

AIDING WATER UTILITIES CONSIDERING DEVELOPMENT PLANNING WITHIN OPEN WATER SUPPLY CATCHMENT

TOP TEN LEARNINGS FROM PLANNING TRIBUNALS IN VICTORIA REGARDING DEVELOPMENT WITHIN OPEN POTABLE WATER SUPPLY CATCHMENTS

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INTRODUCTION

Victoria has specific statutory provisions for developments on land in open drinking water catchments. Clause 66 of all planning schemes contains a requirement for certain kinds of permit applications within catchment areas to be referred to the relevant water utility in accordance with Section 55 of the *Victorian Civil and Administrative Tribunal Act 1998* (Vic) (the ACT).

As a determining referral authority, water utilities can object to a planning permit application where the risk to drinking water is considered unacceptable. If the water utility

objects on this basis, the local council must refuse to grant a planning permit. To facilitate these assessments, planning guidelines have been developed, along with the provision of codes of practice, legislation and model permit conditions. Where the water utility recommends refusal of a planning permit, or when the local council refuses to grant a permit in its own right, the applicant can seek for the case to be reviewed at the Victorian Civil and Administrative Tribunal (VCAT). The development applicant, local council and water utility are then called to present assessments and submissions in support of their positions at VCAT.

The VCAT was established under the *Victorian Civil and Administrative Tribunal Act 1998* (the Act) and began operations on 1 July 1998. Where a case at VCAT is considered to present significant findings and adds to the body of learning in a particular area, VCAT classifies the case as a 'red dot' decision. Some red dot decisions are also identified as guideline decisions. Guideline decisions establish principles that could or should be followed or applied in other decision-making.

They may establish new principles or they may clarify or restate established principles, especially when there may

Box 1: Theoretical development planning scenario

A water utility has objected to a planning application to build a house with an on-site wastewater management system within an open potable water supply catchment. Council has refused to grant a permit, based on the determining authorities' (water utility's) objection.

The applicant has requested that the matter be reviewed by VCAT on the following basis:

- A more comprehensive expert assessment will find that the land is capable of containing 1 dwelling without significantly impacting drinking water quality
- There are alternative techniques to ensure that all wastewater can be contained and treated on the site.

¹<https://www.vcat.vic.gov.au/adv/disputes/planning-and-environment/decisions-0>

Box 2: Theoretical development planning scenario

CONSIDERATIONS

- The proposal did not meet the 1:40 DSE Guideline 1 threshold, and
- Exemption from Guideline 1 has not been demonstrated, with no evidence that the cumulative risk from the existing dwelling density within a 1 kilometre radius is being acceptably managed.

EXEMPTIONS

There are four categories of exemptions listed in relation to Guideline 1 (with Category 4 exemptions of most relevance).

Category 4: The relevant water utility may consider allowing a higher density if all of the following conditions are met:

1. The minimum lot size area specified in the zone is met
2. The water utility is satisfied that the relevant Council has prepared, adopted and is implementing a Domestic Wastewater Management Plan
3. The proposal does not present an unacceptable risk to the catchment (with risk being defined by criteria in the DSE Guidelines). NB: The findings of McDonald v Hepburn SC VCAT 1538 emphasised the need to explicitly address the DSE criteria and not other risk-based criteria defined by Council or water utilities).

RISK CRITERIA WITHIN THE DSE GUIDELINE:

- The proximity and connectivity of the proposal site to the potable water supply source
- The existing condition of the catchment and evidence of unacceptable water quality impacts
- The quality of the soil and slope of the land
- The existing lot and dwelling pattern in the vicinity of site
- Any site remediation and/or improvement works that form part of the application
- The intensity or size of the development or use proposed and the amount of run-off that is likely to be generated

APPLICATION OF GUIDELINES

It should be noted that while the DSE Guidelines are an important aid in the assessment of planning permit, they are not mandatory controls. Specifically, Guideline 1 refers to 'should' rather than 'must' when referring to the density Guideline 1. Case findings indicate that 'should' allows for the evaluation of special circumstances, but also states that "unless all the conditions listed in Category 4 are met then it is difficult to support a higher density of development than one dwelling per 40 hectares."

