Australia Pacific LNG Downstream

LNG Tank Hydrotest Management Plan

APLN-000-EN-V01-D-17999

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1. INTRODUCTION

The purpose of this management plan is to ensure that hydrotest activities are conducted in accordance with all relevant Health, Safety and Environmental (HSE) requirements.

The release of hydrotest water will be conducted in a way that protects marine water quality and the environmental values of the receiving coastal and marine ecosystems including:

- The Great Barrier Reef World Heritage Area;
- Nationally Important Wetlands (QLD021);
- Declared fish habitat – nearest located at the Fitzroy River;
- Migratory shorebird habitat;
- Water Mouse habitat; and
- The Dugong protection area.

APLNG is committed to ensuring that there are no actual or potential adverse effects on these environmental values.

Compliance with project HSE requirements will be a central component throughout the conduct of the activity and will be detailed in activity specific plans including Job Hazard Analyses (JHA).

1.1. BACKGROUND

All tanks require hydrostatic testing (hydrotesting) in accordance with American Petroleum Institute (API) Standards *620 – Design and Construction of Large Welded, Low Pressure Storage Tanks* and *625 – Tank Systems for Refrigerated Liquefied Gas*. API is recognised as industry best practice for the oil and natural gas industry to safeguard health, ensure safety, and protect the environment.

The test will demonstrate the structural integrity of the LNG tank and its anchorage, bottom insulation, and foundation components, prior to filling with liquefied natural gas. During the hydrotest, the tank is filled with water and an inspection and monitoring program is undertaken to detect potential leaks in the tanks shell, and to assess settlement of the tank's foundation. After completion, the hydrotest water is removed and the tank is thoroughly dried prior to entering into service.

1.2. ROLES AND RESPONSIBILITIES

Australia Pacific LNG is responsible for liaison with administering authorities on matters of environmental compliance, managing responses to complaints, providing notification to GAWB of additional water supply prior to each test, the supply of hydrotest water to within 300m of the tanks, the disposal of hydrotest water from a point 300m from the tank, and for obtaining environmental approvals to release hydrotest water.

The Prime Contractor is responsible for ensuring contract, legal and procedural compliance of all persons involved in these works. The Contractor and Subcontractor shall be responsible for planning and implementing the procedures detailed in this plan, and for setting out of duties.

The Contractor and Subcontractor HSE and Environmental Managers shall be responsible for reporting all incidents to Australia Pacific LNG, emergency response, HSE training, reviewing JHAs required in support of this plan, coordinating inspections and auditing systems.

Employees, involved in this work (including assigned observers) will be suitably qualified, have undergone appropriate training on matters including (but not limited to) incident and emergency response, and will be provided with competent supervision.

1.3. IMPLEMENTATION

All work shall be completed in compliance with relevant legislative, permit and procedural requirements.

1.3.1. Interface and Change Management

Any changes to process or procedure – whether planned, sudden or gradual, shall be reviewed for potential HSE hazards, prior to implementation in accordance with recognised Change Management Procedures.

1.3.2. Simultaneous Construction Management and Planning

Simultaneous construction activities will be managed via communication and barricading should such situations arise. A risk review will be performed prior to the commencement of any simultaneous work activities within the same area, and JHA's will be prepared to identify hazards and precautions to be taken.

1.3.3. Job Hazard Analysis (JHA)

JHA's will be developed in conjunction with the work crew that are directly involved with each task. Items to address in JHA's include HSE requirements for the following:

- Installation of Hydrotest piping
- Operating Hydrotest pumps
- Hydrotest Operations

1.4. SUPPORTING DOCUMENTATION

Environmental Authority (EA) Permit Number EPP600715613 (formerly PEN101701810).

Information to Support Application to Amend EA, APLN-000-EN-R01-17998.

Receiving Environment Monitoring Program APLN-000-EN-V01-D-10160.

Subcontractors Work Method Statement – LNG Tanks Hydrotest 25509-100-V30-MTD0-04267.

