regard to the assessment of how the development will affect the soil environment and subsequent pathways to human health or environmental receptors (on or off site). There is also insufficient characterisation of the existing contamination status of the site in respect to potentially contaminating activities carried out, and a limited conceptual understanding of the nature of the unsaturated soils and their suitability for the proposed use.

In response to the JRPP decision of 27 November 2012, the applicant submitted a "Stage 1 and 2 Environmental Site Assessment – prepared by Martens & Associates Pty Ltd dated February 2012. This report concluded that there is lead contamination and asbestos contamination in areas of the site that require remediation, and that further investigation is needed to assess the contamination status of an area that has been filled and under structures on the site.

State Environmental Planning Policy No 55 – Remediation of Land states that:

- (1) *A consent authority must not consent to the carrying out of any development on land unless:*
 - (a) *it has considered whether the land is contaminated, and*
 - (b) *if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
 - (c) *if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

In this instance, to address point (a), Council has considered whether the land is contaminated, and the report provided by the applicant has confirmed that contamination is present on the site.

Council needs to be satisfied that the land is suitable, or that it can be made suitable for the development to address point (b). However, Council has not received a Remedial Action Plan that outlines what remediation works will be carried out on the site, and whether this will then make the site suitable for its intended use.

As a result of the requirements of Sydney Regional Environmental Plan No 20 – Hawkesbury-Nepean River and SEPP 55, all remediation works in the Penrith Local Government Area require development consent. Thus a separate development application will be required for remediation purposes.

State Environmental Planning Policy (Infrastructure) 2007 (SEPP 2007)

Clause 104 of SEPP 2007 has referral requirements relating to Traffic Generating Development. In accordance with this Clause a formal referral was sent to the Roads and Maritime Service (RMS) and a response from the Sydney Regional Development Advisory Committee was received. The RMS have recommended conditions to be imposed with respect to ensuring safe access and egress from the site. These conditions relate to intersection treatments and provision of 'No Stopping' zones along Elizabeth Drive.

Based on the advice provided by the RMS and Council's Senior Traffic Engineer, the proposed development is satisfactory for the purposes of Clause 104 of SEPP 2007.

Sydney Regional Environmental Plan (SREP) No.20 – Hawkesbury/Nepean River

Sydney Regional Environmental Plan No.20 – Hawkesbury/Nepean River (SREP) applies to the subject land. The relevant planning strategies under this SREP are discussed below:

Cultural Heritage

The subject site has not been identified to contain any items of heritage. No heritage buildings are located in the vicinity of the site. The proposal will not have an adverse impact on cultural heritage.

Water Quality

SREP No.20 requires that future development must not prejudice the achievement of the goals of use of the river for primary contact recreation (being recreational activities involving direct water contact, such as swimming) and aquatic ecosystem protection in the river system. If the quality of the receiving waters does not currently allow these uses, the current water quality must be maintained, or improved, so as not to jeopardise the achievement of the goals in the future.

Based on the assessment of the proposal against potential air quality and ground water contamination impacts as discussed under *the Likely Impacts of the Development*, the application has not demonstrated that there is no impact on water quality and the existing environment of the Hawkesbury-Nepean River system.

Agriculture/Aquaculture and Fishing

SREP 20 requires that agriculture must be planned and managed to minimise adverse environmental impacts and be protected from adverse impacts of other forms of development. The relevant strategies include:

- Give priority to agricultural production in rural zones.
- Ensure zone objectives and minimum lot sizes support the continued agricultural use of Class 1, 2 and 3 Agricultural Land (as defined in the Department of Agriculture's Agricultural Land Classification Atlas) and of any other rural land that is currently sustaining agricultural production.
- Incorporate effective separation between intensive agriculture and adjoining uses to mitigate noise, odour and visual impacts.
- Protect agricultural sustainability from the adverse impacts of other forms of proposed development.

The proposed development does not give priority to agricultural production. The objectives of the zone are addressed in a further section of this report. The agricultural sustainability from adverse impact of the proposed development is addressed in further sections of this report.

Penrith Local Environmental Plan (LEP) 2010

The land is zoned RU2 Rural landscape under the provisions of the Penrith Local Environmental Plan 2010. The proposed development is defined as 'Cemetery and Crematorium' which are permissible uses in this zone with Council's consent.

Clause 2.3 Zone objectives and Land Use Table of the LEP requires that the consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within the zone. These objectives are addressed below:

- 1. To encourage sustainable primary industry production by maintaining and enhancing the natural resource base*

The proposed development does not encourage primary industry production as it will occupy 36.62 hectares of agricultural land for cemetery purposes. It does not protect agricultural land and does not promote the concept of sustainable agriculture for fresh food supply in the Sydney basin. The proposal is inconsistent with the first objective of the zone.

- 2. To maintain the rural landscape character of the land*

The proposal includes construction of below ground burial areas and columbariums (13000). These huge numbers of columbariums to be located on elevated land will be highly visible from the Northern Road and Elizabeth Drive. The cemetery will not look like a small cemetery intended for a local village in a rural setting instead for a much larger catchment. The sheer size of the cemetery with elevated structures will spoil the rural landscape character of the land. The proposed development is not consistent with the second objective of the zone.

- 3. To provide for a range of compatible land uses, including extensive agriculture*

The proposed cemetery use is incompatible with the immediate land uses in the vicinity of the site. The proposed use will cause land use conflict with surrounding land uses. This matter is addressed in a further section of this report. The proposal is inconsistent with the third and fourth objective of the zone.

- 4. To minimise conflict between land uses within the zone and land uses within adjoining zones*

This objective has been addressed above.

- 5. To preserve and improve natural resources through appropriate land management practices*

The proposed cemetery will not preserve and improve the existing agricultural natural resource. The land will be locked for cemetery for many years to come that will destroy the natural agricultural resource located close to urbanised areas. The proposal is inconsistent with the fifth objective of the zone.

6. *To ensure development is compatible with the environmental capabilities of the land and does not unreasonably increase the demand for public services or public facilities.*

The environmental capabilities of the land that will be affected are addressed in a further section of this report. The proposal is considered inconsistent with the sixth objective of the zone.

Clause 4.3 – Height of buildings – No maximum building height is stipulated under this clause. However, the cumbriams will have an adverse visual impact on the rural character of the area. This matter is addressed in a further section of this report.

Clause 6.1 – Earthworks – Details of earthworks in relation to the proposed roads within the site has not been submitted.

Clause 6.3 – Flood planning – The proposed development will not be affected by flooding.

Clause 6.5 – Protection of scenic character and landscape values – the development does not comply. This matter is addressed in a further section of this report.

Clause 6.6 – Servicing – No detailed commentary is provided in the Statement of Environmental Effects on compliance with the above clause.

Clause 6.14 - Development of land in the flight paths of the site reserved for the proposed Second Sydney Airport – This clause mainly deals with dwellings, child care centres, educational establishments, entertainment facilities, hospitals, places of public worship, public administration buildings or residential accommodation, commercial premises, hostels or hotel or motel accommodation. Cemeteries are not subject to restrictions under this clause. However, the chapel is effectively a place of worship which may be affected by future flight paths. The persons attending the funeral services and burial areas may be affected by the noise of aircraft flying above.

Section 79C(1)(a)(ii) – Any Draft Environmental Planning Instruments

No draft environmental planning instruments apply to the site.

Section 79C(1)(a)(iii) – Any Development Control Plan

Penrith Development Control Plan 2010

The proposed development does not achieve some controls of the *Penrith Development Control Plan 2010*. . An assessment against the controls in the DCP is provided as in the Development Control Table in Appendix 5.

Section 79C(1)(a)(iv) – The Regulations

The Environmental Planning and Assessment Regulation 2000 requires the consent authority to consider the provisions of the Building Code of Australia (BCA). Appropriate conditions can be imposed on compliance with the BCA.

Section 79C(1)(b) – The Likely Impacts of the Development

Air Quality

The development application is accompanied by a report titled *Air Quality Impact Assessment – Luddenham Memorial Park* by PAE Holmes. This report has assessed air quality impacts from the crematorium. The maximum allowable emission concentrations in the report have been identified from the following sources:

- NSW Protection of the Environment Operations (Clean Air) Regulation (2010) (POEO Act)
- The United Kingdom Department for Environment Food and Rural Affairs (DEFRA) Process Guidance Note 5/2 (12) Statutory Guidance for Crematoria (2004)
- The Australian Cemeteries and Crematoria Association (ACCA) Environmental Guidelines for Crematoria and Cremators in Australia (2004).

The report states that crematoria are regulated as non-scheduled premises under the Protection of the Environment Operations Act. Notwithstanding this, the cremator is a fuel burning emission source and a source of principal toxic air pollutants. The report has assessed the predicted impact of some air pollutants based on emissions calculated from the *NSW Clean Air Regulation (2010) Schedule 2 Standards of concentration for scheduled premises: afterburners, flares and vapour recovery units*. These emission concentration standards must be met for the cremator furnace emissions. This should be achieved either with or without emission controls.

