Westlink Services
Operations & Maintenance

Soil & Water Management Plan

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1.0 About This Document

1.1 Document Control

This Soil & Water Management Plan (SWMP) is maintained by Westlink Services and shall be made available to relevant stakeholders for review and comment. The Operation and Maintenance Manager has ownership over this document and changes will be authorised at their discretion.

This document will be entered into and managed by a secured document management system. The document will be controlled in accordance with PLN-QA-002 Records Management Plan, PRO-QA-001 Document Control Procedure & RES-QA-001 Terms, Definitions & Acronyms.

1.2 Document Amendments & Authorisation

Superseded versions of this Plan are to be marked 'superseded' and filed accordingly. This document is to be considered Uncontrolled When Printed.

The table below shows amendments to this document and is to be updated with all future revisions.

Revision Schedule

Rev.	Date	Description	Approved
0.1	20/05/2005	Initial Draft Release by ALJV.	
1.0	05/08/2005	Comments from consultation incorporated into document.	
2.0	16/08/2005	Section references in consultation table amended following EMR review and endorsement.	
3.0	21/11/2005	DIPNR comments incorporated	
4.0	30/03/2007	Annual Review. External EMS review comments incorporated.	[redacted]
5.0	15/03/2008	Annual Review. Positions and authorization updated.	[redacted]
6.0	01/12/2011	Document Review & System Upgrade	
7.0	12/02/2013	Annual review and document ID number created in DMS. Document references reviewed.	[redacted]
8.0	07/08/2014	Annual review	[redacted]
9.0	29/08/2016	Annual review	[redacted]
10.0	15/05/2017	Annual review	[redacted]
11.0	20/07/2020	Annual review	[redacted]
12.0	06/07/2021	Annual review	[redacted]
13.0	20/07/2022	Update of Document and Annual Review	[redacted]
14.0	29/05/2023	Section 4.1 – Aspects and Impacts, reference on tannin impact management and education of delivery site personnel around tannin management	[redacted]
15.0	22/07/2024	Annual review of all document	[redacted]
16.0	30/04/2026	Document update as required by Ministerial Condition of Approval (MCoA) 26.	[redacted]

ALJV	Abigroup Leighton Joint Venture
ASS	Acid Sulfate Soils
BOD	Biological Oxygen Demand
DPHI	NSW Department of Planning, Housing and Infrastructure
DPI	NSW Department of Primary Industries
EEC	Ecologically Endangered Community
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
ESA	Environmentally Sensitive Areas
ESCP	Erosion and Sediment Control Plan
MCoA	Minister's Conditions of Approval
M7	Westlink M7
O&M	Operations & Maintenance
OEMP	Operational Environmental Management Plan
TfNSW	Transport for New South Wales (previously Roads and Traffic Authority and Roads and Maritime Services)
ANZECC	Australian and New Zealand Environment and Conservation Council
SCA	Sydney Catchment Authority
SIS	Species Impact Statement
SS	Service Stream
SOP	Standard Operating Procedures
SWMP	Soil and Water Management Plan
SWTC	Scope of Works and Technical Criteria
SMP	Standard Maintenance Procedures
POEO Act	NSW Protection of the Environment Operations Act 1997
SDS	Safety Data Sheet

2.0 Introduction

The Soil and Water Management Plan (SWMP) controls soil and water quality management practices for the duration of operation and maintenance of the M7. It is a part of the PLN-EN-001 Operational Environmental Management Plan (OEMP).

2.1 Purpose

The purpose of the SWMP is:

- To document and describe the systems and procedures to manage soil and water quality during the operation of the M7.
- To facilitate compliance with legal and contractual requirements regarding soil and water quality.
- To provide adequate environmental context surrounding soil and water quality management issues to sufficiently apply mitigation measures and strategies.
- To detail the environmental controls in place in relation to soil and water quality management.
- To follow the national soil & water quality guidelines in accordance with the Australian and New Zealand Environment Conservation Council (ANZECC) Guidelines, NSW Water Quality Objectives (ANZG 2018), Performance Criteria for Protecting and Improving the Blue Grid in the Wianamatta – South Creek Catchment (DPIE, 2021), and Blue Book.

2.2 Objectives

Westlink Services activities will be planned and carried out to enhance the soil and water quality of the motorway corridor by meeting the following objectives:

- To avoid or mitigate impacts from Westlink Services operations and maintenance activities in relation to soil and water quality management.
- To minimise and mitigate any impacts from motorway incident spills.
- Covering disturbed areas to control erosion and minimise sedimentation of waterways.
- Binding topsoil on batter slopes to provide soil stability.
- Providing filter for stormwater run-off.

2.2.1 Targets

The following targets have been established for the management of soil and water quality during the project:

- Stormwater quality control measures are inspected and maintained according to procedures.
- No materials from routine maintenance or minor works will enter the drainage system or waterways.
- Contain spills and remove hazardous materials as soon as practicable.
- Record details of and report environmental incidents including notifications and clean-up activities.
- Manage contaminated soils in accordance with environmental legislation and EPA guidelines.

3.0 Environmental Context

3.1 Environmentally Sensitive Areas (ESAs)

Environmentally Sensitive Areas (ESAs) are sites comprised of items of natural and cultural heritage. This includes endangered ecological communities (EECs), threatened flora and fauna and Indigenous and non-Indigenous cultural heritage.

Operational ESA Plans are available on the electronic document management system under “Drawings” in the series C001-OEW. ESA plans will be checked prior to undertaking maintenance work to assess potential environmental impacts relating to erosion, sedimentation, and other waterborne pollutants and to ensure that works are not carried out within an ESA without the necessary approvals.

This Plan, along with the RES-EN-001 Environmental Aspects and Impacts Register, details controls to minimise potential adverse impacts on these sensitive areas. The following plans outline control measures to protect the landscape and vegetation of the M7 and the areas associated with the M7 widening project (Modification 6):

- PLN-EN-002 Landscape and Revegetation Management Plan,
- M712UDC-JHGRP-M7A-LA-PLN-000001 Stage 1 Design and Landscape Plan.
- M712UDC-JHGRP-M7A-LA-PLN-303001 Stage 2 Design and Landscape Plan.

3.2 Geology

The M7 road corridor passes over two geological soil formations, known as the Wianamatta Group (of Triassic Age) and the Quaternary Alluvium.

Most of the motorway is underlain by the Bringelly Shale sub-group of the Wianamatta Group. The Bringelly Shale typically comprises shales, carbonaceous clay stones, laminates and fine to medium lithic sandstones. This is group of rocks are highly erosive.

Exceptions are the small zones of Minchinbury sandstone and Ashfield shale near West Baulkham Hills, the St Marys Formation near Colebee, and a volcanic deposit of unknown origin west of the intersection of Rooty Hill and Eastern Roads.

Most of the Prestons sections of the study area, south-east of Cowpasture Road, is underlain by Quaternary Alluvium, apart from the area between Kurrajong Road and the M5 Motorway Interchange which is underlain by Bringelly Shale. Quaternary Alluvium in this area typically comprises fine-grained sand, silt, and clay.

3.3 Soils

3.3.1 Soil Landscapes

Soil landscapes are areas of land that have recognisable and describable topography and soils, are easily represented on a map, and can be described by concise statements.

The five soil landscapes which traverse the M7 corridor are:

1. Picton soils (colluvial)
2. Luddenham soils (erosional)
3. Berkshire Park Fluvial Grouping (fluvial)
4. Blacktown soils (residual)
5. South Creek soils (fluvial)

These are all defined in the Landcom publication *Managing urban stormwater: soils and construction Volume 1* as Type D and Type F soils. Type D soils contain a significant proportion of fine (< 0.005 mm) dispersible materials that will never settle unless they are in small clumps. Type F soils are those, the bulk of which, are fine grained (33% or more are finer than 0.02 mm) and take longer to settle in a sediment retention basin.

The M7 corridor intersects Maxwell, Cabramatta, Hichinbrook, Ropes, Reedy, Eastern, Breakfast and Toongabbie creeks which are dominated by alluvial plain soils. They are actively and frequently being reworked by fluvial processes.

Overall, the potential for erosion within the M7 alignment is generally moderate to high, with it being very high in some areas close to creeks and natural waterways.

3.3.2 Acid Sulphate Soils

Acid sulphate soils (ASS) are likely to be present in sediments of recent (Holocene era) geological age, in soil horizons not more than five metres above high tide level, and in marine or estuarine settings. It was determined in the EIS for the project that ASS is unlikely to be present in the soil landscapes traversed by the M7.

3.4 Watercourses

The M7 falls within several catchment areas that are comprised of both developed and non-developed areas. The areas adjoining the M7 comprise of residential, industrial, commercial, open space, and regional reserves.

The majority of the waterways that intersect the M7 have historically had poor water quality. Toongabbie Creek and Eastern Creek are considered sensitive watercourses therefore special measures need to be taken into consideration to protect them against water pollution resulting from the project.

Watercourses and waterbodies that are located within M7 corridor in the event of reported contamination incident water and soil quality testing will be performed to ensure appropriate mitigation controls are implemented.

3.5 WaterNSW Infrastructure

WaterNSW (previously the Sydney Catchment Authority (SCA)) has three significant items of potable water infrastructure that intersect the M7 alignment. The first is the Upper Canal, which is located near Elizabeth Drive, Cecil Hills and runs underneath Elizabeth Drive, Wallgrove Road, and the M7 (see ESA Plan C001-OEW-762114). The second is the Warragamba to Prospect Pipelines which are located near Old Wallgrove Road and the M4 interchange Eastern Creek, and the third is the Prospect Reservoir which is located to the east of the M7 from the M4 Interchange.

