SECTION 8:
CONTINGENCY PLANNING

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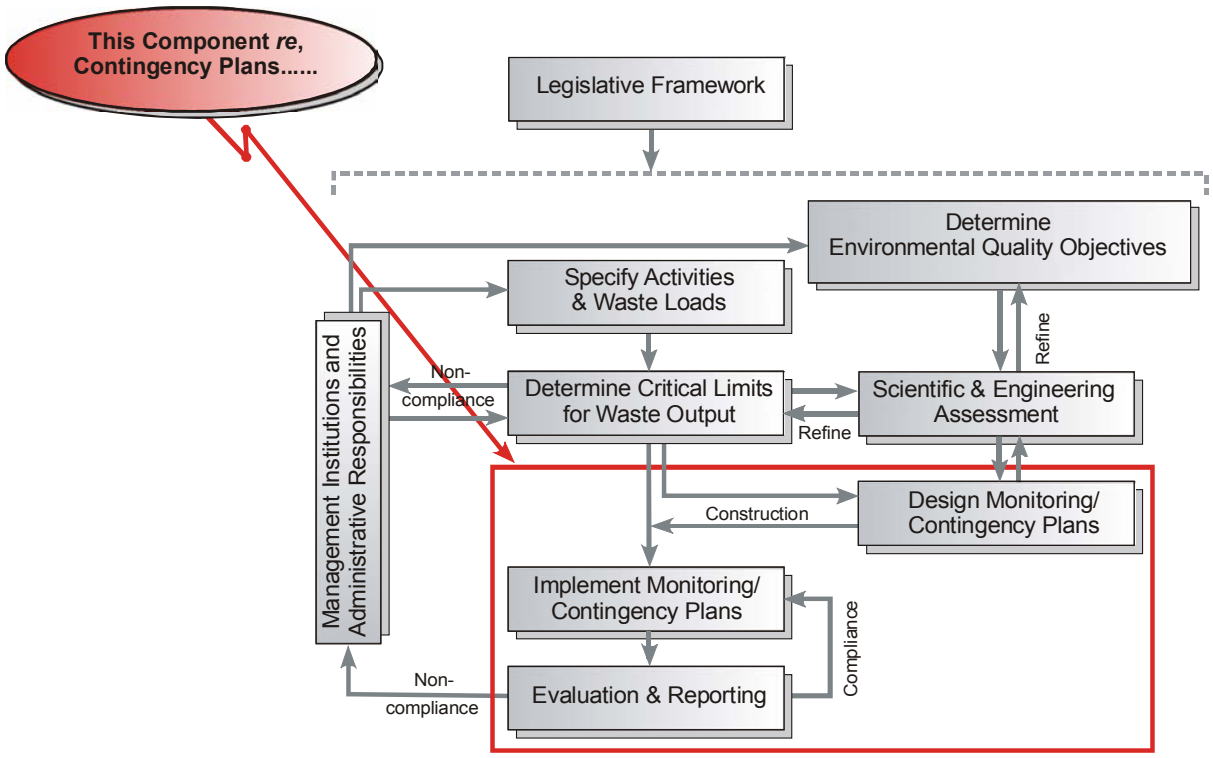

PURPOSE:

The purpose of contingency plans is to identify specific mitigating actions that need to be implemented in the event of malfunctioning, both during construction and operation, to minimise risks to the environment.

The design of a contingency plan is only required as part of a Detailed Investigation stage.

8.1 MOTIVATION FOR CONTINGENCY PLANNING

Contingency planning is required to prevent or minimise potentially negative impacts on the receiving environment both during the construction and the operational phases.

During construction, potentially significant negative impacts (onshore and offshore) typically relate to the activities of the contractors. Contingency plans and mitigation measures are therefore best achieved through the incorporation and enforcement of suitable clauses in the construction contract documents. These clauses must include the best alternatives for ensuring minimum impact, monitoring programmes for the duration of the construction phase and mitigation options, and specifications for reinstatement and rehabilitation.

