NORTHERN PIPELINE INTERCONNECTOR PROJECT

CHEMICAL DOSING FACILITY

Supplementary Report #3

Northern Pipeline Interconnector (Stage 1) Environmental Impact Statement

Document number: NPI001-A-REP-042

Notes:

(i) An electronic database stores and controls the current electronic versions of this document.

(ii) Key personnel will be notified of changes to the document.

(iii) Holders of printed controlled copies will receive printed revisions to this document should they occur.

(iv) An electronic database manages the controlled printed copy distribution list for this document

(v) Printed controlled copies will cease to be a controlled copy once the final stage of the project has reached Practical Completion.

Revision number	Date	Description	Page/ Clause	Reviewer		Approved for Issue		
				Name	Signature	Position	Name	Signature
0	14.03.08	Final		Mark Breitfuss			Paul Tracey	
1	17.03.08	Final		Mark Breitfuss		Alliance Program Director	Paul Tracey	

Prepared by:

Southern Regional Water Pipeline Alliance

Level 5/200 Creek St

Spring Hill QLD 4004

Telephone: (07) 3414 8300, Facsimile: (07) 3831 7911

CONTENTS

ILLUSTRATIONS

APPENDICIES

Abbreviations

GENERAL

AHD	Australian Height Datum (see also PASS)
ASS	acid sulfate soils
CDF	chemical dosing facility
CG	Coordinator-General
CHMP	Cultural Heritage Management Plan
CIE	Critical Infrastructure Easement
CLR	Contaminated Land Register
DEWHA	Department of the Environment, Water, Heritage and the Arts (Australian Government)
DMR	Department of Main Roads (Queensland)
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMR	Environmental Management Register
EPA	Environmental Protection Agency (Queensland)
EPBCA	Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)
GIS	geographic information system
IPA	Integrated Planning Act 1997 (Qld)
NES	National Environmental Significance
NRW	Natural Resources and Water (Queensland Government Department of)
PASS	potential acid sulfate soils
RE	regional ecosystem
REDD	Regional Ecosystem Description Database
ROW	right of way
SDPWOA	State Development and Public Works Organisation Act 1971 (Qld)
SRWP Co	Southern Regional Water Pipeline Company
VMA	Vegetation Management Act 1999 (Qld)
VMP	Vegetation Management Plan
WTP	water treatment plant

GLOSSARY

Acid sulfate soils	Soil, sediment or rock that contains elevated levels of metal sulfides, which can generate sulfuric acid when exposed to oxygen.
Amenity	The quality of being pleasant or attractive; something that contributes to physical or material comfort.
Aquatic	Biota living in or on water for all or a substantial part of the life span.
Balance tank	A water reservoir provided for temporary storage of water to regulate flows in the water supply system.
Best practice	Implies continual improvement to maintain maximum performance.
Biodiversity	The variety of all life forms; the different plants, animals and micro-organisms, the genes they contain and the ecosystems of which they form a part.
Biota	The total flora and fauna of a region.
Blasting	The use of explosives to break up or otherwise aid in the extraction or removal of a rock or other consolidated natural formation.
Canopy	The uppermost layer in a forest, formed by the crowns of the trees.
Carriageway	The trafficked section of a roadway.
Catchment	The land area drained by a river and its tributaries.
Chemical dosing facility	A facility necessary to store chemicals used in the disinfection of treated potable water.
Contaminated land	Land contaminated by hazardous substance(s) which may pose a risk to human health or the environment.
Contaminated Land Register	A register of proven contaminated land which is causing or may cause serious environmental harm, which is maintained by the EPA.
Cultural heritage	Possessing historical, archaeological, architectural, technological, aesthetic, scientific, spiritual, social, traditional or other special cultural significance, associated with human activity.
Ecosystem	A relatively self-contained ecological system defined by the types of organisms found in it and their interactions.
Edge effects	The often negative ecological impacts that occur at the boundaries of ecosystems, particularly where habitats are fragmented or located adjacent to disturbed land uses. These impacts may include changes in species composition, gradients of moisture, sunlight, soil and air temperature and wind speed, amongst other factors.

Endangered regional ecosystem	A listing under the Vegetation Management Act 1999 (VMA) where a regional ecosystem type occupies less than 10% of its pre-clearing extent, or where 10-30% of the pre-clearing extent remains but is less than 10,000 ha.
Endangered species	A species at serious risk of disappearing from the wild if present land use or other causal factors continue.
Environment	The term is used in its broadest sense to include physical, biological, cultural and social aspects.
Environmental Impact Statement	A report documenting the outcomes of investigations into the potential environmental impacts of a project or activity which is typically required as part of state or federal approvals processes.
Environmental Management Plan	Documentation of the procedures and physical methods that will be used to manage a particular activity such that its environmental impact is minimised.
Environmental Management Register	A register of land that has been, or is being used for a notifiable activity under the Environmental Protection Act 1994, and about which the EPA has been notified.
Erosion	The process by which material such as soil or rock is worn away or removed by wind or water.
Fragmentation	The breaking of an entity into smaller parts, referring in particular to an area of habitat being separated such that the resulting smaller areas are not capable of supporting flora and fauna populations to their original level.
Freehold land	Land over which the Crown has granted an interest which carries the exclusive right to the use and enjoyment of the land for an indefinite period of time.
Geology	The science that deals with the earth, the rocks of which it is composed and the changes it has undergone or is undergoing.
Groundwater	The water beneath the surface of the ground, consisting largely of surface water that has seeped down.
Habitat	The locality or environment in which a plant or animal lives.
Hollow	A natural cavity of a tree which provides habitat for fauna species.
Hydraulic	Of or relating to water or other liquid in motion; operated, moved or affected by water or liquid.
Main Roads	Queensland Department of Main Roads.
Micro-tunnelling	A method of trenchless construction that involves the pushing of a pipe between two pits, wherein a drill is located at the front of the pipe for excavating soil and rock.

National Environmental Significance	Specific matters protected under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.
Not of concern regional ecosystem	A listing under the VMA where a regional ecosystem type occupies more than 30% of its pre-clearing extent and more than 10,000 ha.
Of concern regional ecosystem	A listing under the VMA where a regional ecosystem type occupies 10–30% of its pre-clearing extent or more than 30% remains but is less than 10,000 ha.
Population	A group of individuals of a species living in a certain area.
Proponent	The person or organisation putting forward a proposition or proposal.
Pump station	A facility for pumping water to assist its movement through the pipeline.
Regional ecosystem	A vegetation community consistently associated with a particular geology, landform and soil, used by the Queensland Government as the basis for nature conservation planning.
Rehabilitation	Activities undertaken to return disturbed land to a predetermined beneficial land use/productivity.
Remnant vegetation	Wholly and predominantly intact native vegetation, excluding young regrowth.
Riparian	Frequenting, growing on or living on the banks of streams or rivers.
Runoff	The drainage of water from waterlogged or impermeable soil into rivers and creeks; rainfall or other water not absorbed by the soil.
Sand	Sediment composed of particles within the size range 63 µm to 2 mm.
Sediment	Solid material settled from suspensions in a liquid.
Silt	A type of sediment with particles finer than sand and coarser than clay (i.e. 2–63 µm).
Species	A taxonomic grouping of organisms which are able to interbreed with each other but not with members of other species.
Spoil	Surplus soil and rock material after backfilling pipeline trenches.
Stakeholder	Persons, parties or organisations with specific interests in the project.
Static site	A situation where a dedicated construction team will implement activities via a site-specific management plan
Terms of Reference	A document prepared by the Coordinator-General outlining those issues to be addressed by the proponent in the EIS.
Terrestrial	Living or found on land, as opposed to in rivers, lakes, oceans or in the atmosphere.
Threatened species	A collective term for plant or animal species considered ‘endangered’ or ‘vulnerable’.

Topsoil	The surface or upper part of the soil, often containing seed or other reproductive parts of plants. Generally the most biologically rich soil horizon.
Trenching	Installation of a pipe by excavating a trench, followed by pipe placement and backfilling with soil and rock material.
Understorey	The vegetation layer between tree canopy and the ground cover in a forest, composed of shrubs and small trees.
Vibration	The rapid back-and-fourth movement, often invisible, in space, of an object against which some force has been applied.
Vulnerable	A native plant or animal species or population whose ability to survive in the wild is compromised by exposure to threatening processes such as habitat destruction or disease.
Waste	Any gas, liquid, solid or energy that is surplus to, or unwanted from, any industrial, commercial, domestic or other activity.
Weed species	A plant growing where it is not wanted or where it poses an ecological risk.

