Purpose

This document reviews the Company’s compliance against adopted international standards and guidelines.

The Table below:

- summarises key requirements of adopted international and EC standards,
- compares these with the current requirements applied to the Project,
- provides an overview of monitoring programmes, considering the adopted international and EC Standards, TEO-C and EMP, and
- provides a Comment stating the extent of compliance with the adopted international and EC Standards.

Who is this for?

This document supports the Asset/Activity HSE Managers and Environmental Specialists to determine compliance, maintain internal standards and specifications, and advise Asset/Activity Managers on relevant requirements.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Issue/Item</th>
<th>International Standards</th>
<th>EC standards</th>
<th>Current requirements applied to Project</th>
<th>Monitoring overview</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Discharge of treated sewage effluent (LNG / OET)</td>
<td>General Environmental, Health and Safety Guidelines (2007) IFC, Liquefied Natural Gas (LNG) Facilities (IFC, April 30, 2007)</td>
<td>EC Directive concerning urban waste water treatment (91/271/EEC):</td>
<td>General requirements related to installed facilities which are described in Water Use Standard, Appendix 7. LNG / OET plant has four discharges (three to sea and one on land). Every discharge to sea has individually calculated allowable discharge norm (ADN) which ensure compliance with maximum permissible concentration in the receiving environment. Drainage systems collect all oil contaminated water for further on-site treatment. Separators and storm containment basins are provided and maintained. No storm drainage catch basins discharge directly into surface waters. LNG plant applies air cooling for main process (not cooling water).</td>
<td><strong>Parameter</strong></td>
<td>ETF nitrogen limit relates to “Ammonia Nitrogen” only, which is consistent with the parameter applicable in the WB PPAH (1998) at time of Project Design. The Project limit specified is 14.36 mg/L, which exceeds the 1998 WB PPAH limit of 10 mg/L which was applicable at time of Project Design. However the actual concentrations discharged are below the WB PPAH value. Hence, in practice the Project ETF nitrogen complies with the adopted standards applicable at the time of design. With comply with limits, with the exception of the above limit. Although the approved limit (marked *) for Fire Pond is higher than the IFC indicative value, the actual concentrations discharged are below the IFC indicative value. Monitoring programmes comply, with the exception of COD which is excluded as RF regulations do not stipulate COD for sanitary wastewater discharges to Fishery Waters. This is acceptable in accordance with IFC requirements which accept compliance with national standards.</td>
</tr>
</tbody>
</table>

| | | | | | Location | Frequency | |
| | | | | | For discharge from temporary Effluent Treatment Facility (ETF) (Outlet 4) | | |
| | | | | | BOD, Oil and grease, TSS, Ammonia nitrogen, Total phosphorus | 1) before/after ETF | 1) quarterly, 2) monthly, 3) monthly in the ice free period |
| | | | | | BOD, Oil and grease, TSS, Ammonia nitrogen, Total phosphorus | 1) mix in the sea pipe before discharge, 2) point of discharge from sea pipe | 1) monthly, 2) monthly in the ice free period |
| | | | | | Coliform bacteria | 1) before/after ETF | quarterly |
| | | | | | pH | before/after ETF | quarterly |
| | | | | | NB: Synthetic surfactants | Three points in the sea in control line (250 m from discharge) | Monthly in the ice free period |
| | | | | | Organoleptic properties | Three points in the sea in control line (250 m from discharge) | Monthly in the ice free period |
| | | | | | pH | before/after STP | quarterly |
| | | | | | Nitrate | after STP | quarterly |
| | | | | | BOD, Oil and grease, TSS | 1) before discharge | 1) quarterly, 2) monthly, 3) monthly in the ice free period |
| | | | | | pH | before/after STP | quarterly |
| | | | | | Organoleptic properties | Three points in the sea in control line (250 m from discharge) | Quarterly in the ice free period |
| | | | | | Total count of coliform | before discharge | Monthly |
| | | | | | Thermo tolerant coil | before discharge | Monthly |
| | | | | | Temperature | before discharge | Monthly |
| | | | | | Dissolved Oxygen | before discharge | Monthly |

