

NORTHERN PIPELINE INTERCONNECTOR PROJECT STAGE 2

MANAGEMENT PLAN

Contaminated Land Management Plan

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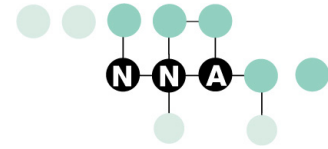
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CONTENTS

1	INTRODUCTION	4
1.1	Project Description	4
1.2	Purpose and Scope	5
1.3	Related Management Plans	5
1.4	Objectives and Targets	6
2	LEGISLATION AND REGULATORY REQUIREMENTS	7
2.1	Licenses/Permits	7
2.2	Guidelines/References	7
2.3	Commitments	8
3	EXISTING ENVIRONMENT	8
3.1	General Description	8
3.1.1	Surrounding Land Uses	8
3.1.2	Topography, Geology and Soil Characteristics	8
3.1.3	Drainage and Waterways	10
3.2	Environmentally Sensitive Areas/Features	10
4	POTENTIAL IMPACTS	11
4.1	Soil	11
4.1.2	Contaminated Sites Located on Flood Plains	12
5	ENVIRONMENTAL MITIGATION MEASURES	13
5.1	General	13
5.2	Site Specific and Accidental Contamination	13
5.3	Verification Procedure	17
6	CORRECTIVE AND PREVENTATIVE ACTIONS	18
6.1	Community Liaison and Complaint Management	18
6.2	Environmental Incident/Emergency Reporting	18
6.3	Incident/Emergency Preparedness and Response	18
6.4	Incident Investigation	18
6.5	Non-conformances	18
7	INSPECTION AND MONITORING	19
7.1	Inspection	19
7.2	Site Processes	19
7.3	Validation of Excavations	20
7.4	Groundwater	20
8	DEFINITIONS AND ACRONYMS	21
9	REFERENCE DOCUMENTS	23
TABLE OF TABLES		
Table 1	Contaminated Land Commitments from Project Stage 2 EIS	7
Table 2	Land Resource Areas along the Stage 2 Route	8

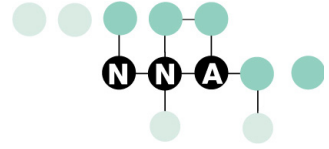
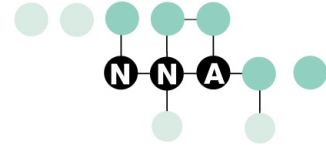


Table 3	Contaminated Land Management Procedures	12
Table 4	Incident Response Management Measures	15



1 INTRODUCTION

This Contaminated Land Management Plan (CLMP) is one component of the Construction Environmental Management Plan (CEMP) (NNA001-A-PLN-017) which provides a system and procedures to ensure that Northern Network Alliance (herein after referred to as “the Alliance”) establishes and maintains best practice controls to manage potential environmental impacts during the construction of the Northern Pipeline Interconnector (NPI) Stage 2 and associated infrastructure (hereafter referred to as the ‘Project’) and, wherever practicable, realise opportunities for enhanced environmental outcomes.

The Project is a key component of the SEQ grid. Initially, the Project will transport water under existing utilised entitlement (up to 55% or 3600 ML/a has been used by Noosa Shire in the past) authorised under the *Water Resource (Mary Basin) Plan 2006* (Mary Basin WRP). This existing entitlement comprises 6500 ML/a (18 ML/d) interim water allocation (high priority) held by the SEQ Water Grid Manager within the Upper Mary River Water Supply Scheme. However, the pipe will be sized and designed to accommodate flows from future bulk water sources on the Sunshine Coast, including the Traveston Crossing Dam, should it be approved.

The Alliance consists of the following partners:

- LinkWater
- Abigroup Contractors Pty Ltd
- McConnell Dowell Constructors (Aust) Pty Ltd
- Kellogg, Brown & Root Pty Ltd.

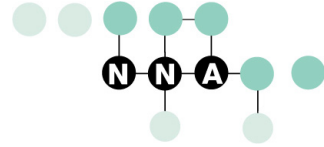
The Alliance is committed to providing the services it offers in a manner that conforms to the contractual requirements and to all relevant regulatory and legislative requirements. To achieve this, the Alliance will plan, implement and control an integrated management system that achieves the stated environmental outcomes.

The Alliance will ensure that controls are properly implemented and regularly monitored and audited to assess their effectiveness. Changes to the controls will be instigated if they are not achieving their objectives.

1.1 Project Description

The Project Stage 2 forms part of the drought contingency pipeline to connect existing and future water infrastructure on the Sunshine Coast with the Brisbane network. The Project will be constructed in two stages and will allow the transfer of up to 65 ML/d of potable water between the Sunshine Coast and Brisbane. Stage 1 of the Project—between Landers Shute Water Treatment Plant (WTP) and Morayfield—is due for completion by 31 December 2008.

