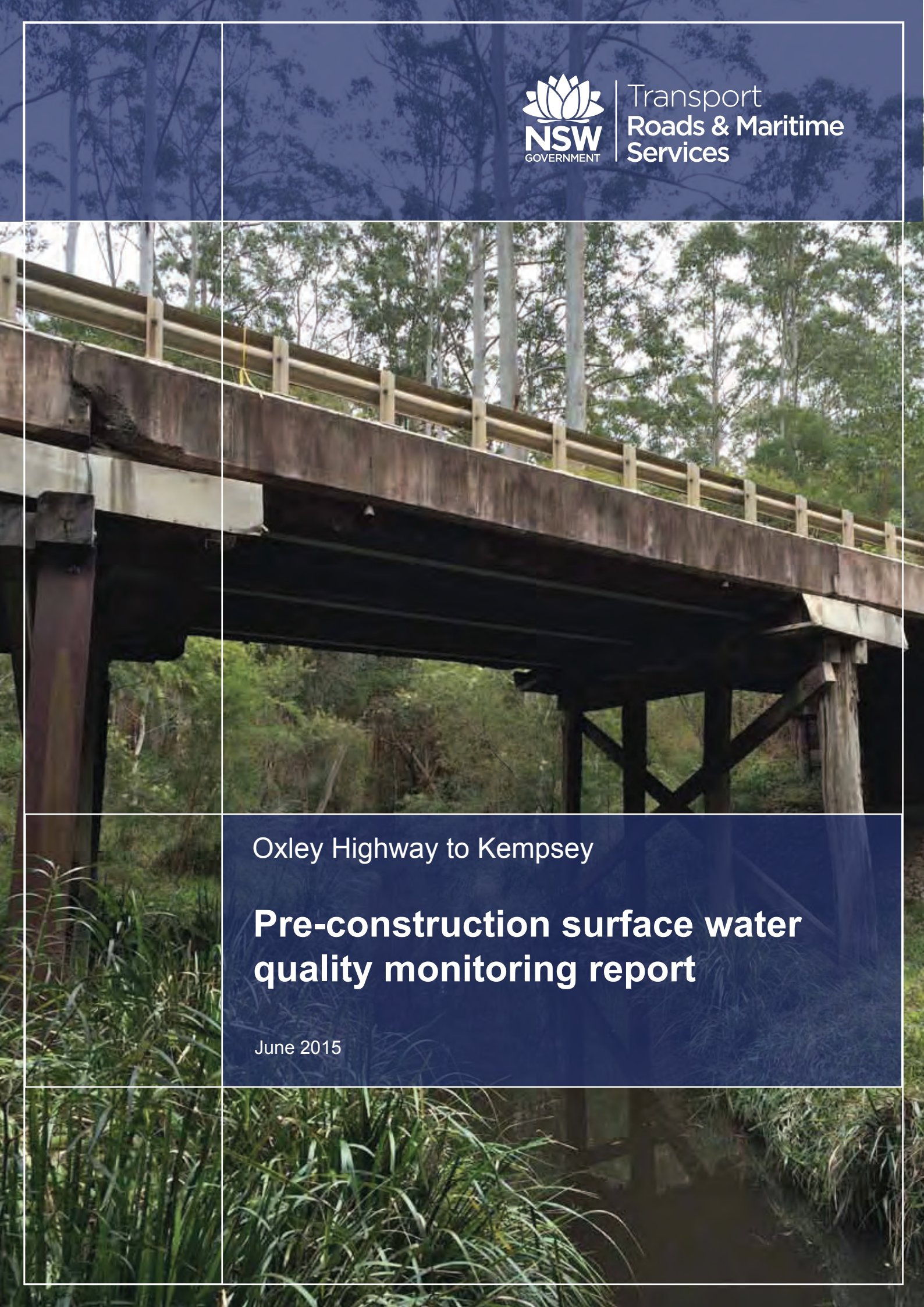

NSW GOVERNMENT
Transport Roads & Maritime Services

Oxley Highway to Kempsey

# Pre-construction surface water quality monitoring report

June 2015

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# 1 Introduction

## 1.1 The project

On behalf of the Australian and NSW governments, Roads and Maritime Services (Roads and Maritime) is currently constructing the Oxley Highway to Kempsey Pacific Highway Upgrade (the project). The project is 37 kilometres in length, commencing approximately 700 metres north of the Oxley Highway interchange and continuing northwards to tie in with the dual carriageways of the Kempsey to Eungai Pacific Highway Upgrade. The project involves the duplication of the existing highway, except for sections in the vicinity of the Hastings River and Wilson River that deviate from the existing highway, and a bypass of Telegraph Point. The existing highway will be retained wherever possible for use as a service road or local road connection. Figure 1-1 shows the location of the project.

Roads and Maritime will construct and open the project in stages. The stages of the project are:

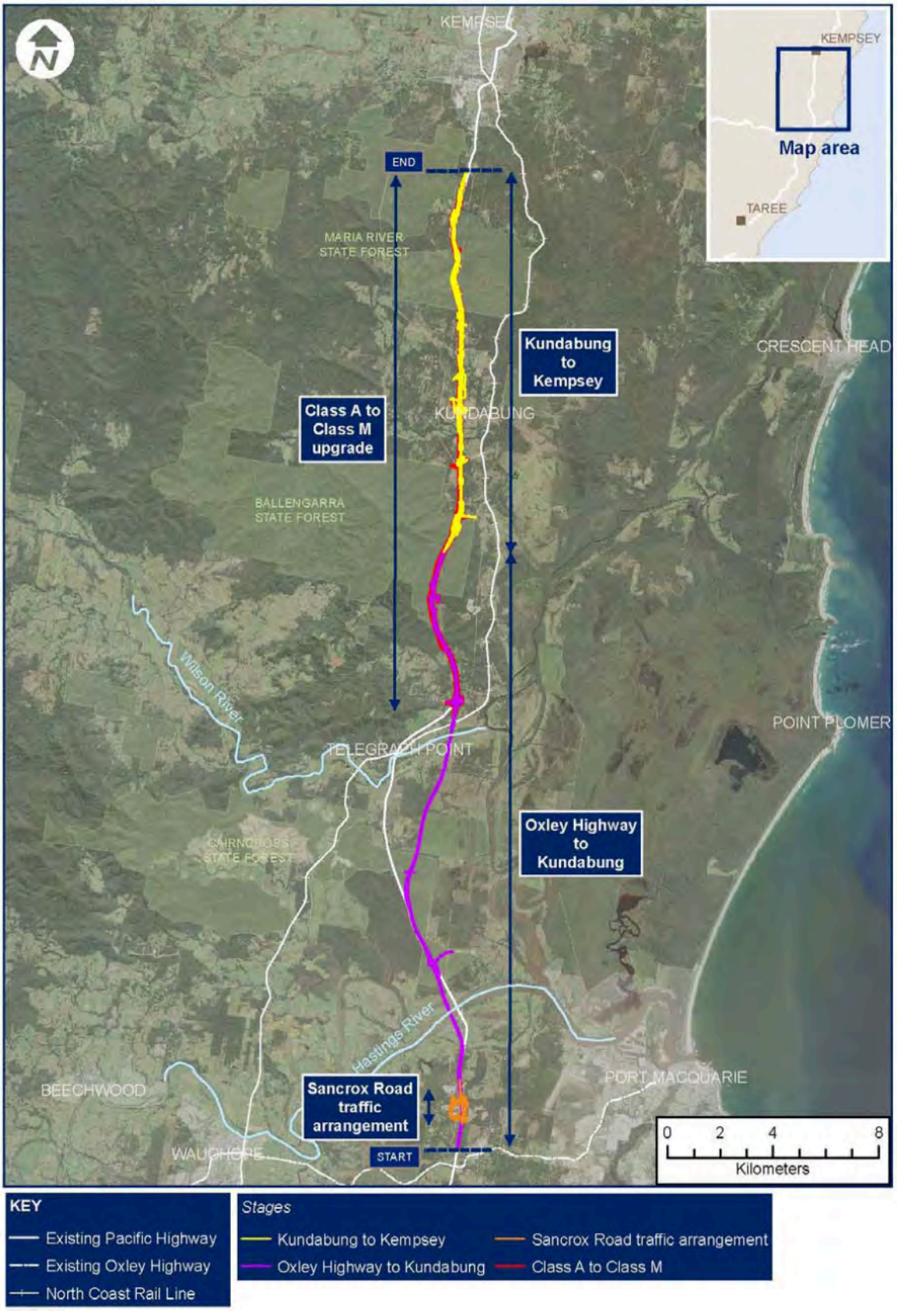
- Stage 1 - The Sancrox Traffic Arrangement works located about two kilometres north of the Oxley Highway / Pacific Highway intersection.
- Stage 2 - Kundabung to Kempsey Stage consisting of about 14 kilometres of dual carriageway, commencing north of Barrys Creek near Kundabung (chainage 24,000) and connecting to the Kempsey Bypass at Stumpy Creek (Chainage 37,800).
- Stage 3 - Oxley Highway to Kundabung Stage consisting of about 24 kilometres of dual carriageway, commencing just north of the Oxley Highway / Pacific Highway intersection (chainage 700) and connecting with the Kundabung to Kempsey stage just north of Barrys Creek (chainage 24,000).

## 1.2 Project approval

On 8 December 2006, the project was declared by the then Minister for Planning to be a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* applies. An environmental assessment was prepared and placed on public exhibition for 30 days between September and October 2010. Following consideration of submissions made during the exhibition period, the submissions report, including changes to the proposal following consideration of submissions, was submitted to the Minister for Planning and Infrastructure seeking approval. Approval of the project was granted on 8 February 2012, subject to a number of Conditions of Approval (MCoA). At the request of Roads and Maritime, the Minister has since modified the approval on two occasions.

Under MCoA B17, Roads and Maritime must prepare and implement a Water Quality Monitoring Program (WQMP) to monitor the impacts of the project on surface and groundwater quality and resources and wetlands, during construction and operation. The WQMP was prepared in consultation with the EPA, DPI (Fishing and Aquaculture) and NoW, and was submitted to Department of Planning and Infrastructure for approval on 11 February 2014. The plan was subsequently approved on 5 March 2014.

**Figure 1-1 Location of Oxley Highway to Kempsey project**



## 1.3 Purpose of this report

The WQMP developed in response to MCoA B17 outlines various pre-construction, construction and post-construction surface and groundwater quality monitoring and assessment requirements. This report addresses the pre-construction surface water quality monitoring requirements outlined in Chapter 4 and Chapter 5 of the WQMP, which include, but are not limited to:

- Undertaking pre-construct surface water quality sampling monthly for at least 12 months prior to the commencement of construction.
- Collecting and analysing representative water samples for chemical, physical and nutrient properties during dry and wet-weather conditions.
- Providing results of pre-construction sampling to relevant stakeholders including the DP&E, DPI (Fisheries and Aquaculture) and NOW.
- Providing a basis for construction and post-construction monitoring result comparison.

Pre-construction groundwater quality monitoring results are contained in the Roads and Maritime Oxley Highway to Kempsey Groundwater Pre-Construction Report, 10 April 2014. This report will be provided to relevant stakeholder at the same time as the pre-construction surface water report. Subsequent construction and post-construction surface and groundwater monitoring reports will be provided as composite reports unless the content lends itself to separate reporting.

A review of surface water and groundwater quality results to evaluate potential surface and groundwater interactions has not been undertaken for the pre-construction phase due to the absence of activities that might effect these interactions. This type of evaluation will be the subject of subsequent construction water quality monitoring reports.

# 2 Methodology

The approved method for surface water quality monitoring is outlined in detail in the WQMP. The following sections are a summary of key elements of that program.

## 2.1 Monitoring sites

The project traverses either through or near a number of water dependent ecosystems including major rivers, creeks, tributaries, SEPP 14 wetlands and endangered ecological communities. Surface water quality monitoring sites were selected to ensure potential impacts on these systems from the project could be identified early and where necessary measures to remedy any impacts implemented.

Table 2-1 lists the 27 surface water quality monitoring locations and the reason for site selection. Appendix A includes a series of maps that show the location of each monitoring site relative to the project alignment. The WQMP identified 30 locations for sampling of which SW4a, SW4b and SW5a are no longer subject to the program. These sites were removed from the regular sample regime as they rarely hold or carry water, generally only limited to the immediate affect of surface flows during a rain event. The remaining 27 site are considered sufficiently diverse in terms of location, condition, type and suitability for the protection of nearby sensitive water depended ecosystems / land uses.

**Table 2-1 Surface water quality monitoring locations**

| Site no. | Chainage | Waterway name | Position relative to project | Reason for site selection |
|---|---|---|---|---|
| SW1a | 2500 | Unnamed tributary of Fernbank Creek | Upstream / West | Industrial land use upstream |
| SW1b | 2600 | Unnamed tributary of Fernbank Creek | Upstream / West | Industrial land use upstream |
| SW1c | 2650 | Unnamed tributary of Fernbank Creek | Downstream / East | Industrial land use upstream |
| SW2a | 4620 | Fernbank Creek | Downstream / East | EEC / ASS |
| SW2b | 4800 | Fernbank Creek | Upstream / West | EEC / ASS |
| SW3a | 6040 | Northern bank of Hastings River | Upstream / West | Major river with oyster leases downstream |
| SW3b | 6080 | Northern bank of Hastings River | Downstream / East | Major river with oyster leases downstream |
| SW5b | 15820 | Unnamed tributary of Wilson River | Downstream / West | EEC / ASS |
| SW6a | 16460 | South bank of Wilson River | Upstream / West | Major river / SEPP 14 / Floodplain / ASS |
| SW6b | 16600 | South bank of Wilson River | Downstream / East | Major river / SEPP 14 / Floodplain / ASS |
| SW6c | 16830 | North bank of Wilson River | Upstream / West | Major river / SEPP 14 / Floodplain / ASS |
| SW6d | 16840 | North bank of Wilson | Downstream / | Major river / SEPP 14 / Floodplain / |

| Site no. | Chainage | Waterway name | Position relative to project | Reason for site selection |
|---|---|---|---|---|
| | | River | East | ASS |
| SW7a | 19660 | Cooperabung Creek | Upstream / West | EEC / Giant Barred Frog habitat |
| SW7b | 19660 | Cooperabung Creek | Downstream / East | EEC / Giant Barred Frog habitat |
| SW8a | 23775 | Barrys Creek | Upstream / West | EEC / Giant Barred Frog habitat |
| SW8b | 24000 | Barrys Creek | Downstream / East | EEC / Giant Barred Frog habitat |
| SW8c | 25325 | Barrys Creek | Downstream / East | EEC / Giant Barred Frog habitat |
| SW9a | 28300 | Smiths Creek | Downstream / East | EEC / Giant Barred Frog habitat |
| SW9b | 28300 | Smiths Creek | Upstream / West | EEC / Giant Barred Frog habitat |
| SW10a | 30700 | Pipers Creek | Downstream / East | EEC / Giant Barred Frog habitat |
| SW10b | 30700 | Pipers Creek | Upstream / West | EEC / Giant Barred Frog habitat |
| SW11a | 34650 | Unnamed drainage line | Downstream / East | Downhill of significant cut site / potential ASR |
| SW11b | 34700 | Unnamed drainage line | Upstream / West | Downhill of significant cut site / potential ASR |
| SW12a | 36850 | Maria River | Upstream / West | Major river / EEC / Giant Barred Frog habitat |
| SW12b | 36850 | Maria River | Downstream / East | Major river / EEC / Giant Barred Frog habitat |
| SW13a | 37700 | Stumpy Creek | Downstream / East | Major creek / EEC |
| SW13b | 37750 | Stumpy Creek | Upstream / West | Major creek / EEC |

Surface water quality monitoring of a spring fed dam on private property (known as tipping dam) that had the potential to be affected during construction was also proposed in the WQMP. Roads and Maritime's construction partner for Stage 2 (K2K) and the property owner have since reached an agreement to use the resource during construction. The dam will be enlarged and water used for construction purposes. The dam and surrounding land will be restored inline with the agreement established between the two parties. Ongoing monitoring of water levels during construction as outlined in section 4.2 to the WQMP is therefore no longer proposed.

## 2.2 Monitoring parameters

Surface water quality monitoring parameters have been selected with reference to:

- Roads and Maritime Guideline for Construction Water Quality Monitoring (RTA undated).
- The Australian guidelines for water quality monitoring and reporting (ANZECC Monitoring Guidelines) (ANZECC/ARMCANZ 2000b).
- The parameters included in earlier monitoring programs within the region (eg by the Port Macquarie Hastings Council and by the Kempsey Bypass Alliance).

Table 2-2 lists the monitoring parameters that form the basis of the surface water monitoring program and identifies whether measurement is taken in the field or by a NATA accredited laboratory off site.

**Table 2-2 Water quality monitoring parameters**

| Parameter type | Parameter | Unit of measurement | Analysis method |
|---|---|---|---|
| Chemical properties | pH | Scale 0 to 14 | Field measurement |
| | Dissolved oxygen (DO) | % | Field measurement |
| | Total petroleum hydrocarbons | ug/L | Field visual assessment / laboratory measurement |
| | Trace metals:<br>Aluminum (Al)<br>Arsenic (As)<br>Cadmium (Cd)<br>Chromium (Cr)<br>Copper (Cu)<br>Iron (Fe)<br>Lead (Pb)<br>Manganese (Mn)<br>Mercury (Hg)<br>Nickel (Ni)<br>Silver (Ag)<br>Zinc (Zn) | mg/L | Laboratory measurement |
| Physical properties | Electrical conductivity (EC) | uS/cm | Field measurement |
| | Temperature | $^{0}$C | Field measurement |
| | Turbidity | NTU | Field measurement |
| | Total suspended solids | mg/L | Laboratory measurement |
| Nutrients | Total nitrogen (TN) | mg/L | Laboratory measurement |
| | Total phosphorous (TP) | mg/L | Laboratory measurement |

## 2.3 Water quality analysis

Section 2.2 noted that the analysis of water quality depending on the parameter subject to investigation is undertaken in one of two ways. Some physical and chemical properties due to their rapid degradation with time are analysed in the field. Since April 2014 this analysis has been performed with the use of a Yeo-Kal Model 615 Water Quality Analyser. The instrument is

factory calibrated annually, with in-field calibration checked / undertaken at regular intervals, typically monthly and/or prior to each sampling event.

ALS NATA accredited Sydney laboratory operations undertake all off-site water quality analysis. Samples are collected on-site in ALS supplied sample bottles, refrigerated and transported to the ALS Warabrook depot for dispatch to Sydney. Chain of custody documentation is produced and updated during the collection, transport and analysis stages of the process.

Prior to April 2014 NATA accredited laboratory analysis was performed by either Port Macquarie-Hastings Council or Sydney Water Monitoring Services.

## 2.4 Monitoring frequency and duration

Pre-construction surface water quality monitoring was required on a monthly basis for a period of not less than 12 months prior to the commencement of construction. Surface water quality monitoring commenced in October 2012 at Sancrox and has continued across the entire project since March 2013 up to the commencement of construction on each stage. Construction for each stage commenced on:

- Stage 1 Sancrox Traffic Arrangement works – 22 July 2014.
- Stage 2 Kundabung to Kempsey – 23 November 2014.
- Stage 3 Oxley Highway to Kundabung – 14 October 2014.

During the pre-construction surface water quality monitoring phase, sampling of all parameters except trace metals, was required for one dry event and as required one wet-weather event per month. A wet-weather event has been defined as 10 millimetres of rainfall within a 24-hour period. Sampling for a wet-weather event commences within 24 hours of the cessation of that event. Similarly, trace metals were sampled for one dry and one wet-weather event, but on a quarterly basis.

The requirements for construction and post-construction monitoring are detailed in the WQMP and will be outlined in subsequent construction and post-construction surface water quality monitoring reports.

On 21 May 2014, as part of the Pre-construction Compliance Report submission for Stage 1 – Sancrox Traffic Arrangement works, Roads and Maritime wrote to the Department of Planning and Environment advising that a pre-construction water quality monitoring report would be provided following the commencement of all stages of construction. This report has been prepared to address that requirement.

## 2.5 Rainfall records

During the pre-construction monitoring period rainfall records were obtained through four Bureau of Meteorology weather stations including:

- Kempsey Airport (Station number – 59007).
- Kempsey – Wide Street (Station number – 59017).
- Telegraph Point – Farrawells Road (Station number – 60031).
- Port Macquarie Airport (Station number – 60139).

Rainfall records for these stations are attached at Appendix B and include the period between October 2012 (for Port Macquarie Airport as it related to Sancrox and March 2013 for all other weather stations) and mid November 2014 at which time all stages of the Project had formally commenced construction.

Site based weather stations have also been established for the project at three locations including:

- Kundabung – Port Macquarie.
- Telegraph Point – Port Macquarie.
- Sancrox – Port Macquarie.

These stations have been established at various times during pre-construction and construction. These stations will be used during the construction phase of the project to determine the need for wet-weather monitoring and ongoing water quality reporting.

# 3 Results

## 3.1 Prevailing climatic conditions

Rainfall since the commencement of pre-construction monitoring across the entire project (March 2013) can be characterised as well below average. Only six out of 26 months recorded (commencing in October 2012) at Port Macquarie Airport station were above average. At Kempsey (Wide Street) station there were five months out of 20 where above average rainfall was recorded. Rainfall during the remaining months was generally well below historical monthly mean levels. A summary of daily / monthly rainfall for four weather stations in the Port Macquarie / Kempsey area referred to in Section 2.5 are provided courtesy of the Australian Bureau of Meteorology at
Appendix B.

## 3.2 Limitations

A number of factors have influenced the continuity and completeness of water quality results obtained during the pre-construction monitoring period and the extent to which they will be suitable for construction and post-construction comparison. Considerations include:

- While pre-construction monitoring commenced between 18 and 21 months prior to works on the project, sampling for individual months was not always compliant with the WQMP. In some instances, a scheduled wet weather sampling event (ie triggered by a greater than 10 millimetre rain event) may have been missed for an individual calendar month. Generally, a wet and dry sampling event has been recorded for each calendar month, with the exception of the following:
  - December – where the sampling event represents a wet weather monitoring event in some parts of the project, and a dry weather sampling event in other parts of the project, due to the rainfall variability across the entire length of the project
  - February – no dry weather pre-construction monitoring event has been conducted
  - January – no wet weather pre-construction monitoring event has been conducted.

  Despite the above, the program has recorded at least one representative wet and dry sample during each season.

  Similarly, while sampling for metal parameters was undertaken at least once within each quarter, this did not always include both a dry and wet event. Whilst there is a good seasonal spread of monitoring results for metals, the project is missing a wet monitoring event for metals in summer, and parts of the project are missing a dry sampling event for metals in spring.

  It should be noted that Roads and Maritime were conducting monitoring “in-house” at this time and the availability of internal resources was the primary reason for monitoring omissions during this period. Recognising these deficiencies, Roads and Maritime engaged an external service provider proficient in the requirements of the WQMP. Since April 2014 the external service provider has fulfilled the surface water monitoring requirements compliant with the WQMP. This service will continue for the remainder of project and include all post-construction monitoring requirements outlined in the WQMP.
- Prevailing weather conditions were such that wet-weather monitoring was not possible during each month. Where sampling was undertaken following wet weather events (ie an event greater than 10 millimetres in 24 hours), particularly where only a marginal event occurred, no visible response within many of the waterways was observed ie no subsequent flow.

- A number of the freshwater streams remained isolated ponds for all or a large proportion of both dry and wet-weather sampling events. At no time during the pre-construction period did SW8 (Barrys Creek) prevail as a continuous waterway. SW8a, SW8b and SW8c remained isolated ponds at the time of sampling for the entire pre-construction monitoring period.
- SW8a was only sampled on four occasions during pre-construction monitoring due to the absence of water within the waterway. Metals were analysed for only one of these events. Comparison between 80$^{th}$ and 20$^{th}$ percentiles at SW8a and downstream locations (ie SW8b, SW8c) will not adequately represent any potential impacts associated with construction if these waterway conditions prevail.
- 80$^{th}$ and 20th percentile trigger values established from the pre-construction data are limited and do not technically fulfill the minimum ANZECC requirements ie a minimum of 24 sampling events are required to establish site specific trigger values. However, this will be overcome during the first six-monthly construction period for most parameters with data from both pre-construction and construction combined to establish the 80$^{th}$ and 20$^{th}$ percentile rolling averages based on 24 sampling events.
- At times, due to either equipment issues or operator error, individual parameters were on occasion missed for an individual sampling event. The application of the rolling 80$^{th}$/20$^{th}$ percentile values will to some degree minimised the affects of this issue when undertaking analysis during construction.

## 3.3 Summary of results

Table 3-1 to Table 3-7 provide calculated 80th and 20th percentile trigger values for the upstream sample (test site) locations in accordance with the approved WQMP requirements. This data will be used as the basis for formulating rolling trigger values during construction. Appendix C includes all monitoring results for the pre-construction period for upstream and downstream sites. Full laboratory reports for all sampling events are available on request.

The April 2014 pre-construction groundwater monitoring report identified generalised trigger values for evaluating changes to ground conditions during construction. For completeness, numerical trigger values calculated from the data collected and presented in that report have been attached at Appendix D.

## Table 3-1 Pre-construction upstream trigger values

| Parameter | | Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW1a | SW1a | SW1a | SW1a | SW1a | SW2b | SW2b | SW2b | SW2b | SW2b |
| | | LOR | 80th % | 20th % | Max | Min | Stdev | 80th % | 20th % | Max | Min | Stdev |
| Temperature | $^0$C | | 23.6 | 14.4 | 27.9 | 11.8 | 4.9 | 24.0 | 18.3 | 28.6 | 11.0 | 4.1 |
| Electrical conductivity (EC) | uS/cm | | 1179 | 221 | 3172 | 82 | 788 | 893 | 405 | 1220 | 90 | 286 |
| Dissolved oxygen (DO) | % | | 95 | 38 | 119 | 2 | 35 | 90 | 57 | 128 | 27 | 27 |
| pH | | | 7.0 | 6.6 | 8.1 | 6.3 | 0.4 | 6.1 | 4.1 | 6.5 | 3.8 | 0.9 |
| Turbidity (NTU) | NTU | | 111 | 21 | 1000 | 2 | 199 | 97 | 14 | 900 | 4 | 180 |
| Total suspended solids (TSS) | mg/L | 5 | 50 | 9 | 580 | 5 | 156 | 172 | 11 | 2940 | 5 | 757 |
| Aluminium (Al) | mg/L | 0.01 | 0.52 | 0.04 | 0.81 | 0.01 | 0.29 | 1.11 | 0.10 | 37.40 | 0.02 | 12.22 |
| Arsenic (As) | mg/L | 0.001 | 0.002 | 0.001 | 0.002 | 0.001 | 0.000 | 0.004 | 0.001 | 0.038 | 0.001 | 0.012 |
| Cadmium (Cd) | mg/L | 0.0001 | 0.0010#* | 0.0001#* | 0.0010#* | 0.0001 | 0.000 | 0.0010#* | 0.0001#* | 0.0010 | 0.0001 | 0.0 |
| Chromium (Cr) | mg/L | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 | 0.002 | 0.001 | 0.064 | 0.001 | 0.021 |
| Copper (Cu) | mg/L | 0.001 | 0.008 | 0.002 | 0.010 | 0.001 | 0.003 | 0.005 | 0.001 | 0.076 | 0.001 | 0.024 |
| Iron (Fe) | mg/L | 0.05 | 2.28 | 0.11 | 4.61 | 0.05 | 1.51 | 23.34 | 0.50 | 231.00 | 0.31 | 75.07 |
| Lead (Pb) | mg/L | 0.001 | 0.002 | 0.001 | 0.005 | 0.001 | 0.001 | 0.001 | 0.001 | 0.033 | 0.001 | 0.011 |
| Manganese (Mn) | mg/L | 0.001 | 0.345 | 0.033 | 0.382 | 0.019 | 0.147 | 2.416 | 0.204 | 5.550 | 0.098 | 1.761 |
| Mercury (Hg) | mg/L | 0.0001 | 0.00010# | 0.00001# | 0.0003 | 0.00001 | 0.0000 | 0.0002# | 0.0001# | 0.0003 | 0.0000 | 0.0001 |
| Nickel (Ni) | mg/L | 0.001 | 0.002 | 0.001 | 0.003 | 0.001 | 0.001 | 0.0132 | 0.0034 | 0.810 | 0.001 | 0.266 |
| Silver (Ag) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.0 | 0.0010# | 0.0010# | 0.001 | 0.001 | 0.000 |
| Zinc (Zn) | mg/L | 0.005 | 0.08 | 0.02 | 0.10 | 0.01 | 0.03 | 0.0476 | 0.0126 | 0.339 | 0.006 | 0.105 |
| Total Nitrogen (TN) | mg/L | 0.1 | 0.9 | 0.2 | 4.90 | 0.17 | 1.16 | 5.42 | 0.70 | 47.5 | 0.4 | 10.3 |
| Total Phosphorous (TP) | mg/L | 0.01 | 0.18 | 0.02 | 1.00 | 0.02 | 0.23 | 0.71 | 0.03 | 8.98 | 0.01 | 2.00 |

# - Generally no change in level of parameter for all sampling events and / or at the lower limit of laboratory reporting.

* - Level of reporting raised for some sampling events due to matrix interference eg salinity. Samples diluted 10 times. Refer to individual results at Appendix C.

Note – Where the concentration of a particular parameter is analysis to be less than the LOR, the LOR is taken to be the level for completeness.

**Table 3-2 Pre-construction upstream trigger values (continued)**

| Parameter | | Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW3a | SW3a | SW3a | SW3a | SW3a | SW5b | SW5b | SW5b | SW5b | SW5b |
| | | LOR | 80th % | 20th % | Max | Min | Stdev | 80th % | 20th % | Max | Min | Stdev |
| Temperature | $^0$C | | 24.9 | 16.1 | 26.2 | 15.1 | 4.0 | 26.8 | 17.7 | 27.3 | 12.8 | 5.1 |
| Electrical conductivity (EC) | uS/cm | | 35600 | 8000 | 50800 | 36 | 16378 | 1083 | 452 | 2101 | 365 | 481 |
| Dissolved oxygen (DO) | % | | 90.2 | 64.3 | 131 | 57 | 18 | 106 | 62 | 143 | 44 | 28 |
| pH | | | 7.8 | 7.3 | 8.0 | 6.4 | 0.4 | 5.6 | 4.4 | 7.2 | 3.5 | 0.9 |
| Turbidity (NTU) | NTU | | 40 | 3 | 122 | 2 | 29 | 83 | 4 | 650 | 3 | 184 |
| Total suspended solids (TSS) | mg/L | 5 | 40 | 5 | 200 | 5 | 43 | 279 | 7 | 1182 | 5 | 313 |
| Aluminium (Al) | mg/L | 0.01 | 0.16 | 0.06 | 1.74 | 0.01 | 0.52 | 2.26 | 0.91 | 3.81 | 0.18 | 1.16 |
| Arsenic (As) | mg/L | 0.001 | 0.010 | 0.002 | 0.010 | 0.001 | 0.004 | 0.005 | 0.0010 | 0.011 | 0.001 | 0.004 |
| Cadmium (Cd) * | mg/L | 0.0001 | 0.0010#* | 0.0006#* | 0.0010 | 0.0001 | 0.0000 | 0.0010* | 0.0002* | 0.0010 | 0.0001 | 0.00038 |
| Chromium (Cr) | mg/L | 0.001 | 0.010 | 0.001 | 0.010 | 0.001 | 0.004 | 0.001 | 0.0010 | 0.003 | 0.001 | 0.001 |
| Copper (Cu) | mg/L | 0.001 | 0.010 | 0.001 | 0.010 | 0.001 | 0.004 | 0.004 | 0.0020 | 0.007 | 0.002 | 0.002 |
| Iron (Fe) | mg/L | 0.05 | 0.50 | 0.08 | 2.00 | 0.05 | 0.57 | 6.59 | 0.26 | 17.10 | 0.10 | 6.09 |
| Lead (Pb) | mg/L | 0.001 | 0.010#* | 0.001#* | 0.010#* | 0.001 | 0.000 | 0.001 | 0.0010 | 0.003 | 0.001 | 0.001 |
| Manganese (Mn) | mg/L | 0.001 | 0.043 | 0.019 | 0.076 | 0.015 | 0.017 | 3.170 | 1.7500 | 4.44 | 0.65 | 1.19 |
| Mercury (Hg) | mg/L | 0.0001 | 0.0001# | 0.0001# | 0.0003 | 0.0000 | 0.0000 | 0.0001# | 0.0001# | 0.0003 | 0.0000 | 0.0000 |
| Nickel (Ni) | mg/L | 0.001 | 0.010 | 0.001 | 0.010 | 0.001 | 0.004 | 0.017 | 0.0040 | 0.027 | 0.002 | 0.009 |
| Silver (Ag) | mg/L | 0.001 | 0.010#* | 0.001#* | 0.010#* | 0.001 | 0.000 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 |
| Zinc (Zn) | mg/L | 0.005 | 0.050 | 0.005 | 0.050 | 0.005 | 0.022 | 0.107 | 0.0420 | 0.156 | 0.021 | 0.047 |
| Total Nitrogen (TN) | mg/L | 0.1 | 0.50 | 0.20 | 8.2 | 0.1 | 1.6 | 7.2 | 0.44 | 14.2 | 0.2 | 4.6 |
| Total Phosphorous (TP) | mg/L | 0.01 | 0.05 | 0.02 | 0.21 | 0.01 | 0.05 | 0.36 | 0.02 | 2.42 | 0.02 | 0.64 |

# - Generally no change in level of parameter for all sampling events and / or at the lower limit of laboratory reporting.

* - Level of reporting raised for some sampling events due to matrix interference eg salinity. Samples diluted 10 times. Refer to individual results at Appendix C.

Note – Where the concentration of a particular parameter is analysis to be less than the LOR, the LOR is taken to be the level for completeness.

**Table 3-3 Pre-construction upstream trigger values (continued)**

| Parameter | | Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW6a | SW6a | SW6a | SW6a | SW6a | SW6c | SW6c | SW6c | SW6c | SW6c |
| | | LOR | 80th % | 20th % | Max | Min | Stdev | 80th % | 20th % | Max | Min | Stdev |
| Temperature | $^0$C | | 24.6 | 15.6 | 28.0 | 13.4 | 4.5 | 23.9 | 15.5 | 25.9 | 13.2 | 4.3 |
| Electrical conductivity (EC) | uS/cm | | 13300 | 3187 | 28000 | 629 | 7131 | 12880 | 3107 | 28100 | 478 | 7357 |
| Dissolved oxygen (DO) | % | | 96 | 62 | 118 | 53 | 19 | 88 | 59 | 105 | 56 | 15 |
| pH | | | 7.3 | 6.6 | 7.8 | 6.0 | 0.5 | 7.3 | 7.0 | 7.5 | 6.5 | 0.2 |
| Turbidity (NTU) | NTU | | 14 | 3 | 37 | 2 | 10 | 8 | 3 | 115 | 1 | 22 |
| Total suspended solids (TSS) | mg/L | 5 | 16 | 5 | 37 | 4 | 9 | 11 | 5 | 78 | 3 | 16 |
| Aluminium (Al) | mg/L | 0.01 | 0.32 | 0.01 | 0.58 | 0.01 | 0.20 | 0.17 | 0.01 | 0.35 | 0.01 | 0.11 |
| Arsenic (As) | mg/L | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.002 | 0.001 | 0.002 | 0.001 | 0.000 |
| Cadmium (Cd) | mg/L | 0.0001 | 0.0010#* | 0.0001#* | 0.0010 | 0.0001 | 0.0000 | 0.0010#* | 0.0001#* | 0.0010#* | 0.0001 | 0.0000 |
| Chromium (Cr) | mg/L | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 |
| Copper (Cu) | mg/L | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 | 0.002 | 0.001 | 0.003 | 0.001 | 0.001 |
| Iron (Fe) | mg/L | 0.05 | 0.56 | 0.05 | 1.33 | 0.05 | 0.47 | 0.32 | 0.05 | 0.93 | 0.05 | 0.25 |
| Lead (Pb) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | 0.001# | 0.001# | 0.001# | 0.001 | 0.000 |
| Manganese (Mn) | mg/L | 0.001 | 0.102 | 0.033 | 0.251 | 0.026 | 0.066 | 0.093 | 0.033 | 0.227 | 0.027 | 0.060 |
| Mercury (Hg) | mg/L | 0.0001 | 0.0001# | 0.0001# | 0.0003 | 0.0000 | 0.0000 | 0.0001# | 0.0001# | 0.0003# | 0.0000 | 0.0000 |
| Nickel (Ni) | mg/L | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 |
| Silver (Ag) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | 0.001# | 0.001# | 0.001# | 0.001 | 0.000 |
| Zinc (Zn) | mg/L | 0.005 | 0.013 | 0.005 | 0.023 | 0.005 | 0.006 | 0.007 | 0.005 | 0.016 | 0.005 | 0.003 |
| Total Nitrogen (TN) | mg/L | 0.1 | 0.40 | 0.25 | 0.9 | 0.2 | 0.2 | 0.36 | 0.23 | 0.8 | 0.2 | 0.2 |
| Total Phosphorous (TP) | mg/L | 0.01 | 0.02 | 0.01 | 0.10 | 0.01 | 0.02 | 0.02 | 0.01 | 0.40 | 0.01 | 0.08 |

# - Generally no change in level of parameter for all sampling events and / or at the lower limit of laboratory reporting.

* - Level of reporting raised for some sampling events due to matrix interference eg salinity. Samples diluted 10 times. Refer to individual results at Appendix C.

Note – Where the concentration of a particular parameter is analysis to be less than the LOR, the LOR is taken to be the level for completeness.