EXECUTIVE SUMMARY

The Northern Pipeline Interconnector (NPI) is an emergency drought contingency pipeline project required and defined under the Water Amendment Regulations of the *Water Act 2000*. The NPI project is required to deliver a target volume of 65 ML/d potable water from the Sunshine Coast to the Brisbane area in a southerly flow scenario.

The NPI Stage 1 project is a declared 'significant project' under Section 26 of the *State Development and Public Works Organisation Act 1971* (SDPWOA). An Environmental Impact Statement (EIS) was prepared for Stage 1 of the project and was assessed by the Coordinator-General on 10 October 2007. A significant change to the project described in the EIS was considered by the Coordinator-General and a Supplementary report to the EIS (SEIS January 2008) prepared for public release in January 2008.

In total, 75 submissions were received on the proposal described in the SEIS dated January 2008, identifying potential critical issues with the proposal. The Coordinator-General directed LinkWater and the Alliance to consider alternative sites for locating the proposed facility and to focus on the completion of works necessary for the NPI Stage 1. The proposal discussed in the SEIS dated January 2008 provides the optimal solution for the integration of NPI Stages 1 and 2 and the future bulk water source.

This SEIS is produced in response to the Coordinator-General's direction to the proponent. This SEIS describes an alternative site proposed to locate a chemical dosing facility (CDF) within a location approved for core industry/rural purposes at Landsborough. The site is adjacent Caloundra Street, Landsborough. The site for construction of the CDF is entirely within private property and retains few natural features. The location of the pipeline linking with water mains from the Landers Shute WTP will remain in Energex easement between Old Gympie Road and Nobels Road and assessed in the EIS.

Timely completion of the chemical dosing facility is required for delivery of water from Landers Shute WTP under the NPI Stage 1 scheme and within the regulated completion date for drought contingency flows.

1 INTRODUCTION

Stage 1 of the Northern Pipeline Interconnector (NPI) project was declared a 'significant project' under Section 26 of the State Development and Public Works Organisation Act 1971 (SDPWOA) on 4 April 2007. An Environmental Impact Statement (EIS; SRWPA 2007) was prepared for the project and assessed by the Coordinator-General on 10 October 2007.

Significant changes to some aspects of the project assessed in the EIS resulted from the need to alter the design and provide an integrated solution to current and proposed future water infrastructure. These proposed changes were provided to the Coordinator-General for evaluation and a Supplementary EIS (SEIS; SRWPA 2008) describing the proposed changes was released for public comment from 12 January to 12 February 2008.

During the comment period, the Coordinator-General received 75 submissions from relevant government agencies and the public regarding the proposed changes and potential impacts associated with the changes. The Coordinator-General directed the proponent, LinkWater, to consider alternatives to the proposed change that could be achieved for the NPI Stage 1. This did not include the necessity to integrate the system with current and proposed future water infrastructure.

This report is a subsequent change to the project assessed in the EIS and requires evaluation by the Coordinator-General. This report is a Supplementary EIS (SEIS) to discuss the impacts associated with a chemical dosing facility that must be integrated into the NPI Stage 1 to maintain water quality parameters. This SEIS is not describing a change to the location of pipework described in the EIS and necessary to link with the water mains from the Landers Shute WTP. This pipe is shown as being located between Old Gympie Road and Nobels Road, generally within existing Energex easements.

1.1 NPI Project Background

The NPI is a drought emergency pipeline project required and defined under the Water Amendment Regulation of the *Water Act 2000* (Qld). The NPI project is required to deliver a target volume of 65 ML/d of potable water from the Sunshine Coast to the Brisbane area in a southerly flow scenario, described in the Water Regulation 2002.

The project is being undertaken by the Southern Regional Water Pipeline Company Pty Ltd (Trading as LinkWater), a service provider and water entity directed under Part 8 and Schedule 10A of the Water Regulation 2002 to undertake works for the provision of a drought contingency project.

A number of facilities are required for the full implementation of the NPI. For Stage 1, water from the Landers Shute WTP must be dosed prior to being transported (under gravity flows) to offtakes at Elimbah and Morayfield where it will be stored in existing reservoirs. In addition to disinfection, dosing will change the water quality from chlorinated (sourced from Landers Shute WTP) to chloraminated as per the Brisbane network requirement.

The scope of the Stage 1 EIS assessment included provision for a chemical dosing facility (CDF) within the uncleared Old Gympie Road Road reserve at Nobels Road (referred to in this report as the Nobels Road site). However, detailed information was not available for publishing in the EIS. A formal notice seeking evaluation of a proposed change was provided to the Coordinator-General by

LinkWater in December 2007. Confirmation that an amendment to the EIS was required was received in December 2007 and a Supplementary EIS describing the facility was provided for public comment on 12 January 2008.

2 DESCRIPTION OF ALTERNATIVES

This section describes the process following receipt of public submissions on the SEIS dated January 2008 (SRWPA 2008) and a direction from the Coordinator-General to consider alternatives. The aim of this section is to provide a description of alternatives to that proposed in the SEIS dated January 2008. An alternative option is provided, with details of the suitability of a site on Caloundra Street, Landsborough, to house a chemical dosing facility (CDF).

2.1 Supplementary Environmental Impact Statement

The SEIS released for public comment in January 2008, described a process of assessment to determine the suitability of the preferred Nobels Road site. A number of alternative locations to the preferred option at Nobels Road were included in the SEIS dated January 2008, with some previously identified in the EIS. In the SEIS dated January 2008, these alternative sites were assessed against a range of engineering and environmental features. At the time of releasing the SEIS dated January 2008, the preferred option at Nobels Road provided a solution to the overall integration of the NPI Stage 1 and Stage 2 as well as accommodating the potential future facilities necessary for a future bulk water source. While these future facilities were unable to be described in detail, the configuration of the Nobels Road site was suitable to site these features should they be required by the State in the future.

2.2 Submissions

A total of 75 submissions were received by the Coordinator-General for the SEIS dated January 2008. Submissions were provided by State Agencies, local community/interest groups and the public. A range of issues, concerns and comments were provided in the submissions; including:

- Cumulative impacts associated with completion of all associated future works at the Nobels Road site
- Potential fracturing of a State Wildlife Corridor
- Potential significant impacts on significant species associated with the site and adjacent properties
- Potential interference and edge effects associated with buffering to an adjacent Nature Refuge
- Potential impacts associated with security fencing and lighting at the proposed chemical dosing facility
- The extent of earthworks necessary to prepare the proposed Nobels Road site for construction of facilities, both present and future
- A perceived lack of due process considering the assessment of proposed and future facilities that could be collocated at the Nobels Road site
- A perceived lack of substantive community consultation regarding the proposed and future facilities that could be collocated at the Nobels Road site

2.3 Coordinator-General

On 20 February 2008, the Coordinator-General directed LinkWater to consider alternative locations and configurations for the facilities necessary to deliver the NPI Stage 1 drought contingency project.

The result of the direction from the Coordinator-General allowed sites that had been previously assessed in the SEIS dated January 2008 and ruled-out on engineering grounds to be reconsidered for their potential of housing a chemical dosing facility. The suitability of a site for housing the chemical dosing facility did not require consideration of the integration with all future facilities for potentially related projects.

2.4 Site Options

The SEIS dated January 2008 discussed the justification for selecting the Nobels Road site as a preferred option. Section 2.3 of the SEIS dated January 2008 classified sites according to a range of selection criteria, including:

- Elevation to be compatible with potential future use
- Land tenure – minimised risk
- Proximity to existing and future infrastructure
- Low pressure delivery
- Access
- Potential for future expansion

Together, these criteria enabled selection of a site that provided for the integration of NPI Stage 1 and Stage 2 as well as accommodating facilities for a future bulk water source.

On 20 February 2008, the Coordinator-General directed LinkWater and the Alliance to consider alternative sites on the basis of presenting a site suitable for the chemical dosing facility for NPI Stage 1. With a change in the parameters and criteria defining the suitability of sites, locations previously discussed in the SEIS dated January 2008 and EIS are able to be considered. These locations include:

- The Nobels Road site (considering a reconfiguration of the proposed works)
- A property adjacent to the Nobels Road site, on Eudlo Road
- A property at the confluence of the NPI Stage 1 corridor and the Caloundra water supply main
- A property located within the bounds of an industrial park approved for core industry/rural purposes, off Caloundra Street, Landsborough

A general comparison of relative advantages and disadvantages of each site/configuration is presented in Appendix A.

Other sites were considered for the location of associated future facilities for the NPI Stage 2 and bulk water source. These sites will be included in a separate appropriate approvals process.

