

Tasman Extension Project Technical Overview

June 2012





Donaldson Coal Pty Limited

1132 John Renshaw Drive
Black Hill NSW

PO Box 2275
Greenhills NSW 2323

Environmental Enquiries

Phil Brown, Environmental Manager
Phone: 1800 111 271

Community Enquiries

Adam Heeney, Community Liaison Officer
Phone: 0400 446 700

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OVERVIEW

The Tasman Underground Mine is an underground mining operation located approximately 20 kilometres west of the Port of Newcastle in New South Wales (Figure 1).

The Tasman Underground Mine is owned and operated by Newcastle Coal Company Pty Ltd, a wholly owned subsidiary of Donaldson Coal Pty Limited (Donaldson Coal).

Donaldson Coal also owns and operates the Donaldson Open Cut Mine and Abel Underground Mine, which are located approximately 10 kilometres north-east of the Tasman Underground Mine (Figure 2).

The Tasman Underground Mine commenced operations in 2006 and currently employs over 100 people. The mine is approved to produce up to 975,000 tonnes of run-of-mine (ROM) coal from the Fassifern Seam. Coal is recovered using bord and pillar underground mining methods, which uses continuous miners for first workings and secondary total and partial extraction.

The underground mining operations at the Tasman Underground Mine are supported by an existing pit top facility (Plate 1) located off George Booth Drive (Figure 2).

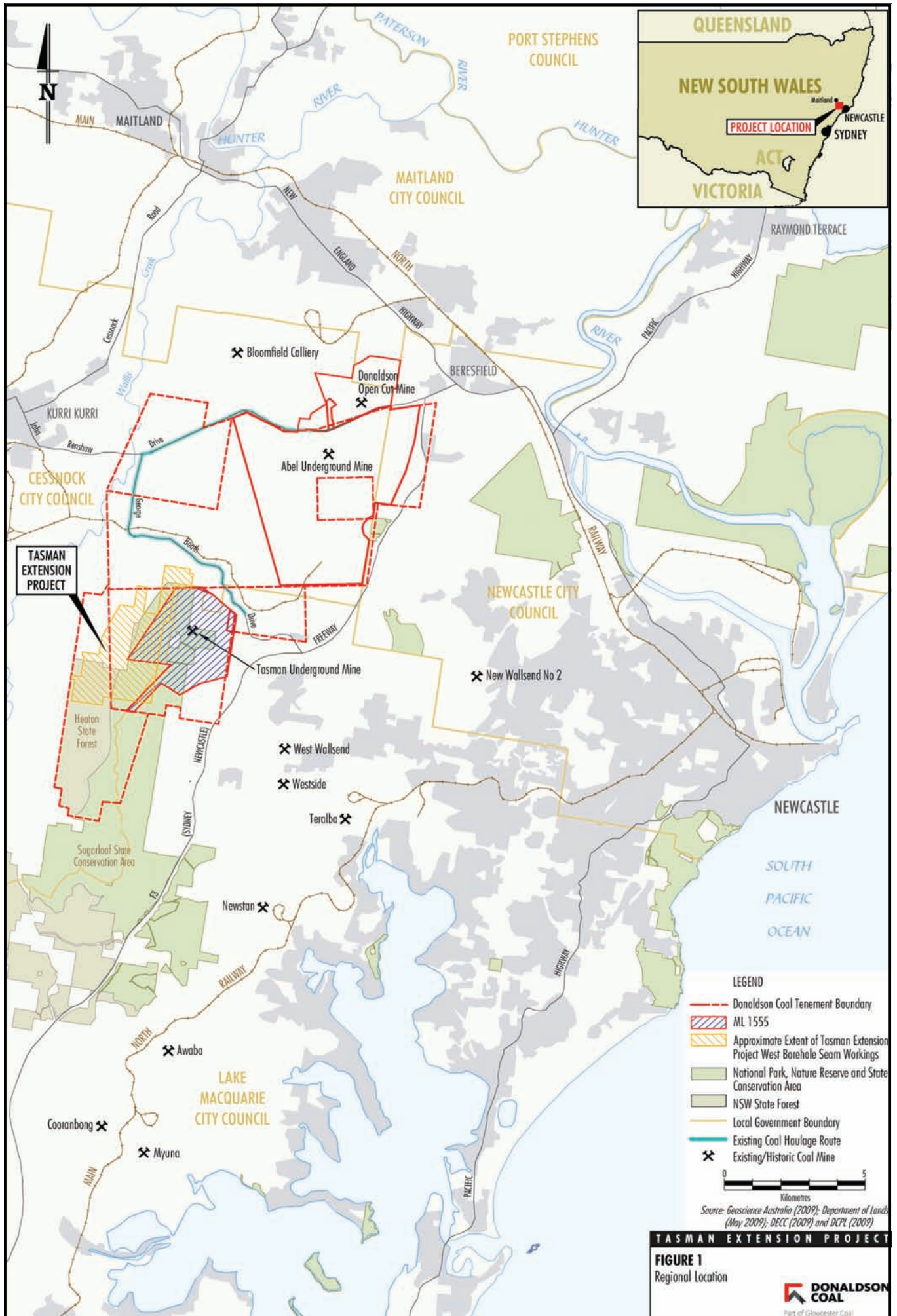
The existing pit top facility comprises ROM coal handling infrastructure, administration facilities, worker amenities and stores buildings, workshop compound, bunded fuel tank area, transformer, water management systems and mine infrastructure.