**Table 3-4 Pre-construction upstream trigger values (continued)**

| Parameter | | Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW7a | SW7a | SW7a | SW7a | SW7a | SW8a^ | SW8a^ | SW8a^ | SW8a^ | SW8a^ |
| | | LOR | 80th % | 20th % | Max | Min | Stdev | 80th % | 20th % | Max | Min | Stdev |
| Temperature | $^0$C | | 20.6 | 13.2 | 23.9 | 11.1 | 3.8 | 18.9 | 16.1 | 19.9 | 15.2 | 2.4 |
| Electrical conductivity (EC) | uS/cm | | 220 | 181 | 290 | 124 | 30 | 181 | 141 | 192 | 122 | 26 |
| Dissolved oxygen (DO) | % | | 79 | 46 | 122 | 24 | 23 | 26 | 10 | 32 | 5 | 13 |
| pH | | | 7.3 | 6.5 | 8.5 | 6.3 | 0.5 | 6.5 | 6.1 | 6.7 | 5.8 | 0.3 |
| Turbidity (NTU) | NTU | | 11 | 4 | 17 | 3 | 4 | 25 | 12 | 36 | 11 | 10 |
| Total suspended solids (TSS) | mg/L | 5 | 9 | 5 | 30 | 3 | 7 | 5 | 3 | 5 | 3 | 1 |
| Aluminium (Al) | mg/L | 0.01 | 0.19 | 0.04 | 0.24 | 0.02 | 0.07 | 0.91 | 0.91 | 0.91 | 0.91 | 0.00 |
| Arsenic (As) | mg/L | 0.001 | 0.0010 | 0.0010 | 0.0020 | 0.0010 | 0.0003 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Cadmium (Cd) | mg/L | 0.0001 | 0.0010#* | 0.0001#* | 0.0010 | 0.0001 | 0.0000 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0000 |
| Chromium (Cr) | mg/L | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Copper (Cu) | mg/L | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Iron (Fe) | mg/L | 0.05 | 0.79 | 0.26 | 5.88 | 0.05 | 1.65 | 0.38 | 0.38 | 0.38 | 0.38 | 0.00 |
| Lead (Pb) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Manganese (Mn) | mg/L | 0.001 | 0.312 | 0.038 | 5.480 | 0.011 | 1.610 | 0.078 | 0.078 | 0.078 | 0.078 | 0.000 |
| Mercury (Hg) | mg/L | 0.0001 | 0.0001# | 0.0001# | 0.0003 | 0.0000 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0000 |
| Nickel (Ni) | mg/L | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Silver (Ag) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Zinc (Zn) | mg/L | 0.005 | 0.008 | 0.005 | 0.011 | 0.005 | 0.002 | 0.006 | 0.006 | 0.006 | 0.006 | 0.000 |
| Total Nitrogen (TN) | mg/L | 0.1 | 0.32 | 0.12 | 0.6 | 0.1 | 0.1 | 0.4 | 0.3 | 0.5 | 0.3 | 0.1 |
| Total Phosphorous (TP) | mg/L | 0.01 | 0.02 | 0.01 | 0.05 | 0.01 | 0.01 | 0.03 | 0.02 | 0.04 | 0.02 | 0.01 |

# - Generally no change in level of parameter for all sampling events and / or at the lower limit of laboratory reporting.

* - Level of reporting raised for some sampling events due to matrix interference eg salinity. Samples diluted 10 times. Refer to individual results at Appendix C.

Note – Where the concentration of a particular parameter is analysis to be less than the LOR, the LOR is taken to be the level for completeness.

^ - Note SW8a was only sampled on three occasions during the pre-construction monitoring period due to the absence of standing water. Only one metal suite was collected.

**Table 3-5 Pre-construction upstream trigger values (continued)**

| Parameter | | Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW9b | SW9b | SW9b | SW9b | SW9b | SW10b | SW10b | SW10b | SW10b | SW10b |
| | | LOR | 80th % | 20th % | Max | Min | Stdev | 80th % | 20th % | Max | Min | Stdev |
| Temperature | $^0$C | | 19.6 | 11.9 | 23.6 | 9.3 | 4.1 | 19.6 | 11.9 | 23.3 | 9.4 | 4.1 |
| Electrical conductivity (EC) | uS/cm | | 454 | 257 | 1467 | 184 | 350 | 328 | 235 | 438 | 161 | 69 |
| Dissolved oxygen (DO) | % | | 49 | 20 | 111 | 9 | 26 | 56 | 14 | 111 | 7 | 30 |
| pH | | | 6.9 | 6.6 | 7.3 | 6.3 | 0.2 | 6.9 | 6.5 | 7.3 | 6.1 | 0.2 |
| Turbidity (NTU) | NTU | | 14 | 6 | 33 | 4 | 7 | 22 | 7 | 43 | 3 | 10 |
| Total suspended solids (TSS) | mg/L | 5 | 15 | 5 | 168 | 5 | 35 | 13 | 5 | 39 | 3 | 8 |
| Aluminium (Al) | mg/L | 0.01 | 0.14 | 0.02 | 0.44 | 0.01 | 0.14 | 0.23 | 0.03 | 0.73 | 0.01 | 0.24 |
| Arsenic (As) | mg/L | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 |
| Cadmium (Cd) | mg/L | 0.0001 | 0.0005 | 0.0001 | 0.0010 | 0.0001 | 0.0004 | 0.0005 | 0.0001 | 0.0010 | 0.0001 | 0.0000 |
| Chromium (Cr) | mg/L | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Copper (Cu) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Iron (Fe) | mg/L | 0.05 | 1.03 | 0.45 | 4.26 | 0.12 | 1.17 | 1.18 | 0.67 | 4.30 | 0.57 | 1.10 |
| Lead (Pb) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Manganese (Mn) | mg/L | 0.001 | 0.776 | 0.105 | 2.130 | 0.019 | 0.624 | 0.285 | 0.057 | 0.655 | 0.021 | 0.188 |
| Mercury (Hg) | mg/L | 0.0001 | 0.0001# | 0.0001# | 0.0001 | 0.0000 | 0.0000 | 0.0001 | 0.0001 | 0.0001 | 0.0000 | 0.0000 |
| Nickel (Ni) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Silver (Ag) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 |
| Zinc (Zn) | mg/L | 0.005 | 0.008 | 0.005 | 0.020 | 0.005 | 0.005 | 0.007 | 0.005 | 0.013 | 0.005 | 0.003 |
| Total Nitrogen (TN) | mg/L | 0.1 | 0.49 | 0.21 | 0.9 | 0.2 | 0.2 | 0.70 | 0.33 | 1.0 | 0.2 | 0.2 |
| Total Phosphorous (TP) | mg/L | 0.01 | 0.04 | 0.01 | 0.08 | 0.01 | 0.02 | 0.04 | 0.02 | 0.07 | 0.01 | 0.01 |

# - Generally no change in level of parameter for all sampling events and / or at the lower limit of laboratory reporting.

* - Level of reporting raised for some sampling events due to matrix interference eg salinity. Samples diluted 10 times. Refer to individual results at Appendix C.

Note – Where the concentration of a particular parameter is analysis to be less than the LOR, the LOR is taken to be the level for completeness.

**Table 3-6 Pre-construction upstream trigger values (continued)**

| Parameter | | Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW11b | SW11b | SW11b | SW11b | SW11b | SW12a | SW12a | SW12a | SW12a | SW12a |
| | | LOR | 80th % | 20th % | Max | Min | Stdev | 80th % | 20th % | Max | Min | Stdev |
| Temperature | $^0$C | | 19.1 | 12.1 | 22.2 | 10.3 | 3.6 | 19.4 | 11.1 | 22.9 | 9.2 | 4.0 |
| Electrical conductivity (EC) | uS/cm | | 230 | 114 | 456 | 70 | 86 | 342 | 171 | 519 | 157 | 103 |
| Dissolved oxygen (DO) | % | | 47 | 17 | 107 | 12 | 25 | 45 | 19 | 161 | 2 | 39 |
| pH | | | 6.8 | 5.9 | 7.4 | 5.5 | 0.5 | 6.7 | 6.2 | 7.3 | 5.7 | 0.4 |
| Turbidity (NTU) | NTU | | 29 | 6 | 51 | 2 | 15 | 45 | 18 | 75 | 9 | 17 |
| Total suspended solids (TSS) | mg/L | 5 | 9 | 5 | 107 | 4 | 22 | 18 | 6 | 41 | 5 | 9 |
| Aluminium (Al) | mg/L | 0.01 | 0.11 | 0.03 | 1.13 | 0.01 | 0.35 | 0.24 | 0.07 | 0.97 | 0.02 | 0.26 |
| Arsenic (As) | mg/L | 0.001 | 0.002 | 0.001 | 0.004 | 0.001 | 0.001 | 0.002 | 0.001 | 0.002 | 0.001 | 0.000 |
| Cadmium (Cd) | mg/L | 0.0001 | 0.0001# | 0.0001# | 0.0010* | 0.0001 | 0.0000 | 0.0010#* | 0.0001#* | 0.0010* | 0.0001 | 0.0000 |
| Chromium (Cr) | mg/L | 0.001 | 0.001 | 0.001 | 0.008 | 0.001 | 0.002 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 |
| Copper (Cu) | mg/L | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 | 0.002 | 0.001 | 0.005 | 0.001 | 0.001 |
| Iron (Fe) | mg/L | 0.05 | 2.30 | 0.40 | 6.76 | 0.19 | 2.04 | 1.82 | 0.80 | 7.04 | 0.16 | 1.94 |
| Lead (Pb) | mg/L | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 |
| Manganese (Mn) | mg/L | 0.001 | 0.227 | 0.064 | 0.405 | 0.042 | 0.116 | 0.323 | 0.123 | 1.140 | 0.082 | 0.302 |
| Mercury (Hg) | mg/L | 0.0001 | 0.0001# | 0.0001# | 0.0001 | 0.0000 | 0.0000 | 0.0001# | 0.0001# | 0.0003 | 0.0000 | 0.0000 |
| Nickel (Ni) | mg/L | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.002 | 0.001 | 0.003 | 0.001 | 0.001 |
| Silver (Ag) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 |
| Zinc (Zn) | mg/L | 0.005 | 0.013 | 0.005 | 0.025 | 0.005 | 0.007 | 0.015 | 0.008 | 0.018 | 0.005 | 0.004 |
| Total Nitrogen (TN) | mg/L | 0.1 | 1.22 | 0.40 | 2.3 | 0.2 | 0.5 | 0.92 | 0.59 | 1.3 | 0.3 | 0.2 |
| Total Phosphorous (TP) | mg/L | 0.01 | 0.08 | 0.01 | 0.29 | 0.01 | 0.06 | 0.06 | 0.03 | 0.10 | 0.01 | 0.02 |

# - Generally no change in level of parameter for all sampling events and / or at the lower limit of laboratory reporting.

* - Level of reporting raised for some sampling events due to matrix interference eg salinity. Samples diluted 10 times. Refer to individual results at Appendix C.

Note – Where the concentration of a particular parameter is analysis to be less than the LOR, the LOR is taken to be the level for completeness.

**Table 3-7 Pre-construction upstream trigger values (continued)**

| Parameter | | Results | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW13b | SW13b | SW13b | SW13b | SW13b | | | | | |
| | | LOR | 80th % | 20th % | Max | Min | Stdev | | | | | |
| Temperature | $^0$C | | 19.2 | 13.0 | 22.8 | 10.3 | 3.7 | | | | | |
| Electrical conductivity (EC) | uS/cm | | 506 | 261 | 679 | 144 | 142 | | | | | |
| Dissolved oxygen (DO) | % | | 57 | 32 | 126 | 22 | 25 | | | | | |
| pH | | | 6.9 | 6.2 | 8.2 | 5.6 | 0.5 | | | | | |
| Turbidity (NTU) | NTU | | 51 | 18 | 150 | 10 | 29 | | | | | |
| Total suspended solids (TSS) | mg/L | 5 | 22 | 5 | 134 | 5 | 28 | | | | | |
| Aluminium (Al) | mg/L | 0.01 | 0.75 | 0.08 | 2.66 | 0.02 | 0.79 | | | | | |
| Arsenic (As) | mg/L | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | | | | | |
| Cadmium (Cd) | mg/L | 0.0001 | 0.0010#* | 0.0001# | 0.0010* | 0.0001 | 0.0000 | | | | | |
| Chromium (Cr) | mg/L | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 | | | | | |
| Copper (Cu) | mg/L | 0.001 | 0.003 | 0.001 | 0.003 | 0.001 | 0.001 | | | | | |
| Iron (Fe) | mg/L | 0.05 | 1.91 | 0.65 | 5.59 | 0.33 | 1.45 | | | | | |
| Lead (Pb) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | | | | | |
| Manganese (Mn) | mg/L | 0.001 | 0.204 | 0.071 | 0.320 | 0.023 | 0.089 | | | | | |
| Mercury (Hg) | mg/L | 0.0001 | 0.0001# | 0.00001# | 0.0001 | 0.0000 | 0.0000 | | | | | |
| Nickel (Ni) | mg/L | 0.001 | 0.002 | 0.001 | 0.002 | 0.001 | 0.001 | | | | | |
| Silver (Ag) | mg/L | 0.001 | 0.001# | 0.001# | 0.001 | 0.001 | 0.000 | | | | | |
| Zinc (Zn) | mg/L | 0.005 | 0.016 | 0.009 | 0.058 | 0.007 | 0.015 | | | | | |
| Total Nitrogen (TN) | mg/L | 0.1 | 0.8 | 0.5 | 9.6 | 0.1 | 1.9 | | | | | |
| Total Phosphorous (TP) | mg/L | 0.01 | 0.05 | 0.01 | 0.09 | 0.01 | 0.02 | | | | | |

# - Generally no change in level of parameter for all sampling events and / or at the lower limit of laboratory reporting.

* - Level of reporting raised for some sampling events due to matrix interference eg salinity. Samples diluted 10 times. Refer to individual results at Appendix C.

Note – Where the concentration of a particular parameter is analysis to be less than the LOR, the LOR is taken to be the level for completeness.

## 3.4 Discussion

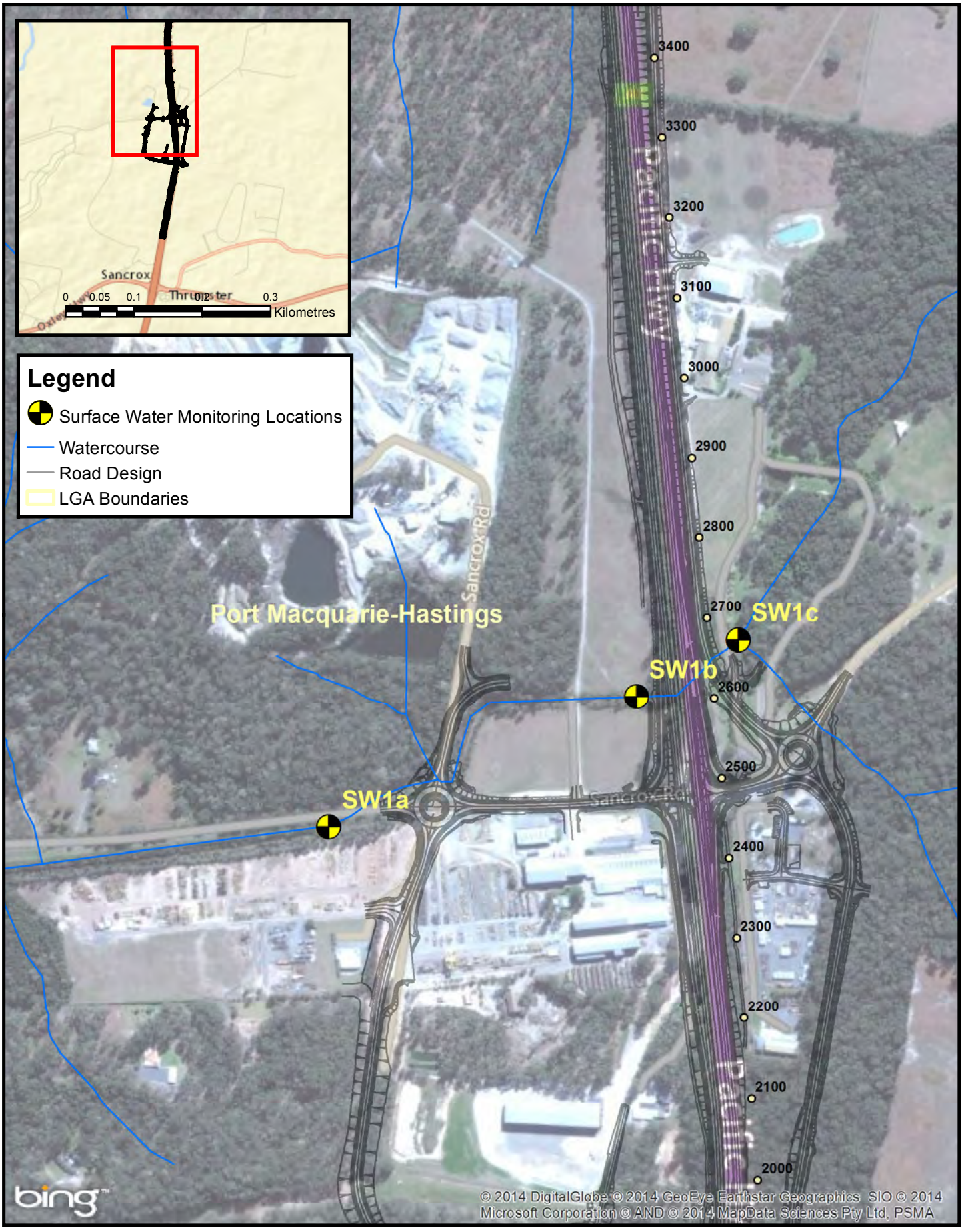
Based on the pre-construction water quality monitoring program the following observations can be made:

- The pre-construction monitoring period can be characterised by below average rainfall across the entire project and broader region. All waterways, with the exception of the Hasting and Wilson Rivers, were predominantly isolated pondages with infrequent connection between upstream and downstream sampling points.
- Electrical conductivity – Calculated 80$^{th}$ and 20$^{th}$ percentile trigger values for all waterways are within the default trigger values for low land rivers presented in the ANZECC guidelines.
- Dissolved oxygen – Calculated 20$^{th}$ percentile trigger values for all waterways are below the default lower limit trigger value for lowland rivers and estuaries presented in the ANZECC guidelines. Calculated 80$^{th}$ percentile trigger values are also below the ANZECC guideline default lower limit trigger value at SW7, SW8, SW9, SW10, SW11, SW12 and SW13.
- pH – Calculated 80$^{th}$ percentile trigger values for all waterways, with the exception of SW2 and SW5 are within the default trigger values for lowland rivers and estuaries presented in the ANZECC guidelines. Calculated 80$^{th}$ percentiles at SW2 and SW5 are below the ANZECC guideline lower limit. Calculated 20$^{th}$ percentile trigger values are within the default trigger values for all waterways with the exception of SW2, SW5, SW8, SW11, SW12 and SW13. At these waterways the calculated 20$^{th}$ percentile are all below the lower limit.
- Turbidity – Calculated 80$^{th}$ percentile trigger values for all waterways, with the exception of SW1, SW2, SW3, SW6a and SW13 are within the default trigger values for lowland rivers and estuaries presented in the ANZECC guidelines. At these locations, calculated 80$^{th}$ percentile trigger values are above the ANZECC guideline upper limit for the respective ecosystem type. Calculated 20$^{th}$ percentile trigger values are within the ANZECC default trigger value for all waterways.
- Nitrogen – Calculated 80$^{th}$ percentile trigger values for all waterways, with the exception of SW7, SW8 and SW9, are within the default trigger values for lowland rivers and estuaries presented in the ANZECC guidelines. At these locations, calculated 80$^{th}$ percentile trigger values are above the ANZECC guideline upper limit for the respective ecosystem type. Calculated 20$^{th}$ percentile trigger values are within the default trigger values for all waterways with the exception of SW2, and SW12. At these waterways the calculated 20$^{th}$ percentile are all above the upper limit.
- Phosphorous – Calculated 80$^{th}$ percentile trigger values for all waterways, with the exception of SW1, SW2, SW3, SW5, SW11 and SW12, are within the default trigger values for lowland rivers and estuaries presented in the ANZECC guidelines. At these locations, calculated 80$^{th}$ percentile trigger values are above the ANZECC guideline upper limit for the respective ecosystem type. Calculated 20$^{th}$ percentile trigger values are within the default trigger values for all waterways.
- Total petroleum hydrocarbons (TPH) – Sampling for TPH following the observed presence of oil and grease was undertaken at SW1b and SW1c on three occasions. Analysis confirmed the presence of TPH with C fraction analysis indicating the presence of “heavy oil”. The catchment for SW1 includes a heavy machinery sales and servicing business and quarry operations.
- Metals – Analysis of metals showed little variation in levels for nearly all sampling locations and analytes. Exceptions included aluminium, iron, magnesium and zinc that showed substantial variability throughout the pre-construction sampling program.

# Terms and acronyms

| Term | Meaning |
|---|---|
| ANZECC | Australian and New Zealand Guidelines for Fresh and Marine Water Quality, October 2000. |
| CEMP | Construction environmental management plan |
| Director General | Director General of the NSW Department of Planning and Environment (or delegate) |
| DPI (Fishing and Aquaculture) | The Department of Primary Industry (Fishing and Aquaculture) |
| EA | Environmental Assessment |
| EMS | Environmental management system |
| EPA | Environmental Protection Authority |
| EP&A Act | *Environmental Planning and Assessment Act 1979* |
| ER | Environmental Representative |
| K2K | Kundabung to Kempsey stage of the Oxley Highway to Kempsey project |
| LOR | Laboratory limit of reporting |
| MCoA | The Department of Planning and Infrastructure Ministers Condition of Approval |
| Minister, the | Minister for Planning and Environment (formerly “Minister for Planning and Infrastructure”) |
| NOW | The NSW Office of Water |
| OH2K | Oxley Highway to Kempsey, also referred to as the project |
| OH2Ku | Oxley Highway to Kundabung stage of the Oxley Highway to Kempsey project |
| OEH | Office of Environment and Heritage |
| P&E | The Department of Planning and the Environment (formerly P&I) |
| P&I | The Department of Planning and Infrastructure |
| Project, the | Oxley Highway to Kempsey Pacific Highway Upgrade |
| Roads and Maritime | Roads and Maritime Services |
| SoC | Revised statement of commitments (March 2011) |
| Stdev | Standard deviation |

# Appendix A – Site locality maps

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Meters

**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

NSW GOVERNMENT | Transport Roads & Maritime Services

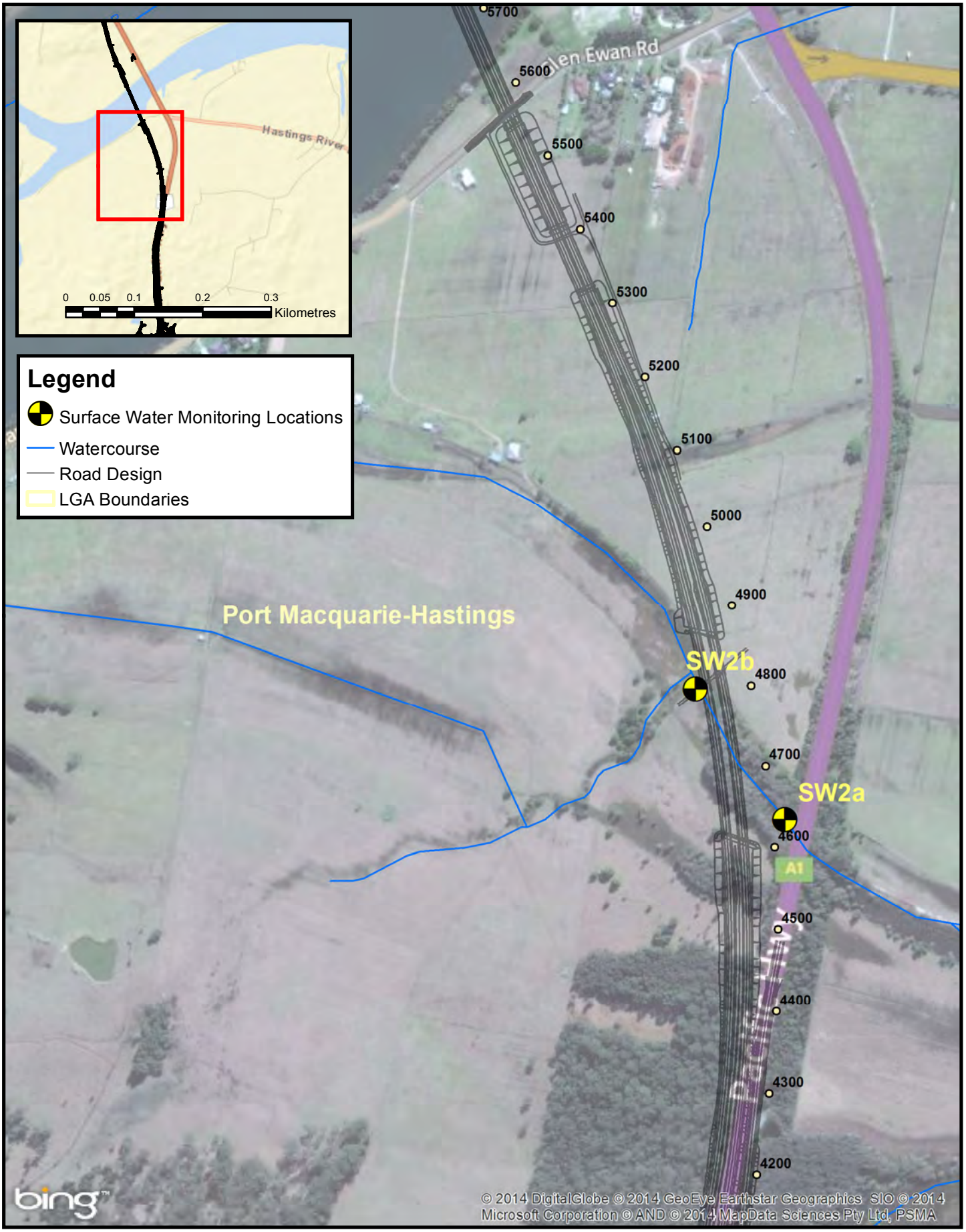
**Surface water monitoring locations**

Drawn By: Stuart Hill

Sheet 1 of 11

Prepared for: Roads and Maritime Services (Hunter)

Date: 05/12/2014

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Meters

**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

NSW GOVERNMENT | Transport Roads & Maritime Services

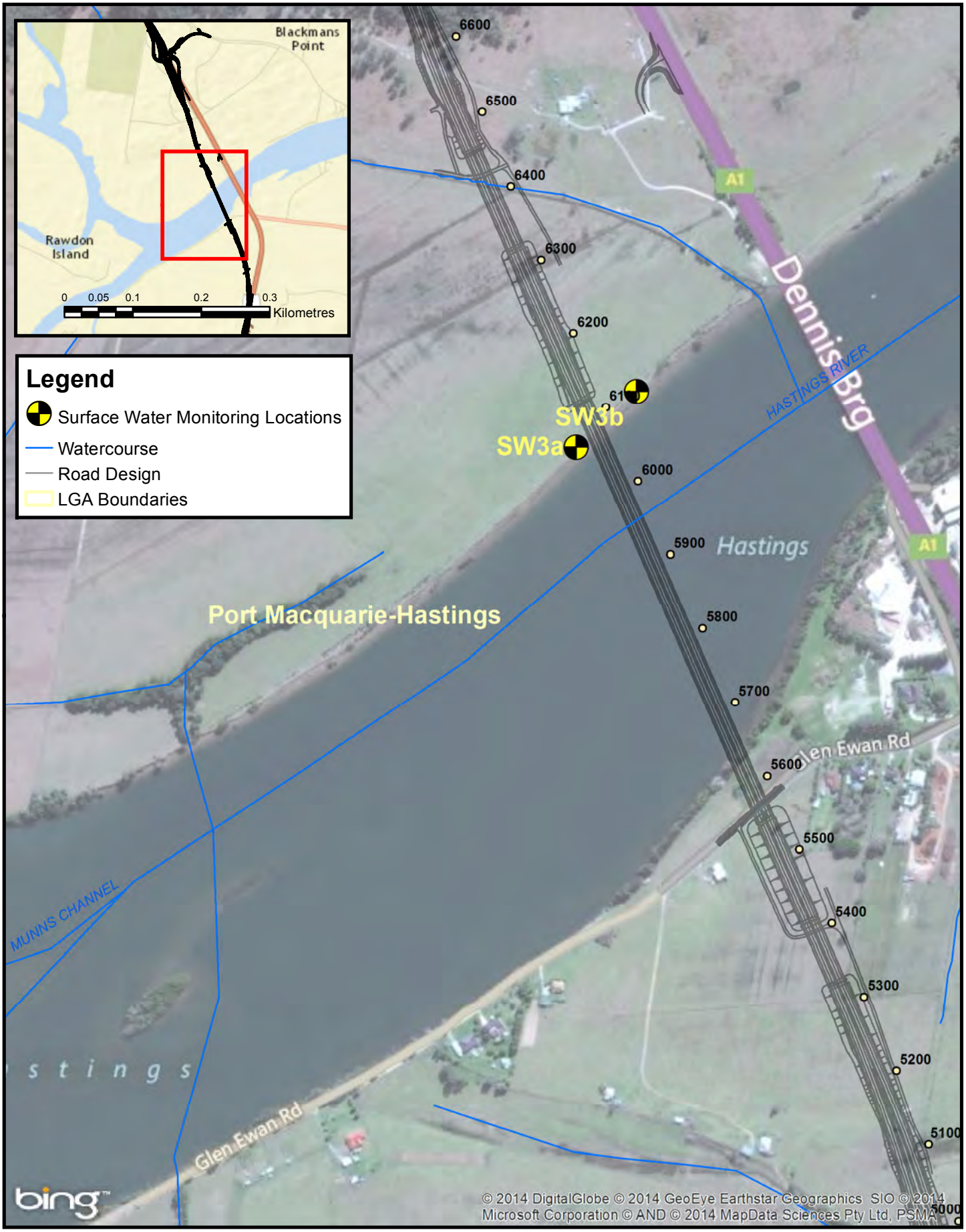
**Surface water monitoring locations**

Drawn By: Stuart Hill

Sheet 2 of 11

Prepared for: Roads and Maritime Services (Hunter)

Date: 05/12/2014




**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

110 55 0 110 220 330
Meters

NSW GOVERNMENT | Transport Roads & Maritime Services

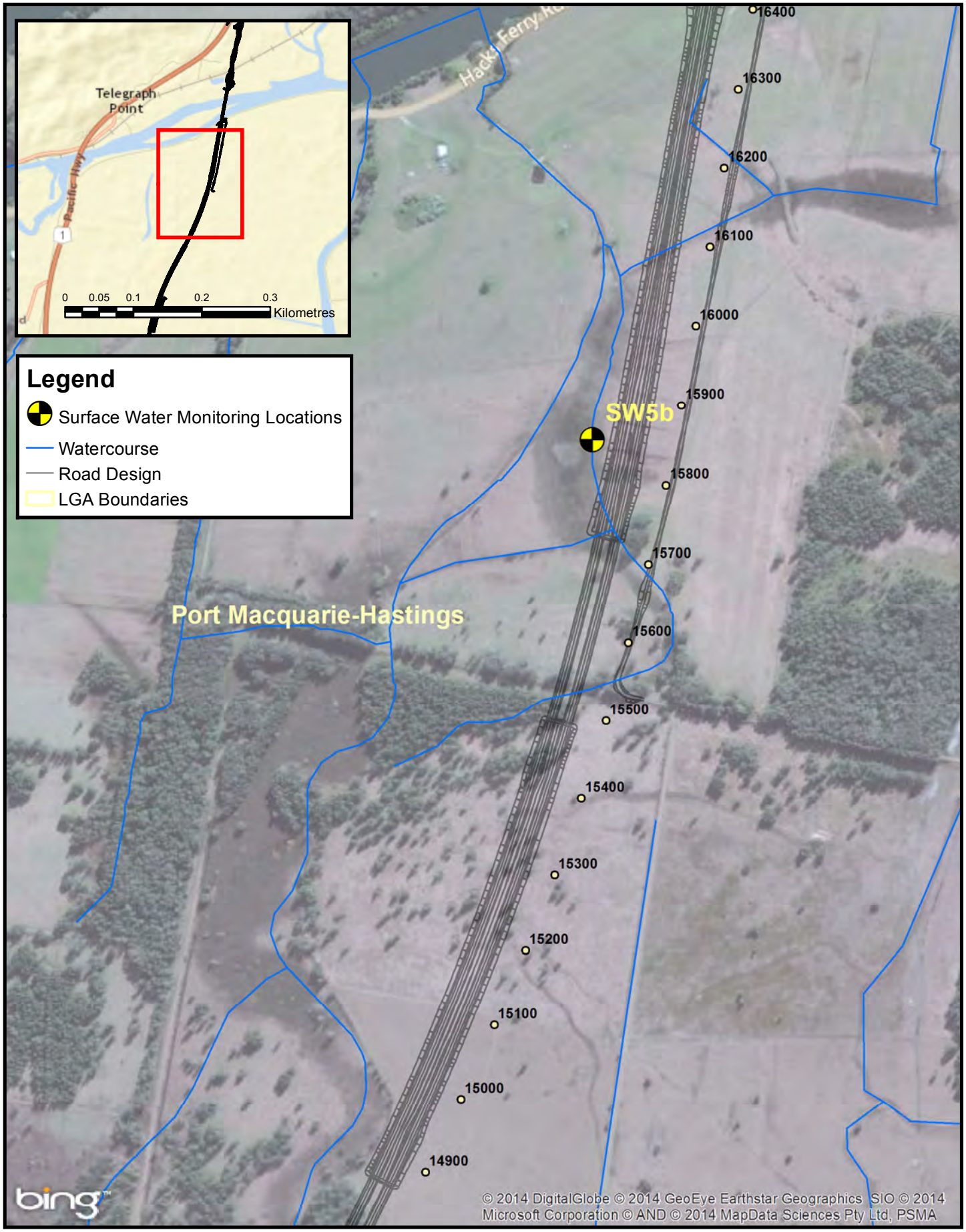
**Surface water monitoring locations**

Drawn By: Stuart Hill

Prepared for: Roads and Maritime Services (Hunter)

Date: 05/12/2014

**Sheet 3 of 11**




**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

NSW GOVERNMENT | Transport Roads & Maritime Services

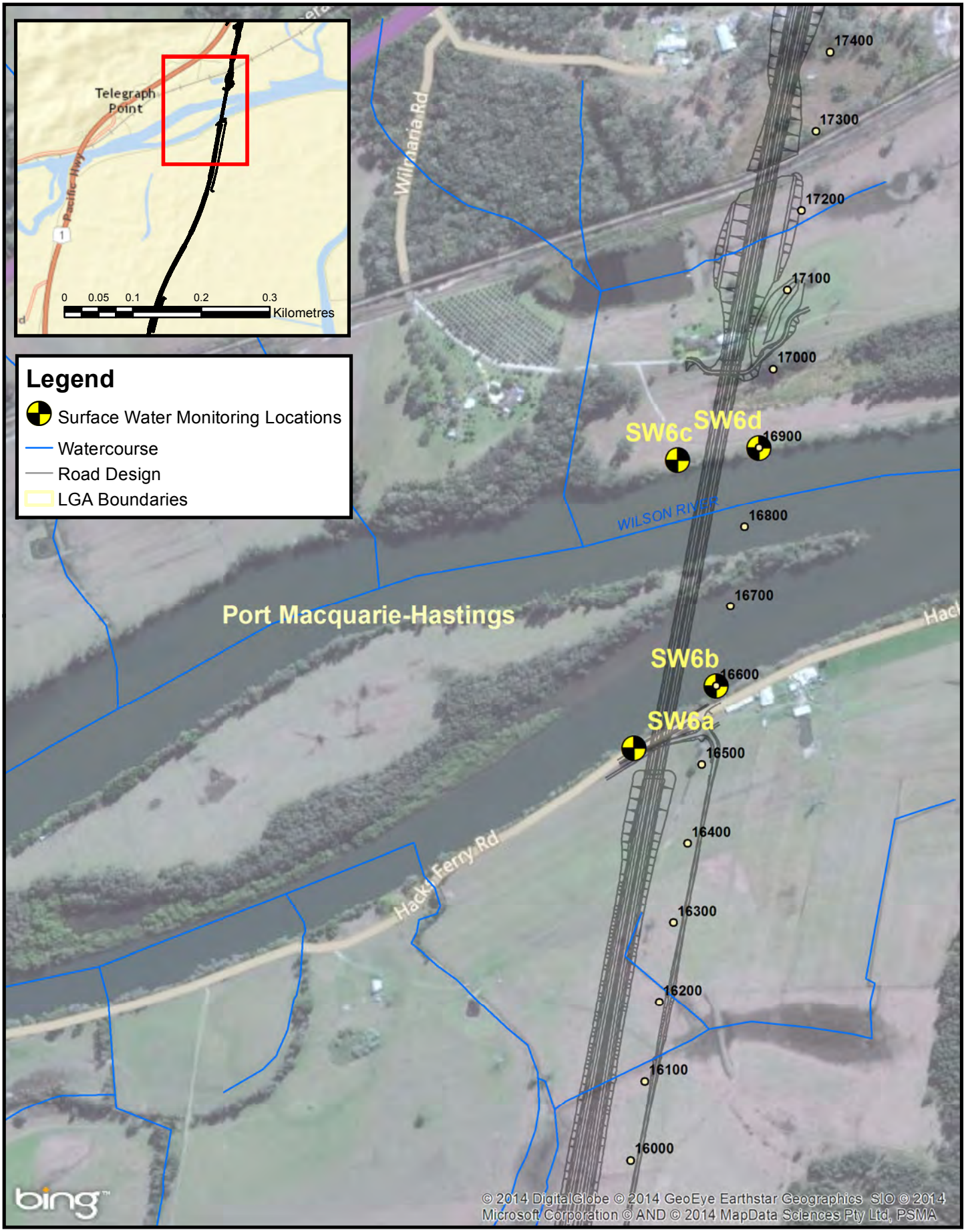
**Surface water monitoring locations**

Drawn By: Stuart Hill

Sheet 4 of 11

Prepared for: Roads and Maritime Services (Hunter)