During public exhibition of the development application strong concerns were received from the community regarding impacts of the emissions from the crematorium. Particularly that, the matter in the emissions from the crematorium will land onto the roof of nearby properties and ultimately into the tank water used for drinking. Also, the emitted matter will contaminate the crops which are grown in the surrounding area thus contaminating food supply. Council appointed an independent consultant to review and assess the air quality issues related to the proposed development. The comments by the independent consultant as reported to the JRPP on 27 November 2012 were as follows:

- The approach for the review and assessment of existing ambient air quality in the local region has identified the year 2010 but does not include comparison to other years
- The use of background air quality concentrations for a cumulative impact assessment of criteria air pollutants has not been discussed in the report

- The general modelling approach is appropriate and meets the requirements of the *Approved Methods (2005)*, However, deviation from the NSW EPA guidance document has been made for the option to model *Dry Deposition*. In addition to this, there is no reference to the modelling of wet deposition. While this is not entirely unreasonable for the assessment of the gaseous air pollutants, consideration should have been given to modelling dry and wet deposition for the prediction of particle deposition on roofs when assessing the accumulation of heavy metals in rainwater tanks. During exhibition of the DA the public raised concerns over deposition of metal particulates on roofs and their pathway into rainwater tanks. This is of major concern due to the residents in the local area not having access to the town water supply and their reliance on rain water tanks.
- Based on the emission rates calculated by the independent consultant the emission rates of the following substances are considered to be underestimated by a factor of:

Mercury	17.1
Carbon monoxide	3.5
Nitrogen oxides (NOX)	3.5
PM10	3.5
VOCs	11
Cadmium	17.6
Hydrogen chloride	3.5

Consequently, the impact is expected to be higher.

- An incorrect NPI derived emission rate value has been used in the modelling assessment
- The results for PAH presented in the report are incorrect.
- A cumulative assessment including background PM10 has not been made. PM10 emissions are high and emissions controls should have been considered and assessed.
- The accuracy of some of the information presented in the report and consequently the report's conclusions are debatable considering the issues associated with:
 - ☐ calculation and selection of emission rates
 - ☐ calculation and presentation of the impact assessment findings
 - ☐ application of the impact assessment criteria.

The applicant submitted additional information on air quality in response to the JRPP's decision of 27 November 2012. Council appointed another independent consultant (JBS) to overview this additional information. A response from the consultant is reproduced below:

- The issues relating to the estimation of the furnace emissions have been partially addressed by the adoption of discharge limits provided by Protection of the Environment Operations (Clean Air) Regulation 2010. Other discharges have been adopted as per emission factors provided to similar industries as available in the National Pollutant Inventory (NPI) information. It is agreed that it is appropriate to use NPI factors. However there is no detail / reasoning provided as to why the crematorium discharges would be held to the limits as provided to the Regulation for other constituents
- Details of calculations and estimates are still not provided preventing checking of calculations and use of relevant equations
- The air quality impact assessment has not considered potential air quality impacts of existing industries on the operation of the crematorium / cemetery. There are known to be existing poultry farms / sheds in proximity of the site which will potentially have significant odour impacts extending beyond their site boundaries and potentially causing air quality impacts to the proposed site of the cemetery / crematorium. An assessment of potential land-use conflicts, as supported by estimation of air quality impacts in proximity of the site and dispersion modelling of air pollutants, should be undertaken. It is recommended that the assessment consider at least all poultry farms within a 1000m radius of the development site boundaries. Where development approval is in place for increased poultry operations than currently occur on these sites, the air quality impact assessment should be based on current and potential future emission levels
- Little detail is provided on the estimation of the potential effect of air emissions on water supplies, either water tanks or dams. The methodology appears to be overly simplistic and does not appear to account for accumulation of deposited emissions between precipitation events, and potential short term accumulations in water supplies as a consequence. It appears that the methodology assumes perfect mixing of rain water and air emissions in the atmosphere. For this to be the case, it requires that it is raining continuously. Further, there appears to be no assessment of the same processes impacting dams in proximity of the site. The drinking water guidelines cited by the assessment are further noted to be outdated. The calculations do not appear to have been revised / updated.
- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW, 2005, NSW Department of Environment and Conservation (DEC 2005) notes 'Where a number of toxic and carcinogenic air pollutants are emitted in significant amounts, demonstrating compliance with impact assessment criteria may not adequately demonstrate the protection of human health'. In these cases it is recommended that a health risk assessment is undertaken and compliance is demonstrated with acceptance criteria for risk and hazard provided to DEC (2005). It is considered that a health risk assessment is required to be completed for the proposed operation of the crematorium and compliance demonstrated with DEC (2005) acceptance criteria for hazard and risk. This assessment must include consideration of background doses of

each of the pollutants potentially discharged from the site. Background doses may occur via oral, dermal or inhalation pathways; and

- No recommendations are provided for monitoring of air emissions from the site either prior to, or subsequent to, commissioning. Noting the uncertainty in estimating emissions as reported in Holmes (2011 and 2012) and PEL (2013), recommendations and associated provision for ongoing monitoring of air quality emissions is considered an essential recommendation of these assessments.

The above comments were provided to the applicant on 10 July 2013. The applicant submitted further reports on air quality prepared by PEL.

Council again appointed an independent consultant (JBS & G) to review these reports. The consultant has provided the following comments:

- The estimation of emissions and the modelling of dispersion of air pollutants is considered appropriate based on the current stage of the development process
- PEL (2013) recommends stack emissions testing consistent with the best practice review. The requirements for this stack testing would be most appropriately presented in an overall Environmental Management Plan (EMP) for the site. As well as including provisions to manage several other potential environmental impacts from the site, the EMP shall additionally include:
 - Proposed scope and methodology for stack testing
 - Required frequency of stack testing
 - Proposed analytes for stack testing
 - Proposed acceptance / suitability criteria for stack constituents by reference to the modelling results included in PEL (2013)
 - Review authority for stack testing
 - Actions to be undertaken where stack emission limits are exceeded (including requirement for Council notification)
- We do not agree that the methodology to estimate potential impacts from deposition of particulates on roof structures and accumulation within tanked water supplies is appropriate. The methodology averages deposition and rainfall over a period of 12 months and essentially assumes perfect mixing between rainfall and deposited particulates. A more likely scenario will be the accumulation of deposited particulates on a roof area over a dry period, and concentration of deposited particulates within the initial flush of rainwater on the roof. This will cause increased concentrations of constituents in the water held within associated tanks. A dry period prior to flushing of accumulated deposited material needs to be incorporated into the assessment. Further consideration should be given to the behaviour of particulate based emissions within the tanked water supplies, with the potential for gravitational settling and accumulation in water discharge from the base of water tanks

- The assumption of tank water will be flushed for '2 to 3 minutes' prior to use is not appropriate and cannot be relied upon to manage potential impacts. Further the recommendation that first flush devices / filters be applied to tank water is not appropriate for properties where the proponent has no control over the operation of water tanks and use of associated water supply
- PEL (2013) make several recommendations for 'feed materials' and operation of the incinerator. These would most be appropriately also be detailed in an EMP prepared for the site with particular detail:
 - Methods to record materials used in the incinerator
 - Responsibility for assessing materials in the casket
 - Materials / products to be excluded from the incinerator (i.e. PEL 2013 nominate metallic objects on caskets, plastics, foam, polyurethane paints etc)
 - Responsibility for operation and maintenance of the scrubber unit and bag filtration unit
 - Responsibility / methodology for monitoring stack discharge rates
 - Waste management practices requiring to be adopted for used scrubbing liquid
 - Responsible persons for audit of compliance with EMP
- An EMP as prepared for the site would be most appropriately issued during the development assessment process. This should be reviewed and confirmed to be consistent with relevant recommendations of each of the environmental assessments and presumably would form part of the development consent for the project. An EMP is considered most appropriate as several of the recommendations by PEL (2013) are not readily managed (i.e. controls on materials / finishes on items placed into the incinerator);
- The potential air quality impact of existing poultry farms / agricultural operations upon the operation of the site has still not been assessed. PEL (2013) indicates that this has not been undertaken as it considered that proposed mourning activities as associated with the site are not considered to be a potentially sensitive land-use and site users will presumably be tolerant of odours / environmental impacts during these activities. It is considered that Council further assess the appropriateness of the PEL (2013) opinion that users of the site will be tolerant of agricultural / poultry odours. It is considered that this assessment would be most appropriately informed by quantification of potential odour impacts (i.e. strength / frequency / character) on the site.
- As noted in the above comments, the comment with respect to assessing potential impacts on tank water supplies is not considered to have been appropriately addressed;
- PEL (2013) have not undertaken a health risk assessment of potential cumulative effects of air pollutants on potential receptors. PEL (2013) notes that predicted levels of pollutants are low, apparently considering only the potential airborne levels of constituents. As discussed in the earlier comments, exposure to air pollutants will not be restricted to inhalation of

airborne pollutants, with potential oral and dermal exposures associated with particulate deposition in potable water catchments. As also discussed earlier, it is also considered that the assessment of this potential exposure scenario is overly simplistic. The health risk assessment would require the summing of exposures across each of the potential exposure pathways (i.e. inhalation, oral and dermal). The requirement of the health risk assessment would be more appropriately re-assessed where the potential deposition / tank water exposure scenario is more appropriately assessed; and

- The issue with respect to monitoring has been partially addressed.