To protect these structures from the potential impacts of M7 operations, the Upper Canal Vent has been extended, whilst Warragamba to Prospect Pipelines has been encased in concrete. This was done in accordance with the MCoA 216 and in consultation with the SCA. None of the receiving waterways downstream of the M7 area drain into the drinking water supply area of the Upper Canal, the Warragamba to Prospect Pipelines and Prospect Reservoir.

Table 1 - Quality of Receiving Waters (major streams)

Watercourse	Water Quality					
	Overall Water Quality Assessment	Nutrient Description	Faecal Description (if present)	Turbidity Description	Dissolved Oxygen Levels	Salinity Description (if present)
Maxwell's Creek	Water quality is generally poor	Enriched levels of nutrients (total phosphorus and nitrogen)	High faecal pollution	High levels of suspended solids	Low dissolved oxygen levels	Presence of salinity along the creek banks
Cabramatta Creek	Water quality is generally poor	High levels of nitrogen	High levels of faecal pollution	High levels of suspended solids	Low dissolved oxygen levels	

Watercourse	Water Quality					
	Overall Water Quality Assessment	Nutrient Description	Faecal Description (if present)	Turbidity Description	Dissolved Oxygen Levels	Salinity Description (if present)
Hinchinbrook Creek	Water quality is fair to poor The water quality of Hinchinbrook Creek does not appear to be as impacted as Cabramatta Creek Development in the catchment has the potential to impact adversely on water quality in this creek				Low dissolved oxygen levels during dry weather conditions	
South Creek	Water quality is highly variable	High levels of nutrients		High levels of suspended solids The creek is turbid	Low dissolved oxygen levels	
Ropes Creek	Water quality is generally poor	High levels of nutrients		High levels of suspended solids The creek is turbid	Low dissolved oxygen levels	
Reedy Creek	Reedy Ck flows only for hours or days following rainfall and it is common to have stagnant pools of ponded water Gross pollutants have been identified			High turbidity is common		

Watercourse	Water Quality					
	Overall Water Quality Assessment	Nutrient Description	Faecal Description (if present)	Turbidity Description	Dissolved Oxygen Levels	Salinity Description (if present)
	at this site in the water					
Eastern Creek	Water quality is generally fair to poor	Acceptable levels of nutrients	High levels of faecal coliforms	The creek has acceptable levels of turbidity		
Breakfast Creek	Water quality is generally poor High levels of heavy metal concentrations present	High levels of nutrients	High levels of faecal coliforms	High levels of turbidity	The creek has low levels of dissolved oxygen	
Caddies Creek	Creek bed is dry and its path only discernable because of the growth of sedges and rushes. There is no 'riparian vegetation' and provides minimal fish habitat. Considered a Class 4 waterway, primarily used as an easement adjacent to surrounding land development.					
Unnamed Tributary of Lalor Creek	Class 4 waterway in the location of the alignment. The 'creek bed' is composed of extensive grass fields with storm water drains to take excessive flows. It is primarily used as an easement. Upstream of easement is a more natural creek bed with dense riparian vegetation.					
Lalor Creek	Biological health of this creek is described as fair High levels of general rubbish from storm water runoff	High phosphate levels	High levels of faecal coliform levels	Extremely high turbidity		
Toongabbie Creek	Water quality is generally poor	High levels of nutrients	High levels of faecal coliforms	High levels of suspended solids		

3.6 Investigations to Date

3.6.1 Surface Water Quality

Following field inspections along the M7 route undertaken by a TfNSW study team in September 2001, 14 locations were selected for the M7 water quality-monitoring program. During construction, regular monitoring of surface water quality was conducted at 22 sites along the M7, with 14 sites monitored by the TfNSW study team prior to construction and an additional eight sites incorporated by Abigroup Leighton Joint Venture (ALJV) into the construction phase of the water-quality monitoring program (see **Table 2**).

During construction, surface water quality was monitored monthly and after significant rainfall events (defined as being > 20 mm over a 24-hour period).

The EIS required that water quality monitoring would be continued to assess residual impacts in the first six months after road opening. At the beginning of the operational phase of the M7, existing surface water sites continued to be monitored for one year to ensure the effectiveness of the water quality control structures along the M7, and to enable a comparison of data between pre-construction, construction, and operation of the M7 motorway. Operational sampling occurred both upstream and downstream of M7 operations where possible and was conducted quarterly (after/during a rain event) and after a very significant rainfall event (> 32 mm over a 24-hour period).

In-situ water quality monitoring (temperature, pH, dissolved oxygen, conductivity/salinity, and turbidity) was conducted by submerging a pre-calibrated water quality probe into the surface water. A visual assessment of the presence/absence of oil and grease and the depth of the water was also recorded.

Grab samples were collected in clean sterile bottles as specified in the Australian/New Zealand Standard 5667.1:1998 – Water quality, from each monitoring site and taken to a National Association of Testing Authorities (NATA) registered laboratory for analysis of Total Nitrogen, Total Phosphorus, Chloride Sulphate, Aluminium, Iron, Nickel, Cadmium, Lead, Copper, Oil, and Grease.

Operational monitoring results indicated that the water quality control structures along the M7 are generally effective. Most parameters were found to be within ANZECC Guidelines. Outliers were either recorded upstream, consistent upstream and downstream, or within the pre-construction baseline monitoring results.

No further surface water monitoring is required for the operations phase of the M7 as the monitoring results indicated that the site has stabilised.

Table 2 - Surface Water Monitoring Sites

Site	Creek/Waterway	Location	Chainage
1	Storm water drain	Intersection of Camden Valley Way & M5 exit ramp	0
2 (Upstream)	Cabramatta Creek	Illaroo Road, Prestons	3500
3 (Downstream)	Cabramatta Creek	Illaroo Road, Prestons	3500
4 (Upstream)	Hinchinbrook Creek Tributary 3	Wilson Road, Hinchinbrook	4200
5 (Downstream)	Hinchinbrook Creek Tributary 3	Wilson Road, Hinchinbrook	4200
6	Hinchinbrook Creek	Cowpasture Road	5200
7	Hinchinbrook Creek	Cecil Hills, via Kensington Place	8500
8 (Upstream)	Ephemeral Stream	Western Side of Wallgrove Road	11800

Site	Creek/Waterway	Location	Chainage
9 (Downstream)	Ephemeral Stream	Western Side of Wallgrove Road	11800
10 (Upstream)	Reedy Creek	Old Wallgrove Road	18250
11 (Downstream)	Reedy Creek	Old Wallgrove Road	18250
12	Unnamed Creek	Wallgrove and Great Western Highway	20700
13	Eastern Creek	Great Western Highway	20600
14 (Upstream)	Angus Creek	Phillip Parkway	22900
15 (Downstream)	Angus Creek	Phillip Parkway	22900
16	Woodstock Avenue	Phillip Parkway and Glendenning Road	24320
17	Breakfast Creek	Quakers Hill Parkway	29820
18	Junction of Breakfast Creek and Eastern Creek	Voysey Close	29700
19 (Upstream)	Unnamed Creek	Fairmount Circuit	36420
20 (Downstream)	Unnamed Creek	Fairmount Circuit	36420
21 (Upstream)	Toongabbie Creek	Valerie Ave	39050
22 (Downstream)	Toongabbie Creek	Valerie Ave	39050

3.6.2 Flooding Potential of Waterways

Table 3 lists the major watercourses that cross underneath the M7 carriageway, the flooding issues associated with each crossing, and flood mitigation measures. This includes the provision of flood detention basins at various points to reduce or mitigate flooding.

The most significant changes to flood velocities occur in the southern section of the M7. These are associated with flood detention basins 18, and 22 and Government Road, with velocities dropping due to retention of water. Downstream of these basins, post-developed flood velocities are generally similar to pre-existing flood velocities.

The detention basins have been sized to maximise the volume of storage that could be provided given the following constraints:

- Property boundaries
- Levels of the receiving watercourse
- Levels of land upstream of the basin inlets
- Proximity to major waterways
- Groundwater conditions and potential contamination

Table 3 - Flood Risks of Major Watercourses on M7

Watercourse	Flood Risk and Hydrological Issues
Maxwell's Creek (M5 Interchange)	A large flood detention basin (referred to as Basin 18) is located between Ash Road and Skipton Lane, Preston. The M7/M5 interchange is located south-east of the detention basin with Maxwell's Creek culverts running under the interchange to the detention basin.
Maxwell's Creek Bridge to Bernera Road	Existing flooding at Jedda Road between Jedda Road and Bernera Road has been reduced as most of the water that flows down Bernera Road to this trapped low point is directed to Cabramatta Creek, via a channel adjacent to the Bernera Road interchange northbound on-ramp. Flood velocities around the Maxwell's Creek bridge remain unchanged.
Cabramatta Creek	A flood detention basin (Basin 22) is located on both sides of Illaroo Road and Cabramatta Creek and east of the M7 at Hoxton Park and Prestons. Flood levels upstream of Cabramatta Creek are influenced by the size of the bridge opening and the impact of Basin 22, which is located immediately downstream of the bridge opening and captures overbank flow passing down the western overbank of Cabramatta Creek. A levee bank has been constructed through the bridge opening in order to encourage afflux at the bridge to the maximum allowable in order to ensure the storage volume of Basin 22 is fully utilised. Flood velocities are increased through the Cabramatta Creek bridge openings and the bridge, and at the inlets to the regional detention basins. Where warranted, protective measures such as dumped riprap have been used to limit the potential for increased scour at these locations.
Government Road to Cowpasture Road	A third compensatory basin known as the Government Road detention basin will be located East of the M7 at Hinchinbrook Creek.
Hinchinbrook Creek	Flood velocities around the Hinchinbrook Creek viaduct remain unchanged. The soffit of the bridge has been located above the 100-year flood level.
Hoxton Park Release area	The area north of Cowpasture Road and west of the M7 alignment will be developed in the near future and drainage patterns in this area will undergo significant changes as a consequence. The development master plan for the release area envisions that the existing flow paths across the M7 alignment within the Hoxton Park vicinity will be redirected to feed a large detention basin that will have an outlet at a single location nearby.
Western Sydney Regional Park	The Western Sydney Regional Park is mainly within the Eastern Creek catchment. There is a small section of the southern side of the park that is within the Cabramatta Creek catchment. The detailed design indicates that the Park is outside of the flood prone area. There have been no changes to the drainage facilities in the park. Any changes would occur in conjunction with consultation with DEC (NPWS) and DPHI .
Ropes Creek	No specific flood mitigation measures were required for Ropes Creek, other than complying with the 100-year ARI.
Reedy Creek	There are five bridge crossings at Reedy Creek that are next to each other and assist in decreasing the upstream water level for a 100-year ARI event.
Eastern and Breakfast Creeks	The creeks and sections of the floodplain are proposed to be bridged by a 220m long bridge. There is a shared path crossing upstream of the main road bridge. At the Eastern Creek and Breakfast Creek crossings velocities through the bridge will increase