Date: 05/12/2014




**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

NSW GOVERNMENT | Transport Roads & Maritime Services

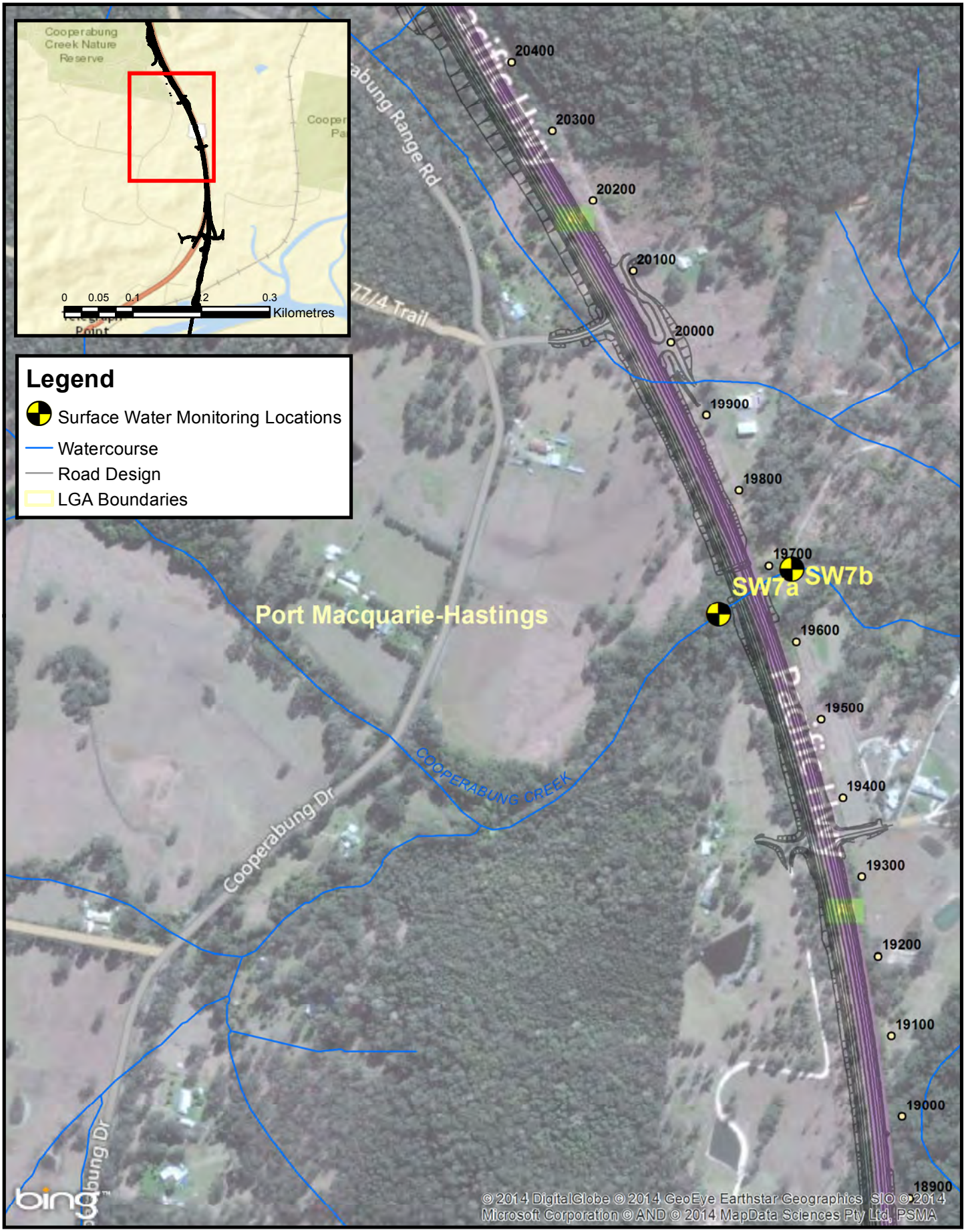
**Surface water monitoring locations**

Drawn By: Stuart Hill

Sheet 5 of 11

Prepared for: Roads and Maritime Services (Hunter)

Date: 05/12/2014




**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

NSW GOVERNMENT | Transport Roads & Maritime Services

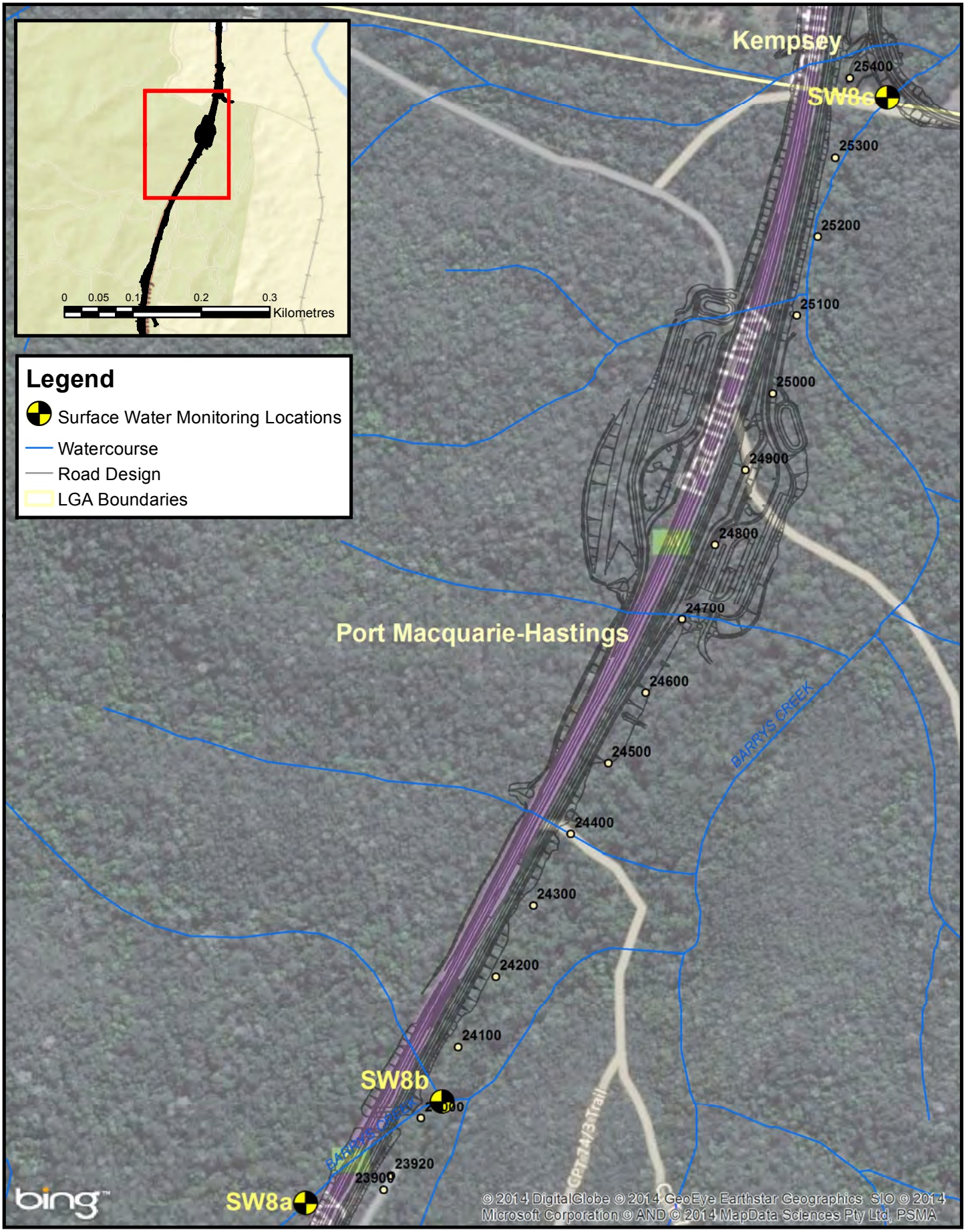
**Surface water monitoring locations**

Drawn By: Stuart Hill

Prepared for: Roads and Maritime Services (Hunter)

Date: 05/12/2014

**Sheet 6 of 11**




**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

NSW GOVERNMENT | Transport Roads & Maritime Services

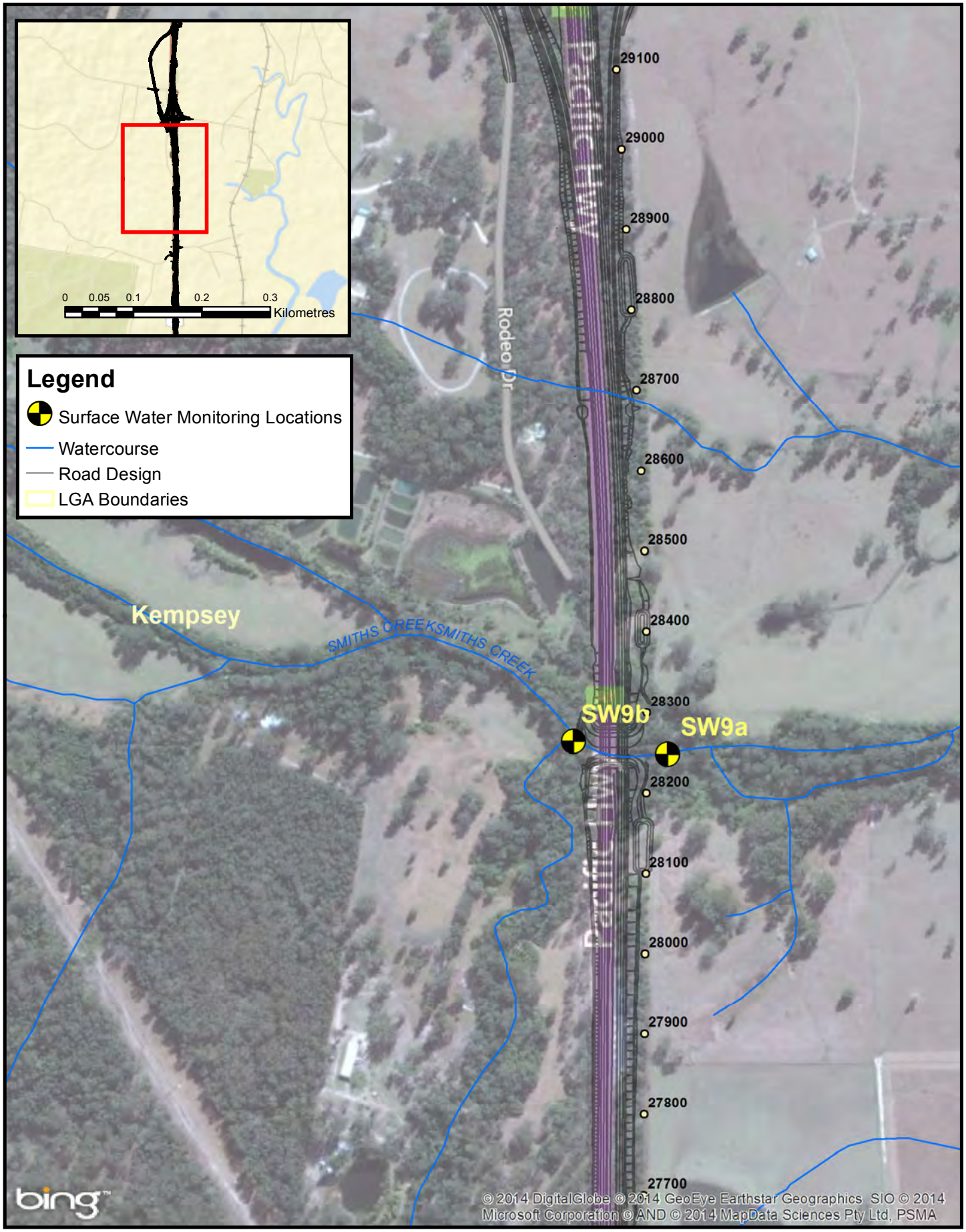
**Surface water monitoring locations**

Drawn By: Stuart Hill

Sheet 7 of 11

Prepared for: Roads and Maritime Services (Hunter)

Date: 05/12/2014




110 55 0 110 220 330
Meters

**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

NSW GOVERNMENT | Transport Roads & Maritime Services

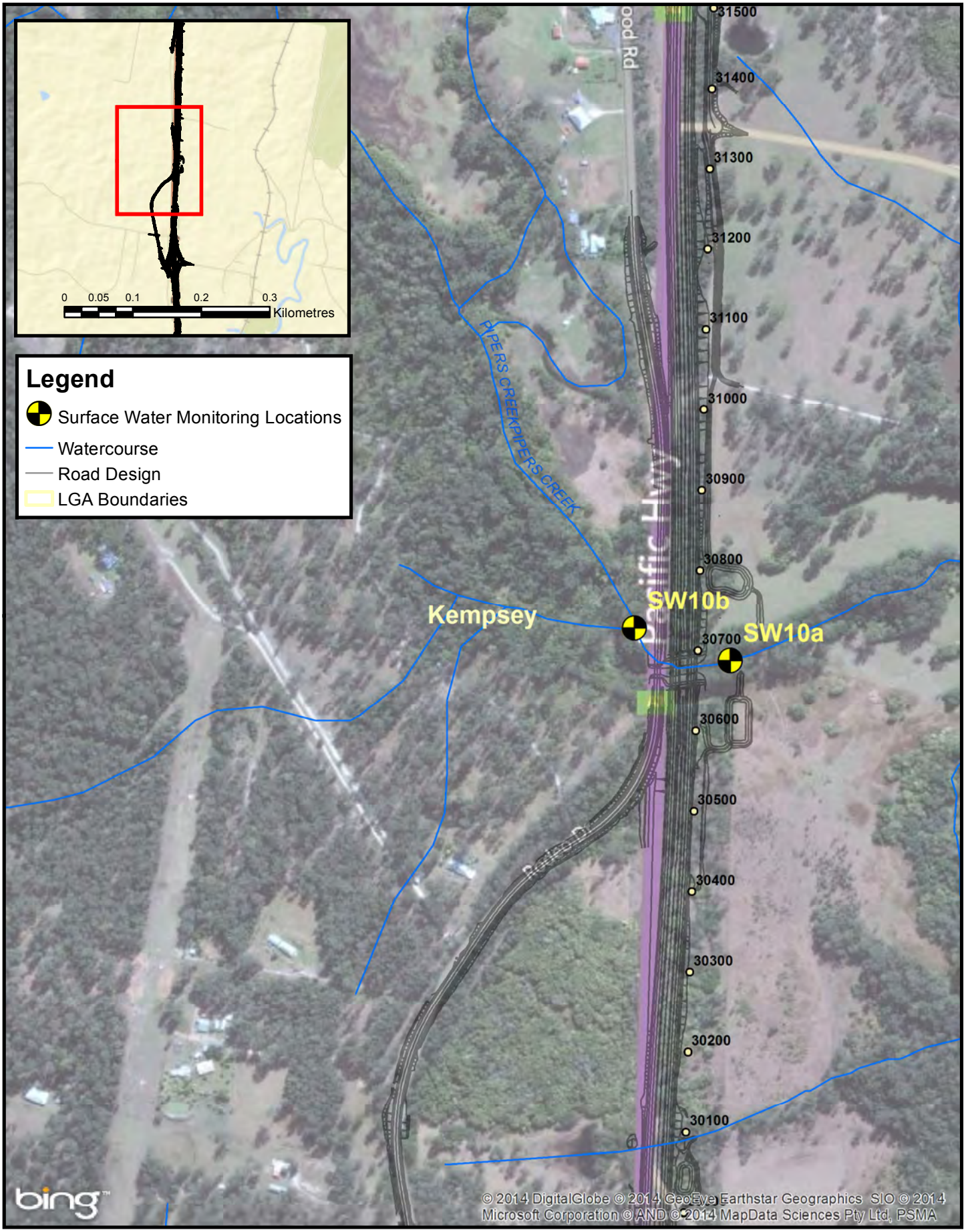
**Surface water monitoring locations**

Drawn By: Stuart Hill

Sheet 8 of 11

Prepared for: Roads and Maritime Services (Hunter)

Date: 05/12/2014




110 55 0 110 220 330
Meters

**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

NSW GOVERNMENT | Transport Roads & Maritime Services

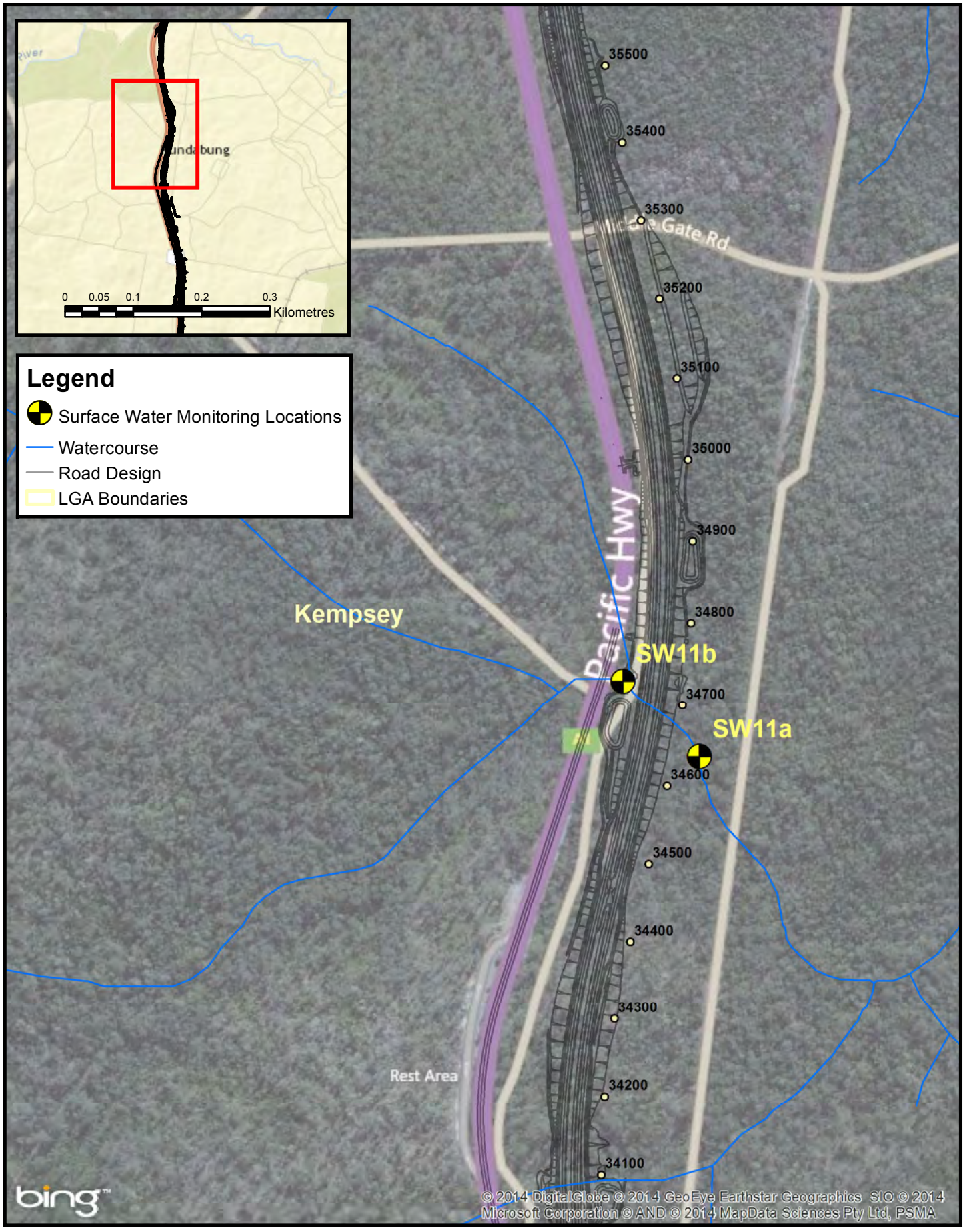
**Surface water monitoring locations**

Drawn By: Stuart Hill

Sheet 9 of 11

Prepared for: Roads and Maritime Services (Hunter)

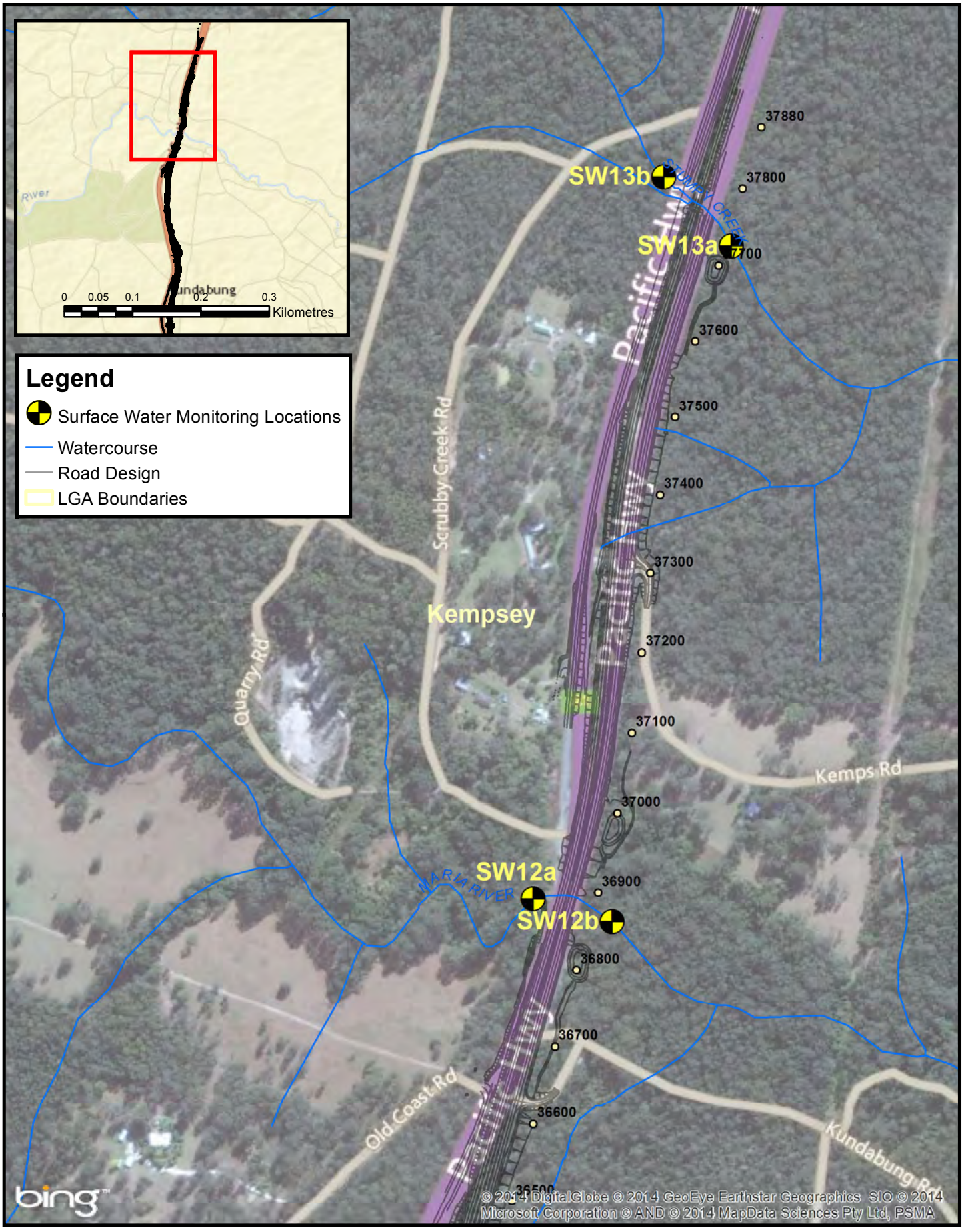
Date: 05/12/2014




**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

NSW GOVERNMENT | Transport Roads & Maritime Services

| | |
|---|---|
| | **Surface water monitoring locations** |
| | Drawn By: Stuart Hill |
| **Sheet 10 of 11** | Prepared for: Roads and Maritime Services (Hunter) |
| | Date: 05/12/2014 |




**Pacific Highway Upgrade**
**Oxley Highway to Kempsey**

110 55 0 110 220 330
Meters

NSW GOVERNMENT | Transport Roads & Maritime Services

**Surface water monitoring locations**

Drawn By: Stuart Hill

Prepared for: Roads and Maritime Services (Hunter)

Date: 05/12/2014

**Sheet 11 of 11**

# Appendix B – Rainfall records

## Port Macquarie airport rainfall records from March 2013 to November 2014

| Day of month | Oct-12 | Nov-12 | Dec-12 | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 | Jan-14 | Feb-14 | Mar-14 | Apr-14 | May-14 | Jun-14 | Jul-14 | Aug-14 | Sep-14 | Oct-14 | Nov-14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 8 | 17.2 | 0 | 0 | 0 | 5 | 0 | 0 | 31 | 0 | 4.4 | 3.2 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 39.8 | 18.8 | 10 | 0 | 2.8 | 6.6 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0 | 70.2 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0.2 | 0 | 0 | 0 | 62.2 | 0 | 0.2 | 6.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0 | 4.4 | 0 | 0.4 | 6.6 | 0 | 0 |
| 4 | 0 | 2 | 1.2 | 0 | 0.2 | 12.6 | 72.6 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.2 | 0 | 0 | 0 | 0 | 3.4 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 5.4 | 6.8 | 2.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.6 | 0 | 18.2 | 1.2 | 5.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0.2 | 0 | 7.6 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 2 | 0 | 23 | 0 | 0.2 | 0 | 0 | 13.6 | 0 | 19 |
| 7 | 0 | 0 | 0 | 0 | 4.2 | 0.6 | 6.2 | 4.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.4 | 0 | 0 | 0.8 | 1 | 0.2 | 0 | 0 | 1.2 | 0 | 0.4 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 4.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0.4 | 0 | 0 | 0 | 2.4 | 0 | 0 |
| 9 | 0 | 7.4 | 1 | 0 | 0 | 0.8 | 0 | 0.8 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 2.4 | 0 | 0 |
| 10 | 0 | 12.2 | 0.6 | 2 | 0 | 0 | 22.8 | 0 | 0 | 2 | 0 | 0.2 | 0 | 1.8 | 0.4 | 5.2 | 0 | 4.8 | 0 | 0 | 0.8 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 3.8 | 5 | 0 | 0 | 1.4 | 0.2 | 2.2 | 1 | 2.2 | 0 | 0 | 0 | 114.4 | 0 | 0 | 0 | 0 | 3.4 | 0 | 0.2 | 0 | 0 | 1.4 | 0 | 3.8 |
| 12 | 2.8 | 0.2 | 1.4 | 0 | 0.4 | 0 | 1.2 | 1.8 | 0 | 0 | 0 | 0 | 0 | 19.2 | 0 | 0 | 0 | 0 | 0.2 | 3.8 | 0.2 | 0 | 0 | 0 | 0 | |
| 13 | 0 | 0 | 2 | 0 | 8.4 | 2 | 7.2 | 0 | 7 | 0 | 0 | 0 | 0 | 17.2 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 11.8 | 2.8 | 0 | 0.8 | 0 | 0.2 | 0.2 | 0 | 0 | 0.6 | 8.8 | 0 | 1.6 | 11.2 | 0 | 0 | 0.4 | 0.6 | 0.2 | 1.6 | 0 | 10.8 | |
| 15 | 0 | 2.2 | 0 | 7 | 5.2 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0 | 2.6 | 0 | 0.4 | 0.2 | 1.6 | 0.8 | 0 | 0 | 5.4 | |
| 16 | 0 | 0 | 1.8 | 0 | 37.4 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 1 | 0 | 2.6 | 0 | 0 | 0 | |
| 17 | 0 | 2.6 | 0 | 0 | 2.4 | 0 | 11.2 | 0 | 0 | 0.2 | 0 | 16.4 | 0 | 5 | 0 | 0 | 31 | 4.4 | 0 | 0 | 0 | 0.8 | 42.8 | 0.6 | 0 | |
| 18 | 0 | 33 | 0 | 0 | 0.4 | 1.2 | 1.8 | 0 | 0 | 0 | 0.2 | 0.2 | 8.6 | 0 | 0 | 0 | 6.2 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | |
| 19 | 0 | 1.8 | 0 | 0 | 29.8 | 1.4 | 0.2 | 0 | | 0.2 | 0 | 0 | 32.8 | 10.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 20 | 0 | 0.8 | 15.4 | 0.8 | 13 | 0.4 | 0 | 0 | 0 | 3.8 | 0 | 0 | 3.4 | 0 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | |
| 21 | 0 | 0.6 | 0 | 10.4 | 8.6 | 0 | 18.4 | 0 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 14.8 | 0 | 0 | 0 | 4.8 | 0 | 0 | 4.4 | |
| 22 | 0 | 0 | 57.2 | 3.2 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 4.6 | 0 | 0 | 0 | 1 | 2 | 0 | 0.8 | |
| 23 | 12.6 | 0 | 0 | 0 | 106.2 | 0 | 0 | 5.6 | 0 | 0 | 0 | 0 | 0 | 21.6 | 0 | 12.6 | 0 | 0.2 | 0 | 0 | 0 | 9.6 | 20.2 | 0 | 0.2 | |
| 24 | 0 | 0 | 0 | 0 | 30.6 | 0 | 0 | 154.8 | 0 | 0 | 0 | 0 | 0.2 | 7.6 | 0 | 25.8 | 0.8 | 0 | 0 | 0 | 0 | 0 | 17.2 | 0 | 0 | |
| 25 | 0 | 0 | 0 | 6.8 | 44.2 | 0 | 0 | 43.2 | 0.2 | 0.2 | 0 | 0 | 0 | 0 | 0 | 1.6 | 1.6 | 0 | 0 | 2.4 | 0 | 0 | 0.4 | 0.4 | 0.4 | |
| 26 | 0 | 0 | 8 | 2.2 | 7.2 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23.4 | 9.8 | 3.8 | 0 | | 0 | 0 | 0 | 0 | 19.4 | 6 | 0 | |
| 27 | 0 | 0 | 5.6 | 71 | 0.6 | 0 | 0 | 0 | 20.6 | 0 | 0 | 0 | 0 | 0 | 0.2 | 3.2 | 0 | | 0 | 0 | 0 | 10.2 | 35.8 | 0 | 2.6 | |
| 28 | 0 | 1 | 0 | 108.4 | 0.8 | 0 | 0 | 25 | 3.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | | 26.6 | 0 | 0 | 0 | 33.2 | 0 | 0 | |
| 29 | 0.4 | 0 | 0 | 144.4 | | 0.6 | 0 | 0.8 | 15.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 11.2 | 0 | 0 | 3 | 0 | 8 | 0 | 0 | |
| 30 | 0.4 | 0 | 0 | 17.2 | | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 20.4 | 28.8 | 0 | 0 | | 0 | 0 | 1.6 | 0 | 0 | 0 | 0 | 0 | |
| 31 | 0 | | 0 | 0 | | 0 | | 0.2 | | 0.2 | 0 | | 0 | | 0 | 0 | | 13.6 | | 9.4 | | 0 | 0 | | 0 | |
| Highest Daily | 12.6 | 33 | 57.2 | 144.4 | 106.2 | 62.2 | 72.6 | 154.8 | 20.6 | 8 | 17.2 | 16.4 | 32.8 | 114.4 | 9.8 | 25.8 | 31 | 70.2 | 26.6 | 9.4 | 4.4 | 10.2 | 42.8 | 13.6 | 10.8 | 19 |
| Monthly Total | 16.2 | 67.8 | 99.2 | 385.2 | 360.8 | 111.2 | 165.8 | 244 | 69.6 | 25.2 | 18.6 | 17.2 | 67.2 | 258.2 | 20.4 | 55.8 | 102 | | 60.2 | 25.2 | 14.6 | 30 | 185.4 | 34.6 | 32.6 | |

| Statistics for all years | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Mean | 144.2 | 168.7 | 165.7 | 146.6 | 114.6 | 140.9 | 68.9 | 66.1 | 59.8 | 73.5 | 163.4 | 100.3 |
| Median | 132.6 | 153.5 | 166.7 | 114.4 | 69.6 | 138.8 | 70 | 38.1 | 47.2 | 58.9 | 142.4 | 95.8 |

Telegraph Point rainfall records from March 2013 to November 2014

| Day of month | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 | Jan-14 | Feb-14 | Mar-14 | Apr-14 | May-14 | Jun-14 | Jul-14 | Aug-14 | Sep-14 | Oct-14 | Nov-14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.8 | 0.3 | 0 | 0 | 7.7 | 11.3 | 0 | 0 | 0 | 0 | 0 | 0 | 33.6 | 0 | 6.8 | 0.7 | 0 | 0 | 9.5 | - | - |
| 2 | 27.6 | 4.2 | 0 | 3.1 | 13.2 | 0 | 0 | 1.4 | 0 | 0.3 | 0 | 0 | 57.3 | 0 | 0.1 | 0.7 | 0 | 0 | 0 | - | - |
| 3 | 58.4 | 0 | 0 | 4.3 | 0.3 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0 | 7.7 | 0 | 0 | 2.8 | 0 | 0 | 0 | - | - |
| 4 | 21.5 | 21 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0 | 0 | 0 | 6.7 | 0 | 0 | 0 | 0 | 1.2 | 0 | - | - |
| 5 | 2.5 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 7 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | - | - |
| 6 | 0.4 | 5.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 20 | 0 | 0 | 0 | 0 | 13 | - | - |
| 7 | 0.6 | 5.6 | 1.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0 | 0.8 | 0 | 0.7 | 0 | 0 | 0 | - | - |
| 8 | 2.5 | 2.8 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | - | - |
| 9 | 2.8 | 1.9 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0.9 | 0 | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - |
| 10 | 0.6 | 10.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.8 | 0.3 | 0 | 5.1 | 0 | 0 | 0.8 | 0 | 0 | 5.6 | - | - |
| 11 | 2 | 5.3 | 1.4 | 1.2 | 0 | 0 | 0 | 0 | 55.4 | 0 | 0 | 0 | 0 | 3 | 0.2 | 0.7 | 0 | 0 | 2.7 | - | - |
| 12 | 0.7 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 17.1 | 0 | 0 | 0 | 0 | 0.5 | 0.2 | 0 | 0 | 0 | 0 | - | - |
| 13 | 3.5 | 1 | 0 | 9.5 | 0 | 0 | 0 | 0 | 14.6 | 0 | 0 | 2.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - |
| 14 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.6 | 16.4 | 0 | 1.1 | 13.7 | 0 | 0 | 0 | 0.9 | 0.8 | 1 | 0 | - | - |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.7 | 0 | 4.1 | 2.1 | 0 | 0 | 0 | 0.7 | 0 | 0 | - | - |
| 16 | 6.3 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0 | 0 | 1.5 | 0 | 6.9 | 0 | 0 | 0 | 0 | 1.6 | 0 | 0 | - | - |
| 17 | 0.1 | 7.1 | 0 | 0 | 0 | 0 | 12.7 | 0 | 14.1 | 0 | 0 | 30.4 | 5.3 | 0 | 0 | 0 | 0.6 | 39.4 | 0 | - | - |
| 18 | 0 | 0.6 | 0 | 0 | 0 | 0.6 | 0 | 13.6 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | - | - |
| 19 | 1.1 | 0 | 0 | 0 | 0 | 0 | 0 | 10.1 | 0.6 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - |
| 20 | 0.9 | 0 | 0 | 0 | 4.1 | 0 | 0 | 0.5 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3.4 | 0 | - | - |
| 21 | 6.5 | 5 | 0 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 17.7 | 0 | 0 | 1.6 | 1.4 | 0 | 0 | - | - |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.3 | 11.8 | 0 | 0 | 0.3 | 1.2 | 4.2 | 0 | - | - |
| 23 | 0 | 0 | 7.4 | 0 | 0 | 0 | 0 | 0 | 20.9 | 0 | 9.5 | 0 | 0 | 0 | 0 | 6.2 | 3.3 | 14.4 | 0 | - | - |
| 24 | 0 | 0 | 120 | 0 | 0 | 0 | 0 | 0.6 | 6.2 | 0 | 12.9 | 0.3 | 0 | 0 | 0 | 0 | 0 | 4.3 | 0 | - | - |
| 25 | 0 | 0 | 37.4 | 6.6 | 0 | 0 | 0 | 0 | 0 | 0 | 3.2 | 4.2 | 0.8 | 0 | 2.2 | 0 | 0 | 0.4 | 0 | - | - |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9.4 | 7.9 | 1 | 0 | 9.7 | 0.6 | 0 | 0 | 0.3 | 10.3 | 9.2 | - | - |
| 27 | 0 | 0 | 0 | 30.8 | 0 | 0 | 0 | 0 | 0 | 2.2 | 2.2 | 0 | 19.3 | 0.2 | 0 | 0 | 13.2 | 46 | 0 | - | - |
| 28 | 0 | 0 | 21 | 4.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 5.8 | 0 | 0 | 0 | 29.1 | 0 | - | - |
| 29 | 0.8 | 0 | 0.2 | 7.8 | 0 | 0 | 0 | 0 | 0.6 | 0 | 0 |  | 13.6 | 0 | 0 | 3.4 | 0 | 4.1 | 0 | - | - |
| 30 | 0.1 | 0 | 0 | 5.5 | 0 | 0 | 0 | 5.4 | 21.4 | 0 | 0 |  | 0 | 0 | 0.8 | 0 | 0 | 0.2 | 0 | - | - |
| 31 | 0 |  | 0 |  | 0 | 0 |  | 0 |  | 0 | 0 |  | 19.4 |  | 5.8 |  | 0 | 0 |  | - | - |
| Highest Daily | 58.4 | 21 | 120 | 30.8 | 13.2 | 11.3 | 12.7 | 13.6 | 55.4 | 7.9 | 12.9 | 30.4 | 57.3 | 22 | 6.8 | 6.2 | 13.2 | 46 | 13 |  |  |
| Monthly Total | 146 | 75.2 | 190 | 73.4 | 26.7 | 11.9 | 14.6 | 33.9 | 179.6 | 14.9 | 31.9 | 90.3 |  | 52.9 | 16.1 | 18.8 | 23.1 | 158.2 | 47 |  |  |

| Statistics for all years | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Mean | 136.9 | 176 | 164.7 | 128 | 104.1 | 107.9 | 68.3 | 58.1 | 60.3 | 83.8 | 108.8 | 113.2 |
| Median | 110.2 | 148.2 | 148.8 | 85.6 | 60 | 73.1 | 37.6 | 25.9 | 42.9 | 55.3 | 90.4 | 94.6 |

