MAJOR PROJECT ASSESSMENT
Eviron Road Quarry Landfill
08_0067 & 08_0068

Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979
November 2012

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EXECUTIVE SUMMARY

Tweed Shire Council (Council) currently disposes of its waste at its Stotts Creek Resource Recovery Centre (RRC), which is located on a site in Eviron in the far north coast of NSW. The facility includes the only putrescible waste disposal facility in the LGA and will shortly reach capacity.

To address this, Council has sought project approval to establish a new landfill in the void of an existing Council owned quarry (Quirks Quarry) to meet its immediate waste needs and to develop a new quarry (West Valley Quarry) on an adjoining site.

Council has concurrently sought concept approval to further develop this quarry/landfill precinct. It is proposed to landfill in the newly created West Valley Quarry void and to develop another quarry/landfill on the site (known as North Valley) to cater for the shire's waste needs over the next 30 or so years. Council will need to lodge subsequent development applications for these future stages.

The proposal has a capital investment value of $21 million and would provide employment for up to 21 people.

Both the concept plan and project applications constitute transitional 'Major Projects' under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as they triggered Clauses 7(1)(b) and 27(1)(b) in Schedule 1 of *State Environmental Planning Policy (Major Projects) 2005*, and would ordinarily require the Minister's approval. However, the applications are able to be determined by the Deputy Director-General under delegation.

The Department exhibited the Environmental Assessment for the proposal from 17 November 2011 to 19 December 2011 and received 11 submissions: 7 from public authorities and 4 public submissions from people in the local area. All of the public submissions objected to or raised concerns about the proposal because it was thought to be incompatible with surrounding land uses and could result in a number of health, amenity and environmental impacts.

The assessment found that the key issues for the concept proposal were waste, air quality, noise, biodiversity, visual and heritage. There were a number of issues that were specific to the project application relating to surface water, groundwater, blasting and vibration, traffic and access, acid generating material, fire and waste management, rehabilitation and infrastructure and services.

The Department is satisfied that the impacts of the proposal are acceptable and can be adequately mitigated and managed. The Department has stipulated the overall terms and limits of the approval, together with the environmental assessment requirements for future development applications as recommended modifications in the concept plan approval. Conditions have also been recommended in the project approval to address the residual issues for the first stage of the concept proposal.

The proposal represents a logical continuation of quarrying and landfilling operations in this area. There is a clear and immediate need for putrescible landfill capacity and for additional quarry resources in the LGA given the continued demand for building aggregates, road base and fill materials.

On balance, the Department believes that the benefits of the proposal sufficiently outweigh its costs and that it is therefore in the public interest and should be approved, subject to strict modifications in the concept plan approval and conditions in the project approval.

1. BACKGROUND

1.1 Introduction

Tweed Shire Council (Council) currently disposes of its waste at its Stotts Creek Resource Recovery Centre (RRC), which is located on a site in Eviron in the far north coast of NSW. The facility includes the only putrescible waste disposal facility in the LGA (see Figure 1) and will shortly reach capacity.

Next to the Stotts Creek RRC, there is an existing Council owned and operated quarry, known as Quirks Quarry. Council has sought project approval to establish a new landfill in this void to meet its immediate waste needs and to develop a new quarry (West Valley Quarry) on an adjoining site.

Council has concurrently sought concept approval to further develop this quarry/landfill precinct. It is proposed to landfill in the newly created West Valley Quarry void and to develop another quarry/landfill on the site (known as North Valley) to cater for the shire's waste needs over the next 30 or so years. Council will need to lodge subsequent development applications for these future stages.

In March 2008, Tweed Shire Council (Council) submitted two Part 3A Major Project applications with the Department:

1. an application for *concept plan approval* to develop two quarries (West Valley and North Valley Quarries) and three landfills (Quirks Quarry, West Valley and North Valley Landfills); and
2. a *project application* for stage 1 of the concept plan, which includes the establishment of Quirks Quarry Landfill and West Valley Quarry, the development of a haul road from Stotts Creek RRC to Quirks Quarry and other associated infrastructure.

1.2 Site Selection

Council carried out an extensive site selection process to identify possible sites in the LGA to provide future landfill capacity before deciding on the Eviron Road site.

After an exhaustive search of possible sites and following negotiations with a number of landowners, the Eviron Road site was selected as the most suitable to meet Council's chosen criteria, being not situated on prime agricultural land, gently sloping, easily accessible from major population centres, and remote from residential areas with few adjoining landowners. In addition, as the site is located next to Council's existing landfill, it has the added advantage of being able to use existing infrastructure such as site offices, weighbridge and a waste transfer station.

Council acquired and rezoned the site to accommodate the proposal under the *Tweed Local Environment Plan 2000*.

1.3 Site Description

The site is located approximately 6 kilometres from the coastline on the Far North Coast of NSW along a spur of the Condong Range where it meets the floodplain of the Tweed River, some 2.5 kilometres to the north (see Figure 1).

Surrounding settlements include Tumbulgum and Tweed Heads to the north, Duranbah to the east, Clothiers Creek, Farrants Hill and Nunderi to the south and Condong and Murwillumbah to the west.

In the immediate vicinity of the site, land uses are mostly agriculture (predominantly sugar cane farming) and rural-residential. There is a public school and seven residential receivers in the immediate vicinity of the site, the closest of which is around 450 metres away.

Quirks Quarry is currently used to supply building aggregates, road base and fill materials in the local area. There are two other quarries operating in the immediate area adjacent to the northern boundary of the site and south of Eviron Road adjacent to the Pacific Highway. Quarry vehicles currently access the site off the Pacific Highway from Eviron Road (see Figure 2).

The area of the site is around 112 hectares. Its natural ground surface increases quite steeply from the lower floodplain from less than 2 metres AHD, up to around 40 metres AHD in the north west and more than 60 metres AHD in the south.

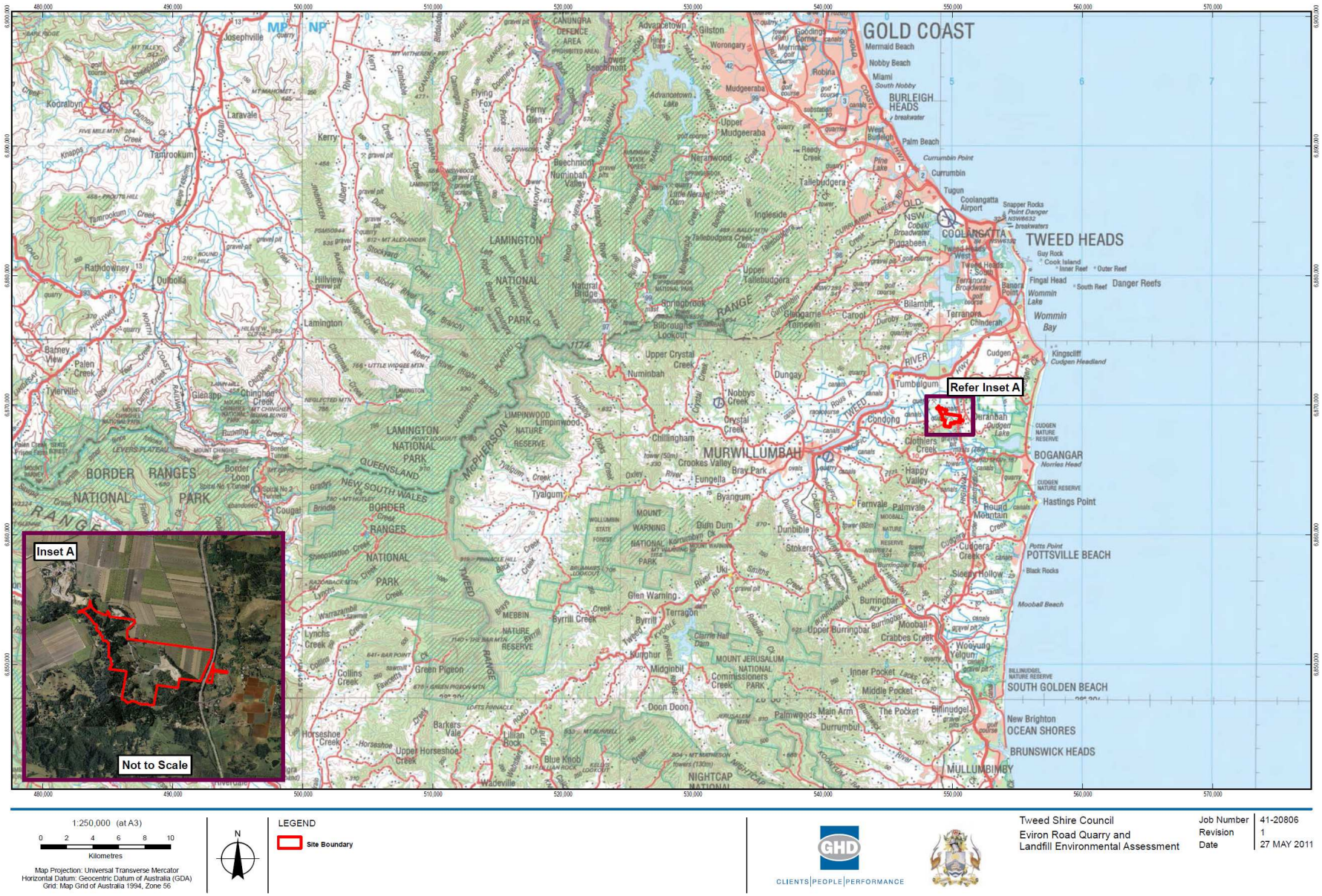

Figure 1: Regional Context

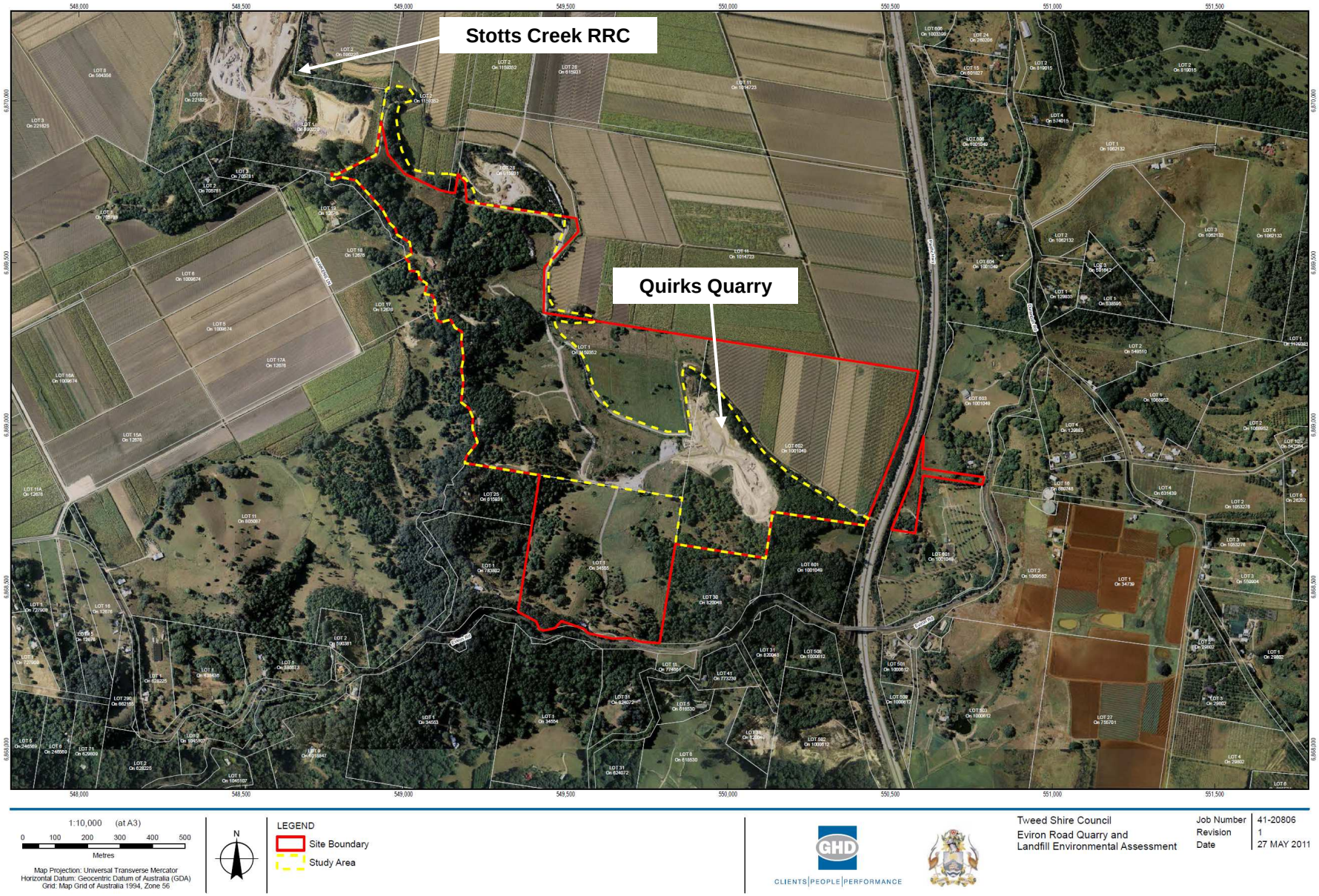

Figure 2: Site Context

2. DESCRIPTION OF THE PROPOSAL

2.1 Introduction

Both applications are described in full in an Environmental Assessment (EA), which has been jointly prepared to cover both applications, and is attached as Appendix E. A summary of each of the applications is provided below.

2.2 Concept Plan

The main components of the concept plan are summarised in Table 1 and depicted on Figures 3 and 4.

