Agricultural Offset Plan

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1. Introduction

1.1 Overview of the Proposal

The Tweed Valley Hospital Project broadly consists of:

- Delivery of the Tweed Valley Hospital; a new Level 5 major regional referral hospital to provide the health services required to meet the needs of the growing population of the Tweed-Byron region (in conjunction with the other hospitals and community health facilities across the region).
- Delivery of the supporting infrastructure required for the Tweed Valley Hospital, including green space and other amenities, roads and car parking, external road upgrades and connections, utilities connections, and other supporting infrastructure.

The Stage 2 State Significant Development Application (SSDA) seeks consent for the Main Works and Operation of the Tweed Valley Hospital, including:

- **Construction of Main Hospital Building:**
  - Main entry and retail area
  - Administration
  - Community health
  - Inpatient units
  - Outpatient clinics and day only units
  - Child and Adolescent Services
  - Intensive Care Unit
  - Mental Health Unit
  - Maternity Unit and Birthing Suites
  - Renal Dialysis
  - Pathology
  - Pharmacy
  - Radiation Oncology as part of integrated Cancer Care
  - Emergency Department
  - Perioperative Services
  - Interventional Cardiology
  - Medical Imaging
  - Mortuary
  - Education, Training, Research
  - Back of House services
  - Rooftop Helipad
- **Construction of Support Building, referred to as the 'Health Hub', containing:**
  - Oral Health
  - Community Health
  - Aboriginal Health
  - Administration
  - Education, Training and Research
- **Internal roads and carparking, including multi-deck parking for staff, patients and visitors**
- **External road infrastructure upgrades and main site access**
- **Environmental and wetland rehabilitation, including rehabilitation of existing farm dam as outlined in the Biodiversity Development Assessment Report (BDAR) prepared for the Concept Proposal and Stage 1 works**
- **Site landscaping**
- **Signage**
- **Utility and service works.**

Plans for Stage 2 Tweed Valley Hospital Main Works and Operation are attached as Appendix B of the Environmental Impact Statement (EIS).

1.2 Background

GeoLINK has been engaged by Health Infrastructure (HI) to prepare an Agricultural Offset Plan for Stage 2 of the proposed Tweed Valley Hospital to be located on land described as Lot 11 DP1246853 at 771 Cudgen Road, Cudgen, NSW. The Tweed Valley Hospital has been granted a State Significant Development (SSD) consent for a concept proposal and concurrent Stage 1 Early and Enabling Works (SSD 9595) on 11 June 2019. The Secretary Environmental Assessment Requirements (SEARs) for the Stage 2 SSD and a condition of SSD 9595 require the submission of an Agricultural Offset Plan with the Stage 2 SSDA.

As a result of the public exhibition of the Stage 2 SSD application (SSD-10353) the Department of Planning, Industry and Environment (Primary Industries), Tweed Shire Council and some of the public submissions identified deficiencies within the Agricultural Offset Plan that was submitted with SSD - 10353. The Department of Planning, Industry and Environment (Social and Infrastructure Assessments) has consequently requested that this Agricultural Offset Plan be updated to address certain matters. These matters and where they are addressed in this report are identified in **Table 1.1**.

Table 1.1 Required Additional Information

Requirement	*Location*
A clear outline of implementation plans and programs and/or physical works	**Section 1.4**
Commitments to undertake the physical works	**Section 1.4**
details to demonstrate how those proposed plans/works will offset the adverse agricultural impacts on State Significant Farmland as a result of the development	**Section 1.4**
An updated 'Offset Strategy' to discuss the results of community consultation	**Section 2**
A local food procurement strategy or a commitment to review and change any relevant State Purchasing policies to accommodate this requirement	**Section 6**

1.3 Stage 1 and Concept Plan SSD Conditions and Stage 2 SEAR's

Schedule 2 Part B Condition B28 of SSD 9575 requires that:

The Stage 2 application must include an Agricultural Offset Plan with a strategy of physical works and/or implementation plans and programmes addressing how the development will offset the adverse agricultural impacts on the State Significant Farmland (SSF) of Cudgen Plateau and the land use risks associated with the siting of the hospital adjoining the agricultural uses (as identified in the Land Use Conflict Assessment Report prepared by Tim Fitzroy and Associates dated 18 October 2018). The Agricultural Offset Plan must include (but not be limited to):

(a) evidence of consultation with Department of Premier and Cabinet, the Tweed Valley Hospital Cross Agency Planning Committee, Department of Industries, Council and the local farmers, specifically on the adjoining lands, in the preparation of this plan;

(b) details of all additional risks, identified during consultation with local farmers and Council, including possible intensification of agricultural uses on adjoining lands to the south and west, in addition to those identified in the Land Use Conflict Assessment Report prepared by Tim Fitzroy and Associates dated 18 October 2018 (if any);

(c) provide additional management and mitigation measures to avoid any additional risks identified in condition B28(b) of Schedule 2;

(d) details of feasibility of reuse of the existing topsoil in the landscaped areas of the site;

(e) details of the feasibility to reuse the remaining topsoil (if any) on other sites for agricultural purpose;
(f) details of edible plant varieties within the landscape gardens on the site;
(g) details of a local food procurement strategy identifying the opportunities for incorporating local food supplies into the hospital including a commitment to sourcing local food where it is feasible to do so; and
(h) details of any collaborative approach by the Tweed Valley Hospital Cross Agency Planning Committee in conjunction with the relevant Government agencies including the Department of Premier and Cabinet to support the agricultural industry in the region, specifically improving the production capacity of underutilised land in the Cudgen Plateau.

The Stage 2 SSDA SEAR's require the EIS to assess agricultural impacts by:

- *Identifying options to minimise and mitigate adverse impacts on agricultural resources, including agricultural lands, enterprises and infrastructure at the local and regional level; and*
- *Providing an Agricultural Offset Plan in accordance with the conditions imposed under SSD 9575.*

The objective of this plan is to document how the above requirements have been addressed. **Table 1.2** identifies where, in this report, the various components of the Concept Plan SSD Conditions and Stage 2 SEAR's are addressed.

Table 1.2 Stage 2 SEAR's and Concept SSD Approval Conditions

SEARs/ Condition	***Requirement***	***Location***
Concept Approval SSD Consent Condition (Schedule 2 Part B Condition B28 of SSD 9575)		
a)	Evidence of Consultation	**Section 2**
b)	Details of all additional agricultural risks identified during consultation	**Section 3**
c)	Additional management and mitigation measures identified	**Section 3**
d)	Details of feasibility of reuse of the existing topsoil on-site	**Section 4**
e)	Details of the feasibility to reuse the remaining topsoil (if any) of site	**Section 4**
f)	Details of edible plant varieties within the landscape gardens	**Section 5**
g)	Details of a local food procurement strategy for the hospital	**Section 6**
h)	Details of any collaborative approach by the Tweed Valley Hospital Cross Agency Planning Committee and other Government Agencies	**Section 2**
Stage 2 SEARs Agricultural Impact		
	Identifying options to minimise and mitigate adverse impacts on agricultural resources, including agricultural lands, enterprises and infrastructure at the local and regional level	**Section 3**
	Provide an Agricultural Offset Plan in accordance with the conditions imposed under SSD 9575	This Report

1.4 Agricultural Offsets

The Department Planning, Infrastructure and Environment (DPIE) have requested HI to provide additional information on how agricultural impacts will be offset including:

- A clear outline of implementation plans and programs and/or physical works
- Commitments to undertake the physical works
- Details to demonstrate how those proposed plans/works will offset the adverse agricultural impacts on State Significant Farmland as a result of the development.

NSW Health have made the following commitments:

- Working closely with the Tweed Valley Productive Land Use Sub-Committee/Working Group to come up with strategies to support agriculture in the region
- Continue to consult with local farmers on how to reduce land use conflict and ensure the hospital and adjoining agricultural land uses work co-operatively together
- Reuse topsoil on-site
- Provide for edible gardens on-site
- Investigate initiatives such as The Buy Local Project Northern Rivers, an existing partnership between Lismore City Council, Northern New South Wales Local Health District (NNSW LHD) and the University Centre for Rural Health for the Tweed Hospital.

The specifics of the abovementioned commitments are discussed further in this Plan.

No other commitments are proposed at this stage.

It should be noted that whilst the Tweed Valley Hospital Project may have been a catalyst for establishing the Tweed Valley Productive Land Use Sub-Committee/Working Group, it is important to note that it is part of a broader government initiative to support agriculture in the region. This Agricultural Offset Plan is specific to the Tweed Valley Hospital Project and not a document of the Cross-agency Committee or the Tweed Valley Productive Land Use Sub-Committee, however it refers to these groups/committees and associated consultation and initiatives as applicable.

2. Consultation and Cross Government Agency Collaboration

2.1 Consultation with nearby Farmers

As required by Schedule 2 Part B Condition B28 of SSD 9575, NSW Health Infrastructure consulted with local farmers and rural land holders in proximity to the new Tweed Valley Hospital. The objective of the 'door knock' was to raise awareness of the Agricultural Offset Plan, included in the Environmental Impact Statement (EIS) as part of its Stage 2 State Significant Development application. The 'door knock' also provided opportunity to share information and answer questions local farmers and rural land holders had regarding the Tweed Valley Hospital development. The door knocks form part of a broader suite of engagement and consultation activities involving key stakeholder groups and the community around productive land use in the Tweed Valley.

A total of 12 properties were door knocked (an information pack was left at each property door knocked) with five engagements with adjoining farmers. The sentiment and feedback received was mixed. All stakeholders spoken to were happy to receive information regarding the Agricultural Offset Plan and the Stage 2 SSD application for the hospital. Some stakeholders arranged for follow up meetings to understand the Agricultural Offset Plan in more detail. Most were interested to hear more about the Tweed Valley Productive Land Use Working Group consultation program and how to get involved in the activities.

A copy of the summary report on the door knock is attached as **Appendix A**.

2.2 Tweed Valley Productive Land Use Sub-Committee

The Tweed Valley Hospital Cross Agency Coordination Committee is committed to undertaking meaningful consultation on initiatives to improve agricultural production in the Tweed Valley. The Tweed Valley Productive Land Use Sub-Committee was established by the Tweed Valley Hospital Cross Agency Coordination Committee to devise strategies that address concerns that were raised during the Stage 1 SSD application for the Concept Plan and Stage 1 Early Works. These issues centred on the rezoning of State Significant Farmland to construct a hospital and the very apparent underutilisation of State Significant Farmland in the area. The Sub-Committee has cross-agency representation, including government, education, industry and community groups focused on strategies to assist in reinvigorating productive, long-term agricultural land use in the Tweed and surrounding region.

A copy of the Tweed Valley Productive Land Use Sub-Committee Terms of Reference, Communications Strategy and Project Plan are attached as **Appendix B**.

The Sub-Committee is engaging with farmers, industry and the community to look at the challenges associated with productive farming, and to consider mechanisms to increase productive land use in the region. Leveraging the NSW Government's investment in education, healthcare and infrastructure in the Tweed and surrounding region, the Sub-Committee will also look at opportunities to:

- Build long-term land use skills and capabilities
- Research and showcase best practice farming methods which increase agricultural productivity
- Facilitate and promote local food procurement and supply-chain initiatives.

The Tweed Valley Productive Land Use Sub-Committee is made up of representatives from:

- Regional NSW
- TAFE NSW
- Department of Primary Industries
- Tweed Shire Council
- Health Infrastructure
- Local Land Services
- Training Services NSW.

In consultation with key stakeholders, the Sub-Committee will seek opportunities to provide better health, employment and training benefits and increase agricultural productivity in the Tweed region.

The main objectives of the Sub-Committee are to:

- Build awareness about the intent of the Tweed Valley Productive Land Use Sub-Committee across stakeholder groups and the community
- Provide information and insight into the current and desired future state of productive land use in the Tweed Valley and surrounding region
- Build a consistent narrative around productive land use and skills
- Create channels for stakeholders to engage with the Working Group to inform, drive outcomes and decision making.

The Tweed Valley Productive Land Use Sub-Committee has met nine times on the following dates:

- 8 July 2019
- 29 July 2019
- 21 August 2019
- 12 September 2019
- 10 October 2019
- 24 October 2019
- 7 November 2019
- 6 December 2019
- 17 December 2019.

The Sub-Committee held its inaugural meeting in June 2019. Funding has been allocated to the working group for engagement with local farming communities to address the underutilisation of State Significant Farmland. The NSW Government recognises that there is a lack of incentive to utilise farmland to its full potential resulting in disused land. This is supported by the Tweed Shire Council Rural Land Strategy which raises the issue of agricultural land being used as hobby farms and lifestyle land rather than for full scale agricultural production which also demonstrates an underutilisation of good agricultural land resources.

2.3 Tweed Valley Productive Land Use Sub-Committee - Farmers Workshops

This Sub-Committee has consulted with farming representatives on three separate occasions:

- Workshop 1: 29 October 2019 at the at the Kingscliff Beach Bowls Club which focussed on farmers on the Cudgen plateau
- Workshop 2: 4 November 2019 which included the Community Reference Panel meeting and four representatives from the farming community for a session in response to the request from workshop 1 to share planning and design information for Tweed Valley Hospital
- Workshop 3: 11 December 2019 which was a Community/Agency Workshop which brought together government agencies, members from the Tweed Valley Hospital Coordination group, and some attendees from the previous two workshops.

Workshop 1

The Tweed Valley Productive Land Use Sub-Committee hosted a workshop with the farming community on 29 October 2019 at the Kingscliff Beach Bowls Club. It was attended by 27 local farmers and farming representatives. There were a number of issues and suggestions that were identified for further discussion at the next consultation meeting including:

Planning/Roads

- Higher traffic volumes (mix of road usage {tractors/cars} plus increased traffic)
- Property access for all vehicles (trucks, tractors, etc.)
- Potential loss of land for road widening
- Is Cudgen Road and Tweed Coast Road going to four lanes?
- Alternate routes for ambulances
- Long range ideas for Cudgen
- Keeping State Significant Farmland
- Protect the land for future generations.

Water

- Water shortage and security – build Byrill Creek Dam
- Old water infrastructure
- Drainage issues
- Ease restrictions on farm dams, increase percentage of harvestable right which can be stored
- Reinstate the old Cudgen Drain Maintenance Scheme and increase storage.

Local Planning

- Rates
- Rural Land Strategies including worker accommodation linked to Agri-Tourism
- Local Environmental Plan – provide an Agri-Tourism definition.

Grants for diversification

- Food hub – infrastructure; value-adding (freezing, drying facilities, bottling)
- Food cooperative
- Niche product opportunities
- Agritourism opportunities.

Community Garden Proposal

- Proposal to provide for a community garden opportunity on the hospital site
- Potentially enhance the walking loops showcasing a live example of horticulture
- Location and inclusion of the community garden opportunity would become a feature of the hospital landscape, providing a reference to the past agricultural land use, and complement the range of actions that comprise the Agricultural Offset Plan
- Proposal subject to the identification of an appropriate community organisation, management plan and licence agreement
- Opportunity to sell produce to local residents via existing local community markets (e.g. existing community and farmers markets held in the surrounding local area)
- Produce is expected to be mostly vegetables and herbs.

The main issues that came out of this workshop were:

- A request for more information on the proposal (refer details on Workshop 2 below)
- Concerns about agricultural land use conflict (refer **Section 3** for details on land use conflict)
- Concerns about the proposed community garden (refer **Section 5** for details).

Workshop 2

Workshop attendees from the farming community requested that further information be provided on the design of Tweed Valley Hospital and how it will interface with farming operations. In response to this request, Health Infrastructure hosted an information session for workshop attendees and the Project's Community Reference Panel on Monday, 4 November 2019. Four representatives from the farming community attended the session which focused on the content of the current Stage 2 SSD application which was on public exhibition.

The following information was shared and discussed:

- Scope of the Stage 2 SSD application covering the main hospital building, multi-deck car park, supporting healthcare buildings and incremental expansion to meet future demand, including the current and future site master plan
- Key design principles and architectural drawings covering facade, interiors and landscape design, floor plans and building layout, visual impact, environmental sustainability, wayfinding, vehicle and pedestrian access and heritage
- Agricultural Offset Plan and the range of measures to minimise the impact of the hospital development on local farming, as well as key cross-government initiatives to stimulate productive land use in the region
- External road infrastructure upgrades and main site access, internal roads and car parking
- Forecast employment during construction, through to opening and operational phase
- Timing and next steps for the hospital development.

The timing of the session ensured participants were informed about the Stage 2 SSD application and had enough time to make a submission to the Department of Planning, Industry and Environment (DPIE), should they wish to do so. A fact sheet summarising the content of that presentation is attached as **Appendix C**.