Kempsey airport rainfall records from March 2013 to November 2014

| Day of month | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 | Jan-14 | Feb-14 | Mar-14 | Apr-14 | May-14 | Jun-14 | Jul-14 | Aug-14 | Sep-14 | Oct-14 | Nov-14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.6 | 0 | 0 | 0 | 2.8 | 0.4 | 0.2 | 0 | 0 | 1.4 | 0 | 0 | 44.8 | 0 | 5.2 | | 0 | 0 | 0 | 0 | 0 |
| 2 | 16.8 | 1.8 | 0.2 | 1 | 6.8 | 0 | 0 | 0 | 0 | 1.6 | 0 | 0 | 20 | 0.2 | 0 | | 0 | 0 | 0 | 0 | 1.8 |
| 3 | 91.2 | 0.2 | 0 | 1.4 | 0.2 | 0.2 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 4.2 | 0.2 | 0.2 | | 0 | 0 | 1 | 0 | 0 |
| 4 | 44 | 19.6 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| 5 | 2.4 | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 6.8 | 0 | 4 | 0 | 0 | 0 | 2.6 | 0 | 0.2 | 0 |
| 6 | 0.2 | 9.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 0 | 20.2 | 0 | 0 | 0 | | 2 | 0 | 23.2 |
| 7 | 0.4 | 11.6 | 0 | 0.2 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8 | 0.4 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 4.2 | 0 | 0 |
| 9 | 1.2 | 0 | 0 | 0 | 0.2 | 0 | 0.6 | 0.8 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0.2 | 0 | 0.4 | 0 | 0 |
| 10 | 0.6 | 3.4 | 0.2 | 0 | 0.2 | 0 | 0 | 0 | 1.6 | 0 | 2.8 | 0 | 5.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 1.6 | 1.4 | 0 | 2.2 | 0.2 | 0 | 0.2 | 0 | 18.8 | 1 | 0 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 2.2 | 0 | 1.8 |
| 12 | 0.4 | 5 | 0.2 | 0 | 0.2 | 0 | 0 | 0 | 17.6 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 0.2 | 0 | 0 | 0 | 1 | |
| 13 | 1.2 | 1.4 | 0 | 8.2 | 0 | 0 | 0 | 0 | 42.2 | 0 | 0 | 0 | 0 | 0 | 1.6 | 0 | 0 | 0 | 0 | 0.2 | 0 |
| 14 | 0.2 | 0.4 | 0 | 0 | 0.2 | 0 | 1.4 | 0 | 6 | 0 | 0 | 9.8 | 0 | 0 | 0.8 | 0.2 | 0 | 0 | 0 | 9.6 | - |
| 15 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0.2 | 0.2 | 0 | 17.4 | 0.2 | 4 | 0 | 0 | 0 | 0.8 | 0 | 0 | 0 | 0.2 | - |
| 16 | 4.4 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 7.4 | 2.2 | 0 | 10.8 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | - |
| 17 | 0.2 | 11.6 | 0 | 0 | 0.2 | 0 | 10 | 0 | 8.2 | 13.2 | 0 | 25 | 1.6 | 0 | 0 | 0 | 0 | 46.2 | | 0 | - |
| 18 | 0 | 0.2 | 0 | 0 | 0.2 | 0.2 | 0.6 | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0.2 | 0 | 0 | - |
| 19 | 0.2 | 0.2 | 0 | 0.2 | 0.2 | 0 | 0 | 4.8 | 1.6 | 0 | 0 | 1.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - |
| 20 | 0.2 | 0 | 0 | 0 | 3.2 | 0 | 0 | 0 | 0.2 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0 | 0 | - |
| 21 | 0.2 | 0.8 | 0 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0 | 6 | 16.6 | 4.4 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.6 | - |
| 22 | 0.2 | 0.2 | 0.2 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 4.8 | 0 | 0 | 2.4 | 3.6 | 1.2 | 0 | 0 | - |
| 23 | 0 | 0 | 7.8 | 0 | 0.2 | 0 | 0 | 0 | 30 | 0 | 0.8 | 0 | 0.2 | 0 | 0 | 0 | 1.6 | 4 | 0 | 0 | - |
| 24 | 0 | 0 | 98.8 | 0 | 0 | 0 | 0 | 0 | 11.4 | 0 | 8.6 | 2.2 | 0.2 | 0 | 4.8 | 0 | 0 | 6.6 | 0 | 0 | - |
| 25 | 0 | 0 | 44 | 0.8 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 5.8 | 0.4 | 0 | 0 | 0 | 0 | 1.8 | 0 | 0 | - |
| 26 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.6 | 6.8 | 0.2 | 0 | 4.6 | 0 | 0 | 0 | 0.2 | 3.6 | 2.2 | 0 | - |
| 27 | | 0 | 0.2 | 29.6 | 0 | 0 | 0 | 0 | 0.2 | 2 | 2.2 | 0 | 10 | 0 | 0 | 0 | 6.6 | 115 | 0.2 | 0 | - |
| 28 | 0 | 0.2 | 4.6 | 3.8 | 0.2 | 0.2 | 0 | 0 | 0 | 0.2 | 0.2 | 0 | 25.2 | 2.8 | 0 | 0 | 0 | 24.8 | 0 | 0 | - |
| 29 | 0.4 | 0 | 0.4 | 5.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 6.2 | 0.4 | 0.2 | 4.6 | 0 | 0.8 | 0 | 0 | - |
| 30 | 0 | 0.2 | 0.2 | 11.4 | 0 | 0 | 0 | 0.4 | 36.6 | 0 | 0.2 | | 0 | 0 | | 0 | 0 | 0.2 | 0 | 0 | - |
| 31 | 0 | | 0.2 | | 0 | 0 | | 0 | | 0 | 0 | | 25.2 | | | | 0 | 0 | | 0 | - |
| | | | | | | | | | | | | | | | | | | | | | - |
| Highest Daily | 91.2 | 19.6 | 98.8 | 29.6 | 6.8 | 0.4 | 10 | 4.8 | 42.2 | 17.4 | 8.6 | 25 | 44.8 | 20.2 | 5.2 | 4.6 | 6.6 | 115 | 4.2 | 9.6 | 23.2 |
| Monthly Total | 168 | 68.2 | 157.4 | 64.2 | 15.8 | 1 | 13.2 | 9.4 | 193.6 | 46.6 | 25 | 105 | 159.6 | 28 | | | 12.4 | 208.4 | 13.2 | 11.8 | |

| Statistics for all years | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Mean | 132.7 | 170.7 | 145.1 | 78 | 63.2 | 113.2 | 24.2 | 55 | 43 | 73.8 | 112.3 | 100.3 |
| Median | 126.5 | 141.2 | 133.2 | 45.1 | 28.6 | 91.8 | 20.6 | 17.8 | 20.4 | 45.6 | 106.5 | 92.9 |

Kempsey (Wide Street) rainfall records from March 2013 to November 2014

| Day of month | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 | Jan-14 | Feb-14 | Mar-14 | Apr-14 | May-14 | Jun-14 | Jul-14 | Aug-14 | Sep-14 | Oct-14 | Nov-14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.3 | 0.2 | 0 | 0 | 6.6 | 0.2 | 0 | 0 | 0 | 1.4 | 0 | 0 | 29.8 | ↓ | 6.6 | 2 | 0 | 0 | 0 | 0 | 0 |
| 2 | 16.2 | 17.6 | 0 | 1.4 | 8.6 | 0 | ↓ | 0 | 0 | 1.4 | 0 | 0 | 39.2 | 0.5 | 0 | ↓ | 0 | 0 |  | 0 | 2.4 |
| 3 | 97.6 | 0.1 | 0 | 2.8 | 0.4 | 0 | 0.2 | 0 | 0 | 0 | 0 | ↓ | 0 | 0 | 0 | ↓ | 0 | 0 | 1.2 | 0 | 0 |
| 4 | 31.1 | 21.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ↓ | ↓ | ↓ | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| 5 | 5.8 | 9.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 8.0 | ↓ | 6.4 | ↓ | 0 | 0 | 0 | ↓ | 0 | 0 |
| 6 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.3 | ↓ | 19.2 | ↓ | 0 | 0 | 0 | 2.8 | 0 | 30.4 |
| 7 | 0.6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | ↓ | 0.4 | 0.4 | 0 | 0 | 0 | 1.8 | 0 | 0 |
| 8 | 0.9 | ↓ | ↓ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.2 | 0 | ↓ | 0 | 0.1 | 0 | 0 | 0 | 10.6 | 0 | 0 |
| 9 | 1.3 | ↓ | ↓ | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | ↓ | 0 | 0 | 0 | 0 | 0 | 2.2 | 0 | 0 |
| 10 | 0.6 | 6.8 | ↓ | 0.1 | 0 | 0 | 0 | 0 | 3.8 | 0 | 4.7 | 0 | 3.2 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0.4 | 0 |
| 11 | 1.6 | 1.4 | ↓ | 2.6 | 0 | 0 | 0 | 0 | 19.6 | 1.6 | 0.1 | 0 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.4 |
| 12 | 1.2 | 8.8 | ↓ | 0.4 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | ↓ | 0 | 0 | 0 | 0 | 1.8 | 0 |
| 13 | 2.2 | 1.8 | ↓ | 8.4 | 0 | 0 | 0 | 0 | 41.2 | 0 | 0.2 | 0 | 0 | 0 | 1.1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | ↓ | 0 | 0 | 0 | 0 | 0 | 7.2 | 0 | 0.8 | 9.2 | ↓ | 0 | 1.4 | 0.8 | 0 | 1.3 | 0 | 6.2 |  |
| 15 | 0 | ↓ | 0.9 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 7.1 | 1.2 | 0 | 0 | 2.6 | 0.4 | 0 | 0 | 0 |  |
| 16 | 14.8 | ↓ | 0 | 0 | 0 | 0 | 0.2 | 0 | 5.8 | 1.6 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0 | 0 |  |
| 17 | 0 | 10.0 | 0 | 0 | 0 | 0.5 | 10 | 0 | 9.4 | 0 | 0 | ↓ | 0 | 0 | 0 | 0 | 0 | 48 | 0 | 0 |  |
| 18 | 0 | 0 | 0 | 0 | 0 | 0.4 | 1 | 4.4 | 0 | 0 | 0 | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 19 |  | 0 | 0 | 0 | 0 | 0 | 0 | 13.1 | 0 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 20 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 13.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 21 | 0.4 | 2.2 | 0 | 0 | 1.2 | 0 | 0 | 0 | 0.6 | 0 | 0 | 28.8 | 8.7 | 0 | 0 | 9 | 0 | 0 | 0 | 0 |  |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 20.6 | 0 | 0 | 2 | 4.6 | 2.2 | 0 | 0 |  |
| 23 | 0 | 0 | 7.4 | 0 | 0 | 0 | 0 | 0 | 22.9 | 0 | 2.9 | 0 | 0 | 0 | 0 | 0 | 4.2 | 4.4 | 0 | 0 |  |
| 24 | 0.6 | 0 | 125.8 | 0 | 0 | 0 | 0 | 0 | 9.4 | 0 | ↓ | ↓ | 0 | 0 | 8.4 | 0 | 0 | 10 | 0 | 0 |  |
| 25 |  | 0 | 44.4 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | ↓ | ↓ | 0 | 0 | 0 | 0 | 0.6 | 0.1 | 0 |  |
| 26 | 0 | 0 | 0 | 0.6 | 0 | 0 | 0 | 0 | 35.8 | 9.2 | 0 | 1.6 | 5.6 | 0 | ↓ | 0 | 0 | 1.6 | 2.6 | 0 |  |
| 27 | 0 | 0 | 0 | 24.6 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 15.2 | 0 | ↓ | 0 | 12.2 | 115.2 | 0 | 0 |  |
| 28 | 0 | 0 | 5.2 | 3.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | ↓ | 33 | 6.5 | 0.6 | 0 | 0 | 27 | 0 | 0 |  |
| 29 | 1 | 0 | 1.2 | 3.4 | 0.6 | 0 | 0 | 0 | ↓ | 0 | 0 |  | 18.2 | 0 | 0.1 | 4.6 | 0 | 2.8 | 0 | 0 |  |
| 30 | 0 | 0 | 0 | 0.8 | 0 | 0 | 0 | 0 | 37.4 | 0 | 0 |  | 0 | 0 | ↓ | 0 | 0 | 0 | 0 | 0 |  |
| 31 | 0 |  | 0 |  | 0 | 0 |  | 0 |  | 0 | 0 |  | ↓ |  | 5.4 |  | 0 | 0 |  | 0 |  |
| Highest Daily | 97.6 | 21.6 | 125.8 | 24.6 | 8.6 | 0.5 | 10 | 13.1 | 41.2 | 10 | 4.7 | 28.8 | 39.2 | 19.2 | 8.4 | 9 | 12.2 | 115.2 | 10.6 | 6.2 | 30.4 |
| Monthly Total | 178.2 | 96.7 | 189.3 | 50.1 | 21.4 | 1.1 | 11.4 | 17.5 | 202.1 | 27.2 | 40.1 | 111 | 191.3 | 33.4 | 24.1 | 28.6 | 21.4 | 213.7 | 21.3 | 8.4 |  |

| Statistics for all years | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Statistic | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Mean | 134.1 | 158.1 | 151.4 | 115.3 | 91.6 | 99.4 | 65.2 | 62.6 | 55.4 | 78 | 95.6 | 109.4 |
| Median | 111.9 | 112.7 | 128.9 | 77.9 | 61 | 63.2 | 32.3 | 32.4 | 38.2 | 56.6 | 78.5 | 93.3 |

# Appendix C – Water quality sampling results

Table 1 SW1 – Unnamed tributary or Fernbank Creek (Chainage 2500 to 2650)

| No. | Parameter | Unit | 10/10/12 (Dry event) | | | 13/10/12 (Dry event) | | | 21/11/12 (Wet event) | | | 13/12/12 (Dry event) | | | 31/01/13 (Wet event) | | | 6/03/13 (Dry event) | | | 24/04/13 (Dry event) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) |
| 1 | Temperature | $^0$C | | | DNS | DNS | 17.5 | 18.5 | | | | 20.5 | 21.3 | 20.9 | 23.4 | 23.2 | DNS | 23.4 | 23.5 | 22.2 | 17.3 | 17.0 | 17.4 |
| 2 | Electrical conductivity (EC) | uS/cm | 1670 | 1730 | | | 1670 | 1730 | 221 | 1130 | 1140 | 351 | 1370 | 1350 | 125 | 700 | | 870 | 871 | 126 | 1160 | 216 | 220 |
| 3 | Dissolved oxygen (DO) | % | | | | | 101 | 55 | | | | 97 | 92 | 89 | 75 | 58 | | 62 | 65 | 37 | 92 | 57 | 70 |
| 4 | pH | | 7.3 | 7.5 | | | 7.3 | 7.5 | 6.7 | 7.3 | 7.2 | 6.7 | 7.2 | 7.2 | 6.6 | 7.0 | | 7.3 | 7.3 | 6.7 | 7.4 | 6.7 | 6.7 |
| 5 | Turbidity (NTU) | NTU | 40 | 17 | | | 40 | 17 | 97 | 32 | 93 | 35 | 14 | 440 | 163 | 4 | | 25 | 20 | 60 | 28 | 10 | 11 |
| 6 | Total suspended solids (TSS)* | mg/L | 19 | 17 | | | | | 40 | 26 | 197 | | 30 | | | | | 28 | 7 | 47 | 35 | 5 | 6 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.05 | 2.07 | | | | | | | | | | | | | | | | | | | |
| 9 | Arsenic (As) | mg/L | 0.002 | 0.004 | | | | | | | | | | | | | | | | | | | |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | | | | | | | | | | | | | | | | | |
| 11 | Chromium (Cr) | mg/L | 0.001 | 0.005 | | | | | | | | | | | | | | | | | | | |
| 12 | Copper (Cu) | mg/L | 0.01 | 0.025 | | | | | | | | | | | | | | | | | | | |
| 13 | Iron (Fe) | mg/L | 2.65 | 9.670 | | | | | | | | | | | | | | | | | | | |
| 14 | Lead (Pb) | mg/L | 0.002 | 0.011 | | | | | | | | | | | | | | | | | | | |
| 15 | Manganese (Mn) | mg/L | | | | | | | | | | | | | | | | | | | | | |
| 16 | Mercury (Hg) | mg/L | <0.00001 | <0.00001 | | | | | | | | | | | | | | | | | | | |
| 17 | Nickel (Ni) | mg/L | 0.002 | 0.003 | | | | | | | | | | | | | | | | | | | |
| 18 | Silver (Ag) | mg/L | | | | | | | | | | | | | | | | | | | | | |
| 19 | Zinc (Zn) | mg/L | 0.048 | 0.124 | | | | | | | | | | | | | | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | 4.9 | 2.7 | | | | | | | | | | | | | | | | | | | |
| 21 | Total Phosphorous (TP) | mg/L | 1 | 0.37 | | | | | | | | | | | | | | | | | | | |

Table 2 SW1 – Unnamed tributary or Fernbank Creek (Chainage 2500 to 2650) Cont.

| No. | Parameter | Unit | 14/05/13 (Dry event) | | | 26/06/13 (Wet event) | | | 29/07/13 (Dry event) | | | 28/08/13 (Dry event) | | | 16/09/13 (Wet event) | | | 18/09/13 (Wet event) | | | 23/10/13 (Dry event) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) |
| 1 | Temperature | $^0$C | | | | 11.8 | 13.8 | 12.3 | | | | | | | | | | | | | 20.5 | 20.9 | 20.4 |
| 2 | Electrical conductivity (EC) | uS/cm | 324 | 30200 | 30300 | 205 | 881 | 904 | 641 | 1600 | 1500 | 637 | 1460 | 1100 | 456 | 367 | 369 | | | | 527 | 1010 | 1010 |
| 3 | Dissolved oxygen (DO) | % | | | | 51 | 101 | 43 | | | | | | | | | | | | | 56 | 29 | 19.3 |
| 4 | pH | | 6.6 | 7.8 | 7.9 | 6.7 | 7.1 | 7.1 | 6.8 | 7.3 | 7.4 | 7.2 | 7.1 | 7.0 | 6.3 | 6.8 | 6.8 | | | | 6.8 | 7.2 | 7.1 |
| 5 | Turbidity (NTU) | NTU | 22 | 3 | 9 | 370 | 62 | 120 | 53 | 15 | 33 | 52 | 31 | 130 | 2 | 11 | 12 | | | | 39 | 29 | 66 |
| 6 | Total suspended solids (TSS)* | mg/L | 18 | 5 | 4 | 381 | 62 | 173 | 15 | 7 | 90 | 14 | 27 | 126 | <4 | 8 | 11 | | | | 50 | 37 | 32 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | **75** | | | | | | **30** | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.81 | 0.09 | 0.14 | | | | | | | | | | | | | 0.61 | 0.43 | 7.88 | | | |
| 9 | Arsenic (As) | mg/L | 0.001 | 0.001 | 0.001 | | | | | | | | | | | | | 0.002 | 0.001 | 0.003 | | | |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | <0.001 | | | | | | | | | | | | | <0.001 | <0.001 | <0.001 | | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | <0.001 | | | | | | | | | | | | | 0.002 | <0.001 | 0.003 | | | |
| 12 | Copper (Cu) | mg/L | 0.004 | <0.001 | <0.001 | | | | | | | | | | | | | 0.01 | 0.002 | 0.009 | | | |
| 13 | Iron (Fe) | mg/L | 1.73 | 0.141 | 0.198 | | | | | | | | | | | | | 4.61 | 1.29 | 10.3 | | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | <0.001 | | | | | | | | | | | | | 0.005 | <0.001 | 0.009 | | | |
| 15 | Manganese (Mn) | mg/L | 0.219 | 0.042 | 0.079 | | | | | | | | | | | | | 0.377 | 0.469 | 0.125 | | | |
| 16 | Mercury (Hg) | mg/L | <0.0003 | <0.0003 | <0.0003 | | | | | | | | | | | | | <0.00001 | <0.00001 | <0.00001 | | | |
| 17 | Nickel (Ni) | mg/L | 0.002 | <0.001 | <0.001 | | | | | | | | | | | | | 0.002 | 0.001 | 0.005 | | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | <0.001 | | | | | | | | | | | | | <0.001 | <0.001 | <0.001 | | | |
| 19 | Zinc (Zn) | mg/L | 0.034 | <0.005 | <0.005 | | | | | | | | | | | | | 0.098 | 0.026 | 0.125 | | | |
| 20 | Total Nitrogen (TN) | mg/L | | | | 0.9 | 0.6 | 0.9 | 0.48 | 2 | 1.8 | 0.26 | 3 | 3 | 0.5 | 0.29 | 0.33 | | | | 2.7 | 3.7 | 2.9 |
| 21 | Total Phosphorous (TP) | mg/L | | | | 0.19 | 0.45 | 0.42 | 0.06 | 0.19 | 0.28 | 0.02 | 1.9 | 2.95 | 0.02 | 0.03 | 0.03 | | | | 0.37 | 3.77 | |

Table 3 SW1 – Unnamed tributary or Fernbank Creek (Chainage 2500 to 2650) Cont.

| No. | Parameter | Unit | 12/11/13 Wet event | | | 27/11/13 (Dry event) | | | 17/12/13 (Dry event) | | | 28/01/14 (Dry event) | | | 19/02/14 (Wet event) | | | 03/03/14 (Wet event) | | | 12/03/14 (Dry event) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) |
| 1 | Temperature | $^0$C | 20.5 | 20.1 | 20.5 | 23.8 | 22.5 | 23.2 | 23.8 | 22.3 | 22.9 | 23.0 | 22.0 | 22.0 | 27.9 | 26.0 | 28.2 | | | | 26.7 | 22.8 | 23.5 |
| 2 | Electrical conductivity (EC) | uS/cm | 82 | 98 | 306 | 470 | 461 | 491 | 1790 | 1080 | 1070 | 304 | 766 | 587 | 273 | 734 | 703 | 151 | 426 | 426 | 880 | 960 | 1340 |
| 3 | Dissolved oxygen (DO) | % | 87.5 | 60.6 | 50.1 | 75.1 | 108.4 | 104.1 | 96.6 | 110.3 | 111.3 | 119.4 | 60.4 | 42 | 92.8 | 32 | 106.7 | | | | 115.5 | 29.1 | 50.9 |
| 4 | pH | | 6.7 | 6.5 | 6.6 | 6.9 | 6.9 | 6.9 | 6.9 | 7.3 | 7.3 | 6.6 | 7.0 | 6.9 | 6.6 | 7.0 | 4.0 | 6.9 | 7.0 | 7.1 | 8.1 | 7.0 | 7.6 |
| 5 | Turbidity (NTU) | NTU | 1000 | 85 | 800 | 48 | 20 | 21 | 16 | 16 | 12 | 16 | 17 | 28 | 40 | 130 | 10 | 98 | 35 | 33 | 183 | 20 | 134 |
| 6 | Total suspended solids (TSS)* | mg/L | 580 | 56 | 350 | 46 | 9 | 24 | 9 | 46 | 11 | 8 | 12 | 24 | 13 | 253 | 9 | 20 | 149 | 43 | | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | | | | 0.38 | 0.04 | 0.28 | | | | | | | | | |
| 9 | Arsenic (As) | mg/L | | | | | | | | | | <0.001 | 0.005 | 0.004 | | | | | | | | | |
| 10 | Cadmium (Cd) | mg/L | | | | | | | | | | <0.001 | <0.001 | <0.001 | | | | | | | | | |
| 11 | Chromium (Cr) | mg/L | | | | | | | | | | <0.001 | <0.001 | <0.001 | | | | | | | | | |
| 12 | Copper (Cu) | mg/L | | | | | | | | | | 0.003 | 0.003 | 0.002 | | | | | | | | | |
| 13 | Iron (Fe) | mg/L | | | | | | | | | | 1.03 | 2.58 | 4.86 | | | | | | | | | |
| 14 | Lead (Pb) | mg/L | | | | | | | | | | <0.001 | <0.001 | <0.001 | | | | | | | | | |
| 15 | Manganese (Mn) | mg/L | | | | | | | | | | 0.127 | 0.376 | 0.335 | | | | | | | | | |
| 16 | Mercury (Hg) | mg/L | | | | | | | | | | <0.00001 | <0.00001 | <0.00001 | | | | | | | | | |
| 17 | Nickel (Ni) | mg/L | | | | | | | | | | 0.003 | 0.001 | 0.002 | | | | | | | | | |
| 18 | Silver (Ag) | mg/L | | | | | | | | | | <0.001 | <0.001 | <0.001 | | | | | | | | | |
| 19 | Zinc (Zn) | mg/L | | | | | | | | | | 0.102 | 0.015 | 0.024 | | | | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.8 | 0.7 | 0.9 | 0.17 | 0.8 | 1 | 0.26 | 1.25 | 0.98 | 0.2 | 1.5 | 1.1 | 0.21 | 1.4 | 1.2 | 0.32 | 0.75 | 0.67 | | | |
| 21 | Total Phosphorous (TP) | mg/L | 0.17 | 0.06 | 0.16 | 0.03 | 0.06 | 0.07 | 0.023 | 0.73 | 0.55 | 0.02 | 0.63 | 0.78 | 0.03 | 0.52 | 0.31 | 0.098 | 0.152 | 0.102 | | | |

Table 4 SW1 – Unnamed tributary or Fernbank Creek (Chainage 2500 to 2650) Cont.

| No. | Parameter | Unit | 10/04/14 (Dry event) | | | 29/04/14 (Wet event) | | | 28/05/14 (Dry event) | | | 16/06/14 (Dry event) | | | 14/07/14 (Dry event) | | | 23/07/14 (Wet event) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) | SW1a (US) | SW1b (US) | SW1c (DS) |
| 1 | Temperature | $^0$C | 20.6 | 21.0 | 21.0 | 19.2 | 19.7 | 18.7 | 16.5 | 17.1 | 16.4 | 13.0 | 12.5 | 13.3 | 11.8 | 11.6 | 9.9 | 12.5 | 12.9 | 12.4 | | | |
| 2 | Electrical conductivity (EC) | uS/cm | 316 | 969 | 964 | 220 | 903 | 874 | 2756 | 705 | 958 | 1257 | 15 | 1011 | 3172 | 904 | 883 | 570 | 631 | 590 | | | |
| 3 | Dissolved oxygen (DO) | % | 39.5 | 34.5 | 28.6 | 61.9 | 6.9 | 3.5 | 4.3 | 11.6 | 0.6 | 6.5 | 8.6 | 1.4 | 1.7 | 16.9 | 10.3 | 36.4 | 30.6 | 34 | | | |
| 4 | pH | | 6.6 | 7.1 | 7.1 | 6.8 | 7.3 | 7.1 | 6.6 | 7.5 | 7.3 | 6.5 | 7.5 | 7.2 | 6.8 | 7.8 | 7.6 | 6.6 | 7.2 | 7.1 | | | |
| 5 | Turbidity (NTU) | NTU | 45 | 14 | 51 | 24 | 19 | 14 | 19 | 13 | 26 | 189 | 6 | 16 | 17 | 4 | 6 | 82 | 258 | 395 | | | |
| 6 | Total suspended solids (TSS)* | mg/L | <5 | 22 | <5 | <5 | 83 | 9 | 17 | 8 | 42 | 408 | 8 | 8 | 8 | 6 | 6 | 86 | 95 | 130 | | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | DNS | DNS | See below | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.05 | 0.01 | 0.01 | 0.04 | <0.01 | <0.01 | | | | | | | <0.01 | 0.02 | <0.01 | 0.04 | <0.01 | <0.01 | | | |
| 9 | Arsenic (As) | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | 0.003 | 0.002 | | | | | | | <0.001 | 0.002 | <0.001 | <0.001 | <0.001 | <0.001 | | | |
| 10 | Cadmium (Cd) | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | |
| 12 | Copper (Cu) | mg/L | 0.002 | <0.001 | <0.001 | 0.002 | <0.001 | <0.001 | | | | | | | 0.002 | <0.001 | 0.001 | <0.001 | <0.001 | <0.001 | | | |
| 13 | Iron (Fe) | mg/L | 0.21 | 0.41 | 0.54 | <0.05 | 0.37 | 0.47 | | | | | | | <0.05 | <0.05 | <0.05 | 0.38 | 0.25 | 0.14 | | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | |
| 15 | Manganese (Mn) | mg/L | 0.031 | 0.145 | 0.157 | 0.019 | 0.367 | 0.326 | | | | | | | 0.382 | 0.109 | 0.172 | 0.043 | 0.105 | 0.123 | | | |
| 16 | Mercury (Hg) | mg/L | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | |
| 17 | Nickel (Ni) | mg/L | 0.002 | <0.001 | <0.001 | 0.001 | 0.002 | 0.002 | | | | | | | 0.002 | 0.002 | 0.002 | <0.001 | <0.001 | 0.001 | | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | |
| 19 | Zinc (Zn) | mg/L | 0.013 | 0.007 | 0.01 | 0.03 | 0.014 | 0.015 | | | | | | | 0.024 | <0.005 | <0.005 | 0.02 | 0.02 | 0.017 | | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.3 | 0.7 | 0.6 | 0.2 | 4.1 | 2.8 | 0.4 | 1.8 | 4.1 | 1.6 | 1.8 | 3.1 | 0.3 | 1.8 | 3.5 | 0.4 | 1.7 | 1.4 | | | |
| 21 | Total Phosphorous (TP) | mg/L | 0.03 | 0.35 | 0.1 | 0.04 | 0.76 | 0.29 | 0.07 | 0.76 | 4.71 | 0.2 | 0.31 | 0.87 | 0.02 | 0.46 | 1.1 | 0.03 | 0.32 | 0.22 | | | |
| 22 | C6 - C10 Fraction | ug/L | | | | | | | | | | | | **<20** | | | | | | | | | |
| 23 | >C10 - C16 Fraction | ug/L | | | | | | | | | | | | **<100** | | | | | | | | | |
| 24 | >C16 - C34 Fraction | ug/L | | | | | | | | | | | | **1570** | | | | | | | | | |
| 25 | >C34 - C40 Fraction | ug/L | | | | | | | | | | | | **630** | | | | | | | | | |

Table 5 SW2 – Fernbank Creek (Chainage 4620 to 4800)

| No. | Parameter | Unit | 06/03/13 (Dry event) | | 24/04/13 (Dry event) | | 16/05/13 (Dry event) | | 26/06/13 (Wet event) | | 29/07/13 (Dry event) | | 29/08/13 (Dry event) | | 16/09/13 (Wet event) | | 23/10/13 (Dry event) | | 12/11/13 (Wet event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) |
| 1 | Temperature | $^0$C | 25.0 | 23.7 | 18.0 | 20.8 | DNS | | 11.0 | 11.0 | | | | | | | 21.8 | 21.8 | 20.1 | 21.0 |
| 2 | Electrical conductivity (EC) | uS/cm | 117 | 90 | 291 | 293 | | 339 | 257 | 259 | 375 | 371 | 444 | 496 | 460 | 674 | 1540 | 532 | 823 | 707 |
| 3 | Dissolved oxygen (DO) | % | 66 | 27 | 37 | 87 | | | 30 | 30 | | | | | | | 71 | 40.3 | 118.9 | 114 |
| 4 | pH | | 6.4 | 6.5 | 6.4 | 6.3 | | 6.1 | 5.7 | 5.6 | 5.8 | 5.6 | 5.6 | 6.0 | 6.3 | 6.1 | 3.5 | 6.4 | 3.7 | 3.8 |
| 5 | Turbidity (NTU) | NTU | 63 | 115 | 83 | 63 | | 70 | 15 | 26 | 39 | 12 | 53 | 97 | 54 | 180 | 65 | 94 | 86 | 17 |
| 6 | Total suspended solids (TSS)* | mg/L | 64 | 63 | 89 | 52 | | 71 | 11 | 78 | 124 | 56 | 63 | 235 | 63 | 291 | 90 | 335 | 56 | 35 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | 0.13 | | | | | | | 0.19 | 1.25 | | | | |
| 9 | Arsenic (As) | mg/L | | | | | | <0.001 | | | | | | | 0.002 | 0.005 | | | | |
| 10 | Cadmium (Cd) | mg/L | | | | | | <0.001 | | | | | | | <0.001 | <0.001 | | | | |
| 11 | Chromium (Cr) | mg/L | | | | | | <0.001 | | | | | | | <0.001 | 0.002 | | | | |
| 12 | Copper (Cu) | mg/L | | | | | | <0.001 | | | | | | | 0.001 | 0.004 | | | | |
| 13 | Iron (Fe) | mg/L | | | | | | 7.04 | | | | | | | 15.8 | 34.2 | | | | |
| 14 | Lead (Pb) | mg/L | | | | | | <0.001 | | | | | | | <0.001 | 0.001 | | | | |
| 15 | Manganese (Mn) | mg/L | | | | | | 0.297 | | | | | | | 0.316 | 2.72 | | | | |
| 16 | Mercury (Hg) | mg/L | | | | | | <0.0003 | | | | | | | <0.00001 | <0.00001 | | | | |
| 17 | Nickel (Ni) | mg/L | | | | | | 0.001 | | | | | | | 0.002 | 0.004 | | | | |
| 18 | Silver (Ag) | mg/L | | | | | | <0.001 | | | | | | | <0.001 | <0.001 | | | | |
| 19 | Zinc (Zn) | mg/L | | | | | | 0.011 | | | | | | | <0.005 | 0.021 | | | | |
| 20 | Total Nitrogen (TN) | mg/L | | | | | | | 1.5 | 2.8 | 2.6 | 1.5 | 2.5 | 5.5 | 2 | 5.5 | | 5.4 | 2.2 | 1.3 |
| 21 | Total Phosphorous (TP) | mg/L | | | | | | | 0.13 | 0.29 | 0.28 | 0.15 | 0.33 | 0.67 | 0.29 | 0.93 | 0.3 | 0.87 | 0.1 | 0.09 |

[#] DNS (Did not sample) – Sample not taken due to absence of sufficient water to collect sample.

