## Document controls

### Approval and authorisation

<table>
<thead>
<tr>
<th>Title</th>
<th>Hornsby Quarry Road Construction Spoil Management Project (SSI 7066) – Landscape and Rehabilitation Management Plan</th>
</tr>
</thead>
</table>
| Accepted on behalf of NSW Roads and Maritime Services by: | Sonja Shand  
Senior Project Manager |
| Signed: | Sonja Shand |
| Dated: | 15 February 2017 |

### Document status

<table>
<thead>
<tr>
<th>Document status</th>
<th>Date</th>
<th>Prepared by</th>
<th>Reviewed by</th>
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<tbody>
<tr>
<td>Revision 1</td>
<td>21/11/16</td>
<td>Paul Churton</td>
<td>Matthew Zielinski</td>
</tr>
<tr>
<td>Revision 2</td>
<td>13/12/2016</td>
<td>Matthew Zielinski</td>
<td>Rhonda Pollard</td>
</tr>
<tr>
<td>Revision 3</td>
<td>16/12/2016</td>
<td>Matthew Zielinski</td>
<td>Rhonda Pollard</td>
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<tr>
<td>Revision 4 (updated in response to ER, HSC, LLBJV &amp; NCX Project Company comments)</td>
<td>13/01/2017</td>
<td>Matthew Zielinski</td>
<td>Sonja Shand</td>
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<tr>
<td>Revision 5 (final ER and HSC Comments)</td>
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<td>Matthew Zielinski</td>
<td>Sonja Shand</td>
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<tr>
<td>Revision 6 (updated in response to ER, HSC &amp; NCX Project Company comments)</td>
<td>08/02/17</td>
<td>Matthew Zielinski</td>
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<td>Revision 7 (updated in response to DPE comments)</td>
<td>05/04/2017</td>
<td>Matthew Zielinski</td>
<td>Sonja Shand</td>
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<tr>
<td>Revision 8 (updated in response to DPE comments)</td>
<td>08/05/2017</td>
<td>Matthew Zielinski</td>
<td>Sonja Shand</td>
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## Terms and Acronyms Used

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<th>Description</th>
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<tr>
<td>CoA</td>
<td>Conditions of Approval</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>ENM</td>
<td>Excavated Natural Material</td>
</tr>
<tr>
<td>FFMP</td>
<td>Fauna and Flora Management Plan</td>
</tr>
<tr>
<td>HSC</td>
<td>Hornsby Shire Council</td>
</tr>
<tr>
<td>Construction Licence</td>
<td>Refers to the period of works which are being carried as defined under SSI-7066.</td>
</tr>
<tr>
<td>LLBJV</td>
<td>Lend Lease Bouygues Joint Venture</td>
</tr>
<tr>
<td>LRMP</td>
<td>Landscape and Rehabilitation Management Plan</td>
</tr>
<tr>
<td>NCX</td>
<td>NorthConnex</td>
</tr>
<tr>
<td>OMV</td>
<td>Old Mans Valley</td>
</tr>
<tr>
<td>PoM</td>
<td>Plan of Management</td>
</tr>
<tr>
<td>RMS</td>
<td>NSW Roads and Maritime Services</td>
</tr>
<tr>
<td>QA Specifications</td>
<td>Specifications developed by Roads and Maritime Services for use with road work and bridge work contracts let by Roads and Maritime Services.</td>
</tr>
<tr>
<td>VENM</td>
<td>Virgin Excavated Natural Material</td>
</tr>
</tbody>
</table>
1 Introduction

1.1 Overview of the Project

Hornsby Quarry ceased operation in the late 1990’s. The site was acquired by Hornsby Shire Council (HSC) in 2002 with the intention to rehabilitate the site for future alternative uses. To facilitate the rehabilitation of the site, it was identified that at least one million cubic metres of material would be needed to fill the void to a workable level.

The Hornsby Quarry site was identified by the NorthConnex project as an option for the beneficial reuse of spoil from its tunnelling activities. It will receive up to 1.5 million cubic metres of Excavated Natural Material (ENM) and/or Virgin Excavated Natural Material (VENM) from the approved NorthConnex construction sites. The excavated rock and spoil material from the NorthConnex excavation sites would be trucked to the quarry where it would be loaded onto a conveyor and placed in the quarry void.

An Environmental Impact Statement (EIS) (AECOM June 2015) has been prepared and placed on public exhibition in July/August 2015. Following consideration of submissions made during the EIS exhibition period, the Submissions and Preferred Infrastructure Report (SPIR) was submitted to the Minister for Planning on 22 October 2015. Under Part 5.1 of the EP&A Act, approval of the Hornsby Quarry Road Construction Spoil Management Project was granted on 18 January 2016.

The Lend Lease Bouygues Joint Venture (LLBJV) has been awarded the contract to implement the Hornsby Quarry Road Construction Spoil Management Project. The contract is in place between LLBJV, NorthConnex Project Company, Roads and Maritime Services (RMS) and HSC. This outlines the requirements of the project, how the EIS Conditions of Approval (CoA) responsibilities would be distributed and the handover requirements on handing the site back to HSC. One of the key outcomes of the contract is to beneficially reuse tunnel spoil from the NorthConnex project, which would partially contribute to Council’s Hornsby Park Plan of Management (December 2015).

The key components of the project include:

- Widening and sealing of the quarry access road (Bridge Road and track) to facilitate all weather access.
- Clearing and grubbing, and establishment of erosion and sediment controls.
- Establishment of a compound site, security fencing and signage around the project area.
- Dewatering of the quarry void (to be undertaken by Hornsby Shire Council in accordance with its existing groundwater licence) to a suitable level that allows working within the void.
- Construction of a conveyor from the stockpile site to the rim of the quarry void.
- Spoil haulage by truck via approved routes from the NorthConnex construction sites to the Hornsby Quarry site over a period of approximately 14 months. (Spoil haulage program duration is dependent on tunnel excavation program)
- Stockpiling of spoil within the Hornsby Quarry site using dozers and wheel loaders.
- Transport of the spoil via the conveyor from the stockpiles to the rim of the quarry void, where the spoil would fall directly into the void.
- Spreading and grading of the spoil on the quarry floor.
• Site demobilisation of project building and conveyor structures. Stockpile area, conveyor corridor and noise mounds to be left as is with no further work by LLBJV as agreed to with Hornsby Shire Council.

This Plan addresses the last key component, listed above, of the Hornsby Quarry Road Construction Spoil Management Project.

1.2 Purpose and Scope of the LRMP

The intent of this Landscape and Rehabilitation Management Plan (LRMP) is to define the condition that the Hornsby Quarry site will be handed back over to HSC at the completion of the contracted works, as per the requirements covered in section 2 below. As the scope of the works is to only partially backfill the quarry void, HSC will then take possession of site to carry out future works as part of Council’s Hornsby Park Plan of Management (PoM). Many of the stabilisation and rehabilitation objectives covered in this LRMP are intended to be a temporary measure until HSC carry out future works for the master plan of the quarry.

The Hornsby Park PoM is a document that provides a means to control the future use, development and maintenance of Community and/or Crown Land under Council’s care, control and management. The PoM identifies issues relevant to the future management of Hornsby Park (including Hornsby Aquatic and Leisure Centre). The PoM establishes Council’s goals, strategies and desired outcomes that will guide the timing, shape and nature of developments. In 2013, the Recreational Potential Study for Hornsby Quarry and OMV was prepared for HSC. This study recommended that HSC pursue the adventure recreation tourism opportunity for the site as part of an overall masterplan for the site. The study identified three main design options for the filling of Hornsby Quarry. The highest scoring option was Option 1 which including filling the void with 1 million cubic metres of external fill, while OMV would remain largely unchanged.