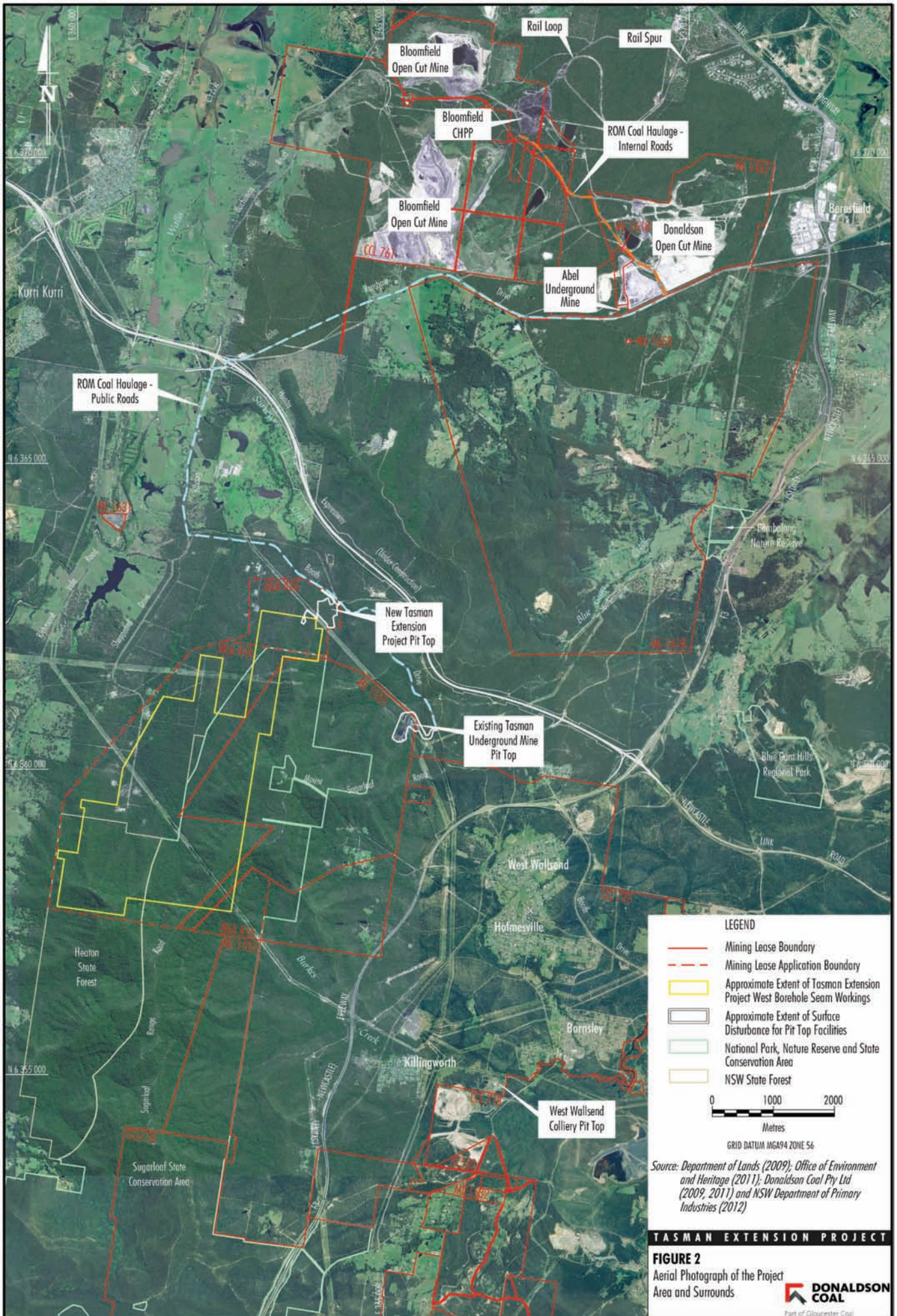
ROM coal mined at the Tasman Underground Mine is transported on weekdays via approximately 16 kilometres of public roads (George Booth Drive and John Renshaw Drive) to the Bloomfield Coal Handling and Preparation Plant to the north of the Tasman Underground Mine (Figure 2). Bloomfield Collieries Pty Limited (Bloomfield) owns and operates the Bloomfield Coal Handling and Preparation Plant.