Table 6 SW2 – Fernbank Creek (Chainage 4620 to 4800) Cont.

| No. | Parameter | Unit | 27/11/13 (Dry event) | | 17/12/13 (Dry event) | | 28/01/14 (Dry event) | | 19/02/14 (Wet event) | | 03/03/14 (Wet event) | | 12/03/14 (Dry event) | | 10/04/14 (Dry event) | | 29/04/14 (Wet event) | | 29/05/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) |
| 1 | Temperature | $^0$C | 23.4 | 23.1 | 23.1 | 23.8 | 23.4 | 22.2 | 26.5 | 27.1 | | | 25.5 | 24.3 | 21.9 | 25.3 | 20.9 | 23.3 | 19.1 | 19.0 |
| 2 | Electrical conductivity (EC) | uS/cm | 692 | 711 | 606 | 610 | 618 | 946 | 2170 | 971 | 822 | 650 | 1030 | 670 | 510 | 522 | 567 | 857 | 729 | 1084 |
| 3 | Dissolved oxygen (DO) | % | 98 | 84 | 64 | 117 | 79.3 | 128.3 | 122 | 79.3 | | | 84 | 66.3 | 24.3 | 69.6 | 8.2 | 95.1 | 42.2 | 77.5 |
| 4 | pH | | 3.9 | 4.1 | 5.9 | 5.0 | 6.2 | 6.1 | 3.3 | 4.0 | 4.1 | 4.3 | 5.0 | 6.0 | 6.1 | 5.9 | 6.0 | 3.8 | 5.5 | 3.9 |
| 5 | Turbidity (NTU) | NTU | 5 | 19 | 34 | 20 | 290 | 290 | 950 | 900+ | 130 | 37 | 3 | 98 | 47 | 43 | 55 | 22 | 70 | 4 |
| 6 | Total suspended solids (TSS)* | mg/L | 7 | 32 | 27 | 21 | 435 | 2940 | 1609 | 2508 | 254 | 53 | | | 14 | 11 | 23 | 12 | 188 | 17 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | 0.18 | 37.4 | | | | | | | 0.03 | 0.02 | 0.05 | 0.8 | | |
| 9 | Arsenic (As) | mg/L | | | | | 0.002 | 0.038 | | | | | | | <0.001 | 0.002 | <0.001 | <0.001 | | |
| 10 | Cadmium (Cd) | mg/L | | | | | <0.001 | <0.001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 11 | Chromium (Cr) | mg/L | | | | | 0.001 | 0.064 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 12 | Copper (Cu) | mg/L | | | | | <0.001 | 0.076 | | | | | | | <0.001 | <0.001 | <0.001 | 0.002 | | |
| 13 | Iron (Fe) | mg/L | | | | | 17.4 | 231 | | | | | | | 1.16 | 0.31 | 1.61 | 0.44 | | |
| 14 | Lead (Pb) | mg/L | | | | | <0.001 | 0.033 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 15 | Manganese (Mn) | mg/L | | | | | 0.211 | 5.55 | | | | | | | 0.017 | 0.098 | 0.091 | 1.96 | | |
| 16 | Mercury (Hg) | mg/L | | | | | <0.00001 | 0.00027 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 17 | Nickel (Ni) | mg/L | | | | | 0.001 | 0.81 | | | | | | | 0.002 | 0.003 | 0.002 | 0.014 | | |
| 18 | Silver (Ag) | mg/L | | | | | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 19 | Zinc (Zn) | mg/L | | | | | <0.005 | 0.339 | | | | | | | 0.006 | 0.006 | 0.006 | 0.048 | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.33 | 1.3 | 0.65 | 0.56 | 15.4 | 47.5 | 19 | 14.4 | 3.14 | 1.44 | | | 1.2 | 1.2 | 1 | 5.4 | 4.1 | 0.7 |
| 21 | Total Phosphorous (TP) | mg/L | 0.03 | 0.07 | 0.105 | 0.072 | 3.04 | 8.98 | 2.87 | 3.04 | 0.498 | 0.118 | | | 0.11 | 0.12 | 0.08 | 0.02 | 0.79 | 0.04 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 7 SW2 – Fernbank Creek (Chainage 4620 to 4800) Cont.

| No. | Parameter | Unit | 17/06/14 (Dry event) | | 15/07/14 (Dry event) | | 23/07/14 (Wet event) | | 13/08/14 (Dry event) | | 18/08/14 (Wet event) | | 01/09/14 (Dry event) | | 07/09/14 (Wet event) | | 01/10/14 (Dry event) | | 15/10/14 (Wet event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) |
| 1 | Temperature | $^0$C | 11.5 | 18.2 | DNS | DNS | DNS | DNS | DNS | DNS | 10.7 | DNS | 20.3 | 21.4 | 14.6 | 17.0 | 20.9 | 18.4 | 14.4 | 15.5 |
| 2 | Electrical conductivity (EC) | uS/cm | 610 | 1196 | | | | | | | 927 | | 464 | 428 | 485 | 488 | 544 | 546 | 514 | 571 |
| 3 | Dissolved oxygen (DO) | % | 31.5 | 85.6 | | | | | | | 28.6 | | 51.5 | 62.8 | 45.9 | 55.6 | 64.9 | 58.8 | 58.7 | 57.2 |
| 4 | pH | | 6.3 | 3.9 | | | | | | | 6.0 | | 5.2 | 5.1 | 5.9 | 6.0 | 5.3 | 5.5 | 5.8 | 5.5 |
| 5 | Turbidity (NTU) | NTU | 49 | 25 | | | | | | | 40 | | 9 | 11 | 11 | 9 | 13 | 15 | 7 | 5 |
| 6 | Total suspended solids (TSS)* | mg/L | 15 | <5 | | | | | | | 57 | | 5 | 8 | <5 | <5 | 9 | 20 | 13 | 11 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | | | | | | | | | 0.08 | 0.08 | 0.06 | 0.12 |
| 9 | Arsenic (As) | mg/L | | | | | | | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 10 | Cadmium (Cd) | mg/L | | | | | | | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 11 | Chromium (Cr) | mg/L | | | | | | | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 12 | Copper (Cu) | mg/L | | | | | | | | | | | | | | | <0.001 | 0.005 | 0.001 | <0.001 |
| 13 | Iron (Fe) | mg/L | | | | | | | | | | | | | | | 1.31 | 1.16 | 2.42 | 0.86 |
| 14 | Lead (Pb) | mg/L | | | | | | | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | | | | | | | | | | | | | | | 0.116 | 0.165 | 0.201 | 0.262 |
| 16 | Mercury (Hg) | mg/L | | | | | | | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 17 | Nickel (Ni) | mg/L | | | | | | | | | | | | | | | 0.003 | 0.006 | 0.004 | 0.007 |
| 18 | Silver (Ag) | mg/L | | | | | | | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | | | | | | | | | | | | | | | 0.006 | 0.018 | 0.013 | 0.015 |
| 20 | Total Nitrogen (TN) | mg/L | 1.1 | 0.4 | | | | | | | 5 | | 1.2 | 0.9 | 1.2 | 0.7 | 0.8 | 0.7 | 1 | 0.7 |
| 21 | Total Phosphorous (TP) | mg/L | 0.08 | 0.01 | | | | | | | 0.18 | | 0.07 | 0.08 | 0.04 | 0.01 | 0.09 | 0.05 | 0.16 | 0.03 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 8 SW2 – Fernbank Creek (Chainage 4620 to 4800) Cont.

| No. | Parameter | Unit | 6/11/14 (Wet event) | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) | SW2a (DS) | SW2b (US) |
| 1 | Temperature | $^0$C | 20.7 | 28.6 | | | | | | | | | | | | | | | | |
| 2 | Electrical conductivity (EC) | uS/cm | 553 | 1220 | | | | | | | | | | | | | | | | |
| 3 | Dissolved oxygen (DO) | % | 73.7 | 70.7 | | | | | | | | | | | | | | | | |
| 4 | pH | | 5.8 | 4.8 | | | | | | | | | | | | | | | | |
| 5 | Turbidity (NTU) | NTU | 20 | 75 | | | | | | | | | | | | | | | | |
| 6 | Total suspended solids (TSS)* | mg/L | 8 | <5 | | | | | | | | | | | | | | | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.11 | 0.89 | | | | | | | | | | | | | | | | |
| 9 | Arsenic (As) | mg/L | <0.001 | <0.001 | | | | | | | | | | | | | | | | |
| 10 | Cadmium (Cd) | mg/L | <0.0001 | <0.0001 | | | | | | | | | | | | | | | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | | | | | | | | | | |
| 12 | Copper (Cu) | mg/L | <0.001 | 0.001 | | | | | | | | | | | | | | | | |
| 13 | Iron (Fe) | mg/L | 1.13 | 0.59 | | | | | | | | | | | | | | | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | | | | | | | | | | |
| 15 | Manganese (Mn) | mg/L | 0.076 | 1.77 | | | | | | | | | | | | | | | | |
| 16 | Mercury (Hg) | mg/L | <0.0001 | <0.0001 | | | | | | | | | | | | | | | | |
| 17 | Nickel (Ni) | mg/L | 0.002 | 0.012 | | | | | | | | | | | | | | | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | | | | | | | | | | |
| 19 | Zinc (Zn) | mg/L | 0.008 | 0.047 | | | | | | | | | | | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | 1.3 | 0.5 | | | | | | | | | | | | | | | | |
| 21 | Total Phosphorous (TP) | mg/L | 0.11 | 0.02 | | | | | | | | | | | | | | | | |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 9 SW3 – Hastings River north bank (Chainage 6040 to 6080)

| No. | Parameter | Unit | 14/05/13 (Dry event) | | 26/06/13 (Wet event) | | 29/07/13 (Dry event) | | 29/08/13 (Dry event) | | 16/09/13 (Wet event) | | 23/10/13 (Dry event) | | 12/11/13 (Wet event) | | 27/11/13 (Dry event) | | 17/12/13 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) |
| 1 | Temperature | $^0$C | | | 15.3 | 15.3 | | | | | | | 22.7 | 22.7 | 22.7 | 22.8 | 22.7 | 22.6 | 24.9 | 25.2 |
| 2 | Electrical conductivity (EC) | uS/cm | 30200 | 30300 | 36 | 35 | 32700 | 31800 | 3040 | 2970 | 35600 | 36100 | 47500 | 47500 | 42300 | 42300 | 27100 | 31600 | 45500 | 45600 |
| 3 | Dissolved oxygen (DO) | % | | | 78 | 82 | | | | | | | 85 | 85 | 74.7 | 126.1 | 81 | 115.2 | 80.7 | 100.2 |
| 4 | pH | | 7.8 | 7.9 | 7.9 | 7.7 | 7.9 | 7.9 | 7.7 | 7.8 | 7.7 | 7.7 | 7.9 | 7.9 | 7.7 | 7.7 | 7.1 | 7.5 | 7.8 | 7.9 |
| 5 | Turbidity (NTU) | NTU | 3 | 9 | 58 | 1000 | 3 | 12 | 4 | 9 | 2 | 6 | 4 | 4 | 91 | 100 | 9 | 4 | 6 | 5 |
| 6 | Total suspended solids (TSS)* | mg/L | 5 | 4 | 98 | 573 | 5 | 9 | 5 | 16 | 20 | 8 | 6 | 6 | 200 | 195 | 21 | 70 | 8 | 9 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.09 | 0.14 | | | | | | | 0.24 | 0.45 | | | | | | | | |
| 9 | Arsenic (As) | mg/L | 0.001 | 0.001 | | | | | | | 0.001 | 0.002 | | | | | | | | |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 12 | Copper (Cu) | mg/L | <0.001 | <0.001 | | | | | | | 0.001 | 0.002 | | | | | | | | |
| 13 | Iron (Fe) | mg/L | 0.141 | 0.198 | | | | | | | 0.366 | 0.555 | | | | | | | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 15 | Manganese (Mn) | mg/L | 0.042 | 0.079 | | | | | | | 0.036 | 0.043 | | | | | | | | |
| 16 | Mercury (Hg) | mg/L | <0.0003 | <0.0003 | | | | | | | <0.00001 | <0.00001 | | | | | | | | |
| 17 | Nickel (Ni) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | 0.001 | | | | | | | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 19 | Zinc (Zn) | mg/L | <0.005 | <0.005 | | | | | | | 0.005 | 0.021 | | | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | | | 0.34 | 1.5 | 0.2 | 0.29 | 0.14 | 0.2 | 0.14 | 0.23 | 0.21 | 0.2 | 1.4 | 0.7 | 0.39 | 0.26 | 0.28 | 0.31 |
| 21 | Total Phosphorous (TP) | mg/L | | | 0.06 | 0.26 | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.21 | 0.09 | 0.02 | 0.02 | 0.018 | 0.015 |

Table 10 SW3 – Hastings River north bank (Chainage 6040 to 6080) cont.

| No. | Parameter | Unit | 28/01/14 (Dry event) | | 19/02/14 (Wet event) | | 03/03/14 (Wet event) | | 12/03/14 (Dry event) | | (10/04/14 Dry event) | | 29/04/14 (Wet event) | | 29/05/14 (Dry event) | | 17/06/14 (Dry event) | | 15/07/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) |
| 1 | Temperature | $^0$C | 25.1 | 25.3 | 26.1 | 26.7 | | | 26.2 | 26.7 | 25.1 | 24.9 | 22.5 | 22.5 | 20.5 | 20.6 | 16.7 | 16.9 | 15.4 | 15.3 |
| 2 | Electrical conductivity (EC) | uS/cm | 48900 | 48900 | 50800 | 50600 | 10700 | 10700 | 29400 | 29900 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 |
| 3 | Dissolved oxygen (DO) | % | 131.2 | 119 | 60.7 | 75.4 | | | 101.8 | 93.2 | 72.6 | 70.8 | 70.4 | 69.3 | 69.6 | 68.5 | 70.8 | 72.6 | 69.8 | 70.1 |
| 4 | pH | | 7.6 | 7.7 | 7.8 | 7.8 | 7.3 | 7.3 | 7.3 | 8.0 | 7.6 | 7.7 | 7.6 | 7.7 | 7.6 | 7.8 | 7.3 | 7.9 | 8.0 | 8.1 |
| 5 | Turbidity (NTU) | NTU | 25 | 28 | 10 | 15 | 4 | 6 | 11 | 26 | 36 | 59 | 3 | 4 | 9 | 10 | 3 | 49 | 53 | 14 |
| 6 | Total suspended solids (TSS)* | mg/L | 45 | 53 | 25 | 28 | 5 | 5 | | | 24 | 14 | <5 | <5 | 14 | 10 | 6 | 20 | 53 | 15 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 1.74 | 1.84 | | | | | | | 0.02 | 0.01 | <0.10 | <0.10 | | | | | <0.10 | <0.10 |
| 9 | Arsenic (As) | mg/L | 0.002 | 0.002 | | | | | | | 0.002 | 0.001 | <0.010 | <0.010 | | | | | <0.010 | <0.010 |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | | | | | <0.0001 | <0.0001 | <0.0010 | <0.0010 | | | | | <0.0010 | <0.0010 |
| 11 | Chromium (Cr) | mg/L | 0.001 | 0.001 | | | | | | | <0.001 | <0.001 | <0.010 | <0.010 | | | | | <0.010 | <0.010 |
| 12 | Copper (Cu) | mg/L | 0.002 | 0.002 | | | | | | | <0.001 | <0.001 | <0.010 | <0.010 | | | | | <0.010 | <0.010 |
| 13 | Iron (Fe) | mg/L | 2 | 2.6 | | | | | | | <0.05 | <0.05 | <0.50 | <0.50 | | | | | <0.50 | <0.50 |
| 14 | Lead (Pb) | mg/L | <0.001 | 0.001 | | | | | | | <0.001 | <0.001 | <0.010 | <0.010 | | | | | <0.010 | <0.010 |
| 15 | Manganese (Mn) | mg/L | 0.076 | 0.09 | | | | | | | 0.026 | 0.023 | 0.04 | 0.031 | | | | | 0.015 | 0.013 |
| 16 | Mercury (Hg) | mg/L | <0.00001 | <0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 |
| 17 | Nickel (Ni) | mg/L | 0.002 | 0.002 | | | | | | | <0.001 | <0.001 | <0.010 | <0.010 | | | | | <0.010 | <0.010 |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.010 | <0.010 | | | | | <0.010 | <0.010 |
| 19 | Zinc (Zn) | mg/L | <0.005 | 0.008 | | | | | | | <0.005 | <0.005 | <0.050 | <0.050 | | | | | <0.050 | <0.050 |
| 20 | Total Nitrogen (TN) | mg/L | 0.3 | 0.31 | 0.25 | 0.29 | 0.23 | 0.24 | | | 0.4 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.5 | 0.6 | 8.2 | <0.5 |
| 21 | Total Phosphorous (TP) | mg/L | 0.04 | 0.05 | 0.04 | 0.03 | 0.01 | 0.012 | | | 0.05 | 0.02 | <0.01 | <0.01 | 0.02 | <0.01 | <0.05 | 0.13 | 0.18 | <0.05 |

Table 11 SW3 – Hastings River north bank (Chainage 6040 to 6080) cont.

| No. | Parameter | Unit | 24/07/14 (Wet event) | | 13/08/14 (Dry event) | | 18/08/14 (Wet event) | | 01/09/14 (Dry event) | | 07/09/14 (Wet event) | | 01/10/14 (Dry event) | | 15/10/14 (Wet event) | | 6/11/14 (Wet event) | | 20/11/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) | SW3a (US) | SW3b (DS) |
| 1 | Temperature | $^0$C | 15.1 | 14.7 | 16.1 | 16.1 | 15.1 | 15.1 | 18.6 | 19.0 | 16.9 | 17.1 | 23.2 | 23.2 | 21.7 | 21.6 | 24.6 | 24.9 | 26.6 | 26.7 |
| 2 | Electrical conductivity (EC) | uS/cm | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 |
| 3 | Dissolved oxygen (DO) | % | 72.8 | 71.2 | 64.1 | 64.3 | 57.3 | 58.2 | 64.3 | 63.1 | 62.3 | 63.2 | 102.2 | 101.7 | 90.2 | 90.2 | 103.8 | 99.4 | 97.8 | 96.7 |
| 4 | pH | | 7.9 | 8.1 | 7.8 | 8.1 | 7.4 | 7.9 | 6.4 | 7.0 | 7.2 | 7.7 | 7.0 | 7.4 | 7.2 | 7.6 | 7.4 | 7.6 | 7.6 | 7.6 |
| 5 | Turbidity (NTU) | NTU | 5 | 4 | 11 | 15 | 3 | 3 | 29 | 30 | 21 | 22 | 122 | 131 | 40 | 33 | 41 | 53 | 15 | 17 |
| 6 | Total suspended solids (TSS)* | mg/L | <5 | <5 | 7 | 8 | <5 | <5 | <5 | 16 | <5 | 12 | 56 | 105 | <5 | 16 | 32 | 21 | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | <0.01 | <0.01 | | | | | | | | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | | |
| 9 | Arsenic (As) | mg/L | 0.003 | 0.002 | | | | | | | | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | |
| 10 | Cadmium (Cd) | mg/L | <0.0001 | <0.0001 | | | | | | | | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | |
| 12 | Copper (Cu) | mg/L | <0.001 | 0.001 | | | | | | | | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | |
| 13 | Iron (Fe) | mg/L | <0.05 | <0.05 | | | | | | | | | <0.50 | <0.50 | <0.50 | <0.50 | <0.10 | <0.10 | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | |
| 15 | Manganese (Mn) | mg/L | 0.018 | 0.018 | | | | | | | | | 0.032 | 0.033 | 0.045 | 0.044 | 0.019 | 0.019 | | |
| 16 | Mercury (Hg) | mg/L | <0.0001 | <0.0001 | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 17 | Nickel (Ni) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | | |
| 19 | Zinc (Zn) | mg/L | <0.005 | <0.005 | | | | | | | | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | | |
| 20 | Total Nitrogen (TN) | mg/L | <0.5 | <0.5 | <0.5 | <0.5 | 0.3 | <0.2 | 0.8 | 0.8 | 0.5 | 0.2 | <0.2 | 0.3 | <0.2 | 0.3 | <0.5 | <0.5 | | |
| 21 | Total Phosphorous (TP) | mg/L | <0.5 | <0.5 | <0.05 | <0.05 | <0.02 | <0.02 | 0.03 | 0.04 | <0.02 | <0.02 | 0.1 | 0.08 | 0.08 | 0.06 | <0.05 | <0.05 | | |

Table 12 SW5 – Unnamed tributary of the Wilson River (Chainage 15820)

| No. | Parameter | Unit | 06/03/13 (Wet event) SW5b (DS) | 24/04/13 (Dry event) SW5b (DS) | 14/05/13 (Dry event) SW5b (DS) | 26/06/13 (Wet event) SW5b (DS) | 29/07/13 (Dry event) SW5b (DS) | 29/08/13 (Dry event) SW5b (DS) | 17/09/13 (Wet event) SW5b (DS) | 23/10/13 (Dry event) SW5b (DS) | 12/11/13 (Wet event) SW5b (DS) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Temperature | $^0$C | DNS | DNS | | 14.5 | | | | DNS | 27.2 |
| 2 | Electrical conductivity (EC) | uS/cm | | | 381 | 603 | 365 | 464 | 406 | | 1070 |
| 3 | Dissolved oxygen (DO) | % | | | | 50 | | | | | 92.6 |
| 4 | pH | | | | 5.6 | 4.5 | 5.7 | 4.7 | 7.2 | | 4.1 |
| 5 | Turbidity (NTU) | NTU | | | 48 | 4 | 210 | 11 | 650 | | 31 |
| 6 | Total suspended solids (TSS)* | mg/L | | | 361 | 17 | 418 | 14 | 1182 | | 19 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | 3.81 | | | | 1.09 | | |
| 9 | Arsenic (As) | mg/L | | | 0.005 | | | | 0.011 | | |
| 10 | Cadmium (Cd) | mg/L | | | <0.001 | | | | <0.001 | | |
| 11 | Chromium (Cr) | mg/L | | | 0.003 | | | | 0.001 | | |
| 12 | Copper (Cu) | mg/L | | | 0.007 | | | | 0.004 | | |
| 13 | Iron (Fe) | mg/L | | | 17.1 | | | | 6.59 | | |
| 14 | Lead (Pb) | mg/L | | | 0.003 | | | | 0.001 | | |
| 15 | Manganese (Mn) | mg/L | | | 1.75 | | | | 0.647 | | |
| 16 | Mercury (Hg) | mg/L | | | <0.0003 | | | | <0.00001 | | |
| 17 | Nickel (Ni) | mg/L | | | 0.004 | | | | 0.002 | | |
| 18 | Silver (Ag) | mg/L | | | <0.001 | | | | <0.001 | | |
| 19 | Zinc (Zn) | mg/L | | | 0.044 | | | | 0.021 | | |
| 20 | Total Nitrogen (TN) | mg/L | | | | 0.8 | 3.7 | 1.1 | 14.2 | | 5.3 |
| 21 | Total Phosphorous (TP) | mg/L | | | | 0.04 | 0.49 | 0.03 | 2.42 | | 0.07 |

# DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 13 SW5 – Unnamed tributary of the Wilson River (Chainage 15820) cont.

| No. | Parameter | Unit | 27/11/13 (Dry event) SW5b (DS) | 17/12/13 (Dry event) SW5b (DS) | 28/01/14 (Dry event) SW5b (DS) | 19/02/14 (Wet event) SW5b (DS) | 03/03/14 (Dry event) SW5b (DS) | 12/03/14 (Dry event) SW5b (DS) | 10/04/14 (Dry event) SW5b (DS) | 29/04/14 (Wet event) SW5b (DS) | 29/05/14 (Dry event) SW5b (DS) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Temperature | $^0$C | DNS | DNS | DNS | DNS | DNS | 25.4 | 27.3 | 26.8 | 24.8 |
| 2 | Electrical conductivity (EC) | uS/cm | | | | | | 1700 | 949 | 786 | 1001 |
| 3 | Dissolved oxygen (DO) | % | | | | | | 61.7 | 82.9 | 97.8 | 143.2 |
| 4 | pH | | | | | | | 5.5 | 3.5 | 4.5 | 5.9 |
| 5 | Turbidity (NTU) | NTU | | | | | | 23 | 14 | 19 | 434 |
| 6 | Total suspended solids (TSS)* | mg/L | | | | | | | <5 | 10 | 224 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | 2.26 | 0.18 | |
| 9 | Arsenic (As) | mg/L | | | | | | | <0.001 | 0.001 | |
| 10 | Cadmium (Cd) | mg/L | | | | | | | 0.0003 | <0.0001 | |
| 11 | Chromium (Cr) | mg/L | | | | | | | <0.001 | <0.001 | |
| 12 | Copper (Cu) | mg/L | | | | | | | 0.002 | 0.002 | |
| 13 | Iron (Fe) | mg/L | | | | | | | 0.97 | 0.1 | |
| 14 | Lead (Pb) | mg/L | | | | | | | <0.001 | <0.001 | |
| 15 | Manganese (Mn) | mg/L | | | | | | | 4.44 | 2.22 | |
| 16 | Mercury (Hg) | mg/L | | | | | | | <0.0001 | <0.0001 | |
| 17 | Nickel (Ni) | mg/L | | | | | | | 0.027 | 0.006 | |
| 18 | Silver (Ag) | mg/L | | | | | | | <0.001 | <0.001 | |
| 19 | Zinc (Zn) | mg/L | | | | | | | 0.156 | 0.042 | |
| 20 | Total Nitrogen (TN) | mg/L | | | | | | | 0.4 | 0.7 | 8.5 |
| 21 | Total Phosphorous (TP) | mg/L | | | | | | | 0.02 | 0.05 | 0.69 |

# DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample, or access unable to be achieved

Table 14 SW5 – Unnamed tributary of the Wilson River (Chainage 15820) cont.

| No. | Parameter | Unit | 17/06/14 (Dry event) SW5b (DS) | 15/07/14 Dry event) SW5b (DS) | 24/07/14 (Wet event) SW5b (DS) | 13/08/14 (Dry event) SW5b (DS) | 18/08/14 (Wet event) SW5b (DS) | 01/09/14 (Dry event) SW5b (DS) | 07/09/14 (Wet event) SW5b (DS) | 01/10/14 (Dry event) SW5b (DS) | 15/10/14 (Wet event) SW5b (DS) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Temperature | $^0$C | DNS | DNS | DNS | DNS | 12.8 | 25.3 | 17.7 | 26.7 | 20.4 |
| 2 | Electrical conductivity (EC) | uS/cm | | | | | 2101 | 550 | 614 | 959 | 1134 |
| 3 | Dissolved oxygen (DO) | % | | | | | 43.8 | 70.2 | 69.9 | 114.5 | 105.6 |
| 4 | pH | | | | | | 4.9 | 4.9 | 5.0 | 4.0 | 5.2 |
| 5 | Turbidity (NTU) | NTU | | | | | 12 | 3 | 4 | 3 | 51 |
| 6 | Total suspended solids (TSS)* | mg/L | | | | | 15 | 8 | <5 | <5 | 44 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | | 1.54 | 0.91 |
| 9 | Arsenic (As) | mg/L | | | | | | | | <0.001 | <0.001 |
| 10 | Cadmium (Cd) | mg/L | | | | | | | | 0.0002 | 0.0002 |
| 11 | Chromium (Cr) | mg/L | | | | | | | | <0.001 | <0.001 |
| 12 | Copper (Cu) | mg/L | | | | | | | | 0.003 | 0.002 |
| 13 | Iron (Fe) | mg/L | | | | | | | | 0.26 | 1.35 |
| 14 | Lead (Pb) | mg/L | | | | | | | | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | | | | | | | | 2.96 | 3.17 |
| 16 | Mercury (Hg) | mg/L | | | | | | | | <0.0001 | <0.0001 |
| 17 | Nickel (Ni) | mg/L | | | | | | | | 0.017 | 0.013 |
| 18 | Silver (Ag) | mg/L | | | | | | | | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | | | | | | | | 0.107 | 0.102 |
| 20 | Total Nitrogen (TN) | mg/L | | | | | 12.3 | 0.5 | 0.3 | 0.2 | 3.6 |
| 21 | Total Phosphorous (TP) | mg/L | | | | | 0.07 | 0.02 | 0.02 | <0.02 | 0.16 |

# DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 15 SW5 – Unnamed tributary of the Wilson River (Chainage 15820) cont.

| No. | Parameter | Unit | 6/11/14 (Wet event) SW5b (DS) | SW5b (DS) | SW5b (DS) | SW5b (DS) | SW5b (DS) | SW5b (DS) | SW5b (DS) | SW5b (DS) | SW5b (DS) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Temperature | $^0$C | DNS | | | | | | | | |
| 2 | Electrical conductivity (EC) | uS/cm | | | | | | | | | |
| 3 | Dissolved oxygen (DO) | % | | | | | | | | | |
| 4 | pH | | | | | | | | | | |
| 5 | Turbidity (NTU) | NTU | | | | | | | | | |
| 6 | Total suspended solids (TSS)* | mg/L | | | | | | | | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | | | |
| 9 | Arsenic (As) | mg/L | | | | | | | | | |
| 10 | Cadmium (Cd) | mg/L | | | | | | | | | |
| 11 | Chromium (Cr) | mg/L | | | | | | | | | |
| 12 | Copper (Cu) | mg/L | | | | | | | | | |
| 13 | Iron (Fe) | mg/L | | | | | | | | | |
| 14 | Lead (Pb) | mg/L | | | | | | | | | |
| 15 | Manganese (Mn) | mg/L | | | | | | | | | |
| 16 | Mercury (Hg) | mg/L | | | | | | | | | |
| 17 | Nickel (Ni) | mg/L | | | | | | | | | |
| 18 | Silver (Ag) | mg/L | | | | | | | | | |
| 19 | Zinc (Zn) | mg/L | | | | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | | | | | | | | | |
| 21 | Total Phosphorous (TP) | mg/L | | | | | | | | | |

# DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 16 SW6 – Wilson River south bank (Chainage 16460 to 16600)

| No. | Parameter | Unit | 14/05/13 (Dry event) | | 26/06/13 (Wet event) | | 29/07/13 (Dry event) | | 29/08/13 (Dry event) | | 17/09/13 (Dry event) | | 23/10/13 (Dry event) | | 12/11/13 Wet event) | | 27/11/13 (Dry event) | | 17/12/13 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) |
| 1 | Temperature | $^0$C | 14.8 | | | | DNS | | | | | | 23.4 | 22.9 | 22.8 | 22.6 | 23.4 | 23.5 | 24.4 | 24.7 |
| 2 | Electrical conductivity (EC) | uS/cm | 1750 | 1740 | 629 | 553 | | 679 | 7820 | 8180 | 11700 | 11800 | 20000 | 20000 | 21000 | 21000 | 12900 | 12800 | 12100 | 12100 |
| 3 | Dissolved oxygen (DO) | % | 58 | | | | | | | | | | 75 | 77 | 102 | 67.8 | 118 | 115.2 | 81 | 73.6 |
| 4 | pH | | 6.8 | 6.7 | 6.6 | 6.7 | | 6.9 | 7.1 | 7.0 | 7.1 | 7.1 | 7.3 | 7.2 | 7.2 | 7.2 | 7.3 | 7.3 | 7.1 | 7.1 |
| 5 | Turbidity (NTU) | NTU | 13 | 13 | 10 | 12 | | 13 | 12 | 22 | 4 | 11 | 15 | 8 | 10 | 71 | 7 | 4 | 3 | 3 |
| 6 | Total suspended solids (TSS)* | mg/L | 14 | 14 | 11 | 14 | | 12 | 15 | 32 | <4 | 15 | 7 | 8 | 18 | 128 | 27 | 4 | 6 | 4 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.5 | 0.39 | | | | | | | 0.58 | 0.7 | | | | | | | | |
| 9 | Arsenic (As) | mg/L | 0.001 | 0.001 | | | | | | | 0.001 | 0.001 | | | | | | | | |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 12 | Copper (Cu) | mg/L | 0.001 | 0.002 | | | | | | | 0.001 | 0.001 | | | | | | | | |
| 13 | Iron (Fe) | mg/L | 1.28 | 1.27 | | | | | | | 1.33 | 1.46 | | | | | | | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 15 | Manganese (Mn) | mg/L | 0.095 | 0.097 | | | | | | | 0.251 | 0.254 | | | | | | | | |
| 16 | Mercury (Hg) | mg/L | <0.0003 | <0.0003 | | | | | | | <0.00001 | <0.00001 | | | | | | | | |
| 17 | Nickel (Ni) | mg/L | <0.001 | <0.001 | | | | | | | 0.001 | 0.001 | | | | | | | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 19 | Zinc (Zn) | mg/L | 0.015 | 0.017 | | | | | | | 0.012 | 0.012 | | | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | | | 0.37 | 0.43 | | 0.37 | 0.25 | 0.39 | 0.23 | 0.26 | 0.28 | 0.25 | 0.33 | 0.8 | 0.26 | 0.3 | 0.27 | 0.26 |
| 21 | Total Phosphorous (TP) | mg/L | | | 0.02 | 0.04 | | 0.03 | 0.01 | 0.04 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.1 | 0.02 | 0.02 | 0.015 | 0.015 |

Table 17 SW6 – Wilson River south bank (Chainage 16460 to 16600) cont.

| No. | Parameter | Unit | 28/01/14 (Dry event) | | 19/02/14 (Wet event) | | 03/03/14 (Dry event) | | 12/03/14 (Dry event) | | 10/04/14 (Dry event) | | 29/04/14 (Wet event) | | 29/05/14 (Dry event) | | 17/06/14 (Dry event) | | 15/07/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) |
| 1 | Temperature | $^0$C | 24.6 | 25.1 | 28 | 27.5 | | | 25.4 | 25.4 | 25.2 | 25.5 | 23.1 | 23.3 | 19.0 | 19.1 | 16.1 | 16.7 | 13.4 | 13.5 |
| 2 | Electrical conductivity (EC) | uS/cm | 24900 | 24900 | 28000 | 28000 | 10700 | 10600 | 14900 | 14900 | 1218 | 1349 | 2957 | 3134 | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 |
| 3 | Dissolved oxygen (DO) | % | 96 | 80 | 118 | 108 | | | 82 | 82 | 60.1 | 64.5 | 63.9 | 67.1 | 62.8 | 66.6 | 64.4 | 70.8 | 70.3 | 69.1 |
| 4 | pH | | 7.3 | 7.1 | 7.3 | 7.4 | 7.3 | 7.3 | 7.8 | 7.8 | 6.6 | 6.7 | 7.0 | 6.9 | 7.1 | 7.0 | 7.3 | 7.3 | 7.3 | 7.2 |
| 5 | Turbidity (NTU) | NTU | 5 | 2 | 8 | 6 | 4 | 5 | 0 | 0 | 35 | 64 | 4 | 19 | 2 | 4 | 2 | 3 | 4 | 4 |
| 6 | Total suspended solids (TSS)* | mg/L | 37 | 4 | 11 | 9 | 4 | 15 | | | 30 | 29 | 5 | 10 | <5 | <5 | <5 | <5 | <5 | <5 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.15 | 0.14 | | | | | | | 0.27 | 0.28 | 0.06 | 0.06 | | | | | 0.01 | 0.02 |
| 9 | Arsenic (As) | mg/L | 0.001 | 0.001 | | | | | | | 0.001 | 0.002 | 0.001 | 0.001 | | | | | <0.001 | 0.002 |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.002 | 0.002 |
| 12 | Copper (Cu) | mg/L | 0.001 | 0.002 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.001 | 0.001 |
| 13 | Iron (Fe) | mg/L | 0.34 | 0.26 | | | | | | | 0.38 | 0.37 | 0.3 | 0.29 | | | | | <0.05 | <0.05 |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | 0.128 | 0.131 | | | | | | | 0.034 | 0.029 | 0.026 | 0.026 | | | | | 0.034 | 0.036 |
| 16 | Mercury (Hg) | mg/L | <0.00001 | <0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 |
| 17 | Nickel (Ni) | mg/L | 0.001 | 0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | 0.001 |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | 0.023 | 0.023 | | | | | | | 0.005 | <0.005 | <0.005 | <0.005 | | | | | 0.006 | 0.007 |
| 20 | Total Nitrogen (TN) | mg/L | 0.49 | 0.3 | 0.34 | 0.31 | <0.05 | 0.25 | | | 0.7 | 0.7 | 0.4 | 0.4 | 0.2 | 0.2 | 0.4 | 0.2 | <0.2 | <0.2 |
| 21 | Total Phosphorous (TP) | mg/L | 0.02 | 0.02 | 0.02 | 0.02 | <0.002 | 0.012 | | | 0.05 | 0.04 | <0.01 | <0.01 | 0.1 | 0.02 | 0.04 | <0.02 | <0.02 | <0.02 |

Table 18 SW6 – Wilson River south bank (Chainage 16460 to 16600) cont

| No. | Parameter | Unit | 24/07/14 (Wet event) | | 13/08/14 (Dry event) | | 18/08/14 (Wet event) | | 01/09/14 (Dry event) | | 07/09/14 (Wet event) | | 01/10/14 (Dry event) | | 15/10/14 (Wet event) | | 6/11/14 (Wet event) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) | SW6a (US) | SW6b (DS) |
| 1 | Temperature | $^0$C | 13.7 | 13.9 | 15.6 | 15.8 | 14.9 | 15.4 | 17.4 | 17.6 | 15.6 | 15.5 | 21.8 | 21.9 | 21.3 | 21.8 | 24.9 | 24.7 | | |
| 2 | Electrical conductivity (EC) | uS/cm | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 2452 | 3056 | 3244 | 3317 | 3401 | 3516 | 8000 | 8000 | 8000 | 8000 | | |
| 3 | Dissolved oxygen (DO) | % | 70.8 | 69.9 | 63.1 | 61.9 | 59.1 | 58.2 | 62.1 | 59.2 | 53.4 | 56.8 | 95.9 | 96.4 | 86.5 | 89 | 87.3 | 83 | | |
| 4 | pH | | 7.3 | 7.2 | 7.7 | 7.7 | 6.8 | 7.3 | 6.1 | 6.5 | 6.0 | 6.7 | 6.1 | 6.5 | 6.0 | 6.5 | 7.5 | 7.6 | | |
| 5 | Turbidity (NTU) | NTU | 2 | 2 | 2 | 3 | 2 | 3 | 16 | 15 | 4 | 6 | 28 | 19 | 14 | 22 | 37 | 6 | | |
| 6 | Total suspended solids (TSS)* | mg/L | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | 14 | 20 | 22 | 8 | <5 | <5 | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | <0.01 | <0.01 | | | | | | | | | 0.05 | 0.04 | 0.01 | 0.02 | 0.01 | <0.01 | | |
| 9 | Arsenic (As) | mg/L | <0.001 | 0.002 | | | | | | | | | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | | |
| 10 | Cadmium (Cd) | mg/L | <0.0001 | <0.0001 | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 12 | Copper (Cu) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | 0.001 | 0.002 | <0.001 | <0.001 | <0.001 | | |
| 13 | Iron (Fe) | mg/L | <0.05 | <0.05 | | | | | | | | | 0.14 | 0.14 | 0.06 | 0.06 | <0.05 | <0.05 | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 15 | Manganese (Mn) | mg/L | 0.028 | 0.029 | | | | | | | | | 0.044 | 0.041 | 0.08 | 0.074 | 0.072 | 0.069 | | |
| 16 | Mercury (Hg) | mg/L | <0.0001 | <0.0001 | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 17 | Nickel (Ni) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 19 | Zinc (Zn) | mg/L | <0.005 | <0.005 | | | | | | | | | <0.005 | <0.005 | 0.009 | 0.007 | <0.005 | <0.005 | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.3 | 0.2 | <0.2 | <0.2 | 0.4 | <0.2 | 0.9 | 0.8 | 0.6 | 0.6 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | | |
| 21 | Total Phosphorous (TP) | mg/L | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.01 | 0.02 | <0.01 | <0.01 | 0.01 | 0.02 | 0.06 | 0.02 | 0.02 | <0.01 | | |

