Upper South Creek

Advanced Water Recycling Centre and Pipelines

Surface Water Monitoring Report

Document Number: USCP-JHG-RPT-ENV-0017
Revision: 02

Revisions and Distribution

Distribution

There are no restrictions on the distribution or circulation of this Construction Environmental Plan within John Holland.

	Uncontrolled Copy
Authorised By: Date:	Richard Ioffrida (Project Director) 05/03/2025

Revisions

Draft issues of this document shall be identified as Revision 01, 02, 03 etc. Upon initial issue (generally Contract Award) this shall be changed to a sequential number commencing at Revision A. Revision numbers shall commence at Rev. A, B etc.

Date	Rev	Remarks	Section	Prepared By	Reviewed By & Approved By
11/12/2024	1	Initial version for review	All	R.Maxwell	A.Harrington
05/03/2025	2	Updated following SW and ER comments	All	R.Maxwell	A.Harrington

Glossary and Abbreviations

Abbreviation	Term	Definition
AWRC	Advanced Recycling Water Centre	Proposed centre for treatment of the wastewater prior to reuse applications or discharge, which includes liquids treatment, advanced water treatment, solids treatment, odour treatment, and residuals management
AHD	Australian Height Datum	A common reference level used in Australia which is approximately equivalent to the height above sea level in metres.
-	Brine Pipeline	A pipeline to transport brine (salty/concentrated wastewater). Brine water is a byproduct of reverse osmosis in the wastewater treatment process.
EC	Electrical Conductivity	The ability of a material to conduct an electric current. In groundwater studies, electrical conductivity is used as an indicator of water quality, as it relates to the concentration of charged particles in water. Electrical conductivity provides an indication of the amount of total dissolved solids and the amount of salts in the water. Typically measured in µS/cm.
EIS	Environmental Impact Statement	An Environmental Impact Statement is a publicly available document that provides technical information on a project, including a summary of the environmental setting, its environmental impacts and mitigation measures, and is used to inform development consent decisions
-	Hydraulic Conductivity	The measure of how easily water can pass through a porous material. High values indicate permeable material through which water can pass easily and low values indicate a less permeable material. Hydraulic conductivity is dependent upon the intrinsic permeability of the material, the degree of saturation and the fluid properties (i.e. density and viscosity).
LOR	Limit of reporting	The smallest concentration of a chemical that can be reported by the laboratory using the adopted analytical methodology. Also commonly referred to as the Estimated Quantitation Limit (EQL) or detection limit.
NATA	National Association of Testing Authorities	Water samples collected are required to be tested at laboratories/facilities which are NATA accredited.
-	Treated water pipeline	The pipelines that will convey the highly treated water to the receiving environment. The pipelines will transport water from the AWRC to the discharge points at the Nepean River. These pipelines will range in size from about 0.6 m to 1.5 m in diameter and will generally consist of steel, glass reinforced plastic and polyethylene pipe materials.
USC	Upper South Creek	The catchment in which the AWRC will be located. South Creek discharges to the Nepean River which flows directly into the Hawkesbury River and then discharges out to the Pacific Ocean
WQO	Water Quality Objectives	Water Quality Objectives are long-term goals for water quality management. They are measures, levels or narrative statements of indicators of water quality that protect environmental values. They define what the water quality should be to protect the environmental values—after consideration of the socio-economic assessment of protecting the water quality.

Table of Contents

1 Background

The Upper South Creek (USC) Advanced Water Recycling Centre and Pipelines project (the project) has been proposed to support the population growth and economic development of the Western Sydney Aerotropolis Growth Area (WSAGA or Aerotropolis), South West Growth Area (SWGA) and the new Western Sydney International Airport. The project will provide wastewater services to Western Sydney to produce high-quality treated water for non-drinking reuse and for release to local waterways.

The project will comprise the following components:

- A new Advanced Water Recycling Centre (AWRC) to collect wastewater from businesses and homes and treat it, producing high-quality treated water, renewable energy and biosolids for beneficial reuse
- A new green space area around the AWRC, adjacent to South Creek and Kemps Creek, to support the ongoing development of a green spine through Western Sydney
- New infrastructure from the AWRC to South Creek, to release excess treated water during significant wet weather events, estimated to occur about 3 – 14 days each year
- A new treated water pipeline from the AWRC to Nepean River at Wallacia Weir, to release high-quality treated water to the river during normal weather conditions
- A new brine pipeline from the AWRC connecting into Sydney Water's existing wastewater system to transport brine to the Malabar Wastewater Treatment Plan
- A range of ancillary infrastructure

2 Purpose

The purpose and scope of the Surface Water Quality Construction Monitoring Program (SWQ-CMP) (Appendix E of the Surface Water and Groundwater CEMP Sub-plan) is to address the Ministers Conditions of Approval (CoA) for SSI 8609189 requirements (C13-C18) for a Surface Water Quality Construction Monitoring Program. The SWQ-CMP establishes how John Holland will monitor the effectiveness of mitigation measures applied during the construction phase of the AWRC site, treated water and brine pipelines. This SWQ-CMP is based on baseline studies developed for the USC AWRC Environmental Impact Statement (EIS) dated September 2021. The purpose of this Surface Water Monitoring Report (SWMoR) is to detail the findings of this monitoring program for the months of March to August 2024 inclusive (the reporting period). Monitoring reports will be produced every 6 months as specified in Section 7.3 of the Monitoring Program in accordance with the CoA C18. The report captures the following details:

- The location and description of surface water monitoring undertaken during the reporting period
- A tabulation of NATA laboratory data and in-situ field measurements
- Summary and analysis of any measurements exceeding the nominated criteria.

3 Construction Update

Activities undertaken at AWRC throughout the reporting period are as follows.

- Clearing and Grubbing
- Bulk Earthworks
- Structure Construction Works including:
  - Piling Works
  - Steel fixing
  - Installation of structural elements
  - Form, reo, pour (FRP) works
  - Concrete pours
  - Planned water discharge events in accordance with EPL 21800 and the Dewatering Procedure (Appendix A of the Surface Water and Groundwater CEMP Sub-plan). It is noted that there were no unplanned water discharges to waterways or outside the project boundary.

Activities undertaken on pipelines throughout the reporting period are as follows.

- Clearing and grubbing
- Potholing
- Open-trench excavation
- Horizontal directional drilling (HDD)
- Pipe installation

- Trench backfilling and surface reinstatement
- Instream works particularly at Oaky Creek, Cosgroves Creek and South Creek
- Construction of the Nepean River discharge structure
- Planned water discharge events in accordance with EPL 21800 and the Dewatering Procedure (Appendix A of the Surface Water and Groundwater CEMP Sub-plan). It is noted that there were no unplanned water discharges to waterways or outside the project boundary.
- Rehabilitation.

4 Surface Water Quality Monitoring

4.1 Monitoring Network

Surface water quality monitoring was carried out at the locations specified in Table 1 for AWRC and Table 2 for the Treated Water Pipeline. These monitoring locations are also presented in Figure 1 for the AWRC site and Figure 2 for Pipelines. Water quality monitoring was not required along the brine pipeline during the reporting period as per the approved SWMoP. It is noted that additional monitoring was undertaken at RBM12 (SW12) and the Nepean River (SW11) discharge structure due to the proximity of construction works to waterways.

Table 1: Surface Water Quality Monitoring Locations (AWRC)

Site Code	Site Description	Easting	Northing
SW01	AWRC site drainage line 1 located downgradient of the site. The receiving waters for this monitoring point is South Creek.	33.85518	150.77018
SW02	AWRC site drainage line 2 located downgradient of the site. These locations will only be sampled if there is a damage to the perimeter berm. The receiving waters of this monitoring point is Kemps Creek.	33.85543	150.77852
SW03	AWRC site drainage line 3 located downgradient of the site. The receiving waters for this monitoring point is South Creek.	33.85406	150.77011
SW04	Additional stormwater control facilities (e.g. sediment ponds) that drain directly to South Creek (to be confirmed based on construction plans) located adjacent the upgradient watershed boundary. The receiving waters for this monitoring point is South Creek.	33.85966	150.76794
SW05	Additional stormwater control facilities (e.g. sediment ponds) that drain directly to Kemps Creek. (to be confirmed based on construction plans) located downgradient of the site. These locations will only be sampled if there is a damage to the perimeter berm. The receiving waters of this monitoring point is Kemps Creek.	33.85251	150.77414
SW06a	AWRC wet weather sampling only In receiving water above the confluence of site water discharge point (location is indicative and subject to accessibility and safety of sampler). If sampling from this point is not possible, the alternative point SW06c can be used. The receiving waters for this monitoring point is South Creek.	33.854340	150.769619
SW06b	AWRC wet weather sampling only In receiving water below the confluence of site water discharge point, but upstream of the AWRC site boundary (location is indicative and subject to accessibility and safety of sampler). If sampling from this point is not possible, the alternative point SW06d can be used. The receiving waters for this monitoring point is South Creek.	33.855140	150.769275
SW06c	Alternative AWRC wet weather sampling only Only required if samples from SW06a are not possible. In receiving water above the confluence of site water discharge point (location is indicative and subject to accessibility and safety of sampler). The receiving waters for this monitoring point is South Creek.	33.859645	150.768084
SW06d	Alternative AWRC wet weather sampling only Only required if samples from SW06b are not possible. In receiving water below the confluence of site water discharge point, but upstream of the AWRC site boundary (location is indicative and subject to accessibility and safety of sampler). The receiving waters for this monitoring point is South Creek.	33.860121	150.769525
SW07	South Creek surveyed stream level gauging point to confirm groundwater flow direction if AWRC_MW04 groundwater drawdown criteria is exceeded. The receiving waters for this monitoring point is South Creek. Note – monitoring at SW07 has not been triggered as groundwater has not been extracted or interfered with during construction during the monitoring period.	33.855140	150.769275