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Document History

Authorizer: A.Galyev, Custodian: A.Marchenko

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<table>
<thead>
<tr>
<th>Location</th>
<th>Parameter</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNG Jetty, Materials Offloading Facility (MOF), Tanker Loading Unit (TLU)</td>
<td>Wind speed, direction</td>
<td>Daily</td>
</tr>
<tr>
<td></td>
<td>Visual inspection (turbidity, foam, oil sheen, litter, floating material)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organoleptic properties</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Temperature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turbidity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Visual (oil sheen)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TSS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydrocarbons</td>
<td></td>
</tr>
<tr>
<td>LNG Jetty, MOF</td>
<td>Depth</td>
<td>Quarterly (ice free season)</td>
</tr>
<tr>
<td></td>
<td>Direction/velocity current</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dissolved oxygen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ammonia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>nitrite</td>
<td></td>
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<tr>
<td></td>
<td>nitrate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>phosphate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ba, Cd, Cr, Cu, Fe, Al, Hg, Pb, Zn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>phenols</td>
<td></td>
</tr>
<tr>
<td></td>
<td>synthetic surfactants</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Visual inspections</td>
<td></td>
</tr>
</tbody>
</table>

2. Ship wastewater in the Port Prigorodnoye

**Environmental, Health, and Safety Guidelines for Ports, Harbors, and Terminals (IFC, April 30, 2007)**

Port operators should provide collection, storage, and transfer and / or treatment services, and facilities of sufficient capacity and type for all wastewater generated by vessels at the port in accordance with MARPOL and national regulations. Oily waste and wastewater should be collected in barges, vehicles, or central collection systems and storage tanks. The capacity of oily waste collection should be established based on applicable MARPOL provisions. Sewage from ships should be collected and treated onsite or off-site according to the recommendations provided in the General EHS Guidelines (see above).

N/A The LNG terminal or TLU has no facilities for receiving any oily residues. No discharges are accepted. As required in the TEOC, all overboard discharge valves are isolated closed and sealed, and all deck scuppers plugged, while the export tanker is moored to the LNG terminal or TLU.

Sakhalin Energy does not permit any discharges from ships moored at the LNG or TLU. Protection of the environment and human health is therefore achieved without the need for the collection or treatment facilities stated in IFC guidelines.

3. Treated wastewater discharge from the OPF site for produced water and mixed treated water (sewage, storm water)

**Environmental, Health, and Safety Guidelines for Onshore Oil and Gas Development (IFC, April 30, 2007)**

Produced water disposal may be injected into reservoir to enhance oil recovery or injected into a dedicated disposal well, drilled to a suitable receiving subsurface geological formation. Produced water discharges to surface waters or to land should be the last option considered and only if there is no other option available.

Storm water runoff should be treated through an oil/water separation system able to achieve the following parameters according to the General Environmental, Health and Safety Guidelines (2007) IFC.

N/A Produced/process waters are discharged to dedicated injection wells. Zero discharge of produced waters to surface waters. Zero discharge of cooling waters. All sewage effluent and storm water after treatment is discharged to land and requirements were specified in permits including the following parameter relating to storm water.

Discharge limits for storm water runoff

Oil products 0.12 mg/l

N/A
Where land is used as part of the treatment system, treatment to meet applicable national or local standards for sanitary wastewater discharges is required.

### 4. Produced water (relevant to platforms only)

**Environmental, Health, and Safety Guidelines for Offshore Oil and Gas Development (IFC, April 30, 2007)**

Produced water should be evaluated and integrated into production design. These alternatives may include injection along with seawater for reservoir pressure maintenance, injection into a suitable offshore disposal well, or export to shore with produced hydrocarbons for treatment and disposal. If none of these alternatives are technically or financially feasible, produced water should be treated for lowering to:

- Oil Products daily average: 42 mg/l
- Oil Products monthly average: 29 mg/l

All produced water is re-injected into the production reservoirs.

### 5. Drilling Fluids (relevant to platforms only)

**Environmental, Health, and Safety Guidelines for Offshore Oil and Gas Development (IFC, April 30, 2007)**

Use of systems with diesel-based drilling fluids is not considered currently as a good practice for offshore drilling and should be avoided.

All oily water / wastewater from the platforms is re-injected. The platform drainage system is designed to collect all oily effluents and to re-inject these into special wells. There is no discharge of oily water from the platforms into the sea.