Based on the information submitted with the development application and considering the above comments by the independent consultant, the proposed crematoria will have detrimental impact on the existing air quality and will result in deposition of particulate matter onto the surrounding properties thus resulting in potential pollution of dams and rainwater stored in the rainwater tanks. The food supply chain will also be contaminated by such emissions. The odour emanating from poultry farms will affect people attending the cemetery grounds. This is a matter related to land use conflict between the two uses. Land use conflicts are addressed in a further section of this report.

Groundwater Contamination

Geotechnique Pty Ltd (GPL) undertook a Groundwater Contamination Assessment at the subject site for the applicant. As their assessment work progressed the initial interpretation of the groundwater regime was amended and consequently this resulted in the proposed locations of the below ground burials being changed. In the case of the effluent irrigation additional work was undertaken which amended the proposed system and its location.

During public exhibition of the development application strong concerns were received from the community regarding impacts of the contamination from burials on groundwater. The comments by Council's independent consultant reported to the JRPP on 27 November 2012 were as follows:

- There is the absence of a hydrogeological interpretation of the site and its surrounds. The reports do not identify that there is a groundwater system which likely exists in the clay on the shale and also possibly the sandstone interface which is directly influenced by rainfall infiltration.
- A conceptual site model has not been developed to explain the groundwater flow regime. The potential receptors of the groundwater impacted by the proposed burials and on-site effluent disposal have not been identified. These potential receptors are the on and off-site dams (into which the groundwater may discharge), nearby creeks and users of both licensed and unlicensed groundwater extraction bores. The reports do not investigate and report on licensed and unlicensed bores in the vicinity of the site (of which there are at least 13).

- By understanding the potential receptors the studies should have been undertaken to identify and assess the risks which the proposed activities pose to them and assess whether the proposed site is suitable. The parameters (e.g. breakdown products of formaldehyde and bacterial indicators) were not identified along with proposed trigger values to be used to initiate remedial action should they be exceeded

On-site bore construction faults

- Some of the groundwater bores installed on site and converted to groundwater monitoring bores would be incapable of monitoring any potential plume moving off site in the upper levels of the geology.

Groundwater and Rock Levels

- The provided standing water levels indicate that the groundwater level is generally within 1 metre from the base of the proposed below ground burial plot (and may be higher as seasonal data has not been gathered and the groundwater levels have not been compared to rainfall).
- The groundwater monitoring data indicates that the groundwater level (saturated clay/rock) is close to the surface and likely to be within 1 metre or above the base of the burial pits. This view is backed up by the groundwater levels encountered in some of the excavated test pits (TP3 and TP4).
- Relying on the encountered water levels during drilling to justify the groundwater level is not supported because these levels are likely to be associated with the higher water bearing zones in the rock geology. It is considered that the geology above these levels is also likely to be saturated.
- There is a high likelihood that over a portion of the area proposed for below ground burials that the groundwater level is within 1 m or even above the base of the proposed burial plots and the burial plot may need to be excavated into shale (and groundwater) and not have the advantage of unsaturated clay material to attenuate pollutants before they enter the groundwater.

Hydraulic testing of the groundwater regime, direction of flow and risk of impact on receptors

There has been no standard hydraulic testing of the groundwater to assess its permeability. The submitted report recommends that permeability testing should be undertaken where the rock is encountered when digging the proposed graves but does not acknowledge that rock (sandstone) is likely to be encountered (as shown by test pits 6 and 7) in the area proposed for the below ground burials. The report should have been followed up by permeability testing and consideration of the results.

The applicant submitted additional Groundwater Assessment prepared by Martens Consulting Engineers (Martens 2013) in response to the JRPP's decision of 27

November 2012. Council appointed another independent consultant (JBS) to overview this additional information. A response from the consultant is reproduced below:

- The report (Martens 2013) does not address the issues identified in GHD (2013) and as a result it is not considered adequate for the purposes of assessing the development application
- The Martens (2013) report includes less than three pages of groundwater assessment information. Of these more than one page comprises a table of water level information. While it is acknowledged that significant additional water level information has been obtained for the proposed development site it represents only a single point in time and does not account for transient effects
- On page 21 of the Martens (2013) report it is indicated that additional water level monitoring, groundwater modelling and groundwater assessment will be provided in a report in “approximately April 2013”. This report has not been provided for review; and
- Prior to assessing the development application it is considered important that the recommendations presented in Section 4 of the GHD (2013) report are addressed on a point by point basis in a revised groundwater assessment
- The relationship between groundwater on the proposed development site and offsite groundwater users (both licensed and unlicensed users) needs to be defined and assessed
- The relationship between groundwater (during all climatic conditions) and surface water (including permanent creeks, ephemeral creeks and dams) needs to be defined and assessed
- A consolidated figure showing depths to groundwater and the proposed site layout is required to allow assessment of whether the proposed layout is acceptable
- Groundwater level data that shows temporal variations over a period representative of climatic variations at the proposed development site
- The assessment of potential groundwater quality impacts should include inorganic, organic and microbiological contamination. All potential sources of groundwater contamination require assessment including both burials and the effluent treatment irrigation system
- Field measurements of hydraulic conductivity in the shallow and deep aquifers
- Collection of data (such as cation exchange capacity, fraction organic carbon) relevant to assessing the fate and transport of contaminants entering the subsurface as a result of operation of the proposed development

- Assessment of hydraulic gradients and groundwater flow paths
- The above dot points require incorporation into a detailed hydrogeological site conceptual model that would provide a basis for assessing potential impacts to groundwater quality and associated receptors (such as surface water, groundwater users (licensed and unlicensed), local agriculture) of the proposed development. The conceptual model may require a detailed assessment of the fate and transport of contaminants (inorganic, organic and microbiological) associated with the proposed development
- In addition to the above the following documents are required:
 - An ongoing monitoring program for groundwater and surface water at the site
 - A contingency plan in the case that monitoring indicates unacceptable contamination.

The above comments were provided to the applicant on 10 July 2013. The applicant submitted further reports on ground water contamination prepared by Martens. Council again appointed an independent consultant (JBS & G) to review these reports. The consultant provided the following comments:

- Section 1: The stated objectives of the work undertaken in the Martens (2013) report were as follows:
 - o “Document existing groundwater conditions (levels, quality and flow directions).
 - o Develop a conceptual groundwater model.
 - o Prepare of a groundwater depth constraints plan.
 - o Identify potential groundwater contamination receptors and assess the potential for groundwater contamination resulting from the proposed development.
 - o Outline ‘trigger values’ applicable to groundwater quality monitoring data obtained throughout the life of the development”.
- It is noted that the objectives in Section 1 do not include reference to the development of a numerical model to provide predictions that would be used to prepare a groundwater depth constraints plan.
- Section 3: The hydrogeological data includes site measurements and public domain bore data. Previous comments on groundwater reports prepared for the proposed development (GHD 2013 and JBS 2013) have highlighted that groundwater extraction bores may be present on neighbouring properties that have not been identified in Section 3. Identifying whether there are bores (even if unlicensed) on neighbouring properties is considered an important aspect of assessing whether the proposed development may impact (stock or people) on neighbouring properties.
- Section 3 Table 6: In addition to depth below ground level the tables showing water levels should include the water level to a common datum (preferably m Australian Height Datum).

- Section 3 Table 7: presentation of logger data as statistical values in a table is unusual. While the statistical information is useful hydrographs (relative to mAHD and with rainfall plots) are more typically used to represent logger data and it is recommended that these plots are included in an amended report to allow interpretation of the water level response to rainfall. It is noted that water level variations exceed 1 m at a number of locations and varied by up to 1.69m at BH120. Considering the short duration of monitoring these are considered to be very significant variations that indicate significant recharge rates. High recharge rates are contrary to the conceptual model presented in Section 3.7 of Martens (2013).
- Section 3: The comments with respect to the timing water level rise compared to rainfall cannot be assessed without reference to a plot of water levels. The text infers that these plots were generated but it is unclear why they were not included in the report.
- Section 3: Table 8: Significant variations in water quality are evident in the data presented in the table and there are a number of locations reporting relatively low (<2500 micro Siemens per cm) fluid EC values. Importantly, locations with low fluid EC correspond to locations with shallow groundwater levels. In addition, a number of these locations (in particular BH110, BH119, MW1 and MW3) also have shallow water levels and have reported significant water level variations with rainfall. Given these observations it is considered highly likely that two aquifers exist at the site with the shallower system being characterised by shallow water levels and relatively good water quality. Given the range of water level variations the shallow system may also discharge (even on an intermittent basis) to surface water features. This is contrary to the conceptual model presented in Section 3.7 of Martens (2013).
- Section 3.5: The measurement and comments on hydraulic conductivity are inconsistent with the water level ranges presented in Table 7 of the report (Marten 2013). It is important that this contradiction is addressed in an amended report.
- Section 3.7: As discussed above the field data do not support the conceptual groundwater model presented in the report (Martens 2013). While it is clear that a relatively saline aquifer is present, as discussed above, it is also likely that a shallow system is present in unconsolidated material at the site. This shallow system should be incorporated into the groundwater assessment and its potential to transport contaminants derived from the proposed development to offsite receptors requires consideration.
- Section 3.8: Given that the conceptual model is not considered reliable the usefulness of a numerical model is uncertain. The documentation of the numerical groundwater is not sufficient to allow review. For example, it is not stated what datum was used for the model. In the case that it was mAHD then survey data for the wells must be available to allow conversion of the standing water levels measurement to mAHD. If this data is available then it should be presented in earlier tables in the report. If survey data for the wells is not

available then there would be some doubt regarding the presented calibration statistics. It is recommended that the consultant revisit the modelling with reference to the Australian Groundwater Modelling Guidelines (Waterlines Report Series No. 82, June 2012).