Donaldson Coal has lodged a development application for the Tasman Extension Project (the Project), which involves the continuation and extension of the existing Tasman Underground Mine into the West Borehole Seam.



Plate 1 – Existing Tasman Underground Mine Pit Top





TASMAN EXTENSION PROJECT

Underground mining currently occurs in the Fassifern Seam within the Newcastle Coal Measures. The Tasman Extension Project involves the extension of underground mining operations into the West Borehole Seam to the north and west of the approved Fassifern Seam workings (Figures 3).

The West Borehole Seam is located approximately 175 metres below the Fassifern Seam in the Newcastle Coal Measures.

Mining in the West Borehole Seam would involve bord and pillar underground mining methods, with partial and total pillar extraction, at an increased production rate of up to 1.5 million tonnes per annum. Approximately 19 million tonnes of ROM coal would be mined from the West Borehole Seam during the life of the Project.

The Project would provide approximately 15 years of additional operational life (i.e. until approximately 2029) and would increase the operational workforce to approximately 150 people.

Subsidence Management

The bord and pillar mining method allows for subsidence impacts to be managed by increasing or decreasing the amount of coal extracted in particular areas.

Subsidence control zones have been developed and adopted for the Project to manage potential subsidence impacts on principal residences, surface infrastructure, cliff lines, steep slopes, streams and relevant vegetation communities. The Project subsidence control zones have been designed to achieve subsidence performance measures for significant surface features (i.e. to minimise potential impacts to these features).

The Project subsidence control zones would involve a combination of partial extraction (i.e. extracting less coal to reduce subsidence effects) or limiting extraction to first workings only (i.e. limited coal extraction and nonsubsiding) in some areas.

An example of the application of subsidence control zones to achieve subsidence performance measures at significant surface features (in this example a principal residence) is provided in Box 1.

Box 1 Principal Residences - Subsidence Management



Private Residence East of Sheppard Drive*

Project subsidence performance measures:

- Maintain safety.
- Serviceability to be maintained and/or fully compensated.
- Damage must be fully repaired or compensated.

Project subsidence control zone:

- First workings only within 26.5° angle of draw resulting in less than 20 millimetres (mm) subsidence, 5 millimetres per metre (mm/m) tilt and 2 mm/m strain (may be relaxed if agreement reached with the owner).

Project subsidence control outcomes:

- No more than minimal impact on the residence, unless otherwise agreed by the owner.
- Long-term stable pillar (i.e. non-subsiding) left under each principal residence, unless otherwise agreed by the owner.

*Ditton Geotechnical Services Pty Ltd, 2012.

New Pit Top Facility

A new pit top facility would be developed off George Booth Drive to allow access to the West Borehole Seam. The new pit top facility would comprise ROM coal handling infrastructure, administration facilities, worker amenities and stores buildings, workshop compound, bunded fuel tank area, electricity reticulation, water management equipment and structures and other associated infrastructure.

The new pit top facility would reduce the ROM coal haulage return trip to the Bloomfield Coal Handling and Preparation Plant on the public road network by approximately 6 kilometres. A roundabout would be constructed on George Booth Drive for access to the new pit top facility.

The new pit top would be developed during the first 18 months of the Project. Construction activities would generally be restricted to daytime hours (i.e. 7.00 am to 6.00 pm).

ROM Coal Transport

ROM coal mined from the existing Tasman Underground Mine is stockpiled at the existing pit top facility. ROM coal is then reclaimed from the stockpiles by front end loader and loaded onto trucks (up to 19 metre long Stag B-Doubles) for transport to the Bloomfield Coal Handling and Preparation Plant. Plate 2 shows a B-Double truck being loaded at the Tasman Underground Mine.



Plate 2 – Loading of ROM Coal into a B-Double Truck at the Tasman Underground Mine

ROM coal dispatch from the existing Tasman Underground Mine to the Bloomfield Coal Handling and Preparation Plant is undertaken between 7.00 am to 10.00 pm Monday to Friday.

Total road haulage (including ROM coal transport and waste rock from the new pit top construction) for the Project would be maintained at the existing maximum of 4,000 tonnes per day prior to commissioning of the Hunter Expressway.

Following commissioning of the Hunter Expressway, the Project would involve ROM coal transport of up to 6,200 tonnes per day along George Booth Drive and John Renshaw Drive.

The new Project pit top facility location would reduce the ROM coal haulage return trip by approximately 6 kilometres.