Watercourse	Flood Risk and Hydrological Issues
	marginally compared with upstream and downstream reaches. Potential scour will be offset by erosion protection measure (rip rap) if required. The floodplains for Eastern and Breakfast Creeks in the vicinity of the M7 crossing are combined for a 100-year ARI. The bridge crosses the floodplain and the creek channels. The crossing does not result in the redistribution of flows within the floodplain. There is negligible attenuation due to the road bridge; consequently, there is consistency of flows upstream and downstream of the crossing. The shared path for Eastern Creek and Breakfast Creek crossings would be raised over parts of the floodplain to ensure 2-year ARI flood immunity.
Toongabbie Creek	No specific flood mitigation measures are required during construction activities for Toongabbie Creek, other than complying with the design that accounts for the 100-year ARI. Additional modeling will be conducted through detailed design to confirm this.

3.6.3 Groundwater Quality

The M7 crosses a number of saline or contaminated groundwater risk areas which are comprised of highly erosive geology/soil types. In addition to the cut sites, these sites may become a source of saline groundwater during the operation of the M7. To date, no seepage has been encountered on the M7 project.

Twenty-seven (27) boreholes were drilled, and standpipe piezometers installed prior to construction commencement in June 2003. In accordance with MCoA 193 & 194, monitoring wells were installed in:

- Areas identified by the EIS and Representations report as having potentially shallow and saline groundwater tables within clay and shale geologic formations.
- Areas identified by the EIS and Representations Report as having potentially contaminated soil (namely Eastern Creek Waste Management Facility).
- Locations where cutting will be deeper than five metres deep.
- Other locations identified in the detailed design phase as containing high salinity and in close proximity to sensitive watercourses.

The extent of saline or contaminated groundwater problems was established through groundwater monitoring during the pre-construction and construction phase of the project and through detailed geotechnical investigations. The information collected was used to formulate appropriate mitigation measures to manage any identified groundwater risks.

Prior to construction, monitoring was undertaken, and baseline data was established by Coffey Geosciences. Results were compiled in the 'ALJV, WSO Groundwater Investigation Report, 19th August 2003'.

During the construction period, some of these wells were destroyed or were found to be consistently dry; however, data from at least 23 of these wells has been found to be of consistent quality and was considered suitable for comparison of monitoring data to be collected during the operation of the M7. **Table 4** details the groundwater monitoring wells that continued to be maintained for the first two years of operation.

Overall, depth to water, pH, and salinity measurements were found to be consistent with pre-construction and construction conditions. Operational monitoring patterns follow pre-construction groundwater findings, such as low salinity in Baulkham Hills, high salinity at Quakers Hill and Eastern Creek, and the remaining majority of the alignment dominated by brackish groundwater.

The results of operational monitoring indicate that the physical characteristics and chemistry of the groundwater is stable. Results obtained outside of the established range are likely to be related to the reinstalment of monitoring wells or the installation of water quality ponds close to the standpipes.

No further regular groundwater monitoring is required.

Table 4 - Groundwater monitoring well location, water level and parameters

GW well	Cutting Start and Finish Chainage	Location	BOC (m bgs)	Elevation of TOC (m relative to AHD)	Water Depth (m below TOC)	Water Level (m relative to AHD)	Comments
2	7120 - 8090	7500 - LHS	18	64.3	16.3	48.0	Cut > 5m
3	8500 - 8650	8560 - LHS	11	78.5	Dry	-	Cut > 5m
4	9120 - 9380	9300 - LHS	17	94.2	13.6	80.52	Cut > 5m
5	9880 - 10490	10240 - LHS	29	144.5	24.5	120.00	Cut > 5m
7	12000 - 12630	12420 - LHS	18.2	124.0	13.3	110.70	Cut > 5m
8	13420 - 13640	13500 - LHS	10.4	107.7	Dry	-	Cut > 5m
9	14300 - 14740	14560 - LHS	12	82.3	4.1	78.20	Cut > 5m
10	15320 - 16460	16060 - RHS	22	90.0	18.4	71.58	Cut > 5m
12	N/a	18150 - RHS	10	58.2	Dry	-	Contaminated site – Waste Mgt Facility; groundwater is expected to be encountered
13	22190 - 22640	22480 - LHS	14	49.9	5.1	44.80	Cut > 5m
16	25560 - 26220	25880 - RHS	11.5	52.3	11.1	41.20	Cut > 5m
18	N/a	27780 - LHS	6	43.1	2.9	40.20	Contaminated site – PACE Egg Farm
19	27840 - 28340	28020 - LHS	16.4	52.3	13.6	38.70	Cut > 5m
21	N/a	29550 - LHS	6	21.2	3.0	18.20	Near to Eastern Ck
22	30140 - 31310	30760 - LHS	16.6	38.5	6.7	31.79	Cut > 5m
23	32680 - 33200	32960 - LHS	13	69.4	8.8	60.60	Cut > 5m

GW well	Cutting Start and Finish Chainage	Location	BOC (m bgs)	Elevation of TOC (m relative to AHD)	Water Depth (m below TOC)	Water Level (m relative to AHD)	Comments
24	33200 - 33600	33380 - LHS	11	78.1	7.3	70.80	One bore was installed for monitoring of both cuts
25	33800 - 34400	34000 - LHS	16.6	89.1	15.6	73.50	Cut greater than 5m
26	N/a	35200 - LHS	6	73.3	0.6	72.70	Near to Caddies Ck
27	35400 - 36000	35880 - LHS	14	89.9	8.5	81.40	Cut greater than 5m
28	36900 - 37250	37120 - LHS	20	83.1	17.9	65.20	Cut greater than 5m
29	37950 - 38200	38120 - LHS	16	85.6	9.4	76.20	Cut greater than 5m
30	38520 - 38800	38660 - LHS	17.3	73.2	4.0	69.20	Cut greater than 5m

Note: Standing Water Levels measure June 2003
AHD-Australian Height Datum *TOC-Top of casing*
Bgs-Below Ground Surface *BOC-Bottom of Casing*

Soil and water quality management in the M7 corridor must comply with a number of legal, regulatory, and contractual obligations and comply with relevant standards and codes of practice, as detailed below.

Any relevant approvals, permits, and licences are listed in the PLN-EN-001 OEMP.

3.7 Statutory and Regulatory Requirements

Statutory and regulatory requirements relating to soil and water management are shown in **Table 5.** A complete list is detailed in the RES-BS-008 Environmental Legal Compliance Register.

Table 5 – Soil and water management statutory and regulatory compliance requirements

Compliance Source	Requirement
Protection of the Environment Operations Act 1997, s 145, 146	Do not litter: • In a public place • In an open private place • From a vehicle
Protection of the Environment Operations Act 1997, s 142A-E; dictionary	Do not cause or permit land pollution.
Protection of the Environment Operations Act 1997, s 116	Do not harm or risk harming the environment by willfully or negligently causing any substance to leak, spill or otherwise escape (whether or not from a container).

Compliance Source	Requirement
Protection of the Environment Operations Act 1997, s 6, 147, 148, 150, 151 *Protection of the Environment Operations (General) Regulation 2009, cl 101*	Notify each relevant authority immediately of the relevant information for pollution incidents where material harm to the environment is caused or threatened. Ensure that verbal notification is followed by written notification within seven (7) days of the incident occurring.
Environmental Planning and Assessment Act 1979, s 76A, 80, 106-109B, 109C, 110-112, 115Y *Environmental Planning and Assessment Regulation 2021, r 4, 39-46, 228, sched 3* *State Environmental Planning Policy (Transport and Infrastructure) 2021, 20B, 20C* *State Environmental Planning Policy (State Significant Precincts) 2005, cl 9A, sched 6*	Do not commence development unless a development consent application and any other relevant certification has been obtained. Comply with the terms of any development consent. If the activity is likely to have a significant effect on the environment, prepare an EIS/SIS.
Contaminated Land Management Act 1997, s 60, 105 *EPA (NSW) Publication: Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* National Environment Protection (Assessment of Site Contamination) Measure (Commonwealth)	An owner of contaminated land or a person whose activities have contaminated land must notify the Office of Environment and Heritage (OEH) as soon as practicable after becoming aware of a substance contaminating land, or any by-product that: • enters or will foreseeably enter neighbouring land, the atmosphere, groundwater, or surface water, and • the levels in the neighbouring land, atmosphere, groundwater, or surface water will foreseeably be, and remain above, those in regulations, in the EPA (NSW) Publication: Guidelines on the Duty to Report Contamination under the *Contaminated Land Management Act 1997* or in the National Environment Protection (Assessment of Site Contamination) Measure (Commonwealth).
Protection of the Environment Operations Act 1997, s 120, 122; Dictionary; sched 3 *Protection of the Environment Operations (General) Regulation 2009, cl 55-59* *Local Government Act 1993, s 638* *Water Act 2014, s 21a*	Do not cause water pollution (other than to a sewer), except in accordance with the conditions of any EPA license.
Hunter Water Regulation 2024, cl 33 *Sydney Water Act 1994, s 53B* *Sydney Water Regulation 2017, cl 18* *Water Management (General) Regulation 2018, cl 136*	Comply with any water restrictions and exemptions imposed by the relevant water authority. An owner or occupier of land must exercise reasonable diligence to keep a record of the name and address of any other person who may breach water restrictions.

