01 GUIDELINES FOR WATER DISCHARGE PLANNING AND OPERATION

The potential environmental and social impacts of water discharges from the NPI Stage 2 will be managed in accordance with the Guidelines for Water Discharge Planning and Operation. These guidelines have been written by the NNA for managing environmental water discharges during both construction and operation of the pipeline.

These guidelines discuss planning for water discharges, the appropriate locations for pipeline facilities and drainage works, and procedures for undertaking environmental discharges.

Planning for water discharges involves assessing the potential risks of each discharge activity, and taking steps to manage these risks. The approach that will be used by the NNA for assessing the discharge of residual water into the environment can be summarised into four activities:

1. Describe the proposed activity (discharge assessment);
2. Describe the receiving environment (site assessment);
3. Predict outcomes of the proposed activity (impact assessment); and
4. Set limits, circumstances and monitoring conditions (impact mitigation).

Table 01.1 provides a checklist of activities that will be undertaken when assessing and planning for potential water discharges from the NPI Stage 2, based on these four tasks. These tasks are based on an assessment process outlined in the Qld EPA ECOACCESS Operational Policy—Waste Water Discharge to Queensland Waters (EPA Operational Policy) used for assessing wastewater discharges from environmentally relevant activities.

Assessment and planning for potential water discharges will occur during the detailed design phase for NPI Stage 2, so that appropriate controls can be put in place during construction.

01.1 Discharge Assessment

To identify the area of impact of an overland discharge of water the end-point of the flow must be established. End-points for an unrestricted overland flow will be dictated by the natural topography and landscape features of the discharge area. In these cases the end point would generally be a low point in a catchment area, such as a watercourse, lake, dam, stormwater or other council infrastructure. Drainage works such as bunds, grading or pipes may be used to direct water to an end point if natural overland flow is undesirable.

To ascertain the area of impact from water discharges from the NPI Stage 2, the flow paths will be mapped and, if necessary, the areas surveyed to calculate the width and depth of flow. Accurate calculation of the width and depth of flow is more important when it is deemed necessary to obtain a drainage easement or other form of tenure over the flow path.

Each individual discharge from bulk water pipelines and associated infrastructure will have different water quality characteristics. The NPI Stage 2 will carry potable water; therefore the

majority of discharges will be water that has been treated to Australian Standards for drinking water.

The quality of a water discharge may be predicted based on the source water quality and the condition of the pipe at the time of the discharge activity; however, water will also be tested prior to discharge to confirm the water quality characteristics.

01.2 Site Assessment

To predict the potential impacts of a water discharge it is necessary to compare the characteristics of the discharge with the condition of the receiving environment. To do this for NPI Stage 2, the extent of the affected area will be established and the relevant characteristics described via a process of desk top and field assessments.

Flow path mapping and site inspections will be used to identify the characteristics of the discharge site that may be an issue for water drainage, and to identify any environmental values which require protection.

Any affected waterways will also be identified during the mapping and site inspection process. Potential impacts to waterways will be assessed by establishing the baseline conditions for surface waters and identifying the relevant environmental values and water quality objectives. The characteristics of waterways in the project area are discussed in Appendix L.

Baseline conditions of waterways in the project area will be established as part of a waterway monitoring program for the project. This program is discussed in Appendix L.

The environmental values and water quality objectives listed in Schedule 1 of the Environmental Protection (Water) Policy 1997 for the waterways in the NPI Stage 2 project area are:

- Maroochy River Environmental Values and Water Quality Objectives – Basin No. 141 (part), including all tributaries of the Maroochy River. March 2007.
- Mary River Environmental Values and Water Quality Objectives – Basin No. 138, including all tributaries of the Mary River. March 2007.

Table 01.1 Task list for assessing the discharge of water to the environment

Activity	Task list
1. Discharge assessment	• Ensure all reasonable and practicable measures have been used to avoid or minimise the discharge (for example: appropriate pipeline and facilities design, best practice for discharge operations, reuse/recycling opportunities)? • Identify the characteristics of the proposed discharge (quality, quantity, variability). • Identify the potential contaminants of concern in the proposed discharge. In particular, the disinfectant residual. • Describe the location and configuration of the proposed discharge. • Identify the likely or intended destination for the discharge (end point).
2. Site Assessment	• Map the flow of water from the discharge point to the end point. • Identify water bodies potentially affected by the proposed discharge. What is the capacity of the affected waters to attenuate or dilute any contaminants in the discharged water? • Does the receiving environment have the capacity to receive the discharge volume (overland flow, drainage channels, waterways, lakes and dams)? • Check government planning requirements that apply to affected water bodies (eg Ramsar, EPA Referable Wetlands, National Parks and Fish Habitat Areas). • Are the environmental values (EVs) and water quality objectives (WQOs) for these waters listed in the Environmental Protection (Water) Policy 1997 Schedule 1? (If not EVs and WQOs from the Queensland Water Quality Guidelines 2006 and ANZECC Water Quality Guidelines apply). • Consider other sources and loads of contaminants in the catchment, including future loads, and previous history (cumulative impacts). • Indentify any people or property that might be affected by the discharge. • Identify any Council infrastructure or other utilities that might be affected by the discharged water (stormwater, telecommunications). • Identify sensitive areas—the presence of sensitive biota, sensitive land uses etc. • Describe the receiving environment in relation to the contaminants and risks associated with the proposed discharge.
3. Impact assessment	• Establish an area of impact for overland water flow using flow maps. • Create a list of affected properties and identify the landholders and form of tenure. • Describe how the characteristics of the discharge might impact on the receiving environment (risk assessment). • Compare WQOs and baseline conditions for waterways. • For receiving water bodies, are WQOs met and EVs protected? If not, does the water discharge activity contribute to achieving them in the future?