### 6. Produced sand (relevant to platforms only)

**Environmental, Health, and Safety Guidelines for Offshore Oil and Gas Development (IFC, April 30, 2007)**

Discharge to the sea is not considered to be a current good practice, recommended to re-inject or take ashore. Discharge into the sea is possible only on condition that oil concentration is lower than 1% of dry sand weight.

Produced sand is collected and transported onshore for disposal.

### 7. Cooling water (Platforms only)

**Environmental, Health, and Safety Guidelines for Offshore Oil and Gas Development (IFC, April 30, 2007)**

The effluent should result in a temperature increase of no more than 3°C at the edge of the zone where initiation mixing and dilution take place. Where the zone is not defined, use 100 meters from the point of discharge.

MARPOL 73/78 doesn’t set limits for containments in cooling water. The Resolution MEPC.159 (55) adopted on 13 October 2006 - Revised Guidelines on Implementation of Eluent Standards and Performance Tests for Sewage Treatment Plants apply to sewage treatment plants installed on board on or after 1 January 2010 includes a requirement that best technical practice is used to keep the chlorine residual to below 0.5mg/l.

The zone is defined at 250m and at this perimeter the temperature increase falls within these guidelines. Lun-A and PA-B platforms use sodium hypochlorite for preventing biofouling of sea water cooling systems. Permitted maximum discharge concentrations for sodium hypochlorite are 0.2 mg/l for Lun-A and 0.31 mg/l for PA-B.

### 8. Treated Waste Water Discharge from the Lun-A, PA-A and PA-B platforms. Exclude produced water (see section #5 below) and cooling water (see section #10 below)

**Environmental, Health, and Safety Guidelines for Offshore Oil and Gas Development (IFC, April 30, 2007)**

Deck drainage water should be routed to separate drainage system on offshore facilities. All process areas should be burred to ensure drainage water flows into the closed drainage system.

Bilge waters from machinery spaces should be routed to the facility closed drainage system. Waters (gray and black water from showers, toilets and kitchen facilities, bilge water, deck drainage, storage displacement water) should be treated before discharge for compliance with MARPOL 73/78:

- The effluent shall not produce visible floating solids in, nor cause discoloration of the surrounding water
- Oil/grease is 15 mg/l

The platform operations are designed for zero discharge of hydrocarbons into the sea. All wastewater containing oily products will be re-injected. The platform’s open drains system is designed to collect all spilled oily and chemical products and to re-inject these effluents. There is no discharge of oily water including produced water into the sea.

Lun-A and PA-B platforms use ultraviolet as a sterilisation medium.

Sewage treatment systems of the platforms have International Sewage Pollution Prevention Certificates. Existing treatment plants were installed before 1st January 2007.

- PA-A northern sluice
- PA-A eastern sluice
- PA-A western sluice (final treated effluent from grey water and sewage treatment plant)

**Table:**

<table>
<thead>
<tr>
<th>Location</th>
<th>Parameter</th>
<th>Frequency</th>
<th>Comply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lun-A northern sluice</td>
<td>Hydrocarbons TSS Temperature</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>PA-A eastern sluice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA-A western sluice</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- PA-A eastern sluice (conditioned clean water from desalination plants, power gen cooling systems)
- PA-A western sluice (final treated effluent from grey water and sewage treatment plant)

**Note:**

- Existing treatment plants were installed before 1st January 2007.
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Condition</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermotolerant coliforms should not exceed 100 coliforms/100 ml.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSS no more than 35 mg/l plus x mg/l, where x is TSS for flushing water (if using).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOD5 – 25 mg/l.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COD – 125 mg/l.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH – 6 – 8.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requirements shown above are primarily applicable to discharges in off-shore locations (e.g. greater than 12 nautical miles from shore). According to MARPOL 73/78 discharge water quality to near-shore waters should be established on a case-specific basis taking into account the environmental sensitivities and assimilative capacity of receiving waters.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment system should have International Sewage Pollution Prevention Certificate.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

January 2010. MARPOL 73/78 doesn’t set the regulation for the level of contaminants in sewage water after treatment for STPs older than those installed after January 1, 2010, excluding oil products. Treated wastewater discharges must meet Water Use Decision conditions, allowable discharge norms and established wastewater standards. These are:

- Oil products daily average: 1.4 mg/l for LUN-A and PA-B
- Oil products daily average: 1.08 mg/l for PA-A

Requirements shown above are primarily applicable to discharges in off-shore locations (e.g. greater than 12 nautical miles from shore). According to MARPOL 73/78 discharge water quality to near-shore waters should be established on a case-specific basis taking into account the environmental sensitivities and assimilative capacity of receiving waters.

| Control Sections 250m from Outlet 1 PA-B, LUN-A (three test points and one control point) | TSS, Hydrocarbons, BOD5, COD, ammonia nitrogen, phenols, organoleptic properties, dissolved oxygen, pH, temperature, coli-index, Total coliform, biogens | Monthly (in ice free period and under favourable meteorological circumstances) |
| Control Sections 250m from Outlet 2 PA-B, LUN-A and PA-A western sluice (three test points and one control point) | Suspended solids, hydrocarbons, BOD5, ammonia nitrogen, nitrite, nitrate, phosphates, synthetic surfactants, phenols, organoleptic properties, dissolved oxygen, pH, temperature, coli-index, Total coliform, biogens | Monthly (in ice free period and under favourable meteorological circumstances) |
| Sea water intake TSS, Hydrocarbons | Monthly |

9. Quality of drinking water (at all project sites) | WHO guidelines for drinking water quality. | N/A | The Project adopts the WHO guidelines for drinking water quality. | Drinking water quality is monitored under the separate Sanitary Monitoring Program, as described in the HSE Monitoring Overview. | Comply |

10. Storm water effluent (Offshore sites only) | Environmental, Health, and Safety Guidelines for Onshore Oil and Gas Development (IFC, April 30, 2007) | N/A | General requirements relating to installed facilities are described in Water Use Standard, Appendix 7. Storm water accumulating in plant operating areas or tank farms is collected and discharged only after receiving appropriate treatment, or verification that it meets water quality requirements without treatment. Separators of baffle type are used in storm water drainage. Wastewater discharges must meet Water Use Decision conditions. Maximum permissible discharge was calculated in accordance with the allowable discharge norm approved by Russian environmental authorities. For discharge on land wastewater must meet maximum permissible discharge limits on the land approved by Russia environmental authorities. For discharges of storm water on land after Pipeline Maintenance Depots sewage treatment plants, the upper oil concentration is 0.11 mg/l and TSS is 18.88 mg/l. | Monitoring programmes described in other rows (OPF, Onshore Pipelines, LNG, and Accommodation). | Comply |
11. Water after hydraulic testing of the pipeline systems

**OFFSHORE PIPELINES**

Environmental, Health and Safety Guidelines, OFFSHORE OIL AND GAS DEVELOPMENT, table 1

- Should be sent to shore for treatment and disposal.
- Discharge offshore following environmental risk analysis.
- Reduce use of chemicals.
- Discharge into shallow coastal waters should be avoided.

**ONSHORE PIPELINES**

Environmental, Health and Safety Guidelines, ONSHORE OIL AND GAS DEVELOPMENT, table 1

For discharge to surface waters or to land:
- Total hydrocarbon content: 10 mg/L
- pH: 6 - 9
- BOD: 25 mg/L
- COD: 125 mg/L
- TS: 35 mg/L
- Phenols: 0.5 mg/L
- Sulfides: 1 mg/L
- Heavy metals (total): 5 mg/L
- Chlorides: 600 mg/L (average), 1200 mg/L (maximum)

12. Non-water based muds and cuttings

**Environmental, Health and Safety Guidelines, OFFSHORE OIL AND GAS DEVELOPMENT, table 1**

- No discharge to sea allowed for drill fluids.
- Drilled cuttings - re-inject or ship-to-shore, no discharge to sea except:
  - Oil concentration lower than 1% by weight on dry cuttings.
  - For stock barite use for cuttings see section #13.
  - Discharge via a caisson at least 15 m below sea surface.