Compliance Source	Requirement
Water Management Act 2000 *Water Act 2014*	Obtain a license or permit before constructing or using a water conservation, irrigation, drainage, water supply or urban drainage work that impounds water or affects the quantity or use of water in a watercourse or lake.
Water Management Act 2000 *Water Management (General) Regulation 2018*	Do not excavate or remove material from a watercourse, lake or lagoon bank, shore or bed, or land within 40 metres from the top of the bank or shore of such a body or obstruct the likely flow of water in such a body, without a controlled activity approval or an aquifer interference approval.

3.8 Planning Conditions

The MCoA relevant to this plan are included in **Table 6**.

Table 6 - Minister's Conditions of Approval – Soil and Water Management

MCoA No.	Condition	Status
26	The existing Westlink M7 Operational Environmental Management Plan (OEMP) and associated sub-plans (including those required by Conditions 90 and 125 (as it relates to operation)) must be updated no later than one month prior to the commencement of operation of Modification 6. The Plan and associated sub-plans must be updated in accordance with the conditions of this approval, Schedule 2 of this approval and all relevant Acts and Regulations and accepted best practice. The updated OEMP and associated sub-plans must be submitted to the Planning Secretary upon request. The consultation requirements of Condition 90 and 125 do not apply to the updates of Operational sub-plans made as a result of Modification 6.	Complete
125.	As part of the Construction Method Statements and Operational EMPs, detailed Soil and Water Quality Management Plan(s) shall be prepared in consultation with the EPA, DLWC, NSW Fisheries, relevant Catchment Management Trusts, Sydney Water, Sydney Catchment Authority, and relevant Councils. The Plan(s) shall be prepared in accordance with the Department of Housing's guideline Managing Urban Storm water - Soils and Construction 1998, the RTA's Guidelines for the Control of Erosion and Sedimentation in Roadwork's and where appropriate, DLWC's Constructed Wetlands Manual. The Plan(s) shall be prepared prior to construction or operation as appropriate. The Soil and Water Quality Management Plan(s) shall contain, but not be limited to: (a) Management of the cumulative impacts of the development on the quality and quantity of surface and groundwater, including storm water in storage, sedimentation dams and flooding impacts (b) Details of short and long-term measures to be employed to minimise soil erosion and the discharge of sediment to land and/or waters including the exact locations and capacities of sedimentation basins (c) Identification of all potential sources of water pollution and a detailed description of the remedial action to be taken or management systems to be implemented to minimise emissions of these pollutants from all sources within the subject site (d) Detailed description of water quality monitoring to be undertaken during the pre-construction, construction and operation stages of the Project including base line monitoring, identification of locations where monitoring would be carried out and procedures for analysing the degree of contamination of potentially contaminated water (e) Measures to handle and dispose of storm water, effluent and contaminated water and soil including incident management structures (f) A process for the disposal of water from sedimentation basins and constructed wetlands developed in consultation with the EPA (g) Measures for the use of water reclaimed or recycled on-site (h) Contingency plans to be implemented in the event of fuel spills or turbid water discharge from the site	Complete
130.	No disposal of water from sedimentation basins or constructed wetlands shall be allowed to the sewer system without prior agreement from Sydney Water.	Complete

MCoA No.	Condition	Status
146A	Modification 6 must be operated so as to maintain the NSW Water Quality Objectives (ANZG 2018), and where relevant the Performance Criteria for Protecting and Improving the Blue Grid in the Wianamatta – South Creek Catchment (DPIE, 2021), where they are being achieved as at the date of this approval. Modification 6 must also contribute towards achievement of the NSW Water Quality Objectives, and, where relevant, the Performance Criteria for Protecting and Improving the Blue Grid in the Wianamatta – South Creek Catchment, over time where they are not being achieved as at the date of the approval of Modification 6.	Ongoing
149.	Where practicable, the Proponent shall in consultation with DLWC, ensure that discharge of storm water (for both construction and operational phases) is prevented from draining into areas of existing native vegetation.	Complete
150.	All operational storm water and wastewater systems of the Project including storm water drainage, erosion, sedimentation and water pollution control systems and facilities of the Project shall be located, designed, constructed, operated and maintained to meet the requirements of the relevant authorities including the EPA, NSW Fisheries, DLWC, SWC and relevant Councils. All facilities including wetland filters, grass filter strips, gross pollutant traps and sedimentation basins shall be **inspected regularly and maintained in a functional condition for the life of the Project**. Operational stormwater and wastewater systems impacted by Modification 6 must meet the requirements of DPI, DCCEEW, Sydney Water and relevant Councils.	Ongoing
151.	Where practical and feasible stormwater control measures for the operational phase of the Project shall be installed and utilised within the road reserve prior to substantial construction.	Complete
152.	Road storm water shall be treated through gross pollutant traps, storm water interceptors, constructed storm water wetlands and/or detention basins. Gross pollutant traps shall be constructed at discharge locations where it is not possible to construct water quality ponds. Gross pollutant traps shall be designed to operate during a 1-year ARI flood event and shall provide for control of coarse sediments and collection of trash and litter. The design of gross pollutant traps all incorporates adequate by-pass mechanisms to manage events greater that the 1-year ARI flood event.	Complete
153.	All storm water and pollution detention systems shall be located outside of, or protected from, existing or future flood hazard areas, to ensure that collected pollutants do not come into contact with flood waters.	Complete
154.	The Proponent shall provide appropriate detention systems for containment of spills and materials arising from accidents that are consistent with the RTA's Code of Practice for Water Management - Road Development and Management in consultation with the EPA.	Complete
155.	In the event of a **spill**, the Proponent shall ensure that all material spilled is removed as soon as practicable and at least within 24 hours.	Ongoing

MCoA No.	Condition	Status
192.	A detailed Groundwater Management Sub Plan shall be prepared to meet the requirements of DLWC and the EPA and incorporated into the Construction Framework and Operational EMPs. The Sub Plan shall cover the complete Project and shall provide details of groundwater control measures to be undertaken during both the construction and operation stages respectively and include but not be limited to: (a) handling, treatment and disposal of contaminated groundwater; (b) treatment strategies appropriate to predicted levels of salinity and quantities of seepage water; (c) pre-construction and construction monitoring in accordance with the NSW EPA Contaminated Sites: Sampling Design Guidelines (NSW Environment Protection Authority 1995) to identify elevated concentrations of contaminants; and (d) auditing.	Complete
193	Groundwater studies to determine quality, quantity and hydrological characteristics shall be undertaken for any proposed tunnel locations and significant cuts. This shall include targeted field investigations involving drilling, groundwater monitoring, bore installation, soil groundwater sampling and analysis, and data interpretation. The investigations and monitoring shall be undertaken by a suitably experienced hydrogeologist or geotechnical engineer.	Complete
194	In accordance with Condition No. 193 investigations into groundwater salinity shall be undertaken at all locations identified as potentially containing high salinity levels and areas in close proximity to sensitive watercourses. Further investigations for the groundwater salinity issues shall include, at a minimum: (a) boreholes to 5m below the proposed base of cuts, in all cuts deeper than 5m (b) installation of groundwater sampling and monitoring wells in the boreholes (c) sampling of the groundwater for salinity and general groundwater chemistry (d) regular monitoring of the groundwater levels (e) assessment of the results of the testing and monitoring by an experienced hydrogeologist	Complete
216	In accordance with the outcomes of the risk management workshop in Condition No. 212 and the findings of the Sub-Plan, the Proponent must prepare procedures dealing with the construction stage impacts in the vicinity of utilities and services, determine the need for specific risk assessments and to approve the design of any protective structures required. These procedures must be prepared to the satisfaction of the relevant authority as nominated above and in consultation with the Ministry of Energy and Utilities as appropriate prior to construction and incorporated into the Construction Method Statements.	Complete

4.0 Environmental Management Controls

4.1 Aspects and Impacts

An environmental aspect is an element of an organisation's activities, products or services that interacts or has the potential to interact with the environment. The process of identifying aspects and impacts is described in PRO-EN-013 Identify Environmental Aspects and Impacts. A register of environmental aspects and impacts are maintained in RES-EN-001 Environmental Aspects and Impacts Register.

The aspects of M7 operation and maintenance activities that have the potential to impact soil and water quality include:

- Basin and drainage management and repairs (including removal of debris from waterways, discharge of detained water and removal of accumulated sediment)
- GPT cleaning
- Scour maintenance and prevention
- Driving, refuelling, and maintaining vehicles and/or plant
- Workshop activities
- Street sweeping
- Waste management
- Dewatering of trenches and excavations
- General cleaning of equipment and vehicles
- Water used for dust suppression
- Hazardous, fuel and other chemical storage in compound areas
- Stockpile management
- Landscape management (including pesticide application, augering/digging, watering plants, fertiliser application and hydro mulching)
- Pavement and asphalt maintenance and repairs
- Any work on creek batters/embankments

The potential environmental impacts associated with these maintenance activities relating to soil and water management include:

- Sediment from unstable or unsealed areas
- Oil and hydrocarbons from road surfaces
- Chemicals and other liquid pollutants (arising from spillage or storage areas)
- Polluted or 'dead' water (no dissolved oxygen)
- Nutrients (e.g., phosphorus and nitrogen from agricultural areas and fertiliser use)
- Ground disturbance from vegetation maintenance and/or removal
- General surface run off and excavation stockpile run off into waterways
- Scouring and erosion of soil
- Localised flooding
- Sedimentation and eutrophication of the surrounding waterways
- Soil contamination

The specific control measures implemented aim to avoid or minimise impacts from operational and maintenance a activities, and they consider the quality of water entering, used on and discharging from the site during normal and adverse conditions. These are listed in **Table 7** below.