Table 1: Main Components of the Concept Plan

Component	Description	
Summary	**Establishment of 2 quarries and 3 landfills and associated infrastructure.**	
Staging	The concept plan would be developed in 3 stages (see Figures 3 and 4): • Stage 1: Quirks Quarry Landfill and West Valley Quarry (2012 to 2021 or an exhaustion of the airspace or quarry resource); • Stage 2: West Valley Landfill and North Valley Quarry (2022 to 2033); and • Stage 3: North Valley Landfill (from 2034 to 2045).	
Waste Volumes	Quirks Quarry Landfill	up to 75,000 tonnes per annum
	West Valley Landfill	to be determined but is likely to be similar to the waste volumes at Quirks Quarry Landfill
	North Valley Landfill	
Quarry Extraction Volume	Up to 200,000 tonnes per annum	
Capital Investment Value	$21 million	
Employment	Construction: 7	Operation: 17
Hours of Operation	Daytime hours only	

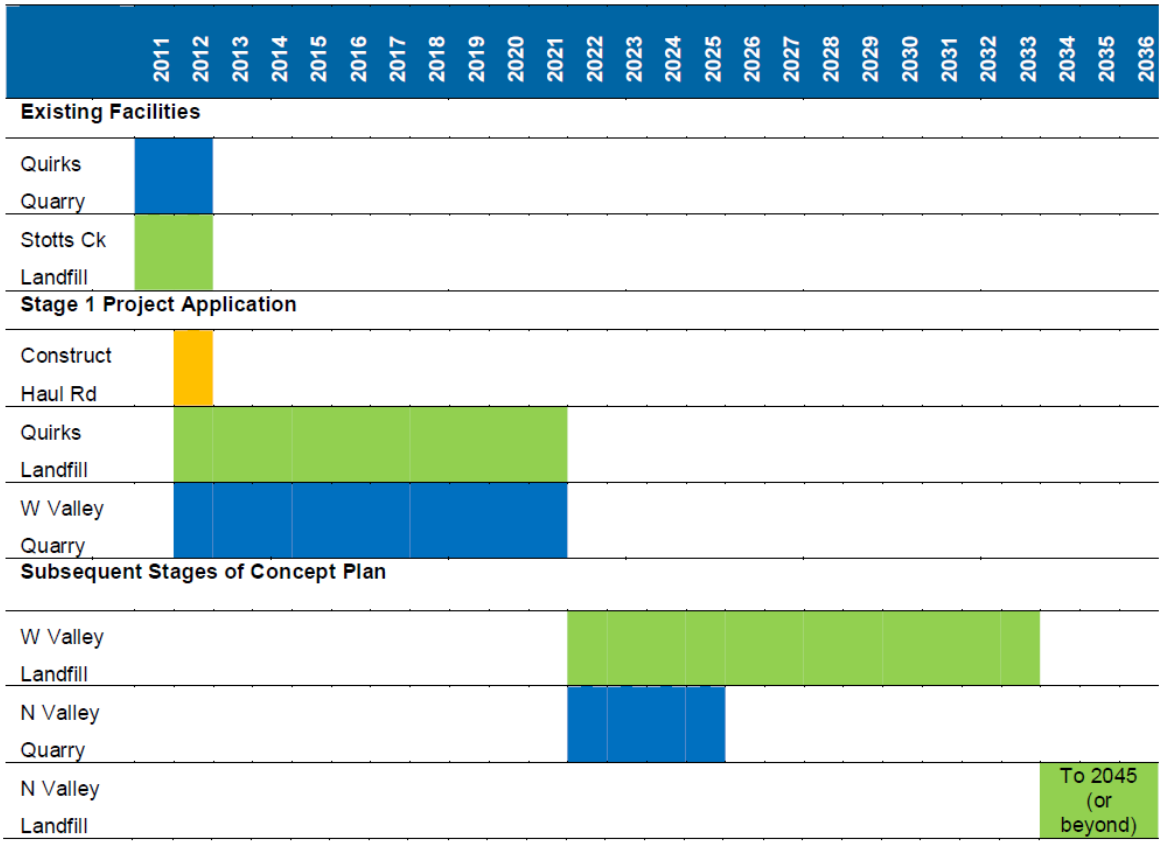

Figure 3: Indicative Concept Plan Staging

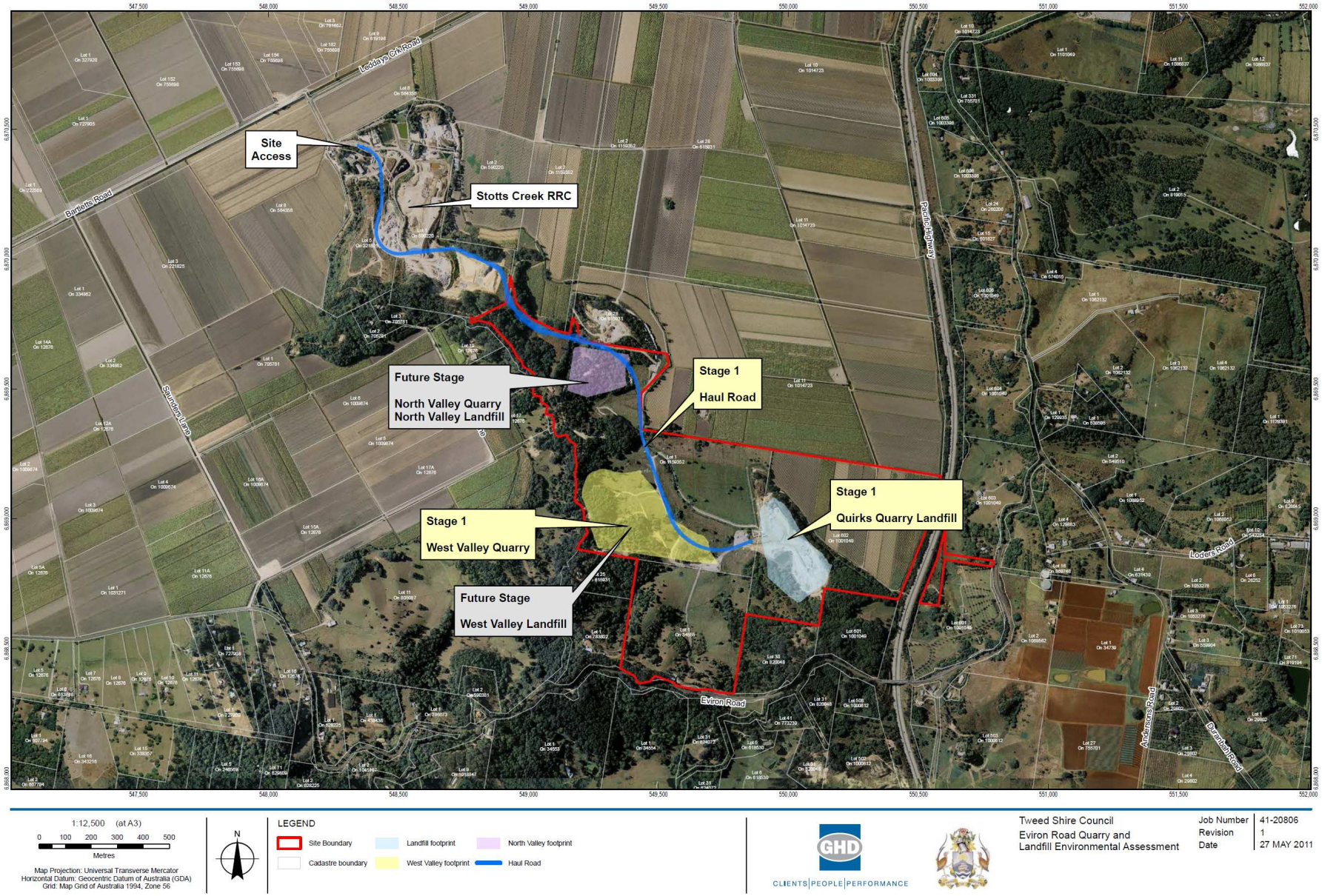

Figure 4: Concept Plan Proposal

2.3 Project Application

The main components of the project application are summarised in Tables 2 and 3 and depicted on Figures 5 and 6.

Table 2: Main Components of the Quirks Quarry Landfill

Component	Description
Summary	**A new landfill to provide 750,000 cubic metres of capacity, emplacing up to 75,000 tonnes of general solid waste a year for a period of 10 years**
Proposed Key Infrastructure	• three landfill waste cells: Stages 1, 2 and 3; • two intercell bunds to separate each of the landfill waste cells; • a sub cell bund to divide Stage 1 into Stages 1A and 1B; • a stormwater and leachate management and collection system; • a reticulated landfill gas management system; and • a new haul road from Stotts Creek RRC to Quirks Quarry.
Void Capacity	• Assumed 2013 yearly tonnage = 48,851m^3; • Void Capacity (waste only) = 580,000m^3; and • Void Capacity (waste and daily cover) = 696,300m^3.
Capping	Daily Cover: • 150mm of minimum soil material over exposed waste at the end of each working day or an alternative approved by the EPA; Intermediate Cover: • 300mm minimum of well compacted soil material to achieve a suitable permeability as final waste landform profiles are created Final Capping: • Linear low density polyethylene (LLDPE) liner • 500mm revegetation layer suitable for plant growth • 100mm of topsoil
Waste Classification	General Solid Waste
Project Life	10 years
Transport	7 heavy and 48 light vehicles expected during peak hour (as is currently generated by the Stotts Creek RRC).
Access and Facilities	Access to the site would be gained solely from Leddays Creek Road with the existing Eviron Road access being sealed and no longer used. Waste collection vehicles would proceed through Stotts Creek RRC along a new haul road to Quirks Quarry for landfilling. Domestic and small commercial customers would continue to utilise the existing waste transfer station facility at Stotts Creek. The existing demountable/temporary site office and amenities at Quirks Quarry would continue to be used.
Landfill Concept Design	Appendices B & C of the EA (Appendix E)
Environmental Management Plans	A Landfill Environmental Management Plan (LEMP) which would include: • how land filling operations would be staged; • requirements and timing of covering and capping of the landfill area; and • environmental management requirements for water quality (stormwater and leachate), air quality (landfill gas, odour and dust), litter, vermin and noise.
Final Landform	Progressive capping of cells to take place. External batters to a maximum grade 25% (1:4) with a minimum surface grade of 5% (1:20) to be maintained to ensure that rain fall is able to drain away freely to minimise infiltration into the site
Employment	Construction: 7 Operation: 17
Hours of Operation	Daytime hours only: • Monday to Friday, 7am to 4pm; • Saturday and Sunday and public holidays, 9am to 4pm; and • closed on Christmas Day and Good Friday.

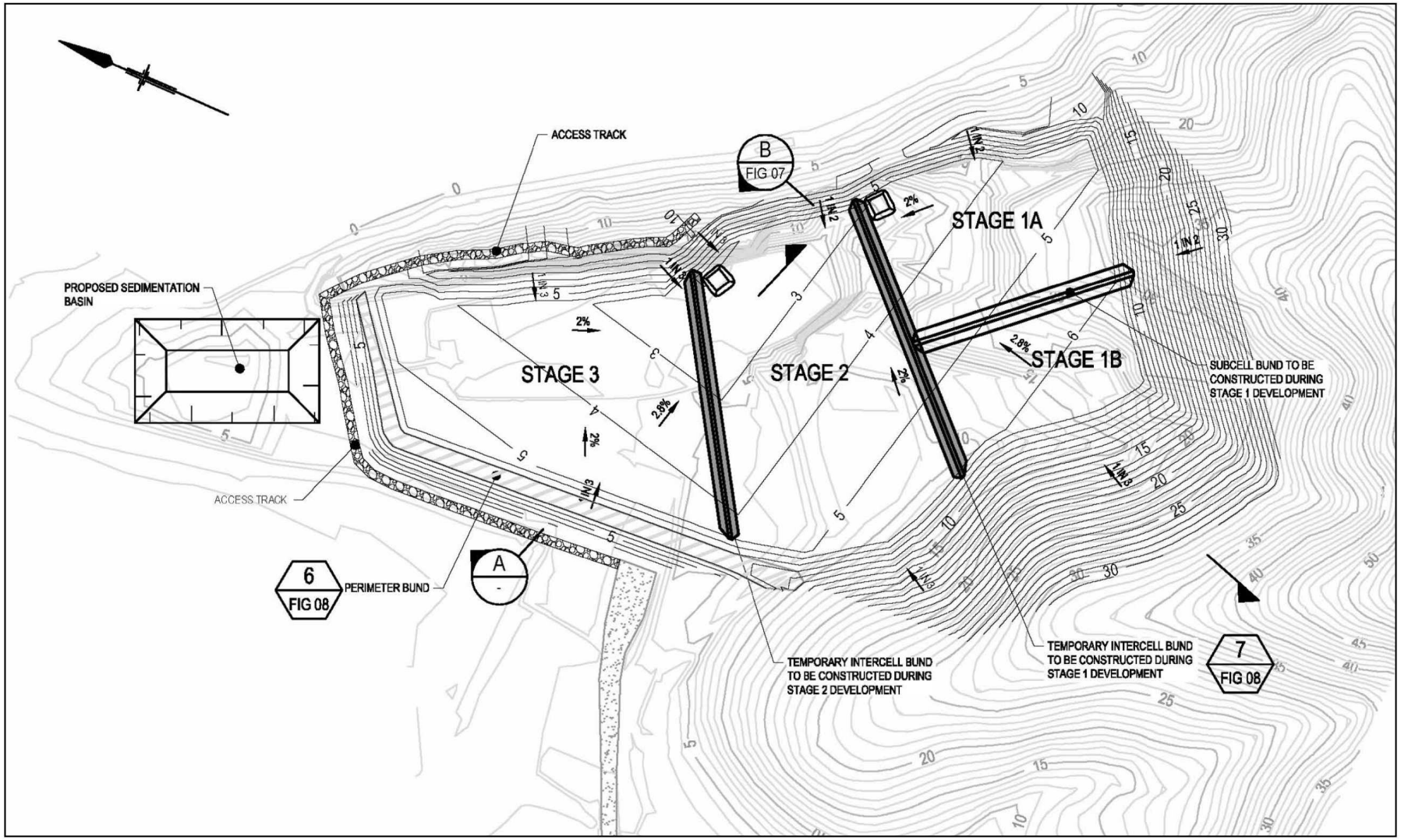

Figure 5: Quirks Quarry Landfill

Table 3: Main Components of the West Valley Quarry

Component	Description
Summary	**A new hard rock quarry to provide up to 200,000 tonnes per annum of materials a year over a period of 8 years**
Quarry Area	11 hectares
Total Resource	Clays, gravel and rock
Production	Up to 200,000 tonnes per annum
Project Life	11 years
Extraction Method	Drill and blast to provide fragmented rock for crushing and load and haul to move rock from the quarry to the crushing plant
Processing	Crushing and screening of rock to the required product size and specification, storage of rock from the plant to the final product stockpiles and dispatch of product to customer via the weighbridge
Transport	Approximately 3 heavy and 10 light vehicles expected during the peak hour
Activity Sequence	• pre-strip activities and topsoil stockpiling; • blast-hole drilling and blasting; • extraction; • primary and secondary screening and crushing; • haulage; • stockpiling; and • product loading and hauling.
Access and Facilities	See Table 2
Stockpiling	Different products (and sometimes raw materials) will be stockpiled away from the main excavation area close to screeners and crushers
Quarry Products	Aggregates, road base and fill materials for use and sale in the local area for construction and development
Environmental Management Plans	A Quarry Plan of Management which would include the following sub-plans: • a Surface Water Management and Response Plan; • a Groundwater Management and Response Plan; • an Air Quality Management Plan; • a Traffic Management Plan; and • a Fire Management Plan.
Final Landform and Use	Rehabilitation would be undertaken progressively whilst quarrying occurs. The aim would be to rehabilitate the pits to create a stable landscape, with the pit floors being returned to a state suitable for grazing
Employment	Construction: 7 Operation: 7
Hours of Operation	Daytime hours only: • Quarrying: Monday to Friday, 7am to 5pm and Saturday, 7am to 12pm • Blasting: Monday to Friday, 9am to 3pm and Saturday, 9am to 12pm • Hauling: Monday to Friday, 7am to 5pm and Saturday, 7am to 12pm • No work on Sundays or public holidays