2.5 Alternative Site

2.5.1 Location

The alternative site for the chemical dosing facility (CDF) is located to the north of Caloundra Street, Landsborough within the Caloundra City Council local government area (see Figure 2.1). The site is located within a developing industrial estate and is currently in the ownership of Caralan Developments Pty Ltd (see Appendix B).

The developing estate comprises a number of property lots; namely: -

- Lots 102 and 103 on SP175836
- Lots 3 and 7 on RP129417

These lots are currently zoned as “core industry” under the Landsborough Township Planning Area Precinct Map. Caloundra City Council has approved the development and reconfiguration of the lots over properties in accordance with approval conditions (see Appendix B).

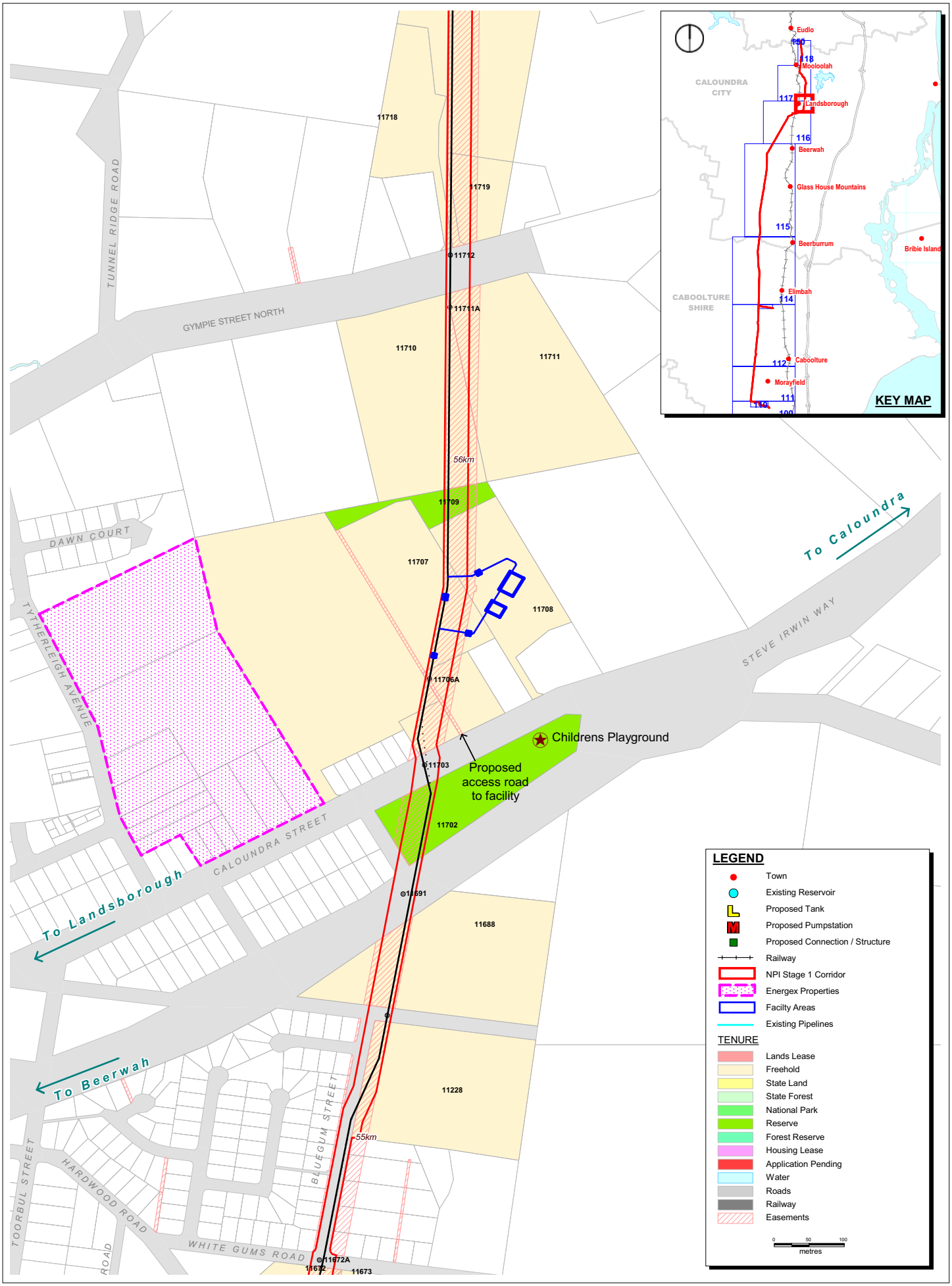
Subsequent to this approval, the developer had secured ownership of an adjoining property, Lot 1 on RP222398, immediately to the east of the site. This lot is currently designated as “rural” precinct. This rural lot is now being incorporated into a revised sub-divisional layout with the intention to have the zoning changed to “core industry” through a “Material Change of Use” application.

The NPI project is exempt from the planning scheme and is not subject to planning constraints; however compliance with regulatory requirements, local laws, etc with be undertaken on works being proposed.

2.5.2 Characteristics

In relation to the industrial estate at Landsborough, the site has the following characteristics: -

- Subject to final confirmation of the concept layout of the water quality facility, it is considered that Lot 2A as indicated in Appendix B would be the most suitable site to locate the required facility.
- The lot is currently vacant and developer has indicated the lots availability for purchase though negotiation.
- The lot is located within that section of pipeline where injection must be undertaken to achieve the required water quality to downstream networks.
- Site enables the CDF to be located as near practical to the pipeline corridor.
- The lot is currently zoned as “core industry” and “rural” under the Planning Scheme.
- Adjoining lands to the lot are zoned either “core industry”, “rural”, “special commercial” or “open space”.
- Nearest residential precinct is 250 metres away to the south west. However, residences are located within 100m of the proposal and these properties are included within a specific Communications Plan (see Appendix C).



Source: *Base data supplied by Department of Natural Resources and Water*

Projection: *GDA94 (MGA56)*

File Path: *O:\BRS\Projects\BEG\BEG601- SRWP\T08 GIS Data\TOC5 Northern Interconnector\MapInfo\Workspaces\ES\Supplementary\Caloundra St.Wor*

Date: *10 March 2008 (Prior to Rev J)*

northern pipeline inter connector

NORTHERN PIPELINE INTERCONNECTOR

CALOUNDRA STREET FACILITY

2.1

- The provision of the supporting services (water, sewerage, electricity, etc), traffic and vehicular access are not seen as significant concerns given the proximity of the site to current development and the level of works performed as part of the development approval process undertaken by the developer to date. Any adaptation of those service layouts to meet the requirements of the CDF is not seen as a major concern.
- The site is situated close to an existing Energex facility station. The station is used for storage of related Energex infrastructure.
- Based on a review of the site, available flood studies for the site (provided by the landowner and the Caloundra City Council flood record), and the Caloundra City Council Planning Scheme Overlay Map “Natural Waterways and Wetlands”, the site is located about the Q100 flood event level. This is in accordance with the *State Planning Policy 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*. Further, all activities will be guided by a site-specific Environmental Management Plan (see Appendix D).
- The estate itself has good access to the regional road networks which will enable timely delivery of materials and supplies.

2.5.3 Suitability for Chemical Dosing Facility

The industrial estate is intersected by the NPI corridor and the Energex power transmission line. These services are wholly contained within the Critical Infrastructure Easement (CIE) that runs generally in a north-easterly direction through the site.

Given the position of the pipeline corridor and the ”core industry/rural” zoning of the estate, it is considered that the opportunity exists to locate the NPI Stage 1 CDF at this location.

A review of the operational requirements of the NPI pipeline has determined that the site is suitable for locating the CDF. It should be recognised that high pressures will operate in the pipeline due to its low elevation at this location. The remainder of the pipeline will operate under loca pressure. However, there will be no overall head loss that would require significant pumping to deliver drought flows to Brisbane.

Hydraulic considerations exclude the site for other facilities such as pump stations and or balance tanks.

2.6 Stakeholder Comments

On 20 February 2008, the Coordinator-General directed LinkWater to consider alternative locations for the chemical dosing facility. This was provided in a statement to the media as well as a letter to LinkWater. On the evening of 20 February 2008, representatives from the Alliance attended a community meeting at the Mooloolah Valley Community Association hall and discussed the direction received from the Coordinator-General. Attendees to the meeting included local councillors from Caloundra City and Noosa Shire Councils and the general public. Approximately 80 people were in attendance. General feedback from the meeting suggested a positive reaction to the consideration of alternative locations for the chemical dosing facility.

