



GUIDANCE ON HOW TO DEVELOP A SITE MANAGEMENT PLAN (SMP) FOR AQUATIC FACILITIES WITHIN LOGAN CITY COUNCIL

Purpose of this document

This document is intended to assist managers and operators of high risk public aquatic facilities in developing a Site Management Plan (SMP) for their facilities. Guidance on completion of a SMP is provided in text boxes at the start of each section. Also, examples are given of typical plan entries.

A separate document has been developed in line with this guidance called '**Example Site Management Plan**' which can be used to develop a SMP. When completing a SMP, these examples should be replaced by the facilities' own entries.

<Aquatic facility name>

Site Management Plan

*<option to insert
picture/logo>*

| | |
|------------------|--|
| Facility address | |
| Contact person | |
| Position | |

Revision history

| Revision | Name of person | Date | Initials |
|----------|----------------|------|----------|
| | | | |
| | | | |

Section 1 – Facility management team

Guidance note

- Including staff roles, responsibilities and competency or trainings
- The names, position titles, and skills/knowledge/experience of each staff should be documented in Table 1.

Table 1 – Facility team

| Name | Position | Skills / knowledge / experience |
|------------------|------------------------|---|
| E.g. James Smith | Manager/ pool operator | Knowledge: pool plant, pool maintenance, water testing, first aid, lifesaving, etc. |

- *Add more rows as required.*

Section 2 – A description of the facility, its source water, and its treatment systems

Guidance note

Describe how the water flows through the public aquatic facility, including all the components associated with the flow such as, but not limited to, water source (usually the town water supply), filtration system, pH adjustment system, primary disinfection system (e.g. chlorination), secondary disinfection system (e.g. ozone, UV) and monitoring points located throughout the process.

Provide a basic schematic and/or flow diagram of the process as below. Be sure to include the water body or interactive water feature where bathers come into contact with the water. For interactive water features NOT located within a larger public aquatic facility, the process description should include identification of locations where passers-by may be exposed to spray mist.

Insert process flow diagram here. Figure 1 is shown as an example.

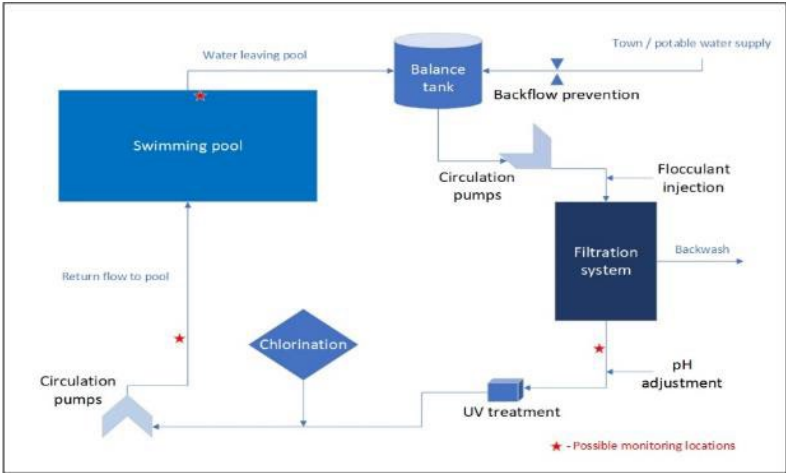


Figure 1. Example process flow diagram for a swimming pool

Section 3 – Hazard identification and risk assessment

Guidance note

Table 2 below can be used to document your hazards and hazardous events, to assess the risks and to identify appropriate control measures. Guidance on how to complete each column of the table is provided within the table below.

Also refer to Chapter 10, Appendix E of the *NSW Department of Health 2013- Public swimming pool and spa pool advisory* document for health risk management planning and an example of descriptive risk assessment and management of pools.

Example of a completed hazard identification and risk assessment table is provided in the example Site Management Plan document.

