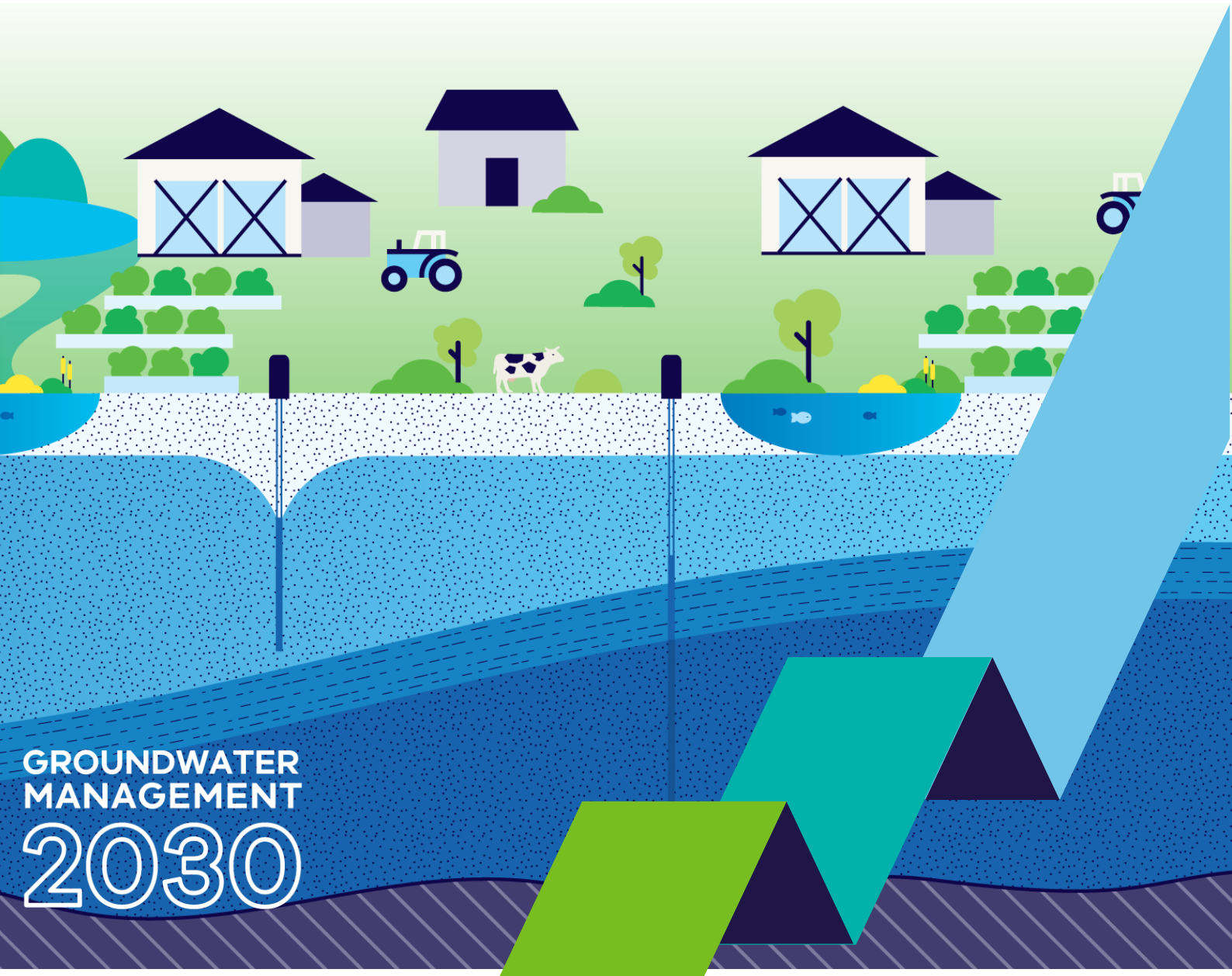
GROUNDWATER SUSTAINABLE YIELD ASSESSMENT: SYNTHESIS RESULTS REPORT



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We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it.