The scope of the Hornsby Quarry Road Construction Spoil Management Project contributes to Option 1 of the Hornsby Park PoM by beneficially reusing up to 1.5 million cubic metres of external fill from the NorthConnex project. The LRMP defines the condition that the quarry void and OMV will be handed over to HSC, which will allow council to carry out future works to the quarry as outlined in the PoM. Refer to Section 4.1.2

The scope and extent of the Landscape and Rehabilitation Management Plan (LRMP) is to provide measures, a monitoring program, responsibilities and risk management for rehabilitating the Hornsby Quarry Site up until site establishment is obtained. Site establishment is defined at the point at which excavated and disturbed areas from the Hornsby Quarry Road Construction Spoil Management Project are rehabilitated to a 70-80% hydromulched crop cover, or as otherwise agreed with HSC.

Implementing this LRMP effectively will ensure that NorthConnex meets the requirements of the Conditions of Approval (CoA), Environmental Impact Statement (EIS) and RMS QA Specifications.

1.3 Hornsby Shire Council Future Works

When NorthConnex completes the placement of tunnel spoil in Hornsby Quarry, HSC proposes to start major stabilisation of the north and south faces of the quarry void and earthworks elsewhere in Old Mans Valley. At the moment it is anticipated that these works will create a landform generally in accordance with the conceptual landform and Masterplan shown in Appendix B. It is estimated these works will take approximately two years to carry out and a further two years for the construction of the park facilities and associated landscaping. It is proposed the new parklands will open to the public in 2023. The Hornsby Park PoM shows the intent of these parklands. Refer to: (http://www.hornsby.nsw.gov.au/__data/assets/pdf_file/0011/82991/Hornsby-Park-POM-Final-Adopted-Version-2_231215-v4.pdf)
The site is unique. The remnant quarry walls, void, lake and exposed eastern face of the diatreme formation combine to create a dramatic landscape only a few minutes walk from the centre of Hornsby. The surrounding bushland encloses the site creating a sense of remoteness from the city centre.

The creation of major parkland centred on Hornsby Quarry provides an opportunity to create a highly memorable place for local residents and the wider Sydney community. There is the potential to open up the site for public enjoyment and to take advantage of the quarry landscape for types of recreation that are suited to the topography and landscape setting. It is proposed to protect approximately 50% of the heritage listed eastern face of the quarry void by limiting the extent of fill to 60m AHD at this face. It is proposed to have a lake directly below the exposed eastern face as per the PoM. A full range of recreation experiences possible for the park can be viewed on page 44 in the PoM.

Council will continue with the development of park concepts, in accordance with the PoM, as the filling by NorthConnex continues. These concepts will be informed by the feedback from public consultation sessions over the next few months. It is anticipated that a Development Application supported by an Environmental Impact Statement for major earthworks in Hornsby Park will be submitted to the North District Planning Panel in late 2018.

1.4 Conditions of Approval

This LRMP report addresses the following Conditions of Approval (CoA):

**Table 1: COA relevant to the LRMP**

<table>
<thead>
<tr>
<th>CoA No.</th>
<th>Condition Requirement</th>
<th>LRMP Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>A15</td>
<td>The Proponent shall commission a suitably qualified specialist to:</td>
<td>Table 3</td>
</tr>
<tr>
<td></td>
<td>f) Advise the Proponent on spoil compaction and monitoring techniques to achieve the rehabilitation objections in condition B43.</td>
<td></td>
</tr>
<tr>
<td>B41</td>
<td>The Proponent shall implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development, to be generally consistent with the requirements of <em>Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting</em></td>
<td>Section 4.1.3</td>
</tr>
<tr>
<td>B43</td>
<td>The Applicant shall rehabilitate the site to the satisfaction of Council. This rehabilitation must be generally consistent with the rehabilitation strategy set out in the EIS and must comply with the objectives in Table 1.</td>
<td></td>
</tr>
</tbody>
</table>

*Table 1: Rehabilitation Objectives*

<table>
<thead>
<tr>
<th>Feature</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site (as a whole)</td>
<td>• Safe, stable and non-polluting</td>
</tr>
<tr>
<td></td>
<td>• Final landform generally consistent with Council’s Hornsby Park Plan of</td>
</tr>
<tr>
<td></td>
<td>Management (December 2015), or its latest version</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feature</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Section 4.1</td>
</tr>
<tr>
<td></td>
<td>Section 4.1</td>
</tr>
<tr>
<td>CoA No.</td>
<td>Condition Requirement</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
<td>• Final landform integrated with surrounding natural landforms as far as is reasonable and feasible</td>
</tr>
<tr>
<td></td>
<td><strong>Surface Infrastructure</strong> • Decommissioned and removed, unless Council agrees otherwise</td>
</tr>
<tr>
<td></td>
<td><strong>Old Mans Valley and Quarry Pit Floor</strong> • Settlement potential of spoil placed in the quarry void within acceptable limits for Council’s planned future use</td>
</tr>
<tr>
<td></td>
<td>• Maximise the exposure of the diatreme formation in the eastern face of the quarry void</td>
</tr>
<tr>
<td></td>
<td>• Areas disturbed by the SSI to be landscaped and vegetated using native tree and understorey species, unless Council agrees otherwise</td>
</tr>
<tr>
<td>B44</td>
<td>The Proponent shall prepare and implement a <strong>Landscape and Rehabilitation Management Plan</strong> for the SSI. This plan must: a) be prepared in consultation with Council and be submitted to the Secretary for approval within 12 months of the date of this approval, unless otherwise agreed by the Secretary; b) provide details of the conceptual final landform; c) describe the measures that would be implemented to ensure compliance with the rehabilitation objectives in Table 1; d) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria; e) identify the potential risks to the successful rehabilitation of the site, and include a description of the contingency measures that would be implemented to mitigate these risks; and f) include details of who would be responsible for monitoring, reviewing, and implementing the plan.</td>
</tr>
</tbody>
</table>
The environmental management measures from the EIS relevant to this Plan are listed in the Table below.

### Table 2 - Environmental management measures relevant to the LRMP

<table>
<thead>
<tr>
<th>Measure</th>
<th>Requirement</th>
<th>Reference</th>
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</thead>
<tbody>
<tr>
<td>Working Hours and Scheduling NV8</td>
<td>Particularly noisy activities associated with the site establishment and demobilisation would be scheduled where feasible and reasonable around times of high background noise to provide masking.</td>
<td>CNVMP (Construction Noise and Vibration Management Plan)</td>
</tr>
<tr>
<td>Contamination HS12</td>
<td>ENM imported to the site for the purpose of emplacement into the quarry pit would meet chemical and other material requirements of the ‘excavated natural material order’ under Part 9, clause 93 of the Protection of the Environment Operations (Waste) Regulation</td>
<td>CSWMP (Construction Soil and Water Management Plan)</td>
</tr>
<tr>
<td>General HS14</td>
<td>Demobilisation personnel would be competent and trained in systems and procedures</td>
<td>CEMP</td>
</tr>
<tr>
<td>Contamination HS15</td>
<td>Procedures to address spills and leaks would be developed and implemented during demobilisation of the project</td>
<td>CSWMP</td>
</tr>
<tr>
<td>Erosion and Sedimentation Control SW6</td>
<td>Soil and land stabilisation would occur as soon as practicable following construction. The Site would be stabilised through the application of a sterile cover crop to achieve a stabilised groundcover. Stabilisation would be in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2014) and would not preclude future land use at the site.</td>
<td>CSWMP</td>
</tr>
<tr>
<td>Waste Management RW3</td>
<td>Cleared site vegetation would be mulched for reuse in erosion and sediment control, rehabilitation and landscaping works, where feasible and reasonable.</td>
<td>CFMP (Construction Flora Management Plan)</td>
</tr>
</tbody>
</table>

#### 1.5 Certification and Approval

This LRMP report will be submitted to the Secretary of the Department of Planning and Environment (DP&E) by the 15 February 2017 as agreed with DP&E. This document has been developed and submitted to DP&E for approval under Condition B44.