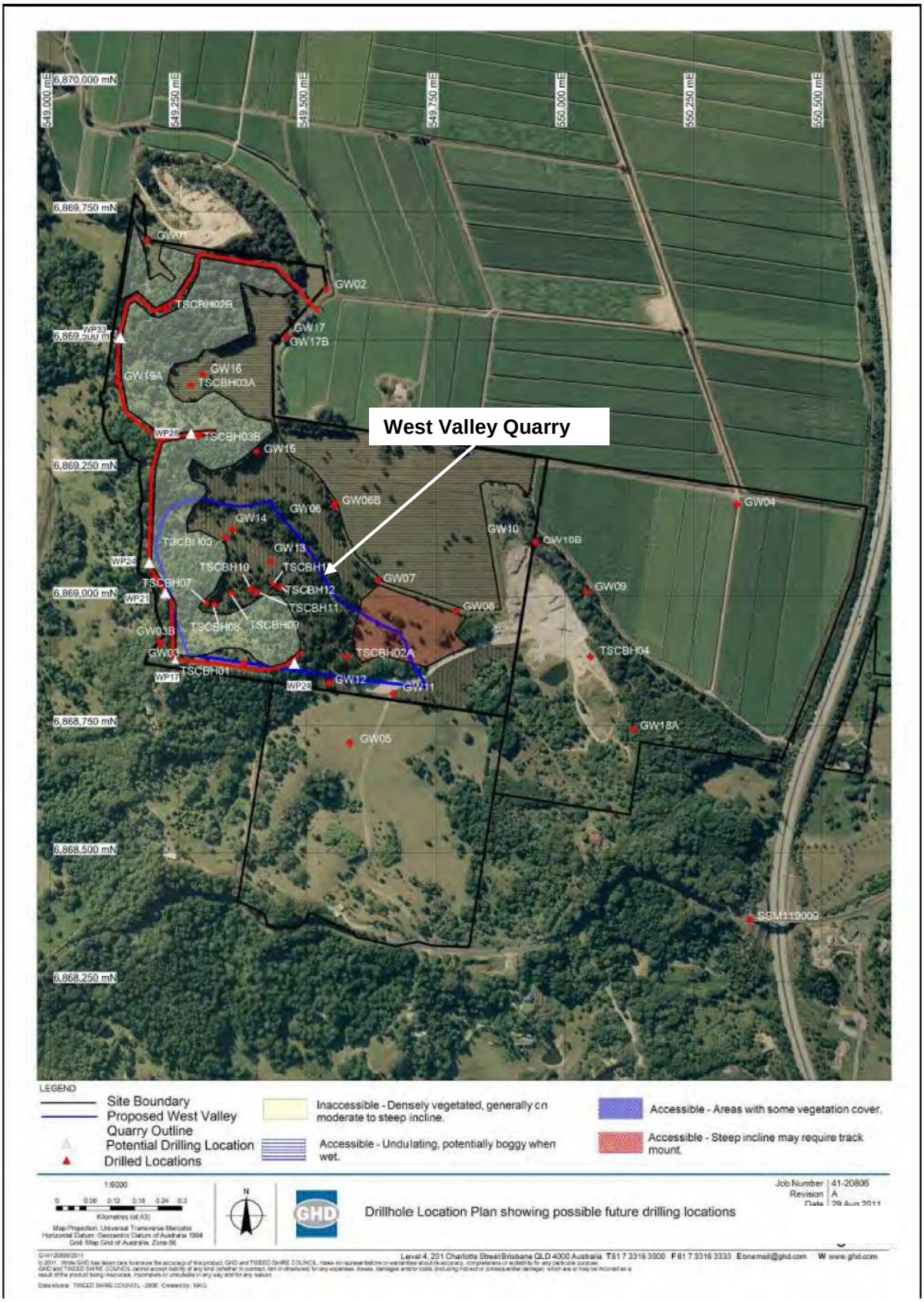

Figure 6: West Valley Quarry Footprint and Drilling Locations

3. STRATEGIC AND STATUTORY CONTEXT

3.1 Strategic Context

NSW 2021 aims to increase recycling to meet 2014 NSW waste recycling targets in the *Waste Avoidance and Resource Recovery (WARR) Strategy 2007*. The Department has considered the overall need for the proposal, including consideration of resource recovery levels, in Section 5.1, and found that it would be consistent with this strategy.

The proposal is also consistent with the *Far North Coast Regional Strategy*. The purpose of this regional strategy is to manage the regions expected high level of growth in a sustainable manner. Whilst the site is not specifically identified in the strategy, the proposal is consistent with the strategy's overall aims and objectives, particularly those relating to the environment and natural resources, economic development and employment growth, water and energy resources and regional transport.

3.2 Major Projects

Both the concept plan and project applications constitute transitional 'Major Projects' under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as they triggered Clauses 7(1)(b) and 27(1)(b) in Schedule 1 of *State Environmental Planning Policy (Major Projects) 2005*.

Part 3A of the EP&A Act, as in force immediately before its repeal on 1 October 2011 and as modified by Schedule 6A to the Act, continues to apply to transitional Part 3A projects. Director-General's environmental assessment requirements (DGRs) have been issued in respect of these projects. The projects are therefore transitional Part 3A projects.

Consequently, this report has been prepared in accordance with the requirements of Part 3A and associated Regulations, and the Minister (or his delegate) may approve or disapprove of the carrying out of the projects under sections 75J and 75O of the EP&A Act.

3.3 Approval Authority

The Minister has delegated his functions to determine Part 3A concept plans under Section 75O of the EP&A Act to the Department where:

- the project is consistent with a relevant Regional Strategy prepared by the Department and endorsed by the Minister;
- the council has not made an objection;
- there are less than 25 public submissions objecting to the proposal; and
- political disclosure statement has not been made in relation to the application.

Similarly, the Minister has delegated his functions to determine Part 3A project applications under Section 75J of the EP&A Act to the Department in the same circumstances as those listed above (with the exception of the criterion relating to consistency with the relevant Regional Strategy).

The Department is satisfied that the concept plan is consistent with the *Far North Coast Regional Strategy* (see Section 3.1). There have been 4 public submissions and there has been no political disclosure statement made for these applications or for any previous related applications, and no disclosures made by any persons who have lodged an objection to these applications.

Accordingly, both applications are able to be determined by the Deputy Director-General under delegation.

3.4 Other Approvals

Under Section 75U of the EP&A Act, a number of other approvals have been integrated into the Part 3A approval process and are not required to be separately obtained for the project. These include:

- heritage-related approvals required under the *Heritage Act 1977* and *National Parks and Wildlife Act 1974*; and
- water-related approvals under the *Water Act 1912* and *Water Management Act 2000*.

The Department has consulted with the Office of Environment and Heritage (OEH) and the Office of Water (NOW) in respect of the project application and has incorporated its comments into the recommended conditions (see Section 4.2).

Under Section 75V of the EP&A Act, a number of further approvals are required to be obtained, but these must be approved in a manner that is consistent with any Part 3A approval for the project.
These include an Environment Protection Licence (EPL) under the *Protection of the Environment Operations Act 1997*.

Quirks Quarry operates under an existing EPL. A new or updated EPL would need to be issued for landfilling operations. West Valley Quarry would require a new EPL as this is a proposed new activity.

The Department has consulted with the Environment Protection Authority (EPA) and considered the relevant issues relating to the grant of an EPL in its assessment of the project application (see Section 5 of this report). The EPA has determined that should project approval be granted, it would be able to issue an EPL subject to conditions.

3.5 Permissibility

The extent of the site is such that it falls within three different zones in the *Tweed Local Environmental Plan 2000* (Tweed LEP): 5(a) Special Uses (Garbage Depot), 1(b) Agricultural Protection or 1(a) Rural. The proposal is mostly permissible with consent in these zones.

However, given that the proposal includes extractive industry and a waste disposal facility, it is permissible under *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* and *State Environmental Planning Policy (Infrastructure) 2007*.

3.6 Environmental Planning Instruments

Section 75I of the EP&A Act requires the Director-General's report to include a copy of or reference to environmental planning instruments that substantially govern the carrying out of the projects. Those instruments are:

- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*;
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection*;
- *State Environmental Planning Policy No. 55 – Remediation of Land*;
- *State Environmental Planning Policy No. 71 – Coastal Protection*;
- *State Environmental Planning Policy (Infrastructure) 2007*;
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*; and
- *Tweed Local Environmental Plan 2000*.

The Department has assessed the projects against these instruments and considers:

- that the proposal is not potentially hazardous or offensive and that it is generally consistent with the aims, objectives and requirements of SEPP 33;
- that based on the assessment, none of the vegetation in the area would be classified as 'potential koala habitat' under SEPP 44;
- the land is not contaminated in a manner that requires the preparation of a Preliminary Contamination Investigation under SEPP 55;
- the proposal meets the relevant aims and objectives of SEPP 71;
- there is an assessment of the proposal against the matters for consideration in Clause 123 of the Infrastructure SEPP in Section 5.1, which concludes that it is consistent with this SEPP;
- the Department is satisfied that the project is able to be managed in a manner that is generally consistent with the aims, objectives and provisions of the Mining SEPP including the matters in Part 3 of the Mining SEPP that a consent authority must consider before determining an application of this nature, which has been considered in this assessment report as appropriate; and
- the proposal satisfies the relevant provisions of Tweed LEP.

Section 2.4 of the EA also includes an assessment of the proposal against relevant environmental

planning instruments. A copy of all of these instruments is included as Appendix B.

3.7 Objects of the *Environmental Planning and Assessment Act 1979*

The Minister is required to consider the objects of the EP&A Act when he makes decisions under the Act. These objects are detailed in Section 5 of the Act, and include:

'The objects of this Act are:

(a) to encourage:
- *(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
- *(ii) the promotion and co-ordination of the orderly and economic use and development of land,*
- *(iii) the protection, provision and co-ordination of communication and utility services,*
- *(iv) the provision of land for public purposes,*
- *(v) the provision and co-ordination of community services and facilities, and*
- *(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
- *(vii) ecologically sustainable development, and*
- *(viii) the provision and maintenance of affordable housing, and*

(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and

(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.'

With respect to ecologically sustainable development (ESD), the EP&A Act adopts the definition in the *Protection of the Environment Administration Act 1991*. Section 6(2) of that Act states that ESD *'requires the effective integration of economic and environmental considerations in decision-making processes'* and that ESD *'can be achieved through'* the implementation of the principles and programs including the precautionary principle, the principle of inter-generational equity, the principle of conservation of biological diversity and ecological integrity, and the principle of improved valuation, pricing and incentive mechanisms. In applying the precautionary principle, public decisions should be guided by careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment and an assessment of the risk-weighted consequences of various options.

Council has undertaken an environmental risk analysis of the proposal, and considered it in the light of ESD principles. The Department has fully considered the objects of the EP&A Act, including the encouragement of ESD, in its assessment of the applications. This assessment found that the objects of most relevance to the Minister's decision on whether or not to approve these projects are those under Section 5(a)(i) to (vii) and that the proposal is consistent with these principles.

4. CONSULTATION

4.1 Exhibition and Notification

An Environmental Assessment (EA) was jointly prepared for both projects. Under Sections 75H(3) and 75N of the EP&A Act, the Director-General is required to make the EA of the projects publicly available for at least 30 days.

After accepting the EA for the projects, the Department:
- made them publicly available from 17 November 2011 until 19 December 2011:
  - at the Department's Information Centre;
  - at Tweed Shire Council's offices in Tweed Heads and Murwillumbah;
  - at Stotts Creek Resource Recovery Centre, Eviron; and
  - at the Nature Conservation Council.
- notified landowners in the vicinity of the site about the exhibition period by letter;

- notified other relevant State government agencies and Tweed Shire Council (Development Assessment team) by letter; and
- advertised the exhibition in the Tweed Link and the Tweed Sun.

This satisfies the requirements in Section 75H(3) and 75N of the EP&A Act.

During the assessment process the Department also made a number of documents available for download on the Department's website. These documents included the:
- applications for concept approval and project approval;
- Director-General's environmental assessment requirements;
- EA;
- submissions received; and
- Council's response to issues raised in these submissions.

During the exhibition period, the Department received a total of 11 submissions on the project comprising:
- 7 from public authorities; and
- 4 public submissions, predominantly from the Eviron area.

A summary of the issues raised in submissions is provided below. A copy of these submissions is attached in Appendix D.

4.2 Public Authorities

The **Environment Protection Authority** (EPA) was generally satisfied with the proposal once some additional information had been provided by Council in its response to submissions (RTS) and was able to recommend likely EPL conditions. The EPA has also reviewed and is satisfied with the recommended conditions of approval for the project.

The **Land and Property Management Authority** (LPMA) confirmed that there was no crown land that would be affected by the proposal.

NSW Office of Environment and Heritage (OEH) were satisfied with the findings of the biodiversity and heritage assessment and broadly supported the proposed offset strategy.