A broader communications strategy was implemented on 22 February 2008. The results of the strategy and a refined Communications Plan are summarised in Table 2.1 below. Specific comments received are presented in Appendix E.

Table 2.1 Summary of stakeholder comments on the proposal

Date	Stakeholder	Commentary	Positive/Negative
22.02.08	Carolyn Male MP	Provided briefing on CG statement and consideration of alternative locations for CDF	Positive
	Local Residents – Caloundra Street	Letterbox drop to 43 residences. General construction information	NA
25.02.08	Dept. Main Roads	No objection to location of chemical dosing facility. Main contact Roy Stone – Senior Engineer	Positive
26.02.08	Caloundra City Council	Provide compliance with flood mitigation and water quality for headwaters of Ewen Maddock dam	Positive
28.02.08	Environmental Protection Agency	No objection to location of chemical dosing facility	Positive
	Dept. Natural Resources & Water	No objection to location of chemical dosing facility	Positive
	Queensland Transport	No objection to location of chemical dosing facility	Positive
5-7.03.08	Local Residents – Caloundra Street	Of 43 residences surveyed, 16 were unavailable and the remaining 27 were interviewed.	26 positive 1 negative
06.03.08	Dept. Main Roads	No objection to location of chemical dosing facility. Main contact Geoff Dawson – Manager	Positive
08.03.08	Local Residents – Landsborough	Fact Sheets and invitations to an information session on 13 March 2008 were provided to approx. 150 residences and commercial properties	Positive
13.03.08	Local residents and Councillors – Landsborough and Caloundra	Held a community information session to provide details of the proposal to the direct and broader community. Information was provided and experts were available to discuss particular issues/concerns. Approx. 32 attendees.	General acceptance of the need and suitability of location for the facility. Some concern raised over safety.

On 26 February 2008, Caloundra City Council provided specific comments on the facility. These comments and responses from the proponent included:

- Completion of a flood modelling study to determine no impact from the proposal as per *State Planning Policy 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*.
- Mitigation of potential impacts to Ewen Maddock Dam from on-site water control

The following responses are provided in regards to these comments.

- The proposed site is located above an elevation subject to Q100 flood-event scenarios and flood modelling is not necessary to confirm this site feature. The facility will be constructed in accordance with *State Planning Policy 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*. Based on a review of the site, flood data provided by the landowner (and the Caloundra City Council flood record), and the Caloundra City Council Planning Scheme Overlay Map "Natural Waterways and Wetlands", the site is located about the Q100 flood event level.
- The site layout has been reconfigured to provide additional buffer distance between the proposed works area and Addlington Creek to the north. A vacant property is located between Addlington Creek and the proposed works site. Further, the property developer is required to provide a sediment detention basin in the direct overland flow path between the proposed site works location and Addlington Creek (see Appendix B). This is in addition to the bunding and other mitigation necessary under ERA 7 for the proposed facility. Under ERA 7, the proponent is required to provide appropriate containment and spill response measures suitable for both static and dynamic situations. Accordingly, the design of the facility for truck movements, storage and handling are consistent with the relevant Australian Standard.

3 CHEMICAL DOSING FACILITY

Water transported by the pipeline will have an increased retention time due to the length of the traverse (47 km) and the generally low pressure within the pipe. In order to maintain high standards of potable supply, all water in the pipeline will require chemical dosing prior to transport. To comply with pipeline water quality management needs and disinfection requirements of the customers (Caboolture and Brisbane), chemical dosing of the NPI water is required. Effectively, the CDF will convert chlorinated water from the Landers Shute WTP into chloraminated water suitable to integrate into the Brisbane distribution network.

3.1 Design

The chemical dosing facility (CDF) sizing has been analysed for the NPI. The building would be approximately 75m by 25m (Figure 3.1) which provides a functional balance between design, engineering and site suitability features. With prudent planning, the site could incorporate potential future bulk water flows by increasing the size of the facility to include additional internal modules and storage units (see Figure 3.1). This will only occur following the completion of appropriate approvals processes for future projects.

The general concept for the site necessary for NPI Stage 1 is as described in the SEIS dated January 2008. However, the relative size has increased to maximise the area available and thereby, reduce the number of truck movements necessary to maintain chemical levels. The site configuration shown in Figure 3.1 is based on a design requirement for injection into the system, thereby reducing head losses to the hydraulic capacity of flows.

The facility will be designed with appropriate recesses and variations in building lines to reduce the visual amenity impact. The use of materials and colours will further mitigate the visual impact. The completed site will be landscaped with species and features appropriate for the intended use as well as in accordance with the conditions of easement. Where possible, landscaping will include screening and buffering.

3.1.1 Access

During construction, access to the site would be via an existing right-of-way directly off Caloundra Street. This access is being used for construction of the NPI Stage 1 pipeline within the Energex easement. The approximate traffic volumes per day during construction will include:

- Up to 70 truck movements, dependant on requirements for movement of spoil and overburden
- Up to 100 vehicle movements for site vehicles, small trucks, excavators and other site plant

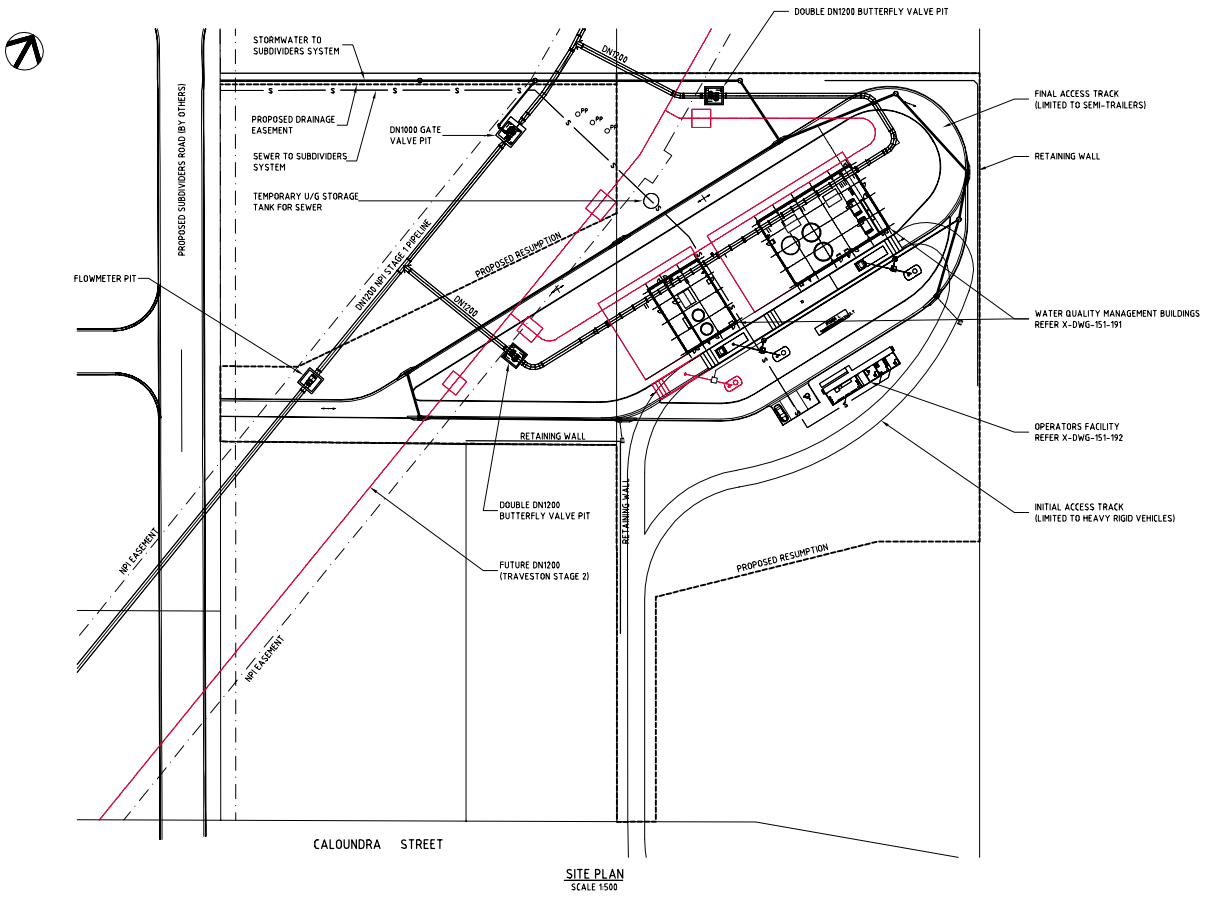
Once the Addlington Industrial Park is fully approved and developed, access to the CDF would be in accordance with the Caloundra City Council conditions for transport access and through an internal access road (see Appendix B).