The completed Project (Stage 1 and Stage 2) will supply a target volume of 65 ML/d of potable fresh water to existing facilities at Caboolture for distribution to localities in the greater Brisbane region. The Project will have the capacity to deliver up to 18 ML/d (under existing entitlements for the Noosa Shire).



Subsequent interconnection of Stages of the Project may be constructed to link with the proposed Traveston Crossing Dam and/or other bulk water sources proposed for the Sunshine Coast. These subsequent Stages are not considered in this report. However, the use of a large diameter pipe capable of transporting bulk water is a basis for the design of both Stages 1 and 2 of the Project.

The key components of the Project are as follows:

- approximately 48 km of underground pipe between Noosa Water Treatment Plant (WTP) and the termination point of Project Stage 1 at Eudlo
- a balance tank with a 5 ML capacity
- three new pump stations; and
- a new Water Quality Management Facility (WQMF) and upgrades to an existing WQMF at Landsborough.

A number of additional above-ground facilities would be required for commissioning, operation and maintenance of the system. These include:

- water quality maintenance structures
- water branch mains; and
- cleaning and communications stations.

1.2 Purpose and Scope

LinkWater has a commitment to effective environmental management and lists the environment as a key component of its overall vision to become an effective partner in delivering water security to South-East Queensland (LinkWater 2008). LinkWater is committed to adding value to the management of the natural and built environments by adhering to all appropriate local, state and federal environmental guidelines, with an underlying principle of sustainability and positive environmental outcomes (LinkWater 2008).

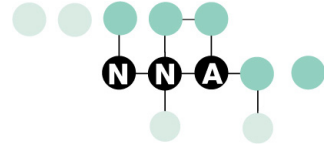
The purpose of this CLMP is to establish a set of best practice procedures for the identification and management of contaminated land if encountered during works undertaken for the Project.

This Plan will address the requirements of all applicable legislation and aims to ensure that the commitments made by the Alliance within the Project Environmental Impact Statement (EIS) regarding contaminated land are met.

1.3 Related Management Plans

The Contaminated Land Management Plan (CLMP) forms part of the overall CEMP (*NNA001-A-PLN-017*) for the Project. Where relevant, reference should also be made to the following associated management plan (MP):

- Soil and Water Management Plan (*NNA001-A-PLN-011*).



1.4 Objectives and Targets

The objectives of this management plan are:

- Avoid and minimise the environmental and human health risks arising from the disturbance of contaminated land encountered during construction of the project
- Follow the guidelines set out in the statutory requirements for managing contaminated land and the transport of contaminated goods.

The targets associated with this management plan are:

- No degradation to the receiving environment along the pipeline route as a result of disturbance of contaminated land
- No contamination of soil, air or water as a result of spillages or other impacts arising from construction activities
- Compliance with specified regulatory requirements including conditions of approval.

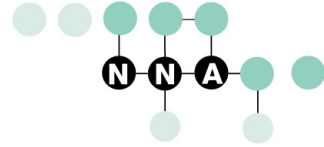
The above performance criteria have been developed for this MP to assist in the delivery of desirable environmental outcomes. The performance criteria will be linked to key performance indicators (KPIs) for the Project.

Contaminated land is largely a historical problem, and may be a result of:

- Industrial processes once carried out at a site which use or produce toxic or otherwise hazardous substances
- Storage or dumping of hazardous substances on a site
- Agricultural processes carried out on a site, for example a sheep dip, use of fertilizers, or where farm chemicals were stored or
- Contaminants present in imported fill material.

Contaminated land in Queensland is managed on a risk based approach assessed on suitability for a specified end land-use. Under this risk-based process, the potential risk to the environment and human health is assessed. Should contaminated sites be encountered along the ROW, then applicable EPA criteria will be used to assess them.

To evaluate the level of risk, laboratory results are compared with criteria presented in the *Draft Guidelines for Assessment and Management of Contaminated Land in Queensland*, May 1998. These Guideline criteria are based on the National Environmental Protection Councils (NEPC), “*National Environmental Protection Measure 1999*”. For petroleum hydrocarbons guideline criteria presented in a draft internal guideline issued in 1999 by the Queensland EPA Contaminated Land Unit will be used.



2 LEGISLATION AND REGULATORY REQUIREMENTS

2.1 Licenses/Permits

The following licences and permits may be required throughout the construction period for managing contaminated land:

- Disposal Permits will be sought from the EPA for off-site disposal of any unexpected contamination discovered during construction.
- Only licensed waste disposal contractors shall be used to transport contaminated soil.
- Contaminated waste will be disposed only at licensed disposal facilities.