Workshop 3

This workshop was a Community/Agency Workshop which brought together government agencies, members from the Tweed Valley Hospital Coordination group, and some attendees from the previous two workshops. This meeting involved a presentation, combined with open question and answer session with representatives from NSW Government agencies and Tweed Shire Council.

2.4 Ongoing consultation

Through a program of on-going consultation, the Tweed Valley Productive Land Use Working Group will develop and implement targeted initiatives focused on stimulating productive and long-term land use in the Tweed Valley.

The Agricultural Offset Plan is a dynamic document which will be updated following the above consultation programme coordinated by the Productive Land Use Project Sub-Committee.

3. Tweed Valley Productive Land Use Initiatives

From the consultation undertaken so far (refer Section 2), the Tweed Valley Productive Land Use Sub-Committee has identified three areas of opportunity, which will drive the development of initiatives to increase productive and sustainable land use across the region:

1. Diversification
2. Agritourism and
3. Skills development.

These opportunity areas now provide the Working Group with focus to develop structured initiatives to stimulate productive and long-term land use in the Tweed Valley and explore and leverage existing avenues of support.

3.1 Diversification and Agritourism

Throughout the consultation, participants expressed interest in diversification and agritourism, as well as highlighting some of the challenges involved, such as access to information, funding, planning and avenues for support.

Some of the existing funding and support options which local farmers can access include:

- **Farm Investment Loans**
  - Regional Investment Corporation
  - Loans for diversification and resilience
  - 10 years up to $2M.
- **Farm Innovation Fund**
  - Rural Assistance Authority
  - Build on farm infrastructure, reduce risk and improve efficiencies (including water, soil health).
- **Professional Development Program**
  - Rural Assistance Authority
  - An initiative developed to support farmers and provide access to vocational skills and training
  - Three professional development priority areas have been identified:
    - Risk management
    - Financial and business management
    - Farm business planning/drought preparedness.
- **Northern Rivers Food**
  - Northern Rivers Food is an association established to support and grow the local food industry, including growers
  - Network and make new connections in the food industry at workshops, events and information seminars.

- **Local Government**
  - Planning and sustainable land management advice including Sustainable Agriculture, River Health and Biodiversity grant programs.

3.2 Skills Development

Skills development was recognised by the participants as an enabler of diversification, agritourism and sustainable and productive land use.

TAFE NSW (Kingscliff, Murwillumbah and Wollongbar)

A partner in the Tweed Valley Productive Land Use Working Group, TAFE NSW offers customised and flexible training, across the agriculture industry, helping customers respond to market changes and to grow their business through their people.

As Australia's largest training provider, TAFE NSW ensures you, and your employees, will be trained by expert industry trainers, utilising the latest industry practices and technology to deliver training wherever, whenever and however needed. This includes designing specific training packages which combine a variety of skills such as retail sales, tourism, hospitality and events with agriculture and horticulture.

TAFE NSW courses incorporate extensive field work and hands-on learning at TAFE NSW Kingscliff, TAFE NSW Murwillumbah or the TAFE NSW Connected Learning Centre at Murwillumbah which provides greater convenience and accessibility to services when, where and how it suits students.

Locals can access a range of courses at TAFE NSW Kingscliff including:

- Certificate II in Horticulture
- Certificate III in Natural Area Restoration
- Certificate III in Production Horticulture.

* Fee free traineeships in these areas may also be of interest.

The Connected Learning Centre at Murwillumbah offers a state-of-the-art learning experience via technology. Courses include:

- Certificate IV Team Leadership and Management
- Statement of Attainment in Project Management
- Statement of Attainment in Visitor Information Services.

Short courses, delivered by experienced professionals, can be customised to support local people obtain nationally recognised qualifications through competency-based training. Some of the TAFE NSW short courses which provide a statement of attainment include:

- Chemical applications, chainsaw use, plant nutrition and plant propagation
- Local and state government planning regulations
- Natural area regeneration to create buffers around farm and riparian zones.

More information about Agribusiness courses or customised training packages visit www.tafensw.edu.au or call 131 601.

3.3 The Next Steps

Through a program of on-going consultation, the Tweed Valley Productive Land Use Working Group will develop and implement targeted initiatives focused on stimulating productive and long-term land use in the Tweed Valley. Further opportunities for interested local farmers, industry and landowners to engage in the initiatives will continue to be offered throughout 2020.

Further information on these initiatives can be found in the latest Stakeholder Update attached as **Appendix D**.

4. Land Use Risks and Management and Mitigation Measures

Tim Fitzroy & Associates has prepared an updated Land Use Conflict Risk Assessment (LUCRA) in response to SSD 9575 conditions of consent. A copy of the updated LUCRA is attached at Appendix H of the EIS). The LUCRA included consideration of potential land use conflicts, including:

- Agricultural chemical spray drift
- Odour
- Noise (including tractors and machinery operation)
- Dust
- Surface water and sediment runoff
- Traffic and access.

Any potential land use conflicts between the proposed hospital and existing agricultural land uses and activities were considered against a risk assessment matrix to rank the potential land use conflicts in terms of significance. Based on the proximity of the existing vegetable cropping to the south of the Tweed Valley Hospital the LUCRA recommends a series of measures, including vegetated buffers and plantings at key interfaces. The LUCRA and landscape design also considers the potential for any change in rural land use/intensity on the adjoining property to the west (currently fallow). The combination of agricultural buffer and elevation differential with the adjacent western site ground level will contribute to increased buffer effectiveness, and there is the ability to provide an increased buffer in the future if required.

Overall the LUCRA concluded that the Project Site is suitable for the proposed development subject to the following recommendations, which have been incorporated into the Stage 2 design (refer to Appendix B and D of the EIS):

1. A **vegetated buffer** based on the following criteria is to be installed on the Project Site along the southern boundary:

    - contain random plantings of a variety of tree and shrub species of differing growth habits, at spacings of four to five metres for a minimum width of 30 m
    - include species with long, thin and rough foliage which facilitates the more efficient capture of spray droplets
    - provide a permeable barrier which allows air to pass through the buffer. A porosity of 0.5 is acceptable (approximately 50 per cent of the screen should be air space)
    - foliage is from the base to the crown
    - include species which are fast growing and hardy
    - have a mature tree height of at least three metres.

2. **Supplementary plantings** are to be installed between the existing row of mixed trees and shrubs on the western and south-western boundary of the Project Site based on the following criteria to form an improved vegetative screen:

    - contain random plantings of a variety of tree and shrub species of differing growth habits, at spacings of two to three metres for a minimum width of 10 m
    - include species with long, thin and rough foliage which facilitates the more efficient capture of spray droplets

- provide a permeable barrier which allows air to pass through the buffer. A porosity of 0.5 is acceptable (approximately 50 per cent of the screen should be air space)
- foliage is from the base to the crown (achieved by a variety of species)
- include species which are fast growing and hardy
- have a mature tree height of at least three metres.

In addition, open spaces for patients should not be located along the southern frontage. By locating courtyards and balconies on the opposite side of the buildings to the southern farmland, the buildings themselves will provide physical screening of farm activities.

Hospital buildings will be air conditioned. The air intake for air conditioning should not be located on the southern side of the building/s.

Roof water shall not be utilised for potable use.

Any roof water utilised for secondary uses should be fitted with a first flush diverter and adequately filtered in accordance with the relevant Australian Standards for non-potable secondary use/s.

Should intensification of agricultural activity occur on the adjacent lot to the west, the masterplan has capacity to accommodate the widening of the vegetated buffer from 10 m to a maximum width range of 14-30 m, with the exception of a length of approximately 40 m in the location of the bypass lane where an above ground Bulk Oxygen Storage and an underground Liquified Gas Cylinder will be located, as required. The bypass lane is to be located directly opposite a multi-deck car park. The car park consists of a range of materials, including concrete panels, metal cladding and mesh. The car park would have a shielding effect on air and noise impacts should there be any intensification of adjoining agricultural production. The buffer arrangement, combined with the topographic differentiation, is considered acceptable and would achieve appropriate interface management, as required (refer to LUCRA for details).

The *Pesticides Act 1999* regulates the use of pesticides in NSW. Management practices must either eliminate spray drift or at least minimise it to a level where it will not cause adverse health impacts.

Pests/Vermin - The proposed vegetated buffer will be located within a landscaped environment. The hospital gardens and adjoining vegetated buffer will be maintained with professional gardeners to provide an effective biological screen to adjoining agricultural pursuits ensuring that the vegetation does not become overgrown and a potential harbourage for vermin.

A maintenance plan is to be prepared to ensure that the vegetated buffer and surrounding land are managed appropriately to minimise harbourage of vermin and pests.

Recommendations for Noise Impacts

Hospital operations; machinery, air conditioning, aircraft (helicopter), vehicles (staff, patients, visitors, deliveries, waste collection), generators, night work, from the proposed Tweed Valley Hospital are to be addressed in the Noise Impact Assessment to ensure that any noise impacts are sufficiently attenuated so as to comply with the Noise Policy for Industry (NSW EPA, 2017) and the Interim Construction Noise Guidelines (DECC, 2009).

The Noise and Vibration Assessment is attached to the EIS at Appendix O. It concludes that the Project would satisfy relevant noise criteria.

Recommendations for Stormwater Management

A Stormwater Management Plan has been prepared by Robert Bird Group for the construction and operational phases of the development to minimise the potential for erosion and sediment runoff to adjacent farmland, water courses and wetlands.

The nominated buffer areas can also be designed to utilise techniques such as water spreading and water diversion to reduce conflicts from stormwater run-off between the proposed development and adjacent farmland. Ongoing maintenance and enforcement must be identified and incorporated into conditions of approval.

Recommendations for Traffic and Access

Measures to reduce traffic impacts have been addressed in the Traffic Impact Assessment (Appendix K of the EIS) with regard to both construction and operations. The Tweed Valley Hospital entrance has been located so it is not directly opposite the farms. Other appropriate controls relating to turning lanes and lane dividers are proposed to adequately address traffic concerns. Implementation of the recommendations in the Traffic Impact Assessment will adequately address traffic and access issues.

5. Topsoil Reuse

Site preparation works, including bulk earthworks and establishment of site levels, were approved under SSD 9575 - Concept Proposal and Stage 1 Early and Enabling Works. The Stage 2 SSD application proposes to reuse the topsoil excavated as part of the Stage 1 works on-site as part of the establishment of the hospital, mainly within the landscaped and grassed areas.

Melaleuca Group Pty Ltd was engaged by Health Infrastructure to prepare preliminary advice for soil management for the construction of the Tweed Valley Hospital. The preliminary advice included:

- A best estimate of topsoil depth (based on available information)
- Soil characterisation for growing media (based on available information)
- Areas of concern on the site where soil remediation is required due to identified contamination concerns
- Opportunities for soils to be classified as excavated natural materials or virgin excavated natural materials and the required processes to achieve these.

A copy of the Preliminary Soil Management Plan is attached as **Appendix E**. The objective of this assessment is to guide future steps for the handling of soils at the site during bulk earthworks.

Based on the information reviewed as part of Melaleuca's preliminary soil management advice, it is likely that topsoils exist across the site at an average depth 0.35 m. Recent assessments (e.g. Agricultural Risk Consulting Group 2018) indicate the study area was predominantly used for sweet potato production. During the 56-year cropping history a wide range of vegetable and horticultural crops were grown. The changing size, shape and layout of cells/paddocks through the time period further indicate a range of crops were grown. The site is located on the Cudgen plateau, an area of known highly productive agricultural lands due predominantly to the rich red volcanic soils which can support a range of vegetable and horticultural crops. Melaleuca concluded that the historical aerial imagery supports this hypothesis whereby the continual use of the site for cropping has an indicative basis for the presence of rich (fertile) soils.

In accordance with the recommendations of the Melaleuca soil management advice, additional soil testing is currently being undertaken across the site to determine the feasibility of reusing the soil on-site. Provided that consideration is given to any contamination that may have occurred (i.e. avoidance of any soils impacted by Chemicals of Concern), remaining soils could be utilised anywhere on the site including within landscaped areas. Typically, the Red Krasnozem soils that exist on-site are high in nutrients and present a good growing media. Topsoils are preferred for landscaping as they generally have a high organic matter content. Some soil additives (e.g. fertilisers, compost, mulching) may be required to improve soil condition as is common with garden soils. As identified in the Landscape Design Report contained within the EIS, if, following additional testing, the topsoil is deemed suitable for use as growing media, it will be utilised for the top 300 mm (Horizon A) in all new garden areas across the hospital campus. If, following additional testing, site soils are found to be low in organic matter, they may be utilised for the Horizon B (depths >300 mm) of new garden areas, or as engineering fill.

It is not proposed that any topsoil would be reused off-site. However, if there is an excess of topsoil which requires removal from the site, the requirements under the Natural Excavated Material Order 2014 will be met prior to removal and opportunities for agricultural offset avenues, including translocation of soil or mixing soil with organic material for continued re-use by landscape supply businesses, will be further investigated.

6. Community Gardens and Edible Gardens

An opportunity for a community garden was identified in the Stage 2 Landscape Design Report and Plans contained within the Stage 2 EIS as Appendix B and D. The development of a community garden on the Project Site was contingent on the identification of a suitable community organisation and establishment of a licence agreement and general support from the community including local farmers.

Following further analysis and consultation (refer **Section 2**), it has been decided to remove this element from the proposal. Consultation has confirmed that the local farming community does not support the community garden proposal and would prefer that it not be included. The primary concern expressed was that it may impact the commercial viability of farms and local farm stalls. Furthermore, there were unresolved maintenance and management issues associated with the use.

However, to continue to satisfy the conditions of consent from SSD 9575, the landscape zonal plan shows that the existing orchard would be retained, edible plant varieties would be included in the hospital landscape where appropriate, and there is an opportunity for a therapy garden on the site, conveniently located proximal to the hospital building.

The landscape zonal plan prepared by Turf Design (refer to Response to Submissions Report) has been amended accordingly as a result of the consultation with local farmers and the established agricultural working group. As originally described, the planting palette would incorporate species with sensory values, and culinary uses to encourage meaningful engagement with the landscape. Edible plant varieties are proposed for inclusion in various areas of the hospital. Options range from a diverse mix of seasonal species and herbs, to native bush tucker plantings focused around key outdoor Aboriginal meeting places (species palettes would be developed in consultation with the Indigenous community). Edible plants will also be integrated into the courtyards where appropriate.

All these features adequately contribute to providing a practical and meaningful reference to the past agricultural land use, complement the healing environment to be fostered at the Tweed Valley Hospital, and support the range of actions that comprise this plan. On this basis, deletion of the previously proposed community garden opportunity is considered necessary.

7. Local Food Procurement Strategy

Once operational, the hospital will be required to comply with State Purchasing Policies in terms of value for money, and competitive procurement. During operational commissioning, Northern NSW businesses will be supported through the Industry Capability Network in the same manner proposed for construction opportunities. Further to this, initiatives such as The Buy Local Project Northern Rivers, an existing partnership between Lismore City Council, Northern New South Wales Local Health District NNSW LHD and the University Centre for Rural Health are being considered for development with Tweed Shire Council and other interested parties to encourage further local business participation. Department of Premier and Cabinet has met with the NNSW LHD to discuss working with farmers for local procurement and discussions will be further progressed closer to operation.

With reference to Department of Planning, Industry and Environment's request that "*a local food procurement strategy or a commitment to review and change any relevant State Purchasing policies to accommodate this requirement*", state procurement policies are in place to ensure transparency, value for money and equality. The NNSW LHD is unable to change/alter a whole of government policy that is underpinned by various pieces of legislation. The NNSW LHD can, and has, given a previous commitment to continuing and extending the local food procurement practices they currently have in place noting that they must comply with the State Purchasing Policy.

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Appendix A

Door Knock Engagement Report

Stakeholder Engagement Summary Report

Agricultural Offset Plan door knock. Wednesday 8 October 2019

On Wednesday 8 October 2019, NSW Health Infrastructure undertook a door knock of local farmers and rural land holders in close proximity to the new Tweed Valley Hospital at 771 Cudgen Road, Cudgen.

The objective of the door knock was to raise awareness of the Agricultural Offset Plan, included in the Environmental Impact Statement (EIS) as part of its Stage 2 State Significant Development (SSD) application.

The door knock also provided opportunity to share information and answer questions local farmers and rural land holders had regarding the Tweed Valley Hospital development.

The door knock forms part of a broader suite of engagement and consultation activities involving key stakeholder groups and the community around productive land use in the Tweed Valley.

Feedback and questions

- The sentiment and feedback was mixed. All stakeholders spoken to were happy to receive information regarding the Agricultural Offset Plan and the Stage 2 SSD application for the Hospital
- Some stakeholders arranged for follow up meetings to understand the Agricultural Offset Plan in more detail
- Most were interested to hear more about the Tweed Valley Productive Land Use Working Group consultation program and how to get involved in the activities.