The configuration of the site is designed to enable delivery of chemicals by truck (Figure 3.1). Trucks will enter the site, deliver chemicals at the appropriate storage depot and then exit the site by a two-

lane road. The anticipated frequency of truck movements necessary to maintain chemical storages will be weekly. Potentially, this will involve separate trucks filling the four types of chemicals on a weekly basis. All truck movements within the facility will be guided by the requirements of the Environmentally Relevant Activity for chemical storage and associated certificate of registration necessary for operation of the facility. As indicated above, DMR and Caloundra City Council have no objection to the proposed construction and operational access requirements for the CDF.

The CDF will be chain-wire fenced and security lighting will be installed. The security lighting will be of a suitable height and type to complement associated property uses and to reduce significant off-site luminescent issues.

The site is suitable to house this facility (see Appendix B) and is commensurate with the proposed use of adjacent properties. The site is within the Addlington Industrial Park, proposed for core industry/rural uses.



SITE PLAN
SCALE 1:500

NOT FOR CONSTRUCTION

KBR ABN 91 007 660 317
McCONNELL DOWELL ABN 11 008 444 960
regional water pipeline
Abigroup Constructing Australia's Future ABN 46 000 201 536

100mm ON ORIGINAL DRAWING
SCALES
10 0 10 20 30 40
SCALE 1: 500 SCALE IN m
ORIG. SIZE A1

REV	DATE	DESCRIPTION	SDU DRAFT	DRAFT CHK	DES	DES CHK	APPROVED
A	14.03.08	ISSUED FOR 40% REVIEW					

REVISIONS

northern pipeline inter connector

TITLE
AREA 151 - CALOUNDRA STREET WATER QUALITY MANAGEMENT FACILITY
CONCEPT
SITE PLAN

DRAWING NUMBER FIGURE 3.1
REVISION A

O:\CAD\CAD\Projects\NPI\01\Drawings\Area 151\FIGURE 3_1.dwg 17.3.08 13:57

Chemical volumes

Due to the reconfiguration of the site described above, the volumes of chemicals able to be stored on the site are the same as described in the SEIS dated January 2008, but the number of storage units has increased. The chemical types and concentrations remain the same as described in the SEIS dated January 2008, with the exception of Sulfuric acid which is not required under the current scheme. Chemicals and volumes to be stored at the CDF are shown in the table below for the current proposal and potential future flow scenarios:

Table 3.1 Anticipated chemical storage requirements under different scenarios

Chemical	NPI Stage 1	NPI Stage 2	Bulk Water
Sodium hypochlorite	**2 x 37kL**	3 x 37kL	5 x 37kL
Aqueous ammonia	**2 x 13kL**	2 x 13.7kL	3 x 13.7kL
Sodium hydroxide	**2 x 15kL**	2 x 15kL	3 x 15kL
Sulfuric acid	**Not Required**	2 x 22.7kL	3 x 22.7kL

All chemicals are non-combustible and produce low odour. Further descriptions on these chemicals are available on standard Material Safety Data Sheets.

3.2 Consultation

A comprehensive Communications Strategy is provided in Appendix C. This is in addition to the project approved Communications Management Plan and was developed specifically to engage the community regarding the proposed site. As per the Plan, Table 2.1 above provides a summary of events completed to-date. Generally, there was a positive reaction received both from the community and State Agencies to the proposal.

3.2.1 Events

20 February 2008. Following the direction from the Coordinator-General, the Alliance addressed a community meeting of interested and concerned individuals and interest groups on 20 February 2008. The community meeting was attended both by local elected representatives of Noosa Shire and Caloundra Councils as well as members of the public. The majority of the approximately 80 attendees were interested mainly in the proposed Nobels Road facility, described in the SEIS dated January 2008. However, the Alliance described its intent to consider alternative sites already considered in the SEIS and at the direction of the Coordinator-General. This was generally met with agreement from the community attendees.

22 February 2008. A briefing session was held with Carolyn Male MP on 22 February 2008 to inform the MP of the outcomes from the community meeting and to describe the Alliance's intention to consider alternative sites. This was completed as part of a regular process of information sharing.

A letter-box drop of general construction planning and information was completed at approximately 43 residences and commercial premises adjacent to the Addlington Industrial Park on Friday 22 February 2008. General information was provided, with the view to undertake targeted communications in the week commencing 3 March 2008.

28 February 2008. With the DIP, the proponent presented the proposal at a whole-of-government meeting. As described in the project ToR, all relevant State Agencies were invited to participate or provide comment. At the meeting, EPA and NRW provided in-principle approval for the proposal. Further, comments received from Caloundra City Council, QT and DMR raised no objection to the proposal.

5-7 March 2008. Private and commercial residences within a define buffer surrounding the immediate site (see Appendix C) were door-knocked and invited to provide comment. Of the 43 residences, 26 were available and were provided information on the proposal. Of the 26 residences approached, only a single one was negative towards the proposal and the State planning process in general.

8 March 2008. A broad letter-box drop was completed. In total, over 150 residences were visited and provided information on the proposal as well as an invitation to an upcoming information session.

13 March 2008. A community information session was held at a local playground near the proposed site. The purpose of the session was to inform the community of the proposal and the process that has been followed to-date. Approximately 32 people attended the session and included people contacted during previous events, broader community, Landsborough Progress Action Group, print and television media (Channel 7 and 9) and individuals running for re-lection in Council (5 individuals). The session was generally positive with individuals seeking further information and clarification. Concerns were raised over possible safety issues and these were discussed at length.

Details of the Communications Plan, phased events and focus areas in proximity to the proposal are outlined in Appendix C. In conjunction with an implemented Communications Plan, local residents and directly affected landowners will be informed of all pre-construction, construction and post-construction activities.

4 CONSTRUCTION

4.1 Pipeline

There will be a requirement to connect to both the Aquagen and Caloundra mains at points on the alignment. The proposed connection points were identified in the EIS and may include locations where these branch mains intersect the Energex easement (see Figure 4.1). There may be a requirement to extend construction beyond the limits of the Energex easement in order to make the site safe for construction crews.

The topography of the area between Old Gympie Road and Nobels Road is very steep (maximum grades from -57% to +57%) for approximately 500 m. To ensure that the area has appropriate controls in place it will be set up as a 'static' site with the battery limits being the intersections with Nobels Road and Old Gympie Road (see Figure 4.1).

The advantage of a 'static site' set up is that controls can be initially established and progressively monitored, inspected and audited in accordance with Section 7 of the NPI CEMP 2007. It provides the constructor with greater control of the site as no go zones can be established with appropriate signage in place as the site will be in operation for a period of time. This also reduces the likelihood of incidents as the site remains constant and the workforce is aware of the specific site issues.