#### 1.6 Hornsby Shire Council Handover Requirements

The LRMP is consistent with the handover requirements of HSC which will allow council to continue future works in accordance with the Hornsby Park PoM. After completion of spoil placement in the Hornsby Quarry void, the following handover procedures will apply:

- Place spoil to the profile as noted in Appendix B. This temporary landform handed over is consistent with the requirements covered in Section 4.1.2 below;
- All infrastructure brought onto site for the Hornsby Quarry fill works will be removed, or as otherwise agreed with between all parties;
- Demolition of the concrete footings installed for the use of the Conveyors (other than to the extent the concrete footing is more than 500 millimetres below surface level), or as agreed between all parties;
Exposéd areas will be stabilised through hydromulching to a level that ensures a minimum 70-80% coverage of established growth, or as otherwise agreed with HSC. This will only apply to revegetation stages 1, 2 and 3 which are listed in section 4.2 below;

- All security fencing and signage erected will be removed, unless otherwise agreed;
- Reinstate Bridge Road (Roper Lane to Peats Ferry Road) to its pre-existing condition as recorded in a photographic condition survey;
- Repair any defects to the upgraded section of Bridge Road (Ch 60 to Ch 200) and the upgraded section of the access track down to Old Mans Valley (Ch 200 to Ch 377);
- Make good any damage to the Licensed Area to the extent that it has been caused or contributed to by any breach by the works contractor;
- Not remove Spoil used in site establishment works and noise bunds, which will remain in the Hornsby Quarry area;
- Ensuring global stability of the quarry void has not changed relative to the condition handed over from council which is covered by the stability reports as part of condition A15; and
- Ensuring that environmental management control measures, such as sediment basins, are left in a state suitable for ongoing management by HSC.

The existing CEMP will be in place and will be implemented throughout the duration of the works, but will cease upon completion of the handover actions noted in the points above.

The LRMP is consistent with the above handover requirements of HSC, which will allow Council to continue future works in accordance with the Hornsby Park PoM. These requirements have been agreed previously between RMS and HSC through a funding agreement, which ensures that the handover requirements are consistent with HSC’s planned future use of the area.

Refer to Section 3 for decommissioning works and Handover Certificate requirements.
1.7 Environmental Impact Statement Requirements

This LRMP report addresses the Site clean-up and demobilisation and rehabilitation requirements from the Environmental Impact Statement (EIS).

<table>
<thead>
<tr>
<th>EIS Reference</th>
<th>Proposed Activities</th>
<th>LRMP Reference</th>
</tr>
</thead>
</table>
| Table 4-1 Overview of project work activities | • At the completion of spoil emplacement activities, the conveyor and temporary construction compound would be dismantled and removed from the site.  
• The conveyor system would be removed and the footings left in place.  
• Erosion and sediment control measures would be maintained until disturbed areas have been returned to their pre-project condition.  
• The filled in void would be stabilised with hydro-seeding or similar to ensure no ongoing dust generation from the quarry.  
• At the conclusion of the project, the areas affected by the project would be rehabilitated and the site would be handed over to Hornsby Shire Council in a condition agreed to by Roads and Maritime and Hornsby Shire Council.  
• Following handover of the site, any ongoing works including works associated with the maintenance of the site would be the responsibility of Hornsby Shire Council unless otherwise agreed between Roads and Maritime and Hornsby Shire Council prior to the commencement of the works. | Section 3 |

From EIS – 4.8 Rehabilitation and final landform:
The following is an extract from Section 4.8 of the EIS:

As identified in Table 4-1, following the completion of the project, site facilities would be demobilised and all disturbance areas would be rehabilitated and stabilised to a standard as agreed to with Hornsby Shire Council. With respect to the conveyor, all equipment would be removed from site with the exception of the footings. Sealed internal access roads including Bridge Road would be retained unless otherwise agreed to with Hornsby Shire Council. Temporary project facilities would be removed from site and erosion and sediment controls would be kept in place until the site is stabilised.

The quarry void would be filled to a level that would facilitate its future use for rehabilitation, this being an approximate height up to RL 64, with spoil volumes of up to 1.5 million cubic metres. The filled-in void would be compacted to a level suitable for future use for recreation rather than structural/building capacity. The filled-in void would be stabilised through hydro-seeding or similar as part of site completion works. These rehabilitation measures would allow the handover of the site back to Hornsby Shire Council in an appropriately stabilised state to enable the site to be managed by Hornsby Shire Council in the interim period before its eventual rehabilitation into recreation land use.

Following handover of the site, any ongoing works including works associated with the maintenance of the site would be the responsibility of Hornsby Shire Council unless
otherwise agreed between Roads and Maritime and Hornsby Shire Council prior to the commencement of the works. Following site completion works, the site would revert back to the responsibility of Hornsby Shire Council.

The eventual rehabilitation of the site to recreational land use is not part of the current project. After completion of the Hornsby Quarry Road Construction Spoil Management Project, the final land form and land use for the site would be determined by Hornsby Shire Council and implemented as part of long-term plans for the site by Hornsby Shire Council, which would be the subject of a separate planning approval. (AECOM Australia 2015, pg. 61)

It should be noted that the following requirements have been agreed with the LLBJV during development of the detailed design phase, after the EIS:

- The final RL level will be dependent on the commencement date of spoil haulage and other contributing factors;
- It was agreed between RMS, NorthConnex Project Company, LLBJV and HSC that compaction is not required for the spoil placed within the quarry void;
- Concrete footings installed for the use of the Conveyors will be demolished, other than to the extent the concrete footing is more than 500 millimetres below surface level; and
- Hydromulching will be applied instead of hydroseeding.

1.8 Policies, Standards and Guidelines

The table below provides the policies, standards and guidelines adopted for this plan include:

<table>
<thead>
<tr>
<th>No.</th>
<th>Policy, Standard or Guideline</th>
<th>Requirements of guidelines and how these will be met</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RMS QA Specification R178 – Vegetation</td>
<td>Annexure R178/A outlines the seed species and constituents of the mix which will be applied. This is shown in Appendix D of this document.</td>
</tr>
<tr>
<td>2</td>
<td>Condition Assessment &amp; Asset Performance Guidelines Practice Note 9: Road Pavements (Visual Assessment) (IPWEA 2015)</td>
<td>The Guidelines provide a process for carrying out visual assessment of pavement defects as a basis for assessing the condition of Road Pavement assets and to assist in determining the most appropriate treatment for maintaining the desired level of service for these assets. This will be applied to assess the condition of the upgraded section of Bridge Road (Ch 60 to Ch 200) and the upgraded section of the access track down to Old Mans Valley (Ch 200 to Ch 377) in a condition equivalent to condition two (2) in the guidelines. This will occur prior to handover as discussed in section 3.</td>
</tr>
<tr>
<td>3</td>
<td>Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2014)</td>
<td>These guidelines will help mitigate the impacts of land disturbance activities on soils, landforms and receiving waters by focussing on erosion and sediment control. These will be applied by LLBJV throughout the duration of the project in accordance with their CEMP.</td>
</tr>
</tbody>
</table>
2 Consultation

Condition B44, Part (a) requires that this plan must:

a) be prepared in consultation with Council and be submitted to the Secretary for approval within 12 months of the date of this approval, unless otherwise agreed by the Secretary;

The date of the Project Approval is 18 January 2016. To address the consultation requirement, a meeting was held between RMS and Hornsby Shire Council (HSC) on the 24 October 2016. The meeting minutes and correspondence between RMS and HSC are attached in Appendix A. The HSC were sent the final draft of this report on the 23/12/2016 as agreed for comment, allowing a two week review period during working weeks, and relevant correspondence is included in Appendix A.