Early engagement statistics

12	properties door knocked
5	engagements with local farmers and rural land holders
12	information packs provided
1	follow up meeting with long term Cudgen farmer
1	follow up meeting with significant rural land holder

Agricultural Offset Plan information pack

The information pack included:

- The Agricultural Offset Plan
- A covering letter encouraging people to read the Agricultural Offset Plan
- The letter directed people to the Tweed Valley Hospital Stage 2 SSD application on the Department of Planning, Industry and Environment website planning portal
- Information on how to make a submission was provided
- Contact details for the Tweed Valley Hospital project should they have any questions.

The team also provided information regarding the engagement program and series of cross-government consultation activities being undertaken by the Tweed Valley Productive Land Use Working Group. The team provided contact details for the Tweed Shire Council representative coordinating these activities.

Tweed Valley Productive Land Use Working Group

The Tweed Valley Hospital team is a member of the Tweed Valley Productive Land Use Working Group. This is a cross-government initiative focused on stimulating productive and long-term land use in the Tweed and surrounding region.

The Tweed Valley Productive Land Use Working Group, is undertaking a program of consultation focused ensuring farming continues in Cudgen and the across the Tweed Valley. Focused on stimulating productive and long-term land use in the Tweed and surrounding region The Working Group encourages all interested parties to be part of the consultation program.

The Tweed Valley Productive Land Use Working Group, headed by Regional NSW involves NSW Health Infrastructure, Tweed Shire Council, TAFE NSW, Department of Primary Industries, Training Services NSW, the Northern NSW Local Health District and Local Land Services.

Appendix B

Tweed Valley Productive Land Use Sub-Committee Terms of Reference, Communications Strategy and Project Plan

Terms of Reference

Tweed Valley Productive Land Use Sub-Committee

Background

The NSW Government has committed $582 million for the Tweed Valley Hospital Development. This includes a new state-of-the-art hospital on a greenfield site on Cudgen Road, Kingscliff in the Tweed Local Government Area (LGA). The 16ha site chosen for the hospital was previously zoned a combination of RU1 Primary Production and R1 General Residential land, however was rezoned in 2019 via State Environmental Planning Policy (SEPP) to SP2 Infrastructure (Health Services Facility) land. This was to allow the NSW Department of Planning and Environment (DPE) to consider and assess the State Significant Development (SSD) application for Stage 1 works for the new hospital.

The Tweed Valley Hospital Cross Agency Coordination Committee was convened in May 2018 to ensure effective whole-of-government planning and communication around both the Tweed Valley Hospital and the wider Tweed Health and Education Precinct.

The *Tweed Valley Productive Land Use Sub-Committee* was established to identify and promote agriculture and food development opportunities in association with the new hospital, and to facilitate agricultural opportunities throughout the broader Tweed LGA.

Purpose

The *Tweed Valley Productive Land Use Sub-Committee* will identify, develop and co-ordinate the implementation of agricultural industry development and sustainable regional productive land use growth opportunities associated with the Tweed Valley Hospital Development and Health and Education precinct located at Cudgen.

Success Measures and Outcomes

- The *Tweed Valley Productive Land Use Sub-Committee* will develop a Project Plan that addresses agricultural growth and land and conservation management priorities on farmland in the Tweed LGA.

  Subject to consultation with the agricultural sector, this might include, but not be limited to:

  - a Training and Employment Strategy
  - therapy and edible gardens feeding into the Tweed Hospital and other supply chains
  - a local food procurement strategy
  - sustainable development of local primary industries, reflective of the cultural values of local communities
  - development of farm demonstration sites to research and showcase best practice farming methods
  - developing strategies to support the use of currently underutilised farmland

These strategies will proactively address opportunities to provide broader employment and training benefits and improve agricultural practises and market access in the Tweed region.

- The Tweed Valley Productive Land Use Sub-Committee will coordinate agency delivery of the Project Plan.

- The *Tweed Valley Productive Land Use Sub-Committee* will hold three engagement events with agricultural industry representatives and local farmers to identify and validate issues and prioritise project opportunities.

- The *Tweed Valley Productive Land Use Sub-Committee* will develop a communication strategy to engage with key partners and stakeholders.

- Attract investment and obtain adequate resources to fully implement the Project Plan and monitor and evaluate its effectiveness as a means of generating sustainable growth in the Tweed LGA agricultural sector.

Administration

Chairperson

The Chairperson of the *Tweed Valley Productive Land Use Sub-Committee* is Craig Jenkins, Deputy Director North Coast, Regional NSW

Membership

The *Tweed Valley Productive Land Use Sub-Committee* comprises:

- Regional NSW
- TAFE NSW
- DPI
- Tweed Shire Council
- Health Infrastructure NSW
- Local Land Services
- Training Services NSW
- Northern NSW Local Health District
- Subject matter experts and special guests, including but not limited to university partners and members of the Local Aboriginal Land Council, will be invited on an as needs basis.

Reporting

The *Tweed Valley Production Land Use Sub-Committee* will report to the Tweed Valley Hospital Cross Agency Coordination meetings.

Meeting Frequency

The *Tweed Valley Production Land Use Sub-Committee* will meet in the week preceding the Tweed Valley Hospital Cross Agency Coordination meetings and on an as needs basis.

Tweed Valley Productive Land Use Sub-Committee

COMMUNICATIONS PLAN

Communication objectives

1. Build awareness about the purpose of the Tweed Valley Productive Land Use Working Group across stakeholder groups and the community.
2. Seek information and insight into the current state of productive land use and the major impediments to sustainable agricultural growth in the Tweed Local Government Area.
3. Build a consistent narrative around productive land use, and skills and employment development around this, including the hospital being a catalyst for innovative land use.
4. Create channels for diverse stakeholders to engage with the Working Group to inform and drive outcomes and decision making.

Preliminary key messages

- The Tweed Valley Productive Land Use Working Group is a cross-agency, education, industry and community group focused on stimulating productive, long-term land use in the Tweed and surrounding region.
- The Working Group is engaging with farmers, industry, the community and government agencies to look at the challenges associated with productive farming, and to consider initiatives to increase productive and sustainable land use in the region.
- The Working Group is leveraging NSW Government investment in education, healthcare and infrastructure in the Tweed Local Government Area. For example, the Working Group will look at opportunities to:
  - build long-term land use skills, capabilities and employment opportunities
  - support the use of currently underutilised farmland
  - research and showcase best practice farming methods which increase agricultural productivity
  - facilitate and promote local food procurement and supply-chain initiatives.
- The Tweed Valley Productive Land Use Working Group includes representatives from Regional NSW, TAFE NSW, NSW DPI, Tweed Shire Council, Health Infrastructure NSW, Training Services NSW, Northern NSW Local Health District, and Local Land Services.

Tactical communications plan

	Activity	Who	Status
1	Establish web landing page and URL		
2	Establish contact and information line (1800, email, URL and social)		
3	Agree on spokespeople and engagement team		
4	Create a presentation pack including: intent, scope, phases and timings		
5	Facilitate a series of targeted stakeholder meetings (groups and one-on-one)		
6	Manage media event to launch		
7	Create and distribute media releases		
8	Build fact sheets		

Project Name:	**Tweed Valley Productive Land Use Project Plan**
Project Plan reference:	
Lead Agency:	Regional NSW
Officer/s Responsible and contact details:	Lenna Klintworth, Business Development Manager, North Coast Tel 02 6760 2688
Delivery Timeframe:	Phased as per Hospital Plans
Project Outputs:	Identify, develop and co-ordinate implementation productive land use opportunities associated with the Tweed Valley Hospital Project and/or Health and Education precinct located in Cudgen. The opportunities will provide better health, employment and training benefits and increase agricultural productivity in the Tweed region.

Project Delivery

Main Elements	**Comments**
Aims/objectives	Develop an agricultural industry development program to add value to the Tweed Hospital and wider Health and Education Precinct development, building long-term productive land use skills in the Tweed and surrounding regions.
Scope	Consultation with the wider stakeholder group Coordination of agency delivery of current and future agricultural, land and conservation management projects. This might include, but not limited to, a Training and Employment Strategy, therapy and edible gardens feeding into the Tweed Hospital and other supply chains, a local food procurement strategy, mechanisms to support the use of currently underutilised farmland, and development of farm demonstration sites to showcase and research best practice farming methods.
Project Management	Regional NSW coordination of Productive Land Use (PLU) Working Group - government, education, health, council - established to oversee the broader whole of government design, delivery and monitoring.
Project partners and stakeholders	Regional NSW, TAFE NSW, DPI, Tweed Shire Council, Health Infrastructure, Tweed Fruit and Vegetable Growers Association, Local Land Services, Northern NSW Local Health District, Training Services NSW
Financial management	$20,000 to be held by TAFE

Risk Identification

Risk	***Mitigation***
Failure to fully communicate and engage with key partners and stakeholders	Develop a Communication Strategy. Working group to include key partners and stakeholders in identified opportunities via regular updates at the Tweed Valley Hospital Coordination meetings.
Projects not delivered on program	Working group to monitor progress and report into agencies and the Tweed Hospital Coordination meetings.

Project Milestones

Activity	**Responsibility**	**Planned Completion Date**	**Actual Completion Date**	**Status**
M1: Define the opportunities within the agricultural industry development program	PLU Working Group			
M2: Hold an 'engagement event' with wider stakeholders on the identified opportunities	PLU Working Group			
M3: Identify short, medium and long term priorities and projects	PLU Working Group			
M3A: Training and employment strategy – succession planning for farmers/new entrants	Health Infrastructure DPI TAFE			
M3B: Therapy and edible gardens within the Tweed Valley Hospital planning	Health Infrastructure			
M3C: Development and delivery a Local Food	Northern NSW Local Health District			

Procurement strategy – including pathways for farmers to supply the new hospital and local markets				
M3D: Identified projects as a result of the 'engagement event'	STS Health Infrastructure Lend Lease			
M4: Identify and research best practise case studies against the identified projects	PLU Working Group			
M5: Define final projects	PLU Working Group			
M6: Communicate final projects to the Tweed Valley Hospital Coordination meetings	PLU Working Group			
M7: Coordination of rollout of final projects – responsibility, funding, planning, communication				

Project Finance

	Activity	**Budget FY20**
1	Hold two engagement events to raise awareness of identified project opportunities: 1. Agriculture industry 2. Wider stakeholders	$1,000
2	Engage Consultant to: a. Identify short, medium and long term priorities and projects b. Deliver a Training and Employment strategy – succession planning for farmers/new entrants c. Develop and deliver a Local Food Procurement strategy – including pathways for farmers to supply the new hospital and local markets d. Identify and research best practise case studies against the identified projects	$18,000
3	Rollout and delivery of the project	$1,000

Alignment to actions listed in complementary plans or institutional strategies

Action	Agency Responsible	Complementary project plan/strategy	Complementary plan/strategy action	Complementary plan/strategy action completion Date

Prepared by:

Craig Jenkins	Deputy Director, North Coast	approved	DPC Regional	May 2019

Endorsed by:

Louise McMeeking Director North Coast DPC Regional	Comment: Activities pending budget	27 May 2019

Appendix C

Workshop 2 Factsheet

NSW GOVERNMENT

TWEED VALLEY
HOSPITAL DEVELOPMENT

NOVEMBER 2019

Local farmers and community consultation

Preliminary consultation report
OCTOBER/NOVEMBER 2019

The Tweed Valley Hospital project team is committed to working with the community to support the continuation of farming in the region. The project team is a member of the Tweed Valley Productive Land Use Working Group, a cross-government initiative which focuses on the local challenges associated with productive farming, and considers initiatives to increase productive and sustainable land use in the region.

Responding to requests from local farmers received during a recent Tweed Valley Productive Land Use consultation workshop, Health Infrastructure held an information session on Monday 4 November 2019 to present the Stage 2 State Significant Development (SSD) application and Environmental Impact Statement (EIS) for the new Tweed Valley Hospital. In attendance were local farmers and representatives of the Hospital's Community Reference Panel.

The following information was shared and discussed:

- Scope of the Stage 2 SSD application covering the main hospital building, multi-deck car park, supporting healthcare buildings and incremental expansion to meet future demand, including the current and future site master plan
- Key design principles and architectural drawings across facade, interior and landscape design, encompassing floor plans and layout, visual impact, environmental sustainability, wayfinding, vehicle and pedestrian access and heritage
- Agricultural offset plan and the range of measures to minimise the impact of the hospital development on local farming, as well as key cross-government initiatives to stimulate productive land use in the region
- External road infrastructure upgrades and main site access, internal roads and car parking
- Forecast employment during construction, through to opening and operational phase
- Timing and next steps for the hospital development.

Image 1: The Tweed Valley Hospital team share information and answer questions regarding the Stage 2 SSD and the Environmental Impact Statement for the Hospital development

Stage 2 State Significant Development application

The Stage 2 State Significant Development application for the new Tweed Valley Hospital was lodged with the Department of Planning, Industry and Environment on 27 September 2019 and seeks approval for the detailed design, construction and commissioning of the new hospital. The application was placed on public exhibition on 10 October to 8 November 2019.

What is the Environmental Impact Statement?

The Environmental Impact Statement is a comprehensive technical document that provides information on the hospital's potential environmental impacts and assesses how they can be appropriately mitigated.

Areas of interest and discussion

The information session provided opportunity for participants to ask questions about the Stage 2 SSD, the EIS and the planning application process and timings. Here are the key areas of interest and discussion:

Design

Local farmers and community members asked about the design, the number of levels of the hospital and the multi-deck car park. Six levels of the hospital will be visible from the main entrance on Cudgen Road plus rooftop plant and helipad, with a further two levels built into the slope of the site.

The multi-deck car park will be built into the slope of the site. It will be to 10 storeys high, which is approximately equivalent to level 4 of the main hospital building.

Image 2. Main hospital building from Health Hub

Image 3. Emergency department main entrance

Parking

Some participants expressed concern about the number of car parks, dedicated staff parking, tariffs and whether there was enough capacity to accommodate all parking on-site, now and into the future. Information regarding demand studies and benchmarking with other hospitals was shared.

The group was informed that the Stage 2 SSD application seeks approval for over 1500 on-site car parking spaces, including multi-deck, at-grade, mobility spaces and short-term parking facilities. Provision of end-of-trip facilities, cycle ways and access and charging stations for mobility scooters was also discussed.

The group was informed that there has been no final decision on parking fees and various options have been considered in the Stage 2 SSD from free parking to paid parking arrangements in line with Lismore Base Hospital.

It was important for everyone to hear that under the NSW Health Hospital Car Parking Fees Policy, there is provision for concession rates to be offered to patients receiving ongoing cancer treatment, carers of long-term patients, cardiac rehabilitation and exercise class attendees, and outpatients requiring daily dressings. There are also provisions for patients and carers experiencing financial hardship.

Image 4. Multi-deck car park, internal road access

Hospital Car Parking Fees Policy

Car Parking - Concessional Fees and Eligibility: http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2017_008.pdf

Areas of interest and discussion

Agricultural offset plan

Questions regarding road and traffic changes, improvements to intersections, and concerns regarding the movement of local farm vehicles were addressed and referenced to key sections of the Stage 2 SSD application. This led to further discussion of the Agricultural Offset Plan, which addresses how the development will offset the adverse agricultural impacts on the State Significant Farmland (SSF) of Cudgen Plateau.

The plan includes a range of measures which will mitigate the impact on farming activities and allow the hospital and farming activity to co-exist. Mitigations include setbacks and vegetation buffer zones to enable farming activities to continue on neighbouring properties, the appropriate location of terraces and outdoor spaces for patients, air intake for air conditioning, the use of water and water filtration systems, reuse of top soil, measures implemented to accommodate significant rain activity and the use of a native planting in the landscape plan.

Options to establish a community garden and therapy gardens were also discussed, with some participants expressing concern that the community garden may negatively compete with current farm shops and commercial activity in the area. Opportunities for local food procurement strategies for the hospital, to be considered in consultation with the Northern NSW Local Health District, were presented.

Image 6. Main hospital building from Cudgen Road

Image 5: Tweed Valley Hospital team share information and answer questions regarding the Stage 2 SSD and the Environmental Impact Statement for the Hospital development.

TWEED VALLEY
HOSPITAL DEVELOPMENT

NOVEMBER 2019

Future expansion of services and master planning

The provision of key services and equipment on opening and into the future was discussed with the project team walking participants through the current and future master plans for the hospital and the site, as well as the floor-by-floor layouts, including key expansion areas.

In response to questions about expansion and use of adjoining properties, the project team reiterated that the size of the site allows for future expansion and redevelopment for both the hospital and other complementary health-related services to be contained on the hospital campus, without the need for additional land.