2. HYDROTEST PROCESS DESCRIPTION

The tanks require hydrostatic testing (hydrotesting) in accordance with American Petroleum Institute (API) Standards *620 – Design and Construction of Large Welded, Low Pressure Storage Tanks* and *625 – Tank Systems for Refrigerated Liquefied Gas*.

The test will demonstrate the structural integrity of each LNG tank and its anchorage, bottom insulation, and foundation components, prior to filling with Liquefied Natural Gas. An overview of the hydrotest process is provided in Table 1.

Table 1: Overview of Hydrotest Process

Stage	Activity
Final Preparation for Filling	All construction activities will be complete, including welding.
	Quality Assurance/Quality Control activities will be complete, including testing of welds to ensure weld integrity.
	Tank internal surfaces will be cleaned.
	A final inspection will be conducted, including all pipework and supports installed for filling.
	The fill line will be flushed if required.
Filling	The tank will be filled and visually inspected during filling.
	If any non-conformances, for example leaks, are identified, pumping will be slowed, or may cease, until addressed.
	There is no planned introduction of chemicals to the water.
Retention and testing	Settlement surveys will be undertaken during filling.
	Once the maximum fill level is reached, water will be held in the tank for approximately 24 hours for ongoing testing.
Draining	The pipework used to fill the tank will be re-orientated to allow the tank to be drained. Pipework will be flushed prior to connection if required.
	A gross pollutant filter will be fitted.
	Draining will be via gravity feed, switching to a pump once the head pressure in the tank no longer produces adequate flow.
	Once the pump no longer functions due to a low water level, a manhole will be opened and submersible pumps used.
	When submersible pumps no longer function, the remaining water will be removed with wet-vac and mops.
	Water from the lower portion of the tank will be retained for reuse on site where possible, taking into consideration the storage capacity required in sediment basins to manage the design rainfall event.
Drying	Remaining moisture will removed using fans placed on manholes and/or vents in the suspended deck.

The standard hierarchy of waste management has been taken into consideration when developing the approach for the hydrotesting activity, with the aim of reducing the volume of potable water used and subsequently released.

The hydrotest activity cannot be avoided and must be conducted to comply with API standards and to ensure public and environmental safety prior to commissioning of the LNG tank. The tanks will be filled with the minimum volume of water possible to complete the test program in accordance with API standards.

The use of potable water means that water retained from the lower portion of the tank can be reused on site where possible. A decision to retain water for reuse will be dependent on inclement weather, retaining storage capacity required in on-site sediment basins to effectively manage the design rainfall event and an assessment of scour protection (see ***Appendix 1: Checklist - Reuse / Release Assessment***).

All remaining water will be released following the completion of testing on each tank.

2.1. SCHEDULE AND DURATION

Based on the Project schedule, which may be subject to change depending on field progress, Tank A will be ready for hydrotest in July 2014 and Tank B in September 2014.

Each hydrotest will be undertaken in the minimum timeframe possible, with a maximum duration of 28 days to limit the likelihood of corrosion. Hydrotesting will be a 24 hour continuous operation. A detailed night shift plan will be prepared before commencement of the activity.

The test duration is defined by the time it takes to fill, drain and dry the tank and its internal components. Below is an estimate of the hydrotest duration.

- Target timeline - Fill Days 1-18 (18 days duration)
- Hold Day 18 (<1 day duration)
- Empty to temporary nozzle Days 19-22 (3.5 days duration)
- Pump out remaining water Days 22-23 (1.5 days duration)
- Dry Days 24-25 (2 days duration)

The fill duration is dictated by the delivery flow rate of 250m^3/hr. An increased flow rate of up to 360m^3/hr may be possible depending on site commitments during filling operations. Given that there is an assured rate of supply for filling and that head pressure and pumping from the tank will produce an initially higher discharge rate, it is expected that testing will be completed well within 28 days.

2.2. LOCATION

Hydrotesting activities will occur at the APLNG facility, Petroleum Facility Licence (PFL) 20, on Lot 3 on SP22454.