NSW Office of Water (NOW) had no objection to the proposal overall but was initially unable to recommend approval of the project application due to the lack of detailed groundwater assessment that had been carried out for West Valley Quarry in the EA. This issue was addressed in Council's RTS and through the Department's recommended conditions of approval for the project application, which NOW is satisfied with.

NSW Department of Trade & Investment, Regional Infrastructure and Services (DTIRIS) initially raised some concerns regarding the adequacy of the geological and resource assessment but this was addressed by Council in the EA and the RTS. In its final submission, DTIRIS stated that it was satisfied with the suitability of the geological and resource assessment in the context of the States mineral resources.

Roads and Maritime Services (Roads) (RMS) considered that the transport assessment adequately assessed the likely impacts of the proposal on the surrounding road network.

Tweed Shire Council (TSC) (Development Assessment Unit) stated that development contributions would not be required for stage one but could be payable for future stages. As Council is the Proponent, these contributions will be levied and paid through Council's internal procedures.

4.3 Community Submissions

All 4 submissions received from the community objected to or raised concerns about the proposal. The main reasons for these objections were:
- that the proposal is incompatible with surrounding land uses and zoning provisions, and is contrary to Council's strategic policy, including the proposed Tweed Regional Botanical Gardens Project;

- the risk of leachate and other pollutants contaminating the existing environment and a lack of confidence in the mitigation measures proposed including the proposed cell liner and the leachate and gas management and collection systems;
- the potential health and amenity impacts from dust and noise emissions, vibration and odour; and
- a lack of detailed flooding assessment including due consideration of recent flood events.

4.4 Response to Submissions

Council lodged a response to issues raised in submissions on 30 May 2012. No changes were made to the proposal but additional information was provided in relation to groundwater, hydrology and drainage, air quality, noise and soil and water management, together with a revised statement of commitments.

5. ASSESSMENT

In assessing the merits of the proposal, the Department has considered:
- the EA, submissions and response to submissions on the applications (see Appendices C to E);
- the existing environmental performance and management controls that are in place at Stotts Creek RRC and Quirks Quarry (see the EA in Appendix E);
- Council's statement of commitments for the applications (Chapter 10 in Appendix C);
- the relevant environmental planning instruments, guidelines and policies (see Section 3.6 and Appendix B); and
- the objects of the EP&A Act, including the object to encourage ecologically sustainable development.

5.1 Introduction

As outlined in Section 2 of this report, the Eviron Road Quarry and Landfill proposal aims to provide Tweed Council with its waste management needs and provision of quarried materials for the next 30 or so years.

Due to its scope and duration, the proposal seeks to meet Council's immediate land filling requirements through a project application (stage 1) and to establish Council's long-term plans for future land filling and quarrying needs via a concept plan.

As a result, the assessment of issues associated with the proposal either relate broadly to the overall proposal under the concept plan application, or are specific to the immediate activities under the project application for stage 1 (or in some cases both).

The Department's consideration of the concept plan includes the consideration of the following issues:
- the justification and need for more putrescible waste landfills in the Tweed Shire in the context of NSW Government policy;
- whether potential air quality, noise and visual impacts on surrounding receivers can be managed to within acceptable levels; and
- whether the impacts to existing biodiversity and heritage values have been suitably avoided, managed and/or offset.

The Department's assessment of these key issues has been considered in principle (waste), as a worst case impact (air quality and noise) or at a broader level across the whole site (biodiversity, visual and heritage).

In terms of the project application, the Department's assessment has considered issues, which would be specific to activities associated with stage 1 (and for future stages that will be subject to merit assessment) under future development applications. These include:
- surface water and groundwater issues;
- blasting and vibration;
- traffic and access;
- waste management and rehabilitation; and

- infrastructure and services.

The Department's assessment, as outlined in Sections 5.2 and 5.3 below, provides an assessment of the proposed concept plan (Section 5.2) and then the project application for Stage 1 (Section 5.3). This includes the recommendation of specific modifications for the overall Concept Plan area in terms of limits of approval, sequencing and future assessment requirements and the recommendation of specific conditions in the project application to mitigate and manage all issues relevant to the construction and operation of stage 1.

5.2 Key Issues

5.2.1 Waste

Need for the Proposal

Tweed Shire Council has a population of approximately 88,000 and Council provides waste collection services to around 35,000 households in the LGA. Currently, Stotts Creek RRC hosts the only putrescible waste disposal facility in the LGA, which will reach capacity in the next 12 months.

The NSW Government remains committed to resource recovery as affirmed in *NSW 2021* (see Section 3.1). At the same time, the Department acknowledges that at present, and for the foreseeable future, not all waste can be recycled and reused. That is, there is a need for on-going landfill capacity to dispose of residual waste.

This is particularly relevant when considering waste proposals in regional areas of NSW such as the Tweed LGA. The Department acknowledges that some regional areas face some challenges with the economies of scale required to invest in alternative waste treatment facilities so disposal of waste to landfill is sometimes the most viable option.

The Department has observed that Tweed Shire Council has been through a rigorous and transparent process with the community to identify alternatives to the proposal. The results of this process are embedded in Council's Domestic Solid Waste Strategy (the Waste Strategy).

When consulting on the Waste Strategy, alternatives considered for Tweed's waste disposal needs included transporting Tweed's waste to landfill sites in south east Queensland, the Gold Coast and Ipswich regions for disposal. The Department agrees with the sentiments of the community and the conclusions of Council that interstate disposal of Tweed's waste is not desirable for a variety of reasons, not least being the potential for adverse environmental and economic outcomes associated with doing so (e.g. increased greenhouse gas).

The Department notes that Council has been proactive in pursuing alternatives to landfilling, including commissioning a 'Situation Analysis' of Alternative Waste and Resource Recovery Technologies in 2008. The study concluded that an AWT is not currently viable for Tweed (based on estimates of the waste quantities generated in the Tweed being below feasibility levels for current AWT technologies pursued in Australia). Notwithstanding, Council has demonstrated its commitment to pursuing alternatives to landfilling (for example in its 'Community Strategic Plan'), and resource recovery in the LGA (see below).

The Department considers there is an acute need for putrescible landfill capacity and that the proposal is critical to ensuring Tweed Shire Council's landfill capacity is secured into the future, having regard to:

- ongoing demand for waste disposal in the LGA;
- the alternatives that have been considered by the Council (including interstate disposal); and
- the current limitations in developing an Alternative Waste Treatment plant in Tweed to deal with waste disposal demand.

Resource Recovery Levels

Under Clause 123 (1a) of the Infrastructure SEPP, a consent authority for any new landfill is required to consider whether a suitable level of resource recovery of waste has been demonstrated so that the amount of waste is minimised before being placed into landfill.

The WARR Strategy is the key NSW Government policy driving diversion of waste from landfills, recycling, increased processing of residual waste and safe disposal of waste to minimise environmental harm. As described earlier, this commitment to resource recovery is also recognised in the State's principal strategic policy document, *NSW 2021*.

The WARR Strategy sets the following specific targets for resource recovery by 2014:

- 66% of municipal waste;
- 63% of commercial and industrial waste (C&I); and
- 76% of construction and demolition (C&D) waste.

From the Department's assessment of the Eviron Road quarry/landfill proposal, it is evident that Tweed Shire Council is committed to resource recovery activities across the LGA. Council has embedded these commitments in key policy documents including *2011/2021 Tweed Community Strategic Plan (2011)* and *Tweed Shire Domestic Solid Waste Management Strategy (June 2007*). Further, Council has been proactive in pursuing alternatives to landfilling through participation in regional waste forums, studies and has even commissioned its own study into AWT.

Stotts Creek RRC hosts:

- a materials recovery facility;
- green waste processing facility;
- transfer station (that recovers dry recyclables, metal and other items);
- drumMuster compound;
- oil recycling station;
- a construction and demolition recycling pad; and
- a putrescible landfill with landfill gas infrastructure and micro power station.

Further, Council has introduced initatives such as:

- a multi bin, source segregated kerbside collection service (140L weekly red bin, 240L fortnightly yellow bin and an optional fortnightly 240L green bin);
- a staggered gate pricing model that protects the landfill assets of Tweed Shire (and encourages source segregation and resource recovery);
- waste education programs; and
- chemical and e-waste drop off days along with other clean-up campaigns.

The Department considers that these initiatives have proven successful, with Tweed Shire Council on a trajectory of increased resource recovery rates, as shown in Figure 7 below.

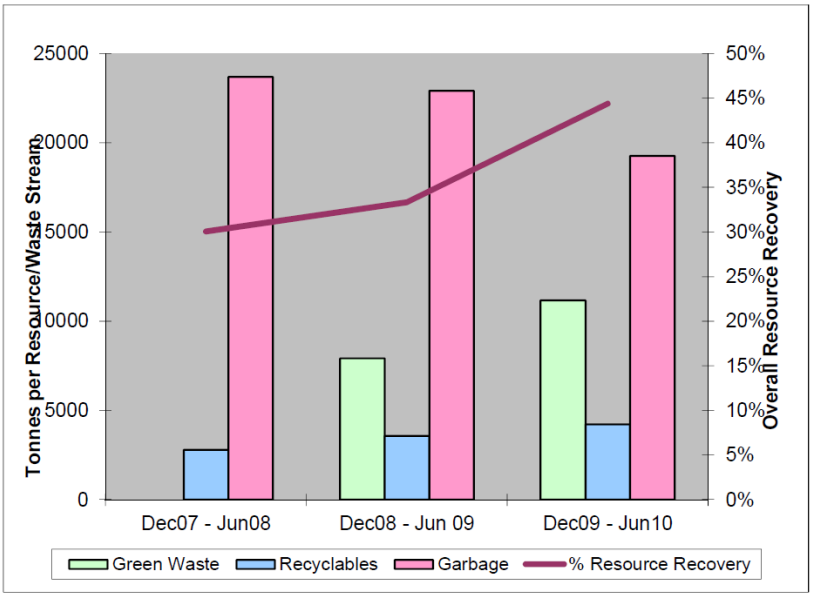

Figure 7: Resource Recovery Rates

With the introduction of Tweed's multi bin system in 2009/2010, Council's kerbside resource recovery rate has risen to 44%. When looking at overall waste generation across the different waste streams, Council is achieving an overall resource recovery rate of approximately 39.3%.

Whilst these resource recovery rates are below the State targets, it is clear to the Department that Tweed Shire Council are implementing all reasonable, feasible and best practice measures to minimise the amount of waste being directed to landfill in the current circumstances and it is confident that Council is committed to minimising the amount of waste to landfill and will continue to investigate and develop further initiatives in resource recovery.

Notwithstanding this, the resource recovery levels are lower than the State average and whilst the Department is satisfied that Council is minimising the amount of waste going to landfill, it is recommended that Council be required to further justify its resource recovery strategy against Clause 123(1a) of the Infrastructure SEPP and that this requirement be stipulated in the requirements for future development applications on the site in the concept approval.

The other provisions of Clause 123 of the Infrastructure SEPP are considered in Table 4 below.

Table 4: Assessment of Clause 123 of the Infrastructure SEPP

No	Issue	Consideration	Recommendation
1	Best practice landfill design and operation	Best practice landfill design and operation is set out in the Benchmark Techniques specified in Appendix A of the Environment Protection Authority's (1996) *Environmental Guidelines: Solid Waste Landfill*. The proposed design and operation of the landfill satisfies the Benchmark Techniques. The Department has formalised the best practice requirements in the approval conditions by specifying leachate and stormwater management and collection design and requiring Council to prepare a Soil, Water and Leachate Management Plan and a Landfill Environmental Management Plan before landfilling operations commence.	Approval conditions for a Landfill Environmental Management Plan and a Soil, Water and Leachate Management Plan and landfill design and operation in accordance with Benchmark Techniques.
2	Landfill gas capture and energy recovery	Council would operate a reticulated landfill gas management system so offsite odour impacts would be negligible. The landfill would be capped as soon as practicable following the deposition of waste to reduce greenhouse gas emissions. Council has also stated that it intends to install infrastructure to recover waste energy (gas extraction wells) and to find ways to reduce these emissions, including flaring. It also intends to explore the option of using the existing Renewable Energy Facility at Stotts Creek once landfill gas flows and compositions are verified. The Department recommends approval conditions for stage 1 requiring Council to prepare and implement a Greenhouse Gas Abatement Strategy to investigate the viability and feasibility of these options, minimise energy use and greenhouse gas emissions from landfilling operations and to prepare and implement an Energy Savings Action Plan.	Approval conditions to minimise greenhouse gas and energy use, a Greenhouse Gas Abatement Strategy and an Energy Saving Action Plan.
3	Location and potential land use conflicts	The site is outside 'environmentally sensitive areas' specified in Table 1, and suitably distant from land-uses specified in Table 2 of the Department's *EIS Guideline for Landfilling*. The proposed landfill would be located on degraded land (i.e. a disused quarry void) and all environmental impacts have been avoided, minimised, managed and offset to within acceptable levels, subject to a range of limits and requirements in the form of modifications in the concept plan and recommended conditions in the stage 1 project approval.	Site is suitably located. Approval conditions to address a range of environmental impacts.
4	Optimal transport links	The proposed landfills are around 30km by road to Tweed Heads and some 10km by road to Murwillumbah and would generate the same amount of traffic as is currently generated by Stotts Creek RRC, which can be accommodated in the capacity of the existing road network. Other waste disposal options such as transport to the Gold Coast introduce undesirable impacts associated with long-haul transport such as higher exposure to the risk of traffic accidents, higher greenhouse gas emissions and higher sensitivity to the price	No conditions necessary.

	of fuel and objections based on social inequity of transporting waste out of the region. The Department is satisfied that the subject site is optimally located in terms of transport links.

Overall, the Department accepts that the proposal is critical to ensuring Council's putrescible landfill capacity going into the future and considers that it has done all it reasonably can to maximise resource recovery in the LGA at this point in time. It also considers the proposal to be consistent with Clause 123 of the Infrastructure SEPP.

5.2.2 Air Quality

The EA included an Air Quality Impact Assessment (AQIA) of the concept proposal carried by GHD in accordance with applicable guidelines, including DECCW's *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*.

Dust

The proposal would primarily generate dust from quarrying activities, such as excavation, bulldozing and blasting, material processing and handling (e.g. crushing, screening and loading), vehicle induced dust emissions in the pit area and wind erosion of exposed unstable soil surfaces and localised stockpiles. Dust would also be generated by landfill and related activities (e.g. earthworks, waste handling and vehicle movements and wind erosion) but to a much lesser extent.