Table 2 – Hazard identification and risk assessment (showing examples)

| Hazard / Hazardous Event | Current control measures | Current risk | Additional control measures |
|---|--|--|--|
| <p>Guidance note: List all the hazards/hazardous events associated with your facility. Some examples have been provided here. These should be replaced in your own risk table. Further information about the hazards/ hazardous events that may be relevant to your aquatic facility are discussed in Chapter 2 of the Water quality guidelines for public aquatic facilities.</p> | <p>Guidance note: Identify control measures currently employed to reduce the level of risk. Insert these controls here. Note that monitoring, on its own, should not be considered a control measure.</p> | <p>Guidance note: To assess the current level of risk for each hazard/hazardous event, go to Appendix 1, Table A to estimate the likelihood and Table B to estimate the consequence (or seriousness) of the hazards/ hazardous events. Then consult the risk matrix in Table C to determine the level of risk. Record your assessment of risk for each of your hazards/hazardous events here.</p> | <p>Guidance note: Where the current risk is unacceptably high, document here any additional control measures that should be implemented to reduce risk to an acceptable level (e.g. this could include non-treatment-based control measures such as closing the facility temporarily to allow for water quality to improve or reducing pool water turnover time).</p> |
| <p>E.g. Chlorine-sensitive disease-causing microorganisms from faecal release</p> | <p>E.g.</p> <ul style="list-style-type: none"> - Maintain effective minimum free chlorine concentration and pH at all times v Filtration | <p>E.g. Low</p> | <p>E.g. Nil</p> |

Replace these examples with your own hazards/hazardous events, and add more rows as required.

Section 4 – Monitoring

Guidance note:

- Use Tables 3 and 4 below to record operational and verification monitoring activities.
- For each parameter that requires monitoring, you should identify the frequency of monitoring required, the locations where monitoring should be undertaken, the targets that should be met, the corrective actions that will be taken in response to a non-compliant monitoring result and how you are required to record the monitoring activity (e.g. daily/ weekly log sheets).
- Frequency of operational monitoring should be carried out based on the risk category and as provided in Appendix 2 Table A2.5 of the water quality guidelines for public aquatic facilities.
- Swimming pool water quality should comply with the chemical and microbiological criteria in Appendix 2 of the Tables A2.1, A2.2 and A2.3 of the water quality guidelines for public aquatic facilities.
- Where a facility is unable to comply with these criteria, this should be identified in this plan and under this section, which should also include a description of how the facility manager will ensure public health is protected using alternative performance criteria or control measures.

Table A2.1 Chemical criteria for facilities using chlorine-based primary disinfectants

| Parameter | Situation | Criteria ¹ |
|---------------------------------|---|-----------------------------------|
| Free chlorine ² | Any pool without cyanuric acid, other than a spa pool | Min. 1.0 mg/L |
| | Outdoor pool with cyanuric acid | Min. 2.0 mg/L |
| | Spa pool | Min. 3.0 mg/L |
| | Interactive water feature | Min. 1.0 mg/L |
| Combined chlorine (chloramines) | Any pool or interactive water feature | Max. 1.0 mg/L, ideally < 0.2 mg/L |
| Total chlorine | Any pool or interactive water feature | Max. 10 mg/L |
| Turbidity (pool water) | Any pool or interactive water feature | Max. 1 NTU, ideally < 0.5 NTU |
| pH | Any pool or interactive water feature | 7.2–7.8 |
| Total alkalinity | Any pool or interactive water feature | 80–200 mg/L |
| Cyanuric acid | Outdoor pool only | Max. 50 mg/L, ideally ≤ 30 mg/L |
| Ozone ³ | Any pool or interactive water feature | Not detectable |

¹ mg/L is equivalent to parts per million or ppm

² Free chlorine concentration should be increased when high bather numbers are anticipated to ensure concentrations are never less than the minimum.

³ Residual excess ozone is to be quenched before circulated water is returned to the pool.

Table A2.2 Chemical criteria for facilities using bromine-based primary disinfectants

| Parameter | Situation | Criteria ¹ |
|-------------------------------------|------------------------------------|--|
| Bromine ² | Any pool, other than a spa pool | Min. 2.0 mg/L |
| | Spa pool | Min. 6.0 mg/L |
| | Any pool | Max. 8.0 mg/L |
| pH | Any pool | 7.2–8.0 |
| Sodium bromide | Bromine bank system | Max. 8.0 mg/L |
| | Ozone ² /bromide system | Max. 15 mg/L |
| Turbidity (pool water) ⁴ | Any pool | Max. 1 NTU ⁵ , ideally <0.5 NTU |
| Total alkalinity | Any pool | 80–200 mg/L |
| Cyanuric acid | Any pool | None – no benefit |