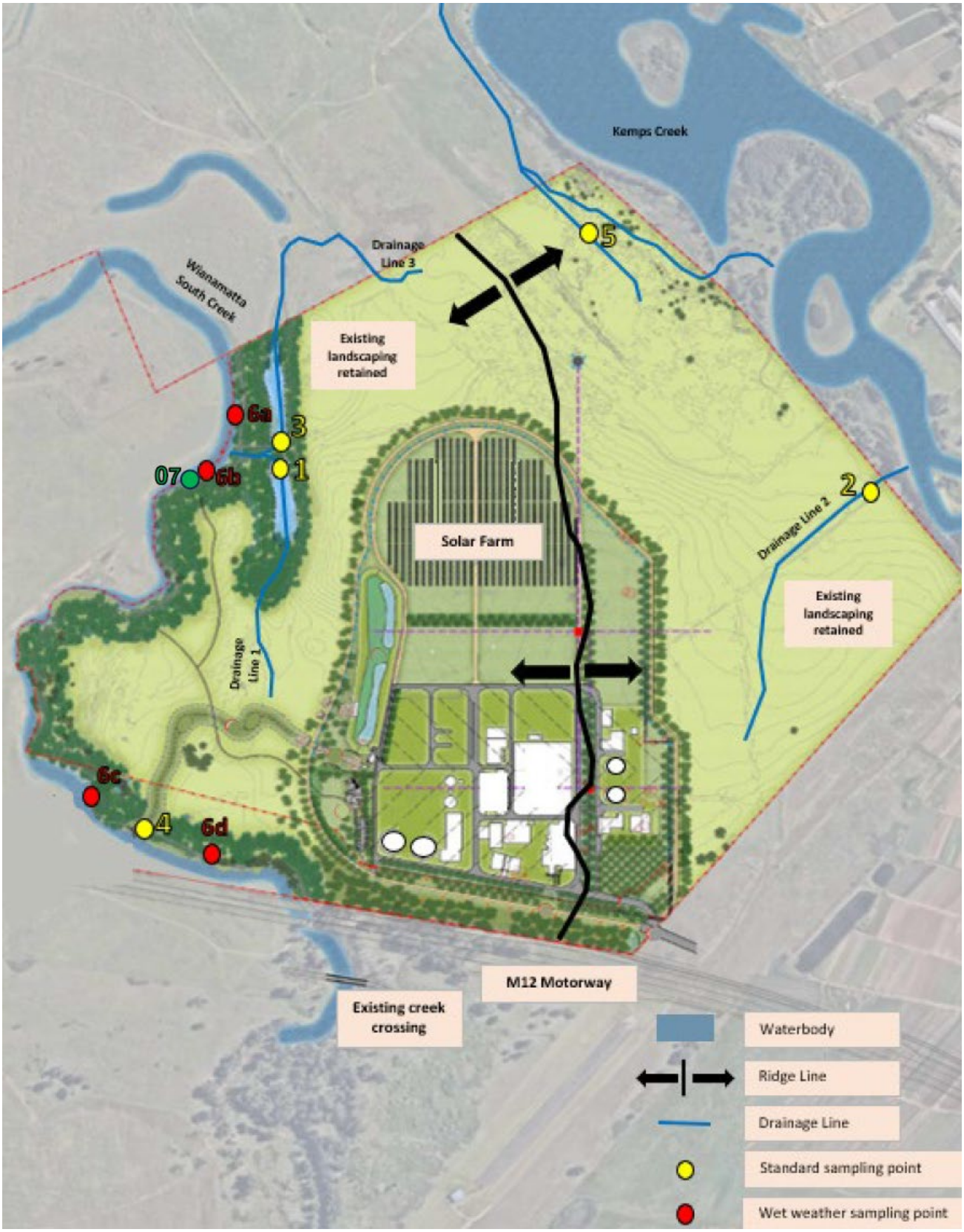

Figure 1: Surface water construction monitoring locations at AWRC

Table 2: Surface Water Quality Monitoring Locations (Pipelines)

Site Code	Site Description	Easting (U - Upstream)	Northing (U - Upstream)	Easting (D – Downstream)	Northing (D – Downstream)
SW08	Treated Water Pipeline - South Creek (chainage 1425m)	-33.87081°S	150.77605°E	-33.87055°S	150.77582°E
SW09	Treated Water Pipeline – Oaky Creek (chainage 6975m)	-33.86925°S	150.72136°E	-33.86874°S	150.72123°E
SW10	Treated Water Pipeline – Cosgroves Creek (chainage 7300m)	-33.86892°S	150.71777°E	-33.86814°S	150.71807°E
SW11*	Treated Water Pipeline – Nepean River (chainage 7300m)	-33.860897°S	150.631652°E	-33.861198°S	150.631137°E
SW12*	Drainage line adjacent to Kemps Creek	-33.885556°	150.802226°	-33.885494°	150.801923°

* Monitoring location not required as per SWMoP however additional monitoring has been undertaken due to works occurring at this location for the construction of the discharge structure and in RBM12.

Figure 2: Surface water construction monitoring locations on pipelines

4.2 Surface Water Quality Parameters

4.2.1 In-situ Field Parameters

In-situ field measurements have been taken using a Horiba U-52 Multi-parameter quality meter. The following parameters have been recorded using the water quality meter at each monitoring site:

- Water Temperature (°C);
- pH;
- Electrical Conductivity (µS/cm);
- Dissolved Oxygen (%); and
- Turbidity (NTU).

In addition to the use the water quality meter at each monitoring site, visual and olfactory observations were also recorded including colour, turbidity, odour, sheen, discolouration, free phase liquids, foaming, stressed or dead flora and / or fauna (for example, fish kills). Refer to Section 5 of the SWQ-CMP for sampling methodologies.

4.2.2 Lab Sample Parameters

Representative grab samples have been obtained and submitted to a NATA accredited laboratory for analysis for the following parameters:

- pH;
- Salinity as Electrical Conductivity (µS/cm);
- Turbidity (NTU); and
- Total Suspended Solids (mg/L).

Refer to Section 5 of the SWQ-CMP for sampling methodologies.

4.3 Monitoring events and timing

In accordance with Section 5.4 of the SWMoP, monthly routine surface water monitoring has been completed at locations detailed in Section 4.1 throughout the reporting period.

In additional to routine sampling, event triggered sampling was also undertaken during the reporting periods for rainfall events which exceeded 20mm over a 24 hour period. For pipelines (treated and brine), it is noted that wet weather sampling was only undertaken when works were being undertaken in or within the vicinity (where there is potential to impact waterway water quality) of relevant waterways.

There were no incidents, events, unapproved HES basin discharges or substantiated complaints during the reporting period with the potential to impact surface water quality, therefore additional event triggered sampling was not required.

No Project trigger value or acceptable range reporting was undertaken during the reporting period. While there were some exceedances noted, these were not attributable to the Project, as detailed in Section 6.

4.4 Project acceptable ranges

In accordance with Section 4.2 of the SWMoP, the project acceptable ranges for each waterway and corresponding monitoring locations are provided in Table 3 below. It is noted that the project acceptable ranges are based on baseline data and in some cases ANZECC criteria.

Table 3 – Project acceptable ranges for each waterway

Parameter	Project Acceptable Range				
	South Creek SW01, SW03, SW04, SW08	Kemps Creek SW02, SW05, SW12	Nepean River SW11	Oaky Creek SW09	Cosgroves Creek SW10
pH	6.77 – 8.34	6.79 – 7.83	6.78 – 8.32	6.5 – 8.0	6.5 – 9.0
Turbidity (NTU)	<310	<168.5	<58.9	<50	<50
Dissolved Oxygen (DO) (%)	47.25 – 131.2	41.88 – 97.31	79.41 – 114.9	85 – 110	85 – 110

Parameter	Project Acceptable Range				
	South Creek SW01, SW03, SW04, SW08	Kemps Creek SW02, SW05, SW12	Nepean River SW11	Oaky Creek SW09	Cosgroves Creek SW10
Electrical Conductivity (EC) (uS/cm)	352.95 – 2104.25	346.51 – 4117.8	148.95 – 540.8	125 – 2200	125 – 2200
Total Suspended Solids (TSS) (mg/L)	<50	<50	<50	<50	<50

5 Surface Water Quality Sampling Results

The results of the monthly routine and event triggered sampling (rainfall >20mm in 24 hour period) throughout the reporting period are provided for AWRC in Section 5.1, and for pipelines in Section 5.2. Appendix 1 shows Bureau of Meteorology rainfall data for Horsely Park (Station ID: 067119) and Badgerys Creek (Station ID: 167108).

5.1 AWRC

The results of the monthly routine and event triggered sampling (rainfall >20mm in 24 hour period) undertaken at AWRC throughout the reporting period are provided in Table 4. Exceedances recorded during active construction have been highlighted in red text in Table 4.

Table 4 – Surface water monitoring results for AWRC

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen (%)	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
19/03/2024	SW01 – downstream	Routine Monthly	-	-	-	-	-	-	-	-	-	No water was observed at this monitoring point (billabong) and therefore a water sample could not be collected.
19/03/2024	SW02 – upstream	Routine Monthly	-	-	-	-	-	-	-	-	-	No water was observed at this monitoring point (drainage line) and therefore a water sample could not be collected.
19/03/2024	SW03 – downstream	Routine Monthly	-	-	-	-	-	-	-	-	-	No water was observed at this monitoring point (billabong) and therefore a water sample could not be collected.
19/03/2024	SW04 – upstream	Routine Monthly	21.1	6.1	58.9	1200	152.4	7.27	1120	25.1	24	No abnormal visual factors, brown/muddy water with some green biological, foaming, no dead flora/fauna
19/03/2024	SW05 – downstream	Routine Monthly	21.0	7.4	4.6	929	151.2	7.63	931	7.1	27	No abnormal visual factors, no observation of discolouration, foaming, no dead flora/fauna
12/04/2024	SW01 – downstream	Routine Monthly	17.4	7.6	269	1.0	112	7.16	324	346	358	Drainage line. Ponded water, cloudy with thick vegetative matter
12/04/2024	SW02 – upstream	Routine Monthly	-	-	-	-	-	-	-	-	-	Dry Site. No water was observed and therefore a water sample could not be collected.
12/04/2024	SW03 – downstream	Routine Monthly	19.2	7.7	123	785	72.0	7.24	432	24.6	48	Drainage line. Ponded water, cloudy with thick vegetative matter, difficult to get sample due to thick vegetative matter.
12/04/2024	SW04 – upstream	Routine Monthly	19.3	7.7	122.0	782.0	69.3	7.65	782	69.4	22	Brown tinge to the water with green film present. No/low visible flow.