We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

DEECA is committed to genuinely partnering with Victorian Traditional Owners and Victoria's Aboriginal community to progress their aspirations.

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Glossary

Term	Definition
Allocation	The assignment of water within a given water year against a water entitlement held by a person or authority, determined by a water corporation and expressed as a percentage of the entitlement. Most groundwater allocations are triggered by declines in groundwater level.
Cap	A colloquial/general term for an upper limit for total water entitlements that can be issued from a waterway, catchment basin or groundwater area for a set time period. This includes Permissible Consumptive Volumes (under the *Water Act 1989*) and Permissible Annual Volumes and Allowable Annual Volumes (under the *Groundwater (Border Agreement) Act 1985*).
Consumptive use	Water removed from the available supply without return to the water resource system. All extractive uses, including water used for agriculture, industry and commerce, including stock and domestic purposes.
Domestic and stock	Water taken for household use, kitchen garden, fire prevention and watering of livestock. Victorians have basic rights to water for under section 8 of the Victorian *Water Act* 1989. These rights allow a person to take water from a bore, dam, river or stream to use for domestic and stock purposes.
Entitlement	A right to use water in a waterway, water in storage works of a water corporation, and groundwater. It also includes the right to water corporations to supply water. Water entitlements include bulk entitlements (generally issued to water corporations), environmental entitlements, water rights, surface water and groundwater licences. The term also can be used to mean the volume of water authorised to be taken and used by the holder.
Groundwater Level Restriction Triggers (GLRT)	A new term defined as – "A defined groundwater level for a system that triggers restrictions on use", generally implemented through water shortage declarations, approved management plans for a Water Supply Protection Area, Local Management Plans and in some cases through licences or Bulk Entitlements.
Groundwater Management Area (GMA)	An area where groundwater has been intensively developed or has the potential to be. Groundwater Management Areas generally have a Permissible Consumptive Volume set by Minister for Water through statutory declaration.
Groundwater Management Unit (GMU)	Refers to both Groundwater Management Areas and Water Supply Protection Areas.
Licensed use (water)	The volume of water taken under a licence(s) to take and use water for consumptive use. It excludes the volume of water taken for domestic and stock purposes under Section 8, *Water Act* 1989.
Licence to take and use	A fixed-term entitlement under section 51 of the Water Act 1989 to take and use water from a waterway, catchment dam, spring, soak or aquifer. Each licence is subject to conditions set by the Minister for Water and specified on the licence.
Limits of take under licence	Refers to both caps on entitlements and any management prescriptions that limit take and entitlements such as groundwater level restrictions triggers that restrict use in a particular season.
Normalised hydrograph	The hydrograph of the Suite comprising the mean and standard deviation of all the groundwater levels for the observation bores in the Suite.
Permissible Consumptive Volume (PCV)	The maximum volume of water entitlements that can be allocated in an area or a water system.

Suite	Refers to the grouping of similar groundwater level responses observed in monitoring bores within a specific groundwater system. See also ‘Normalised hydrograph’.
Sustainable yield	The groundwater extraction regime measured over a 20-year planning timeframe, allowing for acceptable levels of impact that protect dependent values.
Sustainable yield metric	A measure that defines the acceptable level of impact that protects dependent ‘values’ for the assessed sustainable yield volume.
Unincorporated Area (UA)	Groundwater areas which are not defined as Groundwater Management Units and do not have a defined Permissible Consumptive Volume.
Use (water)	The volume of water taken (such as groundwater extracted) for consumptive use.
Water Supply Protection Area (WSPA)	An area declared under section 27 the Victorian *Water Act 1989* to protect the groundwater or surface water resources or both through the development of a statutory management plan.
Waterway	A river, creek, stream or watercourse, a natural channel in which water regularly flows (whether the flow is continuous or not), a lake lagoon, swamp, or marsh.
Winterfill SDL	Winterfill sustainable diversion limit volumes (SDLs) have been developed across Victoria and represent the upper limit on winterfill diversions, beyond which there is an unacceptable risk that additional extractions may degrade the environment. The SDL_BASIN dataset is a spatial representation of river basins, which represent an aggregate of the intermediate SDL catchments. These basins do not reflect the Victorian surface water river basins as defined by the Australian Water Resources Council. Winterfill SDL data is held in the SDL_DATA layer.