2.2.1. Release Point

Hydrotest water will be released from Outfall 3 located adjacent to the LNG tanks, either directly from the outfall or via the spillway from Sediment Basin 3. This outfall typically discharges stormwater from Sediment Basin 3 across concrete box culverts and armour rock, and into a stilling basin protected by geofabric and rock. From the stilling basin, waters percolate through a naturally occurring channel through a narrow section of intertidal mangroves and out into a 13m deep dredged berthing pocket. From here, modeling indicates that rapid mixing and dilution will occur.

2.2.2. Pipe Route

Temporary piping for filling and discharging will be installed along the ground in proximity to internal drainage lines where practicable. Road crossings will be ramped or buried to facilitate traffic movement and minimise unnecessary hazards to other work places the duration of the hydrotest.

2.3. PRELIMINARY WATER SAMPLING

To minimise the risk of corrosion, the hydrotest shall be completed within 28 days and the quality of source water will be analysed just prior to filling to ensure it complies with the requirements of API 620 and meets contractual requirements.

However in the highly unlikely event that the hydrotest extends beyond 28 days, water treatment may require consideration.

2.4. FINAL PREPARATION FOR FILLING

All construction, welding and quality assurance/control activities shall be completed. Dust and debris will be removed by sweeping and/or blowing to minimise the risk of sediments and/or gross pollutants being entrained and potentially released from the site. A final walk-through inspection will then be conducted and all contractual inspection and testing programs which are required be completed prior to hydrotesting shall be accepted and signed-off to ensure the tank is ready for closure and the commencement of filling.

The base of the tank will be sealed, although the roof and deck manholes will be opened for ventilation during the test. The fill line will be attached to the supply source and inspected to ensure it is properly supported and secured, and flushed to a scour protected point on the internal drainage system prior to connection to the tank, if required.

Appropriately bunded pumps that are validated as being fit for purpose will be placed away from sensitive receptors and fuelled in accordance with the Projects EA and CEMP requirements including but not limited to:

- All fuels will be stored in accordance with relevant Australian standards (e.g. AS1940:2004, AS3833:2007, AS3780:1994)
- Refuelling will occur in designated areas away from sensitive receptors (>30m from waters)
- Spill kits will be strategically positioned near the pumps and any fuel storage areas
- Staff will be trained in the use of spill kits and will be prepared to response to spills

Temporary lighting will be installed in critical work and inspection areas including within the tank, adjacent to the pumps and along the fill lines giving due consideration to terrestrial/marine fauna, and visual amenity requirements for any lighting near sensitive locations.

2.4.1. Safety Considerations

Detailed safety plans and procedures will be addressed in the JHA. However, the tank will be placed under load conditions for the first time during hydrotesting and certain basic requirements must be observed:

- The outer tank door sheet will be barricaded to prevent unauthorized entry.
- Only authorised personnel will be allowed in the annular space, on the boat or suspended deck as needed for inspection, monitoring and hydrotest activities. These activities require a confined space permit for access.
- Construction work will be allowed to resume inside the annular space or on the suspended deck when the tank begins draining operations. However, work may continue on the tank roof, platforms and concrete walls during testing.
- All access onto the suspended deck for monitoring purposes will be under the provisions of a confined entry procedure and the attendant safety measures.

Only when all safety provisions are in place, inspections complete, and tools available in good working order, will filling operations begin.

2.5. FILLING, RETENTION AND TESTING

Tank filling operations will commence early in the day so that initial inspections, monitoring and any corrective actions can be undertaken in daylight hours. Filling will begin after all health, safety, environment, quality and operational checklists are complete and approved.

The first pump will be started and run at low speed until water is evident at the second pump. At that point the hydrotest piping will be mostly full of water and the pump speed can be increased. The fill lines will be inspected to ensure that leaks are not present at the commencement of operations.

Radio contact will be maintained between the pump operator and observers on the suspended deck inside the tank and along the pipe routing to report any problems with the fill lines. Provided no problems occur on the external piping, the pump speed will be increased slowly. If problems are detected, pumping will slow or stop until the problems are addressed. If no problems exist, pump speeds will be increased to achieve the maximum fill rate which will be dependent on supply availability and head pressure within the tank.