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen (%)	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
12/04/2024	SW05 – downstream	Routine Monthly	23.9	7.9	230.0	568.0	71.6	7.77	571	149	64	Brownish water, lots of vegetation growth surrounding site. Sample taken from embankment due to difficult access.
12/04/2024	SW06a – downstream	Wet Weather	17.7	7.7	140.0	781.0	78.2	7.82	766	73.8	27	Brownish water with green film, no/low visible flow. 187.2mm recorded at Horsley Park (ID: 94760) on 06/07/2024 and 07/07/2024. Due to site flooding, monitoring undertaken when it was safe to do so.
12/04/2024	SW06b – upstream	Wet Weather	17.4	7.6	139.0	785.0	73.1	7.84	758	77.9	32	Brownish water with green film, no/low visible flow. 187.2mm recorded at Horsley Park (ID: 94760) on 06/07/2024 and 07/07/2024. Due to site flooding, monitoring undertaken when it was safe to do so.
17/05/2024	SW01 – downstream	Routine Monthly	14.7	7.3	182.0	356.0	40.0	7.41	360	49.6	50	Thick vegetation, ponded stagnant water in the billabong.
17/05/2024	SW02 – upstream	Routine Monthly	-	-	-	-	-	-	-	-	-	No water was observed at this monitoring point (drainage line) and therefore a water sample could not be collected.
17/05/2024	SW03 – downstream	Routine Monthly	-	-	-	-	-	-	-	-	-	No water was observed at this monitoring point (billabong) and therefore a water sample could not be collected.
17/05/2024	SW04 – upstream	Routine Monthly	16.1	8.1	178.0	721.0	130.5	7.7	730	96.7	37	Brownish water with green film, no/low visible flow.
30/05/2024	SW05 – downstream	Routine Monthly	N/A	8.5	81.3	928.0	58.9	7.82	919	35.1	44	Thick vegetation, difficult to get a sample.
17/05/2024	SW06a – downstream	Wet Weather	16.1	8.0	169.0	723.0	106.0	7.82	733	94.5	44	Brownish water with green film, no/low visible flow. 20.4mm recorded at Badgery's Creek weather station (ID: 94752) on 12/05/2024 and 13/05/2024.
17/05/2024	SW06b – upstream	Wet Weather	15.7	7.9	185.0	634.0	63.0	7.82	730	93.8	38	Brownish water with green film, no/low visible flow. 20.4mm recorded at Badgery's Creek weather station (ID: 94752) on 12/05/2024 and 13/05/2024.

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen (%)	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
06/06/2024	SW06a – downstream	Wet Weather	13.0	8.1	60.4	1000.0	72.3	7.79	1020	38.3	22	Brownish cloudy water, light flow due to wind. 20.4mm recorded at Badgery's Creek weather station (ID: 94752) on 12/05/2024 and 13/05/2024.
06/06/2024	SW06b – upstream	Wet Weather	13.0	7.9	68.8	1030.0	179.1	7.82	1040	38.7	24	Brownish cloudy water, light flow due to wind. 20.4mm recorded at Badgery's Creek weather station (ID: 94752) on 12/05/2024 and 13/05/2024.
13/06/2024	SW01 – downstream	Routine Monthly	13.2	8.1	42.1	251.0	70.7	7.41	236	48.2	87	Due to recent rain, difficult to get close to water body to get a proper sample, water slightly more turbid/disturbed than usual due to recent rainfall. No other unusual visual or olfactory observations made.
13/06/2024	SW02 – upstream	Routine Monthly	-	-	-	-	-	-	-	-	-	Dry site. No water was observed in this monitoring point (drainage line) and therefore a water sample could not be collected.
13/06/2024	SW03 – downstream	Routine Monthly	12.6	7.7	23.1	296.0	63.1	7.09	303	28.4	6	No unusual visual or olfactory observations made
13/06/2024	SW04 – upstream	Routine Monthly	12.5	8.1	180.0	704.0	110.9	7.57	737	119	65	Water colour more turbid than usual due to recent rainfall. No other unusual visual or olfactory observations made
13/06/2024	SW05 – downstream	Routine Monthly	N/A	8.5	150.0	723.0	75.0	7.79	712	143	82	Water colour more turbid than usual due to recent rainfall. No other unusual visual or olfactory observations made
13/06/2024	SW06a – downstream	Wet Weather	12.6	8.1	186.0	710.0	100.5	7.72	731	122	73	Water colour more turbid than usual due to recent rainfall. No other unusual visual or olfactory observations made. 33.4mm recorded at Horsley Park weather station (ID: 94760) on 06/06/2024 and 07/06/2024.
13/06/2024	SW06b – upstream	Wet Weather	12.1	8.2	184.0	711.0	80.5	7.71	730	123	68	Water colour more turbid than usual due to recent rainfall. No other unusual visual or olfactory observations made. 33.4mm recorded at Horsley Park weather station (ID: 94760) on 06/06/2024 and 07/06/2024.
11/07/2024	SW01 – downstream	Routine Monthly	12.9	6.4	2.8	534.0	112.8	6.36	462	21.1	6	Thick vegetation, ponded stagnant water. 33.4mm recorded at Horsley Park weather station (ID: 94760) on 06/06/2024 and 07/06/2024.

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen (%)	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
11/07/2024	SW02 – upstream	Routine Monthly	-	-	-	-	-	-	-	-	-	Dry site. No water was observed in this monitoring point (drainage line) and therefore a water sample could not be collected.
11/07/2024	SW03 – downstream	Routine Monthly	13.7	6.5	9.9	466.0	114.7	6.32	528	12.4	<5	Thick vegetation, ponded water.
11/07/2024	SW04 – upstream	Routine Monthly	13.5	7.4	63.4	952.0	111.0	7.18	925	50.9	19	Brownish cloudy water, light flow due to wind.
11/07/2024	SW05 – downstream	Routine Monthly	16.3	8.1	78.1	1110.0	130.7	8.43	1130	44.3	34	Brownish water and relatively thick vegetation surrounding monitoring area
16/08/2024	SW01 – downstream	Routine Monthly	20.3	6.6	8.7	865.0	74.3	6.26	890	20.1	22	Thick vegetation, ponded stagnant water
16/08/2024	SW02 – upstream	Routine Monthly	-	-	-	-	-	-	-	-	-	Dry site. No water was observed in this monitoring point (drainage line) and therefore a water sample could not be collected.
16/08/2024	SW03 – downstream	Routine Monthly	-	-	-	-	-	-	-	-	-	Dry site. No water was observed in this monitoring point (billabong) and therefore a water sample could not be collected.
16/08/2024	SW04 – upstream	Routine Monthly	20.1	7.8	32.7	1340.0	76.7	7.55	1360	33.1	26	Brownish water, no/low visible flow.
16/08/2024	SW05 – downstream	Routine Monthly	21.5	7.9	22.5	1660.0	66.4	7.83	1680	22.8	22	Thick vegetation present, no visible flow.

Sampling carried out at AWRC during the reporting period identified exceedances of project acceptable ranges for pH, turbidity, electrical conductivity, dissolved oxygen and TSS. Analysis of these exceedances are provided in Section 6.

5.2 Pipelines

The results of the monthly routine and event triggered sampling (rainfall >20mm in 24 hour period) undertaken at on pipelines throughout the reporting period are provided in Table 5. Exceedances recorded during active construction/diversion of waterways have been highlighted in red in Table 5.

Table 5 – Surface water monitoring results for pipelines

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
22/03/2024	SW09 - Oaky Creek – Upstream	Routine/ baseline	18.4	7.1	185.0	3540.0	64.9	8.18	3380	19.1	14	No construction work commenced within/around Creek therefore considered baseline. No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna.
22/03/2024	SW09 - Oaky Creek – Downstream	Routine/ baseline	16.9	7.9	77.1	1450.0	50.2	8.26	3400	19.3	12	No construction work commenced within/around Creek therefore considered baseline. No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna.
22/03/2024	SW08 - South Creek – Upstream	Routine/ baseline	20.8	6.78	42	1260	62.5	8.0	1200	28	8.4	No construction work commenced within/around Creek therefore considered baseline. Moving water, usual visual factors, more brown than downstream, no discolouration or foaming. No construction work commenced within/around Creek
22/03/2024	SW08 - South Creek – Downstream	Routine/ baseline	20.13	6.74	39.9	1250	62.2	7.54	1210	18.7	22	No construction work commenced within/around Creek therefore considered baseline. Flowing water, no abnormal visual factors, brown water, no discolouration or foaming
22/03/2024	SW10 - Cosgroves Creek – Upstream	Routine/ baseline	15.9	7.7	157.0	673.0	58.4	8.08	1090	2.8	<5	No construction work commenced within/around Creek therefore considered baseline. No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna.
22/03/2024	SW10 - Cosgroves Creek – Downstream	Routine/ baseline	16.2	7.7	77.6	669.0	73.6	8.04	1120	2.6	<5	No construction work commenced within/around Creek therefore considered baseline. No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna.
23/04/2024	SW08 - South Creek – Upstream	Routine/ baseline	16.1	7.4	43.6	955.0	58.3	7.61	954	22	20	No construction work commenced within/around Creek therefore considered baseline. Turbid water, stagnant with minimal flow. Flood channel visible with algae.
23/04/2024	SW08 - South Creek – Downstream	Routine/ baseline	16.2	7.5	43.4	956.0	44.1	7.78	956	18.1	17	No construction work commenced within/around Creek therefore considered baseline. No abnormal visual factors, brown/muddy water, no observation of discolouration, foaming, dead flora/fauna.

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
23/04/2024	SW09 - Oaky Creek – Upstream	Routine/ baseline	17.7	7.92	74	1610	74.4	7.97	1540	32.3	13	No construction work commenced within/around Creek therefore considered baseline. No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna.
23/04/2024	SW09 - Oaky Creek – Downstream	Routine/ baseline	16.88	7.87	77.1	1450	50.2	7.89	1390	33.8	21	No construction work commenced within/around Creek therefore considered baseline. No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna.
23/04/2024	SW10 - Cosgroves Creek – Upstream	Routine/ baseline	16.21	7.67	77.6	669	73.6	7.83	640	41.8	10	No construction work commenced within/around Creek therefore considered baseline. Turbid water, stagnant with minimal flow.
23/04/2024	SW10 - Cosgroves Creek – Downstream	Routine/ baseline	15.94	7.66	157	673	58.4	7.86	652	39	8	No construction work commenced within/around Creek therefore considered baseline. Turbid water, stagnant with minimal flow.
2/05/2024	SW11 - Nepean River – Upstream	Routine/ baseline	18.85	7.73	134	290	104.5	7.32	244	9	6	No construction work commenced within/around Creek therefore considered baseline. Visually turbid, high flow to water.
2/05/2024	SW11 - Nepean River – Downstream	Routine/ baseline	19.75	7.36	67.7	286	85.6	7.54	244	16.7	29	No construction work commenced within/around Creek therefore considered baseline. Visually turbid, high flow to water.
13/05/2024	SW10 - Cosgroves Creek – Downstream	Wet Weather	16.65	7.56	120	601	145	7.88	635	67.3	25	Pipe installation through the creek completed and rehabilitation partially undertaken. No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. Silt curtain in creek, recent bank reinstatement, jute matting and geofab in place, ongoing construction above bank. Although the Horseley Park weather station (Station ID: 94760) did not trigger wet weather monitoring, opportunistic water monitoring was undertaken due works actively being undertaken within the creek. It's noted that 20.4mm of rainfall was recorded at the Badgery's Creek weather station (ID: 94752) on 12/05/2024 and 13/05/2024.
13/05/2024	SW10 - Cosgroves Creek – Upstream	Wet Weather	16.62	7.94	123	634	123.5	7.85	628	67.8	27	Pipe installation through the creek completed and rehabilitation partially undertaken. No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. Silt curtain in creek, recent bank reinstatement, jute matting and geofab in place, ongoing construction above bank.