Table 7- Soil and Water Quality Management Controls

Environmental Management Control	Responsibility
TRAINING	
Ongoing development and improvement of work methods	Environmental Officer Delivery Manager Maintenance Supervisor
Good 'housekeeping' will be encouraged	Delivery Manager Maintenance Supervisor
Provision of ongoing training to site personnel on environmental issues and emergency response procedures	Risk and Compliance Manager Environmental Officer Asset Manager
Continuous training to site personnel on tannin impacts and tannin management including toolbox talk on tannin impacts and induction to educate delivery site personnel around tannin management	Risk and Compliance Manager Environmental Officer Asset Manager
INSPECTIONS	
Routine surveillance inspections of drainage infrastructure, basins, and other controls	Asset Manager
Routine surveillance inspections for scouring (basins, banks & batters)	Asset Manager
Effectiveness of controls must be checked before any major expected rainfall event and immediately after to ensure that standards are maintained	Asset Manager
Plan and implement a schedule for environmental site inspections. Coordinate these inspections with staff	Environmental Officer
MAINTENANCE & OPERATIONS	
Maintenance of stocks of booms, spill control equipment within the workshop/maintenance/ control centre compound	Delivery Manager
Impervious surfaces such as workshops and bridge decks will be swept instead of being hosed down	Delivery Manager Maintenance Crew
Minimising vegetation clearance and ground disturbance, particularly near waterways and on batters	Maintenance Supervisor Maintenance Crew
RECORDS & REPORTING	
Accurate and comprehensive record keeping and reporting	Delivery Manager Asset Manager Environmental Officer

Environmental Management Control	Responsibility
Completion and close out of checklists within the response time identified	Delivery Manager Asset Manager Environmental Officer
Maintain and update a contact list for relevant agencies and emergency response organisations	Environmental Officer

4.2 Erosion and Sediment Controls

4.2.1 Short Term Management Controls

Temporary erosion and sediment controls (i.e., sediment fences, diversion banks, diversion drains and sediment traps) will be implemented and maintained for the duration of maintenance and minor works where required and removed when the site is stable.

Temporary controls are required for all new major works and maintenance activities. This will ensure the protection of existing stormwater infrastructure (e.g., sandbags around inlets to pits and grates to intercept sediments; geo textile over pits in heavy traffic areas) and maintain soil and water quality.

Controls to manage temporary erosion and sediment control are shown in **Table 8**.

Table 8 – Short Term Erosion and Sediment Management Controls

Environmental Management Control	Responsibility	Reference
PLANNING		
Sediment and erosion control should be undertaken in accordance with Landcom's publication Managing Urban Stormwater – Soils and Construction - Volume 1	Project Manager Site supervisor	Managing urban stormwater: soils and construction Volume 1
Plan maintenance and minor works such that the extent and duration of exposed soil is minimised	Project Manager Site supervisor	
Prepare an Erosion Sediment Control Plan (ESCP) for maintenance or minor works if required	Project Manager Maintenance Team Leader	Erosion Sediment Control Plan (ESCP)
Plan activities in areas where there is a potential for erosion of disturbed or unstabilised surfaces to avoid periods of heavy predicted rainfall	Project Manager Site supervisor	Managing urban stormwater: soils and construction Volume 1
INSTALLATION		
Install erosion and sediment control measures as close to the works as possible and should complement existing controls (e.g., sediment basins and traps)	Site supervisor	
Install erosion and sediment controls for maintenance or minor works where soil is disturbed or exposed, stockpiles, drainage works and for works near waterways	Project Manager Site supervisor	

Install water diversion structures using temporary drainage structures, catch drains, bunds and sandbags before any major excavation works. This is to divert water during rainfall events	Maintenance Supervisor Site Supervisor	
Construct graded contour drains or diversion channels to ensure that clear water is directed away from disturbed areas and away from major excavation works	Maintenance Supervisor Site Supervisor	
Install silt fences and/or sediments traps using geo textile fabric and hay bales around work areas and around site boundaries	Maintenance Supervisor Site Supervisor	
Install geo textile fabric filter socks and sausages around the entries to storm water drainage pits	Maintenance Supervisor Site Supervisor	
INSPECTIONS		
Regularly inspect and maintain sediment and erosion controls until all disturbed areas are stable	Environmental Officer Project Manager Site supervisor	
MAINTENANCE & REMOVAL OF CONTROLS		
Avoid runoff from disturbed areas draining directly to waterways via ensuring runoff is directed to a basin or pond, or alternatively providing adequate sediment trapping/filtering devices	Project Manager Site supervisor	
Carry out maintenance and minor works such that the extent and duration of exposed soil is minimised	Project Manager Site supervisor	
Where signs of erosion are observed, put appropriate erosion and/or sediment controls (i.e., sediment fences) in place until the affected area can be stabilised to prevent further erosion	Site supervisor	
Maintain adequate scour protection and/or implement measures to slow the velocity of runoff water to prevent scouring	Project Manager Site supervisor	
Retain and restore vegetation where possible, particularly in riparian areas (near waterways)	Project Manager Site supervisor	
Replace broken or ineffective silt fences, rock socks and/or sandbags before the next rain event prior to the end of the expected usable life and if the control is still necessary	Site supervisor	
Remove accumulated sediment, if it is seen to take up more than 30% of sediment storage zone, and dispose of in an acceptable location away from drainage lines and watercourses	Site supervisor	
Remove accumulated sediment from sediment controls in a manner that does not damage the control	Site supervisor	
Remove controls once area is stable	Site supervisor	

4.2.2 Long Term Erosion and Sediment Control

Long term erosion and sediment management controls are linked with site rehabilitation. Controls include seeding with a cover crop and hydro mulching/hydroseeding, planting or stabilisation with jute mesh or similar product.

The grassed verges of the M7 and adjoining roads act as filter strips with shallow sheet flow from the road surface flowing over the grass. The design provides for a grass batter between the edge of the paved shoulder and the invert of the catch drains along the road corridor. This width is sufficient to act as a filter strip.

4.2.3 Erosion and Sediment Control Plans

An Erosion and Sediment Control Plan (ESCP) will be prepared where works:

- Result in the disturbance or exposure of soil > 250 m^2
- Require stockpiling of material
- Change drainage pathways
- Are in close proximity to a drain, waterway or other sensitive area

The ESCP will consider the following:

- Staging and timing of the works
- Location of waterways, retained vegetation and restricted access areas
- Location of all temporary and permanent controls including sediment fences, catch drains and sediment basins
- Any bunding that may be required in the waterway
- Location of stockpiles and details of controls above and below the stockpile
- Any dewatering activities
- Temporary crossings, access roads or work platforms
- Site rehabilitation requirements

4.2.3.1 Stockpile Management

Stockpile sites enable the temporary storage of material or plant for routine maintenance and minor works projects. All stockpile materials need to be stored in segregated areas to ensure materials do not cross-contaminate in order for them to be re-used or recycled. Stockpile sites are not to be used for the disposal of materials, storage of fuel and chemicals, or storage of any materials that are classified as hazardous, industrial, or liquid waste.

Stockpiles will be managed in accordance with the TfNSW Stockpile Site Management Guideline 2015. **Table 9** details the materials in the guideline that may be stockpiled.

Table 9 – Materials that can be stored at stockpile sites

Material	Description
Topsoil	Surface soil material selected for spreading for revegetation
Vegetation	Unshredded vegetation prunings and loppings
Mulch	Shredded vegetation used for soil stabilization and moisture conservation
Excavated Natural Material (ENM)	Excavated natural material comprised of naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay, and soil) that has: (a) been excavated from the ground (b) contains at least 98% (by weight) natural material (c) does not meet the definition of Virgin Excavated Natural Material
VENM	Virgin Excavated Natural Material (VENM) means natural material (such as clay, gravel, sand, soil, or rock fines) that has been excavated or quarried from areas that are not

	contaminated with manufactured chemicals or process residues, as a result of industrial, commercial, mining or agricultural activities, and that does not contain any sulfidic ores or soils or any other waste It is important to note that, VENM cannot be 'made' from processed soils and that any excavated material that has been stored or processed in any way cannot be classified as VENM
Aggregate	Unused sweepings and left over precoat aggregate
Select Fill	Imported high quality pavement and backfill material including road base
RAP (Milled)	Reclaimed Asphalt Pavement from milling existing asphalt
RAP (Block)	Excavated/block asphalt pavement (including left over hot mix)
RAP (Mill Waste)	Asphalt/bitumen contaminated with gravel to an extent that it would be unsuitable for asphalt reuse
Precast Concrete Units	Culvert headwalls, crown units and pipes
Steel Reinforcing	Steel used for the reinforcement of concrete pavement or structures
Waste Concrete	Excavated block concrete, waste concrete material

4.2.4 Temporary Stockpiles

Temporary stockpile sites are used for the duration of a maintenance or minor works project. The stockpile site is established at the beginning and used throughout the project. Once the project is complete, the land is restored to its original condition. Environmental management controls are shown in **Table 10**.