Images 7 and 8 provide overview of current site master plan and future site master plan for the Tweed Valley Hospital site at 771 Cudgen Road, Cudgen.

Consultation will continue

The Tweed Valley Productive Land Use Working Group, will continue a program of consultation, working with the community to support the continuation of farming in the region. Focused on stimulating productive and long-term land use in the Tweed and surrounding region, the Working Group encourages all interested parties to be part of the consultation program.

The Tweed Valley Productive Land Use Working Group, headed by Department of Premier and Cabinet, involves NSW Health Infrastructure, Tweed Shire Council, TAFE NSW, Department of Primary Industries, Training Services NSW, the Northern NSW Local Health District and Local Land Services.

Image 7. Site master plan

The Tweed Valley Hospital Development

The NSW Government's $582 million investment will deliver a brand new, regional referral hospital along with interim upgrades, which will help meet the urgent clinical needs of the local communities in the Tweed and Byron Local Government Areas.

Image 8. Future site master plan

Keep in touch

The project team looks forward to ongoing consultation and collaboration with the whole community on all aspects of the Tweed Valley Hospital project. The community is encouraged to provide comment and feedback to: tweedvalleyhospital@health.nsw.gov.au or 1800 992 632

Appendix D

Stakeholder Update

STAKEHOLDER UPDATE

NSW GOVERNMENT

April 2020

Tweed Valley Productive Land Use initiative

The Tweed Valley Productive Land Use Working Group is a cross-government initiative focused on the opportunities and challenges associated with productive farming and land use in the Tweed Valley.

A core objective of the Tweed Valley Productive Land Use Working Group is to consider and develop, through consultation with local farmers, land holders and community members, key initiatives to increase productive and sustainable land use across the region.

Central to achieving this objective is recognising and valuing the characteristics of the region which make the Tweed Valley unique – its people, environment and deep roots in agriculture and innovation.

Consultation to date

Over a three-month period in late 2019, the Working Group undertook a program of consultation with local farmers, land holders, community members and various government stakeholders. The program of consultation with these stakeholders included:

- 29 October 2019 — Tweed Valley Productive Land Use Working Group consultation workshop (background and opportunities)
- 4 November 2019 — Tweed Valley Hospital Stage 2 State Significant Development EIS briefing
- 11 December 2019 — Cross-agency / community meeting - questions and answers to issues raised from 29 October workshop

The events included a facilitated workshop, a detailed briefing on the Stage 2 State Significant Development application and Environmental Impact Statement (EIS) for the new Tweed Valley Hospital, and a presentation, combined with open Q&A, with representatives from NSW Government agencies and Tweed Shire Council.

The consultation provided opportunity for participants to ask questions and raise concerns regarding matters impacting farming and sustainable agriculture in the region. Each session was purposefully shaped around stakeholder feedback and the information provided was tailored in response to requests from the participants.

Consultation outcomes

The cross-agency meeting held on 11 December 2019 was shaped around and focused on providing information on these three areas of interest.

1. State, regional and local planning
2. Roads, and
3. Water use and water supply.

Three areas of opportunity were identified, which will drive the development of initiatives to increase productive and sustainable land use across the region:

1. Diversification
2. Agritourism and
3. Skills development.

These opportunity areas now provide the Working Group with focus to develop structured initiatives to stimulate productive and long-term land use in the Tweed Valley and explore and leverage existing avenues of support.

Diversification and Agritourism

Throughout the consultation, participants expressed interest in diversification and agritourism, as well as highlighting some of the challenges involved, such as access to information, funding, planning and avenues for support.

Some of the existing funding and support options which local farmers can access include:

- **Farm Investment Loans**
  - Regional Investment Corporation
  - Loans for diversification and resilience
  - 10 years up to $2M.
- **Farm Innovation Fund**
  - Rural Assistance Authority
  - Build on farm infrastructure, reduce risk and improve efficiencies (including water, soil health).
- **Professional Development Program**
  - Rural Assistance Authority
  - An initiative developed to support farmers and provide access to vocational skills and training
  - Three professional development priority areas have been identified:
    - Risk management
    - Financial and business management
    - Farm business planning/drought preparedness.
- **Northern Rivers Food**
  - Northern Rivers Food is an association established to support and grow the local food industry, including growers
  - Network and make new connections in the food industry at workshops, events and information seminars.
- **Local Government**
  - Planning and sustainable land management advice including Sustainable Agriculture, River Health and Biodiversity grant programs.

Skills development

Skills development was recognised by the participants as an enabler of diversification, agritourism and sustainable and productive land use.

- **TAFE NSW (Kingscliff, Murwillumbah and Wollongbar)**

  A partner in the Tweed Valley Productive Land Use Working Group, TAFE NSW offers customised and flexible training, across the agriculture industry, helping customers respond to market changes and to grow their business through their people.

  As Australia's largest training provider, TAFE NSW ensures you, and your employees, will be trained by expert industry trainers, utilising the latest industry practices and technology to deliver training wherever, whenever and however needed. This includes designing specific training packages which combine a variety of skills such as retail sales, tourism, hospitality and events with agriculture and horticulture.

  TAFE NSW courses incorporate extensive field work and hands-on learning at TAFE NSW Kingscliff, TAFE NSW Murwillumbah or the TAFE NSW Connected Learning Centre at Murwillumbah which provides greater convenience and accessibility to services when, where and how it suits students.

  Locals can access a range of courses at TAFE NSW Kingscliff including:
  - Certificate II in Horticulture
  - Certificate III in Natural Area Restoration
  - Certificate III in Production Horticulture

  * Fee free traineeships in these areas may also be of interest.

The Connected Learning Centre at Murwillumbah offers a state-of-the-art learning experience via technology. Courses include:

- Certificate IV Team Leadership and Management
- Statement of Attainment in Project Management
- Statement of Attainment in Visitor Information Services.

Short courses, delivered by experienced professionals, can be customised to support local people obtain nationally recognised qualifications through competency-based training. Some of the TAFE NSW short courses which provide a statement of attainment include:

- Chemical applications, chainsaw use, plant nutrition and plant propagation
- Local and state government planning regulations and
- Natural area regeneration to create buffers around farm and riparian zones.

To find out more about Agribusiness courses or customised training packages visit www.tafensw.edu.au or call 131 601.

Next steps

Through a program of on-going consultation, the Tweed Valley Productive Land Use Working Group will develop and implement targeted initiatives focused on stimulating productive and long-term land use in the Tweed Valley.

Get involved

Further opportunities for interested local farmers, industry and landowners to engage in the initiatives will continue to be offered throughout 2020. To register your interest, contact Regional NSW:

- Phone: 02 67602688
- Email: Lenna.Klintworth@dpc.nsw.gov.au

Quick reference guide

Organisation	Phone	Email	Web
Tweed Shire Council • Roads • Water • Planning • Sustainable Agriculture	(02) 6670 2400	tsc@tweed.nsw.gov.au	Tweed.nsw.gov.au
TAFE NSW	131601		tafensw.edu.au
DPI • Agriculture Land Use Planning		landuse.ag@dpi.nsw.gov.au	www.dpi.nsw.gov.au
Tweed Valley Hospital Project	1800 992 634	tweedvalleyhospital@health.nsw.gov.au	Tweedvalleyhospital.health.nsw.gov.au
Regional NSW • Business Development	02 67602688	Lenna.Klintworth@dpc.nsw.gov.au	

Strategy links: Tweed Sustainable Agriculture Strategy: www.tweed.nsw.gov.au/agriculture

The Tweed Valley Productive Land Use Working Group, headed by Regional NSW within the Department of Planning, Industry and Environment and involves NSW Health Infrastructure, Tweed Shire Council, TAFE NSW, Department of Primary Industries, Training Services NSW, Northern NSW Local Health District and Local Land Services.

Appendix E

Preliminary Soil Management Plan

(Photo courtesy of Tim Fitzroy & Associates)

Preliminary Soil Management Advice
For Proposed Tweed Valley Hospital
Lot 11 DP 1246853
771 Cudgen Rd,
Cudgen NSW 2487

Melaleuca Group Pty Ltd

Date: 31st January 2019

Prepared for:
Health Infrastructure

Further Information:
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1. Introduction

Melaleuca Group Pty Ltd has been engaged by Health Infrastructure to prepare preliminary advice for soil management for 771 Cudgen Rd, Cudgen NSW 2487 (the site) to allow for the proposed construction of the Tweed Valley Hospital at the site (Figures 1 and 2).

The objective of this assessment is to guide future steps for the handling soils at the site during bulk earthworks. In particular, the handling of excess soils for the proposal are of concern. The Study Area is considered the bulk earthworks area and is best depicted by the masterplan (Figure2). That covers the majority of the southern section of the site to the treeline in the north.

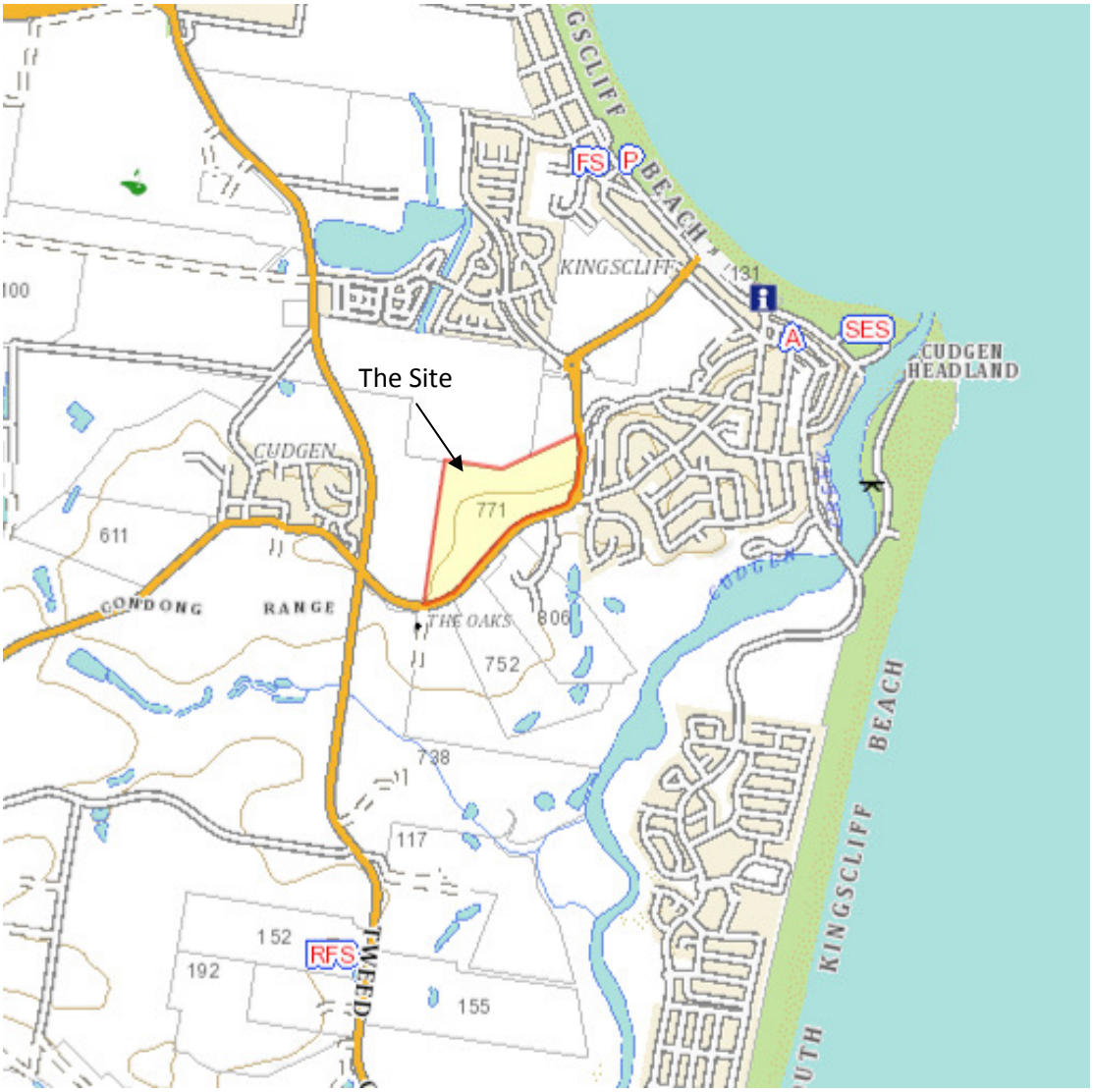

Figure 1. Locality Plan

ESSENTIAL ENERGY SWITCHING STATION

Figure 2

NOTES

LANDSCAPE INDICATIVE ONLY - REFER LANDSCAPE ZONAL PLAN L-MP-12

LEGEND

- SITE BOUNDARY
- MAXIMUM PLANNING ENVELOPE
- TREE TRUNK LINE
- APZ OFFSETS
- PROBABLE MAXIMUM FLOOD LEVEL
- INDICATIVE BUILDING ENTRIES

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NSW GOVERNMENT Health Infrastructure | Health Northern NSW Local Health District

PROJECT

TWEED VALLEY HOSPITAL
771 Cudgen Road, Cudgen

DRAWING TITLE

MASTERPLAN
CONCEPT PLAN

SCALE	DATE	DRAWN BY	CHECKED
1:2500 @ A3	19/09/2018	CE	MH

PROJECT No	DRAWING No	REVISION
10363	AR-SKE-10-006	04

1.2 Scope of Works

For this advice, only desktop investigations were completed. No site works of soil investigations were completed. A number of reports are available for review in direct relation to the project including:

- Agricultural Risk Consulting Group 16 October 2018, Report - Agricultural Impact -Tweed Valley Hospital On Instructions from TSA Management;
- JBS&G Australia Pty Ltd Interim Audit Advice dated 24th January 2019;
- Morrison Geotechnic September 2018a, Preliminary Geotechnical Investigation Proposed Tweed Valley Hospital Lot 102 on DP870722 Cudgen Road Kingscliff;
- Morrison Geotechnic November 2018b Geotechnical Investigation Proposed Sediment Basins Proposed Tweed Valley Hospital Lot 102 on DP870722 Cudgen Road Kingscliff;
- Morrison Geotechnic December 2018c Additional Geotechnical Investigation Proposed Sediment Basins Proposed Tweed Valley Hospital Lot 102 on DP870722 Cudgen Road Kingscliff;
- Octief 10th August 2018 Soil Sampling Analysis And Quality Plan 771 Cudgen Road, Cudgen, NSW Version 2.0
- Octief 17th October 2018, Preliminary And Detailed Site Investigation – 771 Cudgen Road, Cudgen, NSW 2487;
- Tim Fitzroy & Associates 18th October 2018, Land Use Conflict Risk Assessment (LUCRA) - Mixed Agricultural Use on Proposed Tweed Valley Hospital Lot 102 DP 870722 Cudgen Rd, Cudgen;
- Further, a range of resources were available for review (e.g. Soils and Agricultural Land Mapping).

A review of the above documentation was completed to obtain a characterisation of the site and provide:

- a best estimate of topsoil depth (based on available information);
- soil characterisation for growing media (based on available information);
- areas of concern on the site where soil remediation is required due to identified contamination concerns; and
- opportunities for soils to be classified as ENM (Excavated Natural Materials) or VENM (Virgin Excavated Natural Materials) and the required processes to achieve these.

2. Topsoil Depth

Morrison Geotechnic completed the excavation of 55 boreholes across the site between August and November 2018 (Morrison Geotechnic 2018a,b,c). Borehole logs were reviewed along with Tables 1 (Geotechnical Summary of the Subsurface Profile) and 2 (Typical Geotechnical Model Based on Deep Boreholes) (Morrison Geotechnic 2018c).

Geotechnical assessments generally describe the soil profile slightly differently to soil scientists. The summarised description of the profiles by Morrison Geotechnic describe soil units throughout the profile with the upper portion of the soil profiles described as:

- Unit 1: Slopewash - depth 0.2 to 1m.

Borelogs show a range of between only 0.05m to 1.2m with the most common thickness of this layer being 0-0.1m (12 boreholes). However 42% of boreholes had a depth between 0.3 to 0.4m of this unit.

NSW DPI (2004) describes the geology of the Study Area as Tertiary volcanics. Morand (1996) describes the geology as Lamington Volcanics - Tertiary basalts, with members of rhyolite, trachyte, tuff, agglomerate, conglomerate. The Study Area lies within the mapped residual soil landscape unit *Cugen* (**cu**).