- Section 4.2: The report presents no information to support the conclusion presented in this section. As it is likely relatively good quality groundwater is present in a shallow groundwater system it is considered that it is reasonable to conclude that the proposed grave sites could impact farm dams.
- Section 4.3: Without a detailed field survey of bore locations this conclusion is considered premature. In addition, the significant water level variations observed during the short period of monitoring at the site imply that hydraulic conductivity at the site is higher/more variable than acknowledged in the report.

JBS&G (formerly trading as JBS Environmental) previously prepared a review of the groundwater quality impact assessments prepared for the proposed development as Peer Review of Potential Air Quality and Groundwater Impacts of a Proposed Lawn Cemetery and Crematorium 21 June 2013, JBS Environmental (JBS 2013). A number of issues identified in the previous JBS report have yet to be addressed. These include:

- Prior to assessing the development application it is considered important that the recommendations presented in Section 4 of the GHD (2013) are addressed on a point by point basis in a revised groundwater assessment.
- The relationship between groundwater on the proposed development site and offsite groundwater users (both licensed and unlicensed users) needs to be defined and assessed.
- The relationship between groundwater (during all climatic conditions) and surface water (including permanent creeks, ephemeral creeks and dams) needs to be defined and assessed.
- Groundwater level data that shows temporal variations over a period representative of climatic variations at the proposed development site.
- The assessment of potential groundwater quality impacts should include inorganic, organic and microbiological contamination. All potential sources of groundwater contamination require assessment including both burials and the effluent treatment /irrigation system.
- Field measurements of hydraulic conductivity in the shallow and deep aquifers.
- Collection of data (such as cation exchange capacity, fraction organic carbon) relevant to assessing the fate and transport of contaminants entering the subsurface as a result of operation of the proposed development.

- Assessment of hydraulic gradients and groundwater flow paths.
- The above require incorporation into a detailed hydrogeological site conceptual model that would provide a basis for assessing potential impacts to groundwater quality and associated receptors (such as surface water, groundwater users (licensed and unlicensed), local agriculture) of the proposed development. The conceptual model may require a detailed assessment of the fate and transport of contaminants (inorganic, organic and microbiological) associated with the proposed development.

The groundwater contamination assessments submitted by the applicant lacks various details. The applicant has been advised numerous times of this matter however appropriate details are not forthcoming. The application has not therefore satisfactorily demonstrated that there will not be significant groundwater impacts.

Land Use Conflicts

The proposed cemetery will conflict with the existing land uses surrounding the site as described below:

Land Use Conflict with Free Range Egg Production Farm and Poultry Farms

The surface runoff through the burial areas will have contaminants/pathogens that will contaminate the neighbouring lands which are used for free range egg farming and poultry farms. These contaminants may have potential to affect other existing farms in the local area.

The owner of the neighbouring poultry farm engaged an expert Dr Tugrul Durali of Poultry Research Foundation THE UNIVERSITY OF SYDNEY to provide advice regarding potential contaminants from the burial site and their impact on free range egg production and poultry farm. The following comments were received by Council from Dr Durali:

'Microbial contamination of ground and surface waters constitutes a health risk for humans and animals. Microbial contamination of ground and surface waters can be associated with human waste, animal waste, or sources contaminated by such wastes (e.g., stormwater runoff). Enteric pathogens such as viruses and bacteria (see table 1) might be found in all types of sewage and solid waste. Generally, bacterial pathogens that infect humans are generated by both animal and human sources. Viral pathogens that infect humans, on the contrary, are typically generated only by human sources. Viruses that are pathogenic to animals do not cause illness in humans.'

Table 1. Pathogenic Microbial Contaminants

Waterborne Pathogenic Bacteria	Waterborne Pathogenic Viruses
<i>Legionella</i> <i>Mycobacterium avium</i> <i>Shigella</i> (several strains) <i>Helicobacter pylori</i> <i>Vibrio cholera</i> <i>Salmonella</i> <i>Yersinia</i> <i>Campylobacter</i> (several strains) <i>Escherichia coli</i> (<i>E. coli</i> O157:H7) <i>Arcobacter butzleri</i>	<i>Enteroviruses</i> <i>Coxsackieviruses</i> <i>Echoviruses</i> <i>Poliovirus</i> <i>Hepatitis A virus</i> (HAV) <i>Hepatitis E virus</i> (HEV) <i>Adenovirus</i> <i>Rotavirus</i> <i>Norovirus</i> <i>Astrovirus</i> <i>Sapovirus</i>

Source: Adapted from Occurrence and Monitoring Document for the Final Ground Water Rule 2006

Potential sources of human fecal contamination that can infiltrate and contaminate ground water include:

- Improperly located, designed, constructed, operated, or maintained septic systems
- Open sewage ponds
- Inadequately treated sewage treatment plant effluent used to irrigate crop land
- Unlined or leaking sewage treatment plant lagoons
- Land application of improperly treated biosolids (sewage treatment plant residue)
- Ruptured, leaking, or overflowing sewer collection lines
- Combined sewer overflow (CSO) (untreated sewage mixed with stormwater)

Stormwater Infiltration

A study by Rose et al. (2000) demonstrated that, 20 to 40 percent of the enteric disease outbreaks caused by contaminated ground and surface waters were associated with extreme precipitation between 1971 and 1994 in United States. This relationship was statistically significant for both surface water and ground water, although it was more apparent with surface water outbreaks. Thus, stormwater run-off associated with extreme precipitation may in some cases be directly linked to waterborne disease outbreaks.

Urban and rural stormwater run-off can pick up enteric pathogens from surface and enter ground water through a variety of pathways. Urban stormwater run-off has been found to have measurable concentrations of bacteria including: *Salmonella* at

concentrations as high as 10/100 mL, *Shigella*, *E. coli*, and *Pseudomonas* (an opportunistic pathogen) (Pitt et al. 1994).

Microbial Contaminant Fate and Transport

The fate and transport of bacteria and viruses in the subsurface environment are major issues with respect to human exposure to waterborne pathogens. The ability of microorganisms to survive in the environment allows them to be transported by water, food, or personal contact to a human host.

Contamination can reach ground water directly by transport through soil openings and through joints, fractures, or fissures in rock. Also, direct transport is more likely in areas where soils are highly permeable.

All microbial contaminant sources that enter ground water either where soils are absent or through the wellhead of an improperly constructed or abandoned well bypass an important protective barrier. The soil zone protects by providing in situ treatment that minimizes public health risks. However, the capacity of a soil to attenuate contamination depends on soil types, soil saturation, and source of contamination. Thus, the presence of soil does not guarantee that a barrier to contamination exists. Stormwater, for example, may percolate downward directly into the subsurface. However, most stormwater runs off into surface water and may then enter ground water through surface water infiltration or recharge.

Human and Animal Health Risks

A report by the Center for Science in the Public offers this list of the riskiest foods regulated by the U.S. Food and Drug Administration. The center analyzed 1,500 outbreaks between 1990 and 2006 with nearly 50,000 illnesses reported:

- 1. Leafy greens – 363 outbreaks involving 13,568 reported cases of illnesses. 37 individual cases per outbreak*
- 2. Eggs – 352 outbreaks involving 11,163 reported cases of illnesses. 31 individual cases per outbreak*
- 5. Potatoes – 108 outbreaks involving 3,659 reported cases of illnesses. 34 individual cases per outbreak*
- 8. Tomatoes – 31 outbreaks involving 3,292 reported cases of illnesses. 106 individual cases per outbreak*
- 9. Sprouts – 31 outbreaks involving 2,022 reported cases of illnesses. 65 individual cases per outbreak*
- 10. Berries – 25 outbreaks involving 3,397 reported cases of illnesses. 135 individual cases per outbreak*

Illnesses caused by these 10 foods may be as minor as stomach cramps and diarrhea for a day or two, or as serious as kidney failure or death.

