WQPN 73, OCTOBER 2006

Wineries and distilleries

Purpose

Western Australia's winemaking industry has experienced significant increases in wine production and exports over the last decade and is one of the fastest growing winemaking industries in Australia. The volume of total wine exported from Western Australia showed significant growth from 1.3 million litres in 1998 - 99 to five million litres in 2002 - 03, an increase of almost 300 per cent.

Wineries and distilleries pose a risk to the quality of water resources if residual solids and effluent (wastewater) are disposed of inappropriately. Potential contaminants include acids, alkalis, nutrients, such as nitrogen and phosphorus, salinity, turbid runoff, volatile organic matter (which can remove dissolved oxygen from water), and residues from chemical equipment cleansers.

This note is designed to complement the *National Water Quality Management Strategy (NWQMS) Effluent Management Guidelines for Australian Wineries and Distilleries* (see Appendix A, Reference 1a).

The Department of Water is responsible for managing and protecting the State's water resources. It is also a lead agency for water conservation and reuse. This note offers:

- the Department's current views on the establishment and operation of wineries and distilleries;
- guidance on acceptable practices used to protect the quality of Western Australian water resources; and
- a basis for the development of a multi-agency code or guideline designed to balance the views of industry, government and the community, while sustaining a healthy environment.

This note provides a general guide on issues of environmental concern, and offers potential solutions based on professional judgement and precedent. The recommendations made do not override any statutory obligation or Government policy statement. Alternative practical environmental solutions to suit local conditions may be considered. Regulatory agencies should not use this note's recommendations without a site-specific assessment of any project's environmental risks. Any conditions set should consider the values of the surrounding environment, the safeguards in place, and take a precautionary approach. The note shall not be used as this Department's policy position on a specific matter, unless confirmed in writing.

Scope

This note applies to all commercial wineries and distilleries Western Australia, particularly those near sensitive water resources. Sensitive water resources are described at Appendix C.

The recommendations made apply to all commercial facilities processing grapes and other fruits into wines, and distilleries that produce alcoholic spirits or fortified wines using stills to vaporise then condense alcoholic fluids. The terms *winery* or *wineries* when used in this Water Quality Protection Note also imply *distillery* or *distilleries* unless noted otherwise.

This note does not apply to vineyards or orchards for fruit wines. For environmental advice about vineyards, see this Department's *Environmental Management Guidelines for Vineyards*. For orchards, see this Department's Water Quality Protection Note *Orchards near sensitive water resources.*

Recommendations

1. Establishment and operation of wineries in Western Australia should be consistent with the Australian Government's National Water Quality Management Strategy document *Effluent Management Guidelines for Australian Wineries and Distilleries* 1998.

2. Premises producing more than 350 kilolitres of wine or alcoholic beverages per year are prescribed premises and require a works approval and licence under the *Environmental Protection Regulations 1987*. This product volume equates to a fruit crush of approximately 500 tonnes per year and an annual effluent discharge between 200 and 500 kilolitres depending on water use efficiency. For further information, see *A Guide to the Licensing System – Licenses and Registration*, available at the Department of Environment and Conservation internet site www.dec.wa.gov.au, select *Environment > Licenses > permits > forms;* then *Guidelines* or *Forms,* or phone 6364 6500.

3. If the winery water needs are supplied via surface or groundwater, located in a declared water allocation management area or drawn from a confined aquifer, a water allocation licence will be required under the *Rights in Water and Irrigation Act 1914*. To apply for a water allocation licence, contact the nearest regional office of this Department or telephone 6364 7600 to request appropriate advice. Further information is available at www.water.wa.gov.au, select *Licensing > Licensing forms.*

4. All above ground storage tanks including fuel, chemicals and juice processing vessels should be consistent with the recommendations made in this Department's Water Quality Protection Note *Tanks for above ground chemical storage.*

5. Stormwater management should be consistent with the recommendations made in this Department's *Stormwater Management Manual for Western Australia,* and the Water Quality Protection Note *Stormwater Management at Industrial Sites* (see Appendix A, Reference 3).