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
												Although the Horseley Park weather station (Station ID: 94760) did not trigger wet weather monitoring, opportunistic water monitoring was undertaken due works actively being undertaken within the creek. It's noted that 20.4mm of rainfall was recorded at the Badgery's Creek weather station (ID: 94752) on 12/05/2024 and 13/05/2024.
22/05/2024	SW08 - South Creek – Upstream	Routine/ baseline	12.9	7.4	124.0	849.0	58.0	7.57	841	66.4	38	No construction work commenced within/around Creek therefore considered baseline. Visually more turbid than usual. Slow/minimal flow.
22/05/2024	SW08 - South Creek – Downstream	Routine/ baseline	12.8	7.3	124.0	846.0	43.6	7.65	840	80	25	No construction work commenced within/around Creek therefore considered baseline. No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna.
22/05/2024	SW10 - Cosgroves Creek – Upstream	Routine – during construction	13.0	8.8	106.0	796.0	73.7	7.94	793	40.2	18	Pipe installation through the creek completed and rehabilitation partially undertaken. No abnormal visual factors, foaming, dead flora/fauna. Difficult to get sample in shallow water.
22/05/2024	SW10 - Cosgroves Creek – Downstream	Routine – during construction	13.1	8.5	93.5	793.0	60.9	7.85	790	34.8	14	Pipe installation through the creek completed and rehabilitation partially undertaken. No abnormal visual factors, foaming, dead flora/fauna. Difficult to get sample in shallow water.
22/05/2024	SW11 - Nepean River - Upstream	Routine – during construction	15.9	7.8	25.3	149.0	89.4	7.49	140	14.7	42	No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. Works occurring on bank of river, silt curtain in place
22/05/2024	SW11 - Nepean River – Downstream	Routine – during construction	15.5	8.1	29.9	156.0	59.4	7.12	148	12.5	11	No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. Works occurring on bank of river, silt curtain in place
3/06/2024	SW11 - Nepean River - Upstream	Wet Weather	13.7	8.2	20.9	208.0	69.2	7.25	208	7.5	234	No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. 45.2mm recorded at Horsley Park weather station (ID: 94760) on 02/06/2024.
3/06/2024	SW11 - Nepean River – Downstream	Wet Weather	13.8	7.9	48.1	208.0	42.6	7.15	211	6.7	<5	No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. Downstream location changed due to unsafe and lack of access, water collected from within silt curtain (in site boundary) close to bank.

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
												45.2mm recorded at Horsley Park weather station (ID: 94760) on 02/06/2024.
12/06/2024	SW11 - Nepean River – upstream	Wet Weather	14.9	7.9	152.0	146.0	103.9	7.14	140	22.3	26	Water visually more turbid. Floating debris and dead flora within the river. High flow. Water sample taken when safe access available, Warragamba dam spill caused flooding within the site, water level raised by 7m. Sample difficult to obtain due to flood conditions. 33.4mm recorded at Horsley Park weather station (ID: 94760) on 06/06/2024 and 07/06/2024.
12/06/2024	SW11 - Nepean River – downstream	Wet Weather	14.6	8.0	63.3	138.0	62.0	7	138	21.8	24	Water visually more turbid. Floating debris and dead flora within the river. High flow. Water sample taken when safe access available, Warragamba dam spill caused flooding within the site, water level raised by 7m. Sample difficult to obtain due to flood conditions. 33.4mm recorded at Horsley Park weather station (ID: 94760) on 06/06/2024 and 07/06/2024.
25/06/2024	SW11 - Nepean River – upstream	Routine – during construction	10.4	7.8	40.5	233.0	65.8	7.46	224	10.1	5	Water less turbid than usual, little flow. No abnormal odours, discolouration, foaming or deceased flora/fauna. Sheet piles in the river, minor excavation begun within the sheet piles. Silt curtain in river.
25/06/2024	SW11 - Nepean River – downstream	Routine – during construction	18.1	7.8	51.3	227.0	136.7	7.22	221	9	<5	Water less turbid than usual. No abnormal odours, discolouration, foaming or deceased flora/fauna. Sheet piles in the river, minor excavation begun within the sheet piles. Silt curtain in river. Directly downstream of flowing riffle potentially resulting in increased DO.
25/06/2024	SW08 - South Creek – upstream	Routine/ baseline	9.9	7.9	216.0	1020.0	76.2	7.68	1020	81	33	No construction work commenced within/around Creek therefore considered baseline. Visually more turbid than usual, stagnant upstream. No abnormal odours, foaming or dead fauna visual.
25/06/2024	SW08 - South Creek – downstream	Routine/ baseline	9.4	8.0	152.0	734.0	62.7	7.61	1010	80	38	No construction work commenced within/around Creek therefore considered baseline. Visually more turbid than usual, flowing water. Slight foaming at flow points.
25/06/2024	SW09 - Oaky Creek – upstream	Routine – during construction	9.7	8.8	50.4	4020.0	59.0	8.26	3900	16.1	13	No abnormal visual factors, creek slightly green/brown, no observation of discolouration, foaming, dead flora/fauna. Water being diverted through a diversion pipe. Creek blocked off from work area as trenching is occurring through the creek. JH notes that Multiplex discharged 4KL the week prior starting 19/06 upstream into Oaky

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
25/06/2024	SW09 - Oaky Creek – downstream	Routine – during construction	9.5	8.8	43.6	4070.0	74.7	8.29	3920	17.6	15	No abnormal visual factors, creek slightly green/brown, no observation of discolouration, foaming, dead flora/fauna. Water being diverted through a diversion pipe. Creek blocked off from work area as trenching is occurring through the creek. JH notes that Multiplex discharged 4KL the week prior starting 19/06 upstream into Oaky
25/06/2024	SW10 - Cosgroves Creek – upstream	Routine	9.3	8.4	12.8	1200.0	57.4	7.94	1160	15.4	<5	Slight foaming upstream. No abnormal visual factors, creek slightly green/brown, no observation of discolouration, dead flora/fauna. No works occurring within or around creek.
25/06/2024	SW10 - Cosgroves Creek – downstream	Routine	10.4	8.6	23.6	1210.0	45.8	8.05	1180	14.5	<5	Slight foaming upstream. No abnormal visual factors, creek slightly green/brown, no observation of discolouration, dead flora/fauna. No works occurring within or around creek.
16/07/2024	SW12 – RBM – upstream	Routine/ baseline	10.3	8.2	1000.0	1900.0	122.5	7.29	1920	3.6	<5	Monitor placed upstream of natural bund that has formed, presence of excessive algae present in the water. Extremely shallow water which stirred up trying to get a sample therefore turbidity reading not accurate. No construction works being undertaken.
16/07/2024	SW12 – RBM – downstream	Routine/ baseline	9.8	7.8	2.1	1920.0	67.4	7.77	1890	2	<5	No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. No construction works being undertaken.
30/07/2024	SW08 - South Creek – upstream	Routine/ baseline	9.0	7.0	150.0	1280.0	91.7	7.66	1230	45.4	18	No construction work commenced within/around Creek therefore considered baseline. Visually more turbid than usual, stagnant upstream. No abnormal odours, foaming or dead fauna visual.
30/07/2024	SW08 - South Creek – downstream	Routine/ baseline	9.0	7.2	150.0	1260.0	68.1	7.97	1230	45.8	21	No construction work commenced within/around Creek therefore considered baseline. Visually more turbid than usual, flowing water. Slight foaming at flow points.
30/07/2024	SW09 - Oaky Creek – upstream	Routine	8.5	7.7	66.8	3500	82.0	8.2	3650	9.4	8	No abnormal visual factors, creek slightly green/brown, no observation of discolouration, foaming, dead flora/fauna. Creek pipe install complete, creek reinstated, no works occurring either side of creek
30/07/2024	SW09 - Oaky Creek – downstream	Routine	7.9	7.7	60.4	3490	61.2	8.7	3570	8.7	9	No abnormal visual factors, creek slightly green/brown, no observation of discolouration, foaming, dead flora/fauna. Creek pipe install complete, creek reinstated, no works occurring either side of creek
30/07/2024	SW10 - Cosgroves	Routine	8.8	7.8	63.9	1640.0	85.8	8.24	1530	<5	11	No abnormal visual factors, creek slightly green/brown, no observation of discolouration, foaming, dead flora/fauna. Creek pipe install complete, creek reinstated, no works occurring either side of creek