After a review of the draft LRMP by the NorthConnex ER, further details were required for the LRMP which required further consultation to occur between RMS and HSC. The two parties held a meeting on 5 and 31 January 2017 to discuss:

- Handover requirements and success criteria for components;
- Ongoing responsibilities;
- Future use plans (concepts): and
- Risk Management.
3 Decommissioning and Demobilisation

Condition B43, Item 2 in Table 1 requires rehabilitation of surface infrastructure to be consistent with the following objective:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Infra</td>
<td>Decommissioned and removed, unless Council agrees otherwise</td>
</tr>
</tbody>
</table>

Rehabilitation of surface infrastructure refers to all LLBJV construction equipment, materials and infrastructure, which will be removed at the end of the spoil disposal works by LLBJV. This includes:

- Removal of all infrastructure brought onto the site;
- Demolition of the concrete footings installed for the use of the Conveyors (other than to the extent the concrete footing is more than 500 millimetres below surface level);
- Removal from the site all security fencing and signage erected for project, or as otherwise agreed between the parties;
- Reinstall Bridge Road (Roper Lane to Peats Ferry Road) to its pre-existing condition;
- Return the upgraded section of Bridge Road (Ch 60 to Ch 200) and the upgraded section of the access track down to Old Mans Valley (Ch 200 to Ch 377) in a condition equivalent to condition two (2) for all attributes as defined in Appendix 3 - Part B in accordance with Condition Assessment & Asset Performance Guidelines Practice Note 9: Road Pavements (Visual Assessment) (IPWEA 2015) and provide RMS with a certificate from the Independent Certifier certifying that such upgraded roads have been returned to the condition noted in the above guidelines;
- Repair any damage to the site that has been caused or contributed to by any breach of conditions during the project;
- Do not remove tunnel spoil used in site establishment works and noise bunds;
- Retain original security fencing around the Hornsby Quarry void; and
- Carry out a joint site inspection with RMS, HSC, NorthConnex Project Company, LLBJV, the IC and NorthConnex Environmental Representative (ER) of the final ground profile within the Hornsby Quarry Void and Old Mans Valley. This would be assessed against the parameters covered in Section 4.1.2 below and is a contractual requirement for the works.

All rubbish and site infrastructure associated with the project would be removed from the site by LLBJV as part of site demobilisation works, or as otherwise agreed, and disturbed areas stabilised to a standard agreed to with Council, prior to site handover back to Council (Table 5-7 of EIS, Issues raised by community).

3.1 Handover Certificate

The following will occur to conclude site handover to HSC:

- A joint site inspection with the Council and the Independent Certifier will be carried out of the final ground profile within the Hornsby Quarry Void and Old Mans Valley.
- A certificate will be provided from the Independent Certifier certifying that Bridge Road has been reinstated accordingly and that the upgraded roads have been returned satisfactorily.

When the above requirements for handover have been satisfied by LLBJV, the NorthConnex Project Company must give to RMS a certificate obtained from the IC, certifying that the requirements for handover have been satisfied. When HSC’s handover requirements in Section 1.6 have been satisfied by RMS, RMS will provide HSC with a certificate certifying the requirements for handover have been satisfied.
Ongoing rehabilitation will however occur to ensure establishment of hydromulch across disturbed areas once the site has been demobilised. This is further detailed and described in Section 4 below.
4 Rehabilitation Management

4.1 Site (as a whole) and Final Landform

This section covers the following conditions:

- Condition B41 requires: The Proponent shall implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development, to be generally consistent with the requirements of Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting
- Condition B44, Part (b) requires that this plan must: provide details of the conceptual final landform.
- Condition B43, Item 1 and 3 (part thereof) in Table 1 requires rehabilitation of the site (as a whole) and Old Mans Valley and Quarry Pit Floor to be consistent with the following objectives:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site (as a whole)</td>
<td>• Safe, stable and non-polluting</td>
</tr>
<tr>
<td></td>
<td>• Final landform generally consistent with Council’s Hornsby Park Plan of Management (December 2015), or its latest version</td>
</tr>
<tr>
<td></td>
<td>• Final landform integrated with surrounding natural landforms as far as is reasonable and feasible</td>
</tr>
<tr>
<td>Old Mans Valley and Quarry Pit Floor</td>
<td>• Settlement potential of spoil placed in the quarry void within acceptable limits for Council’s planned future use</td>
</tr>
<tr>
<td></td>
<td>• Maximise the exposure of the diatreme formation in the eastern face of the quarry void</td>
</tr>
</tbody>
</table>

Each aspect is discussed below.

4.1.1 Site safety, stability and non-polluting

The site is required to be “Safe, stable and non-polluting”. To ensure safety and stability of the site at handover, the following requirements will be implemented:

- The original HSC security fencing around the Hornsby quarry void will remain in place;
- A road safety audit will be completed and recommendations implemented by LLBJV covering the upgraded section of Bridge Road (Ch 60 to Ch 200) and the upgraded section of the access track down to Old Mans Valley (Ch 200 to Ch 377); and
- A geotechnical consultant will be engaged to assess if any major changes to the global stability of the quarry void have occurred after completion of spoil haulage. This will be relative to the assessed global stability of the quarry void completed prior to spoil infill commencing, which can be found in the geotechnical assessment report completed by Coffey Geotechnics for RMS, dated 16 November 2016.

To ensure the site is non-polluting, the following requirements would be implemented:

- During the handover period, LLBJV would carry out a final inspection for signs of weeds or weed infestation within the project area. If the presence of weed infestation is reported, LLBJV are required to follow their Weed Management Strategy (Doc No. NCX-LLB-07-0001-NN-PR-0006) which outlines the weed removal and rehabilitation requirements. After completion of the works under the Construction licence, HSC would be responsible for ongoing weed management in accordance with the Hornsby Park PoM.
- As part of the upgraded section of Bridge Road (Ch 60 to Ch 200) and the upgraded section of the access track down to Old Mans Valley (Ch 200 to Ch 377), the stormwater drainage will be designed and constructed to withstand a 20 year ARI storm in accordance with the Hornsby Council Civil Works Specifications – Design Series & Construction Series
These works will be completed early-mid 2017 and will be certified by the IC. Any defects to the stormwater drainage system which arise prior to the end of the licenced period must be fixed by LLBJV to the satisfaction of RMS and HSC.

- Details, including calculations, for the treatment and stabilisation of all surface drainage network elements (dish drains, swale drains, drainage chutes, etc) are included in the Bridge Road Upgrade detailed design drawings. All jute mesh/ hydromulched stabilised swale drains/ diversion banks require 70-80% coverage prior to handover to HSC, or as otherwise agreed with HSC, as per Section 1.6 of this plan. The pit and pipe drainage network, including headwalls and inlets, are to be constructed in accordance with Hornsby Council Civil Works Specifications.

- Hydromulch, will be applied to the base of the quarry void after demobilisation within the quarry void. The will ensure temporary dust and erosion control is in place for the period prior to HSC commencing their works within the quarry void. Alternatives to hydromulch may be considered to achieve the key principles of erosion and dust control.

- Hydromulch will be applied to the OMV stockpile area after completion of site demobilisation. This will ensure temporary dust and erosion control is in place for the period prior to HSC commencing their works within OMV. Alternatives to hydromulch may be considered to achieve the key principles of erosion and dust control.

- Revegetation stages 1, 2 and 3 hydromulching covered in Section 4.2 below will be completed in accordance with the HSC requirements in Section 1.6. This is intended to be permanent revegetation.

The Projects Construction Environmental Management Plan (CEMP) and Environment Protection Licence No. 20570 prescribe measures and requirements to minimise the risk of pollution or offsite discharge. Environmental Inspections are conducted throughout the life of the project on a regular basis in accordance with the CEMP. Prior to handing the site over to Council, an Environmental Inspection will be conducted by NorthConnex Project Environment Representative, RMS, IC (Independent Certifier), Project Co and LLBJV. The scope of this inspection will be to verify the handover requirements covered in Section 1.6 have been met.

4.1.2 Final landform

The final landform is limited to the temporary landform, which will be handed over from RMS to HSC after completion of NorthConnex spoil disposal works. The profile of this can be found in Figure 1 and Figure 2 of Appendix B. The temporary landform is generally consistent with the HSC Hornsby Park PoM. As discussed earlier, the indicative masterplan of this document discusses three conceptual options. A study which evaluated each option against set criteria identified that Option 1 was the highest scoring option, which involved ‘1 million m3 of external fill. OMV would be largely unchanged’. The proposed temporary landform is generally consistent with this option which is shown in Figure 2 of Appendix B.