Within Public Drinking Water Source Areas

Public drinking water source areas (PDWSA) include Catchment Areas, Water Reserves and Underground Water Pollution Control Areas proclaimed under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* or the *Country Areas Water Supply Act 1947*.
For the location of proclaimed PDWSA see web page www.water.wa.gov.au, select *Tools, System and Data > Geographic Data Atlas > Environment layer > Public Drinking Water Source Areas.*

Priority Protection Areas and the constraints that apply within them are explained in this Department's Water Quality Protection Note *Land use compatibility in Public Drinking Water Source Areas* (see Appendix A, Reference 3b).

6. Winery proponents should submit a detailed proposal for any winery development or expansion within any proclaimed PDWSA to the nearest regional office of this Department for appraisal and await a written response advising on the project's acceptability.

7. In Priority 1 protection areas, wellhead protection zones or reservoir protection zones wineries are considered incompatible with water resource protection objectives. New or expanded wineries will be opposed in these areas and zones.

8. Within Priority 2 protection areas, wineries may be approved with conditions subject to their meeting the following criteria:
   a. process an annual fruit crush of no more than 500 tonnes;
   b. fruit processed at the winery is derived from established vineyards located on or adjoining the winery property and these vineyards are owned or operated by the winery proprietor;
   c. the project proponent demonstrates winery process materials and waste products are managed so there is as no increased risk of contamination of local water resources.

8. The following management measures should be employed by any wineries approved within Priority 2 protection areas:
   a. use 'best industry environmental practice' in the winery design and site operation. The management and disposal of any wastes should be compatible with the local environment and the retention of its environmental values including drinking water supply;
   b. the waste management system should be operated to ensure that the concentration of contaminants in any site runoff or groundwater recharge is less than 25 per cent of the relevant health value given in the *Australian Drinking Water Guidelines* (see Appendix A, Reference 1b). Carcinogens or pesticides should not be detected on analysis of any waters discharged onsite;
   c. winery by-products including effluent, solids, contaminated stormwater and sludges from waste management facilities should be reused outside Priority 1 or 2 PDWSA to improve soil fertility or disposed of as approved by the local government authority. Application of waste to land is not compatible with source protection objectives in Priority 2 areas; and
   d. Wineries established in tourism areas may not operate in conjunction with onsite taverns, restaurants or facilities defined as incompatible land uses within the PDWSA.

9. In Priority 3 areas, wineries are not constrained in size or source of fruit, however they should conform to the following criteria:
   a. Use 'best industry environmental practice' for the management and disposal of any wastes in keeping with protection of local water resource values;
   b. The waste management system should be operated to ensure that any contaminant concentration in any runoff or groundwater recharge is less than 50 per cent of the health guideline value given in the *Australian Drinking Water Guidelines*; and

c. Carcinogens or pesticides should not be detected on analysis of any waters discharged onsite.

Near waterways

10. Wineries should not be established on land subject to seasonal flooding or within floodplains.

11. Adequate separation distances should be maintained between all land use facilities and natural waterways to minimise the risk of degradation of water quality. These separation distances are determined on the basis of the waterway values, vulnerability and biophysical criteria (see Appendix A, Reference 3c for supporting information). For advice on buffer selection, see this Department's Water Quality Protection Note *Vegetation buffers to sensitive water resources*.

12. Five Waterways Management Areas have been declared via the *Waterways Conservation Act 1976* to provide special protection to estuaries and their associated waterways that are considered especially vulnerable to degradation. These areas are the Albany Waterways, Avon River, Leschenault Inlet, Peel–Harvey Estuary, and Wilson Inlet. If a development is located within a Waterways Management Area, prior written approval is required from the department administering the waterway. Information on waterway values and the location of these management areas can be obtained by contacting the Department of Water's regional office (see www.water.wa.gov.au and select *Contact us*).

Within the Swan River Trust management area

13. Approval from the Minister for the Environment is required for any land or water based development within or abutting the Swan, Canning, Helena and Southern Rivers and adjoining lands within the management area established via the *Swan River Trust Act 1988*. For details, see web site www.swanrivertrust.wa.gov.au, or phone the Trust on 9278 0900.

Near conservation valued wetlands

The Department of Environment and Conservation aims to ensure that chemicals or contaminated waters do not enter sensitive environments such as wetlands. See Appendix C for a description of *sensitive water resources*.

