



Queensland

Water Resource (Pioneer Valley) Amendment Plan (No. 1) 2009

Explanatory Notes for SL 2009 No. 212

made under the

Water Act 2000

General Outline

The explanatory notes are a ‘plain English’ version of the *Water Resource (Pioneer Valley) Amendment Plan (No. 1) 2009* (‘the amendment plan’). They are intended to provide the reader with an explanation of, and background information on, the amendments made to the *Water Resource (Pioneer Valley) Plan 2002* (‘the plan’).

The explanatory notes are not intended to be comprehensive but merely a guide to assist the reader in understanding and interpreting amended sections of the plan. These explanatory notes should therefore be read in conjunction with the amendment plan, referring to the amendment plan for details of the provisions. Numbering of the explanatory notes corresponds with the numbering of the amendment plan.

Title

Water Resource (Pioneer Valley) Amendment Plan (No. 1) 2009.

Authorising law

Chapter 2, Part 3, Division 2 of the *Water Act 2000* (Qld).

Policy Objectives

Section 55 of the *Water Act 2000* ('the Act') provides for the Minister to prepare an amendment to a water resource plan to advance the sustainable management of water in Queensland. The objective of the amendment to the plan is to provide a framework for the sustainable management and allocation of groundwater, including the protection of natural ecosystems and the security of supply to water users. The plan area, and the framework for allocation and management of surface water, is extended to include the Sandringham Creek and Alligator Creek catchments. Groundwater will be managed across the entire plan area, which includes the extent of the Pioneer Subartesian Area within the plan area.

The Pioneer Subartesian Area is currently shown on plan AP 10057 in Schedule 11 of the *Water Regulation 2002* ('the Water Regulation'). Under section 1046(3) of the Act a regulation declaring a subartesian area only has effect until a water resource plan is approved for subartesian water in the area, or part of the area. Since the amendment plan will include part of the Pioneer Subartesian Area, the amendment plan will replace the Water Regulation as the instrument regulating subartesian water in that part of the Pioneer Subartesian Area. However, as the amendment plan does not cover all of the Pioneer Subartesian Area, the Water Regulation will be amended to update the boundary of the subartesian area (new plan CAS1672) and rename the area the Sarina Subartesian Area.

The amendment plan provides for the sustainable management and allocation of water in the plan area through:

- extending the plan area to include the Sandringham Creek and Alligator Creek catchments;
- defining the availability of groundwater in the amended plan area;
- defining the availability of unsupplemented surface water in the Sandy Creek, Sandringham Creek and Alligator Creek catchments;
- identifying mechanisms for dealing with future demand for groundwater;
- providing a framework for establishing water allocations for groundwater;
- providing a framework for reversing, where practical, degradation to natural ecosystems;

- identifying mechanisms for addressing seawater intrusion into groundwater in the plan area; and
- providing a framework for ensuring a sustainable level of allocation and groundwater use.

Legislation consistent with policy objectives of authorising law

The subordinate legislation is consistent with the policy objectives of the Act.

Estimated cost for Government

Funding for the development of this water resource plan amendment has been allocated to the Department of Environment and Resource Management under the Water Reform Continuity of Supply Treasury Special allocation. Accordingly, the amendment plan should not alter the present cost to government of administering the Act.

Consistency with fundamental legislative principles

The subordinate legislation is consistent with fundamental legislative principles.

Consultation

Government departments and agencies affected by the changes have been consulted in respect of the amendment plan. In addition, traditional owner, sugar industry, water provider, cultural, economic and environmental interest groups have been consulted in accordance with the water resource planning process as outlined in the Act.

Outcomes of community consultation are outlined in the separate document *Pioneer Valley Water Resource Amendment Plan Consultation Report*.

Regulatory Impact Statement

Section 58 of the Act states that a regulatory impact statement is not required for the approval of a water resource plan or plan amendment.

Notes on Provisions

Part 1 Preliminary

1 Short title

Clause 1 states the short title to the amendment.

2 Plan amended

Clause 2 states the plan to be amended.

3 Amendment of s 2 (Purposes of plan)

Clause 3 amends the purposes of the plan to include regulation of the taking of groundwater.

4 Insertion of new ss 5A and 5B

Clause 4 inserts new sections 5A and 5B into the plan to define the groundwater management area, groundwater sub-areas and watercourse areas.

5A Groundwater management area and groundwater sub-areas

Section 5A defines the groundwater management area to be the whole plan area. The plan area is subdivided into groundwater sub-areas, and covers groundwater in all aquifers in the plan area. A map of the groundwater management area is shown in schedule 2A and a map of the groundwater sub-areas is shown in schedule 2B.

5B Watercourse area and declaration about watercourse Act, s 1006(2)

Section 5B identifies a part of the plan area where groundwater, which is located under a watercourse or under land adjacent to the watercourse in the designated watercourse area (shown in schedule 2C), is to be regulated as water in a watercourse. The water in a watercourse area is referred to as declared water. This approach allows groundwater and surface water resources which are hydraulically connected to be managed as a single resource. The area shown in schedule 2C as the watercourse area covers the area where the surface geology is mapped as alluvium and contains the alluvial aquifers associated with Cattle, Finch Hatton and Owen Creeks and their tributaries. The area also captures any aquifers in the rocks that underlie the alluvium. The effect of section 5B is that groundwater in this area is managed like unsupplemented water.

5 Amendment of s 6 (Information about areas)

Clause 5 amends section 6(1) to state that the exact location of the boundaries of the plan area, subcatchment areas, groundwater management area, groundwater sub-areas, watercourse area, domestic areas, coastline and seawater intrusion baseline and held in the department's digital electronic boundary collection.

6 Amendment of s 7 (Nodes)

Clause 6 amends section 7 to define nodes in the groundwater management area. The groundwater nodes are numbered and their specific locations are shown on a map in schedule 2A and are described in schedule 3, part 2. The nodes can be used in the water resource plan and resource operations plan where a definitive location or reference point is required. For example, nodes are used in the specification of environmental flow objectives in part 4 of the amendment plan.

7 Amendment of s 8 (Water to which plan applies)

Clause 7 amends section 8(a) to specify that the subsection refers to surface water. The existing section 8(b) is removed from the plan because the provision is now covered by the Act. The new section 8(b) includes groundwater in the water to which the plan applies.

8 Insertion of new s 8A

Clause 8 inserts a new section 8A into the plan to describe the outcomes for water.

8A Outcomes for water in plan area

Section 8A states that water in the plan area is to be allocated and sustainably managed in a way that seeks to achieve a balance within the general and ecological outcomes for surface water, and the general and ecological outcomes for groundwater. Section 8A also seeks, without limiting clause 10 of the plan being amended, to achieve a balance in the ecological outcomes for surface water in particular subcatchments of the plan area. The subcatchments are identified in clauses 12 to 18.

The term *balance* does not necessarily imply that each outcome will be given equal weighting or that any specific weighting is attached to particular outcomes. Instead, the outcomes should be seen as a complementary set of responses to the altered natural condition of aquifers that has resulted from water resource development.

In addition to achieving a balance amongst a number of ecological outcomes, section 8A(a) also recognises that the natural state of groundwater has been changed by water infrastructure, flow supplementation in streams and the taking of groundwater.

9 Amendment of s 9 (General outcomes)

Clause 9 amends section 9 of the plan which states the general outcomes for water in the plan area. The heading of section 9 is amended to reflect that the section contains general outcomes for surface water and groundwater. Section 9 is also amended to reflect the changes made necessary by the insertion of section 8A into the amendment plan.

Section 9(c) is amended so that consistent language is used throughout the plan when reference is made to seawater. The clause also amends section 9(c) and 9(d) to specify that these subsections refer to surface water. Section 9(f) is amended to indicate that access to water through a surface water entitlement or other authorisation to take or interfere with water will continue under the amended plan.

Clause 9 amends section 9(i) to include the provision of water to support groundwater-dependent ecosystems as an outcome for the plan area.

Groundwater-dependent ecosystems are biological systems which are wholly or partly dependent on groundwater.

10 Insertion of new s 9A

Clause 10 establishes general outcomes for groundwater in the plan area. These outcomes are specific to groundwater and are expected to be achieved through implementation of the management strategies in the amendment plan.

9A General outcomes for groundwater

Section 9A provides the general outcomes for groundwater in the plan area.

The general outcomes for the groundwater flow system in the plan area include maintaining the connectivity between groundwater and surface water to ensure baseflow in a watercourse, lake or spring is provided for surface water entitlement holders; and the maintenance of a groundwater flow gradient towards the coast to prevent further inland movement of the seawater intrusion front. Where practicable, the quality of groundwater for consumptive purposes is to be maintained and protected through the management of water levels in various parts of the aquifer.

The general outcomes for groundwater also include allowing for the continued use of groundwater entitlements and other authorisations to take groundwater, except in areas affected or potentially affected by seawater intrusion. Groundwater entitlements and other authorisations to take groundwater in areas which are, or are potentially affected by seawater intrusion are known as affected water entitlements. Determination of the entitlements that are affected is on the basis of the location of the seawater intrusion baseline shown in schedule 9A. An affected groundwater sub-area is defined as a groundwater sub-area that is affected or likely to be affected by seawater intrusion to the extent that the ability to take fresh groundwater under a water entitlement is reduced or extinguished. An outcome of the amendment plan is to provide, where practical, the opportunity for use of these affected water entitlements to be recovered in the future, should the seawater intrusion front recede.

11 Amendment of s 10 (General ecological outcomes)

Clause 11 amends the heading of section 10 to indicate that the general ecological outcomes are for surface water and groundwater. Section 10 of the plan is amended to include ecological outcomes for groundwater-dependent ecosystems in the general ecological outcomes for the plan area. The general ecological outcome for groundwater is the maintenance of habitats of groundwater-dependent plants and animals, and the maintenance of long term water quality suitable for groundwater-dependent ecosystems, while recognising that the natural state of groundwater has changed due to development.

12 Amendment of pt 3, div 2 hdg (Ecological outcomes for particular parts of the plan area)

The heading of part 3, division 2 of the plan is being amended to clarify that the division provides specific ecological outcomes for surface water.

13 Amendment of s 12 (Estuaries)

Clause 13 specifies that section 12 of the plan relates to surface water.

14 Amendment of s 13 (Blacks Creek and Pioneer River)

Clause 14 specifies that section 13 of the plan relates to surface water.

15 Amendment of s 14 (Subcatchment areas 2, 3 and 4)

Clause 15 specifies that section 14 of the plan relates to surface water.

16 Amendment of s 15 (Subcatchment area 12)

Clause 16 specifies that section 15 of the plan relates to surface water and ensures references to seawater intrusion are consistent throughout the amended plan.

17 Amendment of s 16 (Palm Tree Creek)

Clause 17 specifies that section 16 of the plan relates to surface water.

18 Amendment of s 17 (Silver Creek)

Clause 18 specifies that section 17 of the plan relates to surface water.

19 Amendment of s 18 (Teemburra Creek)

Clause 19 specifies that section 18 of the plan relates to surface water.

20 Insertion of new pt 3, div 3

Clause 20 inserts a new division 3 into part 3 of the plan which specifies ecological outcomes for groundwater.