DECISION

For all of the above reasons we will direct that no permit is to be issued.

have been debate or uncertainty about their application or they are applied in new or important circumstances¹.

This review has utilised several red dot decisions related to planning in open water supply catchments to determine key learnings and has also reflected on how subsequent cases have utilised and interpreted red dot decisions. The key learnings while most relevant to the Victorian planning system, also have more general application in other States, although the successful application of these principles may be limited where

planning policy and regulation is less comprehensive. To showcase the principles within this paper, a theoretical development application scenario (Box 1) has been used to illustrate how such principles are relevant and are applicable within the decision-making process (Box 2).

LEARNINGS

[Principle 1 - Water Utilities and Councils Have Complementary Roles in Development Assessment and Control as Part of the 'Multiple Barrier' Approach](#)

[to Water Quality Protection](#)

From the perspective of the water utility, safe drinking water must be the primary focus when considering planning permits within open potable water supply catchments. Water utilities have the duty of care to their drinking water customers and the right to object to development planning permits through local government on the basis of safe drinking water quality. These duties and rights are stated or implied in national and state guidelines, policies, plans and planning systems. Specifically:

Safe Drinking Water Quality

- The Australian Drinking Water Guidelines (the ADWG) include six very important and often overlooked ‘guiding principles’ as well as the broader Framework for Management of Drinking Water Quality.
- In Victoria the [Safe Drinking Water Act 2003](#) (Vic) (SDWA) provides a comprehensive, state-wide regulatory framework. Water utilities are governed by the SDWA and are required to produce a Risk Management Plan (RMP). As part of the RMP, Catchment Management Plans (or equivalent) are typically developed by water utilities that affirm the catchment as the first and most critical barrier in a multiple barrier approach. The supporting catchment risk assessments should address the risk from both existing and future expanded development.

Victorian Planning System

- Victoria Planning Provisions
- Planning Schemes – inclusive of State and Local Planning Policy Frameworks
- Guidelines for Planning Permit Applications in Open, Potable Water Supply Catchment Areas, 2012 (Department of Sustainability and Environment, DSE Guideline). The DSE Guideline applies to all open potable water supply catchments declared to be special water supply catchment areas under Division 2 of Part 4 of the *Catchment and Land Protection Act 1994* (Vic). The DSE Guideline is of key importance to many planning applications and several cases which have been considered by VCAT in the past (Rozen v Macedon Ranges SC VCAT 2746, Simpson v Ballarat CC VCAT 133, Kaporis v Macedon Ranges SC VCAT 1969 and McDonald v Hepburn SC VCAT 1538).

Multiple Barrier

Through their roles in development planning both the water utilities and

councils have an important role in providing the ‘multi-barrier’ approach, whereby the catchment is considered to provide a significant ‘natural’ barrier to contamination. Multiple barriers and the protection of source waters are promoted right upfront within the ‘Guiding Principles’ section of the ADWG that includes the following points:

- *“The multiple barrier approach is universally recognised as the foundation for ensuring safe drinking water. No single barrier is effective against all conceivable sources of contamination, is effective 100 per cent of the time or constantly functions at maximum efficiency.”*
- *“Prevention of contamination provides greater surety than removal of contaminants by treatment, so the most effective barrier is protection of source waters to the maximum degree practicable.”*

In 2010 the Supreme Court released its second decision on the Rozen v Macedon Ranges Shire Council [2010] VSC 583 matter, providing very clear endorsement of the force of the DSE Guideline in decision making on new development (and the circumstances that must be in place before the DSE Guideline can be displaced).

Since 2010, and with greater clarity from the Courts, the role of the DSE Guideline with respect to providing a catchment barrier has been cited within several red dot decisions.