Project movement of ROM coal would be restricted to 7.00 am to 10.00 pm Monday to Friday and 7.00 am to 6.00 pm Saturday, except in the case of exceptional circumstances. ROM coal transport would be limited to no more than 26 Saturdays in a financial year and would not occur on Sundays or public holidays.

Interaction with the Bloomfield Coal Handling and Preparation Plant

ROM coal from the Project would continue to be processed at the Bloomfield Coal Handling and Preparation Plant.

Bloomfield owns and operates the Bloomfield Coal Handling and Preparation Plant, which is approved to operate under an existing Project Approval. Donaldson Coal has existing commercial arrangements with Bloomfield regarding the use of the Bloomfield Coal Handling and Preparation Plant.

Donaldson Coal is separately seeking approval for the receipt, internal transport, handling, processing and rail loadout of coal from the Project at the Bloomfield Coal Handling and Preparation Plant.

Rehabilitation and Mine Closure

The Project rehabilitation and decommissioning program would include:

- Decommissioning of the existing pit top facility or placement under care and maintenance (following completion of mining of the Fassifern Seam) and subsequent closure and rehabilitation;
- Closure and rehabilitation of the new pit top facility and upcast ventilation shaft site (following completion of mining of the West Borehole Seam);
- Progressive rehabilitation of minor Project surface disturbance areas, such as disturbance from exploration and monitoring activities;
- Remediation of subsidence impacts on natural surface features; and
- Relinquishment of mining leases.

The final land use of Project surface disturbance areas would be primarily native vegetation conservation.

Benefits of the Project

The Project would provide for the continuation of the Tasman Underground Mine and direct employment of approximately 20 construction personnel and 150 operational personnel at maximum production.

The Project would involve the production of up to 1.5 million tonnes per annum of ROM coal until approximately 2029, in a manner that minimises potential subsidence impacts through the implementation of subsidence control zones.

The Project would produce a combination of thermal and coking coal that would be sold domestically or exported for electricity generation and steel production and other manufacturing overseas.

Project coal production would contribute to New South Wales export income, State royalties and State and Commonwealth tax revenue, as well as contributing to electricity supply and manufacturing in Australia and other countries that purchase Project coal.

The Socio-Economic Assessment indicates that operation of the Project is likely to result in an average annual stimulus of up to approximately 404 direct and indirect jobs in the Newcastle region and some 736 direct and indirect jobs in New South Wales at peak production. The Project would also make contributions to regional and New South Wales business turnover and household income.

The Socio-Economic Assessment indicates a net benefit of between \$57 million and \$94 million would be forgone if the Project is not implemented.



TASMAN EXTENSION PROJECT CONSULTATION

The Project consultation program has been comprehensive and has included:

- Regular meetings and briefings with key State government agencies for feedback on environmental assessments and key mitigation measures.
- Ongoing consultation with the Cessnock City Council and Lake Macquarie City Council, including representation of these councils on the Tasman Underground Mine Community Consultative Committee.
- Consultation with the Commonwealth Department of Sustainability, Environment, Water, Population and Communities under the *Environment Protection and Biodiversity Conservation Act, 1999*.
- Consultation with the community and affected landholders through the Tasman Underground Mine Community Consultative Committee and other Project-specific consultation mechanisms.
- Involvement of and consultation with the Aboriginal community through the Aboriginal Cultural Heritage Assessment in accordance with relevant guidelines, including participation in surveys, site inspections and meetings to discuss cultural matters.
- Dialogue with infrastructure owners and service providers with facilities in the vicinity of the Project that could be potentially affected by mine subsidence or would have interactions with the Project.

Community information sheets have been distributed by Donaldson Coal to inform the local community of the Project and to provide updates on progress of the Environmental Impact Statement and specialist studies in November 2011, January 2012 and June 2012.

Community information evenings were held locally in February 2012 and are planned for June 2012 to provide an opportunity for the local community to ask Donaldson Coal and specialists preparing the studies, any specific queries or issues of concern relating to the Project (Plate 3).

DONALDSON COAL COMMUNITY INITIATIVES

Donaldson Coal plays an active role in local communities through financial contributions to facilities, including the Gloucester Coal Community Support Program, Donaldson Job Creation Trust, the Donaldson Community Welfare Trust and the Donaldson Conservation Trust, in summary:

- The Community Support Program provides assistance to local initiatives. The program's first round of funding in June 2012 supported over 14 local community groups. The aim of the Community Support Program is to help benefit a wider range of community needs such as education, environment, health, infrastructure projects, arts, leisure and research.
- The Job Creation Trust was established to assist the local community achieve its goals by providing training opportunities and experience.
- The Community Welfare Trust is a charitable trust which supports the local community to promote the education needs, community works or other activities of benefit to the local community, such as the "News in Education" programme. The Trust has made significant contributions to the local Black Hill School.
- The Conservation Trust funds environmental education, research, environmental management works or activities within State Conservation Area lands or other environmentally valuable lands.