Division 3 General ecological outcomes for groundwater

18A General ecological outcomes

Section 18A specifies the general ecological outcomes for groundwater in the plan area. Under clause 8, section 8A requires groundwater to be allocated and managed in a way that seeks to achieve balance amongst a number of ecological outcomes. At the same time it is recognised that the natural state of groundwater has been changed by water infrastructure, flow supplementation in streams and the taking of groundwater.

The term *balance* does not necessarily imply that each outcome will be given equal weighting or that any specific weighting is attached to particular outcomes. Instead, the outcomes should be seen as a complementary set of responses to the altered natural condition of aquifers that has resulted from water resource development.

In section 18A, the outcomes to be balanced include maintaining the biological diversity of groundwater ecosystems to the extent of their dependency on groundwater through the maintenance of groundwater levels and flows so that the water requirements of groundwater-dependent ecosystems are provided for. The amendment plan also seeks to maintain the capability of groundwater to flow from one part of an aquifer to another part or to watercourses, lakes, estuaries, near-shore marine systems or wetlands where there is connectivity.

Section 18A does not restrict the general ecological outcomes stated in section 10.

21 Insertion of new pt 4, div 1, sdiv 1 hdg

Clause 21 inserts a new subdivision 1 heading for surface water in order to split part 4, division 1 into environmental flow objectives for surface water and environmental flow objectives for groundwater.

Subdivision 1 Surface water

Subdivision 1 specifies performance indicators and environmental flow objectives for surface water.

22 Amendment of s 19 (Performance indicators for environmental flow objectives)

A performance indicator is defined in the Act to mean a measure that can be calculated and is stated in the plan to assess the impact of an allocation or management decision on water entitlements or natural ecosystems that are dependent on water.

An environmental flow objective is defined in schedule 4 of the Act to mean a flow objective for the protection of the health of natural ecosystems for the achievement of ecological outcomes. Environmental flow objectives aim to protect the health of natural water-dependent ecosystems from future allocation and management decisions made under the plan for the achievement of ecological outcomes.

Environmental flow objectives represent statistically derived values for performance indicators which, in the case of groundwater, are provided by the department's MODFLOW and MODHMS computer programs (see section 49A) or another assessment method approved by the chief executive.

Clause 22 amends section 19 of the plan to extend performance indicators that apply to surface water for assessing baseflow in Sandy Creek (subcatchment 12). This performance indicator is linked to the groundwater that needs to be allowed to discharge from the surrounding aquifers into Sandy Creek under the set of rules provided for in the

amendment plan. The low flow (baseflow) characteristics of Sandy Creek are maintained through this combination of performance indicators and objectives. These indicators allow for environmental flow targets to be established and so limit the changes to the low flow regime that may arise from future allocation and management decisions associated with groundwater and unsupplemented surface water along Sandy Creek and its tributaries.

The specified performance indicators are based on technical advice received during development of the amendment plan. The performance indicators relate to no flow (daily flows less than one megalitre) and low flows (daily flows less than 50 megalitres) and are specified for two sites on Sandy Creek, which are shown on the map in schedule 2A and described in schedule 3, part 2.

The performance indicators for baseflow are the percentage of days in the simulation period that groundwater discharge to Sandy Creek at nodes 27 and 28 is less than one megalitre a day; and the percentage of days in the simulation period that groundwater discharge to Sandy Creek at nodes 27 and 28 is less than 50 megalitres a day. The environmental flow objectives are ranges within which the percentage of days in the simulation period that the simulated groundwater discharge to Sandy Creek, is less than one megalitre a day and 50 megalitres a day, must fall. The establishment of upper and lower boundaries for baseflow discharge to Sandy Creek aims to minimise changes to the nature of interactions between groundwater and surface water flows in this part of the plan area.

23 Amendment of s 20 (Environmental flow objectives)

Clause 23 amends section 20 to specify that parts 1 to 4 of schedule 4 apply to the environmental flow objectives for surface water.

24 Insertion of new pt 4, div 1, sdiv 2

Clause 24 inserts a new subdivision 2 into part 4, division 1 to apply to groundwater.

Subdivision 2 Groundwater

Subdivision 2 specifies performance indicators and environmental flow objectives for groundwater.

20A Environmental flow objectives

Section 20A indicates that the environmental flow objectives for groundwater are stated in schedule 4, parts 5 and 6. The environmental flow objectives for groundwater in the amendment plan aim to minimise change to groundwater flow conditions and groundwater levels and are defined at specific nodes. The environmental flow objectives in schedule 4 of the amendment plan are specified for relevant groundwater-dependent ecosystems (part 5) and seawater intrusion (part 6).

20B Performance indicators for environmental flow objectives-relevant groundwater-dependent ecosystems

Section 20B states the performance indicators for the environmental flow objectives to be used for assessing the impacts of an allocation, management decision or proposal on groundwater flow towards relevant groundwater-dependent ecosystems. The specific groundwater-dependent ecosystems are terrestrial and riparian vegetation ecosystems which are represented by nodes 1 to 26 shown in schedule 4, part 4, table 9, column 1. These specific performance indicators and the sites for the nodes are based on technical advice received during development of the amendment plan and represent a two-staged management response to water level depth. Performance indicators are specified in terms of aquifer drawdown relative to the benchmark level in June 2003. The strategy recognises that the risk to ecosystems from a water shortage is greater in areas where water tables are shallow. As a result, sites located in areas of shallow water tables have the same environmental flow objective for the two levels of drawdown, reflecting the increased sensitivity of these sites

Environmental flow objectives are specified for performance indicators for nodes 1 to 26 and are shown in schedule 4, part 4, table 9, columns 2 and 3. Two levels of drawdown from the benchmarked level of June 2003 are specified. The level 1 drawdown deviation is a desirable drawdown limit that may be exceeded occasionally for periods of more than 365 days duration during the simulation period, and involves a tolerable risk to the

health of groundwater-dependent vegetation. The extent to which the drawdown exceeds the level 1 objective for more than 365 days during the simulation period is to be minimised. The level 2 drawdown deviation is the drawdown limit that must not be exceeded for more than 365 days duration during the simulation period and involves a higher risk to the health of groundwater-dependent vegetation that could result from a shortage of groundwater.

20C Performance indicators for environmental flow objectives-seawater intrusion

Section 20C states that the performance indicator for seawater intrusion is the maximum area of land, expressed in hectares, that is intruded by seawater between the coastline and the seawater intrusion front. The environmental flow objective for seawater intrusion is that the area intruded by seawater in sub-areas 15A, 15B, 15C, 15D and 16 at any time during the simulation period must not exceed the area stated in schedule 4, part 6, table 11, column 3 for that sub-area. A map showing the location of the sub-areas is shown in schedule 2B.

25 Amendment of s 21 (Performance indicators for water allocation security objectives)

A water allocation security objective is defined in schedule 4 of the Act to mean an objective for the protection of the probability of being able to obtain water in accordance with a water allocation. Water allocation security objectives provide a measure of how an allocation would be expected to perform based on simulated historical data and assuming full use of existing water entitlements.

Water allocation security objectives represent statistically derived values for performance indicators which are provided by the department's MODFLOW and MODHMS computer programs (see section 49A) or another assessment method approved by the chief executive.

Clause 25 amends section 21 of the plan to include performance indicators for the water allocation security for groundwater allocations. The performance indicator for groundwater is the annual volume probability. The annual volume probability is the percentage of years in the simulation period in which the volume of water that may be taken by the group of

water users in each groundwater sub-area is at least the total of the nominal volumes for the water allocations in the group.

26 Amendment of s 22 (Water allocation security objectives)

Clause 26 amends the plan to indicate that the water allocation security objectives for water allocations to take groundwater are specified in schedule 5, part 3. The water allocation security objectives shown in schedule 5, part 3, table 2, columns 2 and 3 represent a range of probabilities within which the statistics derived from the model simulation results are to fall.

Water allocation security objectives aim to ensure that decisions about the allocation and management of water made under the plan will not affect the probability of water users being able to obtain water under their water allocations in each groundwater sub-area.

The objectives do not represent a prediction or guarantee of future performance of water allocations in any particular year. Instead, actual performance under the implemented amendment plan will depend on prevailing climatic factors, water demand distribution patterns and water users' decisions about using their entitlements.

27 Insertion of new pt 4A

Clause 27 inserts a new part 4A into the amendment plan.

Part 4A

General strategies for achieving outcomes for surface water and groundwater

Part 4A provides general strategies for achieving the amendment plan outcomes. Inclusion of these strategies meets the requirement in section 46(1)(f) of the Act.

Division 1

Particular strategies for achieving outcomes

Division 1 provides strategies for amending in conjunction and standby water licences, and a process for estimation of nominal entitlements or annual volumetric licences in undeclared parts of the plan area.

22A Amending in conjunction water licences and standby water licences

Section 22A establishes a process for amending in conjunction water licences and standby water licences. These licences for taking groundwater or unsupplemented surface water were originally tied to the use of supplemented surface water from the Eton Water Supply Scheme. These water licences are not compatible with the water allocations established for the Eton priority area and therefore need to be amended to ensure that they are consistent with other water licences in the plan area.

In conjunction water licences are licences that authorise either the taking of unsupplemented surface water to irrigate a maximum area of crop, or the taking of groundwater, in conjunction with supplemented water from the Eton Water Supply Scheme. The volume of water taken from all water sources to which the licence relates could be up to the limit of the total nominal entitlement. Standby water licences are licences which authorise either the taking of unsupplemented surface water to irrigate a maximum area of crop, or the taking of groundwater, when supplemented surface water normally taken from the Eton Water Supply Scheme is not available. The water could be taken from either unsupplemented surface water or groundwater up to the limit of the total nominal entitlement.

Section 22A specifies that in conjunction and standby licences must be amended within 60 business days of commencement of the amendment plan. In conjunction and standby water licences for unsupplemented water are to be amended at 49 per cent of the area stated on the licence on the day the plan is amended. The figure of 49 per cent is based on the average authorised use from bores, with standby or in conjunction conditions on the water licence, that are equipped with water meters to measure the volume of water taken from groundwater under the licence.

For groundwater licences that are metered, the nominal entitlement is to be amended to be the greater of the maximum of the authorised use that is

measured with a water meter in any water year in the ten years before 30 November 2007, or, 49 per cent of the nominal entitlement on the licence on the day the plan is amended. The maximum authorised use is to be no more than the nominal entitlement stated on the standby or in conjunction licence. For groundwater licences that are not metered with a water meter, the nominal entitlement will be amended to be 49 per cent of the nominal entitlement stated on the licence on the day the plan is amended.

Section 22A also requires the in conjunction and standby licences to be amended to change the purpose on the water licence. The purpose may be 'rural' or 'any', as consistent with sections 48A or 49V. Conditions on the licences that authorise the taking of surface water from the Eton Water Supply Scheme must be removed.