In the case Kaporis v Macedon Ranges SC (Red Dot) [2012] VCAT 1969, (a case regarding a house / on-site sewage development), the presiding Member found “The 1 in 40 dwelling density we have discussed above is one component in providing the first barrier referred to in Principle 2 of the Australian Drinking Water Guidelines 2011”. While in the case McDonald v Hepburn SC (Red Dot) [2013] VCAT 1538 the “Guideline 1: Density of Dwellings, along with meeting the remaining Guidelines, serves to acceptably reduce the cumulative risk of onsite wastewater systems when applied in conjunction with other measures in the

‘multi-barrier’ approach to water quality”.

These findings show the importance of both the water utilities and councils (through their role in planning) in collectively providing for the multi-barrier approach and VCAT’s understanding and consideration of this principle within their deliberations.

If either the water utility or council was to not actively pursue these outcomes the risk to drinking water quality would increase.

Principle 2 – Human Health Protection Considerations Take Priority over other Planning Objectives

Any risk to human health must be regarded as serious. Therefore, when considering development in open potable water supply catchments, risk to human health is highly relevant and, because of its serious nature, must be given priority over other planning objectives (Rozen v Macedon Ranges SC (Red Dot) [2009] VCAT 2746).

Findings from the Rozen case state “We accept that the special needs of open potable water supply catchments justify a limitation on dwelling density that operates over and above any zone provisions” and within the concluding remarks “when considering development in open potable water supply catchment areas, risk to human health is highly relevant and, because of its serious nature, must be given priority over other planning objectives”. This position is reasonable since, although unlikely, drinking water contamination can lead to serious illness and death even in developed countries and such an outcome is not likely to be considered acceptable by the community.

The planning scheme recognises this priority and has expressly recognised the primacy of water quality considerations within open water supply catchments.

VCAT’s recognition of primacy of water quality considerations within open water supply catchments is a critical principle to understand and utilise in planning cases.

Often Council's Planning Schemes have multiple important and legitimate objectives/strategies associated with themes such as agricultural productivity, housing affordability, tourism and protection of environmental values, which are reflected in the Scheme through the definition of Zones, Environmental Significance Overlays and Provisions. As a result, any area of land can be subject to various planning strategies that may not complement one another. Without a clear hierarchy to inform planning decisions, the actions required to protect drinking water quality may be compromised in order to achieve other objectives within the planning scheme. To ensure drinking water quality requirements are not compromised when planning conflicts arise, the position of priority consideration should be emphasised.

This principle was reflected in the subsequent *Simpson v Ballarat CC (Red Dot) [2012] VCAT 133* case with the following finding noted "*I conclude that in open, potable water supply catchments the Guidelines recognise that the value of catchments for domestic water supply purposes takes precedence over development for dwellings and subdivision. Therefore, any constraints on development or subdivision are not a reason for saying that a more limited interpretation should apply as to what constitutes an open, potable water supply catchment*".

Principle 3 – Pathogens from Human origins Take Priority Over Other Potential Contaminants When Considering Human Health

The ADWG states upfront in their first principle that "*The greatest risks to consumers of drinking water are pathogenic microorganisms.*" Pathogen contamination presents most risk when pathogen sources are from human origins, including from wastewater treatment plants, and from the failure of onsite wastewater management systems. All relevant drinking water

outbreaks caused by viruses, and most of those caused by protozoa, as well as many caused by bacteria, are associated with human sewage waste. This principle supports the position of the serious nature of the risk associated with planning decisions relating to human wastewater.

Given this priority the DSE Guidelines specifically consider risks from on-site wastewater systems with provisions to limit their density within open potable water supply catchments. These provisions have consequently led to several VCAT reviews relating to this aspect of the DSE Guideline. Principles four, five, six and seven relate to key learnings from these cases.