These are described by Morand (1996) as:

> **Landscape** – low undulating hills and rises on Tertiary basalt plateau. Relief is 20-40m; elevation 30-40m slopes 2-10% and steepening to 20% on plateau margins. Completely cleared closed-forest (rainforest).
>
> **Soils** – deep (>100cm), well-drained Krasnozems (Uf5.12, Uf6.12, Uf6.21)
>
> **Limitations** – acid and highly erodible soils with high aluminium toxicity potential.

A review of the Agricultural Impact report (Agricultural Risk Consulting Group 2018) and the LUCRA (Tim Fitzroy & Associates 2018) indicate soils are relatively shallow across the majority of the study area. These reports describe slopes up to 17% and shallow rocky soils at the site with personal accounts from neighbouring properties of poor farming soils.

In general terms, soils are usually described in horizons with Horizon A being topsoils, B - subsoils and C - parent material. Topsoils are generally considered the most fertile horizon of the soil profile whereby high organic matter is located. Topsoils are generally only 20-30cm in depth and are not considered suitable for construction purposes due to high organic matter content.

With consideration of available information, it is considered most likely, upper soils across the site is to be removed an average depth of 0.35m will be required. This site preparation is best described by Morrison Geotechnic (2018c):

> *This will most likely require the removal of the upper 0.1m to 0.35m of topsoil and disturbed slopewash soils which contain organics from crops across the site, but possibly up to about 1.0m where structures (houses/sheds) and large trees are located as well as in areas where cultivation has been carried out to form small drainage bunds.*

3 Growing Media

To assist in determining the value of the topsoils of the site as growing media, historical aerial photographs from 1944, 1947, 1962, 1972, 1985, 1987 and 2000 were reviewed. Recent imagery from Google Earth were also reviewed. The Study Area appeared cleared in 1944 and 1947.

However, no evidence of cropping was observed. The 1962 image indicated possible cropping of the Study Area. Although not definitive, internal access ways seemed apparent along with some indication of the delineation of cells or paddocks. By 1972 and subsequent imagery, cropping across the majority of the Study Area was apparent. The Study Area appears to be divided into a number of cells or paddocks with variations on their layouts throughout this 46 year period (i.e. 1972 to 2018) at the site.

Recent assessments (e.g. Agricultural Risk Consulting Group 2018) indicate the Study Area was predominantly used for Sweet Potato production. During the 56 year cropping history, it is considered a wide range of vegetable and horticultural crops were grown. Based on the images from 1985 and 1987, an area in the northern section appears to be a tree crop. The changing size, shape and layout of cells/paddocks through the time period further indicate a range of crops were grown.

The site is located on the Cudgen plateau, an area of known highly productive agricultural lands due predominantly to the rich red volcanic soils which can support a range of vegetable and horticultural crops. The historical imagery supports this hypothesis whereby the continual use of the site for cropping has an indicative basis for the presence of rich (fertile) soils.

However, the Study Area while located on the plateau is located on the north-eastern extremity. Based on recent assessments, soils of the Study Area are shallow and rocky thereby decreasing the value of the soils as a growing media.

Works completed by Octief (2018) were for the purposes of identifying contamination at the site. That is, laboratory testing for soil fertility was not undertaken. As such, no definitive data is available to make an assessment on the fertility of the soil.

It is surmised that the red volcanic soils located at the site would be relatively fertile and would provide a good basis for growing media. However, long-term cultivation may had lead to a reduction of nutrients at the site. Fertiliser use should have prevented large losses of nutrients, however, without laboratory data no conclusion can be made.

To assist in determining the value of excess soils from the development of the site and for determining some appropriate end uses of the material, further details on soil fertility attributes would be required. That is, if deemed a potential end use and prior to the commencement of bulk earthworks, an appropriate soil sampling and laboratory analysis program could be completed to obtain additional data on soil fertility properties. Testing completed could included a basic range of properties or a more extensive range such as:

- pH
- Electrical Conductivity (EC) (1:5 water);
- Available (Calcium, Magnesium, Potassium, Ammonium, Nitrate, Phosphate, Sulfur);
- Exchangeable (Sodium, Potassium, Calcium, Magnesium, Hydrogen, Aluminium, Cation Exchange Capacity);

- Bray I and II Phosphorus; Colwell Phosphorus;
- Available Micronutrients (Zinc, Manganese, Iron, Copper, Boron, Silicon);
- Total Carbon (TC), Total Nitrogen (TN), Organic Matter, TC/TN Ratio;
- Basic Colour, Basic Texture; and
- Totals (Sodium, Potassium, Calcium, Magnesium, Sulfur, Phosphorus, Silicon, Cobalt, Molybdenum, Selenium, Zinc, Manganese, Iron, Copper, Boron and Aluminium)

The presence of rock is noted by Agricultural Risk Consulting Group (2018). However, during bulk earthworks, it is plausible that screening of top soils could occur to remove rock. Materials may also be considered suitable for mixing with other organic materials if sold to a Landscape supply business at the completion of additional investigations. Removal of any excess materials is required to meet strict guidelines and is discussed below.

4 Areas of Concern - Contamination

Octief (2018) completed a Preliminary And Detailed Site Investigation. The investigations undertaken by Octief were independently audited by an external auditor (JBS&G) to inform a Site Audit Report (note: interim audit advice was only available at time of writing). Octief (2018) collected 6 composite samples in a preliminary assessment and an additional 49 composite samples in a detailed assessment. Thereby a total of 220 individual samples. Of these, it is understood 28 samples were collected from targeted locations (e.g. shed, farm dump). The remaining samples were collected across the Investigation Area with the following criteria:

- 16 samples (4 composite) per hectare in cultivated areas within Project footprint; and
- 8 samples (2 composite) per hectare in cultivated areas outside Project footprint.

The project footprint is described as being 6.5ha in the southern portion of the site (Octief 2018). This appears to only cover the portion of the proposal for the hospital building. At the time of writing, additional sampling is understood to be being completed.

Based on the information reviewed and experience by the author of this report, it is considered Octief (2018) has identified the most probable areas of concern on the site with the exception of one (see below). That is, the cultivation areas have been in use for over 50 years. As such the use of fertilisers and pesticides are considered to have been used in a similar pattern by individual land owners during this period. In addition, the regular cultivation of the area is likely to have vertically mixed and/or spread any such products in a uniform pattern across the area.

The main areas of concern are as Octief (2018) have identified:

- main site shed;
- vehicle shed;

- farm dump; and
- dam pump house.

However, as indicated above, a Area of Concern appears to remain. At the time of writing, sampling around the existing dwelling has not been undertaken. No photographs are available of the dwelling through this desk-top review to determine the age of the dwelling. However, the 1944 historical image (Octief 2018) and a 1947 image held by Melaleuca Group was reviewed. A building is observed in the 1947 image. It is surmised this is the dwelling located on the site today. Thereby given the age of the dwelling it is considered likely it was painted in Lead-based paints at some point. In addition, organochlorine termiticides may also have been used in proximity to the building. In addition, the dwelling may also contain Asbestos materials. Without soil sampling in the vicinity of the building and an inspection of the building, it is not known if any Contaminants of Concern would be located in this area. Therefore, it is recommended that additional sampling occur.

The analytical suite completed by Octief (2018) is considered comprehensive and suitable for a SEPP55 assessment. The results generally indicate no Contaminants of Concern were identified on the site based on Residential Health-based Investigation Limits (i.e. most stringent assessment level). The exception was an area adjacent to the chemical storage/equipment shed where Asbestos material was located. A excerpt from the conclusion of Octief (2018) summarises findings:

> *Based on the scope of works carried out, the objectives outlined above and subject to the limitations set out in this report the following conclusions are made:*
>
> - *No exceedances of relevant human health investigation levels for chemical contaminants were identified. Exceedances of ecological assessment criteria are relatively minor and isolated, and the site is considered acceptable for use in the Project, from a chemical contamination perspective.*
> - *ACM was identified in the area around the western side of the chemical storage/equipment shed, Soil results indicate Asbestos fines in the soil and the ACM identified on the surface was moderately degraded presenting a potential risk to human health if disturbed.*
> - *Anthropogenic wastes were noted in a small farm dump in the north western corner of the site, visual assessment and soil analytical testing indicate the material in this area is inert waste, however some portions of the dump could not be assessed during the PSI/DSI due to vegetation growth.*
> - *OCTIEF considers that the works undertaken at the site have sufficiently characterised the site to enable assessment as suitable for the SSD application subject to implementation of a Remediation Action Plan as recommended below.*
>
> *Based on the investigations carried out and our current understanding of the Project, OCTIEF recommends that:*
>
> - *A Remediation Action Plan (RAP) be developed for the area of asbestos impacted soil on the western side of the main site shed. The RAP should be prepared in accordance with*

SEPP 55 and relevant NSW guidelines and legislation and include appropriate protocols for removal and appropriate disposal of all remaining ACM associated with the main shed.

Thereby, the only addition to this conclusion is the requirement to complete investigations in the vicinity of the dwelling of the site. If Contaminants of Concern are located, it is Melaleuca Group's experience that usually impacted soils are limited to those immediately surrounding the dwelling and are of shallow depth. Thereby, remediation is usually relatively easily managed through an appropriate RAP. In general, remediation actions usually involve the excavation and removal of impacted soils to a local licensed landfill. Validation of these areas then follows to ensure any impacted soils (materials) have been removed and no further risk to future landusers would occur.

While investigations to date generally provide an indication no extensive Areas of Concern have been identified, unexpected finds are possible. Thereby, any works within the following areas should be completed with caution and follow an unexpected finds protocol:

- dwelling;
- main site shed;
- vehicle shed;
- farm dump; and
- dam pump house.

5 Options for reuse of excess natural materials

It is understood that there is likely to be excess soils produced by the proposal. In general, it is surmised the majority of such soils would consist of the topsoils of the site that are not suitable for construction. While one option is to remove excess soils to the local landfill, the quantity of soils would indicate reuse options should be investigated.

Based on information available, the soils while potentially containing some rock, are likely to be fertile soils that could be used for a range of applications. However, exporting soils from sites need to ensure they are certified as suitable materials for the proposed use. In addition, the destination site needs to be approved for accepting such materials. For the latter, these are often easily located as many development sites require fill and thereby are approved to remove materials through a Development Application process.

Ideally the VENM (Virgin Excavated Natural Materials) process would prove the most efficient means of certifying materials on the site. However, on review of the history of the site only small areas are likely to meet the requirements of VENM. That is, areas need to be considered 'Virgin excavated'. As the majority of the site has been under continual cultivation for over 50 years, it is considered that this definition would not be met. However, with further investigations, soils underlying the topsoils may be able to meet this definition. That is, it is considered cultivation is likely to have been regularly to 20-30cm in depth. This is considered to be the normal tilling depth for a range of vegetable and horticultural crops. While it is possible some deep ripping could have occurred on the

site, as this is a relatively expensive activity, it is considered unusual and the process breaks through rocky subsoils rather than excavates or mixes.

A further consideration is any soils removed from the site need to be tracked for a period of 6 years by both the supplier (Health Infrastructure) and the receiver(s) (unknown at this stage) under the relevant tracking documentation (S143 notice).

Thereby it is considered three (3) options may be available from excess soils from the site. However further investigations and documentation is required for each option. These options include:

- Virgin Excavated Natural Materials (VENM);
- Excavated Natural Materials (ENM); and
- Specific Resource Recovery Order (RRO).

Virgin Excavated Natural Materials (VENM)

As discussed above, VENM is considered unlikely for the majority of materials at this site. However, for large cuts, it is considered discussions with NSW EPA should be held to explore this option. For areas of VENM, the essential criteria is to demonstrate the material has not been disturbed and/or excavated. It is considered plausible that small areas of the site may meet this criteria. These areas are considered small and limited to the periphery of the site. Other such material are considered those at depth. Historical landuses is cultivation whereby only the upper soils would have been disturbed on a regular basis. Once completed, an examination of the Bulk Earthworks plans may identify areas that could demonstrate no disturbance. These would be areas with deep excavation requirements (e.g. ≥0.5m). However, it is considered once identified, liaison with NSW EPA is undertaken for concurrence. While soil sampling and analysis is usually minimal or not required once virgin excavation is demonstrated, some validation testing may be required after the removal of upper soil layers.

Excavated Natural Materials (ENM)

The ENM process is well defined and should follow that prescribed in the The excavated natural material order 2014. This order prescribes the number of samples requiring collections (i.e. 11 samples per hectare in a systematic grid with sample points no greater than 30.2m or options for sampling based on stockpile size). Further this order prescribes the analytical suite required. The ENM order is provided in Appendix A for convenience.

The ENM process also prescribes maximum average and maximum concentrations for a range of Contaminants of Concern (CoCs). It is advised a full review of all sampling locations and testing is completed with regard to the ENM process. Ideally this would be completed after the finalisation of bulk earthworks modelling and prior to excavation of any materials. While an option would be to excavate materials and stockpile on the site, it is more difficult to sample effectively within stockpiled materials and the number of samples require is generally seen to be greater than that for *in situ* soils.

Specific Resource Recovery Order (RRO)

A third option for materials at the site is to apply for a specific Resource Recovery Order (RRO) with NSW EPA. Similar to the ENM process, the RRO has specific guidelines for its assessment. These

have been provided for convenience in Appendix B. This process may be more suitable on the basis of investigations to date with particular regard to the number and location of samples. Similar to the ENM process, a list of commonly tested CoCs is prescribed. The number of samples required is 20 composite samples and given the assessment to date, the information may be considered sufficient for NSW EPA to release a RRO. As prescribed by this process, the first step would be to liaise with NSW EPA to determine if this would be an appropriate pathway.

6. Discussion and Conclusion

Melaleuca Group Pty Ltd has been commissioned by Health Infrastructure to prepare preliminary advice for soil management for 771 Cudgen Rd, Cudgen NSW 2487 to allow for the proposed construction of the Tweed Valley Hospital at the site.

The investigation was completed using desktop resources only. This assessment was to provide advice on:

- a best estimate of topsoil depth (based on available information);
- soil characterisation for growing media (based on available information);
- areas of concern on the site where soil remediation is required due to identified contamination concerns; and
- opportunities for soils to be classified as ENM (Excavated Natural Materials) or VENM (Virgin Excavated Natural Materials) and the required processes to achieve these.

It is considered that topsoil depth would be variable across the site. Based on completed assessments, it is considered the average depth along with the average required topsoils to be removed will be between 0.1 to 0.35m (Morrison Geotechnic 2018c). On examination of data, it is surmised average depths of upper soils is more likely to be approximately 0.35m. Some variations will occur with Morrison Geotechnic (2018c) advising up to 1m will require removal.

In general, it is considered the soils are fertile Red Krasnozems. This characteristic along with the higher organic matter usually found in topsoils, would indicate a relatively valuable resource. However, assessments to date have noted rockiness. This could be corrected by screening during bulk earthworks. Further investigations would be required to demonstrate the financial viability of completing this. Of further note is the long-term cultivation of the site and lack of soil fertility testing. Long-term cultivation may have lead to severe deficiencies within the soil despite the usual classification of the *Cudgen* soil landscape. Additional sampling and testing would enable full characteristics of the soil to be obtained for this component.

Not all soil at the site would be suitable for reuse. The contamination assessment (Octief 2018) have identified a number of areas of concern. Areas around buildings are the most notable area to avoid. A review of documentation has indicated no assessment has been completed in the vicinity of the dwelling. This would need to be completed prior to final delineation of Areas of Concern. These areas should be clearly delineated on plans and on-ground. Any soils located within Areas of Concern should be managed appropriately and if required under a RAP.

While resource recovery/reuse is desired, avoidance should be the highest priority. Any bulk earthworks plans should aim to minimise excess materials for the proposal. The retention of soils

not impacted by contamination is to occur where possible and the processes for retaining such soils on the site is not onerous. However, removal of excess soils need to meet rigorous processes. As described above a number of options or combinations may be plausible for excess materials from the proposal. On the completion of bulk earthworks planning, it is advised a suitably qualified consultant completes a review of the plans to assist in determine the most appropriate handling of soils at the site. Further, some assessments are required to determine appropriate uses for the excess material. Some further geotechnical assessments may be warranted as organic matter may not be high and thereby some of the material may be useful as engineering fill. Conversely, additional studies may allow for the segregation of materials with high organic matter and nutrients which may be used for landscaping purposes. In addition, liaison with NSW EPA should occur to determine appropriate end uses and required documentation for the excess soils.

7. References

Agricultural Risk Consulting Group (2018). Report - Agricultural Impact -Tweed Valley Hospital On Instructions from TSA Management.

Council of Standards Australia (2005). AS 4482.1-2005 Guide to the sampling and investigation of potentially contaminated soil – Non-volatile and semi-volatile compounds. Council of Standards Australia, 50p.

Department of Urban Affairs and Planning and the Environment Protection Authority (1998). Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land.