Plate 3 – Project Community Information Session

MANAGEMENT OF KEY ENVIRONMENTAL ISSUES

An environmental risk assessment was conducted for the Project to identify key potential environmental issues for further assessment in the Environmental Impact Statement. The environmental risk assessment involved a workshop with a number of specialists that contributed to the Environmental Impact Statement.

Based on the application of relevant proposed risk management treatments (e.g. subsidence control zones and minimisation of disturbance of key habitats at the new pit top), all of the potential environmental issues were ranked as low or as low as reasonably practicable by the risk assessment team.

The approach to management of the key environmental assessment issues for the Project is summarised below.

Subsidence Impacts on Principal Residences and Other Built Features

A Subsidence Assessment has been completed for the Project to determine the potential cumulative impacts associated with subsidence above the proposed underground mining in the Fassifern Seam and West Borehole Seam. The Subsidence Assessment demonstrates that potential subsidence impacts can be appropriately mitigated and managed.

There are three principal residences within the West Borehole Seam mining area. Subsidence impacts to principal residences will be minimal as a result of the subsidence control zones (Box 1). This would also reduce impacts to structures located adjacent to principal residences (e.g. water tanks).

Other built features that may be affected by subsidence from the West Borehole Seam include other residential structures, TransGrid and Ausgrid electricity transmission lines, telecommunication infrastructure (i.e. fibre optic cables and copper telecommunication cables), a local road (Sheppard Drive) and associated drainage infrastructure and fire trails and other minor tracks and roads.

Project key infrastructure subsidence control zones and resulting environmental outcomes are provided in Box 2.

Box 2 Key Infrastructure - Subsidence Management



Ausgrid 132 kilovolt Transmission Line Easement*

Project subsidence performance measures:

- Maintain safety and serviceability.
- No damage to structures or loss of service for communication towers on Mount Sugarloaf.
- Damage must be fully repaired or compensated for fibre optic cables, TransGrid and Ausgrid towers.

Project subsidence control zone:

- First workings only within 45° angle of draw resulting in less than 2 mm subsidence and 10 mm horizontal displacement for communication towers on Mount Sugarloaf.
- Partial extraction with stable remnant pillars resulting in less than 300 mm of subsidence for fibre optic cables (unless cables can be relocated by agreement with the infrastructure owner or is suspended on electricity transmission towers).
- First workings only within 26.5° angle of draw resulting in less than 20 mm subsidence, 5 mm/m tilt and 2 mm/m strain for TransGrid towers (may be relaxed if cruciform footings can be installed and agreement reached with the infrastructure owner).
- Maximum extraction for Ausgrid towers (except where within another subsidence control zone).

Project subsidence control outcomes:

- Maintenance of key infrastructure safety and serviceability and repair or compensation for any subsidence related damage.
- Implementation of management measures agreed with infrastructure owners in advance of associated subsidence.

*Ditton Geotechnical Services Pty Ltd, 2012.

Mitigation measures, management and monitoring of subsidence impacts on built features would be documented in Built Features Management Plans (which would be developed as part of a progressive Extraction Plan process) in consultation with the relevant owners.

The Extraction Plan process would involve the review and evaluation of subsidence monitoring results and would apply an adaptive management approach to the subsidence control zones to achieve the subsidence performance measures.

Water Resources and Stream Geomorphology

The West Borehole Seam mining area lies predominantly within the Surveyors Creek catchment. The ephemeral tributaries of Surveyors Creek located within the Project area converge to the north of the Project area and Surveyors Creek then joins Wallis Creek, which drains to the Hunter River near Maitland.

Groundwater in the Project area occurs within the fractured rock aquifer system in the coal measures, and a shallow aquifer system in the unconsolidated sediments of the colluvium associated with incised channels of Surveyors Creek. No alluvium is present in the Project area.

No licensed extractions of surface water have been identified on Surveyors Creek, and beneficial groundwater use in the vicinity of the Project is negligible, as there are no significant useable aquifers underlying, or close to, the Project area.

Key potential impacts of the Project on stream geomorphology and water resources include potential subsidence impacts on streams and dewatering of the West Borehole Seam during mining operations.

The mine layout would be designed to achieve negligible impacts to stream flow characteristics or water quality associated with potential subsidence impacts during the Project.

Project subsidence management measures for streams and resulting environmental outcomes are provided in Box 3. The Subsidence Assessment concluded that the use of partial pillar extraction areas beneath streams would provide a high level of protection from continuous fracturing from surface to seam.

Box 3 Streams - Subsidence Management



1st Order Stream*

Project subsidence performance measures:

- Negligible connective cracking to underground workings.
- Not more than minor environmental consequences for 1st and 2nd order streams.
- Negligible environmental consequences (that is, negligible diversion of flows and negligible change in the natural drainage behaviour of pools) for 3rd order streams or above.