Principle 4 – Practical 'Real World' Experiences (Noting Field Experience with Reliability of Controls) Rather than Theoretical Risks Need to be Considered

There can be confidence in an on-site wastewater management system to theoretically mitigate risks to acceptable levels when designed, installed, operated and maintained correctly. References to the relevant Australian Standards (AS/NZS 1546 and AS/NZS 1547) and the *Onsite Wastewater Management Code of Practice* are often made within a defence from the development applicant, with the reasoning that by meeting the cited standards and codes they have managed the risk to an acceptable level. Whilst theoretically this can indeed be technically correct, in practice, evidence strongly indicates that such risks are not minimised to acceptable levels.

As noted in the *Rozen case*² "*the real risk associated with wastewater treatment systems is that they do not always function as designed, whether because of system breakdown or because of inadequate ongoing management, including proper use of treatment chemicals.*" Submissions to VCAT and similar planning

tribunals should emphasise that when considering 'real world' risks of serious adverse consequences (e.g. public health impacts from unsafe public drinking water supplies), there is a need to consider risks in light of their practical rather than theoretical extent.

Principle 5 – Typically Poor Performance and Failure of On-site Sewage Management Systems in Practice is Well Established and Documented and not in Dispute

This fifth principle builds on the above fourth principle and delves deeper into the evidence relating to on-site sewage management system reliability. The widespread failure of decentralised sewage management was a major cause of disease in the developed world from the middle of the 19th century onwards until centralisation began to be implemented in areas with higher population densities. Only in areas with lower population densities are decentralised systems still tolerated, and even then their reliability remains notoriously poor.

Decentralised sewage management failures include operational and institutional elements and the recognition that new systems eventually become old and are then subject to higher rates of non-compliance. Compliance studies across Australia have confirmed high failure rates (Beavers et al. 1999, Flapper 2001, Charles et al. 2005, Levett, 2009, Billington 2012).

The NSW Government (2012) through the NSW Inquiry into the Regulation of Domestic Wastewater found that on-site systems in NSW are not considered reliable in practice and it is reasonable to assume that owners are even less likely to discharge their responsibilities over the life of the on-site system in the absence of a fail-safe maintenance and inspection regime.

²Rozen v Macedon Ranges SC (includes Summary) (Red Dot) [2009] VCAT 2746

During the NSW Inquiry, Mr Whitehead, submitted that low standards in all areas of on-site wastewater management have contributed to contamination events and will continue in the future unless standards are raised:

“... standards across the board in terms of design, installation, maintenance and regulation have been demonstrably inadequate. The industry needs to recognise and accept that the low standards of the past have resulted in many unsatisfactory outcomes and it is time that standards were raised.”

Although each system may present a relatively small risk in its own right, the greater the number of on-site systems within a catchment, the more likely it is that increasing numbers will fail and more frequently, with resultant increases in risk to public health from the release of pathogens into water bodies. Dwelling densities in drinking water catchments need to provide an acceptable limit to such a risk.

Principle 6 – Cumulative Impacts Must be Considered Rather than Merely Considering Developments in Isolation

Building on the fifth principle the sixth principle considers the whole of catchment perspective. The DSE Guideline states *“The proper application of the precautionary principle requires consideration of the cumulative risk of adverse impacts associated with onsite wastewater systems resulting from increased dwelling density”* (see also Principle 10 in this paper). Therefore, it is not appropriate to consider a development in isolation. Cases in which the water utility or Council have not included an assessment of cumulative impact in their considerations have been criticised by VCAT³.

The VCAT case (Rozen v Macedon Ranges SC [2009] VCAT 2749) states *“..... we consider that every time an*

additional dwelling is permitted in the catchment, an additional, albeit unquantifiable, risk, is created of potential contamination to the quality of water. Individually, the risk from each dwelling may be minimal but the cumulative effect of these incremental risks, coupled with all the other risks which exist, mean that dwelling density in open potable water supply catchments must be curtailed.”