13. Water based muds and cuttings

**Environmental, Health and Safety Guidelines, OFFSHORE OIL AND GAS DEVELOPMENT, table 1**

- No discharge allowed for fluids except in compliance with 96 hr. LC-50 of SPP-3% vol. toxicity test first for drilling fluids or alternatively testing based on standard toxicity assessment species (preferably site-specific species). Discharge via a caisson at least 15 m below the surface.
- For stock barite use for cuttings see next section #13.
- Maximum chloride concentration must be less than four times ambient concentration of fresh or brackish receiving water.

14. Additives and chemicals

**Environmental, Health and Safety Guidelines, OFFSHORE OIL AND GAS DEVELOPMENT, table 1**

- No limitation except toxicity testing of chemicals for hazards.
- Barite used will meet: Hg<1 mg/kg and Cd <3 mg/kg dry weight (Total).
- Products known or suspected to cause taint, endocrine disruption or contain heavy metals will be avoided.

15. Onshore Pipelines - Booster Station 2 (BS2), Pipeline Maintenance Depots (PMDs), Camps

**General Environmental, Health and Safety Guidelines (2007) PC**

The quality of treated process wastewater, wastewater from utility operations or storm water discharged on land, including wetlands, should be established based on local regulatory requirements. Storm water runoff should be treated through an oil/water separation system able to achieve an oil and grease...
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Location</th>
<th>Unit(s)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>LNG accommodation - discharge in Korsakovka river</td>
<td>mg/l</td>
<td>monthly</td>
</tr>
<tr>
<td>COD</td>
<td>LNG accommodation - discharge in Korsakovka river</td>
<td>mg/l</td>
<td>monthly</td>
</tr>
<tr>
<td>Oil and grease</td>
<td>Total phosphorus</td>
<td>mg/l</td>
<td>1) three times in month, 2) monthly</td>
</tr>
<tr>
<td>TSS</td>
<td>Total phosphorus</td>
<td>mg/l</td>
<td>1) three times in month, 2) monthly</td>
</tr>
<tr>
<td>Ammonia nitrogen</td>
<td>Coliform bacteria</td>
<td>MPN/100 ml</td>
<td>1) three times in month, 2) monthly</td>
</tr>
<tr>
<td>Total phosphorus</td>
<td>Coliform bacteria</td>
<td>MPN/100 ml</td>
<td>1) three times in month, 2) monthly</td>
</tr>
</tbody>
</table>

**Environmental, Health, and Safety Guidelines for Onshore Oil and Gas Development (IFC, April 30, 2007)**

**General Environmental, Health and Safety Guidelines (2007) IFC, table 1.3.1 Indicative Values for Treated Sanitary Sewage Discharge**

<table>
<thead>
<tr>
<th>Location</th>
<th>Unit(s)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNG accommodation - discharge in Korsakovka river</td>
<td>BOD</td>
<td>mg/l</td>
</tr>
<tr>
<td>LNG accommodation - discharge in Korsakovka river</td>
<td>COD</td>
<td>mg/l</td>
</tr>
<tr>
<td>Zima accommodation - discharge in Zima river</td>
<td>BOD</td>
<td>mg/l</td>
</tr>
<tr>
<td>Zima accommodation - discharge in Zima river</td>
<td>COD</td>
<td>mg/l</td>
</tr>
<tr>
<td>Zima accommodation - discharge in Pravy creek, at point of discharge</td>
<td>TSS</td>
<td>mg/l</td>
</tr>
</tbody>
</table>

**Storm water runoff** should be treated through an oil/water separation system able to achieve oil and grease concentration of 10 mg/l.

<table>
<thead>
<tr>
<th>Location</th>
<th>Unit(s)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zima accommodation - storm water discharge in Pravy creek</td>
<td>Petroleum hydrocarbons</td>
<td>mg/l</td>
</tr>
</tbody>
</table>

**Standard applicable at time of Design**

**World Bank: PPAH/Onshore Oil and Gas Guidelines (1998)**

**General environmental guidelines, Table 4.**

<table>
<thead>
<tr>
<th>Location</th>
<th>Unit(s)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNG accommodation - discharge in Korsakovka river</td>
<td>BOD</td>
<td>mg/l</td>
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<tr>
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<td>mg/l</td>
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<td>BOD</td>
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<tr>
<td>Zima accommodation - discharge in Zima river</td>
<td>COD</td>
<td>mg/l</td>
</tr>
<tr>
<td>Zima accommodation - storm water discharge in Pravy creek</td>
<td>TSS</td>
<td>mg/l</td>
</tr>
</tbody>
</table>