Table 01.1 (continued)

Activity	Task list
4. Impact mitigation	• Specify any circumstances related to the discharge, such as timing. • Specify temporary or permanent provisions for erosion control or water treatment at the discharge site. • Specify any drainage works required. • Seek approvals for any drainage works, if required. • Negotiate site access (temporary access agreements, easements or permanent tenure) • Identify appropriate monitoring required for the discharge and the receiving environment • If there is the potential for environmental harm to occur, contact the EPA for advice.

01.3 Impact Assessment

The key environmental and social impacts to be identified and managed for water discharges are: erosion; flooding; harm to people and property caught in the flow path; and the discharge of environmental contaminants into waterways.

In planning for potential water discharges from the NPI Stage 2, the details of the proposed discharge activity and the assessment of the receiving environment will be compared to predict potential social and environmental impacts. The following considerations will be made when assessing the risks of a discharge:

- Is the flow likely to cause erosion or mobilise sediments?
- Is the flow likely to cause damage or harm to people or property?
- Is their adequate drainage for the discharge (ie is it likely to cause local flooding)?
- Will the discharge cause any water to flow across a roadway? For safety reasons, water must not be discharged across a roadway surface that is in use.
- Will any characteristics of the discharge impact on the environmental values of the affected waters? This includes aesthetic and recreational values, and other uses for the water.
- Compare the baseline conditions of any affected waterway with the WQOs defined for those waters. If WQOs are not being met, care should be taken to treat the discharge water for any characteristics that may impact the achievement of the WQOs.
- Can an affected watercourse, dam, lake, pond, or stormwater contain the volume of the flow?
- Is the discharge flow likely to case damage to stormwater infrastructure or intensify flooding?
- Can the potential impacts be mitigated with control methods that are practical for the Alliance or the operator to undertake?

Discharge locations will be reconsidered if the risk of harm to people, property or the environment is deemed unacceptable, and cannot be overcome with a design of engineering solution.

01.4 Impact Mitigation

The most effective way to minimise the impacts of water discharges is to reduce the amount of water to be discharged into the environment. This will be achieved by designing infrastructure and planning activities for the efficient use of water.

Pipeline facilities, section valves and drain-down valves on the NPI Stage 2 will be located to minimise the amount of water wastage during maintenance activities.

Every opportunity to reuse or recycle residual water from the pipeline will be explored before an environmental discharge from the pipeline is proposed. Options utilised for this project may include:

- beneficial use in construction or rehabilitation activities;
- direct reuse by third parties for irrigation;
- recycling into dams, lakes or reservoirs that are used for irrigation or industrial purposes; and
- groundwater recharge through dry stream beds or purpose built detention structures.

Site selection for pipeline facilities and drainage works on the NPI Stage 2 will be made in consideration of the environmental and social impacts of potential water discharges. By including the necessary drainage infrastructure and controls in facilities design, and establishing any land requirements for drainage during the design phase of the project, the potential impacts will be reduced or avoided.

The timing of any planned discharges will be designed to best prevent environmental and social impacts. Preferences for timing water discharges include:

- avoiding discharges during wet weather to prevent the intensification of flooding or the overloading of stormwater infrastructure;
- avoiding discharges near flowing waterways during low flow periods; and
- discharging water during warm, dry weather to maximise the opportunity for evaporation and infiltration.

For unplanned water discharges that result from systems failures at pre-designated locations, such as balance tank overflows and safety-relief valves, the best mitigation strategy is the appropriate locations of these provisions. As these locations are fixed, it will also be possible to put permanent controls in place to mitigate impacts such as erosion. Options for permanent controls used for this project include:

- gabion baskets or rock mattresses;
- rock lining for drainage channels;
- drainage pipes and bubbler pits;

- concrete headwalls; and
- detention basins.

Temporary controls for water quality or erosion can be put in place for most planned discharges at the time of the activity, so the provision of permanent controls is less important. However, these facilities should be located and designed so that it is possible to utilise temporary control measures. Temporary or portable control devices for mitigation of erosion or water treatment include:

- temporary detention basins;
- silt curtains/fences;
- silt traps;
- hopper bottomed silt removal tanks; and
- temporary pipes.

Affected landowners will be contacted prior to any discharge activity to negotiate access to the property and approval to discharge the water. If the flow path from a discharge point is required to be secured for drainage of water for the operational life of the pipeline, then an easement or other permanent form of tenure over the flow path will be obtained. These locations will be identified during the design phase of the project so that land acquisition for the pipeline includes provisions for water drainage where necessary.

References

Qld EPA ECOACCESS Operational Policy—Waste Water Discharge to Queensland Waters. Available: http://www.epa.qld.gov.au/publications?id=2272 [Accessed 15 May 2008].