The final temporary landform will be integrated with surrounding natural landforms. Since only part of the quarry void will be filled with spoil, the quarry void landform will still integrate with surrounding landforms, as there will be minimal disturbance to these surrounding areas. When HSC commence their future works for the quarry void, this will involve major stabilisation of the north and south faces of the quarry void and general earthworks elsewhere in the area of Hornsby Quarry and Old Mans Valley. Refer to Figure 3 and Figure 4 of Appendix B for the indicative proposal by HSC for the overall park and quarry void.

HSC is currently developing more detailed concept plans for the final landform, using 55m AHD as the final lake level as shown in Figure 2 of Appendix B. After spoil infill commences, more accurate projections of the likely volume of spoil to be placed within the void will be known. HSC will revise their final design to match projected tunnel spoil imported by NorthConnex and also the spoil generated by HSC’s future quarry wall stabilisation works. If surplus fill is found to be available, HSC can raise levels elsewhere within the quarry void and OMV, leaving the lake level unchanged. HSC will be in a position where they can manipulate levels to match available spoil from the NorthConnex tunnel and from their own future quarry wall stabilisation works.
The final temporary landform will maximise the exposure of the diatreme formation in the eastern face of the quarry void. It is proposed to protect approximately 50% of the heritage listed eastern face of the quarry void by limiting the extent of fill to 60m AHD at this face (after taking into account a 5m surcharge embankment). As part of the overall masterplan, HSC propose to place a lake directly below the exposed eastern face which is consistent with Figure 3 of Appendix B. A 5m high x 80m long surcharge will be applied to settle this area where the lake is proposed. The EIS assessed the impact on the diatreme at a fill level of 64m AHD. The following is an extract from Section 7.6.4 of the EIS:

*The project would directly impact on non-Aboriginal heritage through spoil emplacement activities. For the purposes of this assessment a worst case fill level of 64 metres RL has been considered (based on a fill volume of up to 1.5 million cubic metres). While the spoil deposition in the quarry void is unlikely to damage the item, the partial covering of the volcanic rock and associated obscuring of view-lines will alter the heritage value of the item. As the sections of the diatreme closest to the void rim would remain visible, the impacts to heritage significance of the diatreme are assessed to be minor. (AECOM Australia 2015, pg. 309)*

As the fill level against the eastern face of the void will be less than 64m AHD, it can be considered that this will be consistent with the requirements of the EIS and Conditions of Approval. In terms of the risk of discharged spoil covering the diatreme from the conveyor, this will be eliminated due to the conveyor arm extending far enough past this face.

Settlement potential of spoil placed in the quarry void will be within acceptable limits for HSC’s planned future use. The EIS states that “The filled in void would be compacted to a level suitable for future use for recreation, rather than structural/building capacity”. Consistent with the EIS, compaction of the spoil placed in the Hornsby Quarry void will be derived from:

- The 5m high x 80m long surcharge fill area on the eastern side of the void area. This surcharge area will provide compaction against compaction arising from groundwater surcharge
- The fill placed by HSC to create the proposed Hornsby Park, refer to Figure 4 (Indicative Masterplan) and Figure 3 (the cross section) of Appendix B.

Based on the above no mechanical compaction is required for the spoil placement. As shown in Figure 2 of Appendix B, the surcharge fill will be ultimately removed by HSC and the area reshaped as a lake as part of future works.

### 4.1.3 Outdoor Lighting

To allow for the new Hornsby TAFE driveway access adjacent to the upgraded section of Bridge Road (Ch 60 to Ch 200), two street lights at approximately chainages CH 85.00 and CH 125.00 required a minor lateral shift to the east. This does not cause any adverse visual impacts to the adjacent residents and is consistent with the requirements of AS 4282 - *Control of the obtrusive effects of outdoor lighting*.

### 4.2 Stabilisation and Revegetation of Disturbed areas

Condition B44, Part (c) requires that this plan must:

- describe the measures that would be implemented to ensure compliance with the rehabilitation objectives in Table 1.
Condition B43, Item 3 (part thereof) in Table 4-1 requires rehabilitation of the site (as a whole) to be consistent with the following objectives:

| Old Mans Valley and Quarry Pit Floor | Areas disturbed by the SSI to be landscaped and vegetated using native tree and understorey species, unless Council agrees otherwise |

HSC has agreed during consultation for this plan with RMS held on 5\(^{th}\) January 2017 that only hydro mulching is required for the disturbed areas of the site and that the planting of any trees is not required. As part of future works, HSC proposes to stabilise the void by significant earthworks battering back the steep sides to the north and south of the void. Further, HSC is considering the placement of a playing field in Old Mans Valley. Refer to the indicative Masterplan shown in Figure 3 of Appendix B. Concept designs have been prepared, however, until a design is adopted by HSC it is not considered prudent to request tree species to be planted as final levels over large tracts of the area and final usage need to be determined.

The areas disturbed by the project are to be hydromulched to ensure stabilisation and revegetation. This ensures the requirements of condition B44, Part c are met. The application of hydromulching will follow the requirements covered in Appendix D: Hydromulch. The plan showing the disturbed areas is shown in the ‘Hornsby Quarry Proposed Site Reinstatement Plan’, drawing number ALL-LLB-01-0100-MD-DG-0205 and is shown in Appendix C. The constituents of the seed mixture for the hydromulching have been proposed by the HSC and are shown in Appendix D. The 70-80% revegetation coverage would consist of millet and rye grass only for quick establishment of ground cover, while the native seed mix is provided for the long term coverage. Native seed mix could take approximately one year to establish, hence the need for the quick growing millet and rye grass for initial revegetation. Weed coverage is excluded from the coverage criteria.

Alternatives to hydromulching may also be considered in agreement with HSC, should the PoM future works program negate the need for revegetation establishment. Alternatives to hydromulch may also be considered if reasonable and practicable to ensure the rehabilitation objectives of Condition B44, Part (c) are met, that is providing a “Safe, stable and non-polluting” site.

The stages of revegetation will be completed as follows:

1. Noise mounds in the stockpile area will be hydromulched, or as otherwise agreed, when the mounds are complete.
2. OMV access track disturbed batter areas will be applied with hydromulch, or as otherwise agreed, during the finishing work stage after pavement construction except for rock faces and shotcrete reinforced batter faces will be left as is without hydromulching.
3. Bridge Rd disturbed areas will be hydromulched, or as otherwise agreed, during the finishing stage of works except for rock faces and shotcrete batter face will be left as is without hydromulch.
4. Quarry void pit floor to be hydromulched, or as otherwise agreed, at completion of spoil.
5. Old Mans Valley stockpile area to be hydromulched, or as otherwise agreed, progressively and consecutively with demobilisation works.

Note that the other sections of Condition B43 Table 1 are captured in Sections 3 and 4.1 of this plan.
5 Monitoring, Reviewing and Implementing

Condition B44, Part (d) and (f) requires that this plan must:
   d) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria; and
   e) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

The hydromulching works will be carried out by LLBJV. RMS, HSC and the IC will review QA documentation for compliance and will monitor application of hydromulch in accordance with the requirements listed in Appendix D: Hydromulch.

5.1 Monitoring and reporting

The table below details the proposed monitoring and reporting to be implemented against the requirements of condition B44 Table 1.

The primary measure being proposed is the application of hydromulch along disturbed areas (not including rock) of the quarry void, Old Mans Valley and the new section of Bridge Rd (not including rock or shotcrete batters). The criteria determining the level of performance would be dependent on the level of established growth of grasses. As this would be seasonal, depending on the time of the year, expectations will relate to this. Completion will require the adequate establishment of grasses over the disturbed areas. The monitoring program will involve periodic visual inspections as they will be adequate to assess the criteria. The stages of revegetation required for completion are included in Section 4. Stages 1, 2 and 3 will be monitored periodically by LLBJV to ensure they are being met. Stages 4 and 5 will be monitored by RMS and HSC to ensure establishment of the growth of grasses.