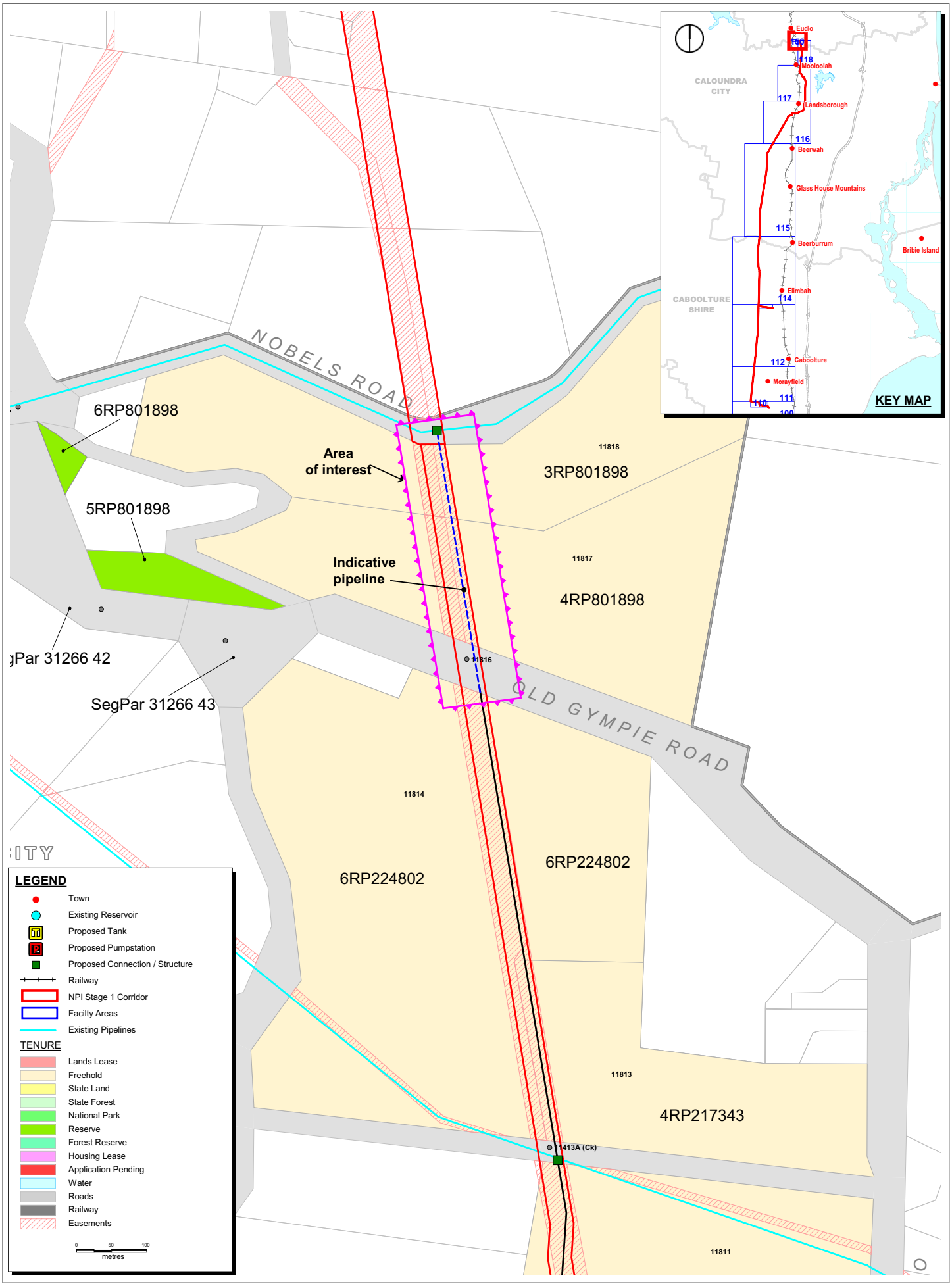
With specific reference to the aforementioned area the following methodology of pipe installation has already been assessed:

Site Set Up

- Development of site specific Sediment and erosion control plan
- Develop Traffic Management Plan
- Site security establishment (fencing on Old Gympie Road and Nobels Road)
- Environmental Controls establishment (may require STAC agreements for controls in neighbouring properties)
- Site access and signage establishment
- Temporary Lay down area establishment

Earthworks

- Clear and remove vegetation
- Excavate and establish appropriate work platforms for plant
- Pre ditch trench on batters (excluding gully base)



Source: *Base data supplied by Department of Natural Resources and Water*

Projection: *GDA94 (MGA56)*

File Path: *O:\BRS\Projects\BEG\BEG601- SRWP\T08 GIS Data\TOC5 Northern Interconnector\MapInfo\Workspaces\ES\Supplementary\Figure 4.1 Old Gympie Rd/Nobels Rd.Wor*

Date: *12 March 2008 (Prior to Rev J)*

northern pipeline interconnector

NORTHERN PIPELINE INTERCONNECTOR

OLD GYMPIE ROAD / NOBELS ROAD

4.1

Pipe Laying

- Pre weld gully pipe at the lay down area
- Excavate gully and dispose of material
- Supply, lower and place bedding material (will need to be completed progressively)
- Set up winch system to lower pipe into gully
- Lower pipe into gully and install
- Pump or lower concrete encasement into the gully
- Excavate load and dispose of pre ditch trench batter material (will need to be completed progressively up the embankments)
- Lower pipe into trench via winch system already established
- Pipe welding and anchor block installation
- Backfill and batter protection
- Vegetation cover establishment

4.2 Chemical dosing facility

The Addlington Industrial Park is being developed to accommodate various industrial and commercial entities. Earthworks excavations are necessary to prepare the Park for these future uses and some works have been completed on lots adjacent to the ones proposed for the chemical dosing facility. In order to bring the site elevation to within a level commensurate with adjacent lots, it will be necessary to excavate up to 30,000 m^3 of material from the proposed site. Under an agreement with the developer, it is anticipated that this material will be distributed to adjacent lots, within the Addlington Industrial Park. All works will be undertaken in accordance with a site-specific Construction Environmental Management Plan (see Appendix E).

The excavation is likely to be undertaken by either an excavator and truck fleet, or a scraper fleet. Preliminary designs indicate there may be some structural earth fills on-site and on adjacent properties. These fills would utilise site won material and would be compacted using conventional equipment such as compactors, rollers and water carts. It is expected that some overburden material may need to be transported from the site. Management of the transport of this material will be under the control of Caloundra City Council and Department of Main Roads planning procedures where relevant.

During the construction of the CDF, all excavations would be profiled in accordance with design and impacts mitigated under the CEMP (see Appendix E). This may require the redirection of surface waters generated at the site from rainfall to approved stormwater facilities within the industrial estate. These surface flows would be controlled according to the natural surface conditions of the site, as detailed in the project Soil and Water Management Plan, and including the existing sediment control pond within the Addlington Industrial Park.

The chemical dosing facility will occupy an area of around 2,700m². Part of the reason for a facility of this size is to allow for the facility to be bunded, thereby allowing for accidental or emergency spillage.

As mentioned above, trucks will deliver chemicals to the site for deposition at appropriate chemical bays within the facility. All activities will be completed in accordance with ERA 7.

4.2.1 Timing

The duration of construction of the CDF, including earthworks, is anticipated to require between 7-8 months. During this time, residents and the local community will be engaged and informed of activities as per the project Communications Management Plan. The NPI Stage 1 has a regulated completion date of 31 December 2008.

4.3 Approvals

Amendments to the *Water Act 2000* and the Water Regulation 2002 direct that works be carried out under state law to complete the NPI by 31 December 2008. Further, a regulation has been made under s.100 and s.109 of the SDPWOA authorising LinkWater to undertake works for the NPI. This regulation also places an obligation on the CG to exercise certain powers in relation to the completion of such works under the SDPWOA.

Schedule 9 of the *Integrated Planning Act 1997* (IPA) lists development that is exempt from assessment against a planning scheme. The NPI has been determined to fall within the exemptions of Schedule 9 where Table 5 Item 4 states that 'all aspects of a development a person is directed to carry out under a notice, order or direction made under a State law' constitute exempt development.

As such, the NPI project does not constitute assessable development under the Caloundra planning scheme.

Construction of the pipeline will require the removal of mapped remnant vegetation assessed under an existing decision notice for an on-going purpose.

No clearing of remnant vegetation of necessary for the CDF. Discussions with Caloundra City Council will continue in regards to local vegetation clearing laws to ensure compliance, if required.

Operation of the CDF will require a registration certificate from the EPA under Environmentally Relevant Activity 7 – Chemical Storage. The site will store chemicals necessary for the disinfection of treated potable water at the volumes stated above. At the whole-of-government meeting conducted on 28 February 2008, the EPA confirmed the need for ERA 7 for the proposal due to the need to store chemicals necessary for water disinfection. The legislative requirement for the ERA 7 is described in the *Environmental Protection Act 1994*.

5 ENVIRONMENTAL VALUES

This section provides an overview of the potential impact and mitigation measures associated with the construction and maintenance of facilities at the chemical dosing facility (CDF).

5.1 Physical Alteration of the Area

The proposed site is devoid of remnant vegetation and retains few natural features. Significant physical alternation of the site and adjacent area has occurred during previous construction and development of the site for an industrial/rural purpose as well as from construction of sections of the NPI Stage 1 pipeline and facilities. Further modification of the proposed site for the intended CDF is consistent with the intended and approved use of the site (see Appendix B).

5.2 Geology and Geomorphology

The geology and geomorphological aspects of the pipeline construction and CDF sites were discussed and assessed in the NPI Stage 1 EIS. In addition, results from recent analyses indicate the presence of a reactive clay substrate on the site.

A geotechnical report was prepared for the Addlington Industrial Park development and is included in Appendix D. Results from the report indicate the site contains low to extremely low strength sandstone (from approx. 4 m depth) overlaid by medium to high plasticity silty or sandy clay, then stiff to very stiff, medium to high plasticity residual sandy clay. The bulk material is suitable for excavation as engineered fill provided care was taken to control moisture within the material via compaction. There was little evidence of ground water seepage.

5.2.1 Soil erosion and sedimentation

The areas at greatest risk of erosion during construction are those where slopes exceed 10%. All construction activities are guided by the NPI Soil and Water Management Plan (see CEMP - Appendix E) to ensure any risk of soil erosion is managed and mitigated.