Project subsidence control zone:

- Partial extraction with stable remnant pillars resulting in less than 300 mm of subsidence where the depth of cover to the stream is less than 80 metres for 1st and 2nd order streams.
- First workings only within 26.5° angle of draw resulting in less than 20 mm subsidence at the edge of the bank for 3rd order streams or above.

Project subsidence control outcomes:

- Maintenance of stream water quality, geomorphic character, flows and ecological function.

*Fluvial Systems, 2012.

Detailed groundwater modelling and assessment determined that while the West Borehole Seam and overburden overlying the mining area would be dewatered during mining, potential impacts to groundwater levels within the colluvium associated with the Surveyors Creek catchment would be insignificant. The Surface Water Assessment concluded that Project predicted changes to baseflow would have a negligible impact on the surface flow regime.

The Geomorphology Assessment concluded that with the implementation of Project subsidence control zones, the potential risk to geomorphic character associated potential subsidence impacts would be insignificant for approximately 99% of total stream length within the West Borehole Seam mining area.

Proposed subsidence monitoring for the Project (i.e. survey lines and visual inspections before and after mining) would provide relevant information for the monitoring of potential impacts to the geomorphic character for streams in the West Borehole Seam mining area.

Potential impacts to water resources would be managed through Water Management Plans prepared for the Project as part of the Extraction Plan process. This would include the installation of additional surface water and groundwater monitoring sites, which would expand the existing monitoring network currently operated by Donaldson Coal.

Steep Slopes and Cliff Lines

Steep slopes are present along the Sugarloaf Range within the Project area. The slopes along the Sugarloaf Range include a variety of forms including continuous cliff lines, overhangs, cliff terraces, discontinuous rock outcrops, talus slopes and other vegetated steep slopes.

Subsidence performance measures for cliff lines and steep slopes would be implemented for the Project to have no more than minor impact on the topographic feature, and negligible environmental consequence (Box 4). The cumulative Project subsidence effects along the steep slopes and cliff line areas are unlikely to result in cracking, toppling or slope instability after completion of mining in the Fassifern and West Borehole Seams.

Slope instability and rock fall occur naturally along steep slopes and cliff lines areas due to natural weathering and tree root wedging processes. In some circumstances it may be difficult to differentiate between natural and mining induced processes.

Box 4

Cliffs and Steep Slopes - Subsidence Management



Cliffs within the Project Area*

Project subsidence performance measures:

- Minor impact resulting in negligible environmental consequence.
- No additional risk to public safety.

Project subsidence control zone:

- First workings only within 30 metres of a cliff line greater than 20 metres in length resulting in less than 150 mm subsidence.
- Partial extraction with stable remnant pillars resulting in less than 300 mm of subsidence for all other cliff lines and steep slopes greater than 1 in 2 slope.

Project subsidence control outcomes:

- No more than minor impact on the topographic feature, and negligible environmental consequence.

* Ditton Geotechnical Services Pty Ltd, 2012.

Terrestrial and Aquatic Ecology

The majority of the Project area is well vegetated and includes open heath, dry sclerophyll forest, wet sclerophyll forest and rainforest. The Project area provides habitat for a number of threatened flora and fauna species.

Apart from very minor clearing associated with ongoing exploration, management and monitoring activities, the Project would result in the clearance of approximately 11.2 hectares for the new pit top facility. The Project would include establishment of at least 22.5 hectares of native bushland as compensatory habitat.

There would be no clearing in the underground mining areas that would lead to habitat fragmentation or isolation. Consequently, the corridor values of the Sugarloaf Range (including the Sugarloaf State Conservation Area) would be maintained.

The Project includes substantial commitments to limit consequences associated with subsidence. The commitments, in the form of proposed subsidence performance measures, greatly reduce the risk of subsidence consequences on ecology.

Project subsidence performance measures for Groundwater Dependent Ecosystems and Hunter Lowlands Redgum Forest on 3rd Order Streams (key endangered ecological communities) and resulting environmental outcomes are provided in Box 5.

Aboriginal Heritage

Modern Awabakal and Wonnarua people identify strong contemporary, historical and traditional associations with the Project area.

Significant traditional, historical and contemporary cultural values and associations have been identified within the Project surrounds by the registered Aboriginal stakeholders and are also known through ethnohistorical evidence. Mount Sugarloaf within the Project area is documented for its association with male initiation ceremonies and the presence of the supernatural spirit being 'Puttikan' and the supreme being 'Koe-in'.

The potential impacts of the Project to Aboriginal sites and cultural areas have been significantly reduced by the implementation of subsidence control zones to achieve the various Project subsidence performance measures.