22B Nominal entitlement or annual volumetric limit

Section 22B states the process to be followed by the chief executive when deciding the annual volumetric limits for water allocations and the nominal entitlements for water licences for taking groundwater or for taking water in a watercourse area. The entitlements to which this process applies involve existing works in the part of the plan area that was undeclared before commencement of the amendment plan. Existing works are works for taking groundwater for purposes other than stock purposes or domestic purposes and that, in the chief executive's opinion, were being used or were capable of being used on 24 June 2003. These works are being identified through two notification of works processes - a process that was carried out in the watercourse area (see schedule 2C) where notifications were received before the commencement of the amendment plan; and a second process in the remaining part of the undeclared area to be conducted after commencement of this amendment plan (see section 49I). The notification processes apply in the parts of sub-areas 1, 2, 3, 4, 6 or 15 that were undeclared before commencement of the amendment plan.

Section 22B(2) requires the chief executive to decide the nominal entitlement or annual volumetric limit to be the lesser of the volumes estimated under the methods in section 22B(6). However, if after having regard to available evidence, the chief executive is satisfied that the volume of groundwater being extracted before the plan commencement day is a higher volume than the volume estimated under section 22B(6), then the chief executive must decide the nominal entitlement or annual volumetric limit to be the higher volume. Available evidence is documentary evidence

that the chief executive considers is reasonably relevant to the matters being considered under this section.

When calculating a volume under section 22B(6)(estimated volume) on the basis of multiplying the capacity of the works by the number of hours operated during a 12 month period, the chief executive must decide the capacity of the works to be either the design or equipped pumping rates. If there is only a valid pumping test from which a design pumping rate for the bore can be estimated then the design pump rate is the capacity. If there is only an equipped rate available, then the equipped rate is the capacity. If there is a design pumping rate and an equipped rate for a bore, then the lesser of these rates is the capacity of the existing works. The number of hours for which the bore is operated is to be no more than 1200 hours. When estimating the number of hours the chief executive must have regard for the efficiency of use and the availability of water from other water sources.

Under section 22B(6), when estimating the volume to have been pumped for irrigation purposes during the relevant period, the chief executive must not determine a volume to be more than 3 megalitres per hectare irrigated. When estimating the volume being pumped during a relevant period, for purposes other than irrigation, the chief executive must not determine the volume to be more than 10 megalitres.

In the parts of sub-areas 4 and 6 that were previously undeclared, there were a number of licences in place until the area was deproclaimed in 1992. Under section 22B(6)(estimated volume), when deciding a volume for these authorisations, where there are existing works being used or capable of being used, the chief executive must not decide a volume that is more than the nominal entitlement that was on the previous authorisations.

In addition to the above matters, calculation of the volume to be placed on the water licence or water allocation under section 22B(6) must also consider the availability of groundwater in the aquifer. The availability of groundwater under the licence or water allocation, expressed as the volume per unit area, is to be no more than one megalitre per hectare of aquifer under the land on which the works are located.

Under section 22B(4), when considering available evidence of a higher volume of groundwater taken in a relevant period, the chief executive is required to have regard to a range of matters. These matters are:

- the capacity of the works installed (as defined in section 22B(6));

- the number of hours the works operated in the relevant period;
- the volume of water calculated by the chief executive to have been taken, using existing works, for irrigation of crops grown during the relevant period;
- the volume of water calculated by the chief executive to have been taken during the relevant period, using existing works, for purposes other than irrigation;
- the efficiency of use for the purpose;
- for areas that were once part of the Pioneer subartesian area and which were deproclaimed in 1992, the nominal entitlement that was on the previous licence;
- the availability of groundwater in the aquifer being accessed by the existing works;
- the availability of water from other sources; and
- the density of bores in the particular locality being considered. The density of bores in the area is a consideration because of the need to evaluate whether or not there is potential for excessive pumping interference between bores during peak demand periods.

The chief executive is not limited to the above matters and may consider other matters to ensure consistency with plan outcomes.

Division 2 Moratorium notices and arrangements for applications made before 25 June 2003

22D Continued effect of moratorium notice published on 25 June 2003 and subsequently amended—Act, s 46(3)

Section 22D continues, in part, the effect of the moratorium notice which came into effect on 25 June 2003 and was amended on 29 September 2005 and 28 June 2008. The purpose of the moratorium notice was to maintain the level of development (i.e., existing water licences) of groundwater or surface water in subcatchments 13 or 14 while the amendment plan was being developed. The moratorium notice remained in effect until this amendment plan was approved by Governor in Council. The purpose of

continuing the effect of the moratorium notice, in part, is to maintain these conditions until the resource operation plan is amended. The continuation of parts of the moratorium notice will have effect until the amendment to the resource operations plan is made.

Section 22D applies to applications, made on or after 25 June 2003, to take surface water in subcatchments 13 or 14, or to take groundwater in the plan area. Applications will not be accepted until after the resource operations plan is amended if they would increase the amount of water to be taken, change the location from which the water may be taken or increase the maximum rate for taking the water.

However, these criteria do not apply to applications to amalgamate two or more licences under section 224 of the Act, or subdivide licences under section 225 if the original licence is to be replaced by two or more licences. The criteria do not apply to applications where there are existing works for taking or interfering with water under a licence that has expired or is no longer in force and where an application for reinstatement under section 221 of the Act, or replacement under section 229 of the Act was not made. The intention is that the granting of the licence will have the same or a lesser effect compared with the effect of the licence had it continued to exist using works that were installed and operable on the day the licence mentioned in subsection 4 expired or was no longer in force.

New works for taking groundwater must not be started. In addition, new works to take groundwater for stock purposes and domestic purposes are not permitted unless the new works relate to:

- stock and domestic use in parts of domestic area A not affected by seawater intrusion, shown in schedule 9B. The seawater intruded area is shown in schedule 9A;
- stock and domestic use in parts of domestic area B not affected by seawater intrusion, shown in schedule 9B, provided there are no existing works on the land that can be used for stock purposes and domestic purposes and the land on which the works are located has not been reconfigured since 28 June 2008. If the land has been reconfigured since 28 June 2008:
 - the reconfiguration needs to have been undertaken by a constructing authority under the *Acquisition of Land Act 1967*, or acquired by a constructing authority by voluntary acquisition for a public purpose; or

- the reconfiguration has not or will not result in more lots being created than existed immediately before 28 June 2008;
- replacement of existing works where the new works constructed after 28 June 2008 are to be constructed within 10m of the existing works.

Voluntary acquisition of land means the acquisition of land by a constructing authority, other than under the *Acquisition of Land Act 1967*, where the acquisition is with the agreement of the owner of the land.

New works that are authorised by or associated with mining tenements granted under the *Mineral Resources Act 1989* are permitted.

Completed or partly completed works which existed on the day the amendment plan commences are not to be changed, enlarged or deepened, with the exception of town water supply works if the works are located west of the 149°E longitude.

22E Particular applications accepted but not dealt with before 25 June 2003

Section 22E applies to applications for water licences that were accepted but not dealt with before 25 June 2003. These applications are for taking or interfering with surface water in subcatchment areas 13 (Sandringham Creek) or 14 (Alligator Creek), or taking groundwater in the plan area. Applications held by the chief executive will be refused if their granting would increase the amount of water that may be taken or interfered with, change the location of the take or interference, or, increase the maximum rate of take or interference with water.

However, these criteria do not apply to applications to amalgamate two or more licences under section 224 of the Act, or subdivide licences under section 225 if the original licence is to be replaced by two or more licences. The criteria do not apply to applications where there are existing works for taking or interfering with water under a licence that has expired or is no longer in force and where an application for reinstatement under section 221 of the Act, or replacement under section 229 of the Act was not made. The intention is that the granting of the licence will have the same or a lesser effect compared with the effect of the licence had it continued to exist using existing works. Works for taking or interfering with water are existing works if they were installed and operable on or before the day when the licence expired or ceased to exist.

Division 3 Measuring devices

Division 3 details the measuring devices to be used to measure the taking of surface water and groundwater, and electrical conductivity of groundwater taken under a water entitlement in the plan area.

22F Volume—water

Section 22F requires a measuring device, namely a water meter, to be installed wherever water is being taken under a water entitlement in the plan area and the entitlement is declared to be a metered entitlement. Metering the take of water in situations where a water licence is not necessary, for example for stock or domestic purposes is not required. The monitoring of volumes of water taken is to provide information for water accounting purposes and to ensure compliance with the terms of a water entitlement.

22G Electrical conductivity—groundwater

Section 22G allows the chief executive to determine in the amended resource operations plan the timing for and circumstances under which a monitoring device to measure and record the electrical conductivity is to be installed on bores located in groundwater sub-areas 11, 12, 13, 15, 16 or 17. These sub-areas are the sub-areas which are affected by, or are vulnerable to, seawater intrusion. Monitoring of electrical conductivity will be decided by the chief executive on a bore-by-bore basis, taking into consideration the groundwater electrical conductivity in the groundwater sub-area and the proximity of the bore to the seawater intrusion front.

28 Amendment of pt 5 hdg (Strategies for achieving outcomes)

Clause 28 amends the heading of part 5 to specify that the part refers to surface water only. Strategies for achieving surface water outcomes are stated separately from strategies for achieving groundwater outcomes.

Part 5

Strategies for achieving outcomes (surface water)

29 Amendment of s 23 (Decisions consistent with objectives)

Clause 29 amends the plan to specify that section 23 refers to decisions about the allocation or management of surface water. The clause also amends section 23 so that reference is made to the surface water parts of schedules 4 and 5. The objectives relevant to surface water are the environmental flow objectives in schedule 4, parts 1, 2, 3, or 4 and the water allocation security objectives in schedule 5, parts 1 or 2.

30 Amendment of s 24 (Assessing impact of decisions)

Clause 30 amends the plan to ensure that section 24 refers to the simulation period for surface water.

31 Amendment of s 25 (Taking or interfering with water from waterholes or lakes)

Clause 31 amends the plan to specify that section 25(1)(c) relates to surface water being managed under a resource operations licence.

32 Amendment of s 26 (Matters chief executive must consider)

Clause 32 amends the plan to specify that section 26 refers to unallocated surface water only.

33 Amendment of s 27 (Licences for unallocated water in subcatchment area 12)

Clause 33 amends the plan to specify that section 27 refers to licences for unallocated surface water in subcatchment 12 only. Clause 33 also amends references to annual volumetric limit in section 27 to refer to nominal entitlement.

34 Insertion of new section 30A

Clause 34 inserts a new section into division 4 of the plan.

30A Granting water licences to take declared water

Section 30A states that under a process to be provided for in the resource operations plan, the chief executive must grant a water licence to the owner of land on which there are existing works used for purposes other than stock and domestic purposes in the undeclared part of the watercourse area. The owners of bores in this area have been required, under section 37 of the Act, to notify the chief executive prior to the commencement of the amendment plan. The licence granted by the chief executive under section 212 of the Act is to be consistent with part 5A, division 7 of the amendment plan. References to groundwater in part 5A, division 7 are to be taken as references to water in a watercourse area. Existing works are works for taking groundwater for other than stock purposes and domestic purposes that were being used or were capable of being used on 24 June 2003.

35 Amendment of s 33 (Conditions of authorisations)

Clause 35 amends the plan to specify that section 33 refers to surface water only.