Council would continue to implement the standard dust mitigation measures that it carries out on site presently to reduce dust emissions such as minimising areas of surface disturbance, staging and progresse rehabilitation/revegetation and suppression of dust generating areas such as access and haul roads, crushing and screening equipment and stockpiles.

For this proposal, Council has also committed to implementing a series of operational management and mitigation measures to reduce the dust impacts of the proposal, such as suspending or reducing operations and/or avoiding high dust generating activities when prevailing winds are blowing towards surrounding receivers.

In order to assess a potential worst-case scenario, the modelling predicted the air quality impacts at the following three key stages of the concept proposal when landfilling and quarrying operations would be being undertaken concurrently (see Section 2.2):

- Stage 1: Quirks Quarry Landfill and West Valley Quarry (2012 to 2021);
- Stage 2: West Valley Landfill and North Valley Quarry (2022 to 2033); and
- Stage 3: North Valley Landfill (from 2034 to 2045).

The assessment conservatively modelled the potential dust emissions from the concept proposal and compared the results against the EPA's criteria of 90µg/m^3 for Total Suspended Particles (TSP), 50µg/m^3 for short term (24 hour) and 30µg/m^3 for long term (Annual) for Particulate Matter (PM_{10}) and 2g/m^2/month for Dust Deposition.

As the modelling was being carried out, it became apparent that Receiver 3 (see Figure 8) would experience significant exceedances of the dust criteria. To address this, Council acquired this property and has made it clear to the Department that it would not be inhabited when West Valley Quarry becomes operational.

The key findings of the Department's assessment of dust emissions from the concept proposal are that:

- the predicted dust emissions are representative of the activities proposed to take place on the site and are commensurate with dust generated by other quarry landfill operations in NSW;
- dust emissions would principally be concentrated around the three quarries and to a lesser extent the two landfills and that these dust emissions would gradually disperse and diminish away from these dust sources (see Figure 8);
- the highest level of dust emissions experienced by surrounding receivers would be during stage 1 of the proposal but these emissions would generally reduce over time;
- dust emissions would be concentrated in the southern area of the site for the first 10 years of the concept proposal which would marginally affect five receivers to the south and south east of

the site (1, 4, 5, 6 and 7). For the remainder of the concept plan life, dust emissions would be concentrated in the northern area of the site, and would primarily affect one receiver to the east of the site (2), however,

- applicable dust criteria would be complied with at all receivers (except at Receiver 3 which has been purchased by Council – see above).

Figure 8: Configuration 1 (Stage 1) – PM_{10} 24-hour concentration contours

In principle, the Department and the EPA are satisfied with the findings of the assessment and that it has been shown that dust emissions from the concept proposal can be managed to within acceptable levels. An air quality assessment would nonetheless need to be prepared in support of subsequent development applications on the site and it is recommended that this requirement by imposed in the future environmental assessment requirements set by modifications in the concept plan approval.

In terms of the stage 1 project, the Department has recommended that the following specific conditions should be included in the project approval, which requires Council to:

- comply with applicable dust criteria (see above);
- implement best practice air quality management on site, including all reasonable and feasible measures to minimise dust emissions generated by the project;
- implement additional dust mitigation measures (such as installing first flush roof systems, air filters or air conditioning) at residences if independent monitoring confirms that the project is exceeding the dust criteria;
- develop an Air Quality Management Plan, which would describe the measures to be implemented to ensure compliance with the relevant conditions of approval;
- respond effectively to enquiries and complaints;
- commission an independent review of any potential exceedances of the applicable air quality criteria;
- publicly report on its environmental performance; and
- regularly review and audit its performance with a view to continually improving the performance of these operations over time.

Odour

The AQIA included an odour assessment of the concept proposal in accordance with DEC's *Assessment and Management of Odour from Stationary Sources in NSW*.

As the site is located in a predominantly rural environment, an impact assessment criterion of 5OU would ordinarily apply (based on a population of about 30). However, as there is potential for an increase in population in the area, a more stringent odour assessment criterion of 2OU was adopted for the purposes of the assessment.

The most significant potential source of odour would be emissions from putrescible waste placed at the tipping face of the active landfill cell. Closed landfill cells would continue to contribute as a minor odour source as landfill gas is released from the restored landfill surface but this would be negligible, as a reticulated landfill gas management (i.e. containment) system would be operated on the site.

The assessment found that the predicted one-second (nose response time) ground level odour concentrations for the proposed landfills would comply with the 2OU criterion at all receivers under all three configurations for the life of the proposal.

It was also found that the 1OU (the odour detection threshold) contour is confined to within 200 metres of the site boundary which means that no privately owned properties would experience any odour impacts except when they were using or in close proximity to the site.

Notwithstanding this, Council would continue to implement a series of standard odour reduction measures on site, including minimising the working face of disposal areas, covering all exposed waste at the end of each day and limiting the disturbance of previously filled areas. Council would also analyse records of odour-related complaints and develop corrective actions in the event of problematic recurring events (e.g. weather conditions).

Overall, the Department and the EPA are satisfied that odour is capable of being routinely managed on the site and would not pose an unacceptable amenity issue for surrounding receivers. Odour would be included as a component of the air quality assessment that would be required to be prepared in support of subsequent development applications on the site and the Department has included this requirement as a modification in the concept approval accordingly.

For the stage 1 project, specific conditions are recommended to reduce potential odour emissions. These include a series of operating conditions, together with a requirement to prepare and implement a Landfill Environmental Management Plan (LEMP).

Greenhouse Gas

The AQIA included a Greenhouse Gas Assessment (GHGA) of the proposal in accordance with the *National Greenhouse Accounts (NGA) Factors*.

The proposal would generate scope 1 and 2 greenhouse gas emissions. These emissions would primarily be comprised of methane gas released from each of the landfills and, to a lesser extent, from fuel being used by plant and equipment on site.

Overall, the proposal would generate 0.87Mt CO2-e during its operational life (between ~ 0.016Mt and ~ 0.032Mt CO2-e per year), and a further 2.7Mt CO2-e (~ 0.027 Mt CO2-e per year) for a 100-year period from decaying organic matter once the landfills close. The proposal represents a minor source of greenhouse gas emissions in terms of Australia's national emissions (~565Mt CO2-e a year in 2009) and this is unlikely to contribute significantly to climate change.

Furthermore, the Department is aware of the Commonwealth Government's Clean Energy Legislative Package and carbon pricing mechanism, which commenced on 1 July 2012, which aims to provide a co-ordinated response to greenhouse gas management, reduce Australia's carbon pollution and provide incentives for industry to move to using clean energy. The introduction of this Commonwealth legislation is likely to further reduce greenhouse gas emissions over time.

Notwithstanding this, Council has made a commitment to install a reticulated landfill gas management and collection system, to cap the landfill as soon as practicable following the deposition of waste and to find ways of reducing the amount of biodegradable organic waste going into the landfill.

Council has also stated that depending on the quantity of landfill gas generated and captured, it intends to install infrastructure to recover waste energy and to find ways to reduce landfill gas

emissions, including flaring. It also intends to explore the option of using the existing Renewable Energy Facility at Stotts Creek once landfill gas starts to flow and compositions are verified.

To formalise this commitment, the Department recommends a condition be imposed in the stage 1 approval requiring Council to prepare and implement a Greenhouse Gas Abatement Strategy to investigate the viability and feasibility of these options further once Quirks Quarry Landfill becomes operational. Additional conditions are recommended requiring Council to prepare and minimise its greenhouse emissions and to prepare and implement an Energy Savings Action Plan for the project.

5.2.3 Noise

The EA included a noise impact assessment (NIA) carried out by GHD in accordance with relevant policies and guidelines, including the *NSW Industrial Noise Policy* (INP).

In order to present a conservative, worst case assessment, the same three model configurations that were used to assess air quality impacts from the proposal were used to assess noise impacts (see Section 5.2.2).

The assessment found that whilst the noise catchment is predominantly rural, it is influenced by existing landfill and quarrying operations in the area and/or road traffic noise from the Pacific Highway (see Figure 2). A Rating Background Level (RBL) of 42dB(A)LA90 was established and was used to develop the Project Specific Noise Limit (PSNL) for the concept proposal. An intrusive criterion of 47dB(A)$LA_{eq\ (15\ minutes)}$ was adopted as the PSNL at all sensitive receivers.

The Department's and the EPA's review of the NIA determined that the methods used to establish both the RBLs and PSNL's in the assessment were appropriate and had been carried out in accordance with the NSW INP.

This assessment included the noise emissions associated with construction of the internal hail road from the site access to Quirks Quarry Landfill, which would take place over a 3 month period and would precede landfilling emplacement in the quarry void. The Department is generally of the view that noise impacts from construction activities at mines and quarries should be assessed as operational noise and is therefore satisfied with this approach.

Two items of plant have been identified as being particularly noisy: the quarry processing plant and the hard rock drill. In addition to its general noise management and mitigation measures, Council has committed to specifically reducing the impacts of the quarrying processing plant by placing it in locations that are naturally attenuated by existing topography, installing an acoustic barrier or possibly treating the façades of affected residences. Impacts from the hard rock drill are more short term and localised so Council would limit and possibly cease using it when other plant and equipment is being operated on site.

All fixed and mobile plant to be used on site were conservatively modelled at various percentages of use as if they were operating at their maximum sound power levels. Noise levels were predicted with and without the use of the hard rock drill, the noisiest item of plant, and based on 'open' and 'closed scenarios' (see Table 4).

Table 4: Predicted Noise Levels – dB(A)$LA_{eq\ (15\ minutes)}$

Model Configuration / Stage	Scenarios *(1, 2)*	R1	R2	R3	R4	R5	R6	R7
West Valley Quarry and Quirks Quarry Landfill	Without drill at open	44	40	**49**	39	< 30	34	43
	With drill at open	44	41	**50**	40	< 30	34	43
	Without drill at close	46	37	45	37	< 30	40	46
West Valley Landfill and North Valley Quarry	Without drill at close	40	36	46	39	< 30	35	40
	With drill at open	41	41	**48**	41	< 30	36	41
	Without drill at close	39	34	**47**	38	< 30	33	39
North Valley Landfill	Open	32	< 30	38	32	< 30	< 30	34
	Closed	32	36	38	34	< 30	< 30	35

Notes:

1. *Open scenario refers to the equipment height at quarry and landfill opening i.e. quarry is at existing ground level and landfill is at previous quarry pit level.*
2. *Close scenario refers to the equipment height at quarry and landfill close i.e. quarry is at lowest pit level and landfill is at maximum capacity (assumed to be approximately natural ground height).*

3. *Exceedances of the applicable criteria are shown in bold.*

The key findings of the Department's assessment of noise for the concept proposal are that:

- the predicted operational noise impacts are representative of the activities proposed to the take place on the site and are commensurate with noise generated by other quarry landfill operations in NSW;
- noise emissions would principally be concentrated around the three quarries and to a lesser extent the two landfills and that these noise emissions would gradually disperse and diminish away from these noise sources (see Figure 9);
- as the landscape of the quarries and the landfills change, the relative contribution of individual sources would also change. As the quarry deepens and the quarry processing plant becomes more shielded by the active wall, noise levels at surrounding receivers would reduce;
- the highest level of noise emissions experienced by surrounding receivers would be during stage 1 of the proposal but these emissions would generally reduce over time;
- noise emissions would be concentrated in the southern area of the site for the first 10 years of the concept proposal which would primarily affect five receivers to the south and south east of the site (1, 4, 5, 6 and 7). For the rest of the concept plan life, noise emissions would be concentrated in the northern area of the site, and would primarily affect one receiver to the east of the site (2), however,
- applicable noise criteria would be complied with at all receivers (except at Receiver 3 which has been purchased by Council – see above); and
- road traffic noise would remain below applicable criteria.

Figure 9: Configuration 1 (Stage 1) – Noise Contours

The existing noise catchment is already influenced from existing landfilling and quarrying activities on the site and/or road traffic noise from the Pacific Highway (following the Yelgun to Chinderah upgrade). Given that the concept proposal represents a continuation of these activities and would continue to be during daytime hours, the Department and the EPA are satisfied that the noise impacts of the concept proposal would not have a detrimental impact on surrounding receivers.

Like with air quality, a further assessment would nevertheless need to be prepared in support of subsequent development applications on the site and it is recommended that this requirement be

imposed in the future environmental assessment requirements as a modification in the concept plan.

To specifically manage and mitigate noise emissions for stage 1 of the project, the Department recommends that conditions should be included in the project approval, which requires Council to:

- comply with contemporary operational noise criteria;
- restrict landfilling and quarrying operations on site to daytime hours (as takes place currently);
- implement reasonable and feasible mitigation measures to minimise noise impacts;
- implement additional noise mitigation measures (such as double glazing, insulation and/or air conditioning) if independent monitoring confirms that the project is exceeding the noise criteria;
- develop a Noise Management Plan for the project, which would describe the measures to be implemented to ensure compliance with the relevant conditions of approval;
- commission an independent review of any potential exceedances of the applicable noise criteria;
- publicly report on its environmental performance; and
- regularly review and audit its environmental performance with a view to continually improving the performance of these operations over time.

5.2.4 Biodiversity

The EA included a biodiversity assessment prepared by GHD in accordance with relevant guidelines including DEC's *Draft Part 3A Threatened Species Guidelines*.

This assessment included a literature review of State and Commonwealth databases and of previous studies carried out in the area, with targeted field surveys carried out to determine the conservation value of the site. It examined the potential biodiversity impacts of the project, paying particular attention to its ability to affect the endangered ecological communities (EECs) and threatened species habitat on the site.

The assessment found that existing and historical quarrying and landfilling and related activities in this area has already impacted existing biodiversity values through vegetation clearing, habitat loss, fragmentation, degradation (from anthropogenic impacts such as weed infestation, noise and dust) and alteration due to changed regrowth habitat (see Figure 2).

Furthermore, vegetation clearing in the area has resulted in the subsequent dense regrowth of camphor laurels (an exotic, noxious weed) with sparse under storey and ground level vegetation, dense scrubby weed growth or open cleared areas. This means that the overall quality of existing vegetation in the area has reduced over time leaving only some small pockets of native vegetation present, predominantly along the boundary of the site (Figure 10).