Table 10 – Stockpile Management Controls for temporary and permanent stockpiles

Environmental Management Control	Responsibility	References
PLANNING		
Plan temporary and permanent stockpiles so that: • They sit outside the Tree Protection Zone of trees (approx. 12 times the diameter of the tree trunk) • They are at least 5 metres away from trees or native vegetation and never pushed up around the base of trees	Project Manager	TfNSW Stockpile Site Management Guideline 2015
INSTALLATION		
Install temporary and permanent stockpiles so that: • They sit outside the Tree Protection Zone of trees (approx. 12 times the diameter of the tree trunk) • They are at least 5 metres away from trees or native vegetation and never pushed up around the base of trees	Site supervisor Drainage crew	TfNSW Stockpile Site Management Guideline 2015
INSPECTIONS		

Environmental Management Control	Responsibility	References
Stockpiles should be checked regularly to ensure that the site sign (which clearly names and locates the site), perimeter bunding, sedimentation and erosion controls and boundary delineation are all in order	Environmental Officer	TfNSW Stockpile Site Management Guideline 2015 FRM-EN-004 Waste Management Checklist
MAINTENANCE & DECOMISSION		
All activities on the site including vehicle traffic and parking should be outside the drip line of trees	Project Manager Site supervisor Drainage crew	TfNSW Stockpile Site Management Guideline 2015
Access to the stockpile site will be maintained as required. Consideration must also be given to signposting, pavement maintenance and maintenance of hard stand entry and egress. Access to private property adjacent to the stockpile is to be maintained with minimal delays to private landowners. Emergency access to private property is to be provided at all times	Site supervisor	TfNSW Stockpile Site Management Guideline 2015
The perimeter of stockpile sites will be delineated with a bund (made out of earth or RAP or other type of fencing or barrier)	Site supervisor	TfNSW Stockpile Site Management Guideline 2015
Stormwater should be diverted around the site and be prevented from entering the site	Site supervisor	TfNSW Stockpile Site Management Guideline 2015
Erosion and sedimentation controls should be installed and maintained between the site and any drainage lines or downslope areas to manage the impact of any runoff from each stockpile, including: • sediment fences below stockpile sites to catch sediment runoff and ensure they are cleaned of sediment as required • catch drains to divert water around the stockpile, which are to be kept stable and free of scours	Site supervisor	TfNSW Stockpile Site Management Guideline 2015
Stabilise stockpiles as required (e.g., with vegetative cover). Cover stockpiles with plastic or keep them damped down if dust could be a problem.	Site supervisor	TfNSW Stockpile Site Management Guideline 2015
Stockpiles and the general stockpile area are to be maintained to prevent the spread of weeds in accordance with the *Biosecurity Act 2015* (NSW).	Site supervisor Maintenance crews	TfNSW Stockpile Site Management Guideline 2015

Environmental Management Control	Responsibility	References
		Biosecurity Act 2015 (NSW).
Stockpile materials should be no greater than 2 metres in height and have batters with a maximum slope of 2:1.	Site supervisor	TfNSW Stockpile Site Management Guideline 2015
Stockpiled material is to be managed to ensure that the capacity of the site is not exceeded, the stockpiled material has not encroached on vegetation, and that the stockpile boundary and height restrictions have not been exceeded.	Site supervisor	TfNSW Stockpile Site Management Guideline 2015
Material that has been illegally disposed of at the stockpile site will be removed as quickly as possible. The disposal of any illegally dumped material will be appropriate to the classification of the waste material. Measures to reduce illegal dumping at stockpile sites include: • making access to the site difficult • inspection and surveillance of stockpile sites • keeping the area free of illegally dumped material • installing signs with illegal dumping prevention messages	Delivery Manager Site supervisor Maintenance crews	
Small stockpiles will be combined where possible to keep the site tidy and avoid material contamination.	Site supervisor Drainage crew	
Stockpile sites will be kept in a clean and tidy state when not in use.	Site supervisor	TfNSW Stockpile Site Management Guideline 2015
Excess aggregate, select or fill materials should be reused or recycled wherever possible	Delivery Manager Asset Manager	TfNSW Stockpile Site Management Guideline 2015

4.2.5 Permanent Stockpiles

Permanent stockpile sites are used for ongoing maintenance of the M7. The control measures are more permanent in nature and specific to local conditions and the types of material stored. Stockpiles are generally located in the operational storage compound (referred to as Gate 19) situated in the alignment of Wallgrove Grove, just north of the M7 depot and at Spire Ct.

4.3 Tannin Management

Tannin management will be required if large volumes of mulch are stockpiled for M7 works. Tannins are naturally occurring plant compounds present in some galls, barks, and other plant tissues.

Water that contains high tannins can cause:

- Dark coloured water discharge which can reduce visibility and light penetration.
- Change in pH.

- An increase in the biological oxygen demand (BOD) of the receiving environment, which may result in a decrease in available dissolved oxygen.

Tannin generation is generally highest from mulched vegetation that is stockpiled in areas that are subject to inundation. Tannin generation from vegetation mulch is likely to be highest from low-lying coastal floodplain areas (e.g., *Melaleuca* spp.).

Tannins cannot be readily treated with standard construction site water quality controls; therefore, tannin generation must be avoided or minimised. Tannin management will be carried out in accordance with the TfNSW management plan *Environmental Direction: Management of Tannins from Vegetation Mulch* 2012.

4.4 Waterways

Any maintenance or minor works in or near waterways will be planned to minimise the potential for bank and vegetation disturbance and will be carried out in accordance with the TfNSW *Code of Practice for Minor work in NSW waterways* 2014. The TfNSW *Biodiversity Guidelines* 2011 (superseded by the *Biodiversity Management Guideline 2024*) is also referenced within the Code and will be consulted during the planning of maintenance or minor works in or near waterways. Vegetation near waterways is to be retained and restored where possible. The prevention of scour and maintenance of batters (and vegetation on batters) is important for the stability of the road embankment and bridges and the prevention of pollution of waterways.

Bridge locations and structure details for waterway crossings along the M7 are provided in **Appendix A**.

4.5 Stormwater Drainage System, Detention Basins and Gross Pollutant Traps

Rainwater from the motorway and shared path is directed to water quality treatment devices such as water quality control ponds, dry detention basins and gross pollutant traps (GPTs) via the drainage system with the intended outcome of treating runoff prior to its release into local waterways to avoid damage to these sensitive areas.

4.5.1 Stormwater Drainage System

The stormwater drainage system of the M7 has been designed to treat runoff from the M7 prior to discharge into local waterways and to prevent runoff from discharging directly into ESAs. Pavement runoff from the M7 and on/off ramps is directed through gross pollutant traps and/or stormwater basins to remove pollutants typically associated with the runoff from the pavement, and to capture spills in the event of a spill incident.

Permanent catch drains, grassed filter strips and swales have been designed to divert clean runoff away from cut and fill batters and dirty water into pits and basins.

4.5.2 Detention Basins

Extended dry detention basins have been installed along the motorway. The ponds are designed with lockable low flow valves that remain open unless a spill incident occurs and can be closed manually to capture the water.

There are 165 stormwater basins situated along the M7, the majority which were converted from sediment basins during construction.

The basin design adheres to the following obligations:

- Landcom's publication Managing Urban Stormwater: Soils and Construction Volume 1.
- OEH publication Floodplain Development Manual: the management of flood liable land.
- MCoA requirements.
- Available area within the corridor to construct a basin.
- Location in relation to sensitive environments.
- Maintenance access requirements.
- Permanent spill control requirements.
- Local rainfall characteristics.
- Soil types.

The water quality control ponds and basins are designed to achieve the following functions:

- First flush detention storage. First flush controls are intended to capture the initial 13 mm of runoff from each drainage catchment or 150 m^3/ha. The detention period for the first flush is up to 48 hours. This allows coarser and high-density sediments, litter, and particulate pollutants to settle.
- Provide a water storage area with a minimum volume of 50 000 litres with a shutoff valve located on the basin outlet pipe to partition the spillage from the catchment waterways and slow down the passage of stormwater flow.
- Sedimentation controls.
- Saline groundwater seepage control.
- Entrapment of hydrocarbons/chemical spills. In the event of accidental spillage, the low flow shut off valve needs to be manually locked to contain the contaminant. For all other occasions, the low flow shut off valve is to remain unlocked to allow the flow of water.
- Collection of rubbish and litter via GPTs.

4.5.3 Stormwater Basin Maintenance

Sediment accumulation in basins will be removed where the volume of sediment is approaching 30% of the sediment storage capacity. Sediment will be reused where possible to assist erosion control around basins or reused within the motorway boundaries with all required minimum controls, in accordance with the NSW EPA *Excavated Public Road Material Exemption 2014* and *Excavated Public Road Material Order 2014*.

Scouring or damage to any part of the basin will be rectified in line with SMP-MT-016 Basins, Floodway and Scour Protection Maintenance Procedure.

A full assessment of the environmental aspects and impacts relating to stormwater basin maintenance, e.g., vegetation removal and pesticide use, are detailed in the RES-EN-001 Environmental Aspects and Impacts Register.

4.5.4 Gross Pollution Traps (GPTs)

Gross pollutant traps (GPTs) are designed to capture coarse sediments via a sedimentation tank, and materials such as litter through trash racks.

GPTs have been installed where sufficient land was not available for a sediment basin, and where the land adjoining the road is subject to inundation by floods. GPT's have been constructed in 13 locations along the M7.

The GPTs are designed to operate to contain a 1-in-100-year storm event but are capable of capturing pollutants in larger storm events. A by-pass mechanism has been incorporated to manage events greater than the 1-in-100-year storm event.

5.0 Spill Prevention and Response

The OEMP provides details of emergency response procedures and emergency contacts. The PRO-OP-007 Incident Response Procedure details the procedure/s during an environmental incident and emergency.

If an incident occurs that may potentially impact upon soil or water quality, a fully trained emergency response crew will be called into action. Such an incident may include a spillage or leak, failure of a pollution control device, bund or basin, a major settlement or fire (e.g., loss of ground cover vegetation).

Details of spill related incidences and responses that may impact on soil and water are detailed below.