Principle 7 – A ‘Line in the Sand’ Approach that Acknowledges the Need to Avoid an Incremental Creep is a Legitimate Reason to Limit Potentially Polluting Activities

Even if ‘just one more’ development doesn’t present a significant relative risk in and of itself, a line must be drawn somewhere between a managed and sufficiently protected drinking water supply catchment on the one hand, and an open planning zone on the other. The Rozen case advocates this position stating *“As time goes on, development within the catchments will reach a critical point where it will be necessary to say no to further development if this objective is to have any meaning.”*² This principle is commonly applied in many situations and evokes commonly used phrases such as ‘death by a thousand cuts’, ‘straw that broke the camel’s back’ and implies the need to ‘draw a line in the sand’.

Although it is not practical to use precise scientific principles to determine these thresholds and test them for each and every development, there are long-established and widely adopted rules of thumb that have arisen as part of preventive public health practice. Such approaches are supported by the adoption of the Precautionary Principle as described above (see also Principle 10 in this paper). The DSE Guideline defines such a rule of thumb with regard to the dwelling density as the 1:40 hectare

dwelling density limitation to protect water supplies from human pathogens.

Findings from *Kapiris v Macedon Ranges SC VCAT 1969* state that *“The 1:40 ha density is a precautionary measure. The figure of 40 hectares has not been selected on a scientific basis but as a rule of thumb. We accept that experience indicates that water from catchments with dwelling densities at around this level require a certain level of treatment and higher densities require much higher levels of treatment, which are more expensive.”* While it is appropriate that thresholds for development be utilised in planning, this could mean some individuals will not get planning approval, and others will.

An exemption to “Guideline 1” (the 1:40 hectare dwelling density limitation) can be considered once a Domestic Wastewater Management Plan (DWMP) has been developed, adopted and satisfactorily implemented. A DWMP must be prepared or reviewed in consultation with all relevant stakeholders including:

- other local government(s) with which catchment(s) are shared
- EPA
- local water utility/ies.

The DWMP must comprise a strategy, including timelines and priorities, to:

- prevent discharge of wastewater beyond property boundaries
- prevent individual and cumulative impacts on groundwater and surface water beneficial uses.

The DWMP must provide for:

- the effective monitoring of the condition and management of onsite treatment systems, including but not limited to compliance by permit holders with permit conditions and the Code
- the results of monitoring being provided to stakeholders as agreed by the relevant stakeholders

³McDonald v Hepburn SC (Red Dot) [2013] VCAT 1538 (4 September 2013)

- enforcement action where non-compliance is identified
- a process of review and updating (if necessary) of the DWMP every 5 years
- independent audit by an accredited auditor (water utility approved) of implementation of the DWMP, including of monitoring and enforcement, every 3 years
- the results of audit being provided to stakeholders as soon as possible after the relevant assessment
- councils are required to demonstrate that suitable resourcing for implementation, including monitoring, enforcement, review and audit, is in place.

It is recommended that water utilities ensure the DWMP within their drinking water catchments are developed based on the above requirements and account for all relevant risks to drinking water quality, and that sufficient resources and policy instruments are made available for the full implementation of the plan.

This is particularly important as the acceptance of these plans in practice may reduce the application of Guideline 1, which has previously been utilised in most VCAT cases to limit dwelling density and hence protect drinking water quality. In the decision of *Glen v Hepburn SC [2014] VCAT 1079* (3 September 2014), it was identified that a DWMP had been developed and adopted, but VCAT found that “*the plan was not being implemented as Council has yet to implement the program of risk management outlined in the DWMP.*”

In fact, it appears it cannot do so until it has passed a by-law to give teeth to the plan’s auditing and reporting programs.” Due to the absence of an implemented DWMP, an exemption could not be provided and Guideline 1 applied, with the VCAT finding in favour of Council (which had been obliged to refuse a planning permit based on the objection of the

referral authority, Coliban Water).

