WATER QUALITY - Categorising risk



RISK FACTORS

Dredge and dewatering methodology

Spoil composition

Wave or flow energy

Duration and/or timing of dredging

Spoil volumes and placement location

Proximity of sensitive receivers

Use of area (eg recreational, commercial)

Weather

(eg stormwater, waves, flooding)

Presence of organic matter

Velocity of dewatering discharge

Depth to groundwater

Compliance history

ACTIVITIES

Removal of spoil

Dewatering

Equipment placement and movement

Bund/dam/pond construction

Spoil management, placement and disposal

WATER QUALITY

Turbidity
Dissolved oxygen
Nutrients

OPERATIONAL CONTROLS

Dewatering plan

Containment structures for dewatering, eg silt curtains, bunds and/or coffer dams, settlement ponds, geofabric bags.

Flocculants

Appropriate dredge methodology

Appropriate spoil management

Onshore disposal of spoil

Treatment of supernatant water

Overflow reduction

Environmental monitoring with triggers and contingency responses

Timing of dredge campaign

Modification of flow rates

IMPACTS

Seagrass, reef and other vegetation loss from smothering and light reduction

Clogging of gills of filter-feeding organisms

Decline in dissolved oxygen causing stress or mortality of aquatic fauna Reduced aesthetics and recreational value of the aquatic environment

Habitat loss, Recreational and commercial fisheries.

RISK

I OW

Less than 1% silt/clay

No organic matter in spoil

Sensitive habitat >500 m away

Short campaign duration (<2 weeks)

Low water flows (inland)

Spoil up to 10,000 m³

MEDIUM

Coarse with silt/clay (1%-10%)

Less than 10% organic matter present in spoil

Sensitive habitat located within 500 m

Medium duration (2-8 weeks)

Dewatering of spoil

Overflow from infrastructure

Flooding potential due to rain forecasted Spoil 10,000-100,000 m³

HIGH

Greater than 10% silt/clay or organic matter in spoil

Frequent recreational use

Sensitive habitat located in plume area and dewatering site

Ocean disposal of spoil

Long duration (>8 weeks)

Spoil >100,000 m³

SUGGESTED MANAGEMENT

Photo monitoring

Turbidity or other monitoring if visual is triggered

Restricted to dry weather (inland)

SUGGESTED MANAGEMENT

Routine turbidity monitoring

Oxygen monitoring

ALARM and HOLD triggers and responses

Contingency responses for rainfall (inland)

Analysis of aquatic flora and fauna impacts if triggers are activated

Hydrodynamic modelling (case by case)

SUGGESTED MANAGEMENT

Turbidity and hydrodynamic modelling (dredge/disposal site)

Detailed turbidity, oxygen and/or nutrient monitoring (dredge/disposal site)

ALARM and HOLD triggers and responses

Before and after, control and impact monitoring of aquatic flora and fauna impacts

WATER QUALITY – EPA Expectations

DREDGE APPLICANTS OR LICENSEES MUST	Met	Notes/Evidence
Not cause environmental harm as defined in the Water Quality Policy.		
Identify sediment composition to ensure that appropriate management techniques for both dredging and dewatering are implemented.		
Select dredging equipment and dewatering methods to minimise impacts to water quality including turbidity and declines in dissolved oxygen and that is appropriate for the nature of the dredge site and spoil.		
Consider the waste management hierarchy for the management of spoil and discharge of wastewater from dewatering activities.		
Identify the location of sensitive receivers that may be impacted by the dredging campaign.		
Take reasonable and practicable measures to avoid impacting sensitive receivers from suspended sediment, reduced oxygen levels, elevated nutrients or release of contaminants and metals.		
Undertake dredging in a manner and during time periods that minimise the potential for impacts to seagrass, reef, recreational users, commercial fishing and aquaculture, and breeding or migratory seasons for aquatic or terrestrial species.		
Take reasonable and practicable measures to ensure that overflow water or discharge of supernatant water during the dewatering process does not cause environmental harm.		
Undertake dewatering of spoil in a manner that minimises the potential for turbidity plumes and release of contaminants (eg hazardous substances, debris). This may need to take into		

DREDGE APPLICANTS OR LICENSEES MUST	Met	Notes/Evidence
consideration the location of the dewatering site or composition of material that is used to construct dewatering infrastructure.		
Not discharge polluted water during dewatering if it is contaminated (eg with plastics or hazardous substances).		
Comply with the NAGD guidelines for the placement of spoil within marine waters.		
Undertake appropriate monitoring and adaptive management arrangements to minimise impacts to water quality to prevent and minimise environmental harm at the dredge site, disposal site and/or the dewatering location.		