5.1 Spill Prevention in Fuel and Chemical Storage Areas

Fuels and chemicals required for maintenance works during the operation of the M7 will be stored in the maintenance depot with secondary containment (bunding). Measures must be put in place to control the risks arising from the spill or leak of dangerous goods. Any area designed to contain goods spilt from a tank must not be shared with spill containment for substances that are not compatible.

Responsibility for the maintenance of fuel and chemical storage areas is with the Maintenance Supervisor who will:

- Check for leaking or damaged containers/drums.
- Remove any visible pollution from the floor of the bund immediately (using absorbent material and proper disposal methods).
- Regularly check the secondary containment bunds for cracking. Cracks should be rectified immediately as these provide a 'weak point' for materials to leak through.
- Containers and drums must be wholly within the bund.
- Undertake preventative maintenance as soon as a problem is detected.
- Ensure that the decanting of liquids is undertaken within a bunded area and that spills are cleaned up immediately.
- Ensure that a suitable spill kit is available on all vehicles and for workshop/storage areas.
- Plant and equipment will be refuelled in the Depot when applicable. When refuelling on-site is necessary, use a drip tray and ensure that the refuelling location is > 50 m from waterways.

5.2 Spill Response

5.2.1 Spills During Maintenance and Minor Works

Accidental fuel and oil spills will be cleaned up immediately using the available spill kits.

Spill kits include:

- Spill trailer for incidents on the motorway.
- Spill kit in depot for workshop and chemical storage area.
- Spill kits in work vehicles for use during maintenance and minor works.

Chemical spills will be addressed in accordance with the *PLN-EN-001 OEMP* and cleaned up in accordance with the instructions on the Safety Data Sheet (SDS). Materials used to clean up spills will be disposed of in accordance with the PLN-EN-004 Waste Management Plan.

Dangerous goods that have been spilled or leaked must be contained safely within the premises as far as is reasonably practicable. In the event of a spill or leak, the following actions are to be taken:

- Immediately reduce any risk associated with the spill or leak as far as reasonably practicable
- Dangerous goods and any resulting effluent are to be cleaned up and disposed of or otherwise made safe, as soon as reasonably possible.

5.2.2 Major Incidents

The procedure to manage major emergency spills and other incidents is outlined in:

- PLN-OP-002 Traffic Incident Management Plan
- PRO-BS-002 Incident, Hazard, and NCR Reporting
- SMP-OP-004 Spill Clean-up Procedure

The low flow shut off valve will remain unlocked at all times, unless required to be manually locked in the event of accidental spillage in order to contain the contaminant.

Where chemicals or other pollutants have been captured in a basin following a spill or incident on the M7 comprising actual or potential material harm, direction from the TfNSW and/or EPA will be implemented. As per MCoA 155, spilled material is required to be removed as soon as practicable and at least within 24 hours.

Soil contaminated as a result of an incident will be either remediated in-situ or excavated and disposed of in an approved manner as hazardous waste in accordance with PLN-EN-004 Waste Management Sub Plan.

If guided to do so by the EPA, the site will be assessed and, if required, a remedial strategy developed. A certified contractor will provide treatment using the appropriate methodologies. Any soil or water testing required will be carried out by a NATA approved laboratory.

5.3 Contaminated Land

5.3.1 Unexpected Contaminants

The response to the unexpected discovery of contaminated material will follow these steps:

1. Stop work and ensure safety of site personnel.
2. Inform Traffic Control Room on **(02) 9834 9261**.
3. Inform Environmental Officer and Work Health and Safety (WHS) Officer.
4. Install environmental controls once it has determined it is safe to do so.
5. Environmental Officer to inform the EPA or the local council as appropriate.
6. Contact specialist consultant if needed.
7. Engage a NATA accredited laboratory to sample and classify the soil/sediment/water or groundwater.
8. If required, a Remediation Action Plan or Site Soil Management Plan will be developed for management of the contamination.

6.0 Monitoring and Review

6.1 Environmental Monitoring and Inspections

Stormwater and wastewater facilities and soil quality are inspected regularly in accordance with an inspection schedule through the Confirm asset management system and maintained in a functional condition in compliance with EMS documentation.

Details of monitoring and inspection requirements are detailed in **Table 11** below.

Table 11 – Inspection and Monitoring Requirements

Activity, Product or Service	Action	Responsibility	Timeframe	Reference / Procedure
Stormwater Drainage	Inspect and assess the functionality of catch drainage and culverts.	Delivery Manager	Annually	SMP-AS-016 Open Drain and Channel Procedure SMP-AS-017 Drainage Pits and Covers Inspection Procedure
	Grassed filter strips and swales are required to be visually assessed to identify scour and assess stability and ground cover.			
GPTs	Inspect and assess the functionality of GPT's.	Delivery Manager	6 monthly	SMP-AS-008 GPT Inspection Procedure
	Inspect rubbish and litter traps.	Delivery Manager	6 monthly or after a major storm event	
	Action/s in response to inspections (i.e., cleaning of the structures may need to be carried out).	Asset Manager Maintenance Supervisor/Team	3 – 6 months	
Stormwater Basins	Assess the condition and integrity of the basins including sediment levels and water conditions. Check markers to in each basin to assess whether the level is within 30% of sediment storage capacity for the basin. When > 30% full, remove accumulated sediment.	Delivery Manager	Annually	PLN-EN-001 OEMP PRO-QA-005 Internal and External Audit Procedure SMP-AS-005 Basin and Detention Ponds Inspection Procedure SMP-AS-006 Motorway Weather Event Inspection Procedure
	Routine surveillance inspections for scouring.	Asset Manager		
	Aspects of the basin that will be inspected include the spillway and spillway protection, shut off valve,	Asset Manager		

Activity, Product or Service	Action	Responsibility	Timeframe	Reference / Procedure
	standpipe, release/outlet pipes and walls.			
	Weather event (rainfall) inspection.	Asset Manager	If > 20 mm rain in 24 hours	SMP-AS-006 Motorway Weather Event Inspection Procedure
Erosion and Sediment Control	Inspect and maintain sediment and erosion controls until all disturbed areas are stable.	Environmental Officer Project Manager Site Supervisor	As required	TfNSW PN 143P Erosion and Sedimentation Management Procedure
Stockpiles (Temporary and Permanent)	Inspect regularly to ensure that the site sign (which clearly names and locates the site), perimeter bunding, sedimentation and erosion controls and boundary delineation are all in order.	Environmental Officer	Quarterly	FRM-EN-004 Waste Management Checklist TfNSW Stockpile Site Management Guideline 2015
Tannin Management	Monitor the site for generation of tannins. Tannin impacts can be readily identified visually as dark colored ponded water. Site staff should be trained to identify and report potential impacts to the site project management or environment staff.	Project Manager Site supervisor	As required	TfNSW ED 25 Management of Tannins from Vegetation Mulch
Bridge Waterways	Waterways crossed by the M7 will be visually assessed to identify uncontrolled discharges; scour and/or debris (e.g., vegetation, sediment, litter) preventing free flow of water under bridge structures. If identified, maintenance works will be initiated.	Asset Manager	Annual	PLN-EN-001 OEMP PRO-QA-005 Internal and External Audit Procedure SMP-AS-008 GPT Inspection Procedure
Receiving Waterways	Objectives of post-construction phase monitoring are to assess and manage impacts on the receiving waters as the site stabilises; and to assist in deciding when the site has stabilised.	Delivery Manager Asset Manager	6-monthly	TfNSW Guideline for *Construction Water Quality Monitoring* PLN-EN-001 OEMP PRO-QA-005 Internal and External Audit Procedure

Activity, Product or Service	Action	Responsibility	Timeframe	Reference / Procedure
	The ongoing water quality monitoring parameter is visible oil or grease. The inspections that include monitoring of oil and grease are: • Annual stormwater basin inspections • Weather event inspections			SMP-AS-005 Basin and Detention Ponds Inspection Procedure SMP-AS-006 Motorway Weather Event Inspection Procedure
Beds, Banks, and Batters	Visually assess beds, banks, and batters to identify scour and assess stability and ground cover.	Asset Manager	Annual	SMP-AS-011 Batters and Embankments
Fuel/Chemical Stores	Inspect and maintain bunded areas (secondary containment).	Delivery Manager	Weekly	SMP-MT-023 Depot Wash Down & Maintenance Procedure SMP-AS-040 Building and Carpark Inspection Procedure SMP-AS-008 Gross Pollutant Traps Inspection Procedure
	Inspect and existing pollution control devices (e.g., diversion drains, GPTs and bunding areas) along the M7 and within workshop/storage areas to ensure they are operable and working efficiently at all times.			
Emergency Preparedness	Inspect and restock spill trailer and spill kits.	Delivery Manager	Quarterly	Sub-contractor
Spill Incident Response	Facilitate independent assessment of soil/water quality following a spill incident.	Environmental Officer	Prior to release of water from stormwater basins	-

6.2 Environmental Auditing

To ensure that the management system is operating effectively, Westlink Services will carry out systematic and progressive internal and external audits on the implementation of the EMS. This is done in accordance with the PLN-EN-001 OEMP.

Details of the auditing requirements including the scope, responsibility, frequency, and methods are provided in PRO-QA-005 Internal & External Audit Procedure.

6.3 Non-conformance, Corrective and Preventative Action

Non-conformity occurs when a requirement is not fulfilled. Requirements may relate to the management system or to environmental performance. Non-conformity may be found during audits and reviews or as the result of hazard identification and incidents.

Procedures for non-conformance, and corrective and preventative actions are detailed in PLN-EN-001 OEMP.

6.4 Management Review

The management review process will identify opportunities for improvement of practices and procedures.

The effectiveness of soil and water quality control measures and maintenance activities will be assessed as a part of the EMS on:

- Approval, permit and licence conditions
- Inspection records
- Agreed maintenance schedules and work methods
- Environmental incident response, reporting and follow up.