Summary

The Sustainable Yield (SY) Assessment is a 4-year initiative that reviewed groundwater availability in Victoria. It commenced in 2020 and was overseen by the Victorian Department of Energy, Environment, and Climate Action (DEECA).

The objectives of the SY assessment were to develop methods for estimating groundwater availability and sustainable yield volumes, apply those methods across Victoria, and report on the results and implications for groundwater resource management. Groundwater assessments are an important tool for evaluating changes to water availability and its effect on users and the environment. Sustainable yield is an estimate of available groundwater that minimises adverse impacts on assessed values (e.g. environment and consumptive users). The assessment fulfils Priority Area 1 under GM2030 “Water availability and limits on take: DELWP (now Department of Energy, Environment, and Climate Action (DEECA)) working with the rural water corporations will carry out a state-wide technical assessment and review of the limits of take under licence”. The information gained will inform broader groundwater reform initiatives, such as those under the Groundwater Management 2030 (GM2030).

This report is one of three prepared by the DEECA for the SY assessment. The first report details the methodology. The second report (this report) synthesises the results of the analysis and presents the sustainable yield volumes. The third report is the Overview report which summarises the project objectives and outcomes, and reports on the likely management options to implement the SY assessment recommendations.

Sustainable yield assessment has been undertaken for each Groundwater Management Unit (GMU) in Victoria and the areas outside the GMUs, referred to as Unincorporated Areas (UAs). Sustainable yield volumes have been estimated for each aquifer type (confined, unconfined, semi-confined).

1) Confined aquifers

The drawdown–use relationships were assessed for 25 GMUs under the confined aquifer assessment. A metric of 10 m was used to calculate the sustainable yield volumes from these relationships. The average uncertainty associated with the sustainable yield volumes for confined aquifer GMUs is -42% to +36%.

For areas where the drawdown–use method was not accepted, the sustainable yield volumes were estimated using the percentage of throughflow flux method. A state-wide area-weighted average of 30% was applied to estimate the sustainable yield volumes in confined aquifer GMUs where the drawdown–use method could not be applied, as well as in confined UAs where data on groundwater use and water levels were insufficient.

2) Unconfined GMUs

The drawdown–use relationships were assessed for 50 GMUs under the unconfined aquifer assessment. In 14 GMUs, the drawdown-use relationship was not accepted. For thirteen GMUs and the UAs, a percentage of recharge was used to estimate the sustainable yield volumes. The percentage used was based on the average from those GMUs with accepted drawdown-use relationships, resulting in a value of 3% of recharge.

The sustainable yield volumes for unconfined GMUs were taken from a 2 m drawdown metric from drawdown across the entire GMU, which includes all dependent values.

The uncertainty for unconfined GMUs is not quantified and is represented by the range of outcomes from future climate change scenarios of 50% less to 200% more for the sustainable yield volume. The uncertainty in unconfined aquifers reflects the fact that one of the key drivers of drawdown in groundwater levels is climate, unlike confined aquifers where its predominantly due to groundwater use.