Assigned observers will inspect the full length of temporary piping throughout the test to determine that all joints remain tight and safe; and pumps will be inspected and maintained to ensure they remain fit for purpose and noise and air emissions are minimised.

The water level within the tank will be checked every two hours to ensure that the minimum required volume of potable water is used, and a graph plotted to record the filling rate.

The level will be reported to the supervisor in charge so that an accurate projection can be made to determine when the required fill level is forecast to be achieved. To verify water level as it approaches maximum height it will be necessary to make a visual inspection from the suspended deck in accordance with confined space entry requirements.

When the tank is within one meter of the maximum fill height, the level will be monitored continuously from the suspended deck. Radio contact will be maintained with the pump operator and filling will be stopped when the water level reaches 18.213 meters. At that time all pumps will be shut down and all valves closed. Final settlement checks will be made on the tank and a final inspection made in accordance to the Inspection and Testing Program (ITP).

2.6. PREPARATION FOR DRAINING

Once all necessary ITP's are completed and signed off, the hydrotest fill line will be disconnected from the fill valve and the direction of valves and pumps will be changed for tank drainage. Refuelling of pumps will occur during this time as required. New sections of line may require flushing prior to connection and water will be directed to a scour protected point in the internal drainage system.

The receiving environment monitoring team will be placed on stand-by in preparation to commence sampling in response to the release. Tidal conditions will be assessed and preference will be given to commencing the release on an incoming or high tide when the stilling basin at the base of Outfall 3 is connected to the receiving environment (see ***Appendix 1: Checklist - Reuse / Release Assessment***).

When these provisions are in place, and inspected as required, draining of the tank will commence.

2.7. DRAINING

Valves will be partially opened (to reduce the risk of scour) and water will be released under gravity while all piping is inspected for leaks. The initial release of waters from the tank will be directed to sediment basin 3 (via a scour protected point for example culvert D-1) where observations can be made to validate the expectation that the discharge will not produce any visible discolouration of receiving waters and will not produce any slick or other visible or odorous evidence of oil, grease, or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter (in accordance with EA condition B4). Gross pollutant filters will be installed either on the discharge line or at Outfall 3 - Culvert G-4 in accordance with EA condition B22, to prevent the release of gross pollutants from the site.

Once the water is verified as clean, the flow will be directed to Outfall 3 (see ***Appendix 1: Checklist - Reuse / Release Assessment***).

Once head pressure in the tank produces inadequate flow, the diesel pumps will be brought on-line as required. Pump speeds will be increased slowly to minimise dynamic forces on piping.

Radio contact will be maintained between pump operators and outfall observers during this period. Observers also will be stationed along the pipe routing to report any problems with the release lines. Provided no problems occur on the external piping, the pump speed will be increased as appropriate to achieve the maximum discharge rate. If problems are detected, pumping will slow or cease until the problems are addressed.

The pumps, piping, outlet and tank will be monitored throughout discharge operations.

The discharge rate will be monitored regularly and plotted on a graph to help predict the probable completion time for discharge operations. As the water level in the LNG tank decreases and approaches the tank floor, the valve in the pump discharge line may be partially closed to reduce the flow rate and minimise pump cavitation.

There will be no need to rinse the tank during draining as potable water is being used which is expected to have <5mg/L suspended solids content and does not present a significant corrosion risk.

2.8. CLEANING AND DRYING

When the water level is below the lowest portion of the hydrotest opening, approximately 300mm from the tank floor, temporary openings will be cut in the shell plates. External pumps are expected to be turned off when the water level reaches approximately 100mm.

After verifying the internal tank atmosphere is safe, and observing the provisions of the JHA, small submersible pumps will be used to take the water level down as much as possible. Given that the source water is expected to have <5mg/L suspended solids, it is not expected that a significant amount of sediment will be present in this water. In any case, it will be directed to Sediment Basin 3 for later reuse or be placed into water trucks for immediate reuse as dust suppression depending on the weather forecast and storage capacity in the pond (see ***Appendix 1: Checklist - Reuse / Release Assessment***).