That said, the assessment identified the following key biodiversity values within the study area (Figure 11):

- some pockets of existing vegetation, the most significant being Blackbutt wet schlerophyll forest in the north western edge of the site containing elements consistent with the lowland forest on floodplain EEC and some vegetation along the existing drainage line which is representative of swamp schlerophyll forest on coastal floodplains EEC (indicated as vegetation types 3 and 6);
- fauna habitat comprising connective vegetation along the ridgeline to the south and southwest of the site, habitat trees (6 larger trees, 2 tree hollows and 1 dead stag), Koala habitat (comprising Blackbutt open forest wet and dry schlerophyll), small fruited red gum and tallow wood and vegetation in existing drainage lines;
- 186 different plant species, including 50 exotic species, the most significant being a stand of 5 white lace flowers listed as vulnerable under the TSC Act and 3 rare or threatened Australian plant species being black walnut, long-leafed tuckeroo and smooth scrub turpentine; and
- 92 fauna species (72 bird species, 8 mammal species, 5 reptile species and 10 amphibian species) of which 9 are listed as vulnerable under the TSC Act (5 confirmed and 4 unconfirmed): Glossy black-cockatoo, Little Lorikeet, Collared Kingfisher, Eastern False Pipistrelle, Little Bentwing-bat, Eastern long-eared bat, Squirrel Glider, Koala and Grey-headed flying fox. 1 is listed a vulnerable (Grey-headed flying fox) and 3 are listed as migratory species (Great Egret, Spectacled Monarch and Black-faced Monarch) under the EPBC Act.

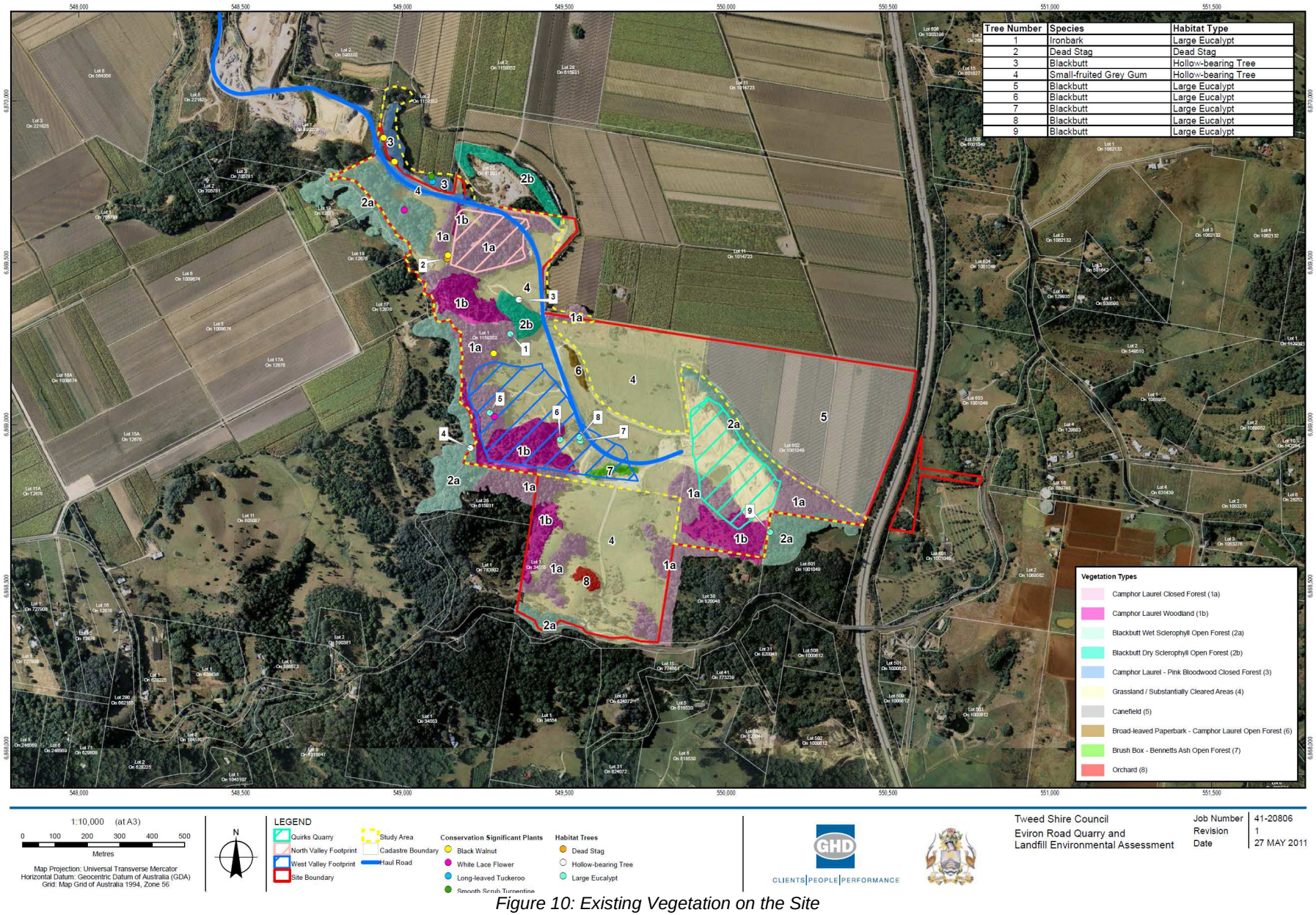

Figure 10: Existing Vegetation on the Site

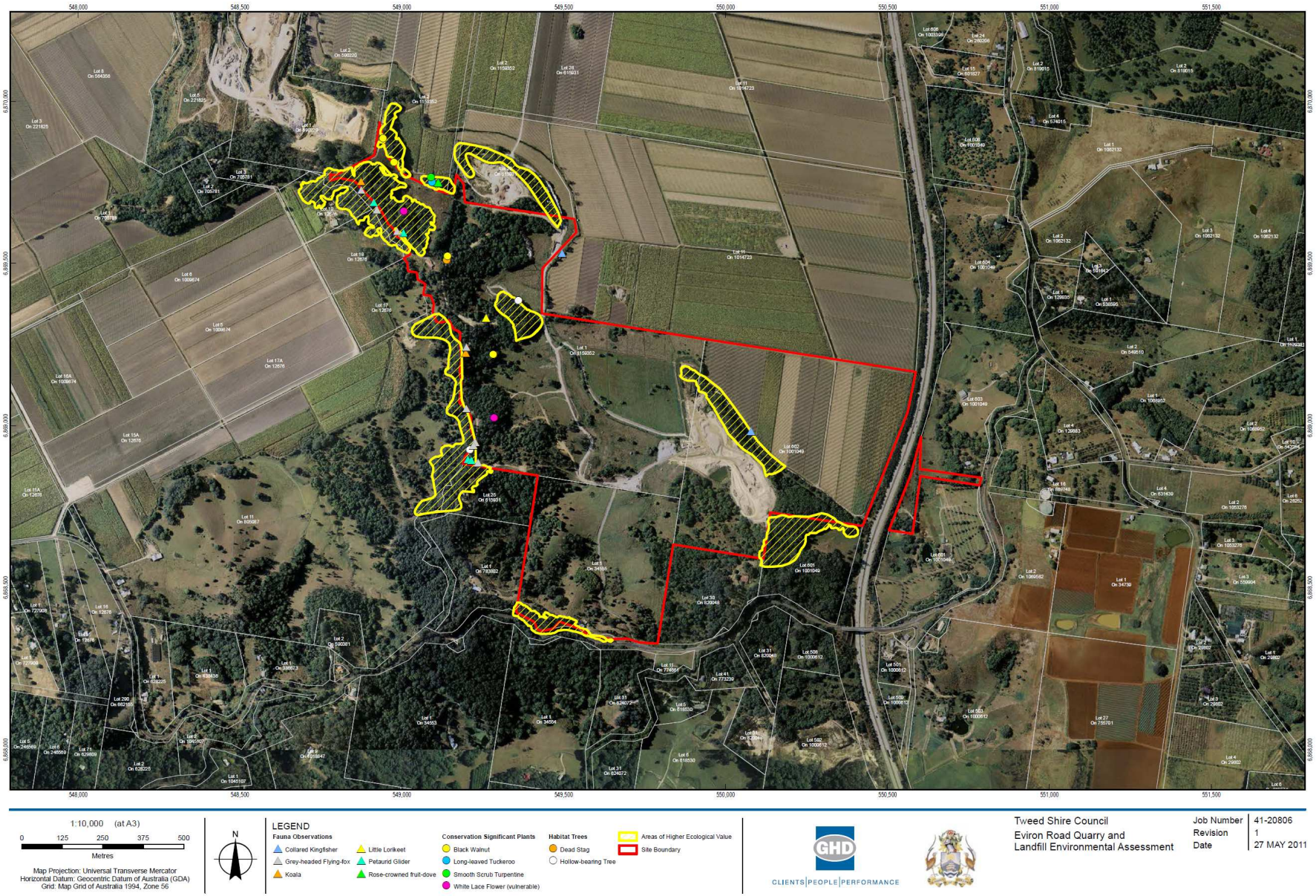

Figure 11: Key Biodiversity Values on the Site

In order to minimise further impacts to existing ecological values, Council adopted a hierarchical strategy of avoidance, mitigation and offsetting with an overall aim of maintaining and improving biodiversity outcomes in the medium to long term. This approach is generally supported.

In particular, the footprints of West Valley Quarry and North Valley Quarry and the alignment of the proposed haul road have been designed so as to avoid impacting the more significant stands of vegetation (Blackbutt open forest wet and dry schlerophyll) and provide good fauna habitat and connectivity with other areas of vegetation.

The concept proposal would nonetheless result in the removal of five white lace flower plants that are located within the footprint of West Valley Quarry and the clearing of about 17 hectares of vegetation, including 0.45 hectares of Blackbutt sclerophyll forest (Types 2a and 2b) and Brush Box – Bennett's ash open forest (Type 7) in the footprint of West Valley Quarry as shown in Table 6.

Table 6: Clearing Area by Vegetation Type

		Clearing Area (hectares)				
#	**Vegetation Type ***	**Approved Quirks Quarry**	**Stage 1 West Valley Quarry**	**Haul Road**	**Future Stage North Valley Quarry**	**Total**
1a	Camphor laurel closed forest	(1.01)	1.69	0.22	3.17	5.08
1b	Camphor laurel open forest to open woodland	(0.26)	3.08	0.02	0.07	3.17
2a	Blackbutt wet sclerophyll forest	(0.37)	--	0.07	--	0.07
2b	Blackbutt dry sclerophyll forest	Nil	--	0.01	--	0.01
3	Camphor laurel – pink bloodwood closed forest	--	--	0.02	--	0.02
4	Grassland / cleared areas	(4.77)	5.83	2.27	0.31	8.41
5	Canefield	--	--	--	--	--
6	Broad-leaved paperbark – camphor laurel open forest	--	--	--	--	--
7	Brush Box – Bennett's ash open forest	--	0.37	--	--	0.37
8	Orchard	--	--	--	--	--

** Refer to Figure 10 for the location of each vegetation type to be cleared.*

In addition to avoiding the most significant biodiversity values on the site, Council has committed to a number of measures to mitigate and compensate for these impacts. These include (see Figure 12):

- conserving a 6.5 hectare parcel of land in the north east and to protect it in perpetuity. As can be seen on Figures 10 and 11, this area has been identified as having high biodiversity value as it contains a stand of intact Blackbutt wet sclerophyll forest which provides habitat for a number of threatened species, some white lace flowers and forms part of an existing wildlife corridor;
- reconstruction and revegetation of 5.6 hectares of bushland habitat to facilitate wildlife refuge and movement through the site with connection with the wider locality to be managed through a Restoration Plan;
- translocating the five existing white lace flowers in the footprint of West Valley Quarry and carrying out further targeted surveys and, if identified, further translocation of threatened plant species if there is the possibility of being impacted by the concept proposal;
- installation of nest boxes to help compensate for the loss of mature eucalypts with the potential to form hollows; and
- the preparation and implementation of a series of Environmental Management Plans, including a site-wide Habitat Management Plan, a Translocation Plan for Threatened Plants and a series of sub-plans to protect and manage biodiversity values during operations.

Council undertook an assessment under the requirements of the Environment Protection and Biodiversity Conservation Act 1999 which found that the proposal is unlikely to have a significant impact on any federally listed threatened species, ecological communities or migratory species.