3) Semi-confined GMUs

Semi-confined aquifers are mapped across GMUs and UAs to identify inter-aquifer leakage. The degree of connectivity between upper unconfined and lower confined aquifers is assessed using correlation coefficients and fluctuation ratios, categorising them into highly connected, partially connected, and no significant connection. It should be noted that the connectivity degree is valid only for the assessed suites within the GMU and does not necessarily represent the connectivity across the entire GMU. This distinction is crucial in GMUs where the lower confined aquifer covers only a small portion of the GMU, and the confined aquifer may outcrop and be recharged through the unconfined part. Based on this classification,

sustainable yield volumes are calculated while ensuring no double-counting of resources. For highly connected aquifers, a single sustainable yield volume is proposed for both aquifers. For partially connected aquifers, a single sustainable yield volume is proposed based on the unconfined aquifer, with further evaluation needed if independent sustainable yield volumes are required for each aquifer. In areas with no significant connection, separate sustainable yield volumes are estimated for each aquifer.

Lower Ovens GMA exhibits strong connectivity between upper and lower aquifers, warranting a single sustainable yield volume for the GMA. Partially connected GMUs, including Mid Loddon GMA, Lower Campaspe Valley WSPA, Broken GMA, and Kiewa GMA, are assigned a single sustainable yield volume based on the unconfined aquifer assessment, acknowledging that further investigation is needed if independent sustainable yield volumes are required for each aquifer. GMUs with no significant connection, such as Mid Goulburn 1070 GMA, maintain separate sustainable yield volumes for confined and unconfined aquifers.

4) Risk to Sustainability

The risk to groundwater sustainability is assessed by comparing current groundwater use with sustainable yield volumes to determine current risk, and by evaluating the impacts of climate change and licence entitlements to assess future risk.

The current risk to groundwater sustainability is assessed by comparing the current use with sustainable yield volumes. Most groundwater use in Victoria remains below the sustainable yield. However, in six GMUs, groundwater use exceeds sustainable yield volumes.

Future sustainability risks are assessed by evaluating climate change scenarios for unconfined aquifers, which are highly sensitive to climate variations. The projected sustainable yield volumes may decrease by up to 50% under a dry future scenario (high climate change) and increase by more than 200% under a wet future scenario (low climate change).

For both confined and unconfined aquifers, licence entitlements are compared against sustainable yield volumes to assess future sustainability risks. Licence entitlement volumes are greater than the sustainable yield in 27 GMUs/GMU zones, and the existing licence volume caps exceed the sustainable yield in 39 GMUs/GMU zones.

5) Suitability of the output – fit-for-purpose

The sustainable yield volumes, whilst having a level of uncertainty, are fit-for-purpose to:

- inform risks to groundwater resources and groundwater-dependent values
- inform groundwater resource management planning
- inform the setting and/or review of caps on entitlements for groundwater resources, where applicable.

The sustainable yield volumes are not considered suitable for implementing restrictions on use due to the uncertainty range in the assessed volumes. Instead, restrictions based on observed groundwater levels are preferred as they are simpler to implement and more accepted by the community. This is the approach currently used in some GMUs.

6) Review of limit of take under groundwater licenses

The gaps identified by the review of the limits of take under licences are:

- UAs do not have caps on the total entitlements that can be issued in an area.
- Most GMUs do not have groundwater level restriction triggers (GLRT) specified.

About this report

This report synthesises the results of the analyses and presents the sustainable yield volumes, where a volume has been recommended. DEECA developed the methodology in partnership with:

- contractors Jacobs, GHD Pty Ltd and CDM Smith, who were responsible for developing the technical aspects of the methodology and conducting assessments of groundwater resources
- representatives from Southern Rural Water, Goulburn–Murray Water, Grampians Wimmera Mallee Water, and the DEECA Environmental Waterways and Water Licensing Policy teams. These representatives possessed extensive experience and expertise in water and groundwater resource management and policy, and they offered advice on technical, management and policy aspects of the project
- a technical review panel consisting of 3 subject matter experts in groundwater assessment and modelling, who provided expert peer review of the methodologies.