36 Amendment of s 34 (Location for taking water)

Clause 36 amends the plan to specify that section 34 refers to surface water only.

37 Amendment of s 40 (Nominal volume for unsupplemented water)

Clause 37 amends section 40 to insert the word “table 1” in the reference to schedule 6.

38 Amendment of s 45 (Water allocation groups for unsupplemented water allocations)

Clause 38 amends section 45 so that the existing provisions refer to part 1 of schedule 8. This change is necessary so that the authorisations in the

watercourse area are included as a separate water allocation group in the relevant subcatchment.

Clause 38 also inserts a new subsection (b) to specify that authorisations in the watercourse area for purposes other than stock or domestic purposes belong to the water allocation group shown in column 3 for the subcatchments shown in column 1 of schedule 8, part 1. Clause 38 also renumbers the existing subsection (b) to be 45(c) and it is amended to refer to schedule 8, part 1, column 4.

39 Replacement of s 46 (Volume of unsupplemented water)

Clause 39 replaces section 46 of the plan with a new section.

46 Water licences to take unsupplemented water

Section 46 requires licences to take unsupplemented surface water to state a purpose for taking the water, a nominal entitlement and a maximum rate of take. The stated purpose must be either 'rural' or 'any'.

40 Amendment of s 47 (Annual volumetric limit for unsupplemented water)

Clause 40 amends the heading of section 47 by replacing annual volumetric limit with nominal entitlement to reflect that the section applies to water licences.

47 Nominal entitlement

References to annual volumetric limit in subsections (1) and (2) are also amended to refer to the nominal entitlement for a water licence.

Clause 40 also amends section 47(2)(b) of the plan to include the area to volume conversion factors for area based licences for taking unsupplemented surface water in subcatchments 12, 13 and 14. These subcatchments are associated with Sandy, Sandringham and Alligator Creeks. Under section 46 of the amended plan, unsupplemented water licences must state a nominal entitlement. Clause 38 of the amendment plan specifies how the nominal entitlement for an unsupplemented water licence in these subcatchments is to be determined.

Where the existing licence does not state an annual volume that may be taken, but states an area that may be irrigated under the licence, the nominal entitlement will be decided by the chief executive having regard for the volume of water required to efficiently irrigate the area, but not more than the volume (in megalitres) calculated by multiplying the number of hectares by the relevant conversion factor for the subcatchment listed in section 47(2)(b) (i) and (ii) of the amendment plan.

Clause 40 also amends section 47 to indicate that the conversion factor for conditional licences in renumbered section 47(2)(b)(iii) only applies to licences not located in subcatchments 12, 13 or 14. Section 47(2)(b)(iv) applies to other licences that are not in subcatchments 12, 13, or 14.

41 Insertion of new s 48A

Clause 41 inserts a new section 48A into the plan.

48A Purpose to be stated on water licence

Section 48A requires water licences for taking unsupplemented surface water, in force immediately before commencement of the amendment plan, to state the purpose for which water may be taken. The stated purpose must be 'rural' or 'any'. Purposes including, or similar to, stock, domestic, irrigation, stock intensive, agriculture, or aquaculture are considered to be 'rural' purposes, otherwise the purpose is 'any'.

42 Replacement of pt 5, div 7, hdg (Moratorium notice)

Clause 42 replaces the heading for part 5, division 7 of the plan.

Division 7 Taking declared water for stock or domestic purposes

The amended division 7 heading relates to the taking of water in a watercourse area for stock purposes or domestic purposes. The former division 7, which dealt with the continued effect of the moratorium notice, is now included in part 4A, general strategies for achieving outcomes.

43 Insertion of new s 48B

Clause 43 inserts a new section 48B into the plan.

48B Taking declared water for stock or domestic purposes authorised

Section 20(3) of the Act authorises an owner of land adjoining a watercourse to take water from the watercourse for stock purposes or domestic purposes. Owners of land that does not adjoin a watercourse require a water licence to take surface water from a watercourse for stock purposes or domestic purposes. Clause 4 of the amendment plan inserts section 5B into the plan that declares groundwater in an aquifer under the area shown in schedule 2C to be water in a watercourse. This effectively treats groundwater in the aquifers under this watercourse area like surface water.

Section 48B authorises owners of land in the watercourse area that do not adjoin a watercourse, to take water from the aquifer under the watercourse area for stock purposes or domestic purposes. This means that owners of land that does not adjoin a watercourse in the watercourse area, and who have a bore taking water for stock purposes or domestic purposes, do not require a water licence. Section 48B also authorises owners of land not adjoining a watercourse in the watercourse area who have or may construct a bore in the future, for stock purposes or domestic purposes, to take water without a water licence.

44 Amendment, relocation and renumbering of s 49 (Continued effect of moratorium notice—Act, s 46(3))

Clause 44 amends the title of section 49 of the plan being amended to indicate that the section refers to the continued effect of the moratorium notice which was issued on 20 September 2000. This moratorium notice applies to surface water in the plan area that existed before commencement of the amendment plan. The section is relocated to part 4A, division 2 and renumbered as section 22C. This ensures that the sections which refer to moratorium notices are located together in the plan. An amendment is also made to section 49(2) and 49(3) of the plan being amended to ensure the provision refers to surface water.

45 Insertion of new pt 5A

Clause 45 inserts a new part 5A into the plan.

Part 5A Strategies for achieving outcomes (groundwater)

Part 5A provides strategies for achieving the outcomes for groundwater which are incorporated into the plan through clauses 8 to 11 and clause 20 of the amendment plan. Inclusion of these strategies meets the requirement in section 46(1)(f) of the Act.

Division 1 Preliminary

Division 1 establishes that decisions made about the allocation and management of groundwater in the plan area must be consistent with the plan objectives, specifies the methods that must be used for assessing the impact of these decisions and the matters the chief executive must consider when making decisions about a water licence or a water allocation, including the conversion of a water licence to a water allocation.

49 Decisions consistent with objectives

Section 49 requires that decisions relating to the allocation or management of groundwater, other than decisions that relate to a water permit, must be consistent with the environmental flow objectives in schedule 4, parts 4, 5 or 6 and the water allocation security objectives in schedule 5, part 3. This provides greater certainty and security to entitlement holders, ensures environmental flows are maintained, ensures the objectives in the amendment plan are not compromised and establishes transparent and consistent considerations for decision making.

Decisions about water permits are excluded from this requirement because the water taken during short permit periods is deemed to have little effect on the objectives, which are derived from long-term historical data. However, separate consideration of the impacts on natural ecosystems and

water authorisations is required in deciding whether to grant or refuse an application for a water permit under section 239 of the Act.

49A Assessing impact of decisions

Section 49A states that when assessing the impact of a decision or proposal about the allocation and management of groundwater on environmental flow objectives and water allocation security objectives, the MODFLOW or MODHMS computer programs are to be used for the simulation of groundwater. MODFLOW and MODHMS simulate groundwater flow processes in the plan area including seasonal variability in water demand, recharge, groundwater flow, flows to rivers and seawater intrusion. These simulations are not a projection or prediction of future performance, but instead are used to assess the consistency of decisions with objectives assuming that future flow patterns will be similar to the historical flow patterns for the period 1 July 1900 to 30 June 2003.

In situations where it is not practical to use the MODFLOW or MODHMS computer programs for assessing consistency with plan objectives, the chief executive may approve another method if satisfied that it is at least as accurate as the MODFLOW or MODHMS computer programs.

49B Limitation on taking groundwater—Act, s 20(6)

Section 49B identifies who is permitted to take groundwater in the plan area. This means that the taking of groundwater is prohibited unless authorised under this section.

In the plan area, groundwater may not be taken other than:

- under a valid water permit;
- under a water licence or a water allocation that authorises the taking of groundwater;
- under an authorisation under section 49I; or
- for stock purposes or domestic purposes authorised under section 49ZB.

49C Restrictions on taking groundwater

Section 49C provides factors the chief executive must consider when making a decision that relates to the taking of groundwater under a water licence, a change to a water allocation, the conversion of a water licence to a water allocation or a decision about the taking of groundwater in areas where there is an exchange of water between surface water and groundwater. The chief executive must consider the impact of taking groundwater on the ecological values of a waterhole, lake, hyporheic zone or streamflow connected with the groundwater. The hyporheic zone is the zone in which an exchange between surface water and groundwater occurs. The chief executive must also consider the impact of taking groundwater under the aggregate of water entitlements on surface water flows, groundwater flows, other water users, the seawater intrusion front or areas of poor water quality.

If the chief executive is satisfied that there would be an impact, a suitable condition must be placed on the water licence or allocation to safeguard ecological values or limit the impact of taking groundwater on other water users, the seawater intrusion front or areas of the aquifer which contain poor quality groundwater. The chief executive need not impose a condition on the taking of groundwater if satisfied that there would be no adverse impact on ecological values or other water users, or if economic hardship would result from imposition of a condition. The matters which the chief executive may consider when making groundwater allocation and management decisions are not limited by the considerations in section 49C(2).

49D Decisions not to increase amount of groundwater taken

Section 49D states that the chief executive must not make a decision about the allocation or management of groundwater that would increase the annual volumetric limit of groundwater permitted to be taken under water allocations or increase the nominal entitlements for water licences to take groundwater in the plan area. This is because groundwater in the plan area is fully allocated and under stress from seawater intrusion. In addition, decisions of the chief executive must not allow groundwater to be taken in parts of groundwater sub-areas 11, 12, 13, 15, 16 or 17 that are intruded or influenced by seawater intrusion if the water has an electrical conductivity greater than 1,500 micro siemens per centimetre except under the following circumstances. The taking is to be in accordance with section 49Y under

the water sharing rules provided for in schedule 9C up to the end of the 2013-2014 water year, or the purpose of the take after the 2013-2014 water year is for public health purposes, such as showers and toilets, or the taking is under a water licence for aquaculture purposes that existed in sub-area 17 at the commencement of section 49D.

Section 49D(1)(a) or (b) does not apply to a decision about a water permit; or an application to amalgamate, replace or reinstate an expired water licence as mentioned under sections 22D(4) or 22E(3). Decisions about new water licences granted or water allocations converted for existing groundwater take in parts of sub-areas 1, 2, 3, 4, 6, 15 or the watercourse area that were in the undeclared area before commencement of the amendment plan are also exempted. The part of the plan area outside the Pioneer Subartesian Area is referred to as the undeclared area.

Division 2 Environmental management rules, water sharing rules and water allocation change rules

Division 2 provides for a range of matters that the chief executive needs to consider in deciding rules to be implemented under a resource operations plan to achieve the outcomes for groundwater. The rules relate to environmental management rules, water sharing rules and water allocation change rules.

49E Matters to be considered for environmental management rules

Section 49E states the matters which must be considered by the chief executive when deciding the environmental management rules to be included in the resource operations plan. Environmental management rules are aimed at achieving environmental outcomes, meeting environmental flow objectives and protecting sites of ecological value that are dependent on access to groundwater.