2.2 Guidelines/References

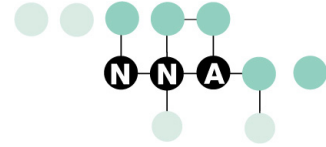
Key Legislation relevant to this MP includes:

- *Contaminated Land Act 1991*
- *Environmental Protection Act 1994*

In order to maintain a responsible framework to manage contaminated land, the Queensland Government has adopted policies that address community concerns, deal with planning and environmental matters, and support industrial and economic development in accordance with ecologically sustainable development.

In 1991 the *Contaminated Land Act 1991* was introduced to identify, manage and remediate contaminated land. In November 1997 the Queensland Government integrated the provisions of the *Contaminated Land Act 1991* with the *Environmental Protection Act 1994*. The EPA is the administering authority for site contamination matters under the contaminated land provisions in Chapter 6 Part 8 of the *Environmental Protection Act 1994*.

Information on contaminated land in Queensland is available through public access registers maintained by EPA – the Environmental Management Register (EMR) and the Contaminated Land Register (CLR). Recording land use information on the EMR ensures that land which has the potential to be contaminated because of a previous or current land use is investigated and, where necessary, remediated before a change of use (EPA guidelines).



2.3 Commitments

The following commitments are made in Project EIS and are relevant to this MP. Table 1 lists these commitments.

Table 1. Contaminated Land Commitments from the Project Stage 2 EIS

NPI 2EIS Section (December 2008)	Requirement/Commitment
3.2	Contaminated material will only be removed from the work area in consultation and with approval of the Queensland Environmental Protection Agency (EPA).
3.2	Material safety data sheets (MSDS) for all chemicals stored on site will be made available to site personnel, with workers informed of their location as part of site inductions.
3.7	Storage, safe handling and transport of any waste generated by the project will be in accordance with Australian standards.

3 EXISTING ENVIRONMENT

3.1 General Description

3.1.1 Surrounding Land Uses

The majority of the route is located within existing road reserves (approximately 24%) or public utility easements (approximately 68%). Other affected tenure types include leasehold, reserves, state owned land (includes railways) and unallocated state land present along most watercourses.

3.1.2 Topography, Geology and Soil Characteristics

The preferred corridor traverses the geological formations of the Nambour Basin, Post-Organic Volcanics and Gympie Province. Within these areas, the route generally traverses hills and ridges composed primarily of residual soils overlying sedimentary sandstone or igneous rhyolitic tuff. There are no significant fault structures prone to significant seismic activity within the project area.

The pipeline route comprises four distinct geological units, including the Pomona Beds and the Kin Kin Beds of the early to middle Triassic area in higher terrain around Cooroy and the North Arm Volcanics between Eumundi and Nambour. A small section of the project area around Yandina traverses the western edge of the Maroochy floodplain which is dominated by alluvium associated with fluvial processes.

The hills in the south of the project area form part of the Landsborough Sandstone formation, while sections of the route near Yandina are composed of Myrtle Creek Sandstone. Sections of the Project area may contain varying depths of colluvium; however, more detailed geotechnical investigations are required to confirm this.

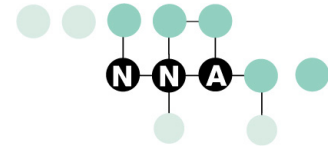


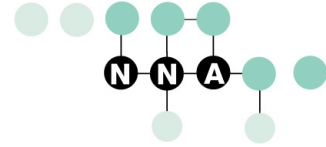
Table 2 presents the land resource areas of the route as interpreted from Capelin (1987).

Table 2. Land Resource Areas along the Stage 2 Route (Capelin 1987)

Land resource area	Location	Geology	Landform	Vegetation
Q2	Stream alluvia and floodplains	Undifferentiated Quaternary alluvium of gravel, sand, silt and clay	Level to undulating plains and rises	Forest red gum open forest and tea-tree open forest
J1	South of Nambour to Eudlo	Laterised Triassic to Jurassic Landsborough Sandstone	Undulating to steep low hills and hills	Blackbutt and bloodwood open forest
J3	Southwest and northwest of Landsborough to Eudlo	Triassic to Jurassic Landsborough Sandstone	Undulating to steep hills	Blackbutt and bloodwood open forest
R1	Between Eumundi and North Arm	Laterised Triassic rhyolite	Gentle undulating and rolling hills	Remnants of grey gum and tallwood open forest
R2	North of Nambour	Triassic andesite and rhyolite; diorite and tonalite intrusions	Undulating low hills	Blackbutt and grey gum open forest
R3	North of Eumundi	Miscellaneous Palaeozoic metamorphics and volcanics	Undulating low hills	Spotted gum and ironbark open forest

The soils of the alignment have been formed from the underlying geological parent materials:

- **Alluvial soils** within the flood plains of the main watercourses are variable in depth, texture, fertility and drainage characteristics.
- **Gravelly loams** can be prevalent in the narrow flood plains adjacent to lower order streams in the upper catchment areas while deep uniform textured or gradational clays (including black earths and prairie soils) are common in the broad flood plains of the major streams. Most alluvial soils are relatively resistant to erosion, due primarily to the low gradient position in the landscape, but may be prone to stream bank erosion.
- **Gleyed podzolic and humic gleys** (poorly drained acid soils) are found in some of the lower terraces of the alluvium.
- **Red and yellow podzolic soils** are texture contrast soils generally associated with Landsborough Sandstone parent material. The soils have a sandy or loam surface horizon with a clay subsoil and there may be a significant gravel component in the subsoil. These soils are highly susceptible to erosion, particularly where slopes exceed 8%. Red and yellow earths are uniform textured soils also associated with Landsborough Sandstone parent material. While still erosion-prone, they are generally less susceptible than red and yellow podzolic soils.



- **Krasnozems** are deep uniform or gradational soils which, within the project area, are confined mainly to the land around Eumundi and North Arm. These soils are relatively resistant to erosion and are used for growing ginger.
- **Lithosols** (mainly shallow gravelly soils with minimal profile development) are common in steeper sections of the project area where grades exceed 10%. They are highly susceptible to erosion although the severity of this risk may be mitigated by the significant stone component within the soil matrix.

Minor sections of the route are located on the floodplains of the major watercourses. Soils of the upland areas are predominantly shallow, texture contrast soils that may have a significant component of stone within the profile.

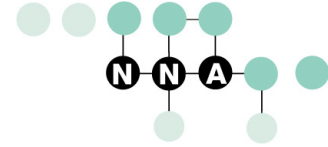
3.1.3 Drainage and Waterways

The Project corridor traverses the freshwater section of the Maroochy River catchment and the south-eastern headwaters of the Mary River catchment within the Six Mile Creek sub-catchment. Sub-catchments within the Maroochy River system traversed by the Project (from north to south) are as follows: the North Maroochy River, South Maroochy River, Upper Maroochy Estuary, Petrie Creek, Paynter Creek and Eudlo Creek.

All surface waterways to be crossed by the pipeline are lowland freshwaters (larger slow flowing freshwater streams and rivers below 150 m altitude) as defined by the *Environmental Protection (Water) Policy 1999* (EPP (Water)). None of the proposed creek or river crossings are located within the boundaries of the Coastal Management District (CMD) or have any tidal vegetation associations.

3.2 Environmentally Sensitive Areas/Features

Searches of both the Queensland EPA's Environmental Management Register (EMR) and Contaminated Land Register (CLR) were undertaken using real property descriptions of directly affected lots on the route. No effected properties within the alignment were listed on the EMR and CLR.



4 POTENTIAL IMPACTS

4.1 Soil

Potential impacts from the Project are expected to arise from the trench excavation, tunnelling and to a lesser degree piling, in contaminated soils.

Adverse environmental impacts may occur from the excavation or displacement of either large volumes of soil containing isolated occurrences of environmentally significant levels of one or more contaminants (well above the Environmental Investigation Levels (EIL)); or smaller volumes containing consistent contamination (i.e. exceeding EIL). This may result in mobilisation of contaminants and the spread of contamination beyond the immediate location to the local receiving environment (i.e. waterways). The adversity of impacts may change depending on the extent and magnitude of any contamination encountered.

Rural areas may contain cattle dips and may have been treated with herbicides or pesticides which could pose a threat to human health if present in soils at high enough concentrations. Urban areas are more likely to contain contamination derived from industrial practises.

The degradation of local groundwater quality can potentially be caused by uncontrolled disturbance of contaminated soil resulting in the mobilisation of heavy metals and/or leaching of other contaminants into groundwater. This can result in locally elevated contaminant levels (in excess of adopted water quality objectives) and broader scale adverse impacts to regional groundwater quality and receiving waters leading to degradation of the receiving environment.

4.1.1 Creek and River Crossing

Alluvial soils in flood plain areas are likely to be more permeable, and migration of groundwater (with any contamination present) towards waterways is more likely. The careful management of earthworks can mitigate impacts arising from both contaminated soil and groundwater.

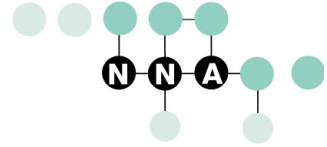
4.1.1.1 Water Discharge

Discharges of water to the environment, associated with both commissioning and operational phases, will be managed to ensure there are no adverse impacts on the environment and/or receiving waters. Preliminary site assessment has been undertaken for draindown infrastructure site options, taking into account the existing environmental values (e.g. water quality of existing waterways and presence of sensitive areas or species); people and properties that might be affected by water discharge; other existing infrastructure and utilities (stormwater and telecommunications); and other sources and loads of contaminants within the catchment (cumulative impacts).