As noted in Section 4.2, alternatives to hydromulching may also be considered in agreement with HSC.

5.1.1 Monitoring during the Construction Licence

This refers to the period during the Hornsby Quarry Road Construction Spoil Management Project, prior to handover back to HSC.

Revegetation stages 1, 2 and 3 which are listed in Section 4.2, will be monitored in accordance with the LLBJV Hornsby Quarry Fauna & Flora Management Plan (FFMP). This will be monitored against the success criteria covered in Section 1.6 and the revegetation requirements listed in the FFMP. It is expected that progress of this revegetation would be monitored and enforced during the periodic Environmental Review Group (ERG) site visits. This would include the 70-80% crop cover over the short term and native grasses over the long term.

Revegetation stages 4 and 5 are likely to occur close to handover, so will only require monitoring by LLBJV in accordance with the FFMP until the completion of the Construction Licence.

5.1.2 Monitoring and ongoing responsibilities after the Construction Licence

This refers to the period after Hornsby Quarry has been handed back to HSC after completion of the Construction Licence.

Revegetation stages 4 and 5 are likely to occur close to handover, and ongoing monitoring will be taken over by HSC after completion of the Construction Licence to ensure establishment as per Section 4.2.
This would also include monitoring of the establishment of 70-80% cover crop over the short term and establishment of native grasses over the longer term.

HSC will resume the following ongoing responsibilities after completion of the licenced period:

- Site security, security fencing and preventing public access to the quarry void;
- Maintenance and operation of all local roads and haul roads which were within the licenced area;
- Monitoring, watering and maintenance of revegetation stages 4 and 5;
- Management of weeds in accordance with the NSW Noxious Weeds Act 1993 and HSC’s weeds management procedure;
- Global and local stability of the quarry void and surrounding areas; and
- Erosion and sediment control of the previous licenced area.

RMS will have no further obligation to HSC in respect of the Hornsby Quarry or OMV after completion of the licenced period.

5.2 Reviewing

RMS NCX staff will review the LRMP if there are any significant changes to the Hornsby Quarry project scope. HSC will need to update the LRMP (in consultation with RMS) if there are further updates to the Hornsby Park PoM.

The personnel for monitoring, reviewing and implementing the LRMP include:

- RMS NorthConnex Senior Project Manager;
- RMS NorthConnex Environment Officer;
- HSC; and
- The NorthConnex Environmental Representative.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Objective</th>
<th>Completion criteria</th>
<th>Target completion</th>
<th>Monitoring/reporting</th>
</tr>
</thead>
</table>
| **Site (as a whole)** | Safe, stable and non-polluting                 | • Original HSC security fencing around the quarry void to remain in place  
• Road Safety Audit completed and recommendations implemented by LLBJV covering the upgraded section of Bridge Road (Ch 60 to Ch 200) and the upgraded section of the access track down to Old Mans Valley (Ch 200 to Ch 377)  
• Confirmation of no significant changes to global stability of quarry void relative to what has been assessed prior to works commencing on site  
• No weeds or weed infestations within the project area  
• Hydromulch applied to floor of noise mounds, Bridge Rd disturbed areas, OMV access track disturbed areas, quarry void and OMV stockpile area  
• Final landform generally consistent with Council’s Hornsby Park Plan of Management (December 2015), or its latest version  
• Final landform integrated with surrounding natural landforms as far as is reasonable and feasible  | • Site disestablishment  
• After road design finalised  
• After completion of spoil infill activities  
• Prior to handover  
• Refer to Section 4.2 for revegetation stages  
• After completion of spoil infill activities  | • Site inspection between HSC, LLBJV, RMS, NCX ER and NCX ProjectCo to confirm original security fencing is still in place.  
• Already completed as per condition B6  
• RMS will have own monitoring (carried out by a suitably qualified geotechnical consultant) in place through-out the works which include periodic inspection reports. Geotech consultant to confirm at completion there are no major changes to global stability via brief report/ memo.  
• Site inspection between HSC, LLBJV, RMS, NCX ER and NCX ProjectCo to confirm there are no weeds present within the project area  
Site inspection between HSC, LLBJV, RMS, NCX ER and NCX ProjectCo to confirm the completion criteria has been followed in accordance with requirements in Section 1.6. Responsibility for monitoring will transfer to HSC after handover.  
This will be confirmed via survey undertaken by a Registered Surveyor                                                   |
| **Surface Infrastructure** | Decommissioned and removed, unless Council agrees otherwise | • Removal of all infrastructure brought onto the site;  
• Demolition of the concrete footings installed for the use of the Conveyors (other than to the extent the concrete footing is more than 500 millimetres below surface level);  
• Removal from the site all security fencing and signage erected for project;  
• Carry out a joint site inspection with the HSC and the Independent Certifier of the final ground profile within the Hornsby Quarry Void and Old Mans Valley;  
• Reinstate Bridge Road (Roper Lane to Peats Ferry Road) to its pre-existing condition;  
• Return the upgraded section of Bridge Road (Ch 60 to Ch 200) and the upgraded section of the access track down to Old Mans Valley (Ch 200 to Ch 377) in a condition equivalent to condition two (2) for all attributes as defined in Appendix 3 - Part B in accordance with Condition Assessment & Asset Performance Guidelines Practice Note 9: Road Pavements (Visual Assessment) (IPWEA 2015) and provide RMS with a certificate from the Independent Certifier certifying that such upgraded roads have been returned in accordance with this Scope of Quarry Works  
• Repair any damage to the site that it has been caused or contributed to by any breach of conditions during the project; and  
• Do not remove Spoil used in site establishment works and noise bunds.  | • Site disestablishment  | • Site inspection between HSC, LLBJV, RMS, NCX ER and NCX ProjectCo to confirm the completion criteria has been followed. |
| Old Mans Valley and Quarry Pit Floor | Settlement potential of spoil placed in the quarry void within acceptable limits for Council’s planned future use | Settlement potential is not required to be checked as agreed in Hornsby Quarry contract. The only requirement was for a 5m high x 80m long area of surcharge fill installed on the eastern end of the void in accordance with the ‘Hornsby Quarry Proposed Site Reinstatement Plan’ construction methods drawings, drawing number PSM1059-18 Rev03. Temporary landform shown in ‘Hornsby Quarry Proposed Site Reinstatement Plan’ construction methods drawings, drawing number PSM1059-18 Rev03, which maximises exposure of diatreme on eastern face. Areas to be hydromulched are covered in the ‘Hornsby Quarry Proposed Site Reinstatement Plan’, drawing number ALL-LLB-01-0100-MD-DG-0202, or as otherwise agreed. | After completion of spoil infill activities The stages of revegetation are covered in section 4.2 of this report. | After completion of spoil infill activities | This will be confirmed via survey undertaken by a Registered Surveyor Visual inspections of the revegetation of hydromulching of disturbed areas will be visually monitored after each stage of hydromulch is completed, until minimum 70-80% coverage is achieved. Alternatives may be considered where reasonable and practicable to achieve a safe, stable and non polluting site. |
6 Risk Management

Condition B44, Part (e) requires that this plan must:
 e) identify the potential risks to the successful rehabilitation of the site, and include a
description of the contingency measures that would be implemented to mitigate these risks.

The main risks identified during handover include the hydromulch and global stability of the quarry
void relative to the assessed stability by Coffey Geotechnics. A risk assessment was carried out by
RMS and HSC during the consultation meeting on 4 January 2017 to discuss the report, with the
discussed risks and required contingency measures captured in Table 4 below.