Table 19 SW6 – Wilson River north bank (Chainage 16830 to 16840)

| No. | Parameter | Unit | 16/05/13 (Dry event) | | 26/06/13 (Wet event) | | 30/07/13 (Dry event) | | 29/08/13 (Dry event) | | 17/09/13 (Dry event) | | 23/10/13 (Dry event) | | 12/11/13 (Wet event) | | 27/11/13 (Dry event) | | 17/12/13 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) |
| 1 | Temperature | $^0$C | | | 14.5 | 14.1 | | | | | | | 23.4 | 22.7 | 22.5 | 22.7 | 22.9 | 22.5 | 23.6 | 23.2 |
| 2 | Electrical conductivity (EC) | uS/cm | 1530 | 1470 | 478 | 499 | 564 | 554 | 7490 | 7500 | 12100 | 12400 | 19700 | 19700 | 21600 | 21500 | 12700 | 13000 | 12100 | 12000 |
| 3 | Dissolved oxygen (DO) | % | | | 63 | 64 | | | | | | | 82 | 92 | 58.7 | 92 | 105 | 123 | 77.8 | 102 |
| 4 | pH | | 7.2 | 6.9 | 6.9 | 6.8 | 6.9 | 6.9 | 7.1 | 110 | 7.0 | 5 | 7.3 | 7.2 | 7.2 | 7.2 | 7.2 | 7.1 | 7.0 | 7.1 |
| 5 | Turbidity (NTU) | NTU | 8 | 9 | 14 | 9 | 7 | 8 | 6 | 27 | 5 | 6 | 5 | 3 | 10 | 5 | 5 | 10 | 3 | 3 |
| 6 | Total suspended solids (TSS)* | mg/L | 7 | 10 | 11 | 11 | 9 | 9 | 27 | | 8 | | 6 | 4 | 23 | 11 | 8 | 62 | 3 | 7 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | 0.1 | 0.33 | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.35 | 0.25 | | | | | | | <0.001 | 0.002 | | | | | | | | |
| 9 | Arsenic (As) | mg/L | 0.001 | 0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | 0.002 | | | | | | | | |
| 12 | Copper (Cu) | mg/L | <0.001 | <0.001 | | | | | | | 0.293 | 0.49 | | | | | | | | |
| 13 | Iron (Fe) | mg/L | 0.933 | 0.728 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | 0.227 | 0.285 | | | | | | | | |
| 15 | Manganese (Mn) | mg/L | 0.071 | 0.067 | | | | | | | <0.00001 | <0.00001 | | | | | | | | |
| 16 | Mercury (Hg) | mg/L | <0.0003 | <0.0003 | | | | | | | <0.001 | 0.002 | | | | | | | | |
| 17 | Nickel (Ni) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | <0.005 | 0.011 | | | | | | | | |
| 19 | Zinc (Zn) | mg/L | 0.016 | 0.011 | | | | | 0.32 | 0.62 | 0.21 | 0.21 | 0.3 | 0.21 | 0.32 | 0.3 | 0.27 | 0.28 | 0.29 | 0.27 |
| 20 | Total Nitrogen (TN) | mg/L | | | 0.38 | 0.4 | 0.24 | 0.37 | 0.02 | 0.09 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.014 | 0.014 |
| 21 | Total Phosphorous (TP) | mg/L | | | 0.03 | 0.02 | 0.02 | 0.02 | 7490 | 7500 | 12100 | 12400 | 19700 | 19700 | 21600 | 21500 | 12700 | 13000 | 12100 | 12000 |

Table 20 SW6 – Wilson River north bank (Chainage 16830 to 16840) cont.

| No. | Parameter | Unit | 28/01/14 (Dry event) | | 19/02/14 (Wet event) | | 03/03/14 (Dry event) | | 12/03/14 (Dry event) | | 10/04/14 (Dry event) | | 29/04/14 (Wet event) | | 29/05/14 (Dry event) | | 17/06/14 (Dry event) | | 15/07/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) |
| 1 | Temperature | $^0$C | 24.4 | 24.4 | 25.9 | 26.4 | | | 23.9 | 24.4 | 24.5 | 24.6 | 22.7 | 21.9 | 18.3 | 18.2 | 15.5 | 15.5 | 13.3 | 13.1 |
| 2 | Electrical conductivity (EC) | uS/cm | 25100 | 25200 | 28100 | 28000 | 10700 | 10600 | 13600 | 13700 | 1192 | 1205 | 2976 | 2967 | 8000 | 8000 | DNS | DNS | 8000 | 8000 |
| 3 | Dissolved oxygen (DO) | % | 96.6 | 102.6 | 88.3 | 70.2 | | | 55.5 | 80.4 | 56.1 | 57.5 | 58.5 | 54.9 | 60.6 | 59.3 | 63.5 | 60.3 | 67.9 | 66.9 |
| 4 | pH | | 7.2 | 7.1 | 7.3 | 7.3 | 7.3 | 7.2 | 7.3 | 7.7 | 6.5 | 6.5 | 6.9 | 6.9 | 7.0 | 6.9 | 7.2 | 7.0 | 7.1 | 6.9 |
| 5 | Turbidity (NTU) | NTU | 3 | 3 | 3 | 5 | 4 | 6 | 1 | 1 | 45 | 29 | 3 | 3 | 2 | 4 | 3 | 6 | 3 | 3 |
| 6 | Total suspended solids (TSS)* | mg/L | 12 | 5 | 3 | 9 | 5 | 8 | | | 34 | 24 | 6 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.15 | 0.08 | | | | | | | 0.23 | 0.28 | 0.06 | 0.04 | | | | | <0.01 | 0.01 |
| 9 | Arsenic (As) | mg/L | 0.001 | 0.001 | | | | | | | 0.001 | <0.001 | 0.002 | 0.001 | | | | | 0.002 | 0.001 |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.002 | 0.002 |
| 12 | Copper (Cu) | mg/L | <0.001 | <0.001 | | | | | | | 0.002 | 0.001 | 0.003 | <0.001 | | | | | 0.002 | 0.001 |
| 13 | Iron (Fe) | mg/L | 0.32 | 0.2 | | | | | | | 0.32 | 0.32 | 0.28 | 0.27 | | | | | <0.05 | <0.05 |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | 0.136 | 0.13 | | | | | | | 0.034 | 0.04 | 0.027 | 0.026 | | | | | 0.034 | 0.034 |
| 16 | Mercury (Hg) | mg/L | <0.00001 | <0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 |
| 17 | Nickel (Ni) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.002 | <0.001 |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | 0.007 | <0.005 | | | | | | | 0.006 | <0.005 | 0.007 | <0.005 | | | | | <0.005 | <0.005 |
| 20 | Total Nitrogen (TN) | mg/L | 0.34 | 0.3 | 0.31 | 0.32 | 0.25 | 0.28 | | | 0.7 | 0.7 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | <0.2 | <0.2 | <0.2 |
| 21 | Total Phosphorous (TP) | mg/L | 0.02 | 0.02 | 0.02 | 0.02 | 0.011 | 0.015 | | | 0.4 | 0.03 | <0.01 | <0.01 | 0.01 | 0.01 | <0.02 | 0.12 | <0.02 | <0.02 |

Table 21 SW6 – Wilson River north bank (Chainage 16830 to 16840) cont

| No. | Parameter | Unit | 24/07/14 (Wet event) | | 13/08/14 (Dry event) | | 18/08/14 (Wet event) | | 01/09/14 (Dry event) | | 07/09/14 (Wet event) | | 01/10/14 (Dry event) | | 15/10/14 (Wet event) | | 6/11/14 (Wet event) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) | SW6c (US) | SW6d (DS) |
| 1 | Temperature | $^0$C | 13.2 | 13.1 | 15.6 | 15.5 | 14.6 | 14.5 | 16.5 | 16.5 | 16.0 | 16.1 | 21.7 | 21.5 | 21.3 | 21.6 | 25.8 | 25.7 | | |
| 2 | Electrical conductivity (EC) | uS/cm | 8000 | 8000 | 8000 | 8000 | 8000 | 8000 | 3140 | 3280 | 3231 | 3217 | 3582 | 3600 | 7845 | 7851 | 8000 | 8000 | | |
| 3 | Dissolved oxygen (DO) | % | 68.4 | 69.4 | 63.4 | 62.5 | 59.6 | 59.7 | 58.4 | 56.8 | 56.9 | 57.3 | 96.2 | 95.7 | 87.8 | 88.9 | 84 | 85.2 | | |
| 4 | pH | | 7.2 | 6.9 | 7.5 | 7.6 | 7.5 | 7.5 | 7.0 | 7.0 | 7.0 | 7.1 | 7.0 | 7.0 | 7.0 | 7.2 | 6.8 | 7.2 | | |
| 5 | Turbidity (NTU) | NTU | 2 | 2 | 3 | 2 | 3 | 2 | 14 | 15 | 6 | 6 | 8 | 8 | 115 | 98 | 7 | 6 | | |
| 6 | Total suspended solids (TSS)* | mg/L | <5 | <5 | <5 | <5 | <5 | <5 | 5 | <5 | <5 | <5 | 6 | <5 | 78 | 136 | <5 | <5 | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | <0.01 | <0.01 | | | | | | | | | 0.04 | 0.06 | 0.02 | 0.02 | <0.01 | <0.01 | | |
| 9 | Arsenic (As) | mg/L | 0.002 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 | | |
| 10 | Cadmium (Cd) | mg/L | <0.0001 | <0.0001 | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 12 | Copper (Cu) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 13 | Iron (Fe) | mg/L | <0.05 | <0.05 | | | | | | | | | 0.13 | 0.14 | 0.06 | <0.05 | <0.05 | <0.05 | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 15 | Manganese (Mn) | mg/L | 0.03 | 0.028 | | | | | | | | | 0.041 | 0.04 | 0.077 | 0.078 | 0.082 | 0.075 | | |
| 16 | Mercury (Hg) | mg/L | <0.0001 | <0.0001 | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 17 | Nickel (Ni) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 19 | Zinc (Zn) | mg/L | <0.005 | 0.006 | | | | | | | | | <0.005 | <0.005 | 0.006 | 0.007 | <0.005 | <0.005 | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.3 | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 0.8 | 0.8 | 0.6 | 0.6 | 0.3 | 0.3 | 0.4 | 0.6 | 0.2 | 0.2 | | |
| 21 | Total Phosphorous (TP) | mg/L | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.06 | 0.07 | <0.01 | 0.01 | | |

Table 22 SW7 – Cooperabung Creek (Chainage 19660)

| No. | Parameter | Unit | 15/05/13 (Dry event) | | 26/06/13 (Wet event) | | 30/07/13 (Dry event) | | 29/08/13 (Dry event) | | 17/09/13 (Dry event) | | 23/10/13 (Dry event) | | 12/11/13 (Wet event) | | 27/11/13 (Dry event) | | 17/12/13 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) |
| 1 | Temperature | $^0$C | | | 11.8 | 11.6 | | | | | | | 20.4 | 19.7 | 20.6 | 20.0 | 19.9 | 19.7 | 20.6 | 20.0 |
| 2 | Electrical conductivity (EC) | uS/cm | 199 | 199 | 184 | 184 | 198 | 196 | 207 | 207 | 211 | 208 | 214 | 231 | 222 | 190 | 229 | 228 | 237 | 238 |
| 3 | Dissolved oxygen (DO) | % | | | 95 | 66 | | | | | | | 65 | 130 | 52 | 58 | 122 | 63 | 52 | 58 |
| 4 | pH | | 6.7 | 6.7 | 6.8 | 6.8 | 6.7 | 6.7 | 6.9 | 6.8 | 6.4 | 6.3 | 6.9 | 6.8 | 6.4 | 6.5 | 6.7 | 6.6 | 6.4 | 6.4 |
| 5 | Turbidity (NTU) | NTU | 4 | 4 | 10 | 10 | 15 | 9 | 7 | 4 | 10 | 15 | 4 | 2 | 11 | 19 | 5 | 5 | 6 | 4 |
| 6 | Total suspended solids (TSS)* | mg/L | 3 | 43 | 4 | <3 | 30 | 27 | 20 | <3 | 24 | 35 | 6 | <3 | 8 | 12 | <3 | <3 | 8 | <3 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.12 | 0.08 | | | | | | | 0.19 | 0.16 | | | | | | | | |
| 9 | Arsenic (As) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 12 | Copper (Cu) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 13 | Iron (Fe) | mg/L | 0.788 | 0.754 | | | | | | | 0.809 | 0.389 | | | | | | | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 15 | Manganese (Mn) | mg/L | 0.061 | 0.057 | | | | | | | 0.305 | 0.022 | | | | | | | | |
| 16 | Mercury (Hg) | mg/L | <0.0003 | <0.0003 | | | | | | | <0.00001 | <0.00001 | | | | | | | | |
| 17 | Nickel (Ni) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | | | | | | | | |
| 19 | Zinc (Zn) | mg/L | 0.009 | 0.008 | | | | | | | 0.011 | <0.005 | | | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | | | 0.14 | 0.17 | 0.36 | 0.14 | 0.16 | 0.07 | 0.16 | 1 | 0.29 | 0.17 | 0.6 | 0.7 | 0.22 | 0.2 | 0.2 | 0.21 |
| 21 | Total Phosphorous (TP) | mg/L | | | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | <0.01 | 0.02 | 0.07 | 0.02 | <0.01 | 0.04 | 0.04 | 0.02 | 0.02 | 0.017 | 0.016 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 23 SW7 – Cooperabung Creek (Chainage 19660) cont.

| No. | Parameter | Unit | 28/01/14 (Dry event) | | 19/02/14 (Wet event) | | 03/03/14 (Dry event) | | 12/03/14 (Dry event) | | 10/04/14 (Dry event) | | 29/04/14 (Wet event) | | 29/05/14 (Dry event) | | 17/06/14 (Dry event) | | 15/07/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) |
| 1 | Temperature | $^0$C | 21.2 | 22.1 | 23.9 | 23.2 | | | 20.6 | 20.8 | 20.5 | 20.4 | 18.0 | 18.2 | 15.5 | 15.1 | 12.1 | 13.1 | 11.1 | 11.5 |
| 2 | Electrical conductivity (EC) | uS/cm | 290 | 230 | 203 | 252 | 203 | 202 | 230 | 230 | 168 | 172 | 199 | 202 | 201 | 207 | | | 182 | 230 |
| 3 | Dissolved oxygen (DO) | % | 59 | 58 | 66 | 100 | | | 91.8 | 50.5 | 49.6 | 51.3 | 30 | 18.1 | 24.1 | 18.1 | 38.7 | 10.6 | 53.1 | 9.4 |
| 4 | pH | | 6.8 | 6.7 | 7.0 | 6.6 | 7.1 | 6.6 | 7.0 | 7.0 | 6.5 | 6.5 | 6.4 | 6.4 | 6.3 | 6.4 | 6.6 | 6.6 | 7.0 | 6.9 |
| 5 | Turbidity (NTU) | NTU | 10 | 4 | 7 | 11 | 17 | 17 | 0 | 0 | 7 | 6 | 4 | 2 | 3 | 2 | 8 | 8 | 4 | 7 |
| 6 | Total suspended solids (TSS)* | mg/L | 13 | <9 | 7 | 11 | 4 | 4 | | | 7 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.1 | 0.11 | | | | | | | 0.2 | 0.22 | 0.04 | 0.04 | | | | | 0.04 | 0.05 |
| 9 | Arsenic (As) | mg/L | 0.002 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.001 | <0.001 |
| 12 | Copper (Cu) | mg/L | 0.002 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.001 | 0.001 |
| 13 | Iron (Fe) | mg/L | 5.88 | 0.92 | | | | | | | 0.51 | 0.52 | 0.78 | 0.63 | | | | | 0.05 | 1.65 |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | 5.48 | 0.182 | | | | | | | 0.043 | 0.022 | 0.158 | 0.051 | | | | | 0.011 | 1.6 |
| 16 | Mercury (Hg) | mg/L | 0.00001 | <0.00001 | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 |
| 17 | Nickel (Ni) | mg/L | 0.002 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.001 | <0.001 |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | 0.008 | <0.005 | | | | | | | <0.005 | <0.005 | <0.005 | <0.005 | | | | | <0.005 | <0.005 |
| 20 | Total Nitrogen (TN) | mg/L | 0.45 | 0.3 | 0.41 | 0.41 | 0.44 | 0.44 | | | 0.2 | 0.2 | 0.1 | 0.1 | <0.1 | <0.1 | 0.2 | 0.2 | 0.1 | 0.3 |
| 21 | Total Phosphorous (TP) | mg/L | 0.03 | 0.01 | 0.03 | 0.04 | 0.026 | 0.029 | | | 0.02 | 0.01 | 0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.01 | 0.05 | 0.01 |

Table 24 SW7 – Cooperabung Creek (Chainage 19660) cont

| No. | Parameter | Unit | 24/07/14 (Wet event) | | 13/08/14 (Dry event) | | 18/08/14 (Wet event) | | 01/09/14 (Dry event) | | 07/09/14 (Wet event) | | 01/10/14 (Dry event) | | 15/10/14 (Wet event) | | 6/11/14 (Wet event) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) | SW7a (US) | SW7b (DS) |
| 1 | Temperature | $^0$C | 11.8 | 10.7 | 13.2 | DNS | 13.8 | DNS | 15.6 | 15.5 | 14.0 | 13.7 | 17.6 | 17.2 | 16.5 | 16.6 | 20.7 | 19.4 | | |
| 2 | Electrical conductivity (EC) | uS/cm | 174 | 232 | 175 | | 124 | | 174 | 175 | 186 | 187 | 217 | 219 | 220 | 223 | 205 | 245 | | |
| 3 | Dissolved oxygen (DO) | % | 53.8 | 18.6 | 78.9 | | 46.2 | | 50.1 | 51.3 | 50.9 | 49.5 | 65.9 | 45 | 42 | 32.1 | 91 | 12.6 | | |
| 4 | pH | | 7.3 | 7.0 | 8.5 | | 8.3 | | 7.4 | 7.1 | 7.7 | 7.3 | 7.3 | 7.0 | 7.5 | 7.3 | 7.3 | 7.1 | | |
| 5 | Turbidity (NTU) | NTU | 4 | 12 | 3 | | 13 | | 14 | 16 | 9 | 9 | 3 | 3 | 6 | 4 | 11 | 19 | | |
| 6 | Total suspended solids (TSS)* | mg/L | <5 | <5 | <5 | | <5 | | <5 | <5 | <5 | <5 | <5 | <5 | 8 | <5 | 20 | 8 | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.02 | 0.01 | | | | | | | | | 0.24 | 0.04 | 0.06 | 0.03 | 0.09 | 0.06 | | |
| 9 | Arsenic (As) | mg/L | 0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 10 | Cadmium (Cd) | mg/L | <0.0001 | <0.0001 | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 12 | Copper (Cu) | mg/L | <0.001 | <0.001 | | | | | | | | | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.014 | | |
| 13 | Iron (Fe) | mg/L | 0.06 | 0.76 | | | | | | | | | 0.44 | 0.32 | 0.41 | 0.23 | 0.31 | 0.69 | | |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 15 | Manganese (Mn) | mg/L | 0.016 | 1.1 | | | | | | | | | 0.097 | 0.019 | 0.338 | 0.037 | 0.09 | 1.48 | | |
| 16 | Mercury (Hg) | mg/L | <0.0001 | <0.0001 | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 17 | Nickel (Ni) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 19 | Zinc (Zn) | mg/L | <0.005 | <0.005 | | | | | | | | | 0.008 | <0.005 | 0.008 | <0.005 | 0.005 | 0.007 | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.2 | 0.2 | <0.1 | | 0.2 | | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.4 | | |
| 21 | Total Phosphorous (TP) | mg/L | <0.01 | 0.03 | <0.01 | | 0.01 | | 0.01 | 0.01 | 0.01 | 0.01 | <0.01 | <0.01 | 0.02 | <0.01 | 0.01 | 0.04 | | |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 25 SW8 – Barrys Creek (Chainage 23775 to 25325)

| No. | Parameter | Unit | 15/05/13 (Dry event) | | | 26/06/13 (Wet event) | | | 30/07/13 (Dry event) | | | 29/08/13 (Dry event) | | | 16/09/13 (Dry event) | | | 23/10/13 (Dry event) | | | 12/11/13 (Wet event) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) |
| 1 | Temperature | $^0$C | DNS | DNS | | | 13.6 | DNS | DNS | DNS | | DNS | DNS | | DNS | DNS | | DNS | DNS | 21.1 | DNS | DNS | 19.7 |
| 2 | Electrical conductivity (EC) | uS/cm | | | 132 | 122 | 179 | | | | 142 | | | 146 | | | 151 | | | 156 | | | 129 |
| 3 | Dissolved oxygen (DO) | % | | | | | | | | | | | | | | | | | | 56 | | | 53 |
| 4 | pH | | | | 6.2 | 6.2 | 5.9 | | | | 6.1 | | | 6.3 | | | 6.1 | | | 6.6 | | | 6.6 |
| 5 | Turbidity (NTU) | NTU | | | 27 | 36 | 22 | | | | 25 | | | 20 | | | 14 | | | 5 | | | 12 |
| 6 | Total suspended solids (TSS)* | mg/L | | | 7 | 3 | <3 | | | | 9 | | | 25 | | | 33 | | | <5 | | | 10 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | 1.95 | | 2.94 | | | | | | | | | | 1.65 | | | | | | |
| 9 | Arsenic (As) | mg/L | | | <0.001 | | <0.001 | | | | | | | | | | <0.001 | | | | | | |
| 10 | Cadmium (Cd) | mg/L | | | <0.001 | | <0.001 | | | | | | | | | | <0.001 | | | | | | |
| 11 | Chromium (Cr) | mg/L | | | <0.001 | | 0.001 | | | | | | | | | | <0.001 | | | | | | |
| 12 | Copper (Cu) | mg/L | | | <0.001 | | 0.001 | | | | | | | | | | <0.001 | | | | | | |
| 13 | Iron (Fe) | mg/L | | | 1.5 | | 1.6 | | | | | | | | | | 0.988 | | | | | | |
| 14 | Lead (Pb) | mg/L | | | <0.001 | | 0.003 | | | | | | | | | | <0.001 | | | | | | |
| 15 | Manganese (Mn) | mg/L | | | 0.175 | | 0.06 | | | | | | | | | | 0.159 | | | | | | |
| 16 | Mercury (Hg) | mg/L | | | <0.0003 | | 0.00001 | | | | | | | | | | <0.00001 | | | | | | |
| 17 | Nickel (Ni) | mg/L | | | <0.001 | | <0.001 | | | | | | | | | | <0.001 | | | | | | |
| 18 | Silver (Ag) | mg/L | | | <0.001 | | <0.001 | | | | | | | | | | <0.001 | | | | | | |
| 19 | Zinc (Zn) | mg/L | | | 0.015 | | 0.033 | | | | | | | | | | 0.02 | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | | | | 0.28 | 0.22 | | | | 0.21 | | | 0.15 | | | 0.34 | | | 0.22 | | | 0.38 |
| 21 | Total Phosphorous (TP) | mg/L | | | | 0.04 | 0.02 | | | | 0.03 | | | 0.02 | | | 0.03 | | | 0.02 | | | 0.02 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 26 SW8 – Barrys Creek (Chainage 23775 to 25325) cont.

| No. | Parameter | Unit | 27/11/13 (Dry event) | | | 17/12/13 (Dry event) | | | 28/01/14 (Dry event) | | | 19/02/14 (Wet event | | | 03/03/14 (Dry event) | | | 12/03/14 (Dry event) | | | 10/04/14 (Dry event) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) |
| 1 | Temperature | $^0$C | DNS | DNS | 19.3 | DNS | DNS | 20.4 | DNS | DNS | 21.2 | DNS | DNS | 25.0 | | | | DNS | DNS | 20.2 | 19.9 | 19.8 | 19.9 |
| 2 | Electrical conductivity (EC) | uS/cm | | | 142 | | | 188 | | | 183 | | | 169 | 192 | 191 | 117 | | | 170 | 154 | 142 | 138 |
| 3 | Dissolved oxygen (DO) | % | | | 136 | | | 123.3 | | | 137.4 | | | 112.3 | | | | | | 42.9 | 5.1 | 17.1 | 33 |
| 4 | pH | | | | 6.3 | | | 6.0 | | | 6.4 | | | 6.5 | 6.3 | 6.3 | 6.3 | | | 6.9 | 5.8 | 5.5 | 5.8 |
| 5 | Turbidity (NTU) | NTU | | | 21 | | | 6 | | | 3 | | | 4 | 12 | 11 | 18 | | | 0 | 11 | 13 | 8 |
| 6 | Total suspended solids (TSS)* | mg/L | | | 7 | | | 16 | | | <7 | | | <5 | 3 | <3 | 7 | | | | <5 | <5 | <5 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | | | 0.39 | | | | | | | | | | 0.91 | 0.89 | 0.49 |
| 9 | Arsenic (As) | mg/L | | | | | | | | | <0.001 | | | | | | | | | | <0.001 | <0.001 | <0.001 |
| 10 | Cadmium (Cd) | mg/L | | | | | | | | | <0.001 | | | | | | | | | | <0.0001 | <0.0001 | <0.0001 |
| 11 | Chromium (Cr) | mg/L | | | | | | | | | <0.001 | | | | | | | | | | <0.001 | <0.001 | <0.001 |
| 12 | Copper (Cu) | mg/L | | | | | | | | | 0.002 | | | | | | | | | | <0.001 | <0.001 | <0.001 |
| 13 | Iron (Fe) | mg/L | | | | | | | | | 1.25 | | | | | | | | | | 0.38 | 0.31 | 0.28 |
| 14 | Lead (Pb) | mg/L | | | | | | | | | <0.001 | | | | | | | | | | <0.001 | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | | | | | | | | | 0.182 | | | | | | | | | | 0.078 | 0.018 | 0.039 |
| 16 | Mercury (Hg) | mg/L | | | | | | | | | <0.00001 | | | | | | | | | | <0.0001 | <0.0001 | <0.0001 |
| 17 | Nickel (Ni) | mg/L | | | | | | | | | <0.001 | | | | | | | | | | <0.001 | <0.001 | <0.001 |
| 18 | Silver (Ag) | mg/L | | | | | | | | | <0.001 | | | | | | | | | | <0.001 | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | | | | | | | | | 0.012 | | | | | | | | | | 0.006 | 0.006 | 0.009 |
| 20 | Total Nitrogen (TN) | mg/L | | | 0.24 | | | 0.15 | | | 0.16 | | | 0.19 | 0.41 | 0.41 | 0.49 | | | | 0.3 | 0.8 | 0.2 |
| 21 | Total Phosphorous (TP) | mg/L | | | 0.03 | | | 0.018 | | | 0.01 | | | 0.02 | 0.017 | 0.019 | 0.025 | | | | 0.02 | 0.02 | 0.01 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 27 SW8 – Barrys Creek (Chainage 23775 to 25325) cont.

| No. | Parameter | Unit | 29/04/14 (W) | | | 29/05/14 (Dry event) | | | 16/06/14 (Dry event) | | | 15/07/14 (Dry event) | | | 24/07/14 (Wet event) | | | 13/08/14 (Dry event) | | | 18/08/14 (Wet event) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) |
| 1 | Temperature | $^0$C | DNS | 18.5 | 17.9 | DNS | 15.7 | 15.3 | DNS | 11.4 | 11.7 | DNS | 11.7 | 10.5 | DNS | 11.3 | 11.2 | DNS | DNS | 13.2 | DNS | 12.2 | 13.4 |
| 2 | Electrical conductivity (EC) | uS/cm | | 177 | 148 | | 226 | 152 | | DNS | DNS | | 264 | 153 | | 271 | 153 | | | 152 | | 210 | 133 |
| 3 | Dissolved oxygen (DO) | % | | 15.9 | 25.8 | | 7.7 | 30.4 | | 12 | 32.2 | | 10.2 | 47 | | 5.5 | 38.5 | | | 60.9 | | 7.6 | 46.8 |
| 4 | pH | | | 5.5 | 5.8 | | 5.7 | 6.0 | | 6.0 | 6.3 | | 6.2 | 6.8 | | 6.2 | 6.8 | | | 8.0 | | 7.2 | 7.1 |
| 5 | Turbidity (NTU) | NTU | | 9 | 5 | | 2 | 4 | | 2 | 4 | | 2 | 4 | | 2 | 8 | | | 2 | | 9 | 16 |
| 6 | Total suspended solids (TSS)* | mg/L | | <5 | <5 | | <5 | <5 | | <5 | <5 | | <5 | <5 | | <5 | <5 | | | <5 | | 6 | 8 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | 0.12 | 0.23 | | | | | | | | <0.01 | 0.02 | | <0.01 | 0.03 | | | | | | |
| 9 | Arsenic (As) | mg/L | | <0.001 | <0.001 | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 10 | Cadmium (Cd) | mg/L | | <0.0001 | <0.0001 | | | | | | | | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | | | | | | |
| 11 | Chromium (Cr) | mg/L | | <0.001 | <0.001 | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 12 | Copper (Cu) | mg/L | | <0.001 | <0.001 | | | | | | | | 0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 13 | Iron (Fe) | mg/L | | 0.1 | 0.21 | | | | | | | | 0.32 | 0.17 | | 0.78 | 0.14 | | | | | | |
| 14 | Lead (Pb) | mg/L | | <0.001 | <0.001 | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 15 | Manganese (Mn) | mg/L | | 0.014 | 0.127 | | | | | | | | 0.075 | 0.027 | | 0.114 | 0.058 | | | | | | |
| 16 | Mercury (Hg) | mg/L | | <0.0001 | <0.0001 | | | | | | | | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | | | | | | |
| 17 | Nickel (Ni) | mg/L | | <0.001 | <0.001 | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 18 | Silver (Ag) | mg/L | | <0.001 | <0.001 | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 19 | Zinc (Zn) | mg/L | | <0.005 | <0.005 | | | | | | | | <0.005 | <0.005 | | <0.005 | <0.005 | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | | <0.1 | <0.1 | | <0.1 | 0.2 | | <0.1 | 0.1 | | 0.2 | <0.1 | | 0.2 | 0.2 | | | <0.1 | | 0.8 | 0.2 |
| 21 | Total Phosphorous (TP) | mg/L | | <0.01 | <0.01 | | <0.01 | 0.02 | | <0.01 | <0.01 | | <0.01 | <0.01 | | 0.01 | <0.01 | | | <0.01 | | 0.02 | <0.01 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 28 SW8 – Barrys Creek (Chainage 23775 to 25325) cont.

| No. | Parameter | Unit | 01/09/14 (Dry event) | | | 07/09/14 (Wet event) | | | 01/10/14 (Dry event) | | | 15/10/14 (Wet event) | | | 6/11/14 (Wet event) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) | SW8a (US) | SW8b (DS) | SW8c (DS) |
| 1 | Temperature | $^0$C | 15.2 | 17.3 | 15.7 | DNS | 16.5 | 14.1 | DNS | 17.8 | 17.7 | DNS | 15.4 | 16.7 | DNS | 23.1 | 19.4 | | | | | | |
| 2 | Electrical conductivity (EC) | uS/cm | 173 | 164 | 125 | | 174 | 130 | | 219 | 164 | | 248 | 164 | | 269 | 170 | | | | | | |
| 3 | Dissolved oxygen (DO) | % | 31.7 | 36.3 | 19.8 | | 40.2 | 25.2 | | 47.5 | 53.7 | | 31.4 | 52.9 | | 29.5 | 38.6 | | | | | | |
| 4 | pH | | 6.7 | 6.0 | 5.9 | | 6.7 | 6.3 | | 6.1 | 6.0 | | 6.7 | 6.4 | | 6.8 | 6.6 | | | | | | |
| 5 | Turbidity (NTU) | NTU | 18 | 13 | 19 | | 13 | 14 | | 6 | 6 | | 6 | 8 | | 6 | 9 | | | | | | |
| 6 | Total suspended solids (TSS)* | mg/L | <5 | <5 | <5 | | <5 | <5 | | <5 | <5 | | <5 | <5 | | <5 | <5 | | | | | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | | 0.1 | 0.13 | | 0.06 | 0.15 | | 0.02 | 0.04 | | | | | | |
| 9 | Arsenic (As) | mg/L | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 10 | Cadmium (Cd) | mg/L | | | | | | | | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | | | | | | |
| 11 | Chromium (Cr) | mg/L | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 12 | Copper (Cu) | mg/L | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 13 | Iron (Fe) | mg/L | | | | | | | | 0.09 | 0.18 | | 0.27 | 0.34 | | 0.71 | 0.46 | | | | | | |
| 14 | Lead (Pb) | mg/L | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 15 | Manganese (Mn) | mg/L | | | | | | | | 0.011 | 0.08 | | 0.032 | 0.162 | | 0.075 | 0.506 | | | | | | |
| 16 | Mercury (Hg) | mg/L | | | | | | | | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | | | | | | |
| 17 | Nickel (Ni) | mg/L | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 18 | Silver (Ag) | mg/L | | | | | | | | <0.001 | <0.001 | | <0.001 | <0.001 | | <0.001 | <0.001 | | | | | | |
| 19 | Zinc (Zn) | mg/L | | | | | | | | 0.007 | 0.007 | | <0.005 | 0.006 | | <0.005 | <0.005 | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.5 | 0.4 | 0.3 | | 0.2 | 0.2 | | <0.1 | <0.1 | | 0.1 | 0.2 | | 0.2 | 0.2 | | | | | | |
| 21 | Total Phosphorous (TP) | mg/L | 0.02 | <0.01 | 0.01 | | 0.01 | 0.01 | | <0.01 | <0.01 | | <0.01 | 0.01 | | <0.01 | <0.01 | | | | | | |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 29 SW9 – Smiths Creek (Chainage 28300)

| No. | Parameter | Unit | 26/06/13 (Wet event) | | 30/07/13 (Dry event) | | 16/09/13 (Dry event) | | 23/10/13 (Dry event) | | 12/11/13 (Wet event) | | 27/11/13 (Dry event) | | 17/12/13 (Dry event) | | 28/01/14 (Dry event) | | 19/02/14 (Wet event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) |
| 1 | Temperature | $^0$C | 11.9 | 12.1 | | | | | 19.5 | 19.6 | 18.8 | 19.3 | 18.9 | 18.7 | 20.3 | 20.3 | 21.3 | 21.6 | 23.2 | 23.6 |
| 2 | Electrical conductivity (EC) | uS/cm | 244 | 242 | 254 | 255 | 304 | 302 | 317 | 316 | 270 | 266 | 289 | 288 | 351 | 349 | 471 | 469 | 430 | 432 |
| 3 | Dissolved oxygen (DO) | % | 42 | 46 | | | | | 55 | 55 | 79.1 | 110.5 | 119.5 | 48.2 | 39.6 | 45.7 | 43.9 | 106.6 | 104 | 36 |
| 4 | pH | | 6.7 | 6.8 | 6.7 | 6.8 | 6.6 | 6.7 | 6.9 | 6.9 | 7.0 | 7.0 | 6.8 | 6.8 | 6.7 | 6.7 | 6.7 | 6.8 | 6.9 | 6.9 |
| 5 | Turbidity (NTU) | NTU | 23 | 14 | 67 | 22 | 13 | 8 | 5 | 5 | 5 | 6 | 8 | 7 | 5 | 4 | 21 | 15 | | 9 |
| 6 | Total suspended solids (TSS)* | mg/L | 21 | 9 | 19 | 58 | 34 | 22 | 10 | 168 | <10 | 14 | 8 | 5 | 12 | 5 | 107 | 46 | 11 | 11 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | 0.4 | 0.44 | | | | | | | | | 0.12 | 0.02 | | |
| 9 | Arsenic (As) | mg/L | | | | | <0.001 | <0.001 | | | | | | | | | 0.002 | 0.002 | | |
| 10 | Cadmium (Cd) | mg/L | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | | |
| 11 | Chromium (Cr) | mg/L | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | | |
| 12 | Copper (Cu) | mg/L | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | | |
| 13 | Iron (Fe) | mg/L | | | | | 0.944 | 0.96 | | | | | | | | | 5.16 | 4.26 | | |
| 14 | Lead (Pb) | mg/L | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | | |
| 15 | Manganese (Mn) | mg/L | | | | | 0.076 | 0.74 | | | | | | | | | 1.75 | 2.13 | | |
| 16 | Mercury (Hg) | mg/L | | | | | <0.00001 | <0.00001 | | | | | | | | | 0.00004 | <0.00001 | | |
| 17 | Nickel (Ni) | mg/L | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | | |
| 18 | Silver (Ag) | mg/L | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | | |
| 19 | Zinc (Zn) | mg/L | | | | | 0.02 | 0.02 | | | | | | | | | 0.006 | 0.006 | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.39 | 0.23 | 0.34 | 0.47 | 0.6 | 0.34 | 0.4 | 0.5 | 0.45 | 0.45 | 0.33 | 0.34 | 0.35 | 0.34 | 1 | 0.9 | 0.9 | 0.7 |
| 21 | Total Phosphorous (TP) | mg/L | 0.03 | 0.02 | 0.02 | 0.03 | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.026 | 0.07 | 0.08 | 0.1 | 0.06 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 30 SW9 – Smiths Creek (Chainage 28300) cont.