14. Wetlands require an adequate buffer to protect them from potential adverse impacts (eg associated with nutrients and pollutants) and to maintain ecological processes and functions within the wetland. The width of the buffer should be determined based on the assigned (or notional) management category of the wetland, the threats posed by the adjacent land use and the protective management techniques used at the facility to maintain or improve wetland values. Recommended buffer distances for the Swan Coastal Plain are provided in *Position Statement: Wetlands (Water and Rivers Commission 2001)* see web site www.dec.wa.gov.au, select *Environment > Water > Wetlands > Publications > Policy*). A minimum wetland buffer of 50 metres is recommended.

    Additional information on identifying wetland buffers is contained in Chapter B4 of the Western Australian Environmental Protection Authority's *Draft Guidance Statement No. 33 Environmental Guidance for Planning and Development*.

15. Proposed development details within 500 metres of any wetland (eg lakes, sumplands, damplands and palusplain wetlands) should be forwarded to the nearest regional office of the Department of Environment and Conservation for assessment, with supporting information addressing the environmental risks.

Clearing of native vegetation

16. For information on constraints on the clearing of native vegetation, contact the Department of Environment and Conservation's nearest regional office or refer to the brochure *Protecting Native Vegetation – New laws for Western Australia,* available at www.dec.wa.gov.au, select *Environment > Land > Native vegetation protection.*

Design of the effluent management system

17. Operators should ensure that water is used efficiently. The volume of effluent can be minimised via managed cleansing cycles and the use of trigger controlled sprays for floor and equipment wash-down. Control of effluent volumes will normally improve treatment system performance. The recovery and reuse of waste by-products (where practical) will reduce total effluent load and may improve treated effluent quality.

18. Separation of waste types is recommended (solids should not be slurried if practical). Separating the various waste components according to treatment requirements will reduce the need for costly treatment, and enhance opportunities for water recycling. Solids and suspended matter can be separated from the effluent by screening, filtration, chemically-enhanced sedimentation or centrifuging. Bunds or graded flooring should be used to prevent the escape of any spilt process fluids.

19. The effluent management system should be designed to take into account the quantity, quality, and intermittent release of process effluent. In rural areas, the conventional treatment of effluent involves removal of gross solids, aerobic (biological) waste stabilisation and sometimes disinfection depending on the use of the effluent. In built-up areas, discharge to sewer may be accepted, provided the effluent meets the sewerage service provider's industrial waste acceptance criteria such as limitations on volatile organic strength and amount of solids. Any ponds used to stabilise organic wastes, settle suspended solids and contain or solar evaporate effluent should be consistent with recommendations made in this Department's Water Quality Protection Note *Ponds for stabilising organic matter.*

20. Waste stabilisation ponds are most easily installed where the land slope is less than one in ten, and the soils are deep and sufficiently impermeable to retain the effluent ie seepage less than ten centimetres per day.

21. Low permeability pond liners should be used in porous soils, consistent with this Department's Water Quality Protection Notes *Liners for containing pollutants, using engineered soils* and *Liners for containing pollutants, using synthetic membranes.*

22. Waste stabilisation systems should be constructed so that they cannot accidentally overflow into the environment. These systems should be designed and maintained to allow for the effective treatment of the peak flow volume of process water and any captured rainfall from a

10 year average return interval storm event. Rainfall impact may be calculated using Engineers Australia's current version of *Australian Rainfall and Runoff,* with freeboard to allow for wave action in large ponds. This document is available by phoning Engineers Australia on (02) 6270 6555, or may be ordered via their web page (see Appendix A, Reference 2).

23. Pond and tank treatment systems should have an effective scum trapping system to prevent the release of floating matter.

24. The winery design should ensure that any contaminated stormwater is contained and discharged to an adequately designed process waste management system. Clean stormwater should be diverted away from the winery and associated waste management system. For best stormwater management practice, refer to the Department's *Stormwater Management Manual* (see Appendix A, Reference 3d).

25. Holding ponds used to recycle treated effluent for irrigation or evaporation ponds should be designed according to water retaining structure criteria, with have capacity for effective containment during a wet year with an average recurrence interval of ten years.

Treatment of wastes

26. All effluent should be stabilised using physical, chemical or biological processes to control colour, odour, volatile organics and suspended solids. The treated effluent should be effectively settled prior to disposal. Settled solids should either be digested or immediately dewatered prior to disposal.