Matters to be considered include:

- the distance of a water bore from a watercourse, lake, spring or an area of ecological value that is dependent on groundwater. The distance of the bore from the feature is considered because of the hydraulic

effects of pumping on water in the watercourse, lake, spring or a feature of ecological value;

- the groundwater flow regime required to maintain habitats needed by aquatic biota in the hyporheic zone and other relevant groundwater-dependent ecosystems;
- the groundwater flow regime required to maintain the connectivity between an aquifer and surface water features such as watercourses, lakes or springs so that these features continue to receive groundwater discharge that will enable the movement of in-stream aquatic biota and maintain the natural seasonality of low flow and no flow periods; and
- the impact of taking groundwater on the ecological values of groundwater-dependent features, seawater intrusion, water quality or baseflow.

The chief executive is not limited to the above matters and may also consider other reasonably relevant matters to ensure that the environmental management rules are consistent with the plan outcomes.

49F Matters to be considered for water sharing rules

Section 49F states the matters that must be considered by the chief executive when determining the water sharing rules for groundwater to be included in the amended resource operations plan. Water sharing rules are an explicit system of rules put in place to define how the take of groundwater that is available for a particular water year is distributed amongst water users and environmental needs, particularly during times of reduced availability when competition for water amongst water users is highest.

In deciding the rules the chief executive must have regard for, but is not limited to, the local availability of water in the aquifers, streamflow, waterholes, baseflow and the connectivity between surface water and groundwater, the impact of groundwater use on the seawater intrusion front, the proximity to and impact of bores on the seawater intrusion front and the electrical conductivity of the groundwater near and behind the seawater intrusion front.

The chief executive must also have regard for existing water sharing rules for groundwater, the environmental flow objectives, the water allocation security objectives, the operating arrangements and supply requirements of

infrastructure where there is connectivity between surface water and groundwater, the environmental management rules for surface water already contained in the resource operations plan, the volumetric limits on water entitlements and the impact of the take of groundwater on authorisations in the area of the use. The volumetric limits on water entitlements can be daily, monthly, quarterly or annual timeframes.

49G Matters to be considered for water allocation change rules

Section 49G states the matters to be considered by the chief executive when deciding the water allocation change rules to be included in the amended resource operations plan. Water allocation change rules are conditions that must be met to allow permanent changing of attributes on a water allocation, including a change to the location or the purpose.

These matters which the chief executive must consider, but is not limited to, include the volume density of groundwater to be taken under authorisations in a locality in a part of a sub-area or zone where the proposed change would apply relative to the local availability of groundwater in the sub-area or zone. The chief executive must consider the impact the proposed change would have on watercourses, lakes, springs, baseflow, waterholes, the ecological values of groundwater-dependent ecosystems, seawater intrusion, areas of poor water quality, monitoring bores and other water users.

Consideration of the volume density of water allocation that could occur in a localised area is included as a mechanism for managing small scale areas of high or over development. Placing limits on the total number of megalitres per hectare of water allocation in the area around the proposed change that can be permitted to occur will prevent extension of these localised areas of over development or development of new areas of over development. The volume density for a locality in a part of a subarea or zone is defined as the total of the annual volumetric limit of water allocations that could be taken in the locality, once the change occurred, divided by the area of the locality. The area (in hectares) of the locality is to be defined by the chief executive in an amendment of the resource operations plan.

Division 3 Unallocated groundwater

Division 3 refers to unallocated groundwater in the plan area.

49H Unallocated groundwater

Section 49H states that there is no unallocated groundwater in the plan area except for stock purposes, domestic purposes, or for water allocations converted, or water licences granted, for the continued use of existing works in the undeclared area of groundwater sub-areas 1, 2, 3, 4, 6 or 15.

Division 4 Authorisations for purpose other than stock or domestic purposes

Division 4 provides strategies for identifying existing water bores taking groundwater in the undeclared parts of the plan area and granting water licences to meet the outcomes for groundwater for authorisations other than for stock purposes or domestic purposes.

49I Taking groundwater using existing works authorised

Section 49I authorises a person taking groundwater in the undeclared part of the plan area, who owns existing works for a purpose other than stock or domestic use, to continue to take groundwater for 60 business days after the commencement of the amendment plan. If the owner gives the chief executive a notice in the approved form within this 60 business day period, the owner of the works will be allowed to continue taking groundwater beyond the 60 business day time period.

Existing works are works that immediately before the moratorium commenced on 25 June 2003, were being used or were capable of being used to take groundwater. The chief executive must be satisfied that the works were equipped and used, or were in a state of repair that if equipped, could be used for taking groundwater.

Division 5 Granting water licences

Division 5 provides for the granting of water licences to the owners of works who are authorised under part 5A, division 4.

49J Granting water licences for authorisation 4

Section 49J states that the chief executive must grant a water licence, under section 212 of the Act, to a person who holds an authorisation 4 in the undeclared part of sub-areas 1, 2, 3 or 15. Authorisation 4 applies to a person who owns existing works being used or capable of being used to take groundwater immediately on 24 June 2003 and who is authorised to continue taking groundwater after the 60 business day period. The taking of groundwater is authorised under section 49I(2) if a notice is given to the chief executive by the owner of the works within the 60 business day period. Section 212 of the Act allows the chief executive to grant a water licence without requiring an application to be lodged under the resource operations plan. The licences granted by the chief executive must be consistent with the provisions in part 5A, division 7.

Division 6 Converting authorisations to water allocations

Division 6 provides the strategies for certain authorisations to take groundwater to be converted to water allocations under the resource operations plan. The division also provides specific instructions for amendment of existing licences under an amended resource operations plan.

For the purposes of this division, authorisations group similar water entitlements in similar groundwater sub-areas to make management of, and referring to, these similar entitlements easier during development of the resource operations plan. There are 16 types of authorisations that are defined in the dictionary in schedule 10 or within the provisions.

49K Application of div 6

Section 49K states that division 6 applies to a water allocation converted under an amended resource operations plan from authorisations grouped under authorisations 1, 2, 3, 6, 7, 9 or 11. These authorisations include existing entitlements not intruded by seawater in groundwater sub-areas 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16 as well as authorisations identified under 49I in sub-areas 4 or 6 that are to be converted to water allocations.

49L Elements of a water allocation

Section 49L lists the elements that must be stated on a water allocation to take groundwater in the groundwater management area. These elements are a nominal volume for the allocation, an annual volumetric limit, the location from where the water may be taken, the purpose for which the water may be taken, any conditions under which the water may be taken and the water allocation group to which the allocation belongs. A water allocation may also state a daily, monthly or quarterly volumetric limit. The following sections of division 6 give direction to the chief executive for amending the resource operations plan and specify the extent necessary to describe the various elements of a water allocation.

49M Nominal volume

Section 49M states the matters that the chief executive must have regard to when deciding on the nominal volume for a water allocation in water allocation groups 4 through to 16 shown in schedule 6, table 2, column 1. Water allocation groups are identified using the corresponding groundwater sub-area numbers. The considerations for deciding the nominal volume for a water allocation are the local availability of groundwater, the conditions under which groundwater may be taken under the existing authorisation or required in order to be consistent with the amendment plan, the simulated mean annual supply for the allocation and the efficiency of groundwater use.

The simulated mean annual supply for a water allocation or a water allocation group is the total volume of groundwater simulated to be pumped over the simulation period from, 1 July 1900 to 30 June 2003, divided by the number of years in the simulation period.

The nominal volume (expressed in megalitres) is an important attribute of a water allocation because it represents the water allocation's share of the total volume of water available to be taken by water allocation holders in a water allocation group. The nominal volume should not be confused with the annual volumetric limit which represents the maximum volume of water that may be taken under the water allocation during a water year. The actual amount of water that may be taken in any particular year will be subject to a range of factors. In dry years, the amount of water available to be taken may be less than the nominal volume, while in wetter years when groundwater levels are high, the amount of water available may be higher than the nominal volume. The total of the nominal volumes on water allocations in a water allocation group must not exceed the nominal volumes stated in schedule 6, table 2, column 3.

49N Annual volumetric limit

Section 49N states the various processes for establishing an annual volumetric limit for a water allocation under authorisations 1, 2, 3, 6, 7, 9 or 11. The chief executive, when deciding the annual volumetric limit for water allocations under the amended resource operations plan, must ensure that the total of all the annual volumetric limits for entitlements in the group is not more than the volume stated for the group in schedule 6, table 2, column 2.

The annual volumetric limit for a water allocation is for:

- authorisation 1- the nominal entitlement stated on the existing authorisation;
- authorisation 2- the volume calculated using the process for standby and in conjunction licences (section 22A(3));
- authorisation 3- the volume calculated using the process being applied to existing works in the undeclared areas in groundwater sub-areas 4 and 6 (section 22B);
- authorisation 11 (authorisation number 20155L)- 1,300 megalitres.

The nominal entitlements of authorisations 6, 7 or 9 will be converted to water allocations at the percentage shown in schedule 6A, column 2 for the sub-areas in which the authorisations occur. For authorisation 6, the nominal entitlement will be converted at the full value (100%) of the nominal entitlement. However for authorisations 7 or 9, the full value of the nominal entitlement stated on a water licence that existed immediately

before the commencement of the amended plan will not be converted to a water allocation. The conversions for water licences in sub-areas 11, 12, 15A and 15B will be at 55% and the conversions for water licences in sub-areas 13 and 15C will be at 60% of the nominal entitlement shown in the existing licence. The remaining part of the nominal entitlement of authorisations 7 or 9 that is not converted to a water allocation will remain a water licence and will hold the complementary component and is dealt with in section 49U. When deciding the annual volumetric limit for authorisations 7 or 9, the chief executive must not reduce the annual volumetric limit below 20 megalitres per annum. In situations where the nominal entitlement on the existing water licence is already less than 20 megalitres per annum, the annual volumetric limit for the water allocation is the nominal entitlement stated on the water licence.

49O Purpose to be stated on water allocation

Section 49O states how the purpose for taking groundwater, which is to be stated on a water allocation, is to be determined. The purpose on the water allocation is to be 'rural' or 'any'. If the purpose stated on an authorisation is for stock, domestic, irrigation, stock intensive, agriculture, aquaculture, dewatering or similar purpose, then the purpose stated on the water allocation is to be 'rural'. If the existing authorisation states another purpose then the purpose to be stated on the water allocation is to be 'any'.

49P Conditions for water allocations

Section 49P requires that when imposing conditions on the taking of groundwater under a water allocation, the chief executive must take into account the conditions on the existing authorisation or any development permit related to the authorisation. This consideration is in addition to the considerations required under other parts of the amendment plan.

49Q Water allocation groups

Section 49Q states that the water allocations in the groundwater sub-areas 4 to 16 in schedule 8, part 2, column 1, belong to the corresponding water allocation groups in schedule 8, part 2, column 2. The water allocation group to which a water allocation for taking groundwater belongs is based on the sub-area in which the water allocation is located and is identified by the number of the sub-area in which the water allocation is located.

Division 7 Amending water licences

Division 7 provides the strategies for amending water licences in the plan area so that they are consistent with the amended plan.

Subdivision 1 Amending particular water licences

Subdivision 1 provides a strategy for amending particular water licences in the plan area for consistency with the amended plan.