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
	Creek – upstream											
30/07/2024	SW10 - Cosgroves Creek – downstream	Routine	8.9	7.6	63.7	1620.0	79.6	8.25	1550	6	9.5	No abnormal visual factors, creek slightly green/brown, no observation of discolouration, foaming, dead flora/fauna. Creek pipe install complete, creek reinstated, no works occurring either side of creek
30/07/2024	SW11 - Nepean River – upstream	Routine – during construction	10.7	7.8	48.7	377.0	77.5	7.78	308	14	7.4	No abnormal visual factors, creek slightly green/brown, no observation of discolouration, foaming, dead flora/fauna. Works occurring on bank of river, silt curtain in place
30/07/2024	SW11 - Nepean River - downstream	Routine – during construction	13.4	7.1	51.5	258.0	68.1	7.44	279	41	15.4	No abnormal visual factors, creek slightly green/brown, no observation of discolouration, foaming, dead flora/fauna. Works occurring on bank of river, silt curtain in place
16/08/2024	SW12- RBM – upstream	Routine/ baseline	13.9	7.8	0.0	3620	80.8	7.4	3960	3.8	8	No construction work commenced within/around Creek therefore considered baseline. No abnormal visual factors, creek mostly clear, no observation of discolouration, foaming, dead flora/fauna, algal growth in middle of creek.
16/08/2024	SW12- RBM – downstream	Routine/ baseline	14.25	7.8	0.0	3590	77.6	7.77	3820	5.8	<5	No construction work commenced within/around Creek therefore considered baseline. No abnormal visual factors, creek mostly clear, no observation of discolouration, foaming, dead flora/fauna, algal growth in middle of creek.
20/08/2024	SW08 - South Creek – upstream	Routine – during construction	14.6	7.7	28.5	2280.0	84.7	8.03	2340	27.9	37	Visually more turbid than usual, flowing water. Slight foaming at flow points. Creek diversion in place and construction occurring within creek
20/08/2024	SW08 - South Creek – downstream	Routine – during construction	19.7	7.8	28.2	882.0	133.2	8.00	2380	26.7	25	Visually more turbid than usual, flowing water. Slight foaming at flow points. Creek diversion in place and construction occurring within creek
20/08/2024	SW09 - Oaky Creek – upstream	Routine	17.9	7.4	17.9	4790.0	129.6	8.01	2580	5.3	7	Stagnant water, no abnormal visual factors. Reinstatement of creek complete, no current construction works occurring.
20/08/2024	SW09 - Oaky Creek – downstream	Routine	15.5	8.0	0.5	2540.0	95.2	8.06	2690	3.6	<5	Stagnant water, no abnormal visual factors. Reinstatement of creek complete, no current construction works occurring.

Date	Location	Type	Field (in-situ) Monitoring					Laboratory Monitoring				Visual/Olfactory and general comments
			Temp	pH	Turbidity (NTU)	EC (uS/cm)	Dissolved Oxygen	pH	EC (uS/cm)	Turbidity (NTU)	TSS (mg/L)	
20/08/2024	SW10 - Cosgroves Creek – upstream	Routine	14.8	8.0	0.0	1670.0	99.8	8.21	1660	7.7	34	No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. Reinstatement of creek complete, no current construction works occurring.
20/08/2024	SW10 - Cosgroves Creek – downstream	Routine	15.0	8.0	0.0	1700.0	100.3	8.24	1680	4.3	<5	No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. Reinstatement of creek complete, no current construction works occurring.
20/08/2024	SW11 - Nepean River – upstream	Routine – during constructi on	18.0	8.3	0.5	333.0	110.0	8.04	338	4.1	6	No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. Works occurring on bank of river, silt curtain in place
20/08/2024	SW11 - Nepean River – downstream	Routine – during constructi on	19.5	7.9	0.0	279.0	86.9	7.65	328	3.8	15	No abnormal visual factors, relatively clear, no observation of discolouration, foaming, dead flora/fauna. Works occurring on bank of river, silt curtain in place

Sampling carried out during at pipelines during the reporting period identified exceedances of project acceptable ranges for pH, turbidity, electrical conductivity, dissolved oxygen and TSS. Analysis of these exceedances are provided in Section 6

6 Discussion of exceedances

6.1 AWRC

Exceedances of project acceptable ranges were observed during the reporting period for pH, turbidity, electrical conductivity, dissolved oxygen and TSS/turbidity. An analysis and review of the exceedances was undertaken by ENRS which is summarised below:

- **pH** – several exceedances of pH were recorded throughout the reporting period at various locations. However, it is noted that most of the exceedances were considered minor exceedances and were still within the range of 6.5-8.5 which is consistent with the Project's EPL discharge criteria. Two occurrences which were outside of this range were on 19/03/2024 at SW04 which recorded a pH of 6.1, and on 16/08/2024 at SW01 which recorded a pH of 6.26. It is noted that bulk earthworks in the vicinity of waterways, had not yet commenced. Surface water monitoring data collected prior to the commencement of construction also identified exceedances of the pH project acceptable ranges at several monitoring locations.
- **Turbidity/ TSS** – two exceedances of turbidity were recorded throughout the reporting period including on 12/04/2024 at SW01 which recorded a field turbidity reading of 346 NTU, and on 12/04/2024 at SW05 which recorded a field turbidity reading of a 230 NTU. No ground disturbance works which would impact water quality, were occurring in vicinity of SW01 and SW05 and there were no planned or unplanned discharges to waterways or offsite during this time and therefore it is not considered to be attributed to the Project. Further, following a significant rainfall event on 13/06/2024, additional exceedances were recorded at SW04, SW05, SW06a and SW06b.
- **Dissolved oxygen (DO)** – Five exceedances of DO were recorded throughout the reporting period at SW04, SW05, SW01 and SW06b. Four of those exceedances were above the upper DO limit, and one below. Baseline surface water monitoring data collected prior to the commencement of construction (pre-August 2023) also identified exceedances of the DO project acceptable ranges at several monitoring locations. Construction works undertaken during the reporting period would not have an impact on surface water DO levels.
- **Electrical Conductivity (EC)** – Several exceedances of EC were recorded through the reporting period at SW01 and SW03, all of which were below the lower EC limit. These monitoring locations were within the two enclosed billabongs which are not directly connected to South Creek and capture overland flows. As such, it is not unexpected or concerning that exceedances were observed in these locations.

Following identification of the above exceedances, an investigation was undertaken in accordance with Section 5.5 of the SWMoP which concluded that they were not attributed to or caused by the Project for the following reasons:

- Baseline and pre-construction surface water monitoring undertaken prior to the commencement of construction (pre-August 2023) identified exceedances of project acceptable ranges for various parameters, including all of those listed above i.e. pH, DO, TSS and EC.
- During the reporting period, there were no unplanned discharges of water offsite, including to waterways, from the AWRC site. There were three planned discharges from the HES basin in July 2024 however all EPL discharge criteria was complied with (pH, NTU, Oil/Grease) and are therefore not considered to have caused or contributed to the recorded exceedances. Further, there were no breaches or failures of the site perimeter berm which extends around the entire AWRC site.
- Construction activities have not reported any release of contamination or spill of a magnitude with the potential to cause surface water contamination including those parameters which exceeded the project acceptable ranges.
- In some instances, exceedances of turbidity/TSS were recorded due to minimal water being available for collection resulting in highly turbid samples being collected which did not accurately represent the actual turbidity in the waterway.
- There are several external construction projects which occur immediately upstream of the Project which also have the potential to impact surface water quality.
- There was not more than a 10% difference (that resulted in an exceedance) between upstream and downstream water quality parameters at wet weather monitoring locations SW06a and SW06b. The only exception is on 06/06/2024, where there was a greater than 10% variation of DO, however it is noted that water samples at these locations are difficult to collect, particularly in relation to DO. No construction works, planned or unplanned discharges to these water monitoring locations was undertaken at that time and therefore is not considered to be caused by construction.

Further to the above, it is noted that site specific baseline water quality data was not available when developing project acceptable ranges for inclusion in the SWMoP. In lieu of site-specific data, water quality monitoring data from the broader area was used to develop project acceptable ranges. As a result, none of the Project surface water monitoring locations

directly correspond to the baseline sampling locations. It is further noted that that the baseline data was deficient at most locations for TSS, which is a key water quality indicator.

6.2 Pipelines

Exceedances of project acceptable ranges were observed during the reporting period for pH, turbidity/TSS, electrical conductivity and dissolved oxygen. An analysis and review of the exceedances was undertaken by ENRS which is summarised below:

- **pH** – several exceedances of pH were recorded throughout the reporting period at various locations. However, it is noted that most of the exceedances were considered minor exceedances and were still within the range of 6.5-8.5 which is consistent with the Project's EPL discharge criteria. For these minor exceedances, pH levels at both upstream and downstream locations were observed, which indicates the Project did not cause the exceedance of pH. Regarding the exceedances which were outside the discharge criteria, these occurred on 25/06/2024 at Oaky Creek. Similarly, high pH levels at both upstream and downstream locations were observed which indicates the Project did not cause the exceedance of pH. Surface water monitoring data collected prior to the commencement of construction also identified exceedances of the pH project acceptable ranges at several monitoring locations.
- **Turbidity/TSS** – Several exceedances of turbidity and TSS were recorded throughout the reporting period at Oaky Creek, Cosgroves Creek and Nepean River. On all occasions, there was no significant increase of turbidity/TSS readings between upstream and downstream monitoring locations which indicates that the change was not caused by the works.
- **Electrical conductivity (EC)** – several exceedances of EC were recorded throughout the reporting period at Nepean River, Oaky Creek and South Creek. There were no works undertaken by JH which would have caused a fluctuation in EC. For these minor exceedances, EC levels were similar between both upstream and downstream locations which indicates that the change was not caused by the works.
- **Dissolved oxygen (DO)** – Several exceedances of DO were recorded throughout the reporting period at Oaky Creek, Cosgroves Creek and Nepean River. Exceedances were recorded above and below the project acceptable ranges. There were no works undertaken by JH which would have caused a fluctuation in DO.

Following identification of the above exceedances, an investigation was undertaken in accordance with Section 5.5 of the SWMoP, which concluded that they were not attributed to or caused by the Project for the following reasons:

- During the reporting period, there were no unplanned discharges of water to waterways from any of the pipeline locations. There were several planned discharges throughout the reporting period however all EPL discharge criteria was complied with (pH, NTU, Oil/Grease) and are therefore not considered to have caused or contributed to the recorded exceedances.
- Construction activities have not reported any release of contamination or spill of a magnitude with the potential to cause surface water contamination including those parameters which exceeded the project acceptable ranges.
- There are several external construction projects which occur immediately upstream of the Project which also have the potential to impact surface water quality.
- On some occasions, there was a 10% difference of water quality results between upstream and downstream locations, however on each of those occasions there were no construction works occurring which would have caused the difference.

Further to the above, it is noted that site specific baseline water quality data was not available when developing project acceptable ranges for inclusion in the SWMoP. In lieu of site-specific data, water quality monitoring data from the broader area and ANZECC criteria was used to develop project acceptable ranges. As a result, none of the Project surface water monitoring locations directly correspond to the baseline sampling locations. It is further noted that the baseline data was deficient at most locations for TSS, which is a key water quality indicator. As additional site-specific data sets have now been collected, the project acceptable ranges should be updated to more accurately reflect baseline values and assess any potential impacts from construction.