Many of the most significant cultural areas are located within the proposed subsidence control zones and potential subsidence impacts would be minimised in these areas.

Box 5

Key Endangered Ecological Communities - Subsidence Management



Alluvial Tall Moist Forest*

Project subsidence performance measures:

- Negligible environmental consequence.

Project subsidence control zone:

- Partial extraction with stable remnant pillars resulting in less than 300 mm of subsidence.

Project subsidence control outcomes:

- No more than negligible environmental consequence.

*Hunter Eco, 2012.

Road Transport

The Project would involve the continuation and increase of ROM coal transportation on George Booth Drive and John Renshaw Drive.

The Hunter Expressway is currently under construction and is scheduled for completion in 2013. The opening of the Hunter Expressway is expected to result in a decrease in traffic of over 90% on George Booth Drive.

The predicted major reduction in the traffic on George Booth Drive is because the Hunter Expressway generally parallels George Booth Drive in the vicinity of the Project (Figure 2) and therefore will provide an alternative dual carriageway link for many motorists and heavy vehicles that currently use George Booth Drive as a through route to other destinations.

Total public road haulage for the Project would not be increased until following the commissioning of the Hunter Expressway.

The Project's contribution to overall traffic conditions on George Booth Drive and John Renshaw Drive would be such that no significant impacts on the performance, capacity, efficiency and safety of the road network are expected to arise as a direct result of the Project.

Notwithstanding, Donaldson Coal would implement a number of road transport management and mitigation measures including construction of a roundabout on George Booth Drive for access to the new pit top facility, (Plate 4) continuation of the existing Road Transport Protocol, independent traffic audits and some intersection performance monitoring.

Donaldson Coal undertook upgrade works at a number of private driveways located on George Booth Drive between Richmond Vale Road and John Renshaw Drive including road shoulder widening and sealing as a component of the road upgrades for the existing Tasman Underground Mine.

However, as an outcome of community consultation, Donaldson Coal commissioned an inspection and safety review of private driveways on George Booth Drive between John Renshaw Drive and Richmond Vale Road (Figures 4 and 5).

This review indicated a number of supplementary improvements could be made to further improve road safety for private vehicles turning onto and off George Booth Drive at, or in the vicinity of, the majority of these driveways (Table 1).

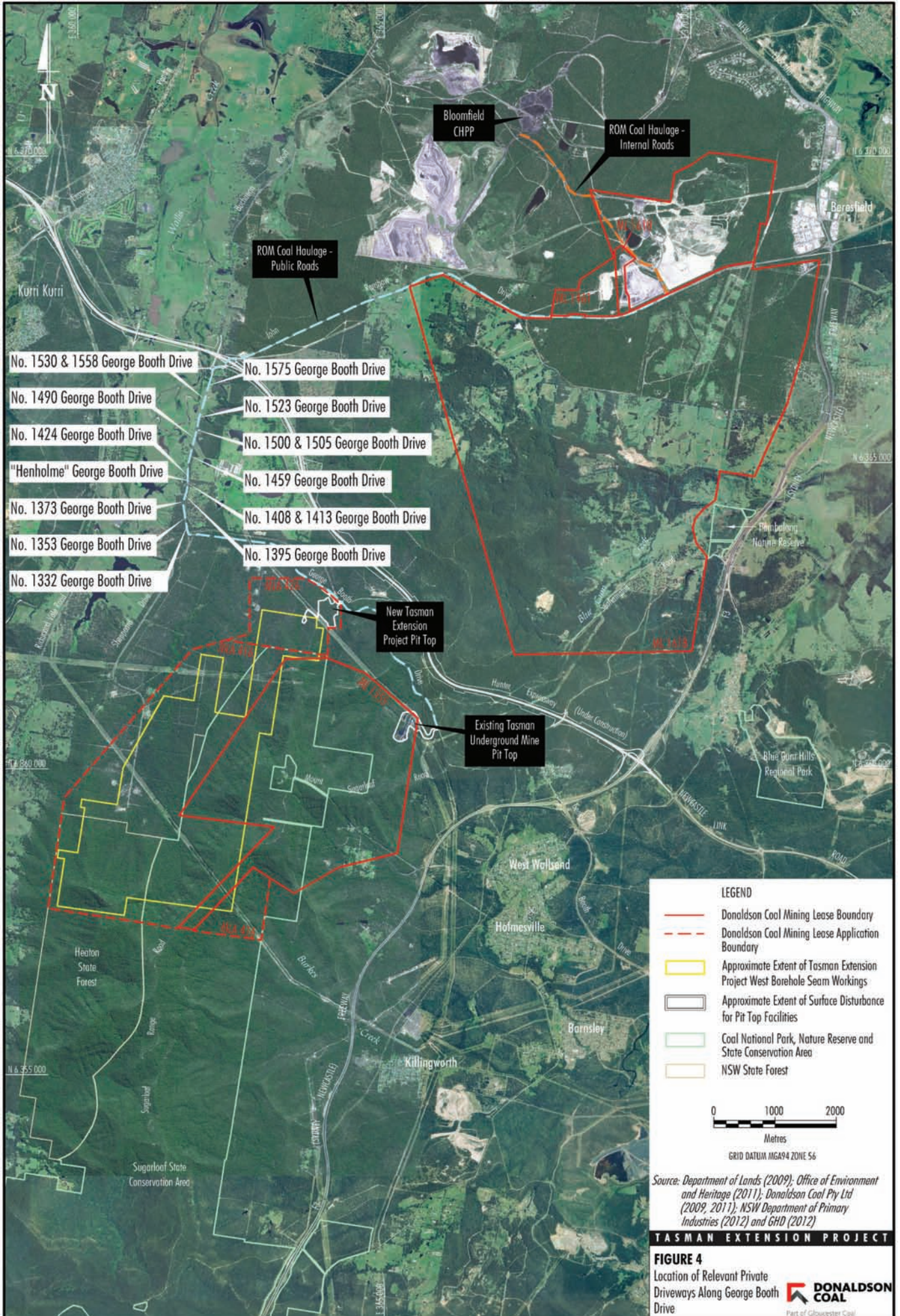
Donaldson Coal has committed to implementing the identified private driveway safety improvement works within one year of obtaining Development Consent for the Project (subject to any required landholder consent and necessary environmental approvals being obtained).