4.1.1.2 Storage and Handling of Fuels, Chemicals and Wastewater

The storage and handling of fuels, chemicals (including those stored at facility areas) and wastewater have the potential to pollute surface waters and contaminated soils, for example:

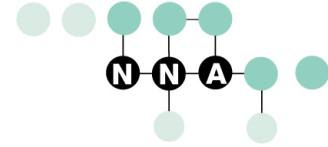
- structural damage to storage facilities resulting in fuels leakage of fuels to the surrounding environment



- incorrect storage of fuel and/or chemical containers (i.e. not in a contained area protected from weather conditions); and
- incorrect refuelling methods resulting in spillage.

4.1.2 Contaminated Sites Located on Flood Plains

No sites are currently listed on the EMR/CLR in floodplain areas. For any sites discovered during construction that may be situated on or close to the floodplains of waterways, monitoring of groundwater will be undertaken if preliminary investigations reveal the water table is located within 1 m (vertically) of the base of proposed excavations in these areas. Groundwater investigations will be conducted in accordance with the *Draft Guidelines for Assessment and Management of Contaminated Land in Queensland*, (DEH May 1998).



5 ENVIRONMENTAL MITIGATION MEASURES

5.1 General

Should contaminated sites be encountered along the ROW, the assessment, investigation, remediation and validation of contaminated sites will be done in accordance with the *Draft Guidelines for Assessment and Management of Contaminated Land in Queensland*, (DEH May 1998). Contaminant concentrations below Queensland Environmental Investigation Levels (EILs) are generally accepted as indicating negligible potential environmental impact. The EILs are based on phyto-toxicity and are conservative. Contaminant concentrations above EILs indicate that impacted soils may need to be removed, if situated in an area deemed to be environmentally sensitive or a site specific assessment of their environmental impact is required.

Contaminant concentrations that exceed Health Based Investigation Levels (HILs) may represent a threat to human health and require specific assessment of risk and remediation where encountered. Differing HILs have been produced depending on the proposed exposure setting of the affected location. For example, for a low density residential setting with an accessible garden, HIL-A applies; for a commercial/industrial area with limited opportunity to access soil, exposure setting HIL-F applies. The appropriate criteria will be adopted dependent on the proposed exposure setting.

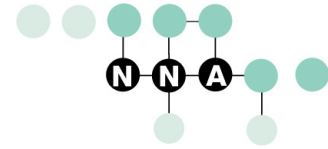
For the Project HIL-A 'low density residential' exposure setting is appropriate, mainly because of the potential for construction personnel (and at some locations neighbouring property holders) to be exposed to disturbed soils during trenching operations. Where contaminant concentrations are below HIL guidelines the risk to human health is considered low. Where contaminant concentrations exceed the HIL, they may represent a risk to human health and soil removal, management or a more specific assessment of risk will be required.

For groundwater, criteria presented in ANZECC and ARM CANZ 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand will be adopted.

Where surface water from a contaminated area is to be discharged off-site, this will be to sewer (where services are present) and the applicable Local Authority Sewerable discharge quality criteria will apply. If not serviced, contaminated water will be removed by a licensed contaminated disposal contractor using a pump/sucker truck.

5.2 Site Specific and Accidental Contamination

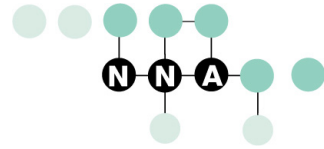
Mitigation measures and responsibilities for identified actions to minimise contaminated land impacts during construction are outlined in Table 3 below. In addition to works in areas of existing contamination, the general contamination management measures will be implemented for management of contamination that may result from incidental/accidental discharges during general



works. Table 4 outlines measures that will be adopted for Incidents by contractors working on the Project.

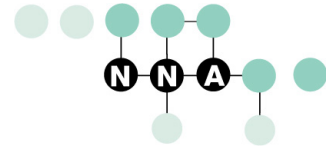
Table 3 Contaminated Land Management Procedures