As the water level recedes hand methods will be used to transfer water to a pump, i.e. by squeegee, mop, bucket, etc and a wet/dry vacuum may be deployed. Fans will then be placed on manholes or vents in the suspended deck to blow air into the tank until all surfaces are completely dry.

3. INSPECTIONS AND MONITORING

The Contractor and Subcontractor are required to ensure all hydrotest Inspection and Testing Plans are completed, and where relevant, hold points are referred to Australia Pacific LNG.

In addition, environmental monitoring and checklists (see ***Appendix 1: Environmental Checklists)*** will be completed to ensure that all requirements of the hydrotest approval are complied with. This includes an assessment of the water quality in the initial stages of the release, likely to be to Sediment Basin 3, to confirm compliance with EA conditions B4 and B7, field verification of pH, Turbidity (NTU) and dissolved oxygen.

All instruments, equipment and measuring devices used for measuring or monitoring in accordance with this hydrotest management plan must be calibrated, appropriately operated and maintained. All analyses and tests required to be conducted under this management plan must be carried out by a laboratory that has NATA certification for such analyses and tests, unless otherwise approved by EHP (see APLN-DEHP-APLN-L-000017).

3.1. PRE-RELEASE

A detailed assessment of marine water quality in the receiving environment was conducted for the EIS (see Section 10.2.5 Water Quality), and on-going baseline monitoring has continued since 2010 in accordance with the Receiving Environment Monitoring Program (REMP) [APLN-000-EN-V01-D-10160].

The intent of the on-going monitoring program is to investigate the current condition of the receiving environment at four locations adjacent to the LNG facility and at four reference locations. To date this program has been collecting information on:

(a) Description of potentially affected receiving waters including key communities and background water quality characteristics based on monitoring data that takes into consideration any temporal variation (e.g. seasonality);

(b) Description of applicable environmental values and water quality objectives to be achieved;

(c) Relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment within which the REMP occurs; and

(d) Water quality targets within the receiving environment to be achieved, and clarification of contaminant concentrations or levels indicating adverse environmental impacts during the REMP.

REMP monitoring occurs on a two week on – two week off basis. At all of the sites physico-chemical samples are collected on both a flooding and ebbing tide during each sampling event including five replicate in-situ recordings every 0.5m throughout the water column and two replicate columns for chemical parameters approximately 0.5m below the surface. The parameters assessed as being of most significance for the hydrotest release include turbidity/suspended solids, salinity, pH, temperature and dissolved metals.

3.2. DURING AND POST RELEASE

3.2.1. Water Quality

In addition to ongoing baseline monitoring program, Australia Pacific LNG will undertake monitoring in the receiving environment coinciding with the commencement of each hydrotest release, and continuing over a two-week period.

The program will assess the following:

(a) Monitoring for any potential adverse environmental impacts caused by the release, particularly in terms of potential contaminants that may be present in the hydrotest water;

(b) Monitoring releases to ensure adequate mixing and dilution;

(c) Sampling to determine the extent of the mixing zone at various tidal phases (including vertical profile) during hydrotest releases to validate modeling estimates;

(d) Monitoring of selected toxicants including zinc and copper (likely to be present in the release water)

(e) Monitoring of selected physical chemical parameters (including turbidity, pH, dissolved oxygen saturation, conductivity, temperature) that would assist in quantifying the mixing and dilution of the hydrotest water;

(f) The locations of monitoring points including monitoring transects away from the outfall of the designated release point for hydrotest water as well as control locations;

(g) The sampling depths;

(h) The frequency or scheduling of sampling and analysis;

(i) Any historical datasets to be relied upon;

(j) Description of the statistical basis on which conclusions are drawn; and

(k) Any spatial and temporal controls to exclude potential confounding factors.

The quality of the receiving waters will be monitored at the locations specified in the Environmental Authority.

This program has been developed to monitor and record the effects of the release of contaminants on the receiving environment whilst contaminants are being discharged, with the aims of identifying and describing the extent of any unlikely adverse impacts to local environmental values, and monitoring any changes in the receiving water quality.