Other Assessments

Assessments of potential impacts of the Project on noise levels, air quality, soil resources, agricultural land use, non-Aboriginal heritage, community infrastructure and visual character demonstrated that the impacts would be negligible, within acceptable levels or could be readily managed.



Plate 4 – Location of Proposed Roundabout on George Booth Drive





Address: No. 1575 George Booth Drive



Address: No. 1530 and 1558 George Booth Drive



Address: No. 1523 George Booth Drive



Address: No. 1500 and 1505 George Booth Drive



Address: No. 1490 George Booth Drive



Address: No. 1459 George Booth Drive



Address: No. 1424 George Booth Drive



Address: "Henholme" George Booth Drive



Address: No. 1408 and 1413 George Booth Drive



Address: No. 1395 George Booth Drive



Address: No. 1373 George Booth Drive



Address: No. 1353 George Booth Drive



Address: No. 1332 George Booth Drive

TASMAN EXTENSION PROJECT

FIGURE 5
Relevant Private Driveways
Along George Booth Drive



*Note: Refer to Figure 4 for Locations
Source: GHD (2012)*

Table 1
Proposed Private Driveway Upgrade Treatments

Location (Refer Figures 4 and 5)	Suggested Treatment
No. 1332 George Booth Drive	Provide sealed shoulder widening for the left turn into the property. Replace the Telstra pit with a trafficable pit and lid.
No. 1353 George Booth Drive	Provide sealed shoulder widening for the left turn into the property.
No. 1373 George Booth Drive	Provide additional shoulder widening for the property as required.
No. 1395 George Booth Drive	Provide additional widening for the right turn shoulder. Guide posts to be relocated to outside the sealed pavement.
No. 1408 & 1413 George Booth Drive	Consider the relocation of the power poles to outside of the clear zone for the road. These poles restrict the extents of the widened shoulders. Trim or remove vegetation on the southbound side of the road, north of the driveway into property No. 1408 to improve sightlines out of the driveway to approaching vehicles
"Henholme" – George Booth Drive	It is considered that the issues associated with this driveway are due to the commercial nature of the property. Provide sealed shoulder widening for the left turn into the property.
No. 1424 George Booth Drive	Provide a sealed widened shoulder for the left turn into the property. Extend the existing widened sealed shoulder to approximately 20 metres past the driveway prior to tapering back to the existing.
No. 1459 George Booth Drive	Provide sealed shoulder widening for the left turn into the property. Consider the relocation of the power pole to outside of the clear zone.
No. 1490 George Booth Drive	Provide a sealed widened shoulder for the left turn into the property. Relocate Hunter Expressway sign to outside of the clear zone for the road. Provide additional widening for the right turn shoulder.
No. 1500 & 1505 George Booth Drive	No improvements or modifications are proposed at these driveways.
No. 1523 George Booth Drive	Provide sealed shoulder widening for the left turn into the property.
No. 1530 & 1558 George Booth Drive	Extend the northbound shoulder widening to the south of property No. 1530. Provide sealed shoulder widening for the left turn into the property.
No. 1575 George Booth Drive	No improvements or modifications are proposed at this driveway.

Source: After GHD, 2012.