Furthermore, it is likely that in the *Glen v Hepburn SC [2014] VCAT 1079* case, if the DWMP had been implemented, the permit may have been granted, as the property, as identified within the DWMP, was not in a high-risk area but rather one where there was a high density of dwellings.

In order to have exemption from Guideline 1 (in addition to the requirements of the DWMP), the minimum lot size area specified in the zone must be met (often 20 ha in a Rural Zone) and the proposal must not present an unacceptable risk to the catchment (with risks being defined by criteria in the DSE Guidelines). (Refer to Box 2)

Water utilities should note that while a DWMP will facilitate the assessment of risk on an individual property basis and will provide greater flexibility (which Council and landowners have long advocated for), VCAT cases are more easily defended based upon compliance/noncompliance with measurable targets (such as Guideline 1).

As a result, in circumstances where Guideline 1 is likely to be utilised less, water utilities should ensure that other measurable targets are included within DWMP and associated catchment water quality protection policies and guidelines. In the absence of measurable targets for individual development applications, VCAT will rely on a weight of risk-based evidence from the applicant and the relevant authorities.

Principle 8 – For Vulnerable Water Catchments, Community Costs Should be Recognised when Considering the Implications for Drinking Water Treatment and Contamination Events

Current revisions to the ADWG set out the use of ‘health-based targets’. These targets involve setting treatment requirements for Australian water supplies based on a Source

Vulnerability Assessment (Figure 1) (WSAA, 2015). Factors of relevance are:

- Site-specific water quality monitoring data for microbial indicators in the raw water
- Catchment information, e.g. catchment type, including density and nature of potential sources of pathogens
- Site-specific water quality monitoring data for pathogens (if the above two lines of evidence are not adequately conclusive).

The third of the above bullet points will not be relevant to most water supply systems – it will be optional – since the cost of pathogen testing is high and the time required to source that pathogen data is potentially several years. The first and second of the above bullet points are, therefore, of most relevance. If the catchment is shown to be a vulnerable source due to the development density and type, and/or due to high levels of microbial indicators, it will be necessary to upgrade the treatment plants at significant community cost.

It is in the interests of the broader community to keep development densities down to benchmark levels, and where those levels are exceeded, to keep development levels down as far as is practicable to minimise pollution levels. Other costs of relevance include costs associated with increased operational costs for existing treatment plants given higher pollution levels as well as possible costs from water quality incidents and contamination events.

The key point is that each and every additional development that is approved in drinking water supply catchments increases the risk of increased costs to the whole community due to additional treatment or other requirements.