49R Authorisations 5, 14, 15 and 16—Act, s 217

Section 49R requires that within 60 business days of an amended resource operations plan coming into effect, the chief executive must amend water licences under authorisations 5, 14, 15 or 16 so that the water licences are consistent with the amended resource operations plan. These authorisations include licences in the seawater intruded parts of groundwater sub-areas 11, 15, 16 and 17, the non intruded parts of groundwater sub-areas 1, 2, 3 and 17 and an aquaculture licence in sub-area 17 referred to as authorisation 16.

Subdivision 2 Amending water licences generally

Subdivision 2 provides the general strategies for amending water licences in the plan area for consistency with the amended plan.

49S Application of sdiv 2

Section 49S states that subdivision 2 applies to all water licences amended in an amended resource operations plan from groundwater entitlements grouped under authorisations 4, 5, 8, 10, 12, 13, 14, 15 or 16. These authorisations include existing entitlements not intruded by seawater in groundwater sub-areas 11, 12, 13 or 15 that are complementary

components of water licences converted to water allocations and existing entitlements in groundwater sub-areas 15, 16 or 17 that are intruded by seawater. Subdivision 2 also applies to water licences that were mentioned in 49I and granted under 49J in the part of the plan area that was undeclared (authorisation 4), water licences to be granted in the watercourse area under section 30A and existing water licences in sub-areas 1, 2, 3 or 17 (authorisation 14).

49T Elements of water licences

Section 49T states the elements that must be stated on a water licence for taking groundwater in the groundwater management area. The elements that must be stated on a water licence are a nominal entitlement and the purpose for the groundwater taken under the licence. A water licence may also state a daily, monthly or quarterly volumetric limit and conditions for taking groundwater. This provision will provide consistency for all water licence types across the groundwater management area.

49U Nominal entitlement

Section 49U specifies the links to the various processes for establishing a nominal entitlement on a water licence in the groundwater management area. A variety of processes are required to deal with the range of circumstances in the plan area and the varying rules that are required to convert the nominal entitlements on existing water licences to nominal entitlements on the amended licences so that the licences are consistent with the amended plan.

Section 49U applies to water licences that occur in the area declared to be water in a watercourse area under section 30A, water licences to be granted under 49J, existing water licences in sub-areas 1, 2, 3 or 17 (authorisation 14), water licences that are to hold the complementary component of water licences converted to water allocations, water licences that were originally standby and in conjunction water licences that are not being converted to water allocations and water licences that occur in areas intruded by seawater.

Section 49U(2) specifies a process for determining the nominal entitlement of the licences that hold the complementary component in the parts of sub-areas 11, 12, 13, and 15 that are not intruded by seawater (authorisations 8 and 10). In situations where the 20 megalitre threshold is

applied to the process of converting authorisations 7 and 9 to water allocations under section 49N(1)(e), there is a need to vary the process for calculation of the complementary component. This process is stated under the definition of available component in schedule 10. In situations where the 20 megalitre threshold does not apply to the percentage conversion rates to water allocations, or where the 20 megalitre threshold applies to nominal entitlements that would reduce the annual volumetric limit below 20 megalitres after the percentage adjustment is applied, section 49U(2) states, through the definition of available component, that the nominal entitlement for the water licence that will hold the complementary component is the difference between the nominal entitlement on the water licence before the complementary component is determined and the annual volumetric limit of the water allocation. If the nominal entitlement on the water licence before the determination of the complementary component is 20 megalitres or less, there is no complementary component as indicated in paragraph (a) of the definition of available component.

49V Purpose to be stated on water licence

Section 49V states how the purpose to be stated on a water licence is to be determined. The purpose is to be 'rural' or 'any'. If the purpose stated on an existing water licence is for stock, domestic, irrigation, stock intensive, agriculture, aquaculture, dewatering or similar purpose, then the purpose stated on the water licence is to be 'rural'. If the existing authorisation states another purpose then the purpose to be stated on the water licence is to be 'any'.

49W Conditions may be imposed on water licences

Section 49W requires that, when an amendment to the resource operations plan is being prepared, and if the chief executive is satisfied that it is necessary, conditions be imposed on water licences to ensure the purpose and outcomes of the plan are achieved.

Subdivision 3 Annual entitlements for particular water licences

Subdivision 3 provides processes for setting the annual entitlement for authorisations 5, 8, 10, 12, 13 or 15. These authorisations are water licences for the complementary component in sub-areas 11, 12, 13 or 15 and water licences that are intruded by seawater.

49X Authorisation 8, 10 or 12

Section 49X states that for authorisations 8, 10 or 12 the chief executive must set the annual entitlement to zero. The annual entitlement is to be set under the resource operations plan and is to remain as zero for a period of 5 years after commencement of the amended resource operations plan. The authorisations to which this section applies are the complementary components of water licences that existed before the amendment plan came into effect in the parts of sub-areas 11, 12, 13 or 15 that are not intruded by seawater.

49Y Authorisation 5, 13 or 15

Section 49Y states that for authorisations 5, 13 or 15 the chief executive must decide the annual entitlement for the authorisations according to the process laid out in schedule 9C. The authorisations to which this section applies are water licences that existed before the commencement of this section in the parts of sub-areas 11, 15, 16 or 17 that are intruded by seawater. The process in schedule 9C allows for the phased introduction of limitations to be placed on the taking of groundwater in the seawater intruded area under existing water sharing rules and water sharing rules to be established under the amended resource operations plan. The chief executive must include in the resource operations plan the parts of schedule 9C that have not been implemented under the existing water sharing rules by the day the resource operations plan commences.

49Z Announced entitlement

The resource operations plan will establish the water sharing rules for the groundwater management area. Section 49Z establishes a process for the chief executive to decide, under the water sharing rules to be developed in

the resource operations plan, an announced allocation in areas that are seawater intruded. This section requires the chief executive to decide an announced entitlement before the start of the water year through one or more of the following mechanisms: by giving a notice to the entitlement holders, by publishing a notice in a newspaper or on the department's website.

An announced entitlement is a percentage of the nominal entitlement on the water licence. When deciding the percentage to be applied to the seawater intruded area, the chief executive must consider the following matters to the extent that is appropriate for the seawater intruded area. The matters relate to trends in groundwater levels and the electrical conductivity of the groundwater, the long term sustainable yield, historical groundwater use, estimates of the groundwater use that might occur in the following year and information on weather conditions or weather forecasts. Section 49Z also requires that the chief executive consider the water sharing rules that apply in the part of the groundwater management area that is not intruded by seawater.

If the chief executive varies the water sharing rules for the seawater intruded area during a water year then the water users are to be informed about the new announced entitlement under the process stated in 49Z(2)(b).

Division 8 Review of particular water licences

Division 8 establishes a process for review of the complementary component of water licences, water licences that are intruded by seawater or granted under section 49J where the notified bores are intruded by seawater.

These entitlements include the complementary component of existing water licences not intruded by seawater in groundwater sub-areas 11, 12, 13 or 15, water licences in groundwater sub-areas 11, 15, 16 or 17 that are intruded by seawater, water licences that were in conjunction or standby licences that are intruded by seawater in groundwater sub-areas 15, 16 or 17 and any water licences granted under section 49J in the undeclared part of groundwater sub-area 15 that is intruded by seawater.

49ZA Process and criteria for review

Section 49ZA requires that the chief executive, when preparing the water sharing rules under an amendment to the resource operations plan, must develop a review process to decide whether conditions imposed on the water licences referred to in this division are consistent with the water sharing rules. The chief executive is required to undertake a review every five years after the resource operations plan is amended and be satisfied after undertaking the review that all the criteria mentioned in 49ZA(4) are met before a change to the licence conditions is necessary.

Specifically, when the water sharing rules are being developed for the amended resource operations plan there needs to be consideration of the measured and simulated trends in groundwater levels and electrical conductivity of the groundwater. Groundwater may only be taken if electrical conductivity is less than 1,500 micro siemens per centimetre except where the water licence is used for public health purposes, and the position of the seawater intrusion front is more than 1,000 metres from a water bore used to take groundwater for the licensed purpose. Through the review process, if the chief executive is satisfied that these criteria are met, the conditions on a water licence may be amended by the chief executive to allow the take of the additional water which is identified and considered to be accessible on a long term basis and is consistent with the objectives of the amendment plan. Any works that were not previously metered would require a meter to measure the volume of water taken and a logger to record the electrical conductivity of water taken.

Section 49ZA(6) states that at the time of the review, an announced entitlement for the water licences decided in the review may not be greater than the announced entitlement for the groundwater sub-area where the water licence is located and may be for either a part of, or the whole of a water year. This approach should provide a degree of flexibility while ensuring the objectives of the plan are met.

The chief executive, when developing a review process in the resource operations plan amendment, is not limited to the matters in 49ZA(3) to 49ZA(6) and may also consider other matters to ensure that the decisions are consistent with the plan outcomes.

Division 9

Authorisations for stock or domestic purposes

Division 9 provides the strategies for managing the taking of groundwater for stock purposes and domestic purposes in the groundwater management area. The objective of this strategy are part of an to manage expansion of water use in critical areas in order to prevent further degradation of the groundwater resource and to prevent adverse impacts on existing users from growth in groundwater use for stock or domestic purposes.

49ZB Taking groundwater authorised

Under section 49ZB an owner of land taking groundwater for stock purposes or domestic purposes is authorised to take groundwater subject to certain conditions. However section 49ZB also places restrictions on the taking of groundwater from works constructed after the 28 June 2008 in sub-area B or C, and in seawater intruded areas after the amendment plan is finalised. The 28 June 2008 is the date a moratorium on stock and domestic bores in the plan area was published. Section 49ZB(2) authorises an owner of land in domestic area B or domestic area C to take groundwater using works that were being used or were capable of being used on 28 June 2008 or to take groundwater using works that replace existing works within 10 metres of those works.

Section 49ZB(3) applies conditions on construction of new works in domestic area B (see schedule 9B). It provides that an owner of land, that is not seawater intruded and on which there are no existing works that are capable of being used by the owner for the purpose, is authorised to take groundwater using works constructed after 28 June 2008 if the plan of survey for a reconfiguration of the land is registered before 28 June 2008.

However there are circumstances under which the owner of land in domestic area B, and where there are no existing works that are capable of supplying groundwater for the purpose, may take groundwater for stock purposes or domestic purposes using works constructed after 28 June 2008. These circumstances are:

- (a) where there has been a reconfiguration of the land after 28 June 2008 and the reconfiguration did not result in more lots being created on the land than existed immediately before the reconfiguration; or

- (b) where a resumption by a constructing authority of part of the land under the *Acquisition of Land Act 1967* and the plan of survey was registered on or after the 28 June 2008; or
- (c) where a resumption by a constructing authority of part of the land for a public purpose is by voluntary acquisition by the constructing authority and the plan of survey is registered on or after 28 June 2008.

Section 49ZB(4) applies restrictions on taking groundwater in domestic area C (see schedule 9B) using works constructed after 28 June 2008. Domestic area C represents the land declared by the local authority to be a local authority service area for the provision of reticulated water services. It provides that an owner of land in domestic area C must not take groundwater using works constructed after 28 June 2008.