Table 4: Identified risks and contingency measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Risk</th>
<th>Contingency Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Storm event disturbs or removes the recently applied hydromulch layer</td>
<td>Ensure correct application in accordance with the requirements of Appendix D, particularly ensuring a check of the weather forecast for storm events in weeks after application</td>
</tr>
<tr>
<td>2</td>
<td>Vegetation is unable to be established due to hot weather or lack of watering</td>
<td>Ensure watering regime in accordance with the LLBJV FFMP which requires adequate irrigation until vegetation is established; avoid applying hydromulch during warmer summer months if possible</td>
</tr>
<tr>
<td>3</td>
<td>Incorrect mix constituents are used</td>
<td>QA records to be checked in accordance with the mix constituents listed in Appendix D.</td>
</tr>
<tr>
<td>4</td>
<td>Areas where hydromulch applied are disturbed by human interaction and interfere with establishment.</td>
<td>Once an area has the hydromulch applied it will be zoned for restricted access to prevent disturbance occurring.</td>
</tr>
<tr>
<td>5</td>
<td>Global stability of the quarry void at handover</td>
<td>A geotechnical consultant will confirm that there are no major signs of change to the global stability of the quarry void at handover back to the HSC and provide a report.</td>
</tr>
<tr>
<td>6</td>
<td>Weed infestation within project area</td>
<td>LLBJV to follow Weed Management Strategy prior to handover. HSC to follow council’s weeds management procedure in accordance with the NSW Noxious Weeds Act 1993 and</td>
</tr>
<tr>
<td>7</td>
<td>Site security (unauthorised public access to the quarry void)</td>
<td>Original site fencing around the quarry void will be checked during the final handover inspection.</td>
</tr>
<tr>
<td>8</td>
<td>Erosion of batters and table drains along upgraded section of Bridge Road (Ch 60 to Ch 200) and the upgraded section of the access track down to Old Mans Valley (Ch 200 to Ch 377)</td>
<td>Check of the stormwater drainage for defects to be carried out during the handover inspection. IC to certify that the stormwater drainage has been designed and constructed to withstand a 20 year ARI storm in accordance with the Hornsby Council Civil Works Specifications – Design Series &amp; Construction Series (Rev 2 May 2005).</td>
</tr>
<tr>
<td>9</td>
<td>Other defects</td>
<td>LLBJV must repair any other defects picked up during the handover inspection to the satisfaction of RMS and HSC.</td>
</tr>
<tr>
<td>10</td>
<td>Quarry void floor and OMV stockpile area revegetation/ dust control</td>
<td>Hydromulching to a level requiring minimum 70-80% coverage. Alternatives may be considered to achieve a safe, stable and non polluting site, focussing specifically on erosion and dust control measures. For example, the application of a soil binder.</td>
</tr>
</tbody>
</table>

Considering that HSC will continue to do extensive rehabilitation work in the quarry void as part of its future plans, most of the measures are temporary and will be of low risk only.
### Conclusion

The intent of Hornsby Quarry Road Construction Spoil Management project is to contribute towards achieving the vision and conceptual landform identified in Hornsby Council’s *Hornsby Park Plan of Management* (December 2015). This is being completed by partially filling the quarry void with spoil material from the NorthConnex project and upgrading a section of Bridge Road and the access track down to Old Mans Valley.

This document has been developed to outline the measures that are required to rehabilitate the site to the satisfaction of Hornsby Council and ensure this is consistent with the rehabilitation strategy set out in the EIS. This will allow Hornsby Council to continue their planned future rehabilitation and redevelopment of the quarry for recreational purposes and public benefit.
8 References


Hornsby Shire Council, 2015, *Hornsby Park Plan of Management (including Hornsby Quarry and Old Mans Valley)*, Hornsby
Appendix A

Meeting Minutes and Correspondence
**MEETING MINUTES**

<table>
<thead>
<tr>
<th>1. Scope</th>
<th>Responsible person</th>
<th>Date required</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Both parties confirmed that the scope of the Landscape &amp; Rehabilitation Management Plan (LRMP) is mainly for the stabilisation/ revegetation (hydro-mulching) of disturbed areas of the quarry void, Old Mans Valley and the new section of Bridge Rd after completion of NorthConnex spoil disposal. This is a temporary measure required before handover of Hornsby Quarry back to HSC. This does not include work to be covered under the permanent rehabilitation works to be carried out by HSC as part of the Master plan for Hornsby Quarry.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- The plan area to be hydromulched is shown in the 'Hornsby Quarry Proposed Site Reinstatement Plan', drawing number ALL-LLB-01-0100-MD-DG-0205</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 2. Condition of Approval Compliance | | |
|-----------------------------------| | |
| - Both parties went through the B43 and B44 conditions to detail how compliance would be covered in the LRMP, as follows: | | |

**B44 The Proponent shall prepare and implement a Landscape and Rehabilitation Management Plan for the SSI. This plan must:**

(a) be prepared in consultation with Council and be submitted to the Secretary for approval within 12 months of the date of this approval, unless otherwise agreed by the Secretary;

- These meeting minutes, Hornsby Quarry project contract/ change notice and other correspondence between RMS – HSC will form the required consultation. HSC will be sent a final draft copy for comment prior to finalising the plan.
- The Secretary will be sent the LRMP by 18 January 2017.

(b) provide details of the conceptual final landform;

- This is limited to the temporary landform which will be handed over from RMS to HSC after completion of NorthConnex spoil disposal works. This can be found in the ‘Hornsby Quarry Proposed Site Reinstatement Plan’ construction methods drawings, drawing number PSM1059-18 Rev03.
- Conceptual permanent landform is yet to be finalised by HSC and does not form part of this LRMP.
(c) describe the measures that would be implemented to ensure compliance with the rehabilitation objectives in Table 1:

- Refer to the B43 condition details below.

(d) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;

- The only measure being proposed is the application of hydro-mulch along disturbed areas (not including rock) of the quarry void, Old Mans Valley and the new section of Bridge Rd. The effectiveness would be dependent on the level of established growth of grasses which would be seasonal depending on the time of the year. Visual inspections would be adequate to check this.

- Revegetation would be staged as follow: disturbed areas of the new section of Bridge Rd after completion of construction; base of quarry void after completion of spoil infill; and Old Mans Valley after completion of site disestablishment and clean-up by LLBJV.

(e) identify the potential risks to the successful rehabilitation of the site, and include a description of the contingency measures that would be implemented to mitigate these risks; and

- This is limited to the temporary landform which will be handed over from RMS to HSC after completion of NorthConnex spoil disposal works.

<table>
<thead>
<tr>
<th>No.</th>
<th>Risk</th>
<th>Contingency measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Major storm washing away recently applied hydro-mulch</td>
<td>Correct application in accordance with contract requirements, check weather forecast for storms in weeks after application</td>
</tr>
<tr>
<td>2.</td>
<td>Grasses do no establish due to hot weather or lack of watering</td>
<td>Ensure adequate watering regime; avoid applying hydro-mulch during warmer summer months if possible</td>
</tr>
<tr>
<td>3.</td>
<td>Incorrect mix constituents</td>
<td>QA records to be checked prior to inclusion</td>
</tr>
</tbody>
</table>

(f) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

- LLBJV will carry out hydro-mulching works. RMS will review QA documentation for compliance and will monitor application of hydro-mulch in accordance with item 57 in the LLBJV ‘Permissible Departures to Council Standards and Specifications’.

B43 The Applicant shall rehabilitate the site to the satisfaction of Council. This rehabilitation must be generally consistent with the rehabilitation strategy set out in the EIS and must comply with the objectives in Table 1.
Site (as a whole)
- Safe, stable and non-polluting
  - Void global stability: geotechnical consultant to confirm after LLBJV site disestablishment that there are no major signs of change to the global stability of the quarry void at handover back to HSC
  - All construction materials, equipment and buildings to be removed at completion of LLBJV works
  - Disturbed areas (non-rock) to be hydro-mulched in accordance with the 'Hornsby Quarry Proposed Site Reinstatement Plan', drawing number ALL-LLB-01-0100-MD-DG-0205
- Final landform generally consistent with Council’s Hornsby Park Plan of Management (December 2015), or its latest version
  - HSC confirmed that the landform required is that which was agreed during finalisation of the Hornsby Quarry spoil disposal contract: refer to ‘Hornsby Quarry Proposed Site Reinstatement Plan’ construction methods drawings, drawing number PSM1059-18 Rev03.
  - HSC advised that the conceptual final landform for their Hornsby Park Plan of Management is not yet confirmed
- Final landform integrated with surrounding natural landforms as far as is reasonable and feasible
  - Since only part of the quarry void will be filled with spoil, the quarry void landform will still integrate with surrounding landforms.