This report comprises:

- Summary
- Section 1: Introduction
- Section 2: Confined aquifer synthesis
- Section 3: Unconfined aquifer synthesis
- Section 4: Semi-confined aquifer synthesis
- Section 5: Sustainable Yield volumes for all aquifers
- Section 6: Review of limits of take
- Appendices 1–7.

The Sustainable Yield assessment methodology (https://www.water.vic.gov.au/water-sources/groundwater/groundwater-management-2030/sustainable-yield-assessment/?a=777719) and overview (https://www.water.vic.gov.au/water-sources/groundwater/groundwater-management-2030/sustainable-yield-assessment/?a=777718) reports are available on the DEECA website.

1. Introduction

This report is the second of three prepared by DEECA for the SY Assessment. There are three reports, covering the methodology, results and overview of the SY Assessment, respectively. This report synthesises the results of the analysis and presents sustainable yield volumes, where applicable.

Sustainable yield volumes have been estimated for each aquifer type (confined, unconfined, semi-confined). They are reported by GMU and the areas outside GMUs, referred to as the UAs (see **Table A1-1**). This assessment is the first time UAs have been mapped by aquifer system and region.

The report provides results in both a statewide summary and for each individual GMU and UA. Limitations on how the results have been used to inform the sustainable yield volumes is discussed.

Synthesis results were produced for confined, unconfined and semi-confined aquifers based on approaches developed for and tailored to these aquifer types. Detailed explanations of these approaches are given in the appendices of this report.

Synthesis results for all GMUs and UAs are presented in tables and graphs by region in Appendices 1 to 7.

2. Confined aquifer synthesis

Detailed results and estimates of the sustainable yield volume for confined aquifers are provided for all GMUs and UAs across the state.

To review the detailed results and estimate the sustainable yield volume for confined aquifers in each GMU across the state the following steps were undertaken:

1. Drawdown–use relationships were developed using statistical modelling (report by (GHD Pty Ltd, 2024)).
2. Pre-development throughflow flux was estimated (report by (Jacobs, 2024)).
3. The results were synthesised.
4. The synthesised results were verified against historical average use and drawdown.
5. Sustainable yield was estimated for all GMUs.
6. In GMUs that contain both confined and unconfined portions, the sustainable yield volume from the unconfined portion is also included in the total sustainable yield volume reported for the entire GMU in this chapter.
7. In GMUs classified as semi-confined aquifers, the final sustainable yield volume is estimated using the semi-confined aquifer synthesis method, as outlined in the “Semi-confined aquifers Synthesis” chapter.
8. Sustainable yields were classified against historical average use and entitlements to assess the current and future risk to the resource.

Once the sustainable yield volumes were estimated for all GMUs, the following step was taken to estimate sustainable yield volumes for UAs:

9. Percentage of throughflow flux was calculated for each GMU based on the sustainable yield volume estimated by the use-drawdown method. A state-wide, area-weighted average of throughflow flux was used to estimate sustainable yield for all confined UAs and the GMUs where the use-drawdown relationship was not accepted.

These steps are described below for GMUs (**Section 2.1**) and UAs (**Section 2.2**).

2.1. GMUs

2.1.1. Assessment methods

Developing drawdown–use relationship using statistical modelling

The groundwater level for each Suite within a GMU is modelled using a Transfer Function Noise (TFN) model. This model allows for the linear transformation of one or more deterministic input series, with the residuals of the transfer model being autocorrelated. Specifically, in this case, the TFN model relates groundwater levels to groundwater use. Hence, drawdown–use relationships were developed for 24 GMUs. The drawdown–use relationship could not be developed for one GMU (Gellibrand) due to no use.

Estimating pre-development throughflow flux

Darcy’s equation is employed to calculate gridded pre-development throughflow rates (5×5 km cell) based on three components: thickness (b), hydraulic gradient (H_L/L), and hydraulic conductivity (K). The calculation is executed through a GIS semi-automated throughflow tool. Pre-development P50 K throughflows at the GMU (or UAs) scale are estimated by summing P50 K gridded throughflows along cross-sections perpendicular to groundwater flow. Where feasible, multiple cross-sections within a flow-tube are selected for analysis, and the average P50 K pre-development throughflow is derived.