3.2.2. Outfall Condition

Although the release of tank hydrotest water is not expected to impact the condition of the Outfall in any way, outfall monitoring, typically undertaken for stormwater releases, will be undertaken to assess potential impacts through visual inspection and photographic logs (see ***Appendix 1: Checklist – Outfall Condition Monitoring***)

In the unlikely event that impacts are observed, a Trigger Action Response Plan will be implemented in consultation with EHP.

Monitoring of the stilling basin will be conducted intensively during the initial release, and then periodically throughout the test period.

3.3. CUMULATIVE IMPACTS

APLNG will continue to monitor the marine environment through its receiving environment monitoring program, and will continue to work with GPC and the other project proponents in Port-wide water quality, marine mammal and turtle monitoring programs.

3.4. REPORTING

In accordance with EA Condition B32, a report outlining the findings of the receiving environment and outfall monitoring program, including all monitoring results and interpretations will be prepared and submitted in writing to the administering authority by 30 June the following year. This will include an assessment of background water quality, any detected impact associated with the release for those contaminants monitored and the suitability of adopted guideline values to protect environmental values.

4. INCIDENT AND EMERGENCY MANAGEMENT

APLNG will ensure that all regulatory notifications are made in accordance with the Environmental Authority, namely Schedule I – Notification requirements.

Complaints will be managed in accordance with APLNG's Stakeholder Engagement Strategy and EA Schedule H – Community.

Emergency Response will be conducted in accordance with the Contractors Emergency Preparedness and Response Plan, Document Number: 25509-100-GPP-GHX-00003.

5. OVERVIEW OF MEASURES TO PROTECT ENVIRONMENTAL VALUES

Potential impacts from hydrotesting were assessed to ensure the activity does not impact on environmental values. A number of hazards were identified for which management actions and control measures are already addressed in the overarching Project CEMP and in site procedures. For the remaining hazards specific management actions have been included in this Management Plan to ensure all risks are reduced to a level that is 'as low as reasonably practicable'.

Table 2 presents an overview of the identified hazards, relevant EA conditions, management actions and residual risk levels for each.

Table 2: Environmental Risk Assessment

Value	Hazard	Consequence	Likelihood	Existing EA Condition, CEMP Protection Objective - Management Action	Risk Ranking
Air	Air emissions from pumps causing nuisance	1	2	A4, C1, Minimise impacts on ambient air quality, Ensure equipment is fit for service and maintained to minimise emissions.	Low
Noise	Noise emissions from pumps/fans causing nuisance	1	2	A4, D1, Minimise excessive noise and vibration – Ensure equipment is fit for service and maintained to minimise emissions.	Low
Lighting and Visual Amenity	Lighting during 24 hour operations causing disturbance to native fauna	2	2	F11, Utilise a sensitive lighting approach – Comply with terrestrial/marine fauna, and visual amenity management requirements for lighting.	Low
Land	Contamination events/spills – Eg. Refueling diesel pumps	2	3	A4, A26-27, F25-F27, No contamination of soils from construction of the LNG facility - Comply with land management requirements for spill prevention and control.	Low
	Scouring of sediment basin when waters directed there	1	2	B18-19 & B24, Limit soil erosion and mobilisation of sediments – Direct waters to scour protected point, eg culverts.	Low
	Leaks from fill/release line	1	3	B1 & F1, Inspect line prior to and during test.	Low
Coastal and Marine Ecosystems / Water Quality	Bacterial growth – microbiologically induced corrosion within the tank	3	1	B1, B3-5, & B27-30, Minimise impacts on the water of Port Curtis – Use potable water, complete hydrotest within 28days.	Low
	Entrainment of sediment/gross pollutants from fill/discharge line	2	2	B22, Minimise wastes or other contaminants exported from site – Outlet filters will be installed to prevent the release of gross pollutants from the site; fill/discharge lines flushed prior to use to confirm cleanliness.	Low
	Release water quality	3	2	B1, B3-5, Minimise impacts on the water of Port Curtis – Worst-case hydrotest release water quality assessed. Implement REMP.	*Low-Medium
	Dilution and mixing of release waters	3	2	B1, B3-5, Minimise impacts on the water of Port Curtis – Worst-case dispersion modelling completed. Implement REMP.	*Low-Medium
	Impact to organisms within stilling basin	2	3	B1, B3-5, Minimise impacts on the water of Port Curtis – Assess tide prior to release. Monitor.	Low
	Ecological impact in the receiving environment	3	2	B1, B3-5, Minimise impacts on the water of Port Curtis – Ecotoxicity review completed. Implement REMP.	*Low-Medium
	Scouring of outfall and/or immediate receiving environment	3	1	B23-24, Limit soil erosion and mobilisation of sediments – Assessment of outfall design completed. Implement outfall monitoring.	Low
Waste	Use of natural resources	1	4	Minimise waste generated from the site – Hydrotest water will be reused where practicable; monitor fill volume, direct waters to sediment basin 3 for reuse where assessed as appropriate.	Low