Surface Infrastructure
- Decommissioned and removed, unless Council agrees otherwise
  - This refers to all LLBJV construction equipment, materials and buildings which will be removed at the end of the spoil disposal works.

Old Mans Valley and Quarry Pit Floor
- Settlement potential of spoil placed in the quarry void within acceptable limits for Council’s planned future use
  - HSC confirmed that settlement potential is not considered an issue since it was agreed that compaction would not be required during finalisation of the Hornsby Quarry spoil disposal contract: refer to Clause 6. (f) of the ‘Attachment A – Hornsby Quarry Project – Scope of Quarry Works’

(f) has no obligation to carry out compaction of Spoil;
- Maximise the exposure of the diatreme formation in the eastern face of the quarry void
  - The maximum level (RL) that spoil would be backfilled to was agreed during finalisation of the Hornsby Quarry spoil disposal contract. This can be found in the ‘Hornsby Quarry Proposed Site Reinstatement Plan’ construction methods drawings, drawing number PSM1059-18 Rev03. This shows that exposure of the diatreme formation in the eastern face of the quarry void is maximised.
- Areas disturbed by the SSI to be landscaped and vegetated using native tree and understorey species, unless Council agrees otherwise
  - Disturbed areas to be hydro-mulched in accordance with the ‘Hornsby Quarry Proposed Site Reinstatement Plan’, drawing number ALL-LLB-01-0100-MD-DG-0205 and the seed mix constituents proposed by HSC.

3. Other

-
04 May 2017

Roads and Maritime Services
NorthConnex Project Office
Level 2 Building D, 55 Coonara Ave
WEST PENNANT HILLS NSW, 2125

Attention: Sonja Shand

Dear Sonja

Request for Approval of Hornsby Quarry Landscape and Rehabilitation Management Plan (551-7066, Hornsby Quarry).

I confirm that Council, in collaboration with Roads and Maritime Services, has participated in the preparation of the submission of the Landscape and Rehabilitation Management Plan (LRMP) submitted to NSW Department of Planning and Environment.

Council agrees to the handover requirements outlined in the LRMP, taking over maintenance responsibility on issue of the handover certificate (where RMS has no further obligation).

Please contact Craig Clendinning on 9847 6701 if you require any further information.

Yours faithfully

Craig Clendinning
Project Manager, Major Projects
Design and Construction Branch
Appendix B

Final Landform
Figure 1: Indicative final plan and cross-sectional layout of spoil infill.
Figure 2: Cross-section showing indicative quarry void infill level.
Figure 3: Conceptual final landform from HSC Hornsby Park PoM (Hornsby Shire Council, 2015)
Figure 4: Indicative masterplan (Hornsby Shire Council, 2015)
Appendix C

Hornsby Quarry Proposed Site Reinstatement Plan
Appendix D

Hydromulch
Hydromulch

Hydromulching will consist of:
- A surface cover crop spray which is to be watered and maintained until 70-80% coverage of revegetation forms or until the end of the licenced period
- For road batters disturbed areas, a native seed mix hydromulch will be used as per Annexure R178/A Grass & Native Seed Mixes (shown below)
Extract from RMS QA Specification R178

ANNEXURE R178/A - GRASS AND NATIVE SEED MIXES

TYPE 1 MIX for Hornsby Quarry

<table>
<thead>
<tr>
<th>Species</th>
<th>Application rate (kg/ha.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass seed</td>
<td></td>
</tr>
<tr>
<td>Sterile Japanese Millet (Summer: September to March)</td>
<td>65</td>
</tr>
<tr>
<td>Or</td>
<td></td>
</tr>
<tr>
<td>Sterile Rye Corn (Winter: April to August)</td>
<td>65</td>
</tr>
<tr>
<td>Sub total</td>
<td>65</td>
</tr>
<tr>
<td>Native seed</td>
<td></td>
</tr>
<tr>
<td>Microlaena stipoides</td>
<td>2</td>
</tr>
<tr>
<td>Entolasia stricta</td>
<td>2</td>
</tr>
<tr>
<td>Entolasia marginata</td>
<td>2</td>
</tr>
<tr>
<td>Aristida vagans</td>
<td>2</td>
</tr>
<tr>
<td>Themeda enotralis</td>
<td>2</td>
</tr>
<tr>
<td>Sub total</td>
<td>10</td>
</tr>
</tbody>
</table>

Organic Fertiliser: Pelletised poultry manure to be applied at a rate of 250 kg/hectare.

* H = Pre-treatment to assist germination by immersing seeds contained in bag in hot water (90°C) for 60 minutes:

NOTES

(1) Only local native species are to be used.

(2) Eucalyptus seed must not be sown:
   * on embankments of Sediment Control basins;
   * within 10 metres of the edge of pavement where no safety barrier is to be provided, or
     within 4 metres of the edge of pavement where a safety barrier is to be erected;
   * within 10 metres of powerlines.

(3) Triticale species must not be used in revegetation mixes in the Tablelands, Central Slopes and Western Plains regions, in order to prevent the spread of "wheat rust" in wheat growing areas.

(4) White, Strawberry and Subterranean Clovers (used as cover crops) must not be used in conjunction with native seeding, since their aggressive spreading growth may prevent germination of native seeds.

(5) All future mowing will be limited to a 2.0 metre wide strip adjacent to both sides of the carriageway. The remaining road reserves must be left unmown to permit natural regeneration of native seed.
The hydromulch, hydrosed and straw mulch must comprise the relevant materials listed in Table R178.1 applied at the rates set out in Table R178.1.

<table>
<thead>
<tr>
<th>Material</th>
<th>Clause</th>
<th>Rate per Hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Hydromulching</td>
<td>2.5</td>
<td>35,000 litres</td>
</tr>
<tr>
<td>(i) Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ii) Organic fertiliser: pelletised poultry manure</td>
<td>2.4</td>
<td>250 kg</td>
</tr>
<tr>
<td>(iii) Seed</td>
<td>2.3</td>
<td>See Annexure R178/A</td>
</tr>
<tr>
<td>(iv) Cellulose fibre mulch: - Sugar cane mulch, mixed with 20% (by weight) of shredded paper or - Wood fibre mulch</td>
<td>2.6</td>
<td>3,500 kg</td>
</tr>
<tr>
<td>(v) Binder: granulated ‘Guar gum’</td>
<td>2.8</td>
<td>60 kg</td>
</tr>
<tr>
<td>(vii) Biodegradable green dye</td>
<td>2.9</td>
<td>As recommended</td>
</tr>
<tr>
<td>(b) Hydrosedding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Water</td>
<td>2.7</td>
<td>20,000 litres</td>
</tr>
<tr>
<td>(ii) Organic fertiliser: pelletised poultry manure</td>
<td>2.4</td>
<td>250 kg</td>
</tr>
<tr>
<td>(iii) Seed</td>
<td>2.3</td>
<td>See Annexure R178/A</td>
</tr>
<tr>
<td>(iv) Biodegradable green dye</td>
<td>2.9</td>
<td>As recommended</td>
</tr>
<tr>
<td>(c) Strawmulching</td>
<td>2.5</td>
<td>5,000 kg</td>
</tr>
<tr>
<td>(i) Straw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ii) Binder: - Undiluted residual bitumen emulsion or - Granulated ‘Guar gum’</td>
<td>2.8</td>
<td>2,500 litres</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 kg</td>
</tr>
</tbody>
</table>

Notes:

The use of hydromulching as described (or similar) above shall be used on sloping land greater than 10% (5-6 degrees) to assist in the stabilisation of the seed mix and reduce potential erosion.

The use of hydroseding as described above may occur on gently sloping lands less than 10% (5-6 degrees).