Principle 9 - Intergenerational and Community Equity Should be Recognised Costs

Building on the eighth principle, the

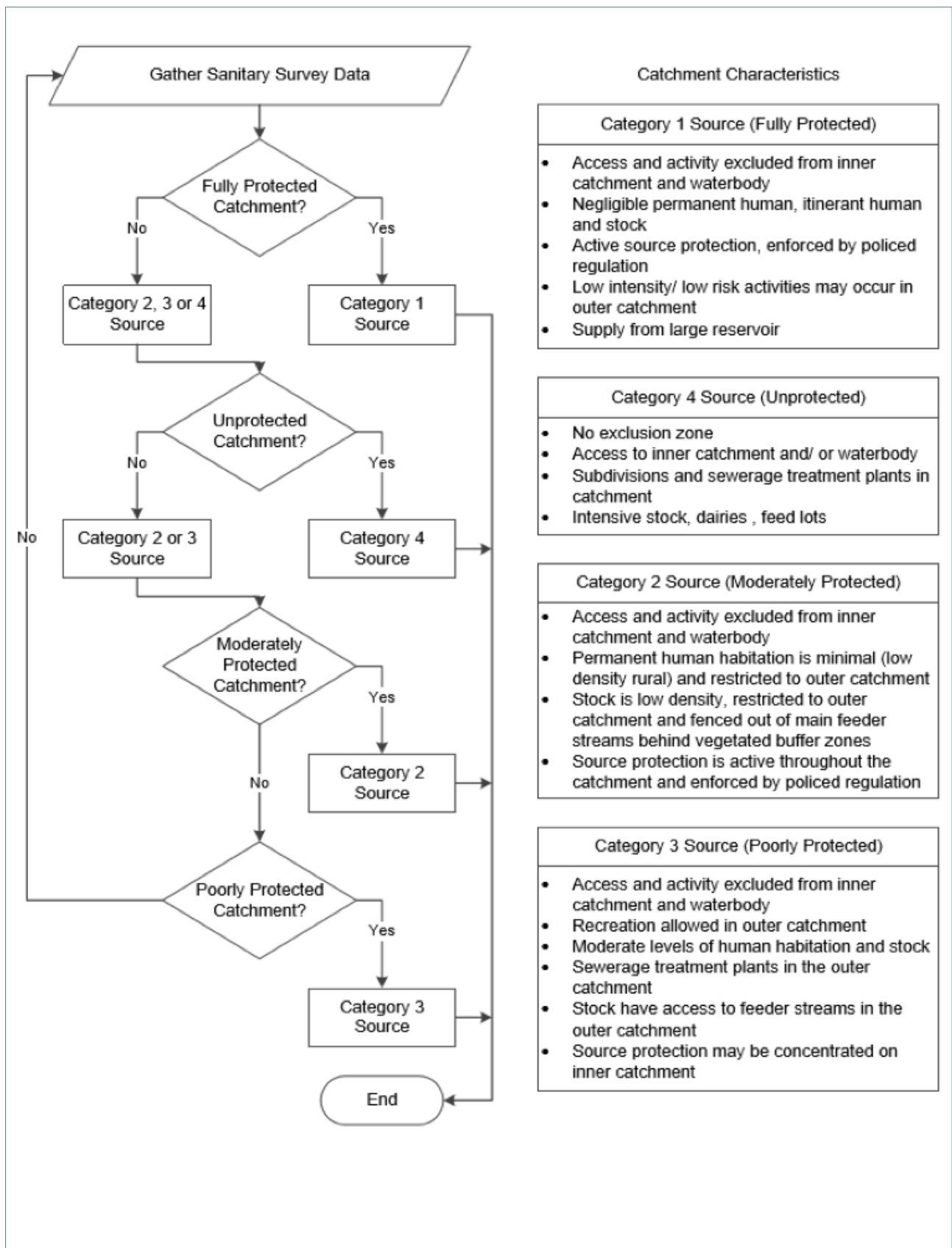


Figure 1. Source Vulnerability Assessment Process (WSAA, 2015)

ninth principle notes that the equity implications of cumulative impacts in drinking water catchments need to be considered from a whole of community and intergenerational perspective.

Developers do not generally contribute to water treatment costs and therefore community’s cross-subsidise catchment activities through increases in rates. Furthermore, water authorities that actively seek to manage ‘open’ catchments through planning and other instruments are more likely to achieve better dollar outcomes for their customers.

Central Highlands Water is one of the most active water supply authorities in Australia in relation to its understanding of the need for, and implementation of, catchment management as the ‘first barrier in water treatment’ (Davison and Ford, 2006). In an example of the benefits of source protection, Central Highlands Water was able to arrange for a new treatment plant to be built for around 50% of the cost of a similar plant being built for a neighbouring water supply authority in what were otherwise quite comparable circumstances. Both water sources were generally very similar but one was not as well protected.

The difference in cost was approximately \$20 million – an example of the source protection dividend to Central Highlands Water,

and hence to the community.

The future ongoing costs of water treatment, along with many other costs associated with poor water quality arising from excessive development in water catchments, often reflect poor planning decisions in the past so intergenerational equity considerations must be relevant to planning decisions in a water catchment.