**** Risk Ranking Low-Medium** = No further mitigation required where controls can be verified as functional, i.e. through monitoring.*

Hydrotest activities will be conducted in line with the work methodology described in Section 2 and monitored as detailed with Section 3, to ensure that all relevant Health, Safety and Environmental (HSE) requirements are met and that marine water quality and the environmental values of the receiving coastal and marine ecosystems are protected.

Appendix 1: Example Environmental Checklists

CHECKLIST - *Reuse / Release Assessment*

Date: **Time:**

This form is used to assess, confirm and approve the diversion of hydrotest release waters to Sediment Basin 3 and/or Outfall 3 at the Australia Pacific LNG site.

Note: Signoff can only occur if a joint APLNG and Bechtel Readiness Review has been conducted.

Releases to Sediment Basin 3			
Scour protection:	**Y**	**N**	**Comments**
Adequate or controls agreed and installed			
Sediment basin 3 capacity: *[Attach photograph]*			
Near empty			
Retaining water from recent rainfall			
Review of rainfall forecast: *[Attach printout from http://www.bom.gov.au]*			
No rainfall forecast			
≥60% probability of ≥5mm rainfall over next 7 days.			
Releases to Outfall 3			
Tidal condition of stilling basin assessed *Note: preference incoming or high tide.* *[Attach photograph]*			
Evidence of discolouration, gross pollutants, visible sheen, etc *(EA condition B3) [Attach photograph]*			
Joint APLNG and Bechtel readiness review completed. *[Attach attendance register]*			
In-situ water quality monitoring data for pH, NTU and DO reviewed and ok *[Attach field sheet]*			
Water quality meter calibration record *[Attach]*			

Approvals:

Bechtel Name: **Signature:** **Dated:**

Actions/Comments:

APLNG Name: **Signature:** **Dated:**

Actions Comments:

CHECKLIST - *Outfall Condition Monitoring*		
Date: **Time:** **Inspected by:**		
Outfall: 3 **Tide Conditions:**		
Photograph taken ☐		
ECOLOGICAL INSPECTION ITEM	**CHECKED**	**COMMENTS**
Evidence of marine fauna impacts. *Note nature and depth.*		
Evidence of marine flora impacts. *Note nature and extent.*		
EROSION INSPECTION ITEM	**CHECKED**	**COMMENTS**
Development of Channels. *Note approximate dimensions (width/depth) and provide sketch.*		
Sheet Erosion. *Note approximate depth and extent and provide sketch.*		
Scour around mangrove trunks. *Note depth and extent.*		
Approximate depth and extent of flow. *Provide sketch with measurements*.		
Damage to Mangroves. *Note nature of damage with approximate percentage affected.*		
Damage to the outfall such as displacement of the armour rock or tearing/loss of the geotextile underlay.		
WATER QUALITY INSPECTION ITEM	**CHECKED**	**COMMENTS**
Gross pollutant filter in place		
No evidence of discolouration, gross pollutants, visible sheen, etc *(EA condition B3)*		
Comments/Actions:		
Signed: **Dated:**		