**Comply with limits (noting also the differences in nitrogen limits as per description in Row 1).**

**Monitoring programmes comply, with the exception of COD which is excluded as RF regulations do not stipulate COD for sanitary wastewater discharges to Fishery Waters. This is acceptable in accordance with IFC requirements which accept compliance with national standards.**

**EC Directive concerning urban waste water treatment (91/271/EEC):**

- **BOD** at 20°C: 25 mg l O₂
- **COD**: 125 mg l O₂
- **TSS**: 60 mg l
- **Ammonia nitrogen**
- **Total phosphorus**: 0.4
- **Coliform bacteria**: < 100 MPN/100 ml

**Units in mg/l except pH**

- **pH**
- **BOD**
- **COD**
- **Oil and grease**
- **TSS**
- **Total nitrogen**
- **Total phosphorus**
- **Coliform bacteria**: < 400 MPN/100 ml

**General Environmental, Health and Safety Guidelines (2007) IFC, table 1.3.1 Indicative Values for Treated Sanitary Sewage Discharge**

**Treated wastewater discharges must meet conditions of water use Decision, in accordance with the allowable discharge norm for fishery value river, as per tables below.**

**Units in mg/l except pH**

- **pH**
- **BODfull**
- **Oil and grease**
- **TSS**
- **Ammonia nitrogen**
- **Nitrite nitrogen**
- **Nitrate nitrogen**
- **Iron**
- **Copper**
- **Zinc**
- **Hydrocarbons**
- **Synthetic surfactants**
- **Phenols**
- **Phosphates**
- **Free chlorine**
- **pH**
- **Dissolved oxygen**
- **Organoleptic properties**
- **Temperature**
- **Coliphage count**

**Location**

**Parameter**

- **Location**
- **Unit(s)**
- **Frequency**

**World Bank: PPAH/Onshore Oil and Gas Guidelines (1998)**

**General environmental guidelines, Table 4.**

**Storm water runoff** should be treated through an oil/water separation system able to achieve oil and grease concentration of 10 mg/l.

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**Units in mg/l except pH**

- **pH**
- **BOD**
- **COD**
- **Oil and grease**
- **TSS**
- **Total nitrogen**
- **Total phosphorus**
- **Coliform bacteria**: < 400 MPN/100 ml

**General Environmental, Health and Safety Guidelines (2007) IFC, table 1.3.1 Indicative Values for Treated Sanitary Sewage Discharge**

**Treated wastewater discharges must meet conditions of water use Decision, in accordance with the allowable discharge norm for fishery value river, as per tables below.**

**Units in mg/l except pH**

- **pH**
- **BODfull**
- **Oil and grease**
- **TSS**
- **Ammonia nitrogen**
- **Nitrite nitrogen**
- **Nitrate nitrogen**
- **Iron**
- **Copper**
- **Zinc**
- **Hydrocarbons**
- **Synthetic surfactants**
- **Phenols**
- **Phosphates**
- **Free chlorine**
- **pH**
- **Dissolved oxygen**
- **Organoleptic properties**
- **Temperature**
- **Coliphage count**

**Location**

**Parameter**

- **Location**
- **Unit(s)**
- **Frequency**

**World Bank: PPAH/Onshore Oil and Gas Guidelines (1998)**

**General environmental guidelines, Table 4.**

**Storm water runoff** should be treated through an oil/water separation system able to achieve oil and grease concentration of 10 mg/l.

**EC Directive concerning urban waste water treatment (91/271/EEC):**

- **BOD** at 20°C: 25 mg l O₂
- **COD**: 125 mg l O₂
- **TSS**: 60 mg l
- **Ammonia nitrogen**
- **Total phosphorus**: 0.4
- **Coliform bacteria**: < 100 MPN/100 ml

**Units in mg/l except pH**

- **pH**
- **BOD**
- **COD**
- **Oil and grease**
- **TSS**
- **Total nitrogen**
- **Total phosphorus**
- **Coliform bacteria**: < 400 MPN/100 ml