Appendix 1 – BoM rainfall data for Horsley Park (Station ID: 067119) and Badgerys Creek (Station ID: 067108)

Horsley Park, New South Wales
March 2024 Daily Weather Observations

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9 am						3 pm					
		Min	Max				Dir	Spd	Time	Temp	RH	Cld	Dir	Spd	MSLP	Temp	RH	Cld	Dir	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	8th		km/h	hPa	°C	%	8th		km/h	hPa
1	Fr	20.8	30.7	0.2			S	24	03:18	22.8	82		ESE	7		28.9	62		ESE	2	
2	Sa	22.7	25.6	0			SSE	33	10:38	24.8	81		SE	11		22.4	84		SE	6	
3	Su	16.7	32.6	1.0			SE	31	17:55	21.4	80		N	7		31.2	40		NNW	4	
4	Mo	18.5	24.4	0			SSE	28	05:57	19.2	60		S	11		21.6	55		SE	13	
5	Tu	14.2	27.6	0			NNW	20	13:20	20.0	60		W	2		25.7	41		N	9	
6	We	14.8	32.3	0			ESE	20	16:18	21.1	73		Calm			31.4	35		NNE	7	
7	Th	18.1	30.2	0			SE	35	14:27	23.8	76		SE	11		28.3	59		SE	20	
8	Fr	19.1	30.9	1.0			E	30	15:40	23.8	77		E	2		30.4	44		NE	9	
9	Sa	16.5	30.9	0			NE	28	16:00	23.4	71		Calm			30.1	40		NE	11	
10	Su	16.7	30.6	0			E	31	15:52	21.7	81		WSW	2		30.0	39		NNE	15	
11	Mo	17.1	30.3	0			E	28	15:11	22.7	76		NW	2		29.3	40		NNE	7	
12	Tu	15.2	35.4	0			SSE	39	15:32	20.8	79		NW	2		34.4	29		WNW	6	
13	We	17.6	30.0	0			ENE	24	15:09	21.9	71		SW	4		28.8	45		E	9	
14	Th	16.6	34.6	0			SE	41	15:33	21.2	76		NW	2		29.0	47		SE	24	
15	Fr	16.2	24.2	6.4			SE	37	15:40	19.5	76		SW	9		22.6	58		SE	20	
16	Sa	15.1	24.9	1.0			ESE	30	15:39	18.8	71		W	4		24.2	57		SE	15	
17	Su	16.8	22.3	15.0			ESE	20	16:35	17.9	98		SE	6		20.4	79		ESE	13	
18	Mo	16.6	26.3	0.2			E	26	17:57	18.6	92		SE	4		25.0	61		N	2	
19	Tu	17.2	29.6	0.4			NE	24	17:11	20.7	95		Calm			27.8	53		N	7	
20	We	19.2	26.7	0.6			SE	44	18:14	20.7	95		Calm			26.0	57		SSW	13	
21	Th	11.9	22.6	0.6			SE	35	14:28	15.6	56		WSW	9		22.2	46		SE	17	
22	Fr	13.4	24.8	0			NNE	19	12:30	17.1	71		SW	7		23.2	60		NNE	2	
23	Sa	13.3	27.2	0			ESE	28	14:13	16.5	88		Calm			26.0	43		ESE	7	
24	Su	16.5	28.0	1.2			NE	22	12:37	18.4	95		Calm			25.9	49		SE	4	
25	Mo	13.3	31.1	0			SW	20	14:18	18.2	87		W	4		30.9	17		WNW	6	
26	Tu	14.2	30.2	0			ESE	31	17:54	18.0	66		WSW	4		28.8	35		N	7	
27	We	16.8	27.8	0			E	28	15:58	20.1	79		SSW	4		25.6	50		E	13	
28	Th	17.6	26.1	0			E	31	15:30	20.0	83		SSW	7		24.9	55		ESE	11	
29	Fr	15.6	27.7	0			E	26	14:22	21.0	76		S	6		27.5	49		E	7	
30	Sa	12.6	30.3	0			ESE	22	15:39	18.0	86		W	4		29.5	35		E	7	
31	Su	15.4	28.6	0			E	20	16:23	19.4	91		SSW	2		26.5	41		E	7	
Statistics for March 2024																					
Mean		16.3	28.5							20.2	78			4		27.0	48			9	
Lowest		11.9	22.3	0						15.6	56		Calm			20.4	17		#	2	
Highest		22.7	35.4	15.0			SE	44		24.8	98		#	11		34.4	84		SE	24	
Total				27.6																	

IDCJDW2062.202403 Prepared at 13:00 UTC on Friday 8 November 2024

Horsley Park, New South Wales
April 2024 Daily Weather Observations

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9 am						3 pm					
		Min	Max				Dir	Spd	Time	Temp	RH	Cld	Dir	Spd	MSLP	Temp	RH	Cld	Dir	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	8th		km/h	hPa	°C	%	8th		km/h	hPa
1	Mo	14.8	31.7	0			NNE	26	12:59	19.6	91			Calm		31.3	29		NNE	11	
2	Tu	15.7	27.2	0			N	30	12:46	19.5	75		NNW	7		21.8	83		N	15	
3	We	14.4	27.4	1.6			SE	28	15:01	18.6	55		WSW	7		22.9	55		SE	13	
4	Th	16.5	20.6	0			SE	28	11:06	18.8	80		SSE	9		17.6	94		SE	7	
5	Fr	17.1	19.6	56.0			ESE	43	20:07	17.9	99		SSE	7		17.7	96		SE	17	
6	Sa	17.0	28.0	131.2			E	52	01:13	18.5	100		N	7		27.4	41		NNW	13	
7	Su	13.8	28.4	0.6			SE	22	18:27	20.6	75		NNW	4		26.0	46		Calm		
8	Mo	14.1	26.2	0			ESE	20	16:18	21.6	64		SSE	6		22.8	63		E	11	
9	Tu	14.1	23.2	0			S	39	14:49	17.7	84		NW	6		14.6	76		S	19	
10	We	11.3	22.0				SW	44	08:39	15.6	53		SW	20		21.4	37		SW	15	
11	Th	11.3	23.3	0.6			SW	24	09:36	17.5	58		WSW	11		22.2	45		SE	9	
12	Fr	12.8	24.6	0			NNE	20	13:53	17.9	68		WSW	6		24.3	40		NNE	6	
13	Sa	11.8	25.8	0			SE	26	16:02	17.8	74		SW	7		23.8	56		E	13	
14	Su	14.3	26.3	0			ENE	19	16:26	19.7	79		W	6		25.6	48		NE	7	
15	Mo	13.1	26.9	0			E	24	15:57	18.9	57		W	6		25.5	31		S	6	
16	Tu	12.8	25.1	0			ESE	22	16:39	17.2	67		SW	7		24.4	48		N	6	
17	We	15.5	23.1	0			ESE	28	16:24	18.4	80		SSE	2		21.3	67		E	15	
18	Th	14.4	25.4				SE	22	14:35	17.8	83		WSW	2		18.2	86		SSE	13	
19	Fr	8.7	20.4	0			S	26	14:36	15.4	67		WSW	7		18.9	55		SSE	13	
20	Sa	14.4	19.7	0			S	44	10:08	17.5	71		S	15		18.0	71		S	20	
21	Su	12.8	23.2	0			SSW	28	01:08	17.4	61		SW	15		21.4	56		ESE	13	
22	Mo	12.2	23.9	0			NW	17	14:22	17.8	69		SSW	6		23.1	50		N	6	
23	Tu	10.6	25.3	0			NNE	19	15:42	16.5	80			Calm		24.8	45		NNW	6	
24	We	14.4	25.4	0			SSE	39	17:08	17.9	66		NNW	6		24.2	42		Calm		
25	Th	11.4	21.9	0			ESE	22	16:44	16.0	61		SW	9		21.3	29		SW	7	
26	Fr	10.3	21.6	0			ESE	20	12:34	14.8	58		SW	9		20.2	46		SE	11	
27	Sa	10.9	22.0	0			SW	19	01:41	15.6	72		WSW	4		19.9	61		ESE	6	
28	Su	10.1	24.8	0			NE	17	17:17	16.2	80		W	4		24.2	43		NE	6	
29	Mo	10.8	26.7	0			SSW	24	20:27	16.8	79		W	4		26.1	35		NW	2	
30	Tu	15.6	18.2	0			S	30	17:14	18.1	76		SSW	9		17.1	66		S	17	
Statistics for April 2024																					
Mean		13.2	24.3							17.8	72			6		22.3	54			10	
Lowest		8.7	18.2	0						14.8	53			Calm		14.6	29			Calm	
Highest		17.1	31.7	131.2			E	52		21.6	100		SW	20		31.3	96		S	20	
Total				190.0																	