27. Effluent should be sufficiently treated to minimise the risk of excessive contaminant discharge to the environment that would limit the use of local water resources or harm aquatic ecosystems. The final discharge quality should be compatible with the intended water use criteria provided in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000* (see Appendix A, Reference 1c).

Re-use or disposal of treated effluent

28. Where practical and suited to local environmental conditions, stabilised effluent should be stored for irrigation of vegetation such as vines, orchards, pasture or wood-lots during their growing season (consistent with conditions and exceptions noted below).

29. In drinking water catchment Priority 2 areas land application of treated winery effluent is incompatible with source protection objectives and will be opposed by this Department.

30. In drinking water catchment Priority 3 areas and near other sensitive water resources, onsite application of treated wastewater may be approved provided a detailed risk assessment demonstrates that the land application of stabilised effluent presents a low risk of contamination to water resources.

31. Where land application of treated winery effluent may be acceptable, an approved nutrient and irrigation management plan should be prepared. The nutrient and irrigation plan should be consistent with the *NWQMS Effluent Management Guidelines for Australian Wineries and Distilleries* and this Department's Water Quality Protection Notes *Irrigation of vegetated land*

with nutrient rich wastewater and *Nutrient and irrigation management plans* (see Appendix A, Reference 3b).

Disposal of treated effluent

32. If winery effluent is unsuited to on-site disposal, stabilised wastes may transported or pumped to an area where they can be disposed of safely, minimising the risk to the environment. Contact your local government office or nearest regional office of the Department of Environment and Conservation for further information.

33. Disposal methods should meet local government health and planning criteria. Direct discharge to waterways may cause environmental harm during equipment malfunctions.

34. If effluent is unsuited to on-site land application, the use of solar evaporation in effective containment ponds may be considered. Avoid land with a slope greater than one in ten, a watertable less than two metres below the surface and/or soils that have a permeability of less than ten centimetres per day.

35. Pond construction should be guided by the Department's Protection Notes *Ponds for stabilising organic matter, Liners for containing pollutants, using engineered soils* and *Liners for containing pollutants, using synthetic membranes* (see Appendix A, Reference 3b).

Management and use of dry stabilised solids

36. Composting and / or controlled land spreading of dry, stable, separated solids is preferable to direct irrigation of vegetation, such as vines, gardens or pasture, with waters containing high concentrations of unstable suspended solids. Solid and semi-solid by-products of the wine-making process should be temporarily stored or stabilised to minimise environmental impacts. This material can either be sold to reprocessing companies or spread onto land, to improve its fertility, at application rates consistent with plant needs and water quality objectives. Phone the Department of Agriculture and Food on 1300 136 016 for technical advice on crop growing.

37. Sludge removed from effluent sumps, tanks and treatment ponds should be considered a resource for reuse. The sludge should be dewatered using drying beds, filter-press or chemical coagulation and the resultant quality analysed. If compatible with water resource protection objectives, stable solids should be spread onto the land in quantities that improve soils. Analysing the dewatered sludge is essential to avoid land degradation or contamination with metals or salts. If the sludge must be disposed of as waste, it should be carted to an approved putrescible material land-fill. Phone your local government council for further information.

38. Concrete pads or hard-stands with perimeter bunds should be used to store stalks and marc.

Monitoring and reporting

39. The site operator should arrange for the preparation of an environmental monitoring program (consistent with the *Effluent Management Guidelines for Australian Wineries and Distilleries* and the *Australian Guidelines for Water Quality Monitoring and Reporting*) by a qualified and experienced environmental professional.

40. The monitoring program should be submitted to the regulatory authorities, ie Department of Environment and Conservation or Department of Water, for approval. Key quality parameters to be analysed may include (but are not limited to) pH, electrical conductivity (EC), suspended solids (NFR), biochemical oxygen demand (BOD) and nutrients (N as ammonia, N as nitrite or nitrate, and P as orthophosphate).

41. Acceptable effluent volume monitoring methods include hours-run meters linked to pump performance graphs, magnetic, ultra-sonic (Doppler), orifice plate, mechanical flow meters or weirs. Any of these methods are subject to errors, including those due to fouling, poor maintenance and equipment faults. Equipment should be regularly maintained and calibrated for accuracy.