Analysis of the works area for the pipeline route between Old Gympie Road and Nobels Road indicates that much of the operations will be on or directly adjacent to steeply elevated land (greater than 10%). This was discussed and assessed in the NPI Stage 1 EIS and will require specific site management strategies to mitigate the risk of significant impacts on adjacent properties. These strategies are discussed at section 4.1 above.

There are no identified soil erosion risks associated with the site proposed for the chemical dosing facility. As described above, a Soil and Water Management Plan with specific sediment control plans will be implemented for the site. Further, the geotechnical report for the site (see Appendix D) provides details for managing water infiltration and movement across the site.

5.3 Contaminated Land

No known contaminated sites have been identified in the area. Measures to account for contaminated material identified during construction, and measures to avoid contamination as a result of construction, will remain the same as the measures detailed in the EIS.

5.4 Terrestrial Environment

The proposed site for construction of the CDF contains no mapped remnant or native vegetation requiring clearing. Database searches (State and Commonwealth) and field surveys completed for the assessed EIS identified no significant fauna or flora species on or adjacent to the site.

Vegetation communities and species associated with the proposed pipeline route between Old Gympie Road and Nobels Road are described and assessed in the NPI Stage 1 EIS and not considered further in this report.

5.4.1.1 Field surveys

A field survey of the proposed CDF site was undertaken by Queensland Fauna Consultants in February 2008 to determine biological features on the site.

A number of features exist to the north of the site and closer to Addlington Creek that are conducive to fauna including dams, ground refugia and arboreal microhabitat associated with large trees. Overall the development of the site should pose little impact to fauna within the area.

Species of interest that may utilise habitat to the north of the site are Koala, Tusked Frog and potentially Wallum Froglet. Inspection of trees resulted in no current evidence of use by Koala. Some arboreal microhabitat is present and would be inspected during the clearance process for any occupant fauna. A short survey effort would determine the occupancy status of both frog species however impact if present is expected to be limited to few individuals. The local fauna corridor is located to the north and development of the site should see no significant impact to fauna movements. Any construction activities should see no net release of sediment into the “wetland” area to the north.

The dam to the north is compromised and of minimal value to fauna. Turtle species may be present and should be removed during or prior to dewatering. The dam in the south west corner contains a more usable riparian margin for transient fauna. Again turtle species may be present here and trapping efforts should be conducted to determine occupancy status if the dam is to be filled.

Very little ground refugia remains on the site and this presents little usable habitat value. However this will be confirmed prior to any required vegetation clearance.

All on-site activities will be guided by current or specific EMP’s (see Appendix E).

5.5 Native Title, Historic and Cultural Heritage

The SRWP Alliance will exercise its 'duty of care' with respect to the relevant legislation to minimise harm to Aboriginal and historical (non-Aboriginal) cultural heritage objects, areas and sites. This section provides details of the processes in place to manage historic and cultural heritage for the extended alignment.

5.5.1 Native title

As with any form of title, native title bestows certain legal rights upon the title holder/s. The NPI will meet its legal obligations and fulfil the procedural rights of native title parties.

Land the subject of these works is under freehold title, with native title rights on all parcels having been previously extinguished.

5.5.2 Aboriginal cultural heritage

A Cultural Heritage Management Plan (CHMP) has been prepared and approved under the Aboriginal Cultural Heritage Act 2003. The approved CHMP covers the works and activities proposed in this Change Report.

The Alliance will work in partnership with the endorsed Aboriginal Party to ensure the construction activities are managed according to the CHMP. If required by the parties, monitors will be engaged to be present during clearance and construction activities.

5.5.3 European cultural heritage

A search of the Heritage Register (European) on the EPA website revealed that the study area does not contain non-indigenous cultural heritage sites under the Queensland Heritage Act 1992.

A web search of the DEWHA database revealed no records of heritage sites of interest in the vicinity of the works.

In the event of encountering any unidentified finds during the construction or operational phases of the proposal, the project Heritage Management Plan provides actions to ensure the appropriate State Agencies are advised.

5.6 Visual Amenity

For sections of the route where installation of the pipe is required, the pipe will not be visible as it will be buried approximately one metre underground. Occasionally the pipeline may be visible where areas of steeply undulating land are encountered or where above-ground connections with existing facilities are required.

Construction and operation of the CDF will occur within an area approved for core industry/rural purposes. The proposal constitutes a like use with other facilities anticipated to be built in the Addlington Industrial Park. AS the site is within an area approved for core industry/rural purposes, there will not be an additional visual amenity impact as a result of the CDF.

5.7 Traffic, Transport and Access Arrangements

Traffic impacts associated with construction of the pipeline between Old Gympie Road and Nobels Road has been assessed under the NPI Stage 1 EIS. General traffic considerations associated with the Addlington Industrial Park were considered during preparation and subsequent approval of the master plan under an IPA development approval. The proposal for construction and operation of the CDF is within the conditional boundaries of the development approval. Further, DMR and Caloundra

City Council have raised no objection to the traffic requirements during construction and operation of the facility.

5.7.1 Impact management

5.7.1.1 Traffic operations

For construction and operation of the CDF, traffic modelling will be conducted to assess the likely impacts of the works. The route and proposed traffic management arrangements arising from the modelling, will be discussed and agreed in principle by the Caloundra City Council and DMR. Traffic Control Plans (showing the locations and face type of all temporary signs) will be submitted for approval of the relevant road authority prior to commencement of works on these roads and approvals sought as required.

As described in 3.1.1 above, large trucks will be required to enter the site on an approximately weekly frequency in order to maintain chemical storages.

5.7.1.2 Pavements

Procedures have been established to assess any accelerated deterioration of the road pavements as a result of the haulage of construction materials.

For roads under the control of the Caloundra City Council, the condition of each road affected by the construction or haulage of construction materials, will be inspected prior to works commencing. This inspection will be undertaken using a road condition vehicle. Inspections may be undertaken during or after construction if concerns arise as to the condition of pavements. The appropriate remedial treatments will be negotiated with the Council, though no objection to the proposal has been raised by Caloundra City.

5.8 Air Quality

The existing air quality environment along the pipeline route is influenced by regional air pollutant sources (mainly transport and industry related), with minor contributions from local traffic, construction and commercial/industrial sources. Variations in local air quality will occur due to the proximity of sources such as major roads, regional events such as bushfires and dust storms and variations of meteorological conditions such as wind speed, wind direction and atmospheric stability.

The Queensland EPA continuously monitors air quality at a number of sites throughout south-east Queensland. Results for the two sites closest to the pipeline project (Mountain Creek and Deception Bay) are similar to those from monitoring sites throughout the region. Mountain Creek has lower particulates (PM10) than other Queensland monitoring sites, with a lower than normal variation.

These parameters fall well within the recommended air quality indicators and goals outlined above. As such, the existing air quality environment is taken to be in good to excellent condition.

5.8.1 Impacts

Air pollutants associated with the project are mostly emitted during construction in the form of particulates, with very minor contributions of carbon monoxide (CO) and nitrogen oxides (NOx) associated with fuel combustion from vehicles and plant. The chemicals to be stored at the CDF are

non-combustible and produce minimal odours. Use and storage of all chemicals will be as per the requirements outlined in the registration certificate provided under ERA 7 for the storage of chemicals necessary for the disinfection of water.

During dry conditions, on-site construction activities have the potential to generate dust. The impact of a 'worst-case' construction scenario was assessed using the Ausplume computer dispersion model developed by the Victorian EPA. Based on this modelling, minimal impacts from particulate matter emissions are expected. All activities will be managed under the existing EMP for the project and any developed for specific sites.

The following activities are those identified as specific potential sources of dust as a result of construction works:

- Vegetation clearing
- Earthmoving activities and excavation
- Movement of vehicles and construction machinery, both within and outside the construction site
- Transport of construction materials, rubble and waste
- Stockpiling of materials
- Build-up of material around erosion and sedimentation controls.

Most of these activities will occur for a limited period at any location along the pipeline route, and will typically be restricted to daylight hours (nominally 7 am to 6 pm).

Operational impacts will be limited as all minor pumps at the CDF will be powered by electricity. There is some potential for emissions from diesel-powered backup generators in the event of a power failure. However, generators will be used as an emergency measure rather than as a standard operational procedure.