IDCJDW2062.202404 Prepared at 16:00 UTC on Thursday 7 November 2024

Horsley Park, New South Wales
May 2024 Daily Weather Observations

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9 am						3 pm					
		Min	Max				Dir	Spd	Time	Temp	RH	Cld	Dir	Spd	MSLP	Temp	RH	Cld	Dir	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	8th		km/h	hPa	°C	%	8th		km/h	hPa
1	We	13.1	20.1				S	31	13:54	15.3	65		SW	17		18.6	55		S	19	
2	Th	12.8	20.1				SSE	24	15:35	15.4	73		SSW	9		18.9	60		SE	6	
3	Fr	10.7	17.5				SE	20	11:55	15.1	83		SSW	9		15.4	94		SSW	6	
4	Sa	12.7	19.9				SE	22	16:01	15.2	89		SW	6		18.4	69		SE	9	
5	Su	14.0	16.9				S	30	14:23	15.4	96		SSW	4		15.6	83		S	15	
6	Mo	13.6	20.7				SE	43	13:21	16.3	86		SW	17		19.4	59		SSE	22	
7	Tu	12.5	19.9				SSW	24	04:43	14.6	93		WSW	9		19.4	63		SE	6	
8	We	11.4	18.4				SSW	20	12:10	15.7	96		SSW	6		16.6	92		SSE	4	
9	Th	12.8	20.5				ENE	20	12:18	16.5	91		WSW	4		18.6	73		SE	9	
10	Fr	14.2	21.4				E	22	14:51	15.6	89		WSW	4		16.3	89		E	13	
11	Sa	14.6	17.0				N	20	20:28	15.7	100		SE	4		16.0	95		ESE	11	
12	Su	13.7	20.5				SSW	33	14:43	15.4	87		SW	7		17.6	74		SW	19	
13	Mo	14.4	21.9				SSW	41	11:44	18.2	74		SW	13		20.3	65		S	7	
14	Tu	9.4	22.8				SW	20	11:10	14.6	82		W	4		22.3	41		SSW	11	
15	We	11.8	21.6				N	17	13:25	17.0	68		WSW	6		21.2	55		N	6	
16	Th	11.1	20.8				SW	13	07:08	14.6	83		W	4		19.5	74		ESE	2	
17	Fr	10.1	23.2				S	22	00:00	14.6	86		WSW	9		22.2	50		Calm		
18	Sa	11.3	16.0				SSW	44	13:59	12.9	51		SSW	20		14.5	54		SSW	22	
19	Su	8.1	17.7				SW	31	09:33	11.9	55		WSW	13		16.8	37		SSW	11	
20	Mo	5.9	18.0				SW	28	09:17	12.5	56		SW	11		17.8	51		SSE	9	
21	Tu	10.9	20.1				SE	28	16:19	14.7	57		SW	15		17.9	55		SE	9	
22	We	9.1	18.6				WSW	20	09:51	12.8	70		WSW	9		17.9	41		SW	6	
23	Th	5.8	20.9				SW	19	02:47	11.3	76		W	7		20.0	38		ENE	2	
24	Fr	6.2	20.5				ESE	19	16:08	11.9	78		WSW	4		19.0	47		N	2	
25	Sa	8.1	17.9				SW	13	02:47	14.1	82		WSW	6		17.4	64		Calm		
26	Su	7.2	21.3				SE	11	17:34	12.9	88		WSW	4		20.5	45		S	4	
27	Mo	7.1	20.4				SSW	22	11:59	12.5	77		W	6		19.6	43		SE	2	
28	Tu	6.0								11.3	82		WSW	4		20.1	49		NNE	4	
29	We	5.1	21.4				NNE	11	13:04	11.3	86		Calm			21.1	51		Calm		
30	Th	6.8	22.7	0			N	24	13:41	11.9	86		NW	4		22.2	48		N	11	
31	Fr	11.9	20.7	0			N	31	14:31	19.0	60		N	13		20.0	64		NNW	13	
Statistics for May 2024																					
Mean		10.4	20.0							14.4	78			8		18.7	60			8	
Lowest		5.1	16.0	0						11.3	51		Calm			14.5	37		Calm		
Highest		14.6	23.2	0			SSW	44		19.0	100		SSW	20		22.3	95		#	22	
Total				0.0																	

IDCJDW2062.202405 Prepared at 13:00 UTC on Wednesday 6 November 2024

Badgerys Creek, New South Wales
May 2024 Daily Weather Observations

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9 am						3 pm					
		Min	Max				Dir	Spd	Time	Temp	RH	Cld	Dir	Spd	MSLP	Temp	RH	Cld	Dir	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	8th		km/h	hPa	°C	%	8th		km/h	hPa
1	We	13.1	21.1	0			SSW	31	08:58	16.3	61		SSW	22	1030.8	19.8	51		SSE	17	1028.7
2	Th	12.6	20.7	0			ESE	24	15:41	16.1	70		SW	4	1032.1	18.4	66		WNW	4	1029.3
3	Fr	11.1	19.0	0.2			SSW	26	12:37	15.5	83		SW	11	1030.2	15.2	95		SSW	7	1027.4
4	Sa	12.3	20.1	2.8			SSE	20	13:00	15.0	95		WSW	7	1025.8	18.9	67		ESE	7	1022.1
5	Su	13.9	16.5	4.8			SSW	39	12:13	15.3	97		SW	7	1022.7	15.1	87		SSW	19	1021.5
6	Mo	13.4	20.4	4.8			SSW	44	04:04	16.4	83		SW	22	1027.7	18.9	57		SSE	20	1028.3
7	Tu	12.3	20.0	3.4			S	31	16:07	17.9	80		WSW	9	1031.3	17.6	83		SW	9	1029.2
8	We	12.5	18.8	2.2			SE	22	14:09	13.9	99		ENE	4	1031.8	16.3	100		SE	4	1029.1
9	Th	12.2	21.0	9.0			ENE	24	12:57	18.3	85		SSE	2	1032.2	18.9	77		SSW	7	1029.9
10	Fr	13.8	21.1	1.6			SE	15	00:12	17.3	87		SSW	6	1030.8	16.6	92		E	4	1027.9
11	Sa	14.4	17.0	3.8			SE	24	15:22	15.4	100		SW	7	1027.1	16.5	100		ESE	7	1024.0
12	Su	13.8	21.2	16.6			SSW	35	14:10	17.0	82		SW	11	1021.1	17.0	77		SSW	19	1018.5
13	Mo	14.8	22.0	1.0			SW	41	09:06	19.4	70		SSW	22	1020.3	21.7	64		SW	17	1019.5
14	Tu	8.1	23.2	0			S	20	14:40	14.2	93		Calm		1025.6	21.8	46		S	7	1024.3
15	We	12.4	22.1	0			NNE	19	11:59	16.5	78		WSW	6	1029.8	21.5	59		NNE	7	1025.8
16	Th	10.2	22.6	0			N	15	15:01	17.6	78		WSW	7	1030.0	19.5	63		N	9	1026.6
17	Fr	9.7	24.2	0			SW	13	21:00	13.4	100		W	6	1025.5	23.1	49		WSW	4	1020.2
18	Sa	11.1	16.1	0			SW	50	10:23	12.3	55		SW	22	1024.0	15.1	54		SSW	26	1023.1
19	Su	7.2	17.9	0			SW	31	09:49	12.1	56		SW	22	1023.0	17.5	41		SW	9	1019.5
20	Mo	5.0	19.5	0			SSW	30	10:27	12.6	59		SW	17	1023.5	16.8	53		S	11	1022.9
21	Tu	10.2		0						14.7	61		WSW	17	1027.8	18.9	53		SE	9	1025.1
22	We	8.4	18.9				SW	26	10:05	15.0	60		SW	15	1027.4	18.4	45		SW	9	1024.0
23	Th	4.8	21.1	0.2			E	15	17:52	11.0	84		SW	6	1027.9	19.7	43		W	6	1025.8
24	Fr	5.9	20.6	0			ESE	13	16:53	14.6	72		Calm		1027.6	18.9	53		NE	4	1025.1
25	Sa	7.0	18.4	0			S	9	04:35	11.8	100		SSE	2	1028.9	16.1	73		Calm		1025.7
26	Su	6.5	21.5	0			WSW	24	13:48	11.8	100		NW	2	1026.2	21.1	44		SSW	9	1022.6
27	Mo	5.8	21.0	0			SW	24	13:15	14.9	74		SW	4	1025.8	19.0	46		S	4	1024.2
28	Tu	4.6	21.6	0			WSW	11	21:45	9.7	100		S	4	1029.0	20.6	49		NE	7	1026.1
29	We	3.8	21.4	0			NE	13	13:00	9.3	100		Calm		1029.6	20.9	48		NE	4	1025.6
30	Th	4.7	23.0	0			NNE	22	14:28	10.4	100		WSW	2	1026.8	21.3	56		NNE	6	1022.8
31	Fr	10.3	20.3	0			NNE	30	08:57	18.4	66		NNE	22	1017.4	20.0	69		NNW	7	1014.7
Statistics for May 2024																					
Mean		9.9	20.4							14.6	81			9	1027.1	18.7	63			9	1024.5
Lowest		3.8	16.1	0						9.3	55		Calm		1017.4	15.1	41		Calm		1014.7
Highest		14.8	24.2	16.6			SW	50		19.4	100		#	22	1032.2	23.1	100		SSW	26	1029.9
Total				50.4																	

IDCJDW2005.202405 Prepared at 13:00 UTC on Sunday 9 February 2025

Horsley Park, New South Wales
June 2024 Daily Weather Observations

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9 am						3 pm					
		Min	Max				Dir	Spd	Time	Temp	RH	Cld	Dir	Spd	MSLP	Temp	RH	Cld	Dir	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	8th		km/h	hPa	°C	%	8th		km/h	hPa
1	Sa	13.2	15.3	0.2			SW	30	18:55	14.4	67		WSW	7		14.0	98		SW	6	
2	Su	11.2	16.2	45.2			SW	37	10:35	13.8	59		WSW	13		15.4	58		WSW	11	
3	Mo	6.1	17.5	0			WNW	30	12:40	11.9	69		N	6		16.2	41		WNW	15	
4	Tu	4.6	16.7	0			S	20	19:48	8.7	78		Calm			15.5	57		WNW	4	
5	We	8.8	16.2	0			SSW	17	12:00	11.0	73		WNW	6		14.6	77		SW	9	
6	Th	10.6	15.1	6.8			WSW	26	22:28	13.8	91		SW	4		13.9	98		SSW	9	
7	Fr	12.3	17.6	26.6						13.4	86		SSW	9		16.6	79		WSW	7	
8	Sa	11.5	20.3	0.4			W	30	14:03	13.2	79		WNW	4		20.0	51		W	13	
9	Su	7.4	19.5	0			SW	20	18:38	12.2	96		Calm			18.6	48		Calm		
10	Mo	5.3	18.2	0			SW	37	11:23	12.2	69		SW	15		16.9	40		SSW	11	
11	Tu	3.9	16.3	0			NW	28	22:58	7.7	92		Calm			14.8	60		N	6	
12	We	7.7	18.1	0			WSW	50	12:43	16.2	48		WNW	2		15.8	43		WSW	19	
13	Th	7.6	15.4	0			SSW	30	10:47	10.4	58		SW	15		14.0	54		WSW	6	
14	Fr	8.6	14.8	0			SW	19	04:32	10.7	70		SW	7		14.7	65		SW	4	
15	Sa	10.2	15.0	8.8			SSW	26	10:02	11.1	90		WSW	6		13.8	68		S	11	
16	Su	7.3	15.4	0			SW	30	12:33	10.2	63		SW	9		14.9	41		WSW	11	
17	Mo	7.2	17.1	0			S	39	12:39	12.6	57		SW	11		15.8	56		SW	13	
18	Tu	8.2	16.5	0			SW	24	10:52	11.0	61		W	7		16.1	42		SW	11	
19	We	3.0	15.6	0			NNW	20	12:15	8.1	73		W	4		15.0	44		W	6	
20	Th	1.3	16.3	0			SW	11	03:47	6.9	84		WSW	2		14.4	41		NE	6	
21	Fr	4.5	17.0	0			SW	24	12:09	11.1	71		WSW	7		15.9	49		SW	7	
22	Sa	8.4	15.1	13.6			SSW	35	15:19	9.3	99		Calm			14.5	62		SSW	15	
23	Su	9.3	16.4	1.6			SSW	31	11:49	12.0	75		SW	13		15.4	59		S	6	
24	Mo	3.3	16.9	0.2			SW	11	02:12	8.4	99		W	4		15.3	51		NNE	2	
25	Tu	2.8	18.9	0			NNE	13	13:18	9.1	90		Calm			17.8	48		SSE	2	
26	We	4.2	21.1	0			N	26	13:30	9.7	86		NW	2		19.9	48		NNW	11	
27	Th	6.2	19.0	0			W	17	12:11	11.5	64		NW	4		18.7	35		WSW	6	
28	Fr	3.7	19.0	0			SW	15	11:31	10.4	73		Calm			18.0	35		Calm		
29	Sa	3.1	18.5	0			N	22	23:28	6.8	95		Calm			18.0	53		ESE	7	
30	Su	6.7	14.8	7.2			SSW	31	03:12	12.5	100		Calm			12.4	79		SSE	9	
Statistics for June 2024																					
Mean		6.9	17.0							11.0	77			5		15.9	56			8	
Lowest		1.3	14.8	0						6.8	48		Calm			12.4	35		Calm		
Highest		13.2	21.1	45.2			WSW	50		16.2	100		SW	15		20.0	98		WSW	19	
Total				110.6																	

