NORTHERN NETWORK ALLIANCE

MANAGEMENT PLAN

Contaminated Land Management Plan

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Date	Reason for Issue	Revision	Originator	Signature	Checked By	Signature	Approved By	Signature
	Issued for Review	A	Construction Environment Manager		Project Controls Manager		Alliance Manager	
	Issued for Review	B	Construction Environment Manager		Project Controls Manager		Alliance Manager	

Prepared by:

Northern Network Alliance

End of Sunridge Farm Road

Chevallum QLD 4555

PO Box 515 Nambour QLD 4560

Telephone: (07) 3811 8800

Facsimile: (07) 5456 4203

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1 INTRODUCTION

This Contaminated Land Management Plan (CLMP) is one component of the Construction Environmental Management Plan (CEMP) which provides a system and procedures to ensure that Northern Network Alliance (NNA) 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 NNA consists of the following partners:

- Linkwater
- Abigroup Contractors Pty Ltd
- McConnell Dowell Constructors (Aust) Pty Ltd
- Kellogg, Brown and Root Pty Ltd

NNA (referred to as 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

NPI 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 NPI 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 NPI project—between Landers Shute water treatment plant (WTP) and Morayfield—is due for completion by 31 December 2008.

The completed NPI (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. NPI Stage 2 will have the capacity to deliver up to 18 ML/d (under existing utilized entitlements for the Noosa Shire).

Subsequent interconnection of Stages of the NPI 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 NPI.

The key components of the NPI Stage 2 project are as follows:

- approximately 48 km of underground pipe between Noosa water treatment plant (WTP) and the termination point of NPI 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
- Cleaning and communications stations

1.2 Purpose and Scope

Linkwater is committed to conserving and enhancing the biological environment where possible for the duration of the Project while achieving positive environmental, commercial and social outcomes.

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 has been prepared to address the requirements of the applicable legislation and aims to ensure that the commitments made by the Alliance with regard to contaminated land are met.

The Queensland EPA's Environmental Management Register (EMR) and Contaminated Land register (CLR) were searched as part of the Environmental Impact Statement (EIS) to determine the status of properties along the proposed Project alignment. A search of both the CLR and EMR identified zero (0) effected properties along the proposed project alignment.

1.3 Objectives and Targets

Objectives:
- 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

Targets:
- 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 to deliver desirable 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 REGULATORY AND ADMINISTRATIVE FRAMEWORK

2.1 Licences / 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

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 *Environmental Impact Statement* for the proposed NPI has several commitments for the management of Contaminated Sites. Table 2 identifies example key commitments.

Table 1. Contaminated Sites Management Requirements/Commitments
(refer NNA EIS 2008, Appendix E for final commitments)

Document	Section	Requirement/Commitment
	3.2	Any contaminated lands identified during construction will be managed on site and in accordance with EPA standards.

3 EXISTING ENVIRONMENT

3.1 Surrounding Land Uses

Approximately two thirds of the preferred corridor makes use of an existing cleared easement maintained by Energex, or previously established by the now-defunct Gympie to Gatton gas pipeline. The existing easement is largely unrestricted by urban or residential development.

Land uses are typically limited to low-density rural residential properties. Land within the valleys has been highly modified and are typically characterised by more intensive uses, including cropping, road and rail infrastructure, urban communities, industrial uses and rural residential properties. The ridges in the project area are steep and retain a large proportion of their original vegetation.

3.2 Landforms and Soils

The Stage 2 project area takes in the eastern edge of the Blackall Range, traversing a number of ridges which extend west-east towards the coast. The main line extends in a north-south direction, commencing in the rolling hills around Lake Macdonald and descending onto the floodplain of the North Maroochy River. To the west of Eumundi, the route crosses a steep ridge adjacent to the Bruce Highway, and traverses the western edge of Yandina township onto the South Maroochy river floodplain. South of Yandina, the route crosses two high coastal ridges and the middle reaches of Petrie and Paynter creeks. The corridor rises again before descending onto the flats around Eudlo Creek and ascending steeply to connect with the Stage 1 works at Nobels Road.