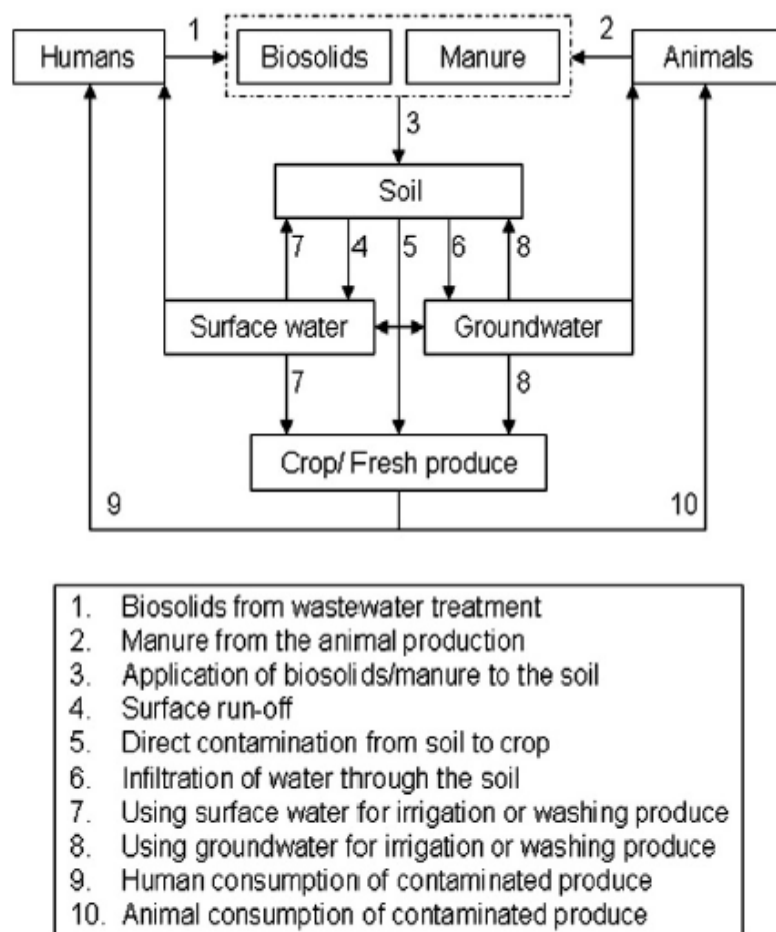


Fig. 2. Simplified routes of transfer of *Salmonella* from manure/biosolids through soil to water and/or crop/fresh produce and back to humans or animals. Note that for reasons for simplicity, no arrows for transfer from groundwater and surface water to respective humans and animals have been drawn.

Salmonellosis

*A scientific assessment undertaken by FSANZ of the public health in Australia identified *Salmonella* as the main microbiological hazard for safety of eggs and egg products. *Salmonella* bacteria that infect laying birds are pathogenic to humans which cause gastroenteritis. Salmonellosis is the second most commonly reported food-borne illness in Australia. Where the cause of food-borne illness can be identified, eggs are the most commonly identified food vehicle.*

These illnesses are estimated to cost the Australian economy about \$44 million each year. This cost is associated with the loss of reputation, shut down costs, fines and compensation payments, product recall, medical expenses, lost productivity and a reduction in overall health and welfare, compliance, investigation and surveillance costs.

Transmission of Salmonella spp. into laying flocks is multi-factorial in nature, including feed, water, pests (rodents and insects), the environment, personnel, new laying stock and equipment. Therefore, there is the need to encourage the application of steps, which are consistent with current biosecurity requirements, to limit the potential for flock to become initially infected with pathogens. Contaminated surface water and range area are extremely important for free range chickens which are free to roam in large pastured range areas.

Campylobacteriosis

Campylobacteriosis is an infection by the Campylobacter bacterium, most commonly C. jejuni. It is among the most common bacterial infections of humans, often a foodborne illness. It produces an inflammatory, sometimes bloody, diarrhea or dysentery (flux) syndrome, mostly including cramps, fever and pain.

Campylobacteriosis is caused by Campylobacter bacteria (curved or spiral, motile, non-spore-forming, Gram-negative rods). The disease is usually caused by C. jejuni, normally found in cattle, swine, and birds, where it is non-pathogenic, but the illness can also be caused by C. coli (also found in cattle, swine, and birds), C. upsaliensis (found in cats and dogs) and C. lari (present in seabirds in particular).

Campylobacter spp. colonize the gastrointestinal tract of animals. The bird, animal and human environments pose certain challenges, which Campylobacter spp. must be able to overcome in order to survive and cause infection. Campylobacter spp. are apparently fragile organisms that are unable to grow in the presence of air, multiply outside the animal host and are highly susceptible to a number of environmental conditions (Park 2002). Despite their inability to grow outside the host and their apparent sensitivities, Campylobacter spp. survives to be regarded as the greatest causative agent of bacterial foodborne illness in humans.

The common routes of transmission for the disease-causing bacteria are fecal-oral, person-to-person, ingestion of contaminated food and waterborne (i.e., through contaminated drinking water). Contact with contaminated poultry, livestock, or household pets, especially puppies are also important transmission routes. Increased people movement around poultry farms are one of the major risks factor.

Vibriosis

Gram negative, facultative anaerobic bacteria. A facultative anaerobic bacteria produce ATP by aerobic respiration if oxygen is present but is also capable of switching to fermentation when oxygen is not in present.

The bacteria infects the small intestine and increases mucus production causing diarrhea and vomiting which result in extreme dehydration and, if not treated, death. The bacterium has been found in birds and herbivores surrounding freshwater lakes and rivers as well as in algae, copepods (zooplankton), crustaceans and insects. It is usually transmitted through the feces of an infected person, often by way of contaminated drinking water or contaminated fresh green food consumptions. Contaminated pasture forms high risk for free range poultry especially for layers who has access to outdoor run.

Proposed cemetery could increase contamination risks of ground and surface waters. Having commercial free range egg farm on surface water run-off way will increase risk even further. It creates high risk for human health as well as animal health and welfare. Poultry industry is heavily regulated for prevention of Salmonella and Campylobacter, however possible contamination of pasture on commercial free range egg farm with one of these zoonotic disease agents could result an outbreak in large area due to distribution of contaminated eggs and as a consequences of that farm could face with economic loss including fines, reputation loss, productive loss and possible shut down.

Council referred the development application to the NSW Department of Primary Industries for comment. Their response in part was as follows:

'The distance to the poultry is very close -- between 150 - 200 m -- any attendees at the proposed cemetery would be impacted by odour particularly when clean-out is occurring or when cool still air conditions which result in the odour plume nearer the ground.

The locality has agricultural land class 3 suitable for cropping in rotation with pasture. The area is suitable for most agricultural pursuits including intensive horticulture and animal industries and there are water resources (dams).

The other issue for the poultry is that if the development goes ahead and the poultry farms need to expand – it will be difficult to get their DAs through due to the increased visitation by mourners in the locality.'

Land Use Conflict with Activities of Model Park

A Model Park exists at the neighbouring property to the east of the site. The activities at the Model Park which will lead to a land use conflict with the proposed cemetery is evident from the following submission from the Model Park:

'Many of the activities that take place in the Model Park will be closed down entirely or be restricted in such a way that it will cause great disruption to those events and activities. One of the largest sections in this club is the radio controlled aircraft section with a third of the members and it will most certainly be forced to cease its operation due to noise and loss of its air space over the western boundary. Before approval is given to the proposed Cemetery great consideration to the model park, its members and the public who visit and enjoy its facilities should be given. The Model Park is the longest continually running club of its type in the world and in 2006 the Governor General helped in its centenary celebrations by unveiling a plaque.

Sections of the Model Park that will be affected directly because of noise and or proximity to the proposed cemetery will be as follows:

- *Radio controlled aircraft (planes, helicopters)*
- *Quarter scale speedway this has at least 5 classes of race cars*
- *Tether cars capable of going in excess of 300 kmph. This year an international event took place at our park (World Championships)*

- *High speed power boats*
- *Steam trains and their whistles*
- *Baja buggies race meetings get quite loud 4 classes of cars*

Only three sections of the Model Park will be unaffected:

- *Slot cars*
- *Ho electric trains*
- *Stationary steam engines.*

It should be noted the slot car section is used mainly as a public activity on open days with few members the ho trains has few members and the stationary steam section has few members.

Again I ask the council to consider the detrimental affect the crematorium will have on the Model Park with the real possibility of its closure and what this will mean to thousands of people who enjoy visiting and being part of this family activity centre. I believe it is in the best interest of the council in helping the model park to remain as a vital part of the Penrith area as it is, as the park does bring visitors from around the country and indeed from overseas. The closure of any section will mean that members will leave they probably wont stop participating in their hobby but it will certainly mean these people will start operating their models in public parks and reserves and it is the councils responsibility to ensure for the safety of the wider community that these modellers have the facilities to use so they don't cause disruption and a danger to others,'

There is an obvious land use conflict of the proposed cemetery where mourners will be present and the Model Park entertainment/recreational facility which has activities such as radio controlled aircraft flying, car racing etc. It will be odd to have the mourning activity and entertainment happening in the immediate vicinity at the same time.

Land Use Conflict with Activities of Go Kart and Paintball Skirmish Fields

Council recently granted Development Consent (DA12/1128) for the following recreational facility at Nos. 821-849 Luddenham Road, Luddenham which is the immediate neighbouring property east of the subject site:

- Construction of two Go-Kart Tracks, with Track 1 being approximately 870m long and 8m wide. Track 2 being approximately 600m with a width of 6m.
- Construction of four (4) Paintball Skirmish Fields.
- Use of the tracks as a driver training facility.
- Construction of a car park containing forty (40) spaces, one (1) accessible space and associated driveways/ pedestrian paths. A grassed overflow area for an additional eight (80) spaces is also provided.
- Construction of three paintball fields sheds amenities buildings and control tower.