5.8.2 Impact management

The primary sensitive receptors in the study area are residential properties and sensitive environmental areas in close proximity to the alignment. Work conducted within 20 m of a sensitive receptor will be carried out in accordance with appropriate dust mitigation measures to ensure that any adverse impacts are minimised. Recommended mitigation measures include, but are not limited to:

- Spraying of the ROW by water trucks during dusty conditions in sensitive areas
- Chipping/mulching of cleared vegetation (rather than burning it) for use on cleared areas to minimise wind-generated dust
- Stopping construction activities or applying appropriate control measures upwind of and close to residences during periods of high wind
- Situating activities involving the use of odorous chemicals and dusty or odour-generating construction or maintenance activities downwind of residences where possible
- Reducing dust generation via watering of temporary access roads and open areas when necessary and covering/watering/revegetating exposed areas and stockpiles.

These measures, and any other mitigation strategies relevant to the project, will be incorporated into the current Air Quality Management Plan, implemented during construction of the NPI.

5.9 Noise and Vibration

Description of environmental values

Unattended noise measurements were conducted at various locations along the proposed pipeline alignment to determine the existing noise environment. Some noise monitoring locations were chosen to represent the densest residential area or the most sensitive noise receivers adjacent to the proposed pipeline alignment which may be affected by the construction works of the NPI project. The results of these assessments were discussed and assessed in the EIS.

Background noise levels (LA_{90}) were required from various locations on and near number 75 Caloundra Street, Landsborough (Lot 1 RP222398), the proposed site for the CDF. The L_{A90} noise level is the A-weighted sound pressure level exceeded for 90% of a given measurement period and is representative of the average minimum background sound level (in the absence of the source under consideration), or simply the 'background' level.

Attended noise measurements were carried out on 29 February 2008 to provide an understanding of average daytime background levels at locations within the proposed site and at sensitive receptor stations outside of the site. Monitoring was conducted at three locations, commencing at approximately 8am.

Measurements were taken using a Svan 949 Level 1 Sound Level Meter which was calibrated prior to and after use. The three locations are shown in blue on Figure 5.1 below. The locations are:

- 1. 75 Caloundra St Landsborough. Near site office
- 2. Access track to site between 73 and 75 Caloundra Street, Landsborough
- 3. Car park at front of businesses at 77 Caloundra Street, Landsborough

Results are shown below in Table 5.1.

Table 5.1 Results of noise monitoring at the proposed site

Location	dB range (15 mins)	Measure 1 (LA_{90})	Measure 2 (LA_{90})	Measure 3 (LA_{90})	Measure 4 (LA_{90})
1	45dB – 50dB	48dB	47dB	48dB	46dB
2	54dB – 59dB	55dB	55dB	57dB	54dB
3	49dB - 69dB	54dB	52dB	57dB	54dB

Figure 5.1 Location of noise monitoring locations at proposed site

Four measurements were taken at each location for a duration of 15 minutes for each measurement. Background levels should be taken without the presence of extraneous noise, however, in this instance extraneous noise could not be avoided and was therefore taken into consideration during monitoring. The types of extraneous noises heard include birds, insects, vehicle movement (including trucks, buses, cars and motorbikes) on Caloundra Street and Steve Irwin Way.

It is apparent that daytime levels at sensitive stations are influenced heavily by traffic movements on both Caloundra Street and Steve Irwin Way to west. Night-time background noise levels would be expected to be lower than reported for day-time, but still significantly influenced by local traffic movements.

All noise measurements were conducted in general accordance with the Environmental Protection Agency's *Noise Measurement Manual and AS 1055.1 1997 Acoustics—Description and measurement of environmental noises: General procedures*.

Construction

Noise levels during construction will be highly dependent on the type of construction activities undertaken, their duration and location. The most significant noise source will be mechanical plant operation. To avoid impacting surrounding land uses, construction hours will be limited to 7.00 am to 6.00 pm, Monday to Friday and 8.00 am to 1.00 pm on Saturdays. Construction during these hours is

not regulated and, as such, there is no need to meet specific noise criteria for the majority of construction works. However, given the distance to the nearest sensitive receptor and the level of day-time background noise, the construction activity will not result in significant disturbance.

A set of generic noise limits has been developed. These will be applied where construction works are to extend beyond normal hours. For all construction works, comprehensive noise mitigation strategies will be considered and implemented by a project-specific noise and vibration management plan to be developed in consultation with the Queensland EPA.

Operation

Operation of the CDF will not generate noise in exceedance of the levels discussed in this report. The monitoring and background levels described above do consider potential future operational noise associated with pumping facilities for reverse flow. These facilities would be required to accommodate the future transfer of water from the Brisbane network to the Sunshine Coast. Under the approved use of the adjacent land, this potential future use will not provide additional noise impacts to the area.

5.9.1 Vibration

Potential impacts and impact mitigation

Monitoring of vibration levels along the pipeline route was not undertaken. The primary impacts of vibration on human environments relate to structural damage and the effects on human comfort. Vibration is measured in millimetres per second (mm/s). Humans can detect vibration levels well below those causing any risk of damage to a building or its contents. Vibration of 0.15 mm/s is at the threshold of human perception, while vibration of 14 mm/s would be very strongly noticeable.

The highest vibration impacts are expected to occur during the construction phase of the project. The major potential sources of ground vibration are blasting, bulldozers (ripping) and hydraulic rock breakers. No hard rock is anticipated to occur within the immediate construction zone for the CDF.

Also, no building damage or human comfort impacts are expected to be associated with vibration from bulldozers and hydraulic rock breakers, as vibration levels at distances greater than 30 m are usually below 0.2 mm/s.

Based on these levels and the likely offset distance to the nearest houses at the site, there should be no building damage or human comfort impacts associated with vibration from the rock break operation. Dilapidation surveys would completed for any properties within the offset distance.

Heavy trucks passing over normal (smooth) road surfaces generate relatively low vibration levels, typically ranging from 0.01 mm/s to 0.2 mm/s at the footings of buildings located 10 m to 20 m from a roadway. Very large surface irregularities can cause levels up to 5 to 10 times higher. Provided all truck routes are maintained to avoid large surface irregularities (e.g. potholes), there will be no building damage or human comfort impacts associated with vibration from truck movements at the site. Further, the development approval for the larger Addlington Industrial Park (see Appendix B) is conditioned to ensure the provision of particular road surfaces and other features.

Assessment of the vibration levels associated with general construction activities such as construction and general traffic movement, has indicated that pipeline construction and activities associated with the CDF will not result in any damage to buildings or human comfort impacts.

It is not anticipated that any vibration impacts will be generated during the operational phase of the NPI.

5.10 Cumulative Impacts

In addition to the proposed activity, a number of other large infrastructure projects are currently planned in the vicinity of the site. These include:

- Landsborough to Nambour Rail Corridor Study - the study area is adjacent the Addlington Industrial Park, but does not intersect the area of interest. Queensland Transport do not object to the current proposed use of the site.
- Traveston Crossing Dam Stages 1 and 2 - it is proposed that facilities necessary for maintenance of the hydraulic capacity of the Traveston project could be co-located at the site. These facilities would include possible functional augmentation of the CDF. This information is provided in Figure 3.1 and Table 3.1 above and includes additional valves, flowmeters, piping, storage tanks and bunded chemical unloading stations. Some additional facilities would also be required for operational purposes, such as a small office. There is no capacity for future use of the land for construction of reservoirs.
- Completion of proposed projects listed above would have no significant impact on the features of the land described for the CDF.

6 CONCLUSIONS AND RECOMMENDATIONS

In accordance with the Terms of Reference adopted for the assessed EIS, the current report has described the planning, design, construction and operation of a chemical dosing facility that could be located at Caloundra Street, Landsborough. This SEIS is provided in response to a direction received from the Coordinator-General requesting an assessment of alternative sites to a preferred option presented in the SEIS dated January 2008. Submissions received on the proposal identified a series of potentially critical issues that are addressed by locating the chemical dosing facility at Caloundra Street, Landsborough.

The proposed location for the chemical dosing facility is within an industry park approved for core industry/rural purposes. The site contains very limited natural features and is commensurate with the use proposed for the facility.

In order to minimise potential impacts prior to and during construction, the works will be strictly governed by existing Environmental Management Plans as well as a new plan to address site-specific issues. On this basis, completion of the works necessary for the NPI could proceed with no perceptible short-term impacts and minimal long-term negative impact on surrounding natural systems. All impacts are able to be mitigated under the CEMP for the project and the site. This SEIS recommends adoption of the alternative location for siting of the chemical dosing facility.

7 REFERENCES

SRWPA 2007, Northern Pipeline Interconnector Stage 1 – Environmental Impact Statement, prepared for LinkWater, Queensland.

SRWPA 2008, Change Report to the Northern Pipeline Interconnector (Stage 1) Environmental Impact Statement, prepared for LinkWater, Queensland.