Activity / Construction Item or Detail	Management Mitigation Measures	Responsibility	Timing
Identification of unexpected and potentially contaminated soil at any site on the alignment	<p>All works shall cease immediately and the affected area isolated from workers and other persons with a physical barrier. The EO shall be notified and a suitably qualified ES contacted to inspect the site.</p> <p>Soil can only be excavated following approval from the ES. It may be that the ES requires the material to remain in-situ until an assessment has been carried out.</p> <p>For any work in identified areas the ES shall advise as to levels of Personal Protective Equipment (PPE) required. A specific health and safety plan may be required depending on the extent and magnitude of the contamination.</p>	Environmental Manager/ Environmental Officer/ Health Safety Officer	During Works (notification within 24 hrs)
Storage of potentially contaminated soil	All potentially affected spoil will be stockpiled on a bunded, impermeable surface, covered to prevent wind blow and potential erosion	Environmental Officer / Site Superintendent	During Works (short term until testing and disposal is carried out).
Storage and handling of dangerous goods i.e. fuels, chemicals and wastewater.	<p>Storage areas for fuels, oils and chemicals used during construction will be covered and contained within an impervious bund to retain any spills of more than 120% of the volume of the largest container in the bunded area. Storage methods and storage areas will comply with the relevant Australian Standards and the Queensland EPA requirements for bunding and spill management.</p> <p>Refuelling of mobile vehicles, plant and equipment will be undertaken no closer than 50m from a watercourse and using approved fail-safe couplings in hoses. Spill kits and absorbent materials will be provided on site to clean up in the event of a spillage or leak. In the event of accidental hydrocarbon spills, an incident response plan will be enacted.</p>	Environmental Officer/ Environmental Manager / Site Superintendent/ Health Safety Officer	
Validation sampling	Undertaken at an appropriate frequency as approved by the ES.	Environmental Officer / Site Superintendent	Before backfilling.
Stockpile sampling	Undertaken at a frequency of one sample per 50 m ³ . Additional samples will be collected for QA/QC purposes. All sampling shall be undertaken with existing standard	Environmental Specialist/ Environmental Manager / Site	Within 48 hrs of excavation



Activity / Construction Item or Detail	Management Mitigation Measures	Responsibility	Timing
	<p>industry adopted procedures. All samples shall be stored in appropriate containers and transferred to a laboratory under appropriate chain of custody documentation.</p> <p>All collected samples shall be transferred to a National Association of Testing Authorities (NATA) accredited laboratory. Selected samples will be analysed for potential contaminants of concern. These are to be determined by the ES.</p>	Superintendent	
Off-site soil disposal – low level contamination	<p>If analysis results are greater than 1.5 times the adopted EIL criteria the soil must be taken off-site to an appropriately licensed contamination facility.</p> <p>If the site is contaminated a waste Disposal Permit will be required.</p>	Superintendent	<p>Seven days for Laboratory Results</p> <p>Seven days to get EPA Disposal Permit</p>
On site reuse of soil	If analysis results fail EIL criteria but are within 1.5 of EIL, soil may be reused on site with approval of the EPA.	Superintendent	Seven days for Laboratory Results
Off-site soil disposal of highly contaminated soil	<p>If soil results greater than the adopted HIL criteria, the EPA will be notified. An EPA disposal permit will be required for offsite disposal. Leachate (TCLP) testing will be required before disposal at a licensed receival facility (of the appropriate level). Personnel will wear appropriate PPE and an ES will supervise the work.</p>	Superintendent/ Environmental Specialist	<p>Seven days for Laboratory Results.</p> <p>Seven days for TCLP Results.</p> <p>Contact EPA within seven days</p>
Potentially contaminated groundwater	Where the watertable is present within 1 m of the base of excavations, a groundwater monitoring well is to be installed adjacent to the excavation and monitoring for expected contaminants will be undertaken.	Superintendent/ Environmental Specialist	Weekly during works
Potentially contaminated receiving waters	Where the watertable is present within 1 m of the base of excavations in areas within 100 m of a waterway, monitoring for expected contaminants will be undertaken at a location downstream of the excavation.	Superintendent/ Environmental Specialist	Weekly during works

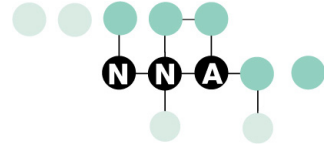
** All site contamination shall be investigated by a suitably experienced person in accordance with the EP act (Section 1180 & 118ZC)*



In addition there may be there may be impacts on contaminated land due to unforeseen failures (rupture of the water pipe) which may disperse contaminated soils over a wider area. These incidents are prescribed below in Table 4.

Table 4 Incident Response Management Measures

Activity/Construction Item or Detail	Management Mitigation Measures	Responsibility	Timing
General Construction Activities	Covered stockpiles will be provided at site suitable for the type of waste that will be disposed. (e.g. for typical construction waste, for drill cuttings in contaminated soils). Benign construction / demolition (C&D) waste will be kept separate.	Site Supervisor	All times during excavation works
Accidental Spills	Spill kits and absorbent materials will be provided on site to clean up in the event of a spillage or leak. Each construction crew will carry such kits and be trained in their use.	Environmental Officer / Site Supervisor	During all site works
Emergency Response	Ensure Emergency Response training is undertaken to contain material in the event of a spill or contamination of a sensitive area	Environmental Manager / Site Supervisor	Prior to the commencing construction
Unexpected accident (pipe rupture) and movement of potentially contaminated soil on the alignment where contamination has been identified	The affected area isolated from workers and other persons with a physical barrier. The EO shall be notified and a suitably qualified ES contacted to inspect the site ASAP. Rupture and soils contained if possible by bunding or other method. Possible Notification of Emergency Services (Fire Brigade). ES to investigate and map area of movement. Removed Soil can only be collected following approval from the ES. It may be that the ES requires the material to remain in-situ until an assessment has been carried out. For any work in identified areas the ES/ Health Safety Officer shall advise as to levels of Personal Protective Equipment (PPE) required. A specific health and safety plan may be required depending on the extent and magnitude of the contamination.	Environmental Manager/ Environmental Specialist/ Health and Safety Officer	During Works (notification within 24 hrs)