- Alterations to existing buildings located within the site to create eight (8) sheds, including a workshop/ washbay shed.
- Installation of various grass mounds

The hours of operation will be as follows:

Go Kart: 9am to 6pm, Monday to Sunday.

Driver Training Course: 9am to 6pm Monday to Sunday.

Paintball Skirmish Facility: 9am to 6pm, Monday to Sunday.

There will a land use conflict of the proposed cemetery where mourners will be present and the Go Kart/Paintball Skirmish recreational facility which has activities such go kart racing which will have noise impacts on the mourners attending the cemetery. It will be odd to have the mourning activity and recreation/entertainment happening in the immediate vicinity at the same time

This site also has an olive farm which could be adversely affected by pathogenic microbial contaminants from burial areas via surface runoff or groundwater contamination.

On-Site Effluent Disposal

The application has proposed to dispose of up to approximately 1050 Litres/day of effluent (including mostly sewage) on-site. The system will be a secondary treatment system with disinfection producing low strength effluent. The effluent disposal system is assumed to be shallow subsurface drip irrigation. All wastewater generated by the development is to be treated by an onsite sewage treatment plant (STP).

Council's Environment Section has assessed the proposed on-site sewage management system (OSSM) and they are generally satisfied with the proposed, OSSM including both the treatment system and disposal area. Some of the figures used in calculating the water load were not necessarily the most suitable; however this is negated by including an appropriate reserve area.

Some information is lacking in relation to how the wastewater will be transferred across the site to the treatment system (how it will be pumped and piped) and the management of the system. However it is a matter of detail that can be imposed as a condition of consent. As discussed in a previous section of this report there is risk of transfer of pathogens/ bacteria from the disposal area to the dams and free range egg production areas/poultry farms in the vicinity of the site.

Loss of Productive Agricultural Land in the Sydney Basin

The NSW Department of Primary Industries has advised that the site has Agricultural Land Class 3 suitable for cropping in rotation with pasture. It is suitable for most agricultural pursuits including intensive horticulture and animal industries and there are water resources (dams). The Department has forwarded a Planning Project

Report on ‘*Understanding Conflicts between Agriculture and Incompatible Uses on Sydney’s Metropolitan Urban Fringe*’ by Vasiliki Andrews. This report highlights the importance of Sydney’s agriculture as follows:

The Importance of Sydney’s Agriculture

The importance of maintaining agriculture around large cities is being increasingly recognised not only in Australia but also the United Kingdom, Canada, United States of America (USA) and Europe. There is a growing awareness that the combined effects of peak oil, peak water, climate change, rapid urbanisation, continued population growth as well as the current status, configuration and dominance of conventional agriculture have the potential to undermine the resilience of our cities, threaten food security and ultimately result in an food system that is not sustainable (Condon et al. 2010). Agriculture on Sydney’s fringe is vital to the efficient and sustainable use of the metropolitan area. Not only does it provide Sydney with most of its fresh food produce but also provides important economic, social, scenic, historic, environmental and aesthetic functions (DoP, 2010; Wilkinson, 2011, Jeffs, 2009).

By 2036 the population of Sydney is expected to grow by 6 million people, new housing and employment areas will be established in both existing urban areas and on the fringe (DoP, 2010 & Jeffs, 2009). It is therefore essential that the need to provide housing to accommodate people is balanced with the need for food production.

Loss of Poultry Farms in Sydney Basin

The Department has further advised the following in relation to Poultry Meat Industry in Sydney Basin:

‘The poultry meat industry is one of the largest agricultural industries in the Sydney basin. On aggregate, the estimated value to Sydney’s regional economy of the poultry farming and processing industries is approximately \$774.1 - \$841.6 million (Jones, 2013). The industry employs 1183 people with a wages bill of \$78.7 million. An average farm in the Sydney basin spends an average \$103,000 on purchases of capital assets and \$102,000 on goods and \$56,500 on services per annum.

The primary threats to this industry in Sydney include urban sprawl and associated landuse conflicts; constraints to further development and expansion on existing sites and biosecurity risks associated with urban encroachment and alternative land uses not compatible with agriculture. Of concern is that the industry has been gradually contracting in the Sydney basin because of these pressures. This is demonstrated by Baiada’s closure of its Pendle Hill processing plant in 2009 (460 jobs lost) and Inghams closure of their Hoxton Park processing plant and Casula hatchery in 2013 (363 jobs lost)’.

It is considered that losing 36.62 hectares of productive agricultural land to a non-productive agricultural use is not in the public interest. Moreover the proposed cemetery will impact on the poultry farms and horticultural farms in the immediate vicinity of the site which may face closure due to transfer of pathogens/contaminants

from the proposed cemetery. This would be a further loss of agricultural land which is not in the public interest. Council received objections from two major poultry companies located in Sydney Basin. These objections highlight the importance of the industry and threats to their operations. These objections are attached at Appendix 6 of this report.

Biosecurity Impacts and Food Safety

Biosecurity is an important consideration for all agricultural producers. The proposed cemetery will create potential biosecurity risks for the surrounding land and agricultural enterprises. Agricultural enterprises on surrounding land are horticulture (market gardens, fruit production), intensive animal production (eggs, broilers) and grazing (cattle, sheep, horses). The farm biosecurity website (<http://www.farmbiosecurity.com.au>) states that farm biosecurity brings together a range of practices that aim to keep Australian livestock and crops free of disease, pests and weeds. Keeping diseases, pests and weeds out is important because they can:

- reduce on-farm productivity
- affect farm incomes
- affect animal welfare
- reduce the value of farming land
- close export markets or reduce export prices – with a flow on effect to domestic producers.

Farm biosecurity highlights five key areas of risk, as the main ways that disease is spread:

- People movement
- Product movement
- Vehicles and equipment
- Feed and water
- Pests and weeds.

Of the above, people movement; feed and water; and pests and weeds are considered to be the most relevant biosecurity issues arising from the proposed cemetery development.

The applicant has not adequately addressed biosecurity matters that will affect the agricultural enterprises. The surrounding agricultural enterprises rely on rooftop rainfall collection (tank water), dam water (surface water run-off) and bore water (ground water) for livestock drinking water and irrigation. There is no acknowledgement in the documentation that local residents do not have access to the Sydney Water public water supply and therefore rely on using only collected water for livestock drinking and agricultural purposes. There is also a concern that contamination of water sources may occur as a result of air quality pollution (emissions from the crematorium) and also groundwater seepage (burial residue).

The NSW Department of Primary Industries has provided the following comments on Biosecurity and Food safety in relation to the proposed development:

‘Poultry meat and egg farms are required to comply with strict government and industry biosecurity guidelines and standards. Biosecurity standards include those outlined in:

- a) The National Farm Biosecurity Manual for Poultry Production (2009)*
- b) The National Water Biosecurity Manual for Poultry Production (2009)*
- c) Various industry standards and guidelines issued by poultry processing companies.*

In addition to these guidelines, poultry farms are also required to comply with National Primary Production and Processing Standards for Poultry Meat. The purpose of the above guidelines and standards is to:

- To prevent the introduction of infectious disease agents to poultry flocks*
- To prevent the spread of disease agents from an infected area to an uninfected area*
- To minimise the incidence and spread of microorganisms of public health significance.*

In terms of food safety and public health, the most significant threats are from pathogenic bacteria including Campylobacter and Salmonella. Salmonella and Campylobacter are the bacteria most commonly associated with food poisoning in poultry products, including meat and eggs. It is therefore important that any assessment of the proposed development, DA11/1445, takes into account:

- Any potential risks of pathogen movement from the proposed development to the nearby poultry enterprises and other food producing enterprises, and therefore the potential risks to food safety and human health*
- The potential for restriction of farming activities due to proximity of gatherings of people near commercial farms that operate 24 x 7 that can produce odour, noise and dust.’*

Pathogen movements and their types have been discussed in a previous section of this report. The DA does not adequately address potential agricultural biosecurity issues on surrounding land and as such the documentation provided does not include a suitable biosecurity assessment.

Public Health Regulation 2012

Clauses 64 and 66 of this Regulation state:

‘Unless otherwise approved by the Director-General in a particular case, a person who buries a body contained in a coffin must place the coffin so that its upper surface is not less than 900 millimetres below the natural surface level of the soil where it is buried. A person must not bury a body in or on any land if to do so would make likely the contamination of a drinking water supply or a domestic water supply’.

The depth of the proposed burials is around 2 metres and it is expected that the 900 mm requirement will be achieved by the proposed development. The applicant has not undertaken a survey to confirm that there are no unlicensed (or recently licensed) bores within approximately 250 metres from the proposed development which may be used for domestic water supply. The detrimental impacts of particulate matter from the crematoria and its transfer to domestic rain water tanks used for drinking water has been discussed in a previous section of this report.

Risks to Human Health and Environment Including Farming and Livestock

The most likely risk that the proposed development would present to human health and the environment is via polluted groundwater/surface runoff entering nearby surface water dams which overflow off site. This water is used for agricultural purposes and should the polluted groundwater enter any bores near the site the risk is higher.

There is insufficient information provided by the applicant, especially in regard to the assessment of how the development will affect the groundwater environment and subsequent pathways to human health or environmental receptors (on or off site).