2.1.2. Synthesising the results

The results of the statistical modelling and the throughflow flux assessments were synthesised according to the approach presented in the *Sustainable Yield Synthesis method paper* – confined aquifers (DEECA, 2023). This approach was used to calculate the drawdown, the proportion of pre-development throughflow flux and their uncertainty bands for different volumes of use (e.g., average use, entitlement, Permissible Consumptive Volume (PCV)) and to calculate volume and uncertainty bands for a 10 m drawdown as a sustainable yield consumptive use metric.

Consolidated tables and graphs for all GMUs (presented in **Appendix 4**) provide contextual information related to the GMU, including the representative Suite, aquifer, water system depth boundary, average use, entitlement and PCV. They also present the synthesised results for average use, PCV and 10 m drawdown as a sustainable yield metric. **Table 1** and **Figure 1**, which show synthesised results for the Sale Water Supply Protection Area (WSPA), are provided here as examples of the more detailed data provided in **Appendix 4**.

Table 1. Synthesised information for the Sale WSPA, Representative Suite M_O_1

Assessment area	GMU		Sale WSPA
	Representative Suite		M_O_1
	Aquifer		Boisdale Formation (UTAF, 105)
	Water system depth boundary (metres below natural surface)		All formations between 25 m and 200 m below surface
Context	Permissible Consumptive Volume (ML/yr)		21,238
	Licensed entitlement (ML/yr)		21,203
	Licensed average use (ML/yr)		11,029
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	7.42 (8.54–5.09)
		Proportion of throughflow flux (%) [lower band–upper band]	57 (43–90)
	Use at Permissible Consumptive Volume	Drawdown (m) [lower band–upper band]	15.59 (16.71–12.23)
		Proportion of throughflow flux (%) [lower band–upper band]	110 (83–173)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	14,252 (12,850–18,050)
		Proportion of throughflow flux (%) [lower band–upper band]	74 (56–116)