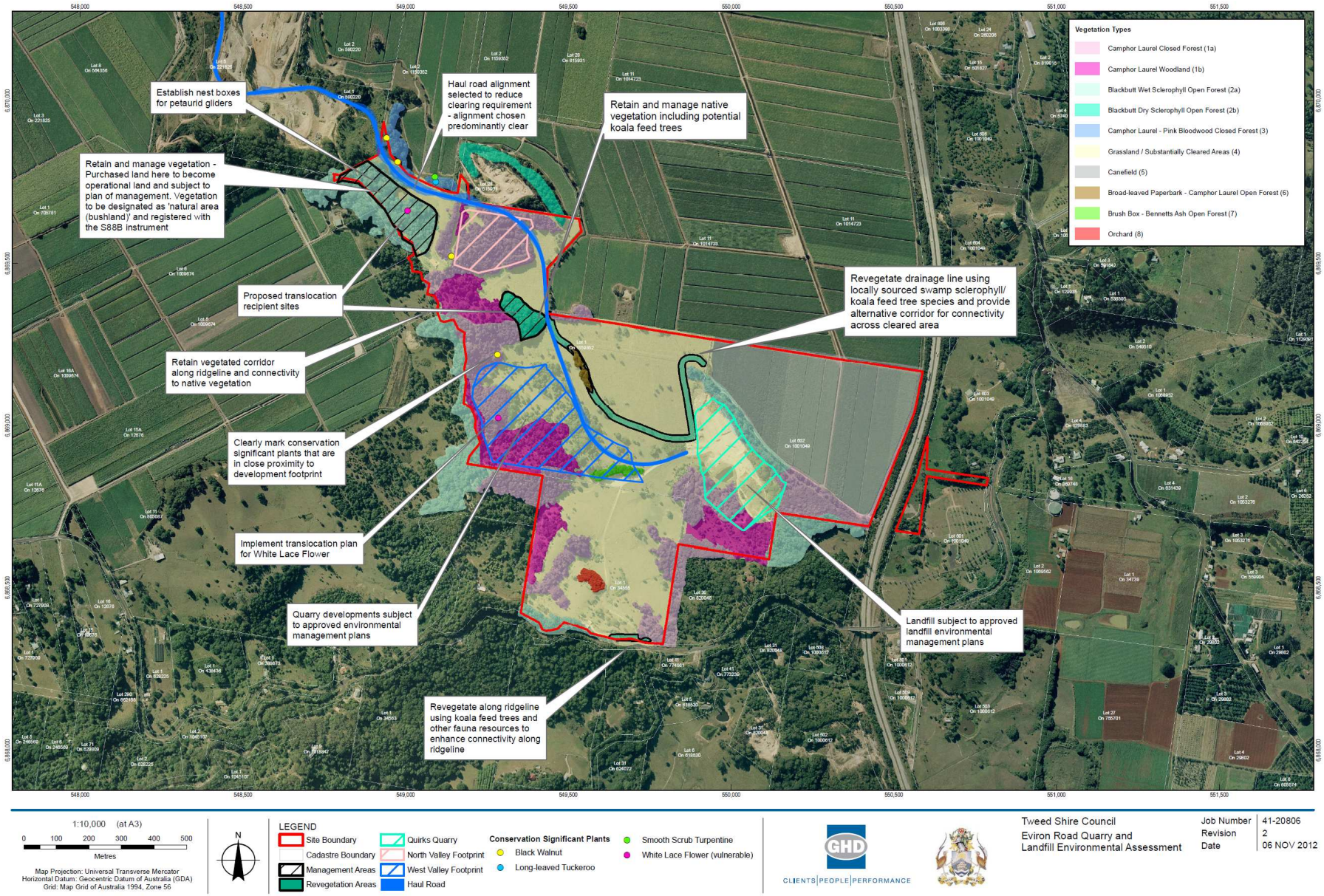

Figure 12: Biodiversity and Visual Management and Mitigation Measures

OEH broadly supported Council's biodiversity strategy to compensate for the impacts of the proposal. However, in relation to the proposed offset area, OEH questioned the veracity of the legal mechanism that is proposed to be used to protect this land in perpetuity and the limited level of protection that is currently afforded to this land in light of its classification as 'Operational Land' under the *Local Government Act 1993*.

On the basis of the information available, including the preliminary Restoration Plan that was submitted with the EA, OEH acknowledges that it is highly likely that the overall biodiversity strategy would deliver like for like compensation if best practice landscape restoration planning and techniques are properly resourced, supervised and managed to completion, but maintained that it could not be certain of this until the strategy is fully implemented.

There was also some debate between OEH and Council whether the 0.44 hectares of vegetation to be cleared in the footprint of West Valley Quarry under stage 1 constitutes Lowland Forest EEC and whether assisted regeneration of this community is feasible. To address this, OEH recommended that a requirement to rehabilitate Lowland Forest EEC be incorporated into the final Restoration Plan. Similarly, OEH also recommended that the Restoration Plan have a focus on providing additional Koala feed trees on the site.

To address the issues above, the Department recommends that a series of conditions be imposed in the stage 1 project approval which requires Council to implement the biodiversity strategy and make suitable arrangements for the long term protection of the proposed offset area in consultation with OEH by the end of next year so this issue is resolved during the early stages of the concept plan and to lodge a conservation bond with the Department to ensure that the strategy is properly implemented.

The Department further recommends that Council should be required to prepare and implement a detailed Landscape Management Plan for the site which describes the measures that would be implemented to manage remnant vegetation and to implement the biodiversity conservation strategy. The Plan would also have a focus on rehabilitating the site with Lowland Rainforest EEC and providing Koala feed trees as recommended by OEH.

In addition to the recommended conditions for stage 1, it is recommended that the concept approval include a requirement for Council to carry out a biodiversity assessment in support of each future development application on the site and that this requirement be imposed as a modification in the concept plan approval.

5.2.5 Visual

The concept proposal has the potential to have a visual impact on surrounding receivers as the existing landscape changes over time as parts of the site are developed for quarrying and landfilling operations and associated activities.

The EA included a visual assessment that modelled the visual impact of the concept proposal from a number of vantage points surrounding the site to gauge how the concept proposal would affect the visual amenity of the key receivers surrounding the site (1, 2, 4, 5, 6 and 7).

The assessment found that each vantage point would have a different level of visual exposure to each operational area depending on its position within the landscape and the nature and location of existing vegetation screening. To help ameliorate these impacts, vegetation would be planted to help screen the proposed operations on the site particularly along the sites southern and north-eastern boundaries (see Figure 13).

In addition, and in response to a specific concern from a local resident in the area, Council has included an additional commitment to review its visual impact assessment and to carry out additional screen planting (or other suitable mitigation measure) at this specific property if required.

The Department does not consider the visual impact of the concept proposal to be particularly significant in this case because:

- the impact would be temporary as progressive rehabilitation/revegetation takes place and would only be focussed on one area of the site at a time;

- the concept proposal would be viewed in the context of previous and existing quarrying and landfilling operations on the site and in the surrounding area that have taken place for many years (see Figure 2); and
- as the current access to Quirks Quarry is to be sealed and landscaped, with all traffic accessing the site from the north via Leddays Creek Road, visual and other amenity impacts from the operations would be focussed in the northern area of the site away from where most of the receivers are located in the south.

Notwithstanding this, it is recommended that the concept approval include a requirement for Council to prepare a visual impact assessment for each future development application to assess the potential visual impact of each stage and to develop specific management and mitigation measures to address this impact.

For the stage 1 project, a number of conditions are recommended to manage day-to-day visual impacts on the site from lighting, signage and fencing. In addition, as set out in Section 5.2.4, conditions are recommended to prepare and implement a comprehensive Landscape Management Plan for the site. One of the key aims of this plan would be to landscape the site in such a way as to minimise the visual impacts of the project on surrounding receivers.

5.2.6 Heritage

The heritage assessment included a desktop review of scientific assessments, register searches, Aboriginal stakeholder consultation and a field survey aimed at identifying the presence of and/or potential for Aboriginal and non-Aboriginal cultural heritage items on the site, and was carried out in consultation with OEH and local Aboriginal groups.

The assessment identified that there were no existing heritage areas or objects on the site, except for five springboard trees and considered there to be a low probability that further, undetected heritage material is present in low visibility or sub surface areas.

The five springboard trees are of historical interest as they are illustrative of the past activities of loggers and timber gatherers. Council has committed to retaining these trees where possible and, if removed, would relocate them to a location where they can be preserved and displayed with appropriate interpretation.

The Department and OEH are satisfied with the findings of the heritage assessment for the concept proposal and the measures put forward by Council to manage and mitigate the five identified springboard trees.

For the stage 1 project, no specific conditions are considered necessary, other than a requirement for Council to prepare and implement a Heritage Management Plan for the projects (i.e. for areas where ground disturbance and excavation would take place), which includes:
- procedures for ongoing consultation with the Aboriginal community;
- details of proposed management and mitigation strategies;
- procedures for the identification and management of unrecorded sites, including human remains; and
- details of an Aboriginal cultural heritage education program for contractors and personnel.

5.3 Project Specific Issues

As set out in Section 5.1, the following issues are specific to the project application. However, it should be noted that a number of these issues are likely to be relevant to subsequent stages of the concept proposal since more quarrying and landfilling is proposed. As a result, the Department has included the issues below as future environmental assessment requirements in the concept approval.

5.3.1 Surface Water

The EA includes an assessment of potential surface water impacts. This assessment was based on several technical reports prepared by GHD, which formed part of the EA. These include the Stormwater Assessment and Sediment Management Report, the Quirks Quarry Landfill Concept

Design Report and the West Valley Quarry Preliminary Study, as well as surface water baseline monitoring data.

These documents established the following key characteristics of the existing hydrological environment:

- the Tweed region generally receives higher than average rainfall. Summer and Autumn are when there is higher levels of rainfall whilst Winter and Spring are typically dryer;
- there are five catchments: Quirks Quarry and four other catchments within the North and West Valleys which flow to a number of discharge points;
- surface water generally flows in a north and north easterly direction through a series of cane channels and ephemeral creeks, which feed into the Tweed River;
- baseline data indicates that water quality in the area is generally fresh, slightly acidic and typically exceeds relevant guideline values; and
- there is an existing drainage channel and existing stormwater infrastructure present in Quirks Quarry which capture dirty water on site.

Stormwater Management

The project would generate clean stormwater runoff from undisturbed and rehabilitated/revegetated areas and potentially turbid, sediment laden stormwater runoff from disturbed areas.

The assessment determined the specification and location of stormwater infrastructure that would be required to effectively manage, segregate and contain this stormwater runoff based on local climatic conditions in the Tweed.

At Quirks Quarry, it was recommended that the existing stormwater infrastructure (comprising a dam, sediment basins, perimeter drains and culverts) should be retained but that additional infrastructure should be installed. This would include a new sediment basin to intercept and retain sediment laden stormwater runoff from disturbed areas of the catchment, stormwater drains to intercept this rainwater and convey it to the sediment basin prior to release from the site, and temporary stormwater drains along the boundary of each of the temporary intercell bunds.

Similar stormwater infrastructure would be required at West Valley Quarry and would be progressively installed as required.

In addition, a series of specific measures are proposed to ensure excessive rainfall events do not cause flood water to be released from the site. These include provision of a perimeter bund around the northern and eastern edges of Quirks Quarry, designing the haul road to act as a flood levee and ensuring that the design of the pit floor in West Valley Quarry is above the 1 in 100 Year flood level of 3.9m AHD.

The Department and the EPA are generally satisfied that stormwater can be adequately managed such that it poses no risk to the surrounding environment even if flooding events do occur but nonetheless recommends that Council should be required to finalise its stormwater management system prior to commencement of landfilling or quarrying operations.

A series of additional conditions are recommended to manage stormwater, which require Council to:

- comply with a series of operating conditions including diverting surface water around operational areas of the site, directing all sediment laden water in overland flow away from the leachate management system, preventing cross-contamination of clean and sediment or leachate laden water and implementing suitable erosion and sediment control measures on site;
- comply with surface water discharge limits (both volume and quantity) set for the project in the EPL;
- design and install the stormwater management and collection system in accordance with applicable Australian Standards and ensure it has adequate capacity to manage flood events;
- prepare and implement a Soil, Water and Leachate Management Plan; and
- prepare and implement a surface water management plan for the quarrying operations which includes detailed baseline monitoring data, details of the surface water management system, performance criteria including trigger levels for investigating any adverse or unpredicted surface water impacts, a monitoring program and a surface water response plan.

Leachate Management

Modelling indicated that the volume of leachate that would be generated in Quirks Quarry Landfill would vary, but gradually rise over the life of the landfill, depending on the level of rainfall received. It was predicted to be around 1,400kl/month and 2,200kl/month, rising as high as 5,800kl/month by Stage 3 of the landfill (see Figure 3).

Council would implement a series of specific measures to reduce and manage leachate generated. These measures include diverting upstream clean water runoff from the landfill, minimising exposed areas at the active landfill area by regularly (at least daily) covering of waste, grading filled areas to direct surface water runoff away from the active waste disposal area and progressive capping and rehabilitation/revegetation of landfill areas.

In terms of leachate management and collection, GHD recommended that a staged strategy be adopted, whereby leachate is initially irrigated onto the active landfilling area to control leachate levels and, during this period, a leachate treatment plant is established in time for the next phase of landfilling operations (Stages 2 and 3 – see Figure 5) when higher volumes of leachate are generated.

However, during the course of the assessment, the EPA expressed concerns about the adoption of a staged approach and recommended that Council should be required to re-examine its overall leachate management strategy, in consultation with the EPA, and to finalise the strategy before being permitted to commence landfilling operations. The Department agrees with this approach and has recommended a condition in the approval accordingly.

There is the potential for leachate from the landfill to seep into and contaminate the groundwater environment. To address this, it is proposed to install a cell liner, which includes a 1-metre thick compacted low permeability clay liner (of $< 1 \times 10^{-9}$ m/s) and a 1.5mm thick high-density polyethylene (HDPE) liner to the base of the landfill. The Department and the EPA are satisfied that such liners have been successfully used at a number of landfill sites in NSW and are consistent with EPA Guidelines.

A series of other conditions are recommended to manage leachate, which require Council to:

- comply with a series of landfill and leachate operating conditions which reflect or build on the measures committed to by Council;
- design and install the leachate management and collection system in accordance with applicable Australian Standards and/or EPA requirements; and
- prepare and implement a leachate management plan, monitoring program and response plan prior to commencement of landfilling operations.

The Department and the EPA are satisfied that the potential surface water impacts of the project can be managed in such that they do not pose an unacceptable risk to the environment subject to the recommended conditions outlined above relating to stormwater and leachate management.

5.3.2 Groundwater

The EA included an assessment of potential groundwater impacts by GHD. The assessment characterised the geology, soils and hydrogeology of the site through a review of existing information including groundwater-monitoring data (including a drilling program carried out to identify the potential hard rock quarry resource) and published geological and land classification maps.

These documents established the following key characteristics of the existing hydrogeological environment:

- there are two main aquifers present: shallow and marine alluvium deposits and underlying fractured bedrock (Fernleigh-Fernvale beds). Overlying soils are typically clayey and sandy to silty;
- these aquifers are likely connected with standing groundwater levels typically ranging from around -1 m AHD to 40m AHD;
- the groundwater in both of these aquifers flow to the north east (via slightly different pathways) to various natural and man-made channels before discharging into the Tweed River; and
- the quality of the groundwater is good and is used by a number of licensed bores (13 within 2km of the site) for domestic supply, stock and irrigation purposes.

The development and operation of West Valley Quarry could also adversely affect existing groundwater resources primarily from dewatering of existing aquifers and increased hydraulic conductivity.

Whilst the EA contained a conceptual groundwater assessment of the overall concept proposal and for West Valley Quarry it did not include a full assessment supported by long-term baseline monitoring data and modelling to determine the extent of groundwater depressurisation and drawdown and impacts to surrounding watercourses and users of this water in the surrounding area (including GDEs) and how these impacts would be licensed and/or managed. As a result, NOW was unable to complete its assessment of this aspect of the project.