DPI (2004) NSW Coastal Quaternary Geology Data.

JBS&G Australia Pty Ltd (2019). Interim Audit Advice dated 24th January 2019.

Morand, D.T. (1996). Soil Landscapes of the Murwillumbah-Tweed Heads 1:100000 Sheet.

Morrison Geotechnic (2018a). Preliminary Geotechnical Investigation Proposed Tweed Valley Hospital Lot 102 on DP870722 Cudgen Road Kingscliff.

Morrison Geotechnic (2018b). Geotechnical Investigation Proposed Sediment Basins Proposed Tweed Valley Hospital Lot 102 on DP870722 Cudgen Road Kingscliff.

Morrison Geotechnic (2018c) Additional Geotechnical Investigation Proposed Sediment Basins Proposed Tweed Valley Hospital Lot 102 on DP870722 Cudgen Road Kingscliff.

NEPC (1999). Schedule B (1) Guidelines on the Investigation Levels for Soil and Groundwater. National Environmental Protection, Assessment of Site Contamination.

NEPC (2013). Schedule B7 Guideline on Health-Based Investigation Levels.

Northern Rivers Regional Council (NRRC) (2007). Regional Policy for the Management of Contaminated Land.

NSW DEC (2006). Contaminated Sites – Guidelines for the NSW Site Auditor Scheme. NSW DEC, Sydney South, 85p.

NSW DECC (2008). Waste Classification Guidelines. Part 1 Classifying Waste.

NSW EPA (1995). Contaminated Sites – Sampling Design Guidelines. NSW EPA, Chatswood, 35p.

NSW EPA (1997). Guidelines for Consultants Reporting Contaminated Sites. NSW EPA, Chatswood, 22p.

NSW Office of Environment and Heritage (2011) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites.

Octief 10th August (2018). Soil Sampling Analysis And Quality Plan 771 Cudgen Road, Cudgen, NSW Version 2.0

Octief 17th October (2018). Preliminary And Detailed Site Investigation – 771 Cudgen Road, Cudgen, NSW 2487.

Tim Fitzroy & Associates (2018). Land Use Conflict Risk Assessment (LUCRA) - Mixed Agricultural Use on Proposed Tweed Valley Hospital Lot 102 DP 870722 Cudgen Rd, Cudgen.

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Appendices

Appendix A: The excavated natural material order 2014

Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The excavated natural material order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of excavated natural material to which 'the excavated natural material exemption 2014' applies. The requirements in this order apply in relation to the supply of excavated natural material for application to land as engineering fill or for use in earthworks.

1. Waste to which this order applies

1.1. This order applies to excavated natural material. In this order, excavated natural material means naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:

a) been excavated from the ground, and
b) contains at least 98% (by weight) natural material, and
c) does not meet the definition of Virgin Excavated Natural Material in the Act.

Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, Acid Sulfate Soils (ASS), Potential Acid Sulfate soils (PASS) or sulfidic ores.

2. Persons to whom this order applies

2.1. The requirements in this order apply, as relevant, to any person who supplies excavated natural material, that has been generated, processed or recovered by the person.

2.2. This order does not apply to the supply of excavated natural material to a consumer for land application at a premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

3. Duration

3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Generator requirements

The EPA imposes the following requirements on any generator who supplies excavated natural material.

Sampling requirements

4.1. On or before supplying excavated natural material, the generator must:

4.1.1. Prepare a written sampling plan which includes a description of sample preparation and storage procedures for the excavated natural material.

4.1.2. Undertake sampling and testing of the excavated natural material as required under clauses 4.2, 4.3, and 4.4 below. The sampling must be carried out in accordance with the written sampling plan.

4.2. The generator must undertake sampling and analysis of the material for ASS and PASS, in accordance with the NSW Acid Sulfate Soil Manual, Acid Sulfate Soils Management Advisory Council, 1998 and the updated Laboratory Methods Guidelines version 2.1 – June 2004 where:

4.2.1. the pH measured in the material is below 5, and/or

4.2.2. the review of the applicable Acid Sulfate Soil Risk Maps (published by the former Department of Land and Water Conservation and available at http://www.environment.nsw.gov.au/acidsulfatesoil/riskmaps.htm) indicates the potential presence of ASS.

4.3. For stockpiled material, the generator must:

4.3.1. undertake sampling in accordance with Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent);

4.3.2. undertake characterisation sampling by collecting the number of samples listed in Column 2 of Table 1 with respect to the quantity of the waste listed in Column 1 of Table 1 and testing each sample for the chemicals and other attributes listed in Column 1 of Table 4. For the purposes of characterisation sampling the generator must collect:

4.3.2.1. composite samples for attributes 1 to 10 and 18 in Column 1 of Table 4.

4.3.2.2. discrete samples for attributes 11 to 17 in Column 1 of Table 4.

4.3.2.3. The generator must carry out sampling in a way that ensures that the samples taken are representative of the material from the entire stockpile. All parts of the stockpile must be equally accessible for sampling.

4.3.2.4. for stockpiles greater than 4,000 tonnes the number of samples described in Table 1 must be repeated.

4.3.3. store the excavated natural material appropriately until the characterisation test results are validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 4 and the absolute maximum concentration or other value listed in Column 3 of Table 4.

Table 1

Sampling of Stockpiled Material		
Column 1	**Column 2**	**Column 3**
Quantity (tonnes)	**Number of samples**	**Validation**
<500	3	Required
500 – 1,000	4	
1,000 – 2,000	5	
2,000 – 3,000	7	
3,000 – 4,000	10	

4.4. For in situ material, the generator must:

4.4.1. undertake sampling by collecting discrete samples. Compositing of samples is not permitted for in-situ materials.

4.4.2. undertake characterisation sampling for the range of chemicals and other attributes listed in Column 1 of Table 4 according to the requirements listed in Columns 1, 2 and 3 of Table 2. When the ground surface is not comprised of soil (e.g. concrete slab), samples must be taken at the depth at which the soil commences.

4.4.3. undertake sampling at depth according to Column 1 of Table 3.

4.4.4. collect additional soil samples (and analyse them for the range of chemicals and other attributes listed in Column 1 of Table 4), at any depth exhibiting discolouration, staining, odour or other indicators of contamination inconsistent with soil samples collected at the depth intervals indicated in Table 3.

4.4.5. segregate and exclude hotspots identified in accordance with Table 2, from material excavated for reuse.

4.4.6. subdivide sites larger than 50,000 m² into smaller areas and sample each area as per Table 2.

4.4.7. store the excavated natural material appropriately until the characterisation test results are validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 4 and the absolute maximum concentration or other value listed in Column 3 of Table 4.

Table 2

In Situ Sampling at surface				
Column 1	**Column 2**	**Column 3**	**Column 4**	**Column 5**
Size of *in situ* area (m^2)	**Number of systematic sampling points recommended**	**Distance between two sampling points** (m)	**Diameter of the hot spot that can be detected with 95% confidence** (m)	**Validation**
500	5	10.0	11.8	Required
1000	6	12.9	15.2	
2000	7	16.9	19.9	
3000	9	18.2	21.5	
4000	11	19.1	22.5	
5000	13	19.6	23.1	
6000	15	20.0	23.6	
7000	17	20.3	23.9	
8000	19	20.5	24.2	
9000	20	21.2	25.0	
10,000	21	21.8	25.7	
15,000	25	25.0	28.9	
20,000	30	25.8	30.5	
25,000	35	26.7	31.5	
30,000	40	27.5	32.4	
35,000	45	27.9	32.9	
40,000	50	28.3	33.4	
45,000	52	29.3	34.6	
50,000	55	30.2	35.6	

Table 2 has been taken from NSW EPA 1995, *Contaminated Sites Sampling Design Guidelines*, NSW Environment Protection Authority.

Table 3

In Situ Sampling at Depth	
Column 1	**Column 2**
Sampling Requirements *	**Validation**
1 soil sample at 1.0 m bgl from each surface sampling point followed by 1 soil sample for every metre thereafter. From 1.0 m bgl, sample at the next metre interval until the proposed depth of excavation of the material is reached. If the proposed depth of excavation is between 0.5 to 0.9 m after the last metre interval, sample at the base of the proposed depth of excavation.	Required if the depth of excavation is equal to or greater than 1.0 m bgl

* Refer to Notes for examples

Chemical and other material requirements

4.5. The generator must not supply excavated natural material waste to any person if, in relation to any of the chemical and other attributes of the excavated natural material:

4.5.1. The chemical concentration or other attribute of any sample collected and tested as part of the characterisation of the excavated natural material exceeds the absolute maximum concentration or other value listed in Column 3 of Table 4:

4.5.2. The average concentration or other value of that attribute from the characterisation of the excavated natural material (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 4.

4.6. The absolute maximum concentration or other value of that attribute in any excavated natural material supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 3 of Table 4.

Table 4

Column 1	Column 2	Column 3
Chemicals and other attributes	**Maximum average concentration for characterisation** (mg/kg 'dry weight' unless otherwise specified)	**Absolute maximum concentration** (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	1
2. Cadmium	0.5	1
3. Lead	50	100
4. Arsenic	20	40
5. Chromium (total)	75	150
6. Copper	100	200
7. Nickel	30	60
8. Zinc	150	300
9. Electrical Conductivity	1.5 dS/m	3 dS/m
10. pH *	5 to 9	4.5 to 10
11. Total Polycyclic Aromatic Hydrocarbons (PAHs)	20	40
12. Benzo(a)pyrene	0.5	1
13. Benzene	NA	0.5
14. Toluene	NA	65
15. Ethyl-benzene	NA	25
16. Xylene	NA	15
17. Total Petroleum Hydrocarbons C_{10}-C_{36}	250	500
18. Rubber, plastic, bitumen, paper, cloth, paint and wood	0.05%	0.10%

* The ranges given for pH are for the minimum and maximum acceptable pH values in the excavated natural material.

Test methods

4.7. The generator must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.

4.8. The generator must ensure that the chemicals and other attributes (listed in Column 1 of Table 4) in the excavated natural material it supplies are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.

4.8.1. Test methods for measuring the mercury concentration.

4.8.1.1. Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated absolute maximum concentration in Column 3 of Table 2 (i.e. < 0.20 mg/kg dry weight).

4.8.1.2. Report as mg/kg dry weight.

4.8.2. Test methods for measuring chemicals 2 to 8.

4.8.2.1. Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils (or an equivalent analytical method).

4.8.2.2. Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of the stated absolute maximum concentration in Column 3 of Table 2, (e.g. 10 mg/kg dry weight for lead).

4.8.2.3. Report as mg/kg dry weight.

4.8.3. Test methods for measuring electrical conductivity and pH.

4.8.3.1. Sample preparation by mixing 1 part excavated natural material with 5 parts distilled water.

4.8.3.2. Analysis using Method 103 (pH) and 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.8.3.3. Report electrical conductivity in deciSiemens per metre (dS/m).

4.8.4. Test method for measuring Polynuclear Aromatic Hydrocarbons (PAHs) and benzo(a)pyrene.

4.8.4.1. Analysis using USEPA SW-846 Method 8100 Polynuclear Aromatic Hydrocarbons (or an equivalent analytical method).

4.8.4.2. Calculate the sum of all 16 PAHs for total PAHs.

4.8.4.3. Report total PAHs as mg/kg dry weight.

4.8.4.4. Report benzo(a)pyrene as mg/kg.

4.8.5. Test method for measuring benzene, toluene, ethylbenzene and xylenes (BTEX).

4.8.5.1. Method 501 (Volatile Alkanes and Monocyclic Aromatic Hydrocarbons) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.8.5.2. Report BTEX as mg/kg.

4.8.6. Test method for measuring Total Petroleum Hydrocarbons (TPH).

4.8.6.1. Method 506 (Petroleum Hydrocarbons) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).

4.8.6.2. Report as mg/kg dry weight.

4.8.7. Test method for measuring rubber, plastic, bitumen, paper, cloth, paint and wood.

4.8.7.1. NSW Roads & Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Concrete (or an equivalent method).

4.8.7.2. Report as percent.

Notification

4.9. On or before each transaction, the generator must provide the following to each person to whom the generator supplies the excavated natural material:

- a written statement of compliance certifying that all the requirements set out in this order have been met;
- a copy of the excavated natural material exemption, or a link to the EPA website where the excavated natural material exemption can be found; and
- a copy of the excavated natural material order, or a link to the EPA website where the excavated natural material order can be found.

Record keeping and reporting

4.10. The generator must keep a written record of the following for a period of six years:

- the sampling plan required to be prepared under clause 4.1.1;
- all characterisation sampling results in relation to the excavated natural material supplied;
- the volume of detected hotspot material and the location;
- the quantity of the excavated natural material supplied; and
- the name and address of each person to whom the generator supplied the excavated natural material.

4.11. The generator must provide, on request, the characterisation and sampling results for that excavated natural material supplied to the consumer of the excavated natural material.

5. Definitions

In this order:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

Bgl means below ground level, referring to soil at depth beneath the ground surface.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply excavated natural material to land.

discrete sample means a sample collected and analysed individually that will not be composited.

generator means a person who generates excavated natural material for supply to a consumer.

hotspot means a cylindrical volume which extends through the soil profile from the ground surface to the proposed depth of excavation, where the level of any contaminant listed in Column 1 of Table 2 is greater than the absolute maximum concentration in Column 3 of Table 2.

***in situ* material** means material that exists on or below the ground level. It does not include stockpiled material.

***in situ* sampling** means sampling undertaken on *in situ* material.

N/A means not applicable.

stockpiled material means material that has been excavated from the ground and temporarily stored on the ground prior to use.

systematic sampling means sampling at points that are selected at even intervals and are statistically unbiased.

transaction means:

- in the case of a one-off supply, the supply of a batch, truckload or stockpile of excavated natural material that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of excavated natural material, the first supply of excavated natural material as required under the arrangement.

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(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on ' www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies excavated natural material should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of excavated natural material remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet. Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.

Examples

In situ sampling at depth

Example 1.

If the proposed depth of ENM excavation is between 1 m bgl and 1.4 m bgl, then:

- 1 sample on surface (as per the requirements of Table 2).
- 1 sample at 1 m bgl.
- No further depth sampling after 1 m bgl, unless required under section 4.4.4.

Example 2.

If the proposed depth of ENM excavation is at 1.75 m bgl, then:

- 1 sample on surface (as per the requirements of Table 2).
- 1 sample at 1 m bgl.
- 1 sample at 1.75 m bgl.
- No further depth sampling after 1.75 m bgl, unless required under section 4.4.4.

Example 3.

If the proposed depth of ENM excavation is at 2.25 m bgl, then:

- 1 sample on surface (as per the requirements of Table 2).
- 1 sample at 1 m bgl.
- 1 sample at 2 m bgl.
- No further depth sampling after 2 m bgl, unless required under section 4.4.4.

Appendix B: Guidelines on resource recovery Orders and Exemptions

Guidelines on resource recovery Orders and Exemptions

For the land application of waste materials as fill

NSW EPA

www.epa.nsw.gov.au

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Fill materials are a valuable resource that play a pivotal role in the construction and infrastructure sectors, and are fundamental to the growth and prosperity of the NSW economy.

The EPA encourages the recovery of resources from waste to be used as fill where this is beneficial and poses minimal risk of harm to the environment or human health.

Introduction

The proper assessment and characterisation of wastes that are intended for land application as fill are key to protecting not only the environment and human health, but also to protecting the current and potential future uses of land on which waste is applied.

The recovery of waste materials for use as fill is a re-use pathway and must not be mistaken for disposal or landfilling activities.

Many waste materials are not appropriate for land application as they may contain contaminants that cause significant environmental and / or commercial liabilities. Preventing the degradation of soils physically, chemically and biologically is part of managing the potential risks of using waste materials as fill. This includes preventing the build-up of potentially harmful persistent chemicals and the contamination of soil, and ground and surface water.

Regulatory framework

The key legislative instruments for the regulation of waste in NSW are the *Protection of the Environment Operations Act 1997* (POEO Act) and the *Protection of the Environment Operations (Waste) Regulation 2014* (Waste Regulation). Both contain provisions for the management, storage, transport, processing, recovery and disposal of waste.

The land application of waste (as defined in the POEO Act) may trigger various regulatory requirements, such as the need to hold an environment protection licence and to pay a waste levy. In some cases, however, the EPA has the power to give exemptions from certain regulatory requirements that would otherwise apply to the land application of a material that is produced wholly or partly from waste.

The types of exemptions relating to resources recovered from waste (also referred to as 'resource recovery wastes') are specified in clause 92 of the Waste Regulation. They include the re-use of wastes that are: applied to land; used as fuel; or are used in connection with a process of thermal treatment.