42. South Australia's Environmental Protection Authority *Guidelines for Wineries and Distilleries* 2004 is a recommended reference for monitoring (see Appendix A, Reference 6).

43. The monitoring program should include the following details:

Monitoring site	Measured variables	Recommended frequency
Raw winery effluent	volume and key quality parameters	weekly
Pond performance measures	pH, EC, BOD, NFR	weekly
Treated effluent stored for irrigation	quantity and key quality parameters	monthly during the irrigation season
Irrigated land	location, area, vegetation type, timing and water application rate	monthly
Irrigated soil and vegetation condition	moisture, chemistry, nutrients, salinity, soil absorption ratio and structure	end of each irrigation season
Runoff from the property	key quality parameters	minimum quarterly during flow events
Groundwater (from water table where present)	Standing water level and key quality parameters	quarterly

44. Data records should be maintained on-site for at least two years after gathering the information for inspection or reporting to regulatory authorities.

Contingency measures

45. An environmental contingency plan should be developed, outlining management responses to various abnormal operating situations that may occur and could impact on water resources. Scenarios include disruption to power supplies, floods, accidental spillage of chemicals, and variable loading of the effluent treatment and disposal system. The contingency plan should be followed when an incident occurs. Plant operators should be trained and assigned roles in emergency management procedures and techniques. Refer to this Department's Water Quality Protection Note *Contaminant spills – emergency response* for further information (see Appendix A, Reference 3b).

46. Systems should be installed and maintained to record key water management and treatment parameters, detect any equipment malfunctions and spillage of material likely to harm water resources.

47. Should any incidents occur, a written record of each incident and management response taken should be maintained.

More information

We welcome your views on this note. Feedback provided on this topic is held on file No. **18649**.

This note will be updated periodically as new information is received or industry/activity standards change. Updates are placed on the Department's internet site www.water.wa.gov.au, select *Drinking water > Publications > Water Quality Protection Notes.*

To comment on this note or for more information, please contact the Water Source Protection Branch at our Atrium offices in Perth, phone (08) 6364 7600 (business hours), fax 6364 7601 or use *Contact us* at the Department's internet site, citing the note topic and version.

Where a conflict arises between the Department of Water's recommendations and any proposed activity that may affect a sensitive water resource, this note may be used to assist negotiations with stakeholders. The negotiated outcome should not result in a greater risk to water quality than if the Department's recommended protection measures were used.

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Appendices

Appendix A - References and further reading

1. Australian Government *National Water Quality Management Strategy:*
   a. *Effluent Management Guidelines for Australian Wineries and Distilleries* 1998;
      Printed copies are available from the Australian Water Association, refer to Internet page www.awa.asn.au or phone 1300 361 426.
   b. *Australian Drinking Water Guidelines 2004;*
      see web page www.nhmrc.gov.au/publications/synopses/eh19syn.htm
   c. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* 2000;
      see web page www.deh.gov.au/water/quality/nwqms/introduction; and
   d. *Australian Guidelines for Water Quality Monitoring and Reporting*, 2000, Australia;
      see web page www.deh.gov.au/water/quality/nwqms/monitoring.html.

2. Engineers Australia

   Australian Rainfall and Runoff (current version);
   see web page www.engaust.com.au/bookshop/eabookspub.html.

3. Department of Water (WA)

   a. Guidelines
      - *Environmental guidelines for vineyards 2002*.

   b. Water Quality Protection Notes
      - *Chemical spills - emergency response;*
      - *Irrigation with nutrient-rich wastewater;*
      - *Land use compatibility in Public Drinking Water Source Areas;*
      - *Liners for containing pollutants, using engineered soils;*
      - *Liners for containing pollutants, using synthetic membranes;*
      - *Nutrient Irrigation Management Plans;*
      - *Orchards near sensitive water resources;*
      - *Ponds for stabilising organic matter;*
      - *Stormwater management at industrial sites;*
      - *Tanks for above ground chemical storage; and*
      - *Wash-down of mechanical equipment.*

      see web page http://drinkingwater.water.wa.gov.au; select *Publications > Water Quality Protection Notes.*

   c. Waterways policy and guidelines
      - *Foreshore Policy No1 Identifying the Foreshore Area*
      - *Water Note 23 – Determining the Foreshore Reserve*

        see web page http://waterways.water.wa.gov.au , select *Foreshore Policy* or *Water Notes.*

   d. *Stormwater Management Manual for Western Australia 2004*;
      see web site www.water.wa.gov.au, select *Stormwater > Stormwater management manual.*