However replacement of bores in domestic area C that were being or were capable of being used on the day the amendment plan commences is permitted provided the replacement works are within 10 metres of the works being replaced.

Under section 49ZB(5) an owner of land in a part of the groundwater management area that is seawater intruded must not take groundwater using works constructed after the commencement of this amendment plan. However, taking of groundwater in seawater intruded areas using replacement works is authorised provided the replacement works are within 10 meters of the works being replaced.

For section 49ZCB existing works are defined as works for taking groundwater for stock purposes or domestic purposes that the chief executive is satisfied were being or were capable of being used on 28 June 2008. Replacement works are defined as works replacing existing works to be constructed within 10 metres of the existing works.

Division 10

Miscellaneous

Division 10 outlines the relationship of the plan with the *Integrated Planning Act 1997*.

49ZC Relationship with Integrated Planning Act 1997

The development of works for stock or domestic purposes is a self-assessable development under schedule 8, part 2, table 4, item 1(b)(iii) of the *Integrated Planning Act 1997*. In effect, if a land owner wishes to construct new works for stock or domestic purposes in a domestic area which allows the taking of groundwater using new works under the amendment plan, then the owner is required to comply with the self-assessable development process.

Under section 49ZC(2) works for taking groundwater, for purposes other than stock purposes or domestic purposes, are assessable developments under schedule 8, table 4, part 1, item 3(c)(iii) of the *Integrated Planning Act 1997*. This means that development approval in the form of a development permit is required under the relevant code before constructing works that allow taking of groundwater for purposes other than stock purposes or domestic purposes.

The repair or maintenance of works which does not alter the design of the existing works or works constructed under a development permit is not assessable development.

In parts of the plan area, (namely in sub-area 3, 15, 16 or 17) where interference with groundwater may have an effect on the flow of groundwater in an area close to the seawater intrusion front, or is an area that is already intruded by seawater, it is necessary to limit the impact from the interference with groundwater. Activities that have the potential to interfere with groundwater, and that are of concern, are excavations of more than 2 megalitre capacity including drains, canals or similar works that intersect the water table. These works are assessable developments under schedule 8, part 1, table 4, item 3(c)(ii) of the *Integrated Planning Act 1997*.

46 Amendment of s 50 (Monitoring)

Clause 46 extends the water and natural ecosystems monitoring requirements under the plan to include monitoring required for groundwater in the plan area. The broad water monitoring requirements for the plan are extended to include the monitoring of stream water levels and groundwater levels. The existing plan already requires monitoring of water quality. Further monitoring is also required for groundwater-dependent ecosystems including depth to groundwater, water quality in coastal aquifers where seawater intrusion is an issue, baseflow volumes, stream

water levels and the distribution and information on the hydraulic-habitats of micro-organisms in aquifers and the hyporheic zone.

The amendment plan also makes provision to include other monitoring programs such as natural vegetation monitoring as required by the chief executive and as a means of meeting the monitoring requirements of the plan. The details of monitoring requirements will be specified in the amended resource operations plan.

47 Amendment of s 54 (Implementation schedule)

Clause 47 amends section 54 of the plan to specify that sections 54(2)(a), 54(2)(b) and 54(2)(c) of the existing plan refer to the implementation of surface water provisions.

The existing section 54(4) is renumbered as section 54(5) stating that the resource operations plan is not limited to the matters mentioned in section 54. The new section 54(4) proposes that within one year of commencement of the amendment plan, the resource operations plan be amended to convert authorisations in the groundwater priority area to water allocations for taking groundwater where this is applicable. The groundwater priority area comprises groundwater sub-areas 4 to 16.

48 Amendment of s 56 (Minor amendment of plan Act, s 57)

Clause 48 amends the plan to specify the types of amendments for which minor amendments can be made to the plan under section 57(b) of the Act. A minor amendment is an amendment to correct a minor error or to make a change that is not a change of substance and a stated amendment is one that is listed in a water resource plan. To make these changes, community consultation or extensive procedures are not required.

Section 56(j) of the plan is being amended to reflect the relocation of section 49 which is to be renumbered as 22C. Section 22D is also added as a minor amendment of the plan to allow amendment of section 22D provided a notice of the amendment is published as if it were a moratorium notice under the Act. References to the Act are also updated to reflect that moratoriums are now published under section 26 of the Act.

Additional stated amendments which may be made to the plan include:

- an amendment to change the boundaries of, subdivide or amalgamate groundwater sub-areas;

- an amendment to change the boundaries of, subdivide or amalgamate domestic areas;
- an amendment to change the boundaries of, subdivide or amalgamate the watercourse area;
- an amendment to change the nominal volume for water allocation groups 2C, 3C, 4C and 6C as shown in schedule 6, table 1, column 1 and the nominal volume in accordance with the nominal volume mentioned in schedule 6, table 1, column 2 for the group; and
- an amendment to increase the annual volumetric limit and nominal volume for water allocation groups 4, 6 or 15 in accordance with schedule 6, table 2, columns 2 and 3 respectively.

49 Replacement of schs 1-3

Clause 49 amends the plan to remove schedules 1 to 3 and replace them with new schedules.

Schedule 1 Plan area and location of surface water nodes

Schedule 1 shows the new plan area. The new plan area includes the surface water catchments of Alligator and Sandringham Creeks located in the south-east of the map. The title of schedule 1 has also been amended to indicate that the map also displays the surface water node locations. The location of the nine surface water nodes are identified by letters (A to I) on the map and are described in the schedule 3, part 1 of the amendment plan.

Schedule 2 Subcatchment areas

Schedule 2 shows the additional surface water subcatchments that have been included by the extension to the plan boundary in the amendment plan. Two new subcatchments have been added. Subcatchment 13 includes Sandringham Creek and subcatchment 14 incorporates Bell, Splitters and

Alligator Creeks. The amended map also makes a minor correction to the location of the eastern boundary of subcatchment 5.

Schedule 2A Groundwater management area and location of groundwater nodes

Schedule 2A shows the boundary of the groundwater management area and the location of groundwater nodes. The groundwater management area boundary is defined by the boundary of the plan area. There are 28 groundwater nodes. Their locations are described in schedule 3, part 2 of the amendment plan.

Schedule 2B Groundwater sub-areas

Schedule 2B shows the boundaries of the groundwater sub-areas. There are 17 groundwater sub-areas.

Schedule 2C Watercourse area

Schedule 2C shows the watercourse area, which is the part of the plan area where groundwater in the aquifers under this area has been declared to be water in a watercourse. This map is a subset of the plan area map in schedule 2. Water in the aquifer which will be managed under this 'single resource' arrangement is located in the alluvial aquifers (the stippled area) associated with Owen, Cattle and Finch Hatton Creeks and their tributaries and will also cover any groundwater that may be found in deeper aquifers that underlie the alluvium.

Schedule 3 Nodes

Part 1 Surface water

Schedule 3 lists the location of the 9 nodes for surface water. The descriptions of the location of the nodes should be read in conjunction with the map in schedule 1. Schedule 3, part 1, contains corrections to the location information for surface water nodes A, C and D.

Part 2 Groundwater

In schedule 3, part 2 lists the location of 26 nodes for groundwater and two nodes (nodes 27 and 18) that apply to baseflows in Sandy Creek. (Baseflows are derived from groundwater discharge to Sandy Creek.) The descriptions of the location of the nodes should be read in conjunction with the map in schedule 2A in the amendment plan. Some of the descriptions of the node locations refer to UTM coordinates. The UTM (Universal Transverse Mercator) coordinate system is used to project the spherical earth onto a flat map. The coordinates (in metres) on that flat map are expressed as an easting and northing coordinate to give a point location.

50 Amendment of sch 4 (Environmental flow objectives)

Clause 50 inserts three new parts into schedule 4 - baseflow objectives, environmental flow objectives for groundwater-dependent ecosystems and seawater intrusion objectives. Clause 50 also amends items 1, 2, 3, 4, 5, 6 and 7(a) of schedule 4 to reflect that the simulation period mentioned is the simulation period for surface water.

Schedule 4 Environmental flow objectives

Part 4 Baseflow objectives

Schedule 4, part 4 states the environmental flow objectives for baseflow at nodes 27 and 28 shown on the map in schedule 2A. The percentage of the total number of days in the simulation period that daily flow is less than 1 megalitre must be between the minimum and maximum percentages stated in table 9, column 2. The percentage of the total number of days in the simulation period that daily flow is less than 50 megalitres must be between the minimum and maximum percentages stated in table 9, column 3.

Part 5 Relevant groundwater-dependent ecosystem flow objectives

Schedule 4, part 5 states the environmental flow objectives for groundwater-dependent ecosystems. Relevant groundwater-dependent ecosystems include riparian and terrestrial vegetation ecosystems. Table 10 states the two specific drawdown deviation levels for groundwater nodes 1 to 26 relative to the benchmark level of June 2003. These drawdown levels are the environmental flow objectives for the riparian or terrestrial vegetation ecosystems at the 26 sites.

The level 1 drawdown deviation in table 10, column 2 is a desirable drawdown limit that may be exceeded occasionally for periods of more than 365 days. The extent to which the drawdown exceeds the objective for more than 365 days is to be minimised. The level 2 drawdown deviation in column 3 is the drawdown limit that must not be exceeded for more than 365 days in a continuous period.

Part 6 Seawater intrusion objectives

Schedule 4, part 6 provides the environmental flow objectives for the seawater intrusion area. The area simulated to be intruded by seawater in the parts of groundwater sub-areas 15A, 15B, 15C, 15D and 16, described in table 11, column 2, must not exceed the area stated in column 3 during the simulation period.

51 Amendment of sch 5 (Water allocation security objectives)

Clause 51 inserts a new schedule 5, part 3 into the plan and renumbers the table in part 2 to be table 1.

Part 3 Groundwater

Part 3 states the water allocation security objectives for groundwater. Water allocation security objectives for groundwater are based on water allocation groups dealt with under section 49Q and listed in schedule 6, table 2. Schedule 5, table 2 specifies the minimum (column 2) and maximum (column 3) probability of the nominal volume specified on the water allocations in the listed water allocation group being achieved in any given year of the simulation period. Probabilities vary from area to area and are specified for sub-areas 4 to 16. The annual volume probability must be at least the percentage stated in column 2, and the extent to which it is less than the percentage stated in column 3 is to be minimised.

52 Amendment of sch 6 (Total volumes for water allocation groups)

Clause 52 adds four new water allocation group classes to schedule 6, table 1. These new classes relate to the areas where groundwater has been declared water in a watercourse. The classes relate to the parts of groundwater sub-areas 1 and 4 that occur in surface water subcatchments 2, 3, 4 and 6. The specific nominal volumes (in megalitres) for these classes will be added to column 2 as a minor amendment to the plan after the

resource operations plan is amended with the numbers for the nominal volumes.

Schedule 6, table 2 states the total annual volumetric limit (column 2) and the nominal volume (column 3) for water allocation groups 4 to 16. These groups consist of all water allocations for groundwater in the corresponding groundwater sub-area as listed in column 1 of schedule 8, part 2. For example, water allocation group 4 is made up of water allocations for groundwater located in groundwater sub-area 4. The total volumes (in megalitres) are given for each of the groups. However, groups 4, 6 and 15 do not include volumes for entitlements in the undeclared parts of these sub-areas. The specific volumes for these water allocation groups will be added to table 2 as a minor amendment to the plan after the resource operations plan is amended.