Contingency plans and mitigation measures for the operation of a marine outfall system relate mainly to accidental damage or failure of the system to perform to expected standards. Negative impacts resulting from the underperformance of the entire system and subsequent failure to perform to expected standards, or negative feedback from the monitoring programme can be the result of:

- Deviations from specifications, such as:
  - Increased loads (flow or quality) resulting from unexpected population increase
  - Extreme or abnormal physical conditions (meteorological or oceanographic) which were not anticipated in the data set used for the design.

- The malfunctioning/underperformance or breakdown of plant/equipment, as a result of:
  - Equipment/plant or outfall breakdown
  - Electrical power failures (local network or national power supply)
  - Overloading (flow conditions or wastewater composition which exceed design standards) that will result in the underperformance of the system due to one or more of the following: 1) ineffective screening; 2) sedimentation in the main pipeline and diffuser section; 3) blocking of ports; 4) insufficient initial dilutions; 5) process failure and malfunctioning due to insufficient maintenance (corrosion, sliming in the pipeline, damaged ports, etc.); 6) operational problems due to deviation from standard operational procedures, insufficient control or incompetent staff; and 7) operational problems related to strikes (staff or suppliers).

- Incidents and disasters, such as:
  - Accidents related to ships (dragging or dropping anchors, direct collision with pipeline)
  - Extreme conditions (wave forces on exposed sections of the pipeline or excessive scour)
  - Vandalism of onshore structures
  - Fires
  - Earthquakes.

8.2 COMPONENTS OF A CONTINGENCY PLAN

A contingency plan needs to address aspects related to the malfunctioning or breakdown of the wastewater disposal system (i.e. the source), as well as preventing of pollution of the receiving environment (the 'resource'). A plan primarily consists of four sub-components:

i. Mechanisms for detection of problems

A well-designed monitoring programme (refer to Section 6) primarily constitutes the mechanism for the detection of problems. Monitoring of the waste disposal system (the source) is particularly important in terms of detecting problems pertaining to the malfunctioning or breakdown of the wastewater disposal system (also providing the 'early warning signal'), while monitoring of the receiving environment is the key mechanism for the prevention of pollution.

ii. Stipulated Procedures and Responsibilities (Provision of schedules)

Provision of schedules is crucial for the rapid and effective implementation of contingency plans.

In the case of *malfunction or breakdown of the plant*, schedules include:

- Standard operating procedures and staff schedules (roles and responsibilities)
- Programmes for the maintenance, replacement, and surveillance of the physical condition of equipment, facilities, and sewer lines
- Standby/alternative personnel/service companies for the continued operation and maintenance of wastewater discharge facilities during employee shortages (strikes, accidents, ill-health, etc.)
- Stock lists and suppliers for chemicals, spare parts, and equipment components that can adequately ensure the continued operation of the wastewater discharge facility during an emergency or breakdown
- Emergency standby power facilities - for high-risk areas, a permanent standby plant may be required. Mobile generators should be considered only for low-risk plants/areas.
- Emergency standby pumps
- Provision for sufficient storage capacity to cope with the normal or typical load for the area (history should be available) during power failures. This capacity should be expressed as the equivalent number of hours of dry weather flow. If practical, provision for the deviation of excess loads should be made, either by tankering or pumping
- Protection of plant/equipment against vandalism/sabotage
- Security protocols and procedures (entrance to premises)
- Repairs, including rapidly implementable action plans to repair failures of, or damage to, equipment and sewer lines (including human resources, contact information, standby and maintenance agreements).

In order to *prevent pollution* of the receiving environment, it is crucial to specify the responsibilities and procedures for staff, as well as for external institutions such as relevant government departments (e.g. DWAF and DEAT), and local authorities. These schedules must include specific contact details.

iii. Action Plans

Associated with the schedule of provision, a clear action plan on mitigating measures needs to be set out. Of particular importance is the action plan to protect other beneficial uses of the affected marine environment. Measures for this plan could include:

- Site notice boards or media releases (newspapers, radio or television) informing users (public) of the potential risks
- Demarcation of polluted areas, if required
- Notification of industrial users of seawater and mariculture farms, as well as procedures to be followed in assisting with protection of such facilities against pollution.

iv. Reporting

Procedures and protocols for reporting events of malfunctioning/breakdown of the wastewater disposal system, as well as pollution events, must be stipulated. These include internal procedures, but also reporting to responsible authorities on local, regional, and national levels.