Land Contamination

Land contamination has been addressed in a previous section of this report. It was reported to the JRPP on 27 November 2012 that further to that assessment Council's independent consultant (GHD) carried out an assessment of the potential contaminants of concern (COPC) relating to burials against the following publically available guidance on the development and operations of cemeteries:

- NEPC, *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)*, 1999
- Environment Agency (UK), *Assessing the Groundwater Pollution Potential of Cemetery Developments*, 2004
- Boyd Dent, *The hydrogeological Context of Cemetery Operations and Planning in Australia Thesis*, the University of Technology, December 2002
- Public Health (Disposal of Bodies) Regulation 2002 (Clauses 20 and 22)
- World Health Organisation (WHO), *The Impact of Cemeteries on the Environment and Public Health*, 1998

The independent consultant provided the following comments:

- The published documents provide summaries of the COPC and these include range of metals, ammonia, cations and anions, pathogens, microbes, pH and formaldehyde. The presence and concentrations of these COPC is dependent on the burial methods, burial density, and demographic of the population requiring burials. These are not discussed within the reports submitted with the development application.
- The development application does not include an assessment of the physico-chemical nature of the subsurface soils, including the physical descriptions,

permeability and the behaviour of the soils with the potential contaminants; and the thickness of the unsaturated and saturated zones, desiccation, soil pH and cation exchange capacity. All these characteristics are essential to provide a robust understanding of the site specific nature of the site, as detailed in the WHO15 guidelines the 'unsaturated soil layer has been found in past studies to be the most important line of defence against the transport of degradation products into aquifers';

- The development application does not include an assessment of the proposed burial depths within the subsurface deposits with consideration to the soils types, unsaturated/saturated nature of the subsurface deposits, physico-chemical nature of the deposits and migration pathways within the subsurface strata was not undertaken by the applicant.
- The development application does not include an assessment of the proximities to on and off site receptors (human health and the environment (e.g. surface water, groundwater, agriculture) and the migration pathways of the COPC to these receptors
- The Boyd Dent thesis states that the 'best soils for cemeteries in order to favour decomposition and with food decay product attenuation are well drained clayey sands'. The site specific subsurface conditions are questionable and there are contradictory descriptions on permeability.

There is insufficient information provided by the applicant especially in regard to the assessment of how the development will affect the soil environment and subsequent pathways to human health or environmental receptors (on or off site). There is also insufficient characterisation of the existing contamination status of the site in respect of potentially contaminating activities carried out, and a limited conceptual understanding of the nature of the unsaturated soils and their suitability for the proposed site.

Noise

A Noise Assessment Report prepared by Benzo Tonin and Associates dated 23 May 2011 was submitted with the development application. This report provided an assessment of noise from various sources within the proposed development. Council Officers undertook an assessment of this report and raised matters relating to noise from the use of the function room, chapel, car park and various plant and equipment.

The applicant provided additional information on the matters raised by Council Officers. This additional information has satisfactorily addressed the concerns raised and Council Officers can provide conditions to address construction and operational noise.

Access, Parking and Traffic

Vehicle access to / from the site is proposed from about the location of the existing driveway off Elizabeth Drive. The new access is proposed by a single combined (7.0 metres wide) entry / exit two way access road to Elizabeth Drive and it is proposed to provide all vehicle access to the site for staff and visitors. This access road is proposed to meet Elizabeth Drive as a new tee junction with (RTA) BAR and BAL treatments for the 80km/h speed zone. Internal roads are proposed to be 7.5 metres wide between roll kerbs and widened by a further 2.5metres where designated parallel parking bays are provided. An on site speed limit of 25km/h is proposed.

A traffic, access and parking assessment report prepared by Transport and Urban Planning Consultants has accompanied the original development application. This report has included surveys of the existing car parking demands for similar cemetery and crematoriums. These surveys have indicated that the car parking demands varies from 105 to 226 spaces between 9.30am to 2.30pm during business hours Monday to Friday. The original development application proposed a total of 334 parking spaces dispersed throughout the site.

The report also indicated that there will be a maximum (indicative) traffic generation level of up to 414 two way vehicle trips per hour, during business hours Monday to Friday and that the existing road network has the capacity to accommodate the increase in traffic.

The NSW Roads and Maritime Service (RMS), the Sydney Regional Development Advisory Committee and Council's Senior Traffic Engineer have assessed the above report and they have recommended conditions of consent to be imposed with respect to ensuring safe access and egress from the site. These conditions relate to intersection treatments and provision of 'No Stopping' zones along Elizabeth Drive.

The amended plans submitted by the applicant show that there will be 113 car spaces provided on site as the number of chapels have been reduced to one chapel having 60 seats. These spaces are considered appropriate and there is sufficient overflow parking available on site.

Rural Character and Visual Impacts

The exiting rural character is dominated by large rural lots having little built form. These lots are undulating providing scenic landscape views to the residents of Luddenham and motorists on The Northern Road and Elizabeth Drive. The natural features such as creeks, dams and strands of vegetation add to the rural character. The following components of the proposed cemetery will deteriorate the existing scenic views which in turn will have a detrimental impact on the rural character:

- Thirteen thousand columbriums erected on the existing elevated land. These structures will be visible from Elizabeth Drive, all surrounding and many district properties. Any landscaping proposed will take a long time to establish and difficult to maintain throughout the life of the cemetery. Landscaping cannot be taken as a guaranteed component to curtail cemetery views from major focal points.

- Internal roads and car parking areas.

A visual Impact Analysis prepared by Richard Lamb and Associates has been submitted in response to the decision of the JRPP on 27 November 2012. This visual analysis has assessed the potential visual impacts of the proposal with recommendations for strategies for design and impact mitigation measures, where appropriate. It is supported by photomontages that indicate the likely future appearance of the proposal seen from representative locations in both the public and the private domains. The analysis cites in part the following:

‘The most important existing interface identified as part of the visual analysis is Elizabeth Drive. This area has the highest exposure to public viewers in the context where views can be experienced over any sustained period and in which the ridge on the site forms the horizon. The report cites that the overall visual effects of the proposal on the views, rural character and quality would be moderate initially, following refurbishment and adaptation of existing building and the construction of the entrance features, new roads and buildings.

The below ground graves will be laid out informally and occupy the lower slopes of the ridge land generally below 85m HAD and have an initial moderate visual effect for the part occupied in the first few years, while the road access to the future below ground area would also have a moderate initial effect.

The memorial plaques proposed for proposed below ground burial sites are intended to have minimal vertical scale and would not be of significant individual visibility. The pattern created in space may initially be perceivable from elevated viewing places in adjacent private properties.

The visibility of proposed columbaria on the lower, southern part of the site would be minor, given their intended small vertical and horizontal scale. The small number and scale of the buildings is intended to have an appearance that conforms to the rural character of the setting. Appropriate character, appearance and potential colours and materials for all structures would reduce the overall level of visual effect in the context of the adjacent rural area and can be conditioned to Council’s specific requirements, if necessary.

Landscape establishment will occur simultaneously with construction following the infrastructure roll. The opportunity should be taken to conserve the existing character of the higher ridge land and keep it free of development. Observations made on the site indicate that if the maximum height of any built element of the development is restricted to below 85m AHD, there would be minimal visibility to the public domain outside the immediate visual catchment and in the majority of cases the same benefit would apply to visual exposure to views from residences.

Development should be constrained to a maximum RL of 85m, ie. no structures should be placed above or extend in maximum height above 85m AHD. This will ensure that there is minimal visibility of any of the built structures including buildings, roads, paths and the like in views from the majority of the public and private domain even if the proposed landscape takes a significant time to become established.

The analysis shows that the project does not cause excessive negative effects on existing baseline factors of visual character or scenic quality of the project site and that it would respond appropriately to the existing scenic resources of the subject land.

The analysis concluded that there would be moderate levels of visual effects. The predominant reason for the level of effects determined is the initial extent of change itself that is proposed, rather than negative effects.

The impact assessment component of the report then considers the critical question of whether the extent of the visual effects of what is proposed is significant. It does so by giving explicit weight to three critical factors, i.e. compatibility, sensitivity and mitigation measures. After weighting each of these factors against the ratings for visual effects from the analysis, it is concluded that construction of the proposal would not cause unacceptable visual impacts.'

It is considered that the 13,000 Columbariums will be highly visible from Elizabeth Drive and neighbouring properties. The visual amenity of these properties will be detrimentally affected. Further to that the landscaping plan submitted by the applicant does not specify species of plants that will be used for screening purposes. This matter is discussed below:

Landscaping

The amended development application is accompanied by a Landscape Masterplan Plan prepared by Taylor Brammer Landscape Architects. This plan is attached at Appendix 8 of this report. The plan provides for landscaping at the boundaries and burial areas within the site. The nomenclature for planting types used is 'Landmark Trees'. 'Reflective Garden' etc , however no species are nominated. It is questionable whether the landscaping will screen views of the cemetery from Elizabeth Drive and neighbouring properties.

Safety and Security

Safety and security of the site and the proposed operations has not been adequately addressed in the development application. The applicant was requested to address matters related to any possible vandalism of the site. This matter was also raised by the concerned residents during the public exhibition of the development application. The applicant's response was that "There is no evidence to suggest that vandalism will occur as a result of the proposed development. That said the entrance point will to the site be controlled and monitored. Passive surveillance will occur naturally as well through the ongoing use of the site."