4. Department of Environment and Conservation (WA)

   a. Wetlands policy and guidelines
      - *Position statement: Wetlands*, WRC 2001;
        see web page www.dec.wa.gov.au, select *Environment > Water > Wetlands> Wetlands Position Statement.*

   b. Environmental Regulation
      - *A Guide to the Licensing Systems – Licenses and Registration*

      see web page www.dec.wa.gov.au, select *Environment > Licenses > Permits > Forms.*

5. Environmental Protection Authority, Western Australia

   Draft Guidance Statement No. 33 *Environmental Guidance for Planning and Development*, June 2005, see internet site www.epa.wa.gov.au, select *Guidance statements.*

6. Environmental Protection Authority, South Australia

   EPA Guidelines for Wineries and Distilleries, 2004;
   see web page www.environment.sa.gov.au/epa/pdfs/guide_wineries.pdf.

7. Chapman, J, 1996, *Cleaner Production for the Wine Industry, South Australian Wine and Brandy Association.*

8. Chapman J, Baker P, Wills S, 2001 *Winery Wastewater Handbook: Production, Impacts and Management,* Wine titles, Australia.

9. Environmental Protection Authority, Victoria

   Winemakers Environmental Management Kit, see web page
   www.epa.vic.gov.au/bus/EMS/WineEMS/welcome/index.shtml.

10. Hazell, P, *Monitoring and control of environmental impacts associated with winery effluent in South Australia*.

11. South Australian Wine and Brandy Association

    Environmental Management Code of Practice for Wineries and Distilleries Consultation Draft 1998, and additional resources are available from internet site www.winesa.asn.au.

Appendix B - Statutory requirements and approvals include:

What is regulated	Comments	Statute	Regulatory office
Development approval	Must be consistent with the Town Planning Scheme and local by-laws.	*Planning and Development Act 2005*	WA Planning Commission; Local Government
Activities in locations subject to Environmental Protection Policies.	Contact the Department of Environment and Conservation's regional office for further advice.	*Environmental Protection Act 1986,Part III Environmental Protection Policies*	Environmental Protection Authority (EPA)
Impact on the values and ecology of the environment including waters.	An Environmental Impact Assessment may be required.	*Environmental Protection Act 1986, Part IV Environmental Impact Assessment*	Minister for the Environment on advice from the EPA
Works approval and/or licence for prescribed premises.	Premises producing more than 350 kilolitres of wine or alcoholic beverages per year are prescribed premises.	*Environmental Protection Regulations 1987*	Department of Environment and Conservation - regional office
Clearing of native vegetation	Constraints on land clearing	*Environmental Protection (clearing of native vegetation) Regulations 2004*	

What is regulated	Comments	Statute	Regulatory office
Development and operation in the Swan River Trust Management Area.	Development approval required from the Swan River Trust.	*Swan River Trust Act 1988*	Swan River Trust
Development in declared Waterways Management Areas	Development approval required	*Waterways Conservation Act 1976*	Department of Water – regional office (for specific waterways)
Licence to use surface water and groundwater from proclaimed areas or artesian sources.	Water drawn from proclaimed ground or surface water area; or water drawn from a confined aquifer.	*Rights in Water and Irrigation Act 1914*	Department of Water - regional office
Development and operations in drinking water catchments.	Wineries are not a compatible land use in Priority 1 areas and Well head or Reservoir Protection Zones. Departmental advice needed should sought in other areas	*Metropolitan Water Supply, Sewerage and Drainage Act 1909* *Country Areas Water Supply Act 1947*	
Disposal of materials that may affect human health.	Refer to local government environmental health officer	*Health Act 1911*	Department of Health; Local Government.
Discharge to sewer via an industrial waste permit.	Refer to the sewerage service provider	*Metropolitan Water Supply, Sewerage and Drainage Act, 1909* *Country Towns Sewerage Act, 1947*	Water Corporation; or other appropriate sewerage service provider.
Storage of fuels, solvent, explosive and dangerous goods.	Refer to the regulatory agency.	*Explosive and Dangerous Goods Act 1961.*	Department of Consumer and Employment Protection

Appendix C - Sensitive water resources

Clean water resources used for drinking, sustaining aquatic and terrestrial ecology, industry and aesthetic values, along with breathable air, rank as the most fundamental and important needs for viable communities. Water resources should remain within specific quality limits to retain their values, and therefore require stringent and conservative protection measures. Guidance on water quality parameters necessary to maintain water values are published in the Australian Government's *National Water Quality Management Strategy Guidelines* (see web page www.deh.gov.au/water/quality/nwqms/index.html).