NOW and the Department discussed this issue and agreed that based on its combined experience, the potential impacts of West Valley Quarry on existing groundwater resources were likely to be low. In addition, Council reaffirmed that it had always intended to carry out a detailed groundwater assessment prior to commencement of quarrying operations (scheduled to start in around 12 months time) if approval of the project was forthcoming.

Based on this, NOW and the Department were able to support the project in principle provided that conditions are imposed which:

- require a full groundwater assessment to be prepared in consultation with NOW prior to commencement of quarrying operations (i.e. whilst the haul road is being constructed and Quirks Quarry Landfill becomes operational) which includes a rigorous, long term monitoring program to better understand the nature of the groundwater environment and that modeling is carried out to accurately predict the likely extent of impact from the concept proposal;
- require a groundwater management plan to be prepared and implemented which includes detailed baseline data as augmented by this monitoring program;
- performance criteria including trigger levels for investigating any adverse or unpredicted surface water impacts, details of ongoing monitoring and a groundwater response plan; and
- prohibit the commencement of quarrying until Council has demonstrated to the satisfaction of the Director-General that the operation would have negligible groundwater impacts and that the above requirements have been addressed.

5.3.3 Blasting and Vibration

Blasting in West Valley Quarry would take place in a similar manner to what takes place currently in Quirks Quarry, that is, one blast a week with a Maximum Instantaneous Charge (MIC) of around 55 kilograms.

Amenity and Structural Damage

The assessment used previous blast monitoring and vibration reports and data from existing operations at Quirks Quarry to predict the ground vibration and airblast overpressure over various distances and compared the results against the relevant blasting criteria, as shown in Table 7.

Table 7: Blasting Criteria

Blast Impact	Amenity Criteria *	Structural Damage Criteria **
Airblast Overpressure	115dB for 95% of blasts in any year 120dB for 100% of blasts	133dB
Ground Vibration	5mm/sec for 95% of blasts in any year 10mm/sec for 100% of blasts	10mm/m

* ANZEC Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration
** Australian Standard AS2187.2-2006 Explosives – Storage, Transport and Use (houses and low-rise residential buildings

The assessment found that based on its current blast design, estimated ground vibration and airblast overpressure levels would comply with these criteria at a distance of around 230 metres or 260 metres respectively from the blast location.

This means that blasting can be suitably controlled to comply with these criteria at all surrounding receivers, except at Receiver 3, which Council has acquired due to dust impacts (see Section 5.2.2).

Notwithstanding this, Council has committed to minimising ground vibration and air blast impacts in its detailed blast design (e.g. by not firing holes with insufficient overburden and overfilling holes with blasting agents) and avoiding blasting during adverse wind conditions (i.e. when the prevailing wind is blowing towards surrounding receivers).

Safety Risks

Whilst the majority of quarrying activities associated with West Valley Quarry would take place some distance from existing receivers, there would be some short-term blasting within 500 metres of Eviron Road and Receiver 4, which could pose a health risk to surrounding people and livestock within this radius.

Based on previous experience, the Department is satisfied that potential safety risks associated with blasting near Eviron Road can be appropriately managed, primarily via temporary closures to this road, and has recommended conditions requiring Council to obtain the necessary approvals for such closures.

For Receiver 4, the Department believes Council should be required to either manage these risks in consultation with the landowner or prepare a detailed plan setting out specific measures that would be implemented to ensure safe blasting any closer to the property.

Consequently, the Department has recommended a condition restricting blasting to within 500 metres of any privately-owned land or land not owned by Council unless it has:

- a written agreement with the landowner to allow blasting to be carried out closer to that land; or
- demonstrated to the satisfaction of the Director-General that the blasting can be carried out without compromising the safety of people or livestock on the land, and updated the Blast Management Plan (see recommended conditions below) to include specific measures that would be implemented to ensure this occurs.

Based on its assessment, the Department has concluded that blasting can be suitably managed and designed to comply with applicable amenity and structural damage criteria and safety risks can be reduced to acceptable levels. The EPA raised no concerns.

To ensure this occurs, the Department believes Council should be required to:

- comply with relevant blasting criteria as set out above;
- restrict blasting on site to between Monday to Friday, 9am to 3pm – the Department and the EPA have agreed with Council that it will no longer blast on Saturdays;
- carry out one blast a day averaged over a 12 month period (although it is noted that Council would probably only blast once a week anyway);
- implement best blasting management practice on site to:
  - protect the safety of people and livestock on the surrounding area;
  - protect private and public property in the surrounding area;
  - minimise dust and fume emissions from blasting.
- prepare and implement a detailed Blast Management Plan for the project;
- monitor and publicly report on blasting performance; and
- commission an independent review of any claims that blasting has damaged property on private land in the immediate vicinity of the quarry and repair any blasting damage.

5.3.4 Other Project Specific Issues

Table 8 presents the Department's consideration of other issues.

Table 8: Other Issues

Issue	Consideration	Conclusion
Traffic and Access	• The traffic assessment found that during the peak hour, the project would generate 7 heavy and 48 light vehicles from Quirks Quarry Landfill (as is already generated by Stotts Creek RRC) and 7 heavy and 48 light vehicle movements from West Valley Quarry. Overall, it was found that this traffic is either already accounted for or can be	• Conditions are recommended including requirements for Council to: - only commence landfilling operations in Quirks Quarry once the haul road has been constructed and sealed to the satisfaction of the Director-General; - nominate appropriate haulage routes for all material being imported and

	accommodated within the capacity of the existing road network. • SIDRA analysis indicated that the intersection of Leddays Creek Road with Tweed Valley Way would operate within an acceptable level of performance for the duration of the project and that no upgrades is considered necessary at this stage. • RMS raised no concerns with the assessment overall.	exported to the site and minimise heavy vehicle movements on these routes during hours in which school buses are operating; and - prepare and implement a traffic management plan for the project. • Subject to the above recommendations, the Department and RMS are satisfied that the project would not have a detrimental impact on the safe and efficient operation of the existing road network.
Acid Sulfate Soils (ASS)	• Based on ASS risk mapping, the lower lying, north and eastern areas of the site have the highest probability of ASS occurrence, as confirmed by sample testing of monitoring bore data. • The footprint of West Valley Quarry is located just outside of the ASS mapped area however Council has adopted a minimum bench level of 4 metres AHD, as the mapped ASS risk area is generally below 2 metres AHD. • Around 500 metres of the proposed haul road lies below this level and therefore falls within the high-risk ASS mapped area. • To manage this issue, Council proposes to carry out further investigations in this area, including further borehole drilling, logging and sampling of data to better characterise the soils in this area and to identify specific measures to manage ASS in this area.	• To ensure that ASS is properly managed across the site (including the high risk ASS area of the haul road), Conditions are recommended requiring Council: - to carry out ASS testing of the areas of the site to be disturbed by the project and if any ASS is to be disturbed; and - prepare and implement a ASS management plan, which includes details of how ASS would be tested, handled, stockpiled and disposed of. • The Department is satisfied that this issue can be suitably managed subject to the imposition of recommended conditions, as outlined above. • NOW and the EPA raised no concerns.
Pyritic Material	• Drilling activities carried out to identify the quarry resource identified pyritic, graphite shales, which indicated the presence of potential acid forming (PAF) material. • Council has acknowledged this issue and has committed to carrying out additional soil and rock drilling and testing for PAF. If identified, it would avoid quarrying in these areas and would prepare and implement a PAF management system for the site. • The PAF system would include a series of management options such as direct neutralisation of potential acidity of excavated PAF material (e.g. treated with alkaline materials increase pH) and preventing oxidisation.	• The Department is generally satisfied with Council's commitments to test for PAF and to avoid and manage this material if encountered. • It is recommended that the Surface Water Management Plan required for West Valley Quarry include a plan for extracting, handling and emplacing any long-term potentially acid forming material identified on the site. • Through a combination of Council's commitments and a recommended condition, the Department is satisfied that this issue poses a low risk to the environment and can be easily managed. • NOW and the EPA raised no concerns.
Fire Safety and Waste	• The project poses a fire risk from accidental migration of landfill gas, equipment usage and the handling and disposal of fuels, oils and waste on site; • Council has included a series of commitments to address these risks including the preparation and implementation of a site operations plan, which would include safety and emergency management procedures and a Fire Management Plan for the site.	• The Department notes these commitments and has included recommended conditions to: - minimise, appropriately store, handle and dispose of waste; - prepare and implement a Waste Management Plan for the project; - prepare and implement a Bushfire Assessment for the site; and - implement suitable measures to prevent and minimise the risk of fire and maintain adequate fire fighting capacity on site. • Subject to these conditions, the Department is satisfied that this issue can be managed.
Rehabilitation	• Council would progressively rehabilitate and revegetate the quarry area and cap and rehabilitate each landfill stage as filling	• The Department has recommended conditions of approval to set rehabilitation objectives for the site as well as requiring

	is completed. The final cover layer of the landfill would be revegetated. • The average slope angle would not exceed 1:4 and the level parts of the landfill would be domed and graded to a minimum of 1:20. Council would undertake regular maintenance of landscaping to ensure its integrity, including: - maintaining surface water drains and structures; - monitoring landfill gas emissions; - filling cracks and depressions created by settled of landfill waste to ensure shedding of surface water runoff; - replacement of vegetation affected by landfill gas, erosion or slippage; and - ensuring all monitoring boreholes and locations are maintained. • Council has developed a rehabilitation strategy for the site, which meets all relevant regulatory requirements, and is consistent with the concept for the proposed Tweed Regional Botanical Gardens. • To achieve this, Council has committed to prepare and implementing a Rehabilitation and Closure Plan for the site.	rehabilitation to be undertaken progressively. • To ensure that the rehabilitation objectives are met, the Department has also recommended conditions requiring Council to lodge a rehabilitation bond to ensure the rehabilitation obligations are met and that the Landscape Management Plan for the project, including details of the measures to achieve the rehabilitation objectives and the methods for revegetating and rehabilitating the site. • The Department is satisfied that, subject to the above conditions, the site would be appropriately rehabilitated. It is also satisfied that the proposed rehabilitation objectives would provide beneficial ecological habitat and landscape compatible with surrounding land uses, including the proposed Tweed Regional Botanical Gardens.
Infrastructure and Services	• Council proposes to extend an existing 11kV powerline approximately 710 metres on a north easterly alignment to the existing demountable/temporary site office and amenities at Quirks Quarry Landfill, which would continue to be utilised. • The proposed extension comprises around 555 metres of underground cable (designed this way in recognition that it falls within stage 1 of the Tweed Regional Botanical Gardens proposal) and 155 metres of overhead 11kV powerline, 2 poles and a transformer. • The alignment follows a spur through the Condong Range ridge within a cleared area of forested vegetation and onto the existing quarry site. In its RTS, Council submitted a supplementary environmental assessment, which concluded that subject to the implementation of a series of management and mitigation measures, the proposed extension would not have a significant impact on the environment.	• The Department is satisfied with the findings of this assessment and that all other essential infrastructure and services are capable of being provided to the site. • The Department has recommended a condition requiring Council to prepare and implement an Infrastructure and Services Plan for the project, which includes an implementation schedule showing how all essential infrastructure and services are to be provided. A copy of all necessary approvals from relevant service and utility providers showing that access to these utilities and services is available and secured would need to be provided with the Plan. • Council would also be required to pay the full costs of relocating or repairing any public infrastructure as required.

6. RECOMMENDED MODIFICATIONS AND CONDITIONS

The Department has prepared a concept plan approval and a project approval (see Appendix A).

The concept approval sets overall terms and limits, and stipulates the environmental assessment requirements for future development applications, as modifications in the approval.

The stage 1 project includes a series of conditions, which are required to:
- prevent, minimise, and/or offset adverse impacts of the project;
- set standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

Since receiving the response to submissions, the Department has carried out further consultation with the public authorities that are likely to be involved in regulating the stage 1 project, and has incorporated their comments into the recommended conditions of approval.

The Proponent has reviewed and accepted the instruments of approval for both the concept plan and project approval.

7. CONCLUSION

The Department has assessed the proposal, the EA, submissions on the proposal and Council's response to submissions, in accordance with relevant statutory requirements.

The assessment found that the key issues for the concept proposal were waste, air quality, noise, biodiversity, visual and heritage. There were a number of issues that were specific to the project application relating to surface water, groundwater, blasting and vibration, traffic and access, acid generating material, fire and waste management, rehabilitation and infrastructure and services.

The Department has assessed these issues in detail having regard to the objects of the EP&A Act and the principles of ecologically sustainable development.

The Department is satisfied that the impacts of the proposal are acceptable and can be adequately mitigated and managed. The Department has stipulated the overall terms and limits of the approval, together with the environmental assessment requirements for future development applications as recommended modifications in the concept plan approval. Conditions have also been recommended in the project approval to mitigate and manage the residual issues for the first stage of the development proposal.

The proposal represents a continuation of quarrying and landfilling activities in this area. There is a clear and immediate need for putrescible landfill capacity and for additional quarry resources in the LGA given the continued demand for building aggregates, road base and fill materials.

Overall, the Department believes that the proposal has been adequately justified on economic, social and environmental grounds and it is in the public interest and should be approved subject to the terms and requirements in the concept plan approval and conditions in the project approval.

8. RECOMMENDATION

It is recommended that the Deputy Director-General:

- **consider** the findings and recommendations of this report;
- **approve** the concept plan application, subject to the modifications in the concept approval, under Sections 75O and 75P of the EP&A Act;
- **approve** the project application, subject to conditions, under Section 75J of the EP&A Act; and
- **sign** the attached instruments of approval (see Appendix A).

Nick Hall
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Chris Ritchie
Manager – Industry

Chris Wilson
Executive Director

Richard Pearson
Deputy Director-General

APPENDIX A – INSTRUMENTS OF APPROVAL

APPENDIX B – COPY OF ENVIRONMENTAL PLANNING INSTRUMENTS

See the attached CD-ROM entitled *Copy of Environmental Planning Instruments*.

APPENDIX C – RESPONSE TO SUBMISSIONS

See the attached CD-ROM entitled *Response to Submissions*, dated May 2012.

APPENDIX D – SUBMISSIONS

See the attached CD-ROM entitled *Submissions*.

APPENDIX E – ENVIRONMENTAL ASSESSMENT

See the attached CD-ROM entitled Environmental Assessment, dated November 2011.