A number of recovered waste materials are already approved to be re-used for fill purposes. These existing exemptions are available on the EPA website.

This guideline details the application process for the reuse of other waste types for the purpose of land application as fill.

PART A: Applying for a resource recovery Order and resource recovery Exemption

The regulatory framework for resources recovered from waste may apply in different ways depending on the circumstances of your case.

Applicants are strongly encouraged to discuss their proposal with the EPA prior to commencing work on an application.

Applicants are also advised to consult, where necessary, with other relevant consent authorities regarding the proposal prior to submitting an application.

For any queries or to discuss your proposal, please contact the EPA's Environment Line on 131 555 or email waste.exemptions@epa.nsw.gov.au

The resource recovery framework

Under the provisions of the Waste Regulation, the EPA issues two documents: resource recovery orders (Orders) and resource recovery exemptions (Exemptions). These documents focus on different parts of the waste re-use supply chain and are released as a package. The subject of an Order and Exemption is called a 'resource recovery waste' in the Waste Regulation and this refers to the specific resource recovered from waste.

Orders: for suppliers of the waste

Orders contain the conditions that *generators* and *processors* of waste must meet to legally supply the resource recovery waste material for land application. These conditions may include material specifications, processing specifications, record-keeping, reporting and other requirements. All Orders are made under clause 93 of the Waste Regulation.

Exemptions: for consumers of the waste

Exemptions contain the conditions that *consumers* must meet to use resource recovery waste for application to land as fill. These conditions may include requirements regarding how to reuse or apply the waste, as well as record-keeping, reporting and other requirements. All Exemptions are made under clauses 91 and 92 of the Waste Regulation.

Your responsibilities

Orders and Exemptions provide both the significant responsibility and benefit of being 'excused' from some of the legal obligations relating to the application of waste to land. They may release the consumer of a specific waste from certain parts of the waste regulatory framework. Orders and Exemptions do not release those using them from any other relevant regulatory controls, such as the requirement to obtain planning consents or approvals from the appropriate regulatory authority.

The land application of a resource recovery waste remains subject to all other relevant environmental regulations, such as the special requirements relating to asbestos waste (Part 7 of the Waste Regulation) and pollution offences under the POEO Act. You need to exercise care to prevent pollution and risks to human health across all aspects of your activities. For example, if an offence is committed

under the POEO Act, such as the pollution of waters (section 120), complying with the conditions of an Exemption will not be a defence by itself.

The existence of an Order and Exemption is not an endorsement of the resource recovery waste or its performance. Generators or processors need to ensure that their waste material is produced to a specification, and that its use is limited to appropriate applications and application rates so as to ensure it does not cause harm to the environment or human health. Suppliers must also exercise due diligence to ensure that consumers of their waste material use it in accordance with the specified conditions of the Exemption.

Consumers of the resource recovery waste must comply with the conditions of use set out in the Exemption. Penalties apply for the land application of non-compliant waste.

The information provided here regarding your responsibilities under the legislative framework in NSW is a simple overview to provide context. It should not be used as a substitute for legal advice.

Public information

The EPA can issue an Order and Exemption in two ways, either:

i to a "specified person" or "specified class of persons", by written notice; or

ii to non-specified persons, by publication in the NSW Government gazette.

In cases that involve "specified persons", the notices will not be publicly available. Examples of "specified persons" include cases where specific companies are identified as the sole generator or processor of a waste material; or where specific companies or receiving sites are identified as the sole consumer. This is largely to protect commercial-in-confidence process information. Reference to these approvals may, however, appear on the EPA website to inform the public of the existing approvals.

Where an Order and Exemption do not pertain to specified persons, the notices must be published in the NSW Government Gazette, and will also appear on the EPA's website. In most other cases, a generated waste type will have a corresponding Order and Exemption on the EPA's website. These are available for general use by anyone that can comply with the conditions of use. Existing Orders and Exemptions that are currently in force are available on the EPA website.

Approval periods

Orders and Exemptions that are issued to a "specified person or class of persons" will be issued for a reasonable period during which the material must be used. Depending on the circumstance, Orders and Exemptions for an ongoing process will be typically issued for a period of 2 years. After this time, the applicant may apply to the EPA for a re-issue of the Order and Exemption. The EPA will subsequently review the conditions of the Order and Exemption (including compliance with the requirements) prior to re-issuing the Order and Exemption.

Orders and Exemptions issued for general use are valid until the EPA amends or revokes them.

Assessment criteria

Before you start your application, check if an Order and Exemption currently exists for your intended use of a waste material by visiting the EPA website.

If an Order and Exemption is not currently available for your intended use, you can apply to the EPA for one specific to your operations. We strongly recommend that you discuss your proposal with the EPA before you begin the application process by contacting the EPA's Environment Line on 131 555 or by email to waste.exemptions@epa.nsw.gov.au

We also advise you to consult with other consent authorities before you submit your application, such as the local Council or Planning Authority.

Applicants that wish to apply for an Order and Exemption for the land application of a waste as fill must follow this guideline and demonstrate that the waste material:

- is fit for purpose in its proposed use;

- poses minimal risk of harm to the environment or human health; and
- is not intended to be land applied as a means of disposal (i.e. a landfilling activity).

Applicants must also ensure the waste material proposed for land application meets **all of the criteria** outlined below, prior to applying for an Order and Exemption.

Note: Exemptions will not be made retrospectively i.e. after the waste has already been applied to land.

The criteria against which the EPA will assess applications are:

a). Legitimacy of the proposed use for the waste material

A key consideration in assessing an application is whether, in light of the three criteria below, the proposed use of the waste is a genuine re-use opportunity rather than simply a method of opportunistic waste disposal.

b). Consistency with the waste management hierarchy

The recovery of resources via land application can benefit the environment and the community by reducing reliance on virgin resources and increasing the return of materials to the economy that may otherwise end up in landfill.

Under the *Waste Avoidance and Resource Recovery Act 2001*, the appropriate management of waste is considered against the following priorities in descending order:

1. **Avoidance** – with the aim of reducing the amount of waste generated by households, industry and all levels of government
2. **Resource recovery** – with the aims of re-using, reprocessing, recycling and recovering energy from waste, consistent with the most efficient use of the recovered resources
3. **Disposal** – with the aim of managing all disposal options in the most environmentally responsible manner.

The EPA discourages the land application of a waste material where there is the potential to avoid the generation of that material in the first place, or where higher order re-use opportunities are available and practicable for that material (e.g. waste that can be recycled into the same product or for the same original purpose rather than to be used as fill).

c). Minimisation of risks to the environment and human health

Many chemical, physical and biological contaminants may be present in waste materials that, when applied to land, could cause harm to the environment and human health.

The EPA will consider whether a waste material can be appropriately applied to land based on the type, concentration and nature of contaminants in the waste. As part of this assessment, it is necessary to identify any potentially harmful interactions between the contaminants in the waste material and the conditions of the proposed application site (for example, soil pH can influence the toxicity of some contaminants).

It is important to note that many waste materials are not suitable for land application. This is particularly the case where the land application of a recovered waste material will lead to the accumulation of potentially harmful persistent chemicals, salts or other potential corrosive components in a soil, that may adversely affect built structures or contaminate soils, ground and surface water.

Note: The EPA generally does not issue Orders and Exemptions for restricted solid or hazardous waste.

Using the right framework

Applicants should note that the objectives for the recovery and re-use of waste for land application are different to those for the management of contaminated sites. Several applicants have mistakenly overlooked this difference.

When assessing the suitability of waste materials for land application in the context of resource recovery, the EPA cautions against relying solely on health-based investigation levels (HILs), health-screening levels (HSLs), ecological investigation levels (EILs), ecological screening levels (ESLs), and site-specific risk assessments to demonstrate a waste is suitable for reuse in the context of resource recovery. In NSW, these investigation and screening levels, and site-specific risk assessments are supported by the contaminated land framework and the *Contaminated Land Management Act 1997*. They are used to assess if a site presents a risk to human health and the environment in relation to landuse.

The *National Environment Protection Measure (Assessment of site contamination) 1999* (Amended in 2013) ('NEPM') states (section 2.1.2 in Schedule B1) that:

"***investigation and screening levels are not… desirable soil quality criteria. The use of these levels in regulating emissions and application of wastes to soil is inappropriate."***

It also states:

"The inclusion of an investigation and screening level in this guidance should not be interpreted as condoning discharges of waste up to these levels."

Relying solely on investigation and screening levels to assess whether a waste can be reused for resource recovery purposes may result in spreading contaminated waste and contaminating land.

The policy objectives and considerations for the recovery and re-use of waste are very different to those used for the management of contaminated sites. The management of a contaminated site by its very nature is always reactive because the contamination has typically already occurred. The landowner, company, or person responsible for the contamination reacts to clean-up the site. On the other hand, the re-use of waste materials is proactive, precautionary and focussed on preventing land from being contaminated by the waste. It also focusses on ensuring the waste is viewed as a resource rather than a contaminated waste.

For these reasons, investigation and screening levels, and site-specific risk assessments should be used with care. Applicants should note the context of the framework that supports these tools and consider the objectives of the resource recovery framework.

d). Physical and chemical homogeneity of the waste material

The risk profile of a waste material is related to its chemical, physical and biological characteristics. Wastes that are inconsistent in composition, heterogeneous or obtained from a variety of sources are more difficult to characterise and potentially present greater risks.

The EPA does not support the land application of irregular, one-off batches of wastes, or of wastes that are blended to reduce the concentration of harmful contaminants. The consistency of waste streams needs to be considered in order to ensure potential contaminants will not vary over time. In practice, wastes are only likely to satisfy this criterion if they are produced in large quantities from a well-defined and consistent feedstock.

To ensure that potential contaminants are known, manageable and will not exceed appropriate concentrations over time, the applicant must be confident that the material is homogeneous with regard to its chemical and physical composition when considering the suitability of a waste material for land application.

PART B: Application format and information required

Before you start an application check the EPA website for existing Orders and Exemptions.

There may already be one that fits your proposed re-use of a waste as fill.

If you cannot meet all of the conditions of an existing Order and Exemption, then you may apply for your own exemption particular to your circumstances.

Please contact the EPA's Resource Recovery Innovation team to discuss your application by calling the EPA Environment Line on 131 555 or by emailing waste.exemptions@epa.nsw.gov.au.

Applicants seeking an Order and Exemption for the application of waste materials to land must submit an application in the format required by the EPA, as described in this document. The application format needs to be structured in the **eight sections** outlined below. An accompanying explanatory question is provided for each section to describe the information required.

Each section must be addressed. If any of the sections below are not applicable, the applicant must outline the reasons why this is the case.

The EPA may request further information from the applicant to inform its decision.

1. Contact details

Who is submitting the application?

2. Background information about the waste

What is the waste and what processes has it undergone?

3. Characterisation of the waste

What is the physical and chemical composition of the waste?

4. Mixing or blending of the waste

Is the waste to be mixed or blended with other materials?

5. Proposed use or application

What is the waste to be used for?

6. Information on the receiving environment

Where is the waste material to be applied?

7. Quality assurance and controls

What controls are in place to manage risks?

8. Specifications and standards

To what specification will the waste material be produced?

All applications **must be signed and dated** by the applicant and must be submitted electronically to:

Manager Waste Strategy and Innovation
NSW Environment Protection Authority
waste.exemptions@epa.nsw.gov.au

Applications submitted without a signature will not be considered. (**Note**: electronic signatures are acceptable).

Applicants should also be aware that in some cases the EPA may charge a fee for service to cover the costs related to the administration and assessment of an application for an Order and Exemption. The EPA will discuss any fee for service with the applicant prior to incurring the costs associated with this work.

The EPA aims to complete a preliminary assessment of each application within 4 weeks of its receipt. However**,** proponents should note that some applications may take more time to consider. For example, the EPA may need to consult with different areas within the agency, local government, other government agencies and external experts to make an informed decision on an application. Proponents should also note that final approval may require further criteria to be addressed, and should not be expected within the four-week preliminary assessment period.

1. Contact details

General administrative information is required by the EPA for an application to be considered. The required administrative information includes:

1. the applicant's details including, if relevant, the ACN and/or ABN
2. the representative or consultant's details, if relevant.

If the application is being made on behalf of another person, please provide the contact details of that person, including their ACN and/or ABN where applicable.

Identify the person who will be able to provide answers to any enquiries for further general or technical information. This person may be a consultant or representative of the applicant. In this case, the applicant should provide a letter authorising a representative or consultant to act on their behalf. It is the applicant's responsibility to make sure their representative has the necessary skills, knowledge and authority to discuss the matters listed in this guideline with the EPA.

In addition, if a specific generator or processor will be involved in the process of generating a recovered waste for supply to a consumer or where a specific consumer will take the recovered waste, the following information must also be included:

3. the generator and/or processor details, if relevant, including the ACN and/or ABN
4. the consumer details, if relevant, including the ACN and/or ABN

Note: Applicants are strongly encouraged to discuss their proposal with the EPA prior to commencing work on an application. Applicants are also advised to consult, where necessary, with other relevant consent authorities regarding the proposal prior to submitting their application.

For any queries or to discuss your proposal, please contact the EPA's Environment Line on 131 555 or email waste.exemptions@epa.nsw.gov.au

2. Background information about the waste

Background information about the waste material is required to assist the EPA's understanding of the potential risks associated with the proposed use.

2.1 What is the waste?

The applicant is required to provide the following information about the waste:

1. a description of the waste
2. photos of the waste, including close-ups, with a scale for size
3. the total amount of waste proposed for exemption
4. how the waste material was/will be generated (including information about the type of activity that generated the waste)
5. the sources of the waste (including whether the waste has come from one or multiple sources, and what those individual sources are)
6. a trade or common name for the waste material.

The applicant may wish to submit a systematic soil classification if relevant.

2.2 What processes has the waste undergone?

The applicant is required to provide detailed information about:

1. any physical processing the waste has already undergone or will undergo (including specific details on the processing steps, such as crushing, size reduction, separation)
2. any treatment the waste has been subject to or will be subjected to, whether chemical, biological or thermal.

It is often helpful to include schematic diagrams or flowcharts to show the sequence of processing or treatment stages and materials.

2.3 What are the current disposal practices or uses of the waste?

The applicant must provide details about the current uses or disposal practices of the waste, if any.

2.4 Are there any higher order resource recovery opportunities for the waste material?

The EPA discourages the land application of any waste where avoidance or a higher order re-use or recycling opportunity is available and practicable. Before an application can be considered, the applicant must demonstrate that such opportunities either do not exist or are not viable for the waste, indicating that land application is the most sustainable solution.

Applicants should be aware that the application process requires the submission of information on any measures being taken to avoid the need to generate the waste in the first place, using appropriate design or engineering techniques (for example 'cut and fill') or cleaner production principles.

3. Characterisation of the waste

A detailed chemical and physical characterisation of the waste is necessary to provide an understanding of the potential risks associated with its proposed use.

If the waste is to be blended, mixed or incorporated with any other material prior to being applied to land, the characterisation required under this section must be undertaken **before** the waste is mixed with any other substance.

Note: If you are applying for a waste material that has more than one waste input, the EPA may require characterisation for each individual waste input. The applicant should consult with the EPA on the details of the characterisation requirements before submitting an application.

3.1 What are the physical and chemical properties of the waste?

The minimum requirements for the initial characterisation of the waste material are detailed in Appendix I. The chemical contaminants required to be tested for in Appendix I are limited to those that occur most commonly or are most likely to have an adverse impact on the environment or human health. The sampling plan and copies of the laboratory test results must be provided with the application as separate attachments.

If additional chemicals and/or physical properties that are not included in Appendix I are relevant to the characterisation of the waste, it is the responsibility of the applicant to report them as part of the characterisation. These might include, for example, bulk density and geotechnical information, such as particle size distribution, Atterberg limits, strength, and plasticity properties. Where appropriate, the EPA may request additional testing to determine the likelihood of other contaminants being present in the waste. The waste must not be blended or diluted to reduce the concentration of harmful contaminants prior to characterisation.

All analytical data must be presented in two spreadsheets (examples are provided in Tables 2 and 3 of Appendix II) **including unprotected versions of the spreadsheets**, and must include:

1. a minimum of 20 samples for all the chemicals/attributes listed in Table 1 of Appendix I
2. the minimum, average, maximum and standard deviation calculated using all 20 samples
3. the test methods used for the characterisation, their detection limits and estimated uncertainty of measurement where this is applicable.

The applicant must provide details of the production process of the waste material. It must be stated if the waste material is a once-off batch or an ongoing supply. For on-going supplies, applicants must specify if this will be in batch or continuous form.