| No. | Parameter | Unit | 03/03/14 (Dry event) | | 12/03/14 (Dry event) | | 10/04/14 (Dry event) | | 29/04/14 (Wet event) | | 29/05/14 (Dry event) | | 17/06/14 (Dry event) | | 15/07/14 (Dry event) | | 24/07/14 (Wet event) | | 14/08/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) |
| 1 | Temperature | $^0$C | | | 19.6 | 19.4 | 19.9 | 20.0 | 17.1 | 16.9 | 13.8 | 13.9 | 11.2 | 10.9 | 11.1 | 9.3 | 12.0 | 10.7 | 11.2 | 10.7 |
| 2 | Electrical conductivity (EC) | uS/cm | 306 | 305 | 310 | 320 | 223 | 226 | 263 | 260 | DNS | DNS | DNS | 343 | 8000 | 892 | 8000 | 1182 | 3507 | 1467 |
| 3 | Dissolved oxygen (DO) | % | | | 47 | 36.1 | 42.5 | 41.8 | 19.2 | 22.9 | 19.4 | 20 | 10 | 14.6 | 11.1 | 10.2 | 1.4 | 20.3 | 19.3 | 35.1 |
| 4 | pH | | 7.2 | 6.9 | 7.1 | 7.2 | 6.3 | 6.3 | 6.5 | 6.5 | 6.8 | 6.8 | 6.7 | 7.2 | 6.1 | 6.8 | 6.4 | 6.7 | 6.2 | 7.2 |
| 5 | Turbidity (NTU) | NTU | 8 | 11 | 7 | 12 | 13 | 7 | 5 | 4 | 5 | 13 | 11 | 8 | 16 | 33 | 13 | 6 | 34 | 9 |
| 6 | Total suspended solids (TSS)* | mg/L | 10 | 7 | | | <5 | <5 | <5 | <5 | 5 | <5 | <5 | <5 | <5 | <5 | 24 | <5 | 23 | 6 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | 0.26 | 0.26 | 0.04 | 0.06 | | | | | 0.02 | 0.02 | <0.01 | <0.01 | | |
| 9 | Arsenic (As) | mg/L | | | | | <0.001 | <0.001 | 0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 10 | Cadmium (Cd) | mg/L | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 11 | Chromium (Cr) | mg/L | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.002 | 0.001 | <0.001 | <0.001 | | |
| 12 | Copper (Cu) | mg/L | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.002 | <0.001 | <0.001 | <0.001 | | |
| 13 | Iron (Fe) | mg/L | | | | | 0.49 | 0.54 | 0.71 | 0.72 | | | | | 1.25 | 0.32 | 4.49 | 0.12 | | |
| 14 | Lead (Pb) | mg/L | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 15 | Manganese (Mn) | mg/L | | | | | 0.02 | 0.019 | 0.137 | 0.131 | | | | | 0.977 | 0.323 | 1.68 | 0.346 | | |
| 16 | Mercury (Hg) | mg/L | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 17 | Nickel (Ni) | mg/L | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 18 | Silver (Ag) | mg/L | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 19 | Zinc (Zn) | mg/L | | | | | 0.005 | 0.01 | <0.005 | <0.005 | | | | | 0.008 | <0.005 | 0.006 | <0.005 | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.69 | 0.73 | | | 0.4 | 0.4 | 0.7 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.2 | 0.4 | 0.3 | 0.7 | 0.2 |
| 21 | Total Phosphorous (TP) | mg/L | 0.05 | 0.065 | | | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.03 | 0.01 | 0.02 | <0.01 | <0.01 | 0.09 | 0.07 | 0.02 | <0.01 |

Table 31 SW9 – Smiths Creek (Chainage 28300) cont

| No. | Parameter | Unit | 18/08/14 (Wet event) | | 02/09/14 (Dry event) | | 07/09/14 (Wet event) | | 01/10/14 (Dry event) | | 15/10/14 (Wet event) | | 6/11/14 (Wet event) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) | SW9a (DS) | SW9b (US) |
| 1 | Temperature | $^0$C | 12.9 | 11.9 | 14.3 | 14.3 | 13.1 | 13.3 | 16.4 | 15.7 | 16.6 | 17.5 | 18.8 | 19.2 | | | | | | |
| 2 | Electrical conductivity (EC) | uS/cm | 1940 | 1170 | 184 | 184 | 205 | 208 | 271 | 269 | 277 | 282 | 297 | 297 | | | | | | |
| 3 | Dissolved oxygen (DO) | % | 29.9 | 51.3 | 41.6 | 43.4 | 42 | 40.6 | 52.7 | 49 | 29.3 | 23.7 | 8.3 | 8.9 | | | | | | |
| 4 | pH | | 6.0 | 7.3 | 6.5 | 6.5 | 6.7 | 6.7 | 6.6 | 6.6 | 6.7 | 6.6 | 6.7 | 6.7 | | | | | | |
| 5 | Turbidity (NTU) | NTU | 24 | 13 | 15 | 15 | 9 | 10 | 4 | 6 | 7 | 10 | 16 | 19 | | | | | | |
| 6 | Total suspended solids (TSS)* | mg/L | 19 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | 6 | 12 | 15 | | | | | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | 0.05 | 0.04 | 0.02 | 0.02 | 0.02 | 0.01 | | | | | | |
| 9 | Arsenic (As) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | |
| 10 | Cadmium (Cd) | mg/L | | | | | | | <0.0001 | 0.0002 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | | |
| 11 | Chromium (Cr) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | |
| 12 | Copper (Cu) | mg/L | | | | | | | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | |
| 13 | Iron (Fe) | mg/L | | | | | | | 0.56 | 0.6 | 0.78 | 0.81 | 1.15 | 1.13 | | | | | | |
| 14 | Lead (Pb) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | |
| 15 | Manganese (Mn) | mg/L | | | | | | | 0.043 | 0.066 | 0.198 | 0.214 | 0.698 | 0.829 | | | | | | |
| 16 | Mercury (Hg) | mg/L | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | | |
| 17 | Nickel (Ni) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | |
| 18 | Silver (Ag) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | |
| 19 | Zinc (Zn) | mg/L | | | | | | | <0.005 | <0.005 | 0.007 | 0.006 | 0.018 | 0.005 | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.5 | 0.2 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.3 | 0.6 | 0.6 | | | | | | |
| 21 | Total Phosphorous (TP) | mg/L | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 | <0.01 | 0.01 | 0.01 | 0.04 | 0.03 | 0.04 | 0.05 | | | | | | |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 32 SW10 – Pipers Creek (Chainage 30700)

| No. | Parameter | Unit | 30/07/13 (Dry event) | | 29/08/13 (Dry event) | | 28/08/13 (Dry event) | | 16/09/13 (Dry event) | | 23/10/13 (Dry event) | | 12/11/13 (Wet event) | | 27/11/13 (Dry event) | | 17/12/13 (Dry event D) | | 28/01/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) |
| 1 | Temperature | $^0$C | | | | | | | | | 19.1 | 19.1 | 18.5 | 18.6 | 18.4 | 18.8 | 20.2 | 20.1 | 20.8 | 20.9 |
| 2 | Electrical conductivity (EC) | uS/cm | 313 | 315 | 346 | 357 | 299 | 298 | 367 | 369 | 441 | 438 | 310 | 298 | 306 | 305 | 332 | 336 | 383 | 385 |
| 3 | Dissolved oxygen (DO) | % | | | | | | | | | 45 | 45 | 119.6 | 81.6 | 45 | 110.6 | 43.4 | 54.6 | 126 | 38.3 |
| 4 | pH | | 6.6 | 6.6 | 6.5 | 6.8 | 6.7 | 6.7 | 6.8 | 6.6 | 6.9 | 6.9 | 6.9 | 6.9 | 6.1 | 6.1 | 6.5 | 6.6 | 6.7 | 6.6 |
| 5 | Turbidity (NTU) | NTU | 16 | 15 | 20 | 21 | 25 | 8 | 11 | 12 | 3 | 3 | 35 | 29 | 43 | 43 | 13 | 7 | 14 | 12 |
| 6 | Total suspended solids (TSS)* | mg/L | 6 | <3 | 11 | 39 | 34 | 6 | 8 | 11 | 6 | 5 | 32 | 16 | 36 | 28 | 16 | 11 | 12 | 11 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | 0.75 | 0.73 | | | | | | | | | 0.06 | 0.05 |
| 9 | Arsenic (As) | mg/L | | | | | | | <0.001 | <0.001 | | | | | | | | | 0.002 | 0.002 |
| 10 | Cadmium (Cd) | mg/L | | | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 |
| 11 | Chromium (Cr) | mg/L | | | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 |
| 12 | Copper (Cu) | mg/L | | | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 |
| 13 | Iron (Fe) | mg/L | | | | | | | 1.26 | 1.15 | | | | | | | | | 4.37 | 4.3 |
| 14 | Lead (Pb) | mg/L | | | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | | | | | | | 0.298 | 0.271 | | | | | | | | | 0.654 | 0.655 |
| 16 | Mercury (Hg) | mg/L | | | | | | | <0.00001 | <0.00001 | | | | | | | | | <0.00001 | <0.00001 |
| 17 | Nickel (Ni) | mg/L | | | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 |
| 18 | Silver (Ag) | mg/L | | | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | | | | | | | 0.013 | 0.013 | | | | | | | | | <0.005 | <0.005 |
| 20 | Total Nitrogen (TN) | mg/L | 0.25 | 0.27 | 0.23 | 0.26 | 0.7 | 0.23 | 0.29 | 0.33 | 0.38 | 0.33 | 0.7 | 0.7 | 0.8 | 0.8 | 0.76 | 0.65 | 0.8 | 0.8 |
| 21 | Total Phosphorous (TP) | mg/L | 0.02 | 0.02 | 0.02 | 0.03 | 0.06 | 0.02 | 0.03 | 0.03 | 0.03 | 0.02 | 0.03 | 0.04 | 0.03 | 0.03 | 0.078 | 0.052 | 0.05 | 0.05 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 33 SW10 – Pipers Creek (Chainage 30700) cont.

| No. | Parameter | Unit | 19/02/14 (Wet event) | | 03/03/14 (Dry event) | | 12/03/14 (Dry event) | | 10/04/14 (Dry event) | | 29/04/14 (Wet event) | | 29/05/14 (Dry event) | | 17/06/14 (Dry event) | | 15/07/14 (Dry event) | | 24/07/14 (Wet event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) |
| 1 | Temperature | $^0$C | 23.0 | 23.3 | | | 19.5 | 19.5 | 19.8 | 19.9 | 17.1 | 17.2 | 13.8 | 13.9 | 11.0 | 11.0 | 7.7 | 9.4 | 9.6 | 9.7 |
| 2 | Electrical conductivity (EC) | uS/cm | 311 | 309 | 243 | 245 | 260 | 260 | 161 | 161 | 235 | 235 | DNS | DNS | DNS | DNS | 233 | 282 | 281 | 280 |
| 3 | Dissolved oxygen (DO) | % | 106.5 | 108.3 | | | 21 | 21 | 49.3 | 49.1 | 11.8 | 15 | 7.2 | 7.2 | 6.2 | 7.6 | 12.3 | 10.8 | 27.8 | 26.1 |
| 4 | pH | | 6.8 | 6.8 | 6.5 | 6.4 | 6.7 | 6.7 | 6.4 | 6.4 | 6.5 | 6.5 | 6.7 | 6.7 | 6.9 | 7.0 | 7.0 | 7.0 | 7.0 | 6.9 |
| 5 | Turbidity (NTU) | NTU | 18 | 15 | 39 | 35 | 20 | 20 | 23 | 15 | 5 | 4 | 10 | 10 | 20 | 18 | 17 | 20 | 16 | 11 |
| 6 | Total suspended solids (TSS)* | mg/L | 20 | 17 | 15 | 15 | | | <5 | <5 | <5 | <5 | <5 | 6 | <5 | <5 | <5 | <5 | <5 | <5 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | 0.49 | 0.45 | 0.07 | 0.07 | | | | | 0.02 | 0.03 | <0.01 | 0.01 |
| 9 | Arsenic (As) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | 0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 10 | Cadmium (Cd) | mg/L | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 11 | Chromium (Cr) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 12 | Copper (Cu) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.002 | <0.001 | <0.001 | <0.001 |
| 13 | Iron (Fe) | mg/L | | | | | | | 0.66 | 0.57 | 0.99 | 0.95 | | | | | 1.28 | 1.23 | 0.7 | 0.8 |
| 14 | Lead (Pb) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | | | | | | | 0.017 | 0.021 | 0.141 | 0.126 | | | | | 0.063 | 0.057 | 0.074 | 0.056 |
| 16 | Mercury (Hg) | mg/L | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 17 | Nickel (Ni) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.001 | <0.001 | <0.001 | <0.001 |
| 18 | Silver (Ag) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | | | | | | | <0.005 | <0.005 | <0.005 | <0.005 | | | | | <0.005 | <0.005 | <0.005 | <0.005 |
| 20 | Total Nitrogen (TN) | mg/L | 1.1 | 1 | 1.07 | 0.91 | | | 0.4 | 0.5 | 0.4 | 0.4 | 0.5 | 0.4 | 0.3 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 |
| 21 | Total Phosphorous (TP) | mg/L | 0.07 | 0.07 | 0.046 | 0.038 | | | 0.02 | 0.03 | 0.03 | 0.02 | 0.04 | 0.02 | 0.03 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 |

Table 34 SW10 – Pipers Creek (Chainage 30700) cont

| No. | Parameter | Unit | 14/08/14 (Dry event) | | 18/08/14 (Wet event) | | 02/09/14 (Dry event) | | 07/09/14 (Wet event) | | 01/10/14 (Dry event) | | 15/10/14 (Wet event) | | 6/11/14 (Wet event) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) | SW10a (DS) | SW10b (US) |
| 1 | Temperature | $^0$C | 9.8 | 9.9 | 11.7 | 12.1 | 14.4 | 14.4 | 12.9 | 13.4 | 15.2 | 18.0 | 16.6 | 17.1 | 18.8 | 19.1 | | | | |
| 2 | Electrical conductivity (EC) | uS/cm | 283 | 286 | 221 | 200 | 162 | 162 | 180 | 178 | 234 | 236 | 244 | 245 | 262 | 260 | | | | |
| 3 | Dissolved oxygen (DO) | % | 16.3 | 14.4 | 37.3 | 49.6 | 43.5 | 43.5 | 32.6 | 36.1 | 26.6 | 60.1 | 11.5 | 22.7 | 6.3 | 11.2 | | | | |
| 4 | pH | | 7.0 | 6.9 | 7.1 | 7.3 | 6.5 | 6.5 | 6.6 | 6.5 | 6.4 | 6.5 | 6.5 | 6.6 | 6.5 | 6.6 | | | | |
| 5 | Turbidity (NTU) | NTU | 5 | 7 | 42 | 31 | 19 | 24 | 12 | 15 | 8 | 6 | 9 | 6 | 13 | 16 | | | | |
| 6 | Total suspended solids (TSS)* | mg/L | 6 | <5 | 12 | 6 | <5 | <5 | <5 | <5 | <5 | <5 | 7 | 5 | <5 | 6 | | | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | | | 0.07 | 0.09 | 0.02 | 0.05 | 0.03 | 0.02 | | | | |
| 9 | Arsenic (As) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | | | | |
| 10 | Cadmium (Cd) | mg/L | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | |
| 11 | Chromium (Cr) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 12 | Copper (Cu) | mg/L | | | | | | | | | 0.001 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 13 | Iron (Fe) | mg/L | | | | | | | | | 0.86 | 0.87 | 0.8 | 0.66 | 0.66 | 0.67 | | | | |
| 14 | Lead (Pb) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 15 | Manganese (Mn) | mg/L | | | | | | | | | 0.07 | 0.071 | 0.166 | 0.186 | 0.289 | 0.307 | | | | |
| 16 | Mercury (Hg) | mg/L | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | |
| 17 | Nickel (Ni) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 18 | Silver (Ag) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 19 | Zinc (Zn) | mg/L | | | | | | | | | 0.008 | <0.005 | 0.007 | 0.006 | <0.005 | 0.008 | | | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.3 | 0.3 | 0.7 | 0.7 | 0.9 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.6 | 0.6 | | | | |
| 21 | Total Phosphorous (TP) | mg/L | 0.02 | 0.02 | 0.03 | 0.03 | 0.02 | 0.03 | 0.01 | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | | | | |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 35 SW11 – Unnamed drainage line (Chainage 34650 to 34700)

| No. | Parameter | Unit | 30/07/13 (Dry event) | | 28/08/13 (Dry event) | | 16/09/13 | | 18/09/13 | | 23/10/13 (Dry event) | | 12/11/13 (Wet event) | | 27/11/13 (Dry event) | | 17/12/13 (Dry event) | | 28/01/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) |
| 1 | Temperature | $^0$C | | DNS | | DNS | DNS | | | DNS | 18.5 | DNS | 18.8 | 18.5 | 18.7 | 18.2 | 19.4 | 19.2 | 20.0 | 19.8 |
| 2 | Electrical conductivity (EC) | uS/cm | 390 | | 457 | | | 456 | | | 447 | | 109 | 123 | 134 | 127 | 198 | 204 | 227 | 228 |
| 3 | Dissolved oxygen (DO) | % | | | | | | | | | 33 | | 107 | 48 | 56 | 60 | 112.2 | 42 | 24 | 107.3 |
| 4 | pH | | 6.0 | | 6.2 | | | 6.3 | | | 6.5 | | 6.0 | 5.9 | 6.0 | 5.9 | 6.3 | 6.2 | 6.6 | 6.6 |
| 5 | Turbidity (NTU) | NTU | 26 | | 5 | | | 2 | | | 9 | | 29 | 28 | 42 | 49 | 16 | 44 | 13 | 12 |
| 6 | Total suspended solids (TSS)* | mg/L | 25 | | 14 | | | <4 | | | 32 | | 15 | 10 | 14 | 20 | 11 | 107 | <13 | 16 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | 0.08 | | | | | | | | | | 0.11 | 0.09 |
| 9 | Arsenic (As) | mg/L | | | | | | | <0.001 | | | | | | | | | | 0.004 | 0.004 |
| 10 | Cadmium (Cd) | mg/L | | | | | | | <0.001 | | | | | | | | | | <0.001 | <0.001 |
| 11 | Chromium (Cr) | mg/L | | | | | | | <0.001 | | | | | | | | | | <0.001 | 0.001 |
| 12 | Copper (Cu) | mg/L | | | | | | | 0.001 | | | | | | | | | | <0.001 | 0.001 |
| 13 | Iron (Fe) | mg/L | | | | | | | 0.531 | | | | | | | | | | 6.83 | 6.76 |
| 14 | Lead (Pb) | mg/L | | | | | | | <0.001 | | | | | | | | | | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | | | | | | | 0.132 | | | | | | | | | | 0.405 | 0.405 |
| 16 | Mercury (Hg) | mg/L | | | | | | | <0.00001 | | | | | | | | | | <0.00001 | <0.00001 |
| 17 | Nickel (Ni) | mg/L | | | | | | | 0.001 | | | | | | | | | | <0.001 | 0.001 |
| 18 | Silver (Ag) | mg/L | | | | | | | <0.001 | | | | | | | | | | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | | | | | | | 0.013 | | | | | | | | | | 0.008 | 0.014 |
| 20 | Total Nitrogen (TN) | mg/L | 0.9 | | 1.5 | | | 0.5 | | | 1 | | 1.1 | 1.3 | 0.6 | 0.7 | 1.05 | 2.33 | 0.9 | 1 |
| 21 | Total Phosphorous (TP) | mg/L | 0.05 | | 0.05 | | | 0.02 | | | 0.07 | | 0.07 | 0.09 | 0.03 | 0.04 | 0.089 | 0.286 | 0.05 | 0.07 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 36 SW11 – Unnamed drainage line (Chainage 34650 to 34700) cont.

| No. | Parameter | Unit | 19/02/14 (Wet event) | | 03/03/14 (Dry event) | | 12/03/14 (Dry event) | | 10/04/14 (Dry event) | | 29/04/14 (Wet event) | | 29/05/14 (Dry event) | | 17/06/14 (Dry event) | | 15/07/14 (Dry event) | | 24/07/14 (Wet event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) |
| 1 | Temperature | $^0$C | 22.4 | 22.2 | | | 19.1 | 19.1 | 19.3 | 20.3 | 17.1 | 16.7 | 14.6 | 14.5 | 11.1 | 10.5 | 10.2 | 10.3 | 10.5 | 10.6 |
| 2 | Electrical conductivity (EC) | uS/cm | 100 | 101 | 87 | 96 | 130 | 130 | 756 | 85 | 239 | 262 | DNS | DNS | DNS | DNS | 235 | 231 | 237 | 229 |
| 3 | Dissolved oxygen (DO) | % | 130.1 | 84.8 | | | 46.1 | 46.1 | 13.7 | 18.9 | 2.6 | 12.2 | 10.3 | 14 | 10 | 14.6 | 35.5 | 19.5 | 24.1 | 17.9 |
| 4 | pH | | 6.1 | 6.0 | 5.8 | 5.9 | 6.8 | 6.8 | 5.3 | 5.5 | 5.7 | 6.1 | 6.1 | 6.6 | 6.1 | 6.8 | 6.1 | 6.9 | 5.9 | 6.6 |
| 5 | Turbidity (NTU) | NTU | 25 | 25 | 51 | 51 | 13 | 13 | 11 | 29 | 8 | 9 | 6 | 10 | 4 | 7 | 3 | 2 | 2 | 2 |
| 6 | Total suspended solids (TSS)* | mg/L | 10 | 7 | 6 | 7 | | | <5 | <5 | 12 | 8 | 8 | <5 | 6 | <5 | <5 | <5 | <5 | <5 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | 1.1 | 1.13 | 0.18 | 0.12 | | | | | <0.01 | 0.02 | 0.04 | <0.01 |
| 9 | Arsenic (As) | mg/L | | | | | | | 0.001 | <0.001 | 0.002 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | 0.002 |
| 10 | Cadmium (Cd) | mg/L | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 11 | Chromium (Cr) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | 0.008 |
| 12 | Copper (Cu) | mg/L | | | | | | | 0.001 | 0.002 | <0.001 | 0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 13 | Iron (Fe) | mg/L | | | | | | | 2.17 | 0.65 | 1.29 | 1.06 | | | | | 0.47 | 0.19 | 0.37 | 0.27 |
| 14 | Lead (Pb) | mg/L | | | | | | | <0.001 | 0.002 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | | | | | | | 0.201 | 0.056 | 0.152 | 0.116 | | | | | 0.06 | 0.042 | 0.107 | 0.076 |
| 16 | Mercury (Hg) | mg/L | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 17 | Nickel (Ni) | mg/L | | | | | | | 0.001 | 0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 18 | Silver (Ag) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | | | | | | | 0.014 | 0.025 | 0.009 | 0.007 | | | | | 0.006 | 0.007 | <0.005 | <0.005 |
| 20 | Total Nitrogen (TN) | mg/L | 1.1 | 1.2 | 0.62 | 0.51 | | | 1 | 0.6 | 0.5 | 1.3 | 0.4 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.4 | 0.3 |
| 21 | Total Phosphorous (TP) | mg/L | 0.08 | 0.08 | 0.034 | 0.033 | | | 0.03 | 0.03 | 0.01 | 0.04 | 0.01 | 0.03 | <0.01 | 0.01 | <0.01 | <0.01 | 0.02 | <0.01 |

Table 37 SW11 – Unnamed drainage line (Chainage 34650 to 34700) cont.

| No. | Parameter | Unit | 14/08/14 (Dry event) | | 18/08/14 (Wet event) | | 02/09/14 (Dry event) | | 07/09/14 (Wet event) | | 01/10/14 (Dry event) | | 15/10/14 (Wet event) | | 6/11/14 (Wet event) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) | SW11a (DS) | SW11b (US) |
| 1 | Temperature | $^0$C | 10.3 | 10.4 | 13.1 | 13.3 | 14.4 | 14.6 | 13.1 | 13.0 | 14.3 | 15.7 | 15.0 | 17.8 | 17.1 | 17.4 | | | | |
| 2 | Electrical conductivity (EC) | uS/cm | 235 | 226 | 70 | 70 | 191 | 201 | 194 | 209 | 175 | 213 | 179 | 227 | 184 | 236 | | | | |
| 3 | Dissolved oxygen (DO) | % | 25.7 | 25 | 43.5 | 41.1 | 26.8 | 42.5 | 13 | 25.2 | 16.1 | 27.3 | 16.5 | 45.9 | 20.2 | 16.7 | | | | |
| 4 | pH | | 6.5 | 7.4 | 6.2 | 6.3 | 5.5 | 5.7 | 5.7 | 6.0 | 5.8 | 6.1 | 6.4 | 6.9 | 6.3 | 6.7 | | | | |
| 5 | Turbidity (NTU) | NTU | 3 | 3 | 23 | 38 | 22 | 27 | 15 | 17 | 7 | 6 | 10 | 9 | 7 | 13 | | | | |
| 6 | Total suspended solids (TSS)* | mg/L | 6 | <5 | 6 | <5 | <5 | 6 | <5 | <5 | <5 | <5 | 6 | 9 | <5 | <5 | | | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | | | 0.39 | 0.1 | 0.28 | 0.07 | 0.09 | 0.04 | | | | |
| 9 | Arsenic (As) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 | 0.002 | | | | |
| 10 | Cadmium (Cd) | mg/L | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | |
| 11 | Chromium (Cr) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 12 | Copper (Cu) | mg/L | | | | | | | | | 0.002 | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 13 | Iron (Fe) | mg/L | | | | | | | | | 0.48 | 0.6 | 1.09 | 2.02 | 1.64 | 2.48 | | | | |
| 14 | Lead (Pb) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 15 | Manganese (Mn) | mg/L | | | | | | | | | 0.066 | 0.1 | 0.077 | 0.169 | 0.077 | 0.266 | | | | |
| 16 | Mercury (Hg) | mg/L | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | |
| 17 | Nickel (Ni) | mg/L | | | | | | | | | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 18 | Silver (Ag) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 19 | Zinc (Zn) | mg/L | | | | | | | | | 0.011 | 0.012 | 0.009 | <0.005 | <0.005 | <0.005 | | | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.4 | 0.2 | 0.7 | 1.4 | 0.4 | 0.4 | 0.2 | 0.6 | 0.3 | 0.5 | 0.4 | 0.6 | 0.6 | 1 | | | | |
| 21 | Total Phosphorous (TP) | mg/L | <0.01 | <0.01 | 0.03 | 0.08 | 0.01 | 0.02 | <0.01 | <0.01 | 0.02 | 0.09 | 0.02 | 0.05 | 0.02 | 0.06 | | | | |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 38 SW12 – Maria River (Chainage 36850)

| No. | Parameter | Unit | 15/05/13 (Dry event) | | 26/06/13 (Wet event) | | 28/08/13 (Dry event) | | 17/09/13 (Dry event) | | 23/10/13 (Dry event) | | 12/11/13 (Wet event) | | 27/11/13 (Dry event) | | 17/12/13 (Dry event) | | 28/01/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) |
| 1 | Temperature | $^0$C | | | DNS | DNS | | | | | 18.5 | 18.5 | 18.9 | 18.7 | 19.9 | 19.7 | 19.4 | 19.5 | 20.0 | 19.9 |
| 2 | Electrical conductivity (EC) | uS/cm | 342 | 336 | | | 308 | 323 | 318 | 302 | 468 | 384 | 341 | 319 | 169 | 215 | 360 | 393 | 519 | 508 |
| 3 | Dissolved oxygen (DO) | % | | | | | | | | | 29 | 24 | 70.4 | 53 | 44 | 108.1 | 46.2 | 53.1 | 35 | 46.5 |
| 4 | pH | | 6.3 | 6.3 | | | 6.3 | 6.2 | 6.2 | 6.4 | 6.2 | 6.9 | 6.2 | 5.9 | 6.4 | 6.3 | 6.5 | 6.4 | 6.4 | 6.1 |
| 5 | Turbidity (NTU) | NTU | 75 | 62 | | | 9 | 12 | 10 | 17 | 24 | 45 | 25 | 29 | 49 | 38 | 11 | 15 | 41 | 29 |
| 6 | Total suspended solids (TSS)* | mg/L | 41 | 115 | | | 17 | 19 | 7 | 16 | 26 | 13 | 14 | 11 | 22 | 15 | 5 | 7 | 20 | 13 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 0.14 | 0.1 | | | | | 0.35 | 0.31 | | | | | | | | | 0.08 | 0.14 |
| 9 | Arsenic (As) | mg/L | 0.002 | 0.002 | | | | | <0.001 | <0.001 | | | | | | | | | 0.002 | <0.001 |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 |
| 11 | Chromium (Cr) | mg/L | <0.001 | <0.001 | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 |
| 12 | Copper (Cu) | mg/L | <0.001 | <0.001 | | | | | 0.002 | 0.002 | | | | | | | | | 0.001 | 0.001 |
| 13 | Iron (Fe) | mg/L | 7.04 | 6.39 | | | | | 1.82 | 1.71 | | | | | | | | | 4.63 | 4.08 |
| 14 | Lead (Pb) | mg/L | <0.001 | <0.001 | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | 1.14 | 0.89 | | | | | 0.323 | 0.313 | | | | | | | | | 0.618 | 589 |
| 16 | Mercury (Hg) | mg/L | <0.0003 | <0.0003 | | | | | <0.00001 | <0.00001 | | | | | | | | | <0.00001 | <0.00001 |
| 17 | Nickel (Ni) | mg/L | 0.003 | 0.003 | | | | | 0.002 | 0.002 | | | | | | | | | 0.002 | 0.004 |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | 0.018 | 0.017 | | | | | 0.015 | 0.015 | | | | | | | | | 0.014 | 0.033 |
| 20 | Total Nitrogen (TN) | mg/L | | | | | 0.6 | 0.7 | 0.5 | 0.8 | 0.8 | 1 | 0.7 | 1 | 0.5 | 0.44 | 0.59 | 0.55 | 0.7 | 0.6 |
| 21 | Total Phosphorous (TP) | mg/L | | | | | 0.04 | 0.04 | 0.03 | 0.05 | 0.03 | 0.02 | 0.03 | 0.03 | 0.04 | 0.04 | 0.051 | 0.043 | 0.01 | 0.01 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 39 SW12 – Maria River (Chainage 36850) cont.

| No. | Parameter | Unit | 19/02/14 (Wet event) | | 03/03/14 (Dry event) | | 12/03/14 (Dry event) | | 10/04/14 (Dry event) | | 29/04/14 (Wet event) | | 29/05/14 (Dry event) | | 17/06/14 (Dry event) | | 15/07/14 (Dry event) | | 24/07/14 (Wet event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) |
| 1 | Temperature | $^0$C | 22.9 | 23.0 | | | 19.3 | 19.3 | 20.0 | 20.0 | 16.7 | 17.0 | 13.6 | 13.9 | 9.2 | 9.9 | 10.0 | 10.9 | 11.1 | 10.6 |
| 2 | Electrical conductivity (EC) | uS/cm | 404 | 405 | 162 | 167 | 210 | 220 | 164 | 164 | 202 | 218 | DNS | DNS | DNS | DNS | 196 | 473 | 174 | 204 |
| 3 | Dissolved oxygen (DO) | % | 161 | 166.9 | | | 130.7 | 42.9 | | | 1.5 | 2.4 | 14.9 | 23 | 20.5 | 30.5 | 19.9 | 46.8 | 7.2 | 36.9 |
| 4 | pH | | 6.2 | 6.3 | 6.7 | 6.7 | 7.3 | 6.9 | DNS | DNS | 6.2 | 6.1 | 6.6 | 6.4 | 7.1 | 6.8 | 7.3 | 6.7 | 6.7 | 6.5 |
| 5 | Turbidity (NTU) | NTU | 16 | 22 | 70 | 75 | 33 | 31 | 20 | 18 | 20 | 38 | 25 | 45 | 25 | 39 | 27 | 6 | 45 | 45 |
| 6 | Total suspended solids (TSS)* | mg/L | 8 | 21 | 30 | 28 | | | 9 | 8 | 16 | 28 | 6 | 15 | <5 | 6 | <5 | <5 | 12 | 12 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | 0.97 | 0.93 | 0.2 | 0.2 | | | | | 0.07 | <0.01 | 0.05 | 0.02 |
| 9 | Arsenic (As) | mg/L | | | | | | | 0.001 | 0.001 | 0.002 | 0.001 | | | | | <0.001 | <0.001 | <0.001 | 0.002 |
| 10 | Cadmium (Cd) | mg/L | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 11 | Chromium (Cr) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 12 | Copper (Cu) | mg/L | | | | | | | 0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.001 | <0.001 | <0.001 | 0.002 |
| 13 | Iron (Fe) | mg/L | | | | | | | 1.53 | 1.5 | 1.5 | 1.63 | | | | | 1.33 | 0.08 | 0.8 | 0.16 |
| 14 | Lead (Pb) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 15 | Manganese (Mn) | mg/L | | | | | | | 0.082 | 0.081 | 0.236 | 0.318 | | | | | 0.155 | 0.141 | 0.187 | 0.1 |
| 16 | Mercury (Hg) | mg/L | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| 17 | Nickel (Ni) | mg/L | | | | | | | 0.002 | 0.002 | 0.001 | 0.002 | | | | | <0.001 | 0.001 | <0.001 | 0.001 |
| 18 | Silver (Ag) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 |
| 19 | Zinc (Zn) | mg/L | | | | | | | 0.012 | 0.009 | 0.008 | 0.009 | | | | | 0.008 | 0.005 | 0.005 | 0.015 |
| 20 | Total Nitrogen (TN) | mg/L | 0.6 | 0.6 | 0.67 | 0.78 | | | 0.8 | 0.8 | 0.3 | 1.1 | 1.3 | 1.1 | 1.1 | 0.7 | 0.6 | 0.4 | 0.8 | 0.8 |
| 21 | Total Phosphorous (TP) | mg/L | 0.04 | 0.05 | 0.063 | 0.078 | | | 0.04 | 0.03 | 0.03 | 0.07 | 0.06 | 0.06 | 0.07 | 0.03 | 0.03 | <0.01 | 0.07 | 0.04 |

Table 40 SW12 – Maria River (Chainage 36850) cont.

| No. | Parameter | Unit | 14/08/14 (Dry event) | | 18/08/14 (Wet event) | | 01/09/14 (Dry event) | | 07/09/14 (Wet event) | | 01/10/14 (Dry event) | | 15/10/14 (Wet event) | | 6/11/14 (Wet event) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) | SW12a (US) | SW12b (DS) |
| 1 | Temperature | $^0$C | 10.7 | 10.5 | 12.5 | 14.4 | 15.5 | 15.1 | 14.7 | 13.6 | 17.9 | 18.3 | 17.8 | 15.9 | 18.6 | 17.4 | | | | |
| 2 | Electrical conductivity (EC) | uS/cm | 224 | 458 | 186 | 234 | 157 | 162 | 175 | 176 | 223 | 224 | 209 | 260 | 164 | 165 | | | | |
| 3 | Dissolved oxygen (DO) | % | 4.4 | 49.1 | 44.6 | 54 | 25.8 | 26.1 | 19.4 | 12.4 | 44.7 | 53.5 | 41.9 | 51.5 | 39.9 | 48.1 | | | | |
| 4 | pH | | 6.9 | 7.0 | 6.4 | 7.0 | 5.7 | 5.6 | 6.6 | 6.2 | 6.3 | 6.1 | 6.8 | 6.5 | 6.6 | 6.1 | | | | |
| 5 | Turbidity (NTU) | NTU | 53 | 8 | 37 | 26 | 20 | 20 | 18 | 15 | 11 | 9 | 20 | 25 | 35 | 44 | | | | |
| 6 | Total suspended solids (TSS)* | mg/L | 13 | 7 | 6 | <5 | 6 | 5 | 6 | 8 | <5 | <5 | 7 | 8 | 6 | 8 | | | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | | | 0.24 | 0.24 | 0.19 | 0.14 | 0.09 | 0.05 | | | | |
| 9 | Arsenic (As) | mg/L | | | | | | | | | <0.001 | 0.001 | <0.001 | <0.001 | 0.001 | <0.001 | | | | |
| 10 | Cadmium (Cd) | mg/L | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | |
| 11 | Chromium (Cr) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 12 | Copper (Cu) | mg/L | | | | | | | | | 0.005 | 0.002 | <0.001 | 0.001 | 0.002 | 0.002 | | | | |
| 13 | Iron (Fe) | mg/L | | | | | | | | | 0.89 | 0.86 | 1.23 | 1.58 | 0.7 | 0.69 | | | | |
| 14 | Lead (Pb) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 15 | Manganese (Mn) | mg/L | | | | | | | | | 0.18 | 0.154 | 0.151 | 0.222 | 0.123 | 0.109 | | | | |
| 16 | Mercury (Hg) | mg/L | | | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | |
| 17 | Nickel (Ni) | mg/L | | | | | | | | | 0.002 | 0.001 | 0.001 | 0.002 | <0.001 | 0.001 | | | | |
| 18 | Silver (Ag) | mg/L | | | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | |
| 19 | Zinc (Zn) | mg/L | | | | | | | | | 0.016 | 0.009 | 0.012 | 0.014 | 0.011 | 0.013 | | | | |
| 20 | Total Nitrogen (TN) | mg/L | 1 | 0.3 | 1.2 | 0.9 | 0.5 | 0.5 | 0.6 | 0.7 | 0.7 | 0.5 | 0.7 | 0.6 | 1.1 | 0.8 | | | | |
| 21 | Total Phosphorous (TP) | mg/L | 0.06 | 0.01 | 0.03 | 0.04 | 0.05 | 0.02 | 0.03 | 0.03 | 0.03 | 0.02 | 0.1 | 0.18 | 0.04 | 0.04 | | | | |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 41 SW13 – Stumpy Creek (Chainage 37700 to 37750)

| No. | Parameter | Unit | 31/07/13 (Dry event) | | 28/08/13 (Dry event) | | 17/09/13 (Dry event) | | 23/10/13 (Dry event) | | 12/11/13 (Wet event) | | 27/11/13 (Dry event) | | 17/12/13 (Dry event) | | 28/01/14 (Dry event) | | 19/02/14 (Wet event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) |
| 1 | Temperature | $^0$C | | | | DNS | | | 18.6 | 19.6 | 19.0 | 19.1 | 17.5 | 17.6 | 19.1 | 19.0 | 20.2 | 20.0 | 22.9 | 22.8 |
| 2 | Electrical conductivity (EC) | uS/cm | 278 | 287 | 306 | | 291 | 309 | 356 | 324 | 305 | 555 | 623 | 557 | 411 | 442 | 494 | 460 | 682 | 679 |
| 3 | Dissolved oxygen (DO) | % | | | | | | | 36 | 55 | 124 | 51 | 98.8 | 38.5 | 59 | 60 | 57.8 | 126.1 | 55 | 43.5 |
| 4 | pH | | 5.7 | 5.6 | 6.0 | | 6.3 | 6.2 | 6.3 | 6.5 | 5.2 | 6.2 | 6.2 | 6.4 | 6.3 | 6.2 | 6.3 | 6.3 | 6.2 | 6.3 |
| 5 | Turbidity (NTU) | NTU | 33 | 38 | 66 | | 11 | 42 | 8 | 11 | 8 | 16 | 64 | 30 | 15 | 24 | 44 | 10 | 44 | 49 |
| 6 | Total suspended solids (TSS)* | mg/L | 33 | 61 | 59 | | 12 | 23 | 74 | 9 | 10 | 12 | 17 | 13 | <10 | 36 | 46 | 8 | 28 | 39 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | 3.4 | 2.66 | | | 0.16 | 0.65 | | | | | | | | | 0.93 | 0.13 | | |
| 9 | Arsenic (As) | mg/L | 0.001 | 0.001 | | | 0.001 | <0.001 | | | | | | | | | 0.002 | <0.001 | | |
| 10 | Cadmium (Cd) | mg/L | <0.001 | <0.001 | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | | |
| 11 | Chromium (Cr) | mg/L | 0.002 | 0.002 | | | <0.001 | <0.001 | | | | | | | | | 0.001 | <0.001 | | |
| 12 | Copper (Cu) | mg/L | 0.003 | 0.002 | | | 0.002 | 0.003 | | | | | | | | | 0.002 | 0.001 | | |
| 13 | Iron (Fe) | mg/L | 5.66 | 5.59 | | | 3.34 | 1.95 | | | | | | | | | 7.19 | 1.9 | | |
| 14 | Lead (Pb) | mg/L | 0.001 | <0.001 | | | <0.001 | <0.001 | | | | | | | | | 0.001 | <0.001 | | |
| 15 | Manganese (Mn) | mg/L | 0.551 | 0.192 | | | 0.6 | 0.106 | | | | | | | | | 0.915 | 0.25 | | |
| 16 | Mercury (Hg) | mg/L | <0.00001 | <0.00001 | | | <0.00001 | <0.00001 | | | | | | | | | <0.00001 | <0.00001 | | |
| 17 | Nickel (Ni) | mg/L | 0.002 | 0.002 | | | 0.001 | 0.002 | | | | | | | | | 0.003 | 0.002 | | |
| 18 | Silver (Ag) | mg/L | <0.001 | <0.001 | | | <0.001 | <0.001 | | | | | | | | | <0.001 | <0.001 | | |
| 19 | Zinc (Zn) | mg/L | 0.027 | 0.011 | | | 0.008 | 0.025 | | | | | | | | | 0.022 | 0.013 | | |
| 20 | Total Nitrogen (TN) | mg/L | 1 | 0.7 | 1 | | 1.1 | 0.9 | 0.7 | 0.46 | 0.6 | 0.8 | 0.9 | 0.38 | 0.43 | 0.51 | 0.7 | 0.42 | 1 | 0.7 |
| 21 | Total Phosphorous (TP) | mg/L | 0.04 | 0.04 | 0.05 | | 0.11 | 0.06 | 0.03 | 0.02 | 0.04 | 0.03 | 0.04 | 0.01 | 0.021 | 0.033 | 0.04 | 0.01 | 0.07 | 0.05 |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