The alignment from Landers Shute heading north to the Noosa WTP traverses the six main soil types (table 3).

Table 2. Summary of land resource areas along the Stage 2 route (Capelin 1987)

Location	Geology	Landform	Vegetation
Stream alluvia and flood plains	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
South of Nambour to Eudlo	Laterised Triassic to Jurassic Landsborough Sandstone	Undulating to steep low hills and hills	Blackbutt and bloodwood open forest
Southwest and northwest of Landsborough to Eudlo	Triassic to Jurassic Landsborough Sandstone	Undulating to steep hills	Blackbutt and bloodwood open forest
Between Eumundi and North Arm	Laterised Triassic rhyolite	Gentle undulating and rolling hills	Remnants of grey gum and tallowwood open forest
North of Nambour	Triassic andesite and rhyolite; diorite and tonalite intrusions	Undulating low hills	Blackbutt and grey gum open forest

Location	Geology	Landform	Vegetation
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. However, drainage works undertaken in the past—mainly as part of development for sugar cane production—may have improved the profile drainage characteristics
- **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.

3.3 Drainage and Waterways

The project area encompasses the catchment areas of the Maroochy River, also extending into a small area of the Mary River catchment. Within these two catchments, the proposed corridor traverses four principal waterway systems; South Maroochy River; North Maroochy River; Six Mile Creek; and Petrie Creek.

All surface waterways in the study area are lowland freshwaters (larger slow flowing freshwater streams and rivers below 150 m altitude) as defined by the 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.

3.4 Contaminated Land

A key issue in undertaking a trenching operation is the risk of exposing contaminated land sites. Given this, the Queensland EPA's Environmental Management Register (EMR) and Contaminated Land register (CLR) were searched to identify any associated risk sites. A search of both the CLR and EMR identified zero (0) effected properties along the proposed project alignment.

4 PROJECT 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 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.

4.1.2 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 Information

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 ARMCANZ 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 4 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 3 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	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. 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. 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.	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).
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 industry adopted procedures. All samples shall be stored in appropriate containers and transferred to a laboratory under appropriate chain of custody documentation. 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.	Environmental Specialist/ Environmental Manager / Site Superintendent	Within 48 hrs of excavation
Off-site soil disposal – low level contamination	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. If the site is contaminated a waste Disposal Permit will be required.	Superintendent	Seven days for Laboratory Results Seven days to get EPA Disposal Permit
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

Activity / Construction Item or Detail	Management Mitigation Measures	Responsibility	Timing
Off-site soil disposal of highly contaminated soil	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.	Superintendent/ Environmental Specialist	Seven days for Laboratory Results. Seven days for TCLP Results. Contact EPA within seven days
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)

6 CORRECTIVE AND PREVENTATIVE ACTIONS

6.1 Community liaison and complaint management

Complaints represent an opportunity to enhance project environmental performance. All project complaints, including those from members of the public, stakeholder groups and Government agencies, will be managed via the NNA 1800 243 998 phone number to be listed in the Inquiry and Complaints Management Procedure, contained in the Community and Stakeholder Management Plan.

Complaints from any source must be registered using the QESE complaint record section. Where the complaint is environment-related, the complaint will be investigated by the Environmental Manager or Environmental Officer in consultation with the Site Manager or delegate and action/s taken to enable satisfactory closure.

Feedback to relevant personnel will be managed by the community relations team. As required, complaint details (including type and preventative/corrective actions) will be advised to field staff via pre-start meetings, toolbox talks or the Health, Safety and Environment Committee as appropriate.

6.2 Environmental incident/emergency reporting

All project staff and subcontractor personnel shall report all environmental incidents to the Environmental Manager, although initial response may go via the Site Manager/Spread Supervisor or Environmental Officer.

6.3 Incident/emergency preparedness and response

An Incident Response Plan will be prepared for the project. This plan documents suitable incident procedures to ensure effective response in the event of an emergency (including environmental emergencies such as fire, flood and large fuel spills). Operational incidents will be covered in an Operations Incident Response Plan to be written prior to pipeline hand over to the Operations group.