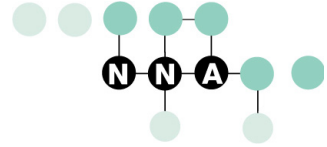


5.3 Verification Procedure

The verification procedure is a mechanism to show that the easement has been inspected, all the environmentally sensitive areas are known and delineated, and the construction supervisor has been advised of and acknowledges environmentally sensitive areas. The verification package is a written record and tangible reminder to the construction supervisor that he has environmental obligations ahead of him; and if he doesn't have signoff, then he doesn't have approval to enter that section of the ROW.

In practical terms, the verification procedure is as follows:

- The Environmental Officer reviews the environmental information available for the easement some days ahead of construction.
- The Environmental Officer identifies from the GIS and alignment sheets all those areas that represent an environmentally sensitive area. These areas may include rare or endangered flora, particular water crossings, habitat of rare or endangered animals, heritage areas [Aboriginal or European], and noise sensitive areas.
- The Aboriginal Heritage Officer will locate and tag known aboriginal heritage sites with construction tape and certify that this task is complete within the designated section of ROW. A 50 metre buffer is to be maintained around aboriginal heritage sites. The Contractor will construct a delineation fence to define the buffer zone. There is to be no activity of any sort within this buffer zone.
- The Environmental Officer should inspect the easement and physically identify all other known sensitive areas with construction tape.
- The details of the site; instructions and description of marking should be recorded and noted in the Verification Checklist process.
- If the Environmental Officer is unfamiliar with a particular environmental aspect [e.g. rare animal capture or plant identification] he should call in suitably qualified personnel who can assist. Sufficient time should be allowed to ensure availability of specialist environmental advisers.
- Once all environmental issues have been identified and flagged out on a specified section of ROW, the Environmental Officer shall point out all the issues in that section with the construction supervisor. The construction supervisor will explain what actions will be taken to protect environmental values and that suitable machinery and material (e.g. spill containment kit) is available to protect flagged out areas.
- The Environmental Officer and the Construction Engineer shall sign off on the verification package prior to the commencement of works. Construction can then commence on that section of the ROW described in the general purpose record.



6 CORRECTIVE AND PREVENTATIVE ACTIONS

6.1 Community Liaison and Complaint Management

Refer to Section 8.1 in the Construction Environmental Management Plan (CEMP)
(NNA001-A-PLN-017).

6.2 Environmental Incident/Emergency Reporting

Refer to Section 8.2 in the Construction Environmental Management Plan (CEMP)
(NNA001-A-PLN-017).

6.3 Incident/Emergency Preparedness and Response

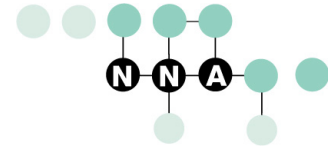
Refer to Section 8.3 in the Construction Environmental Management Plan (CEMP)
(NNA001-A-PLN-017)

6.4 Incident Investigation

Refer to Section 8.4 in the Construction Environmental Management Plan (CEMP)
(NNA001-A-PLN-017)

6.5 Non-conformances

Refer to Section 8.5 in the Construction Environmental Management Plan (CEMP)
(NNA001-A-PLN-017)



7 INSPECTION AND MONITORING

7.1 Inspection

Weekly inspections will be undertaken throughout the construction period by the Site Environment Officers, the Site Superintendents and Project Engineers. This inspection will ensure that appropriate controls are being implemented and are effective. It will also ensure that where necessary additional monitoring is undertaken as a result of changes to activities/construction methods. Any issues identified during the weekly inspections will be recorded in the Weekly Environment Inspection Checklist (*FORM G-FRM-001*).

Contamination assessments will be undertaken on properties situated within the pipeline alignment:

- where potential for contamination is identified by walkover inspection prior to the construction phase of the Project or
- where obvious signs of contamination (chemical odour, putrescible waste, gross physical contamination are identified during excavations)

EPA should be notified immediately or within 2 days if gross contamination (chemical concentrations greater than the HIL-A criteria) is identified on an unexpected site not currently located on the EMR. All contaminated land assessment reports shall be submitted to the EPA at least 28 days prior to commencing work (in that area). A time frame of 90 days is recommended to allow for due process.