Table 42 SW13 – Stumpy Creek (Chainage 37700 to 37750) cont.

| No. | Parameter | Unit | 03/03/14 (Dry event) | | 12/03/14 (Dry event) | | 10/04/14 (Dry event) | | 29/04/14 (Wet event) | | 29/05/14 (Dry event) | | 17/06/14 (Dry event) | | 15/07/14 (Dry event) | | 24/07/14 (Wet event) | | 14/08/14 (Dry event) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) |
| 1 | Temperature | $^0$C | | | 19.1 | 18.9 | 19.9 | 20.9 | 16.4 | 16.9 | 14.4 | 14.3 | 10.5 | 10.7 | 10.6 | 10.3 | 10.8 | 10.5 | 10.4 | 10.3 |
| 2 | Electrical conductivity (EC) | uS/cm | 494 | 492 | 510 | 510 | 177 | 158 | 271 | 306 | 289 | 279 | DNS | DNS | 293 | 356 | 295 | 390 | 311 | 380 |
| 3 | Dissolved oxygen (DO) | % | | | 37.3 | 101.4 | | | 35.7 | 24.4 | 36.2 | 21.5 | 44.3 | 22.2 | 52.9 | 34.6 | 54.1 | 36.6 | 61.3 | 47 |
| 4 | pH | | 6.6 | 6.6 | 6.7 | 6.8 | DNS | DNS | 6.3 | 6.2 | 6.5 | 6.7 | 6.9 | 6.9 | 7.1 | 7.5 | 7.3 | 7.2 | 7.6 | 8.2 |
| 5 | Turbidity (NTU) | NTU | 47 | 150 | 89 | 24 | 29 | 29 | 16 | 19 | 22 | 31 | 26 | 52 | 19 | 60 | 15 | 66 | 10 | 45 |
| 6 | Total suspended solids (TSS)* | mg/L | 32 | 134 | | | 8 | <5 | 11 | 16 | 6 | <5 | <5 | <5 | <5 | <5 | <5 | 8 | <5 | 12 |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | 0.93 | 1.16 | 0.19 | 0.17 | | | | | 0.12 | 0.03 | 0.02 | 0.02 | | |
| 9 | Arsenic (As) | mg/L | | | | | <0.001 | 0.001 | <0.001 | 0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 10 | Cadmium (Cd) | mg/L | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 11 | Chromium (Cr) | mg/L | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | 0.001 | <0.001 | <0.001 | <0.001 | | |
| 12 | Copper (Cu) | mg/L | | | | | 0.002 | 0.002 | 0.001 | 0.003 | | | | | 0.001 | 0.001 | <0.001 | <0.001 | | |
| 13 | Iron (Fe) | mg/L | | | | | 1.36 | 1.4 | 1.56 | 1.28 | | | | | 0.82 | 0.95 | 0.9 | 0.46 | | |
| 14 | Lead (Pb) | mg/L | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 15 | Manganese (Mn) | mg/L | | | | | 0.077 | 0.074 | 0.275 | 0.32 | | | | | 0.018 | 0.023 | 0.027 | 0.117 | | |
| 16 | Mercury (Hg) | mg/L | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | |
| 17 | Nickel (Ni) | mg/L | | | | | 0.001 | <0.001 | 0.001 | 0.002 | | | | | 0.001 | 0.002 | <0.001 | <0.001 | | |
| 18 | Silver (Ag) | mg/L | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | | | | <0.001 | <0.001 | <0.001 | <0.001 | | |
| 19 | Zinc (Zn) | mg/L | | | | | 0.011 | 0.009 | 0.007 | 0.007 | | | | | 0.007 | 0.007 | <0.005 | 0.014 | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.49 | 0.81 | | | 0.8 | 0.9 | 0.7 | 0.8 | 0.7 | 9.6 | 0.6 | 0.8 | 0.4 | 0.6 | 0.4 | 0.9 | 0.3 | 0.7 |
| 21 | Total Phosphorous (TP) | mg/L | 0.029 | 0.093 | | | 0.02 | 0.02 | 0.02 | 0.03 | 0.01 | 0.02 | <0.01 | 0.01 | <0.01 | <0.01 | 0.01 | 0.04 | 0.01 | 0.05 |

Table 43 SW13 – Stumpy Creek (Chainage 37700 to 37750) cont.

| No. | Parameter | Unit | 18/08/14 (Wet event) | | 02/09/14 (Dry event) | | 07/09/14 (Wet event) | | 01/10/14 (Dry event) | | 15/10/14 (Wet event) | | 6/11/14 (Wet event) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) | SW13a (DS) | SW13b (US) |
| 1 | Temperature | $^0$C | 13.2 | 14.0 | 15.0 | 15.3 | 13.3 | 13.6 | 16.5 | 15.9 | 14.5 | 15.4 | 17.9 | 18.3 | | | | | | |
| 2 | Electrical conductivity (EC) | uS/cm | 477 | 562 | 145 | 144 | 241 | 180 | 270 | 256 | 289 | 308 | 240 | 237 | | | | | | |
| 3 | Dissolved oxygen (DO) | % | 38.9 | 29.2 | 49.3 | 48.9 | 43.7 | 37.9 | 72.5 | 56.5 | 66.4 | 44.8 | 56.2 | 57.1 | | | | | | |
| 4 | pH | | 6.7 | 6.9 | 5.6 | 6.1 | 6.2 | 6.6 | 6.4 | 6.3 | 6.8 | 6.8 | 6.7 | 6.9 | | | | | | |
| 5 | Turbidity (NTU) | NTU | 25 | 18 | 24 | 24 | 18 | 17 | 19 | 21 | 22 | 33 | 57 | 72 | | | | | | |
| 6 | Total suspended solids (TSS)* | mg/L | 6 | 6 | 8 | 8 | 6 | <5 | <5 | <5 | 10 | 14 | 16 | 19 | | | | | | |
| 7 | Total Petroleum Hydrocarbons | mg/L | | | | | | | | | | | | | | | | | | |
| 8 | Aluminium (Al) | mg/L | | | | | | | 0.21 | 0.24 | 0.1 | 0.09 | 0.14 | 0.1 | | | | | | |
| 9 | Arsenic (As) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | |
| 10 | Cadmium (Cd) | mg/L | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | | |
| 11 | Chromium (Cr) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | |
| 12 | Copper (Cu) | mg/L | | | | | | | 0.002 | 0.003 | 0.001 | 0.002 | 0.001 | 0.002 | | | | | | |
| 13 | Iron (Fe) | mg/L | | | | | | | 1.11 | 0.88 | 0.82 | 0.7 | 0.29 | 0.33 | | | | | | |
| 14 | Lead (Pb) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | |
| 15 | Manganese (Mn) | mg/L | | | | | | | 0.078 | 0.085 | 0.072 | 0.083 | 0.031 | 0.057 | | | | | | |
| 16 | Mercury (Hg) | mg/L | | | | | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | | | | | | |
| 17 | Nickel (Ni) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | | | | | | |
| 18 | Silver (Ag) | mg/L | | | | | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | | | | | | |
| 19 | Zinc (Zn) | mg/L | | | | | | | 0.009 | 0.014 | 0.006 | 0.012 | 0.012 | 0.058 | | | | | | |
| 20 | Total Nitrogen (TN) | mg/L | 0.8 | 0.8 | 0.6 | 0.6 | 0.6 | 0.06 | 0.4 | 0.5 | 0.4 | 0.7 | 0.6 | 0.8 | | | | | | |
| 21 | Total Phosphorous (TP) | mg/L | 0.02 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 | 0.04 | 0.05 | | | | | | |

[#] DNS (Did not sample) - Sample not taken due to absence of sufficient water to collect sample.

# Appendix D – Calculated groundwater trigger values

Groundwater chemistry trigger values based on sampling conducted in August 2013, November 2013 and February 2014

| No. | Parameter | Unit | GW01 | | GW02 | | GW03 | | GW04 | | GW05 | | GW06 | | GW07^ | | GW09 | | GW10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per |
| 1 | Conductivity | uS/cm | 5166 | 5982 | 383.6 | 468.8 | 967 | 1292 | 3212 | 4922 | 6598 | 7294 | 4452 | 10788 | 168 | 168 | | | 270^ | 270^ |
| 2 | Sulphate | mg/L | 105 | 258 | 14.4 | 29.4 | 99 | 149 | 40 | 65 | 1055 | 1171 | 25 | 31 | 4.7 | 4.7 | | | 9.4^ | 9.4^ |
| 3 | Chloride | mg/L | 1427 | 1919 | 27 | 37.2 | 194 | 325 | 1089 | 1309 | 1468 | 1564 | 1480 | 3676 | 38 | 38 | | | 52^ | 52^ |
| 4 | Total Nitrogen | mg/L | 0.35 | 1.00 | 1.08 | 2.04 | 1.2 | 1.9 | 1.4 | 2.7 | 2.6 | 5.5 | 1.8 | 2.3 | 1.4 | 1.4 | | | 1.1^ | 1.1^ |
| 5 | Ammonia | mg/L | 0.03 | 0.03 | 0.272 | 0.506 | 0.07 | 0.17 | 0.18 | 0.98 | 0.80 | 0.89 | 0.03 | 0.05 | 0.07 | 0.07 | | | <0.02^ | <0.02^ |
| 6 | Total Phosphorus | mg/L | 0.04 | 0.12 | 0.196 | 0.424 | 0.30 | 0.62 | 0.38 | 1.40 | 1.60 | 3.18 | 0.18 | 0.36 | 0.2 | 0.2 | | | 0.11^ | 0.11^ |
| 7 | pH | mg/L | 4.2 | 4.3 | 6.4 | 6.46 | 6.2 | 6.5 | 6 | 6.4 | 6.2 | 6.5 | 4.1 | 5.1 | 5.8 | 5.8 | | | 5.7^ | 5.7^ |
| 8 | Calcium | mg/L | 7.86 | 10.23 | 14.28 | 18.66 | 33.1 | 58.0 | 34.7 | 54.9 | 170 | 232 | 24.3 | 52.3 | 37.6 | 37.6 | 20.45 | 59.86 | 46.1 | 127.0 |
| 9 | Magnesium | mg/L | 109.3 | 136.2 | 12.18 | 16.92 | 37 | 76 | 68 | 107 | 273 | 367 | 102.9 | 265.7 | 16.9 | 16.9 | 54.8 | 108.9 | 22.1 | 48.6 |
| 10 | Sodium | mg/L | 741 | 874 | 38.48 | 54.38 | 97 | 337 | 511 | 701 | 973 | 1045 | 552 | 1593 | 26.2 | 26.2 | 478 | 698 | 69.0 | 120.8 |
| 11 | Potassium | mg/L | 6.17 | 7.23 | 4.85 | 6.044 | 6.17 | 13.84 | 14.2 | 24.7 | 35.4 | 56.34 | 5.30 | 9.43 | 5.25 | 5.25 | 5.57 | 11.59 | 9.42 | 16.01 |
| 12 | Total Aluminium | mg/L | 15.9 | 18.6 | 29.36 | 47.18 | 30.7 | 88.6 | 17.7 | 30.8 | 66.5 | 237.5 | 82.6 | 172.2 | 58.3 | 58.3 | 5.32 | 8.13 | 118.7 | 205.9 |
| 13 | Total Iron | mg/L | 7.01 | 10.84 | 42.54 | 59.28 | 53.7 | 149.8 | 66.3 | 93.3 | 158 | 510 | 26.7 | 71.9 | 38.3 | 38.3 | 8.47 | 9.49 | 115.1 | 194.5 |
| 14 | Total Manganese | mg/L | 0.472 | 0.487 | 0.458 | 0.482 | 0.252 | 0.483 | 0.410 | 0.540 | 0.799 | 0.980 | 0.07^ | 0.07^ | | | 0.85^ | 0.85^ | 0.013^ | 0.013^ |
| 15 | Dissolved Aluminium | mg/L | 4.24 | 4.6 | <0.01* | <0.01* | 0.03 | 0.03 | <0.01* | <0.01* | <0.01* | <0.01* | 0.1^ | 0.1^ | | | 0.23^ | 0.23^ | 1^ | 1^ |
| 16 | Dissolved Arsenic | mg/L | 0.007 | 0.008 | 0.0034 | 0.0046 | 0.003 | 0.003 | 0.0034 | 0.0046 | 0.006 | 0.010 | <0.001*^ | <0.001*^ | | | <0.001^ | <0.001^ | 0.001^ | 0.001^ |
| 17 | Dissolved Cadmium | mg/L | 0.001 | 0.001 | <0.01* | <0.01* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001*^ | <0.001*^ | | | 0.002^ | 0.002^ | <0.001^ | <0.001^ |
| 18 | Dissolved Chromium | mg/L | 0.001 | 0.001 | <0.01* | <0.01* | 0.012 | 0.012 | 0.002 | 0.002 | <0.001* | <0.001* | <0.001*^ | <0.001*^ | | | 0.001^ | 0.001^ | 0.003^ | 0.003^ |
| 19 | Dissolved Copper | mg/L | 0.043 | 0.063 | <0.01* | <0.01* | 0.007 | 0.007 | <0.001* | <0.001* | <0.001* | <0.001* | 0.012^ | 0.012^ | | | 0.218^ | 0.218^ | 0.02^ | 0.02^ |
| 20 | Dissolved Lead | mg/L | 0.021 | 0.03 | <0.01* | <0.01* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001*^ | <0.001*^ | | | <0.001^ | <0.001^ | 0.001^ | 0.001^ |
| 21 | Dissolved Nickel | mg/L | 0.033 | 0.035 | 0.0032 | 0.0038 | 0.0048 | 0.0132 | 0.0018 | 0.0042 | 0.004 | 0.01 | 0.004^ | 0.004^ | | | 0.061^ | 0.061^ | 0.002^ | 0.002^ |
| 22 | Dissolved Silver | mg/L | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001*^ | <0.001*^ | | | <0.001^ | <0.001^ | <0.001^ | <0.001^ |
| 23 | Dissolved Zinc | mg/L | 0.522 | 0.553 | 0.0074 | 0.0086 | 0.013 | 0.013 | 0.010 | 0.014 | 0.019 | 0.019 | 0.008^ | 0.008^ | | | 0.063^ | 0.063^ | 0.007^ | 0.007^ |

* No variation established between sampling events

^ Based on one record only.

Groundwater chemistry trigger values based on sampling conducted in August 2013, November 2013 and February 2014 – cont.

| No. | Parameter | Unit | GW011 | | GW12 | | GW13 | | GW14 | | GW15 | | GW18 | | GW19 | | GW21^ | | GW22 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per |
| 1 | Conductivity | uS/cm | 2904 | 7650 | 3314 | 6962 | 207 | 305 | 7480 | 8074 | 3768 | 3798 | 1652 | 1658 | 746 | 1371 | 1750 | 1750 | 872 | 2056 |
| 2 | Sulphate | mg/L | 448 | 1263 | 1284 | 3267 | 14 | 26 | 166 | 215 | 136 | 206 | 150 | 154 | 46 | 143 | 326 | 326 | 52 | 154 |
| 3 | Chloride | mg/L | 581 | 1422 | 394 | 781 | 25 | 36 | 2386 | 3480 | 990 | 1559 | 101 | 109 | 90 | 98 | 178 | 178 | 201 | 475 |
| 4 | Total Nitrogen | mg/L | 0.56 | 1 | 1.3 | 1.7 | 1.6 | 1.7 | 0.7 | 0.9 | 0.43 | 0.96 | 0.6 | 0.7 | 1.6 | 1.7 | 2.6 | 2.6 | 2.4 | 2.6 |
| 5 | Ammonia | mg/L | 0.03 | 0.13 | 0.82 | 0.93 | 0.32 | 0.50 | 0.08 | 0.10 | 0.07 | 0.10 | 0.20 | 0.22 | 0.1 | 0.28 | | | 0.08 | 0.08 |
| 6 | Total Phosphorus | mg/L | 0.08 | 0.70 | 0.08 | 0.19 | 0.41 | 0.59 | 0.02 | 0.03 | 0.07 | 0.09 | 0.15 | 0.15 | 0.24 | 0.38 | 0.39 | 0.39 | 0.56 | 0.89 |
| 7 | pH | mg/L | 5.0 | 5.4 | 5.7 | 5.8 | 5.2 | 5.9 | 4.3 | 5.3 | 6.3 | 6.4 | 6.7 | 6.9 | 6.4 | 6.7 | 6.8 | 6.8 | 6.2 | 6.3 |
| 8 | Calcium | mg/L | 30.8 | 120.4 | 85.9 | 148.8 | 3.70 | 4.36 | 106 | 127 | 62.3 | 71.5 | 166 | 185 | 34.8 | 124.9 | 29.3 | 29.3 | 22.5 | 27.5 |
| 9 | Magnesium | mg/L | 58.1 | 189.4 | 137 | 233 | 8.23 | 9.23 | 165 | 195 | 115 | 123 | 61.9 | 62.1 | 22.7 | 55.8 | 28.2 | 28.2 | 42.3 | 56.5 |
| 10 | Sodium | mg/L | 427 | 1013 | 313 | 481 | 28.8 | 41.2 | 1048 | 1216 | 532 | 557 | 100.0 | 108.3 | 91.1 | 100.8 | 310 | 310 | 154.8 | 331.9 |
| 11 | Potassium | mg/L | 14.4 | 20.8 | 14.2 | 21.0 | 6.19 | 8.58 | 2.67 | 3.12 | 8.80 | 9.14 | 7.65 | 8.02 | 7.74 | 8.23 | 10.3 | 10.3 | 17.5 | 18.3 |
| 12 | Total Aluminium | mg/L | 24.2 | 91.3 | 20.5 | 48.3 | 31.7 | 62.8 | 4.48 | 5.07 | 1.51 | 2.12 | 2.60 | 5.64 | 10.55 | 30.69 | 48.5 | 48.5 | 108 | 203 |
| 13 | Total Iron | mg/L | 46.8 | 219.3 | 185 | 283 | 41.5 | 60.4 | 2.05 | 3.40 | 8.13 | 10.30 | 5.76 | 9.92 | 18.1 | 48.4 | 43.2 | 43.2 | 199 | 217 |
| 14 | Total Manganese | mg/L | 0.791 | 1.623 | 5.07 | 7.14 | 0.217 | 0.249 | 0.757 | 0.759 | 2.85 | 2.99 | 1.64 | 1.83 | 0.636^ | 0.636^ | 0.358 | 0.358 | 0.011^ | 0.011^ |
| 15 | Dissolved Aluminium | mg/L | 0.26 | 0.56 | 0.02 | 0.02 | 0.02 | 0.03 | 4.07 | 4.29 | 0.01 | 0.01 | <0.01* | <0.01* | <0.01^ | <0.01^ | 0.05 | 0.05 | 0.05^ | 0.05^ |
| 16 | Dissolved Arsenic | mg/L | <0.001* | <0.001* | 0.029 | 0.030 | 0.002 | 0.004 | 0.001 | 0.001 | 0.020 | 0.021 | 0.007 | 0.008 | 0.001^ | 0.001^ | 0.002 | 0.002 | <0.01^ | <0.01^ |
| 17 | Dissolved Cadmium | mg/L | 0.0022 | 0.0028 | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001^ | <0.001^ | <0.001 | <0.001 | <0.001^ | <0.001^ |
| 18 | Dissolved Chromium | mg/L | 0.001 | 0.001 | <0.001* | <0.001* | 0.001 | 0.001 | <0.001* | <0.001* | <0.001* | <0.001* | 0.001 | 0.001 | <0.001^ | <0.001^ | <0.001 | <0.001 | <0.001^ | <0.001^ |
| 19 | Dissolved Copper | mg/L | 0.1818 | 0.2292 | <0.001* | <0.001* | <0.001* | <0.001* | 0.114 | 0.200 | <0.001* | <0.001* | <0.001* | <0.001* | 0.013^ | 0.013^ | 0.048 | 0.048 | 0.01^ | 0.01^ |
| 20 | Dissolved Lead | mg/L | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | 0.001 | 0.001 | <0.001* | <0.001* | <0.001* | <0.001* | <0.001^ | <0.001^ | <0.001 | <0.001 | <0.001^ | <0.001^ |
| 21 | Dissolved Nickel | mg/L | 0.0626 | 0.0884 | 0.003 | 0.003 | 0.003 | 0.003 | 0.028 | 0.029 | 0.003 | 0.003 | 0.003 | 0.005 | 0.015^ | 0.015^ | 0.144 | 0.144 | <0.001^ | <0.001^ |
| 22 | Dissolved Silver | mg/L | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001* | <0.001^ | <0.001^ | <0.001 | <0.001 | <0.001^ | <0.001^ |
| 23 | Dissolved Zinc | mg/L | 0.0788 | 0.0992 | 0.028 | 0.034 | 0.014 | 0.023 | 0.130 | 0.146 | 0.007 | 0.007 | 0.011 | 0.015 | 0.057^ | 0.057^ | 0.122 | 0.122 | 0.084^ | 0.084^ |

* No variation established between sampling events

^ Based on one record only.

Groundwater chemistry trigger values based on sampling conducted in August 2013, November 2013 and February 2014 – cont.

| No. | Parameter | Unit | GW23 | | GW24 | | GW25 | | GW26^ | | GW27 | | GW28^ | | GW29 | | GW30 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per | 20th per | 80th per |
| 1 | Conductivity | uS/cm | 417 | 624 | 5530^ | 5530^ | 805^ | 805^ | 494 | 494 | 567 | 746 | 2140 | 2140 | 291 | 539 | 4436 | 4934 | | |
| 2 | Sulphate | mg/L | 51 | 87 | 151^ | 151^ | 18^ | 18^ | 18 | 18 | 41 | 64 | 5.9 | 5.9 | 35.9 | 123.7 | 158 | 167 | | |
| 3 | Chloride | mg/L | 55.4 | 86 | 1686^ | 1686^ | 235^ | 235^ | 136 | 136 | 80 | 81 | 34 | 34 | 45 | 63 | 1219 | 1390 | | |
| 4 | Total Nitrogen | mg/L | 0.5 | 0.8 | 1.2^ | 1.2^ | 0.9^ | 0.9^ | 1.4 | 1.4 | 0.3 | 0.7 | 2.6 | 2.6 | 2.6 | 4.8 | 1.8 | 2.0 | | |
| 5 | Ammonia | mg/L | 0.03 | 0.04 | 0.04^ | 0.04^ | 0.14^ | 0.14^ | 0.1 | 0.1 | 0.04 | 0.06 | 0.06 | 0.06 | 0.05 | 0.06 | 0.04 | 0.05 | | |
| 6 | Total Phosphorus | mg/L | 0.43 | 1.096 | 4.6^ | 4.6^ | 0.12^ | 0.12^ | 0.18 | 0.18 | 0.14 | 0.22 | 0.92 | 0.92 | 0.63 | 1.07 | 0.52 | 0.55 | | |
| 7 | pH | mg/L | 5.5 | 6.3 | 6.5^ | 6.5^ | 4.9^ | 4.9^ | 5.1 | 5.1 | 5.1 | 5.9 | 4.6 | 4.6 | 5.3 | 5.8 | 4.3 | 4.5 | | |
| 8 | Calcium | mg/L | 28.8 | 45.6 | 42.5 | 160.6 | 2.55^ | 2.55^ | 2.09 | 2.09 | 18.3 | 25.6 | 5.75 | 5.75 | 7.2 | 13.9 | 11.5 | 12.3 | | |
| 9 | Magnesium | mg/L | 17 | 23 | 29.35 | 96.59 | 14.8^ | 14.8^ | 7.07 | 7.07 | 8.3 | 9.6 | 6.83 | 6.83 | 23.1 | 34.0 | 79.9 | 90.3 | | |
| 10 | Sodium | mg/L | 54.0 | 87.6 | 206.7 | 593.9 | 130^ | 130^ | 78.9 | 78.9 | 60.2 | 60.3 | 33.1 | 33.1 | 133 | 231 | 687 | 760 | | |
| 11 | Potassium | mg/L | 5.56 | 5.93 | 7.2 | 12.5 | 17^ | 17^ | 12.8 | 12.8 | 4.34 | 6.24 | 10.5 | 10.5 | 13.9 | 20.3 | 13.2 | 14.2 | | |
| 12 | Total Aluminium | mg/L | 33.3 | 61.44 | 19.51 | 51.08 | 48.2 | 56.7 | 23.1 | 23.1 | 2.89 | 4.16 | 43.1 | 43.1 | 109 | 186 | 41.3 | 108.6 | | |
| 13 | Total Iron | mg/L | 21.9 | 35.8 | 34.2 | 98.5 | 89.0 | 103.3 | 41.3 | 41.3 | 6.61 | 10.20 | 65.3 | 65.3 | 109 | 110 | 36.9 | 115.6 | | |
| 14 | Total Manganese | mg/L | 0.458 | 0.642 | 0.172^ | 0.172 | 0.902^ | 0.902^ | | | 0.492^ | 0.492^ | | | 0.571^ | 0.571^ | 3.21 | 3.58 | | |
| 15 | Dissolved Aluminium | mg/L | 0.05 | 0.19 | 0.19^ | 0.19 | 0.05^ | 0.05^ | | | <0.01^ | <0.01^ | | | 3.21^ | 3.21^ | 2.34 | 2.60 | | |
| 16 | Dissolved Arsenic | mg/L | 0.001 | 0.001 | 0.002^ | 0.002 | 0.001^ | 0.001^ | | | 0.001^ | 0.001^ | | | 0.014^ | 0.014^ | 0.002 | 0.003 | | |
| 17 | Dissolved Cadmium | mg/L | <0.001* | <0.001* | <0.001^ | <0.001 | 0.001^ | 0.001^ | | | <0.001^ | <0.001^ | | | 0.001^ | 0.001^ | 0.001 | 0.001 | | |
| 18 | Dissolved Chromium | mg/L | <0.001* | <0.001* | <0.001^ | <0.001 | <0.001^ | <0.001^ | | | <0.001^ | <0.001^ | | | 0.006^ | 0.006^ | <0.001* | <0.001* | | |
| 19 | Dissolved Copper | mg/L | 0.009 | 0.009 | 0.428^ | 0.428 | 0.066^ | 0.066^ | | | 0.002^ | 0.002^ | | | 0.017^ | 0.017^ | 2.09 | 2.23 | | |
| 20 | Dissolved Lead | mg/L | <0.001* | <0.001* | <0.001^ | <0.001 | 0.001^ | 0.001^ | | | <0.001^ | <0.001^ | | | 0.009^ | 0.009^ | <0.001* | <0.001* | | |
| 21 | Dissolved Nickel | mg/L | 0.003 | 0.006 | 0.028^ | 0.028 | 0.016^ | 0.016^ | | | 0.006^ | 0.006^ | | | 0.031^ | 0.031^ | 0.161 | 0.172 | | |
| 22 | Dissolved Silver | mg/L | <0.001* | <0.001* | <0.001^ | <0.001 | <0.001^ | <0.001^ | | | <0.001^ | <0.001^ | | | <0.001^ | <0.001^ | <0.001* | <0.001* | | |
| 23 | Dissolved Zinc | mg/L | 0.069 | 0.239 | 0.13^ | 0.13 | 0.15^ | 0.15^ | | | 0.026^ | 0.026^ | | | 5.25^ | 5.25^ | 0.813 | 0.859 | | |

* No variation established between sampling events

^ Based on one record only.

Groundwater depth trigger values

| Borehole Reference | Top of casting RL (mAHD) | Depth of water level 20th per | 80th per |
|---|---|---|---|
| GW01 (mTOC) | 20.11 | 4.41 | 4.93 |
| GW01 (mAHD) | | 15.18 | 15.70 |
| GW02 (mTOC) | 3.57 | 1.95 | 2.96 |
| GW02 (mAHD) | | 0.61 | 1.62 |
| GW03 (mTOC) | 2.64 | 0.81 | 2.08 |
| GW03 (mAHD) | | 0.58 | 1.81 |
| GW04 (mTOC) | 1.69 | 1.11 | 2.21 |
| GW04 (mAHD) | | -0.52 | 0.58 |
| GW05 (mTOC) | 1.24 | 0.81 | 1.55 |
| GW05 (mAHD) | | -0.31 | 0.43 |
| GW06 (mTOC) | 20.1 | 5.36 | 5.85 |
| GW06 (mAHD) | | 14.25 | 14.74 |
| GW07 (mTOC) | 15.98 | 2.86 | 5.19 |
| GW07 (mAHD) | | 10.79 | 13.12 |
| GW08 (mTOC) | 19.09 | 6.94 | 6.94 |
| GW08 (mAHD) | | 12.15 | 12.15 |
| GW09 (mTOC) | 17.57 | 8.05 | 8.66 |
| GW09 (mAHD) | | 8.91 | 9.52 |
| GW10 (mTOC) | 15.38 | 3.34 | 7.27 |
| GW10 (mAHD) | | 8.11 | 12.04 |
| GW11 (mTOC) | 1.591 | 1.49 | 2.45 |
| GW11 (mAHD) | | -0.86 | 0.10 |
| GW12 (mTOC) | 1.573 | 0.74 | 1.68 |
| GW12 (mAHD) | | -0.20 | 0.83 |
| GW13 (mTOC) | 2.04 | 1.44 | 2.05 |
| GW13 (mAHD) | | -0.01 | 0.60 |
| GW14 (mTOC) | 5.656 | 2.60 | 3.43 |
| GW14 (mAHD) | | 2.23 | 3.06 |
| GW15 (mTOC) | 13.79 | 10.01 | 10.32 |
| GW15 (mAHD) | | 3.47 | 3.78 |
| GW16 (mTOC) | 14.14 | 8.13 | 8.13 |
| GW16 (mAHD) | | 6.01 | 6.01 |
| GW17 (mTOC) | 59.47 | Dry | Dry |
| GW17 (mAHD) | | Dry | Dry |
| GW18 (mTOC) | 96.71 | 33.98 | 34.04 |
| GW18 (mAHD) | | 62.67 | 62.73 |
| GW19 (mTOC) | 51.81 | 7.53 | 9.46 |
| GW19 (mAHD) | | 42.35 | 44.28 |
| GW20 (mTOC) | 87.18 | Dry | Dry |
| GW20 (mAHD) | | Dry | Dry |
| GW21 (mTOC) | 51.29 | 4.65 | 5.79 |
| GW21 (mAHD) | | 45.50 | 46.64 |
| GW22 (mTOC) | 17.27 | 4.64 | 5.28 |
| GW22 (mAHD) | | 11.99 | 12.63 |
| GW23 (mTOC) | 39.22 | 15.93 | 15.99 |
| GW23 (mAHD) | | 23.23 | 23.29 |
| GW24 (mTOC) | 26.09 | 6.25 | 7.78 |
| GW24 (mAHD) | | 18.31 | 19.84 |
| GW25 (mTOC) | 61.72 | 11.53 | 12.35 |
| GW25 (mAHD) | | 49.37 | 50.19 |
| GW26 (mTOC) | 54.56 | 14.17 | 14.98 |
| GW26 (mAHD) | | 39.58 | 40.39 |
| GW27 (mTOC) | 74.33 | 27.45 | 27.66 |
| GW27 (mAHD) | | 46.67 | 46.88 |
| GW28 (mTOC) | 54.65 | 8.45 | 9.40 |
| GW28 (mAHD) | | 45.25 | 46.20 |
| GW29 (mTOC) | 45.11 | 2.97 | 8.82 |
| GW29 (mAHD) | | 36.29 | 42.14 |
| GW30 (mTOC) | 41.49 | 3.16 | 4.59 |
| GW30 (mAHD) | | 36.90 | 38.33 |

Groundwater trigger values for physical parameters

| | Electrical conductivity (uS/cm) | | pH | | Temperature ($^0$C) | |
|---|---|---|---|---|---|---|
| Borehole reference | 20$^{th}$ per | 80$^{th}$ per | 20$^{th}$ per | 80$^{th}$ per | 20$^{th}$ per | 80$^{th}$ per |
| GW01 | 5062 | 5502 | 4.1 | 4.5 | 20.1 | 20.9 |
| GW02 | 293 | 656 | 6.2 | 6.5 | 19.0 | 21.2 |
| GW03 | 1009 | 1283 | 6.0 | 6.5 | 18.5 | 21.3 |
| GW04 | 3027 | 5520 | 6.0 | 6.3 | 18.6 | 20.3 |
| GW05 | 5970 | 6728 | 6.2 | 6.6 | 17.4 | 18.9 |
| GW06 | 1359 | 8204 | 3.6 | 5.0 | 18.5 | 19.8 |
| GW07 | 172 | 230 | 5.6 | 5.9 | 18.5 | 19.5 |
| GW08 | No record | No record | No record | No record | No record | No record |
| GW09 | 1981 | 2536 | 4.1 | 5.6 | 18.3 | 18.5 |
| GW10 | 443 | 780 | 5.7 | 6.3 | 18.2 | 19.5 |
| GW11 | 1296 | 5880 | 4.9 | 5.2 | 18.2 | 19.6 |
| GW12 | 2467 | 4460 | 5.8 | 6.0 | 18.0 | 20.5 |
| GW13 | 186 | 295 | 5.3 | 5.8 | 19.1 | 20.0 |
| GW14 | 6312 | 7068 | 4.4 | 6.1 | 19.2 | 20.0 |
| GW15 | 3600 | 3740 | 6.2 | 6.4 | 19.4 | 20.2 |
| GW16 | No record | No record | No record | No record | No record | No record |
| GW17 | No record | No record | No record | No record | No record | No record |
| GW18 | 1588 | 1648 | 6.5 | 6.7 | 19.9 | 20.5 |
| GW19 | 554 | 602 | 6.1 | 6.4 | 19.5 | 20.2 |
| GW20 | No record | No record | No record | No record | No record | No record |
| GW21 | 1861 | 2426 | 6.2 | 6.3 | 18.8 | 20.3 |
| GW22 | 842 | 5484 | 6.0 | 6.3 | 17.6 | 20.2 |
| GW23 | 415 | 726 | 5.8 | 6.2 | 19.0 | 19.6 |
| GW24 | 509 | 974 | 4.5 | 5.3 | 18.3 | 19.0 |
| GW25 | 476 | 965 | 4.7 | 5.0 | 19.9 | 20.5 |
| GW27 | 535 | 737 | 6.0 | 6.2 | 19.3 | 20.5 |
| GW28 | 181 | 225 | 5.3 | 5.7 | 19.5 | 22.6 |
| GW29 | 222 | 299 | 5.4 | 5.9 | 18.4 | 19.9 |
| GW30 | 1750 | 3800 | 4.3 | 5.0 | 19.4 | 20.0 |
| GW26 | 1083 | 1337 | 5.5 | 5.9 | 19.1 | 20.6 |