The Department of Water strives to improve community awareness of catchment protection measures for both surface water and groundwater as part of a multi-barrier protection approach to maintain the quality of water resources.

To be considered sensitive, water resources must support one or more of the environmental values described below. Human activity and land uses pose a risk to water quality if contaminants could be washed or leached into sensitive water resources in discernible quantities. These water resources include shallow groundwater accessed by water supply wells, waterways, wetlands and estuaries. Community support for these values, setting of practical management objectives and implementation of sustainable protection strategies are seen as key elements in protecting and restoring the values of these water resources.

Sensitive water resource values include:

a. Public Drinking Water Source Areas (ie Water Reserves, Catchment Areas or Underground Water Pollution Control Areas) proclaimed or assigned under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909*, the *Country Areas Water Supply Act 1947* or the *Health Act 1911.*

b. Private water supply sources, including the following uses:
   - human or stock consumption;
   - commercial or industrial water supplies (with specific qualities that support the activities eg aquaculture, cooling, food or mineral processing or crop irrigation); and
   - garden or municipal water supplies (which can affect people's health or wellbeing).

c. Groundwater aquifers that sustain important ecological functions eg cave ecology.

d. Waterways (excluding engineered drains or constructed features) with ecological and / or social values such as aesthetic appeal, boating, fishing, tourism, and swimming, including:
   - waterways of High Conservation Significance as described in the Environmental Protection Authority's Draft Guidance Statement 33 *Environmental Guidance for Planning and Development* (Section B5.2.2) see www.epa.wa.gov.au, select EIA > *Guidance statements*;
   - waterways managed under the *Waterways Conservation Act 1976*, ie the Avon, Peel-Harvey, Leschenault, Wilson Inlet and Albany Waterways Management Areas; and
   - waterways managed under the *Swan and Canning Rivers Management Act, 2006*.

   Note: many waterways in the State remain to be scientifically evaluated and their value classified. Any such waterways that are substantially undisturbed by human activity, should be considered to have high conservation value unless proven otherwise.

e. Wetlands possessing recognised or probable conservation values (generally excluding those highly disturbed, unless subject to active management to restore specified environmental values), and including:
   - RAMSAR wetlands (see internet site www.ramsar.org);
   - Wetlands of High Conservation Significance as described in the Environmental Protection Authority's Draft Guidance Statement 33 *Environmental Guidance for Planning and Development* (Section B4.2.2), see www.epa.wa.gov.au, select EIA > *Guidance statements*;
   - Wetlands described by Department of the Environment and Heritage (Australia) in *A Directory of important wetlands in Australia,* (see web page www.deh.gov.au/water/wetlands/databases.html, or the Department of Environment and Conservation web page www.naturebase.net/national_parks/wetlands/wa_wetlands.html);

- Conservation and Resource Enhancement category wetlands identified in the *Geomorphic Wetlands of the Swan Coastal Plain* dataset, all wetlands identified in the *South Coast Significant Wetlands* dataset and high value wetlands identified in the *Geomorphic Wetlands Augusta to Walpole* dataset.

  Note: many wetlands in the State remain to be scientifically evaluated and classified. Any such wetlands that are generally undisturbed by human activity, should be considered to have high conservation value, unless proven otherwise. The Augusta to Walpole wetland dataset to date has not been subject to a detailed evaluation process.

  The Department of Conservation and Environment is the custodian of wetland datasets and is responsible for maintaining and updating the information within them. The datasets ban be viewed or downloaded from the internet site www.dec.wa.gov.au, select *Department of Environment > Tools, systems and data > Geographic Data Atlas > Inland waters > Wetlands.* Guidance on viewing the wetlands is provided on the same website at *Water > Wetlands > Data > Wetland mapping > How to view wetland mapping* or phone the Department on 6364 6500.