IDCJDW2062.202406 Prepared at 13:00 UTC on Tuesday 5 November 2024

Horsley Park, New South Wales
July 2024 Daily Weather Observations

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9 am						3 pm					
		Min	Max				Dir	Spd	Time	Temp	RH	Cld	Dir	Spd	MSLP	Temp	RH	Cld	Dir	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	8th		km/h	hPa	°C	%	8th		km/h	hPa
1	Mo	5.8	15.1	2.2			S	24	15:04	8.8	71		WSW	9		14.2	57		S	15	
2	Tu	8.4	15.9	1.8			S	28	11:26	10.5	83		SSW	13		15.1	61		SE	11	
3	We	9.4	16.3	1.8			S	33	13:09	11.6	83		SW	13		14.8	59		SSW	11	
4	Th	10.6	17.1	2.6			S	30	14:39	12.3	88		SW	9		15.7	52		SSE	15	
5	Fr	10.4	15.8	7.4			SE	37	14:11	12.2	90		SW	11		14.4	79		SSE	13	
6	Sa	10.2	16.0	2.4			S	30	12:31	12.6	68		SSW	7		15.7	54		SE	9	
7	Su	9.4	17.3	0.4			ESE	20	14:45	12.5	83		SW	4		14.4	80		ESE	11	
8	Mo	11.9	16.5	0.4			N	15	13:54	12.9	100		Calm			16.3	74		N	4	
9	Tu	11.2	19.8	2.6			NW	13	10:02	12.5	100		N	4		18.4	65		Calm		
10	We	5.8	19.2	0			SW	13	18:39	10.5	86		NW	2		17.5	52		NNW	2	
11	Th	4.6	15.7	0			N	11	12:27	10.9	78		Calm			15.3	61		WNW	2	
12	Fr	5.5	17.9	0			W	15	13:00	9.2	86		WNW	2		17.6	44		WSW	6	
13	Sa	8.6	16.8	0			SSW	31	11:48	12.7	62		SW	13		16.0	46		SSW	6	
14	Su	2.9	16.6	0			SW	28	15:10	9.9	74		Calm			15.2	41		W	11	
15	Mo	2.3	14.6	0			W	39	13:57	9.9	49		W	6		13.7	37		WNW	15	
16	Tu	8.1	15.6	0			WNW	28	00:32	12.1	50		NW	11		14.9	45		W	9	
17	We	6.3	18.2	0			SW	33	11:14	13.0	61		WNW	7		18.0	46		WSW	11	
18	Th	5.5	17.9	0			W	30	13:11	12.1	71		WSW	4		16.9	37		W	11	
19	Fr	1.4	15.5	0			NW	20	19:11	8.5	64		NW	4		13.3	50		Calm		
20	Sa	8.4	16.1	0			NW	63	15:04	14.7	48		NW	20		14.1	38		WNW	31	
21	Su	7.1	17.6	0			W	33	05:12	12.7	46		W	11		16.8	30		SW	13	
22	Mo	3.6	18.1	0			W	13	12:15	9.7	75		NNW	4		17.1	50		NNW	6	
23	Tu	4.0	18.9	0			WNW	15	11:33	10.9	75		NW	2		18.7	43		WNW	2	
24	We	4.0	18.9	0			NE	11	16:52	8.0	90		NW	4		18.6	47		NNE	2	
25	Th	7.9	22.5	0			NNW	41	13:57	14.4	59		N	6		21.6	40		N	17	
26	Fr	10.9	19.8	6.6			SW	24	02:38	13.2	93		Calm			19.1	42		S	6	
27	Sa	5.7	15.8	7.0			WSW	11	07:08	8.2	99		SSE	2		15.4	79		N	6	
28	Su	6.4	13.8	0.8			SW	56	14:53	10.0	60		WNW	11		12.4	38		SW	28	
29	Mo	6.8	15.6	0			SW	46	09:32	10.5	46		SW	13		14.6	37		S	20	
30	Tu	6.7	16.2	0			SSW	35	15:49	10.8	56		SW	19		15.5	42		SSW	19	
31	We	7.5	16.7	0			SSW	33	09:39	11.3	58		SW	15		14.9	46		SSW	15	
Statistics for July 2024																					
Mean		7.0	17.0							11.3	72			7		16.0	50			10	
Lowest		1.4	13.8	0						8.0	46		Calm			12.4	30		Calm		
Highest		11.9	22.5	7.4			NW	63		14.7	100		NW	20		21.6	80		WNW	31	
Total				36.0																	

IDCJDW2062.202407 Prepared at 13:00 UTC on Monday 4 November 2024

Horsley Park, New South Wales
August 2024 Daily Weather Observations

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9 am						3 pm					
		Min	Max				Dir	Spd	Time	Temp	RH	Cld	Dir	Spd	MSLP	Temp	RH	Cld	Dir	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	8th		km/h	hPa	°C	%	8th		km/h	hPa
1	Th	8.0	15.4	0			SW	33	09:43	12.1	59		SW	17		14.7	53		S	11	
2	Fr	8.9	16.9	0			SSW	22	01:54	11.9	68		SW	11		14.1	68		S	6	
3	Sa	2.8	18.6	0			N	13	11:45	9.3	94		Calm			17.5	41		NE	6	
4	Su	2.5	15.7	0			WNW	15	09:50	9.2	75		SW	2		14.9	50		Calm		
5	Mo	6.6	14.7	0			SW	9	13:01	9.7	87		Calm			13.9	64		Calm		
6	Tu	7.8	18.4	0			S	26	12:39	12.6	65		WSW	9		17.6	39		W	7	
7	We	3.0	18.3	0			SE	17	16:13	9.8	72		WNW	4		17.6	38		E	7	
8	Th	3.8	19.5	0			NE	22	13:25	8.9	85		NNW	2		18.9	48		NE	9	
9	Fr	6.8	20.9	0			NNW	11	11:40	11.1	93		SW	2		20.4	48		Calm		
10	Sa	7.6	19.5	0			ENE	20	13:00	11.9	76		SW	7		17.9	60		ESE	9	
11	Su	9.1	19.4	0			E	22	16:04	12.6	86		WSW	6		17.5	60		E	7	
12	Mo	10.0	16.9	1.2			SSW	17	02:46	11.7	91		NNW	7		16.1	76		NE	4	
13	Tu	11.5	18.6	2.4			N	13	13:10	14.7	100		Calm			18.0	79		NNE	4	
14	We	14.6	17.2	2.0			ESE	15	15:23	16.2	100		WSW	2		16.4	99		SE	6	
15	Th	12.5	18.2	6.2			SSW	15	12:49	14.6	91		SW	6		17.7	78		ESE	6	
16	Fr	12.3	21.8	0			S	28	17:55	17.3	82		Calm			21.4	57		N	9	
17	Sa	10.5	20.8	0			NW	33	13:14	16.7	58		NNW	6		19.5	38		WNW	17	
18	Su	7.8	17.9	0			SW	31	11:34	15.1	59		WSW	11		16.7	62		SSE	13	
19	Mo	11.8	19.0	0			ESE	20	14:57	14.3	66		WSW	4		17.3	63		ESE	13	
20	Tu	8.0	21.5	0			NNE	24	13:29	14.0	86		N	2		21.1	52		N	11	
21	We	13.9	25.5	0			NW	33	12:56	20.1	59		NNW	7		24.8	28		NW	15	
22	Th	11.1	22.0	0			WNW	19	12:51	14.5	74		Calm			21.4	37		WNW	6	
23	Fr	7.1	22.3	0			NNE	22	12:16	13.4	71		NW	7		21.6	31		NNE	7	
24	Sa	11.2	27.8	0			N	41	12:21	16.1	66		NNW	9		27.6	32		W	19	
25	Su	14.5	22.4	0			N	35	21:06	18.2	69		Calm			20.7	64		W	4	
26	Mo	11.9	24.9	0			W	44	02:23	19.2	36		SE	2		24.6	23		SW	2	
27	Tu	6.3	24.4	0			NNE	19	10:48	14.8	62		W	4		23.8	34		N	2	
28	We	13.4	27.8	0			WNW	63	14:10	23.8	24		WNW	26		27.0	22		WNW	33	
29	Th	8.3	23.3	0			NW	26	16:34	16.9	39		SW	6		22.6	23		WNW	7	
30	Fr	11.7	29.3	0			NW	65	12:28	20.5	36		N	17		29.0	21		NW	22	
31	Sa	15.9	23.8	0			NW	44	12:05	18.9	33		WNW	11		23.2	22		WNW	20	
Statistics for August 2024																					
Mean		9.4	20.7							14.5	69			6		19.9	48			9	
Lowest		2.5	14.7	0						8.9	24		Calm			13.9	21		Calm		
Highest		15.9	29.3	6.2			NW	65		23.8	100		WNW	26		29.0	99		WNW	33	
Total				11.8																	

IDCJDW2062.202408 Prepared at 13:00 UTC on Sunday 3 November 2024