Table A2.3 Microbiological criteria for all facilities

| Parameter | Guidelines value |
|---|--|
| <i>Escherichia coli</i> (or thermotolerant coliforms) | Less than 1 CFU ⁶ /100 mL or less than 1 MPN ⁷ /100 mL |
| <i>Pseudomonas aeruginosa</i> | Less than 1 CFU/100 mL or less than 1 MPN/100 mL |
| Heterotrophic colony count (HCC) | Less than 100 CFU/mL |

¹ mg/L is equivalent to parts per million or ppm

² Bromine concentration should be increased when high bather numbers are anticipated to ensure concentrations are never less than the minimum.

³ Ozone quenching is not required in an ozone/bromide system.

⁴ If turbidity is measured immediately post filtration, it should not exceed 0.5 NTU (DIN 19643 (2012-11)).

⁵ NTU - Nephelometric Turbidity Unit.

⁶ CFU - colony forming units

⁷ MPN - most probable number

Table A2.5 Recommended minimum operational monitoring frequency

| | Low-risk facilities | Medium-risk facilities | High-risk facilities |
|--|---|-------------------------------|-----------------------------|
| Free chlorine and combined chlorine; or bromine | For facilities with automated monitoring¹ | | |
| | 1 daily sample | 1 daily sample | 1 daily sample |
| | For facilities without automated monitoring | | |
| | 1 daily sample | 3 daily samples | 5 daily samples |
| pH | Tested at the same time as for disinfectant residual (all facilities) | | |
| Water balance (Includes calcium hardness, total alkalinity TDS and temperature) | Weekly (all facilities) | | |
| Turbidity | Daily (all facilities) | | |
| Cyanuric acid (if used) | Weekly (all facilities) | | |

¹ When automated monitoring is in place, the daily sample refers to a sample that is taken by hand and is analysed manually.

Table 3 – Operational monitoring (showing examples)

Guidance note:
 Operational monitoring involves monitoring water quality to confirm the performance of treatment processes and control measures (e.g. free chlorine, pH, turbidity). It also includes physical variables like water temperature. It may be automated or undertaken manually. Use this table to develop a schedule for operational monitoring.

| Parameter | Frequency | Location | Target | Corrective action | Record keeping |
|---------------------------|-----------|--------------------------------|--|---|----------------|
| <i>E.g. Free chlorine</i> | 5x daily | Designated monitoring location | Alert > 1.5 mg/L Critical > 1 mg/L for 10 minutes | When free chlorine < 1.0 mg/L <ul style="list-style-type: none"> • Investigate cause of low free chlorine • Address cause of low free chlorine • Re-establish appropriate water quality • Close pool if cause not readily available | Monitoring log |
| <i>E.g. pH</i> | 5 x daily | Designated monitoring location | 7.2 – 7.8 | <ul style="list-style-type: none"> • Investigate cause of low pH / high pH • Address cause of low pH / high pH • Re-establish appropriate water quality | Monitoring log |

Replace these examples with your own operational monitoring and add more rows as required

Table 4 – Verification monitoring- not mandatory (showing examples)

Guidance note:
 Verification monitoring involves sending water samples to a laboratory for analysis. Use this table to develop a schedule for verification monitoring (e.g. E. coli, Pseudomonas aeruginosa, heterotrophic colony count). However this is not mandatory under the licence conditions.

| Parameter | Frequency | Location | Target | Corrective action | Record keeping |
|-----------------------------|--|---|------------------|---|--------------------------------|
| E.g. E. coli | Annually or in response to an outbreak | Verification monitoring point (location furthest from the inlets) | < 1 MPN / 100 mL | <ul style="list-style-type: none"> • Close pool if micro results less than target • Retest prior to opening | Microbiological monitoring log |
| E.g. Pseudomonas aeruginosa | Annually or in response to an outbreak | Verification monitoring point (location furthest from the inlets) | < 1 cfu / 100 mL | <ul style="list-style-type: none"> • Close pool if micro results less than target • Retest prior to opening | Microbiological monitoring log |

Replace these examples with your own verification monitoring and add more rows as required

Section 5 – Incident response and pool safety signage

Guidance note:

With reference to Appendix 6 of the water quality guidelines for public aquatic facilities, list the procedures developed to respond to diarrhoeal and formed stool/vomit incidents.