Principle 10 - In Relation to the Protection of Public Health the ‘Precautionary Principle’ Should be Applied

Due to the serious nature of the public health risk associated with drinking water contamination the ‘precautionary principle’ should be applied to decision-making in water supply catchment development assessments.

The precautionary principle tips the balance in favour of protecting water quality in the absence of certainty.

A lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

In the application of the precautionary principle, public and private decisions should be guided by:

- careful evaluation to avoid, wherever practicable, serious or irreversible harms

- an assessment of the risk-weighted consequences of various options.

This principle is explicitly evoked in the ADWG under its guiding principles as follows: *“Risk management is about taking a carefully considered course of action. As the obligation is to ensure safe water and protect public health, the balancing process must be tipped in favour of taking a precautionary approach.”*

There is inevitably much uncertainty in assessing the impact of developments in water catchments on drinking water quality. Therefore, the precautionary principle becomes a very important consideration in deciding whether or not to support a development application for which the extent of potential harm is uncertain.

CONCLUSIONS

Ten principles have been extracted and logically ordered to reflect the key learnings arising from VCAT decisions in relation to planning decisions in open water supply catchments. It is considered that an awareness of these principles will aid water utilities when considering development planning within these catchments and specifically if they wish to present cases for review at VCAT or similar tribunals interstate.

Table 1. Example of treatment recommendations and typical treatment trains for each source category (WSAA, 2015)

Category	Min Pathogen LRV Recommended			Typical Treatment Train
	Bacteria	Viruses	Protozoa	
1	4.0	0	0	Chlorination (possibly following clarification)
2	5.0	3.0	2.5	Direct filtration ¹ Chlorination
3	5.0	4.0	3.5	Conventional treatment ² Chlorination
4	6.0	6.0	5.5	Conventional treatment ² . UV disinfection Chlorination
Potable reuse	Refer to the stormwater and sewage potable reuse guidance given in the Phase 2 Australian Guidelines for Water Recycling series for water sources that have in excess of the stormwater and/or treatment sewage inflows tolerable for a Category 4 water source.			

Notes: 1 Direct filtration means coagulation, flocculation and filtration.

2 Conventional treatment means coagulation, flocculation, sedimentation and filtration

1. Multiple barriers: Water utilities and councils have complementary roles in development assessment and control as part of the ‘multiple barrier’ approach to water quality protection.
2. Human health priority: Human health protection considerations take priority over other planning objectives.
3. Pathogens from humans: Pathogens from human origins take priority over other potential contaminants when considering human health.
4. Practical over theoretical: Practical ‘real world’ experiences (noting field experience with reliability of controls) rather than theoretical risks need to be considered.
5. Failing on-site sanitation: Typically, poor performance and failure of on-site sewage management systems in practice is well-established and documented and not in dispute.
6. Cumulative effects: Cumulative impacts must be considered rather than merely considering developments in isolation.
7. Drawing lines: A ‘line in the sand’ approach that acknowledges the need to avoid an incremental creep is a legitimate reason to limit potential polluting.
8. Community costs: For vulnerable water catchments, community costs should be recognised when considering the implications for drinking water treatment and contamination events.
9. Equity: Intergenerational and community equity should be recognised when considering costs.
10. Precautionary principle: In relation to the protection of public health the ‘precautionary principle’ should be applied.

An awareness of these principles will aid water utilities when considering development planning within open water supply catchments, specifically if they wish to present cases for review

at VCAT or similar tribunals interstate.

ACKNOWLEDGMENT

The Program’s Steering Committee is acknowledged for the guidance and contribution it has made to the Aboriginal Communities Water and Sewerage Program; in particular Belinda Cormack and Rachel Ardler (Aboriginal Affairs NSW), Wayne Franklin (Water Directorate), Julia Strano (NSW Aboriginal Land Council), Sascha Moege and Constance Chatfield (Local Government NSW), Thangamany Balaraju (Bala) and Steve Palmer (DPI Water).

NSW Health Public Health Units are also acknowledged for their support of the Program.

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