Further information on Management Review is detailed in the PLN-EN-001 OEMP.

6.5 SWMP Review

The SWMP will be reviewed annually to ensure that it remains current, effective, and adequately addresses the operational issues and maintenance activities being undertaken.

7.0 References

7.1 Internal References

- PLN-EN-001 Operational Environmental Management Plan
- PLN-QA-002 Records Management Plan
- PRO-QA-001 Document Control Procedure
- Scope of Works and Technical Criteria
- Operational ESA Plans Series C001-OEW
- RES-EN-001 Environmental Aspects and Impacts Register
- PLN-EN-002 Landscape and Revegetation Management Plan
- ESA Plan C001-OEW-762114
- Drawing Plan MSJV-DD-010
- Drawing Plan MSJV-DD-020
- RES-BS-008 Environmental Legal Compliance Register
- PRO-QA-005 Internal & External Audit Procedure
- PRO-EN-013 Identify Environmental Aspects and Impacts
- FRM-EN-004 Waste Management Checklist
- SMP-MT-016 Basins, Floodway and Scour Protection Maintenance Procedure
- PRO-OP-007 Incident Response Procedure
- PLN-EN-004 Waste Management Sub-Plan
- PLN-OP-002 Traffic Incident Management Plan
- PRO-BS-002 Incident, Hazard, and NCR Reporting
- SMP-OP-004 Spill Clean-up Procedure
- SMP-AS-016 Open Drain and Channel Procedure
- SMP-AS-017 Drainage Pits and Covers Inspection Procedure
- SMP-AS-008 GPT Inspection Procedure
- SMP-AS-005 Basin and Detention Ponds Inspection Procedure
- SMP-AS-006 Motorway Weather Event Inspection Procedure
- SMP-AS-011 Batters and Embankments
- SMP-MT-023 Depot Wash Down & Maintenance Procedure
- SMP-AS-040 Building and Carpark Inspection Procedure
- M712UDC-JHGRP-M7A-LA-PLN-000001 Stage 1 Design and Landscape Plan
- M712UDC-JHGRP-M7A-LA-PLN-303001 Stage 2 Design and Landscape Plan
- M7 Widening Project (SSI 663 MOD 6) Creek-side Vegetation Management Plan.

7.2 External References

- Ministers Conditions of Approval (125 - 216)
- ALJV, WSO Groundwater Investigation Report, 19th August 2003
- Add storage of small volumes of fuel (email from Daniel)

7.3 Relevant Guidelines

Transport for New South Wales (TfNSW):

- Stockpile Site Management Guideline 2011
- Environmental Direction: Management of Tannins from Vegetation Mulch 2012
- Code of Practice for Minor Work in NSW Waterways 2014
- Code of Practice for Water Management - Road Development and Management 1999
- Biodiversity Management Guideline 2024

- Guideline for Construction Water Quality Monitoring
- QA Specification G38 Soil and Water Management
- Guideline for Batter Surface Stabilisation Using Vegetation 2015
- Guideline for the Management of Contamination 2013

NSW Environment Protection Authority (EPA):

- Guidelines on the Duty to Report Land Contamination under the Contaminated Land Management Act 1997, 2015
- Approved Methods for the Sampling and Analysis of Water Pollutants in NSW 2004
- EPA Excavated Public Road Material Exemption 2014
- EPA Excavated Public Road Material Order 2014

Landcom:

- Managing urban stormwater: soils and construction Volume 1 (Blue Book)

ANZECC

ANZECC Guidelines **Office of Environment and Heritage:**

- Floodplain Development Manual: the management of flood liable land 2005
- NSW Water Quality Objectives (ANZG 2018)

Department of Planning Housing and Infrastructure

- Performance Criteria for Protecting and Improving the Blue Grid in the Wianamatta – South Creek Catchment (DPIE, 2021)

APPENDIX A:
GPT and Bridge Locations

GPT Locations

Reference	GPT Type	Location
102001	Type 5-Boom Diversion System	M7 S/B Bernera Road off ramp between ramp and Shared Path entrance, next to culvert C03.09B (Chainage: 3060)
102002	Type 4-Filter Basket	M7 S/B Elizabeth Drive off ramp in shoulder 5 metres north of Traffic Lights (Chainage: 10610)
102003	Type 11-Circular Screen	Control Centre, Depot (Southwest end of Depot, next to Control Centre boundary fence)
102004	Type 11-Circular Screen	W/B Great Western Highway in shoulder, next to shared path access (Chainage: 20600)
102005	Type 5-Boom Diversion System	M7 S/B Great Western Highway off ramp, next to Basin 20.70, near bridge retaining wall (Chainage: 20700)
102006	Type 5-Boom Diversion System	M7 S/B approx. 30 metres south of Rooty Hill Rail Line, in shoulder (Chainage: 23050)
102007	Type 5-Boom Diversion System	M7 S/B approx. 300 metres north of Rooty Hill Rail Line (Chainage: 23460)
102008	Type 5-Boom Diversion System	M7 S/B end of Woodstock Avenue on ramp, in shoulder (Chainage: 23650)
102009	Spill Containment Pit	M7 S/B Power Street off ramp, in mainline shoulder (Chainage: 25420)
102010	Type 5-Boom Diversion System	Shared Path N/B Florence Street, in Basin 26.45 (Chainage: 26500)
102011	Type 11-Circular Screen	M7 N/B Richmond Road on ramp, in shoulder, approx. 10 metres north of pedestrian crossing, next to Basin 27.40 (Chainage: 27410)
102012	Type 5-Boom Diversion System	M7 N/B Richmond Road on ramp, in shoulder approx. 50 metres north of pedestrian crossing, next to Basin 27.45 (Chainage: 27460)
102013	Type 5-Boom Diversion System	Shared Path S/B approx. 75 metres north of Richmond Road pedestrian overbridge (Chainage: 27450)
102014	Small Collection Pit	Symonds Road N/B side of motorway near entry to Stone Cutters, access road to M7 land (Chainage: 29080)
102015	Type 5-Boom Diversion System	M7 S/B Quakers Hill Parkway off ramp, in footpath next to traffic lights (Chainage: 29900)

Reference	GPT Type	Location
102016	Type 5-Boom Diversion System	M7 N/B Kadina Place, Quakers Hill, next to Basin 31.90 (Chainage: 31850)
102017	Type 5-Boom Diversion System	Shared Path S/B approx. 250 metres south from Sunnyholt Road access point, in the middle of Basin 33.70 (Chainage: 33650)
102018	Type 5-Boom Diversion System	Shared Path S/B approx. 150 metres south from Sunnyholt Road access point, at the northern end of Basin 33.70 (Chainage: 33750)
102019	Type 5-Boom Diversion System	M5 W/B in shoulder, approx. 10 metres west of M5 METS bay 97
102020	Type 11-Circular Screen and Rectangle Sediment Sump	Shared path 450m north of Sunnyholt Rd, (Chainage: 34450)
102021	Oceanprotect JF2300-7-2 Filter Unit	Northern end of Basin 18.24, adjacent to M7 S/B to Wallgrove Road off ramp (Chainage 18208)
102022	Oceanprotect JF2300-9-2 Filter Unit	Northern end of Basin 18.24, adjacent to M7 S/B to Wallgrove Road off ramp (Chainage 18250)
102023	Oceanprotect JF2300-9-2 Filter Unit	Southern end of Basin 18.30, adjacent to Wallgrove Road to M7 N/B access ramp (Chainage 18133)
102024	Oceanprotect JF2300-9-2 Filter Unit	Northern end of Basin 18.85 (Chainage 19001)

Waterways

Waterway Description	Chainage	Structure Number	Bridge Length (m)
Maxwell's Creek Tributary 2	970	3.0(NB) 3.10(SB)	35.0 35.0
Kurrajong Road over Maxwell's Creek	1250	4.0	126.5
M7 bridge over Maxwell's Creek	1720	5.0(NB) 5.1(SB)	172.5 172.5
Bridge over Cabramatta Creek	3310	7.0(NB) 7.1(SB)	225.0 225.0
Viaduct over Hinchinbrook Creek	4250	8.0(NB) 8.1(SB)	693.0 693.0
Farm dams and back channels – Hichinbrook Creek Tributary 4	8230	13.0(NB) 13.1(SB)	66.5 66.5
Ropes Creek and Villiers Road	11800	19.10(NB) 19.11(SB)	118.0 118.0
Reedy Creek crossing, south of Old Wallgrove Road	17920	25.3 (Old Wallgrove Road) 25.4 (M7 NB off-ramp) 25.8 (M7 SB on-ramp) 25.20(NB) 25.21(SB)	65.0 81.0 80.0 72.0 72.0

Waterway Description	Chainage	Structure Number	Bridge Length (m)
Reedy Creek Tributary crossing, north of Old Wallgrove Road	18350	25.92(NB) 25.93(SB)	35.0 35.0
Eastern Creek crossing at eastern end of M7/M4 interchange	19500	26.20(SB) 26.21(NB)	75.0 75.0
Angus Creek bridge	22820	30.0(NB) 30.1(SB)	76.0 76.0
Eastern Creek/Breakfast Creek combined bridge	29450	39.0/40.0(NB) 39.1/40.1(SB)	225.0 225.0
Lady Penrhyn Park/Caddies Creek	35250	46.7(NB) 46.8(NB)	54.7 54.7
Lalor Creek	36410	47.0(NB) 47.1(SB)	58.0 58.0
Unnamed Creek	37350	49.0(NB) 49.1(SB)	130.0 238.0
Unknown waterway	38400	52.1(NB) 52.2(SB)	14.0 14.0
Toongabbie Creek	38990	53.0(NB) 53.1(SB)	120.0 120.0