Also under this section Pools Safety Signage (e.g. CPR procedure and pool pumping signage) should be included.

Example of incident responses and pool safety signage are provided in the example Site Management Plan document.

Section 6 – Hygiene measures to prevent likelihood of contamination

Guidance note:

To help minimize public health risks facility management should have planned hygiene control measures in place to prevent contamination and help ensure bathers practice good hygiene.

Example of good hygiene practices are provided in the example Site Management Plan document. Apply these examples to your facility.

Section 7 – Cleaning and maintenance of the facility

Guidance note:

Add details in here about how the facility, pool surrounds, waste bins, etc. will be kept in a clean and sanitary condition. Also add details here about how facility will be maintained in good working order and in a good state of repair. Information related to equipment servicing, pool filtration and surrounds maintenance, fire safety maintenance, ventilation system maintenance, pest control, etc. can be included here.

Example of cleaning and maintenance schedules are provided in the example Site Management Plan document.

Section 8 – Data recording and record keeping

Guidance note:

All aquatic facilities should maintain a record of operational and verification monitoring results for at least 12 months. An example of a monitoring log template is provided in Appendix 7 of the guidelines and in the example Site Management Plan document. Results for all the chemical and any microbiological sampling undertaken (including date, time, chemical/biological parameter and the levels) and records of incidents affecting pool water quality should be recorded. Appropriate corrective actions should be undertaken in instances where non-compliant results are observed.

Section 9 – Operator skills and training

Guidance note:

As noted in Chapter 10 of the water quality guidelines for public aquatic facilities, all staff involved in operating a public aquatic facility should undertake training appropriate to their role. This plan should include a training schedule showing staff skills and competencies including dates for refresher training, including both formal (accreditation- based) and informal training opportunities (e.g. workshop and conference attendance).

Example training schedule is provided in the example Site Management Plan document.

Section 10 – Audit and review

Guidance note:

A SMP review should take place at least annually. Note that in addition to routine reviews you should consider reviewing your plan whenever there are significant changes to the operation of your facility, your control measures, or in the event of a significant public health risk event (e.g. suspected outbreak of illness).

As example you can include the following for your site management plan audit and review:

This site management plan will be reviewed annually on 15th of January.

Review timing will also depend on:

- ▼ When there is a major change within the operation and the structure of the facility
- ▼ When there is a change within the control measures
- ▼ Following any significant public health risk event
- ▼ When there is a need to improve performance in an area of the operation

Date of last review:

Reviewed by:

Amendments proposed:

Appendix 1. Likelihood and consequence descriptors

Table A – Qualitative measures of likelihood

| Descriptor | Description |
|----------------|--|
| Almost certain | Is expected to occur daily to weekly (from 52 to 365 times per year) |
| Likely | May occur weekly (13-52 times per year) |
| Possible | May occur monthly (2-12 times per year) |
| Unlikely | Expected to occur annually (1 per year) |
| Rare | May occur less than annually |

Table B – Qualitative measures of consequence

| Descriptor | Description |
|---------------|---|
| Catastrophic | Acute health impact e.g. significant disease linked to the facility |
| Major | Probable health impact e.g. diarrhoeal incident or pathogens detected, or facility impacted |
| Moderate | Potential acute health impact e.g. faecal incident or repeated water quality exceedance |
| Minor | Minor health related issue e.g. skin/eye irritation or isolated water quality issue |
| Insignificant | Isolated aesthetic issue |

Table C – Qualitative risk assessment matrix

| | Consequence | | | | |
|----------------|---------------|----------|----------|-----------|--------------|
| Likelihood | Insignificant | Minor | Moderate | Major | Catastrophic |
| Almost certain | Moderate | High | High | Very high | Very high |
| Likely | Moderate | Moderate | High | High | Very high |
| Possible | Low | Moderate | Moderate | High | High |
| Unlikely | Low | Low | Moderate | Moderate | High |
| Rare | Low | Low | Low | Moderate | Moderate |