53 Insertion of new sch 6A

Clause 53 inserts a new schedule 6A into the plan.

Schedule 6A Annual volumetric limit for groundwater

Schedule 6A states the factors to be applied by the chief executive when converting a water licence that existed immediately before commencement of this section in the groundwater sub-areas listed in column 1 (groundwater sub-areas 11, 12, 13, 15, 16 and 17) to a water allocation where this conversion is to occur. The percentage is also used in the calculation of the component of the water licence that will remain as a water licence. The factor in column 2 is the percentage of the existing nominal entitlement which will be converted to an annual volumetric limit under a water allocation while the remainder will be converted to the nominal entitlement on a water licence (the complementary component). The process for this conversion is through the application of the formula defined in schedule 10 under complementary component.

The complementary component is defined in the amendment plan as the volume on a water licence for taking groundwater in a groundwater sub-area mentioned in schedule 6A, column 1, which was in force

immediately before commencement of the amendment plan, which will remain as a water licence and which will not be accessible unless a five year review, provided for in section 49ZA, demonstrates otherwise. The definition of complementary component in schedule 10 also includes a formula for determining the value of the complementary component, subject to the rules provided in section 49U.

54 Amendment of sch 7 (Rates and pump sizes)

Clause 54 states the rates of take of unsupplemented surface water for various pump sizes. For each pump size stated, the maximum rate of take is expressed in litres per second in column 2.

55 Replacement of sch 8 (Water allocation groups)

Schedule 8 Water allocation groups

Part 1 Surface water

Clause 53 amends schedule 8 for water allocation groups and inserts part 1 and a heading to ensure schedule 8, part 1 applies to surface water. The water allocation groups for water in a watercourse area are inserted into part 1 column 3. Columns 2 and 4 of part 1 contain the water allocation groups for surface water from the plan being amended.

Part 2 Groundwater

Schedule 8, part 2 applies to groundwater. The water allocation groups (column 2) for groundwater are aligned with the sub-areas (column 1) which they represent.

56 Amendment of sch 9 (Priority areas)

Clause 56 inserts groundwater priority areas into schedule 9 of the plan.

4 Groundwater (priority areas)

Item 4 states that the groundwater priority area comprises groundwater sub-areas 4 to 16. These priority areas are areas where trading will be introduced with the ability to trade water following an amendment of the resource operations plan.

57 Insertion of new schs 9A-9C

Clause 57 inserts new schedules 9A, 9B and 9C into the plan.

Schedule 9A Coastline and seawater intrusion baseline

Schedule 9A represents a map of the position of the seawater intrusion baseline and the position of the coastline adopted for this amendment plan. The seawater intrusion baseline is the estimated location of the toe of the seawater intrusion front and the extent of seawater intrusion into the aquifer at the commencement of the amendment plan. The electrical conductivity threshold used for defining seawater intrusion baseline is 1,500 micro siemens per centimetre.

Schedule 9B Domestic areas

Schedule 9B shows a map of domestic areas A, B and C. This map applies to provisions in the amendment plan related to management of the taking of groundwater for stock purposes and domestic purposes.

Schedule 9C Annual entitlement

Schedule 9C is inserted to specify the process to be applied by the chief executive for deciding the annual entitlement for water licences in the seawater intruded area. The area to which this applies is the part of sub-areas 11, 15, 16 or 17 that is intruded by seawater.

Part 1 2009-2010 water year

Item 1, part 1 states that for the 2009-2010 water year, where a water year begins on the 1 July, the annual entitlement for authorisations 5, 13 or 15 in a part of sub-area 11, 15, 16 or 17 that is seawater intruded is as follows. For a licence with a nominal entitlement greater than 5 megalitres, the annual entitlement is 100% of the nominal entitlement multiplied by the announced entitlement. If the annual entitlement worked out is less than 5 megalitres, then the annual entitlement is to be set at 5 megalitres. For licences with a nominal entitlement of 5 megalitres or less, the annual entitlement is the volume stated for the nominal entitlement.

Part 2 2010-2011 water year

Item 2, part 2 states that for the 2010-2011 water year, the annual entitlement for authorisations 5, 13 or 15 in a part of sub-area 11, 15, 16 or 17 that is seawater intruded is as follows. For a licence with a nominal entitlement greater than 5 megalitres, the annual entitlement is 60% of the nominal entitlement multiplied by the announced entitlement. If the annual entitlement worked out is less than 5 megalitres, then the annual entitlement is to be set at 5 megalitres. For licences with a nominal entitlement of 5 megalitres or less, the annual entitlement is the volume stated for the nominal entitlement.

Part 3 2011-2012 water year

Item 3 of part 3 states that for the 2011-2012 water year, the annual entitlement for authorisations 5, 13 or 15 in a part of sub-area 11, 15A or 15B that is seawater intruded is as follows. For licences with a nominal entitlement greater than 5 megalitres, the annual entitlement is 55% of the nominal entitlement multiplied by the announced entitlement. If the annual entitlement worked out is less than 5 megalitres, then the annual entitlement is to be set at 5 megalitres. For licences with a nominal entitlement of 5 megalitres or less, the annual entitlement is the volume stated for the nominal entitlement.

Item 4 of part 3 applies a different set of rules to the seawater intruded areas south of Bakers Creek. The annual entitlement for authorisations 5, 13 or 15 in a part of sub-area 15C, 15D, 16 or 17 is as follows. For a licence with a nominal entitlement greater than 5 megalitres, the annual entitlement is 60% of the nominal entitlement multiplied by the announced entitlement. If the annual entitlement worked out is less than 5 megalitres, then the annual entitlement is to be set at 5 megalitres. For licences with a nominal entitlement of 5 megalitres or less, the annual entitlement is the volume stated for the nominal entitlement.

Part 4 2012-2013 water year

Item 5 of part 4 states that for the 2012-2013 water year, the annual entitlement for authorisations 5, 13 or 15 in a part of sub-area 11, 15, 16 or 17 that is seawater intruded and where the electrical conductivity of the groundwater is less than 1,500 micro siemens per centimetre is as follows. For a licence with a nominal entitlement of 20 megalitres or more, the annual entitlement is 20 multiplied by the announced entitlement for the part of the plan area. If the annual entitlement worked out is less than 5 megalitres, then the annual entitlement is to be set at 5 megalitres. For licences with a nominal entitlement stated on the licence of less than 20 megalitres but more than 5 megalitres, the annual entitlement is the nominal entitlement multiplied by the announced entitlement for the part of the plan area. If the annual entitlement worked out is less than 5 megalitres, then the annual entitlement is to be set at 5 megalitres. For licences with a

nominal entitlement of 5 megalitres or less, the annual entitlement is the volume stated for the nominal entitlement.

Item 6 of part 4 applies different rules to entitlements where the electrical conductivity is less than the critical threshold. The annual entitlement for authorisations 5, 13 or 15 in a part of sub-area 11, 15, 16 or 17 that is seawater intruded and where the electrical conductivity of the groundwater is 1,500 micro siemens per centimetre or more, the annual entitlement is zero. If however the water taken under the licence is for public health purposes (showers and toilets), the annual entitlement is set as follows. For a licence with a nominal entitlement of 20 megalitres or more, the annual entitlement is 20 multiplied by the announced entitlement for the part of the groundwater management area. If the annual entitlement worked out is less than 5 megalitres, then the annual entitlement is to be set at 5 megalitres. For licences with a nominal entitlement stated on the licence of less than 20 megalitres but more than 5 megalitres, the annual entitlement is the nominal entitlement multiplied by the announced entitlement for the part of the plan area. If the annual entitlement worked out is less than 5 megalitres, then the annual entitlement is to be set at 5 megalitres. For licences with a nominal entitlement of 5 megalitres or less, the annual entitlement is the volume stated for the nominal entitlement.

Part 5 2013-2014 water year

Item 7 of part 5 states that for the 2013-2014 water year, the annual entitlement for authorisations 5, 13 or 15 in a part of sub-area 11, 15, 16 or 17 that is seawater intruded and where the electrical conductivity of the groundwater is less than 1,500 micro siemens per centimetre is as follows. For a licence with a nominal entitlement of 20 megalitres or more, the annual entitlement is 20 multiplied by the announced entitlement for the part of the plan area. If the annual entitlement worked out is less than 5 megalitres, then the annual entitlement is to be set at 5 megalitres. For licences with a nominal entitlement stated on the licence of less than 20 megalitres but more than 5 megalitres, the annual entitlement is the nominal entitlement multiplied by the announced entitlement for the part of the plan area. If the annual entitlement worked out is less than 5 megalitres, then the annual entitlement is to be set at 5 megalitres. For licences with a

nominal entitlement of 5 megalitres or less, the annual entitlement is the volume stated for the nominal entitlement.

Item 8 of part 5 states that for the 2013-2014 water year, the annual entitlement for authorisations 5, 13 or 15 in a part of sub-area 11, 15, 16 or 17 that is seawater intruded and where the electrical conductivity of the groundwater is 1,500 micro siemens per centimetre or more, the annual entitlement is set to zero. If however the water taken under the licence is for public health purposes, the annual entitlement is as follows. For a licence with a nominal entitlement of more than 5 megalitres, the annual entitlement is 5 megalitres. For licences with a nominal entitlement of 5 megalitres or less, the annual entitlement is the volume stated for the nominal entitlement.

58 Amendment of sch 10 (Dictionary)

Clause 58 amends schedule 10 to include definitions of the terms used in the amendment plan. Clause 58 amends the definitions of *authorisation*, *nominal volume*, *simulation period*, *existing works*, *water allocation group* and *unsupplemented water* in the plan to be amended.

The definition of *authorisation* is amended to provide clarity and update terminology. However the central meaning of the term does not change. Also, the specific usage of the term in part 5, division 5, section 31 of the plan is specifically referred to.

The amendment plan uses the term *authorisation 1 to 16* to refer to collections of water licences in particular areas with particular common features. It is an approach used to clarify and simplify the provisions in the amendment plan.

The new definition of *simulation period* restates the existing definition for surface water and adds the new simulation period for groundwater. The period for groundwater is between 1 July 1900 and 30 June 2003.

The definition of the term *unsupplemented water* is amended to refer to unsupplemented surface water only. The definition of *existing works* is also amended to specify a general meaning of the term and incorporates specific uses of the term which apply only to certain sections of the amendment plan.

The definition of *water allocation group* is amended to refer to the surface water allocation groups in schedule 8, part 1 and the groundwater allocation groups in schedule 8, part 2.

Clause 58 also removes the definition of *nominal volume* from the plan dictionary. The definition of nominal volume is stated in schedule 4 of the Act. This is the definition to which the plan now refers.

Clause 58 also amends a number of definitions in the plan to ensure that where the definition applies to surface water only, the wording makes explicit reference to surface water.

ENDNOTES

- 1 Laid before the Legislative Assembly on . . .
- 2 The administering agency is the Department of Environment and Resource Management.

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