Although the applicant's response is not detailed enough, it is considered that safety and security matters can be managed by imposing conditions of consent relating to the preparation and implementation of a safety and security management plan that could include provision of appropriate fencing, installation of security cameras, appropriate lighting and regular security patrols.

Accessibility

The application was not accompanied by an Accessibility Report. The development application was reported to Council's Access Committee who raised the following matters:

- The proposal should be re-reported to the Access Committee when an accessibility report has been submitted by the applicant. Floor plans and a more detailed site plan should also be provided for perusal by the Committee.
- The slope of the site appears to be significant. The accessibility report should address this consideration.

The applicant was requested to provide an accessibility report. This report was not received by Council.

Social and Economic Impacts

The environmental impacts discussed in the report have the potential to have an adverse economic impact on the existing poultry farms and other farms in the vicinity of the site. The proposed development due to its highly visible location may have social impacts on the residents/children of Luddenham Village who will encounter funeral activity on a frequent basis.

Section 79C(1)(c) – The Suitability of the Site for the Development

The site is unsuitable for the proposed development for a number of reasons outlined in the report particularly the following:

- The objectives of the RU2 Rural Landscape zone are not conducive to the proposal
- The site is a large landholding suitable for agricultural production within the Sydney basin
- The environmental impacts of the proposed development will be detrimental to the existing poultry farms and other farms in the locality
- The emissions from the crematorium are likely to affect the quality of potable water which is relied upon
- The proposal will have a detrimental impact on the rural character and scenic and landscape values of the land
- The proposal will create land use conflicts with the neighbouring land uses which will be detrimental to those uses.

Section 79C(1)(d) – Any Submissions made in relation to the Development

External Referral Comments

The table below summarises the results of external referrals in relation to the proposal.

Referrals	Comments
NSW Office of Water	No objection, subject to general terms of approval.
NSW Roads and Maritime Service	No objection, subject to general terms of approval
NSW Department of Primary Industries	Concerns have been raised. Discussed in report.

Internal Referral Comments

Referrals	Comments
Environment Team	Concerns were raised as discussed in the report.
Traffic Engineer	No objection.
Building Surveyor	No objection subject to conditions.
Development Engineer	No objection subject to conditions.

Community Consultation

The application was advertised in the local newspapers and notified to adjoining and nearby property owners and occupants in the Penrith and Liverpool Local Government Areas. The exhibition period was from 20 January 2012 and extended to 9 March 2012. Council received over 500 objections and petitions from the concerned residents. These concerns related to environmental impacts of the proposed development on the surrounding area. A brief of these concerns is provided in this paper.

The application did not adequately address matters related to air quality, groundwater and land contamination, wastewater and effluent disposal, noise, waste management and compliance with public health legislation. The applicant was requested to respond to these matters. After receiving the applicant's response which included amended proposal and additional information, the application was placed on public exhibition for a second period from 17 to 31 July 2012. Council received further submissions from the concerned residents. After the decision of the JRPP on 27 November 2012 and subsequent amended application submitted by the applicant, the development application was placed on public exhibition for a third time due to the amendments carried out by the applicant. Submissions were invited from 25 March to 24 April 2013. Council received numerous submissions objecting to the proposed development. The concerns raised in those submissions mainly related to the following:

- *Air quality - The particulate matter in the emissions from the crematorium will land onto the roof of nearby properties and ultimately into the drinking water from the roof catchment. Also, this particulate matter will contaminate the crops which are grown in the surrounding area*

- *Groundwater contamination as a result of burial of bodies and its affect on nearby poultry farms and other farms which use groundwater.*
Contamination of drinking water and creeks
- *Land contamination*
- *Bio security of animals/birds and crops and related land use conflicts*
- *Noise.*
- *Traffic impacts and non-availability of public transport*
- *Impacts on scenic heritage valley of Mulgoa and tourism*
- *Lack of appropriate buffer zones with surrounding properties*
- *Increase in salinity levels*
- *Permissibility and non compliance with the objectives of the RU2 zone*
- *Waste Management*
- *Impacts on agriculture*
- *Vandalism*

The concerned residents have also submitted various reports relating to environmental impacts of the cemeteries and crematoriums. Given the extent of public interest in this matter, two meetings were convened with the representatives of the Action Group formed by the local community that is opposing the cemetery, along with Council staff and Councillors. In these meetings the action group voiced their concerns and provided various reports relating to environmental impacts of the cemeteries and crematoriums. The concerns raised by the community have been addressed in the report.

Section 79C(1)(e) – The Public Interest

The proposal is not in the public interest for the reasons outlined in the report particularly the following:

- Contamination as a result of the emissions from the crematorium which will in turn contaminate drinking water. Residents in the local area rely on rainfall for their water. This is both ground water and water collection from roofing.
- Contamination of ground water due to high water table which can rise and fall during dry and wet periods. Should contamination occur it will be a major Bio Security and food safety issue. With a number of farming enterprises in close proximity of the site this could have a detrimental impact on these enterprises and overall food safety
- The proposal does not protect agricultural land
- The proposal will be detrimental to the scenic and landscape values of the land
- The proposal will cause land use conflict detrimental to surrounding land uses.

Conclusion

The development application seeks consent for a lawn cemetery incorporating a memorial garden, crematorium, a chapel, associated buildings and car parking on the subject site. The application was placed on public exhibition on three occasions and over 500 objections were received.

An assessment against the relevant provisions of the environmental planning instruments was undertaken which has revealed that the proposed development will be located in the vicinity of a number of sensitive land uses including poultry farms, other farms and rural residential uses. Such uses would be sensitive to potential environmental impacts that may result from the proposal mainly via potentially elevated contaminant emissions from the cremator and potential contaminant emissions to surface water and groundwater. The end result of these contaminants could be contamination of food supply. There will be land use conflicts of the proposed development with the neighbouring farming, poultry and recreational uses. The likely impacts of the development in terms of air quality and groundwater contamination will be detrimental to the environment. The site is not suitable for the proposed development and the proposal is not in the public interest.

The development is proposed to be located in a scenic landscaped area. This location will have a detrimental impact on the scenic and landscape values of the land and the rural character of area would also be detrimentally affected. The proposed development will not protect agricultural land. The assessment has concluded that the proposed development is not worthy of support.

Recommendation

That the report for DA11/1445 which proposes a lawn cemetery incorporating a memorial garden, crematorium, three chapels, associated buildings and car parking at Nos. 2207-2223 Elizabeth Drive Luddenham be received; and the proposed development be refused on the following grounds: -

1. The application is not satisfactory for the purpose of Section 79C (1) (a) of the Environmental Planning & Assessment Act 1979 as the proposed development is inconsistent with the following provisions of Penrith Local Environmental Plan 2010:
 - i) Objectives of the RU2 Rural Landscape zone
 - ii) Clause 6.5 – Protection of scenic character and landscape values
2. The application is not satisfactory for the purpose of Section 79C (1) (a) of the Environmental Planning & Assessment Act 1979 as the proposed development is inconsistent with the following provisions of Sydney Regional Environmental Plan (SREP) No.20 – Hawkesbury/Nepean River
Clause 6 Specific planning policies and recommended strategies

(3) Water quality

- (a) Quantify, and assess the likely impact of, any predicted increase in pollutant loads on receiving waters.*
- (d) Do not carry out development involving on-site disposal of sewage effluent if it will adversely affect the water quality of the river or groundwater. Have due regard to the nature and size of the site.*
- (g) Minimise or eliminate point source and diffuse source pollution by the use of best management practices.*

(8) Agriculture/aquaculture and fishing

- a) Give priority to agricultural production in rural zones.*
- b) Ensure zone objectives and minimum lot sizes support the continued agricultural use of Class 1, 2 and 3 Agricultural Land (as defined in the Department of Agriculture's Agricultural Land Classification Atlas) and of any other rural land that is currently sustaining agricultural production.*
- c) Incorporate effective separation between intensive agriculture and adjoining uses to mitigate noise, odour and visual impacts.*
- d) Protect agricultural sustainability from the adverse impacts of other forms of proposed development.*

3. The application is not satisfactory for the purpose of Section 79C (1) (a) of the Environmental Planning & Assessment Act 1979 as the proposed development is inconsistent with the following provisions of Penrith Development Plan 2010:

- C1 Site Planning and Design
- C4 Land management

4. The application is not satisfactory for the purpose of Section 79C (1) (b) of the Environmental Planning & Assessment Act 1979 as the likely impacts of the proposed development on the environment and surrounding uses will be detrimental in relation to the following:

- Air quality
- Groundwater contamination
- Land contamination
- Bio-security and food safety
- Rural character and visual amenity
- Loss of productive agricultural land
- Land use conflicts

5. The application is not satisfactory for the purpose of Section 79C (1) (c) of the Environmental Planning & Assessment Act 1979 as the site is unsuitable for the proposed development having regard to the adverse environmental and visual impacts of the proposed development and land use conflicts.
6. The application is not satisfactory for the purpose of Section 79C (1) (e) of the Environmental Planning & Assessment Act 1979 as the proposal is not in the public interest having regard to the extent of submissions and petitions received and concerns raised in those submissions.