3.2 What, if any, is the level or concentration of specific contaminants in the waste?

In addition to the chemical characterisation requirements specified in Appendix I, the applicant will need to outline whether the waste contains any of the specific physical, biological and/or other contaminants listed below:

1. asbestos
2. micro-organisms, pathogens and fungi (if these are relevant to your case, contact the EPA before sampling begins to discuss the range of organisms being considered for testing)
3. weed seeds
4. plastics, glass, metal or other physical contaminants
5. pesticides
6. radioactive substances.

If the waste contains, or is likely to contain any of these contaminants, the applicant must, specify the quantities present, provide characterisation data and address the risks to the environment and human health for the proposed use.

Note: Applicants are strongly encouraged to contact the EPA to discuss characterisation requirements prior to commencing any sampling and testing as part of the application. Please contact the EPA's Environment Line on 131 555.

4. Mixing or blending of the waste

Information must be provided under this section where the waste is to be mixed, blended or incorporated with any other materials prior to land application.

If the waste, as detailed in Sections 2 and 3, is to be directly applied to land without mixing or blending, it is not necessary to complete this section and you may proceed to Section 5: Proposed use or application.

4.1 What is the composition of the final blended material proposed for land application?

Where the waste is to be blended, mixed or incorporated with other materials prior to land application, the applicant must provide the following information:

1. a description of all other materials blended or mixed with the waste
2. the proportions of all materials in the final blended product (including the waste)
3. the quantity of waste produced per year (or other appropriate frequency)
4. a common or trade name for the final blended material (where relevant).

Where the materials being blended with the recovered waste are well known and have consistent, reproducible characteristics the EPA may accept the data on the recovered waste stream only to assess an application. However, if a blend includes materials that are not well understood, the EPA may require the applicant to repeat the characterisation outlined in Section 3 for the final blended material. The applicant should consult with the EPA prior to submission regarding the details of characterisation requirements.

4.2 What processes are involved in the incorporation of the waste into the material?

The applicant is required to detail the processes involved in blending or mixing the waste with the other materials. This section should include flowcharts and/or diagrams where appropriate.

5. Proposed use or application

5.1 What activity is being undertaken where the waste material will be applied?

Applicants should provide information on the current and proposed activities in the area where the waste material is to be applied. This information is necessary to identify any potential adverse impacts on the environment or human health. This will ensure that the EPA is sufficiently informed when considering appropriate contaminant thresholds or other risk management controls, and in understanding current and future exposure pathways. Activity types may include:

- earthworks
- commercial or industrial development
- piping and drainage
- road-making.

This information must include whether the proposed fill will be compacted, left exposed, capped with a hard surface or another groundcover.

5.2 What will the waste material be used for?

The applicant is required to detail the proposed use or range of uses for the waste material.

5.3 What are the properties of the waste material that make it suitable for the proposed application?

The applicant needs to provide information on how the proposed use of the waste material is fit for purpose, and how the use of the waste material will provide a benefit. Applicants should note that the application of a waste material to land is not considered fit for purpose simply because it diverts waste from landfill without delivering other beneficial outcomes.

Where waste has been blended, mixed or incorporated with another material, the applicant should also provide details on how the blended waste provides additional benefits compared to the waste on its own.

Exemptions will only be provided where the proposed land application is a bona-fide re-use and does not represent opportunistic waste disposal. In providing information on the suitability of applying the waste material to land, it may be of value to refer to information presented in previous sections.

5.4 What, if any, virgin material is the waste replacing?

Where applicable, the applicant should provide information on any virgin material the waste is replacing, including its chemical, physical and/or biological properties.

6. Information on the receiving environment

6.1 What is the type of land use where the waste material will be applied?

Applicants should provide information on the current and proposed activities in the area where the waste material is to be applied. This information is necessary to identify any potential adverse impacts on the environment or human health. This will ensure that the EPA is sufficiently informed when considering appropriate contaminant thresholds or other risk management controls, and in understanding current and future exposure pathways. Activity types may include:

- agriculture
- commercial or industrial development
- recreation areas/gardens/parks
- residential.

Applicants should contact the EPA before preparing an application where the waste is proposed to be used at a site that is being managed under the *Contaminated Land Management Act 1997* or a site that requires remediation.

6.2 Where is the proposed location for application?

In cases where it is proposed to limit the land application of the waste material to a specific location or region, geographical information about the proposed application site is required to ensure that the properties of the receiving environment are assessed appropriately. This should include the full address of the site, Lot and Development Plan (DP), a map and a photo of the location. Where applicable, provide a copy of the development consent for the site that demonstrates the waste can be used at the site.

Note: the EPA cannot issue an Order and Exemption where the site does not possess the appropriate development consent for the activity.

Where the application is not limited to a specific location, general details must be provided on the type of sites that would be appropriate to receive the waste.

6.3 What are the characteristics of the proposed location?

Information on the characteristics of the proposed application site is necessary to ensure that the properties of the receiving environment and the associated chemical and physical interactions are fully understood and assessed appropriately. This may include, but is not limited to:

- past, current and future land use
- ground slope
- depth to bedrock
- depth to groundwater
- groundwater bore data
- relevant available soil data
- proximity of the site to a surface water body
- presence of drinking water aquifers
- proximity to residential areas
- proximity to environmentally sensitive areas (those areas which have ecological, natural, cultural or heritage values worthy of protection, such as drinking water catchments areas, national parks and world heritage areas)
- any other potential restrictions in the receiving environment.

The level of detail required is dependent on the activity being undertaken and the sensitivity of the land use, the nature of the waste material and its proposed use. Where appropriate, this information may be used to inform the inclusion of appropriate conditions within an Order and Exemption.

6.4 What are the characteristics of the surrounding land use?

The applicant should provide information on the characteristics of the land surrounding the proposed application site including the activity being undertaken. This should include any information on the future land use of the surrounding land.

7. Quality assurance and controls

The EPA strongly encourages the development of quality assurance/quality control (QA/QC) programs to ensure that environmental and human health outcomes from the land application of the waste materials are consistently maintained over time.

Quality assurance is a system of procedures designed to increase the reliability of the results of a process. The procedures require specific standards to be met throughout the process of planning, control, evaluation, correction and documentation to help ensure that the quality of the process is maintained. Generally, quality assurance in manufacturing products means that the end-product meets the requirements of specifications, standards or users.

7.1 What procedures are in place to manage the input and output quality of the waste material over time?

The extent of procedures designed to appropriately manage any identified risks – QA/QC procedures – will vary for each proposal, depending on the individual risk posed by the type, source and quantity of waste material; the processes that it undergoes; and the end-use of the waste material.

Applicants should provide a QA/QC plan for the waste material and its application processes, including proposed frequencies of sampling and testing of inputs and outputs.

8. Specifications and standards

Specifications for the end-use of waste materials help ensure that proposed environmental outcomes or standards are achieved and maintained over time. Specifications refer to set physical, chemical and additional requirements in published literature or standards that make materials acceptable for the proposed re-use.

8.1 Does the waste material comply with or compare closely to any existing specifications or standards?

Any existing product specifications or standards should be included as a separate attachment in the application.

It may also be useful to check against any specifications for existing Orders and Exemptions that may be similar to your waste material.

8.2 Has a specification for the waste material been developed?

The EPA encourages applicants to submit their own specification for the waste material if one does not exist. Where the applicant has done so, the proposed specification should be included with the application as a separate attachment. The applicant should ensure that the specification addresses all potential contaminants, not just those commonly thought to be present.

8.3 Is there any agreement between the supplier and the consumer of the waste material to ensure the material is 'fit for purpose'?

In addition to material specifications detailing the quality and consistency of a waste material, agreements between the supplier (the generator or processor) and consumer may be useful if they include additional information in support of a waste material being 'fit for purpose'. For example, these could include requirements specified by the consumer that demonstrate the waste material fulfils a specific function for which it is used. Where applicable, applicants should include copies of any agreements as a separate attachment in the application.

Appendix I: Characterisation

Samples must be analysed at a laboratory **accredited for the relevant tests** by the National Association of Testing Authorities Australia (NATA) or an equivalent accreditation body. The test methods used to obtain all data should be specified as part of the chemical characterisation.

Note: Applicants are strongly encouraged to contact the EPA if a NATA accredited laboratory cannot be engaged for relevant tests by calling the EPA's Environment Line on 131 555.

The applicant must ensure that the waste material being proposed for an Order and Exemption has undergone testing for the chemical contaminants in Table 1 for a **minimum of 20 composite samples**. This is the minimum suite of chemical testing required by the EPA for an application for Order and Exemption to be considered. Table 1 is not an exhaustive list and is limited to those chemicals most commonly associated with potential environmental contaminants.

If additional attributes not included in Table 1 are relevant to the characterisation of the waste, it is the responsibility of the applicant to report them as part of the characterisation. Where relevant, this includes, but is not limited to, testing for particle size distribution, exchangeable sodium (where there is a likelihood of the waste increasing the sodicity of the soil), nitrogen, phosphorus, pesticides, herbicides, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), total recoverable hydrocarbons (TRHs), BTEX (benzene, toluene, ethyl benzene and xylene) volatile and semi-volatile organic compounds and cyanide.

In addition to the analytes listed in Table 1, the applicant must outline whether the waste contains any acid sulfate soils, potential acid sulfate soils or specific physical and/or biological contaminants such as asbestos, micro-organisms, pathogens and fungi, weed seeds, pesticides, radioactive substances, plastics, glass, metal or any other physical contaminants. If these materials are likely to be present, they should be reported with appropriate management protocols or testing results.

Sampling plan

Applicants must initially chemically characterise each source of waste by taking a minimum of 20 composite samples. A sampling plan must be prepared for each source of waste where this applies. The sampling plan must have a clear, defensible rationale and should address all of the following criteria (unless otherwise advised by the EPA):

1. homogeneity
2. sampling representativeness
3. diagram of the location of each discrete sampling point (for example, on a conveyor belt or stockpile)
4. sampling method, particularly the method used to extract the sample
5. sample storage and transport (e.g. chain of custody)
6. size reduction, splitting and sub-sampling before the sample is analysed
7. laboratory reports (see Requesting reports from laboratories on page 15)

Note: Composite sampling is required, using five sub-samples, that is each sample is made up of five smaller samples of the same size. Composite sampling refers to waste that is stockpiled. However, discrete sampling must be employed where the analyte is a volatile or semi-volatile contaminant, or where sampling is conducted in situ.

Common chemicals to be tested

The following chemicals/characteristics must be measured and assessed (dry mass means that the samples are dried to a constant weight at ~ 100ºC).

Table 1: Chemical concentrations/material characteristics to be tested

No.	Chemical/attributes	Detection limit	Units for reporting
1	Antimony	~ 2	mg/kg on a dry mass basis
2	Arsenic	~ 2	mg/kg on a dry mass basis
3	Beryllium	~ 0.1	mg/kg on a dry mass basis
4	Boron	~ 5	mg/kg on a dry mass basis
5	Cadmium	~ 0.5	mg/kg on a dry mass basis
6	Cobalt	~ 2	mg/kg on a dry mass basis
7	Copper	~ 2	mg/kg on a dry mass basis
8	Chromium	~ 2	mg/kg on a dry mass basis
9	Lead	~ 2	mg/kg on a dry mass basis
10	Manganese	~ 2	mg/kg on a dry mass basis
11	Molybdenum	~ 1	mg/kg on a dry mass basis
12	Nickel	~ 2	mg/kg on a dry mass basis
13	Selenium	~ 3	mg/kg on a dry mass basis
14	Tin	~ 2	mg/kg on a dry mass basis
15	Vanadium	~ 1	mg/kg on a dry mass basis
16	Zinc	~ 2	mg/kg on a dry mass basis
17	Total organic carbon	~ 0.1	% on a dry mass basis
18	Total sulfur	~ 0.1	% on a dry mass basis
19	Moisture content	~ 0.1	% by weight
20	Mercury	~ 0.1	mg/kg on a dry mass basis
21	Electrical conductivity	~ 0.1	dS/m as received
22	pH	~ 0.1	pH

Test methods

The following test methods should be used for characterising the waste:

1. Test methods for measuring **1–16** in Table 1 require:

a. sample preparation, such as size reduction and splitting techniques
b. sample digestion using USEPA 3051A (or an equivalent method)
c. analysis using USEPA 6010D (or an equivalent method)
d. reporting as mg/kg dry weight.

2. Test methods for measuring **total organic carbon** (17 in Table 1) require analysis using methods 6B2 or 6B3 in Rayment & Lyons (2011), *Soil Chemical Methods - Australasia* (or an equivalent method).
3. Test methods for measuring **total sulphur** (18 in Table 1) require analysis using method 10A1 in Rayment & Lyons (2011), *Soil Chemical Methods - Australasia* (or an equivalent method).
4. Test methods for measuring **moisture content** (19 in Table 1) require analysis using USEPA 9001 (or an equivalent method).
5. Test methods for measuring **mercury** (20 in Table 1) require:

a. sample pre-treatment (if required) using a separate moisture test so a calculated dry weight can be determined
b. cold-vapour atomic absorption spectroscopy (sample preparation and analytical method) using USEPA 7471B (or an equivalent method)
c. reporting as mg/kg dry weight.

6. Test method for measuring **electrical conductivity** (21 in Table 1) requires analysis using method 3A1 in Rayment & Lyons (2011), *Soil Chemical Methods - Australasia* (or an equivalent method).
7. Test methods for measuring **pH** (22 in Table 1) require analysis using either (1) method 4A1 or (2) where the waste is likely to contain high concentrations of soluble salts method 4B1 in Rayment & Lyons (2011), *Soil Chemical Methods - Australasia* (or an equivalent method).

Requesting reports from laboratories

Reports from laboratories should be consistent with the Australian Standard *General requirements for the competence of testing and calibration* (AS ISO/IEC 17025-2005), or with its updated equivalent when this occurs.

Applicants must request that the results of testing include quality control data. This should include the estimated uncertainty of measurement where applicable, and information regarding laboratory receipt of samples. The analysis results and quality control data must both be submitted to the EPA as part of an application.

Appendix II: Characterisation tables

Table 2: Example characterisation summary table

Chemical/ attributes	Units	Test method	Detection limit	Min.	Av.	Max.	Std. deviation
Antimony	mg/kg 'dry weight'						
Arsenic	mg/kg 'dry weight'						
Beryllium	mg/kg 'dry weight'						
Boron	mg/kg 'dry weight'						
Cadmium	mg/kg 'dry weight'						
Cobalt	mg/kg 'dry weight'						
Copper	mg/kg 'dry weight'						
Chromium	mg/kg 'dry weight'						
Lead	mg/kg 'dry weight'						
Manganese	mg/kg 'dry weight'						
Molybdenum	mg/kg 'dry weight'						
Nickel	mg/kg 'dry weight'						
Selenium	mg/kg 'dry weight'						
Tin	mg/kg 'dry weight'						
Vanadium	mg/kg 'dry weight'						
Zinc	mg/kg 'dry weight'						
Total organic carbon	% by 'dry weight'						
Total sulfur	% by 'dry weight'						
Moisture content	% by weight						
Mercury	mg/kg 'dry weight'						
Electrical conductivity	dS/m						
pH	–						

Table 3: Example characterisation data table

Samples (20 samples for characterisation)																						
Chemical/ attributes	**Units**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**Test methods**
Date sampled																						
Antimony																						
Arsenic																						
Beryllium																						
Boron																						
Cadmium																						
Cobalt																						
Copper																						
Chromium																						
Lead																						
Manganese																						
Molybdenum																						
Nickel																						
Selenium																						
Tin																						
Vanadium																						
Zinc																						
Total organic carbon																						
Total sulfur																						
Moisture content																						
Mercury																						
Electrical conductivity																						
pH																						

Glossary

Application to land	**As specified in clause 92 (a) of the Waste Regulation, application to land means:** **(i) spraying, spreading or depositing on the land, or** **(ii) ploughing, injecting or mixing into the land, or** **(iii) filling, raising, reclaiming or contouring the land.**
Consumer	The person who applies, or intends to apply, resource recovery waste to land under an Exemption.
EPA	NSW Environment Protection Authority.
Exemption	A resource recovery Exemption as specified under clauses 91 and 92 of the Waste Regulation. It contains the approved conditions for the use of a resource recovery waste by consumers.
Generator	A person who generates waste for supply to a processor or consumer.
Order	A resource recovery Order as specified under clause 93 of the Waste Regulation. It contains the conditions for the supply of a resource recovery waste by generators or processors.
POEO Act	*Protection of the Environment Operations Act 1997.*
Processor	A person who processes, mixes, blends, or otherwise incorporates resource recovery waste into a material in its final form for supply to a consumer.
Resource recovery waste	Waste to which a resource recovery Order and Exemption applies.
Supplier	Same meaning as generator or processor.
Waste Regulation	*Protection of the Environment (Waste) Regulation 2014.*