The emergency procedures shall be tested on a six-monthly basis. Records are to be maintained of all site emergencies and results of emergency practice drills. The Emergency Response Controller for the project will be defined within the Incident Response Plan.

The key to effective prevention of incidents is monitoring, surveillance and training. During construction activities, inspections and preventative action to be performed by the Alliance will include:

- daily inspections of active worksites and completion of routine environmental checklists
- issue and quick close-out of NCR/EIN
- maintenance of constant supervision on site
- ongoing environmental training
- environmental audits of worksites, subcontractors and compliance issues.

Environmental and safety information on hazardous substances (e.g. Material Safety Data Sheets [MSDS]) will be available at the main site office, including information on where and how such substances are to be stored. An up-to-date list of emergency response personnel and organisations will be maintained at the main office and compounds. A list of key environmental personnel will also be included.

Specific measures will also be implemented to minimise the risk of an incident occurring due to spillage, storage of hazardous materials or fire. Further information will be detailed in the Incident Response Plan.

6.4 Incident investigation

All incidents will be documented, investigations conducted and action plans (if required) developed to ensure no repetition of the event. Where current procedures are identified as being ineffective, the CEMP and any relevant WMS will be revised by the Environmental Manager and/or Health and Safety Manager.

An environmental investigation includes the following basic elements:

- Advising the environmental authority(ies) if any notifiable pollution has occurred
- Identifying the cause and extent of the incident
- Identifying and implementing the necessary corrective action
- Identifying the personnel responsible for carrying out the corrective action
- Implementing or modifying controls necessary to avoid a repeat occurrence of the incident
- Recording any changes required to written procedures.

All personnel are required to report all incidents, as incident reporting is regarded as a valuable method of addressing shortcomings in procedures, training or equipment, and is an opportunity for improvement. It is also an offence not to report to the EPA any incident causing serious environmental harm.

6.5 Non-conformances

Non-conformances will be resolved according to the Quality Management Plan. The Environmental Manager or delegate will issue a Non-conformance Report (NCR) or an Environmental Improvement Notice (EIN) in response to inappropriate or non-conforming work methods, equipment selection, maintenance of controls or other identified concern.

In the event of a non-conformance:

- the nature of the event will be investigated by the Environmental Manager
- advice may be sought from a specialist
- monitoring may be undertaken
- the effectiveness or need for new/additional controls will be reviewed
- an appropriate preventative and corrective action will be implemented
- strategies will be identified to prevent reoccurrence
- the NCR will be closed-out
- environmental documentation/WMS will be reviewed and revised
- will be documented on QESE.

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 (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 m^2 and analysed for the contaminant(s) present.

7.4 Groundwater

In areas where new proven contaminated sites arise during construction, or sites are listed on the EMR, and where shallow groundwater is identified, the groundwater shall be monitored for contaminants previously identified at the site. Groundwater investigations will be conducted in accordance with the *Draft Guidelines for Assessment and Management of Contaminated Land in Queensland*, (DEH May 1998).

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

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

Acronyms	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
CAR	Corrective Action Requests
CLR	Contaminated Land Register (administered by the EPA)
DES	Department of Emergency Services
EIN	Environment Improvement Notice
EIS	Environmental Impact Statement (Draft) as prepared by SRWP Co. April 2006
EIL	Environmental Investigation Levels
EMP	Construction Environmental Management Plan
EMR	Environmental Management Register (administered by the EPA)
EO	Site Environmental Officer
ES	Environmental Contamination Specialist (consultant)
EPA	Queensland Government Environment Protection Agency
HIL	Health Based Investigation Levels
Linkwater	SRWPCo now trades as Linkwater, which is 100 per cent owned by the Queensland Government
NCR	Non-conformance Report
NNA	Northern Network Alliance
NPI	Northern Pipeline Interconnector
PID	Photo Ionisation Detector
PSI	
QESE	Quality Environment Safety Engineering Database
SMP	Site Management Plan
SRWP Co	Southern Regional Water Pipeline Company
WMS	Work Method Statement

9 REFERENCE DOCUMENTS

The following legislative documents and Guidelines apply to developments involving contaminated land in Queensland:

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