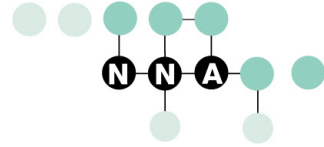
Where contamination has been proven and will be disturbed by clearing and trenching activities, a Remediation Action Plan (RAP) is to be prepared and approved by the EPA where a full Site Management Plan is not considered necessary. Such sites are to be reported to the EPA for listing on the EMR.

The Environmental team will also be informed immediately upon potentially contaminated land being encountered during excavation work at any location. The EO will be responsible for informing the Environmental Manager as soon as possible should contamination be suspected, and who will in turn immediately notify the Alliance Project Manager.

7.2 Site Processes

Permanent records of the following activities must be kept on-site and updated regularly, to enable audit/review by means of a simple 'check list' or similar method:

- Locations of contaminated soil
- Records of field tests (e.g. PID) and visual assessments
- Record of sampling locations, chain of custody forms and laboratory reports
- Records of regulatory correspondence (Disposal Permits etc.)
- Quantities of material disposed of offsite and waste disposal locations
- Requests for 'Corrective Actions' lodged



- Any changes to construction or management procedures.

The PID and other instruments used for field monitoring measurements shall be kept calibrated in accordance with the manufacturer's instructions and records of calibrations.

Where a Disposal Permit has been issued, records of acceptance at landfill and transport documentation shall be submitted to the EPA within 10 days of disposal.

7.3 Validation of Excavations

Clearing and trenching excavations in areas where new proven contaminated sites arise during construction, or on properties listed on the EMR, will be subject to a site validation process. Soil from both walls and the base of all excavations will be sampled a rate of the three samples / 50 m² and analysed for the contaminant(s) present.

7.4 Groundwater

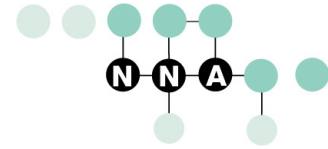
If contaminants are found, and the ES in consultation with the EPA considers it appropriate, they may nominate further sampling e.g.:

- weekly during the period of disturbance and/or
- monthly for a period of six months following completion of construction activities.

Any Groundwater investigations required will be conducted in accordance with the *Draft Guidelines for Assessment and Management of Contaminated Land in Queensland*, (DEH May 1998).

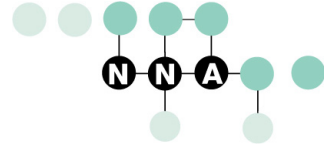
In addition receiving waters within 100 m of the disturbance may be monitored for the same contaminants if considered necessary:

- weekly during the period of disturbance
- quarterly (three monthly) for a period of six months following completion of construction activities.

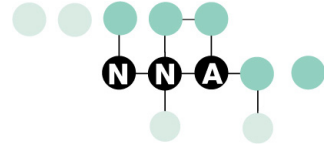


8 DEFINITIONS AND ACRONYMS

Acronym	Glossary
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
ARCANZ	Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand
AS/NZS	Australian and New Zealand Standard
ASS	Acid Sulfate Soils
Aust	Australia
CAR	Corrective Action Requests
C&D	Benign Construction/Demolition Waste
CEMP	Construction Environmental Management Plan
CLMP	Contaminated Land Management Plan
CLR	Contaminated Land Register (administered by the EPA)
CMD	Coastal Management District
DES	Department of Emergency Services
EIN	Environmental Improvement Notice
EIL	Environmental Investigation Levels
EMR	Environmental Management Register (administered by the EPA)
EO	Site Environmental Officer
EIS	Environmental Impact Statement
EPA	Queensland Government Environmental Protection Agency
ES	Environmental Contamination Specialist (consultant)
GIS	Geographical Information System
HIL	Health Based Investigation Levels
KPI	Key Performance Indicator
LinkWater	SRWPCo now trading as LinkWater and is 100 per cent owned by the Queensland Government
Mary Basin WRP	<i>Water Resource (Mary Basin) Water Resource Plan 2006</i>
MP	Management Plan
MSDS	Material Safety Data Sheet
NATA	National Association of Testing Authorities
NCR	Non-conformance Report
NEPC	National Environment Protection Councils
NNA	Northern Network Alliance



Acronym	Glossary
NPI	Northern Pipeline Interconnector
PID	Photo Ionisation Detector
PPE	Personal Protective Clothing
RAP	Remediation Action Plan
ROW	Right of Way
QA	Quality Assurance
QC	Quality Control
QESE	Quality Environmental Safety Engineering Database
SMP	Site Management Plan
SRWP Co	Southern Regional Water Pipeline Company
TCLP	Toxicity Characteristic Learning Procedure
WMS	Work Method Statement
WQMF	Water Quality Management Facility
WTP	Water Treatment Plant



9 REFERENCE DOCUMENTS

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