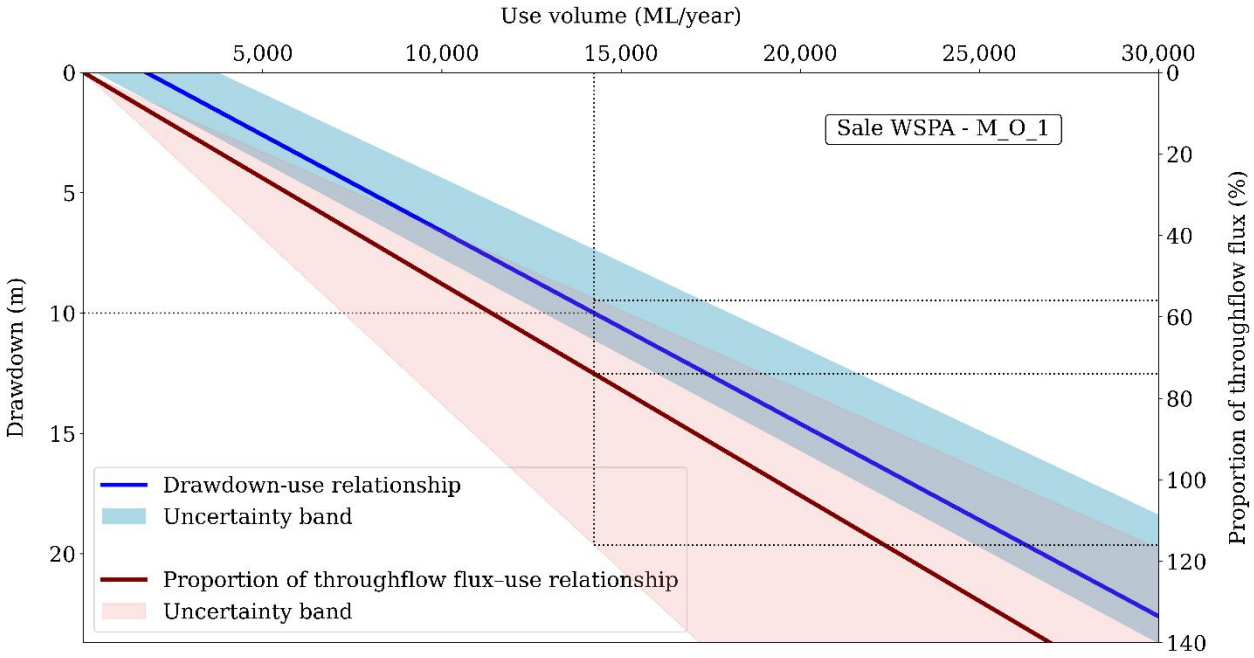

Figure 1: Visual representation of the synthesised information for the Sale WSPA, Representative Suite M_O_1

2.1.3. Verifying synthesised results and estimating sustainable yield volume

Five steps were undertaken to verify the synthesised results and estimate the sustainable yield volume in GMUs. These steps are illustrated in **Figure 2**.

Step 1. Verifying synthesised results based on aquifer, groundwater levels and use

The first step aims to verify whether the developed use-drawdown relationship/model is based on the correct aquifer, groundwater levels, and use. The developed use-drawdown relationship/model is assessed conceptually to understand if it accurately represents the correct confined aquifer within the GMUs and whether the groundwater levels and use are consistent with the developed relationship/model for the GMU. The assessment revealed that in the West Wimmera GMA, Jan Juc GMA (Lower Eastern View Formation (LEVF)), Giffard GMA, and Glenelg WSPA (revoked), the developed use-drawdown relationship/model does not represent the correct aquifer, the appropriate conceptual model, or the relevant groundwater levels and use. Moreover, a drawdown–use relationship could not be developed for the Gellibrand GMA due to no use. Therefore, the sustainable yield volume for these five GMUs is estimated through throughflow flux or water table recharge methods. For the remaining GMUs, the developed use-drawdown relationship/model was accepted at this step and progressed to step two. More details about these four GMUs can be found in **Table 2** and in the section that discusses each GMU individually.

Step 2. Verifying synthesised results based on alignment of statistical model-based 10 m drawdown volume with historical 10 m drawdown volume

The volume calculated based on the use-drawdown relationship for a 10 m drawdown is referred to as the statistical model-based 10 m drawdown volume. This volume is calculated for all GMUs and presented in the synthesised table results (**Table 1**). It is compared with the historical-based 10 m drawdown volume to verify the accuracy of the use-drawdown relationship and assess the alignment of the statistical model-based 10 m drawdown volume with the historical-based volume (Step 2 in **Figure 2**). As an example, in the Sale WSPA, Suite M_O_1, the drawdown in 2020 is 9.1 m compared to predevelopment conditions (1985-1986), with an average historical groundwater use of 11,029 ML/yr during this period. Hence, the historical average use corresponding to the 10 m drawdown is 12,120 ML/yr. This historical-based 10 m drawdown volume aligns with the statistical model-based range of 12,580 to 18,050 ML/yr.

The same verification was conducted for all GMUs to assess whether the statistical model-based 10 m drawdown volume aligned with the historical 10 m drawdown volume. The results indicated that the Cut Paw Paw and Stratford GMUs did not align with the applied procedure. Therefore, the developed use-drawdown relationships were not used for estimating the sustainable yield volumes in these two GMUs; instead, it was estimated based on the throughflow flux method. Please refer to **Table 2** for the outcomes of this step for all GMUs, presented under the 'Comparing statistical model-based 10m drawdown volume with historical and stabilised volume' column.

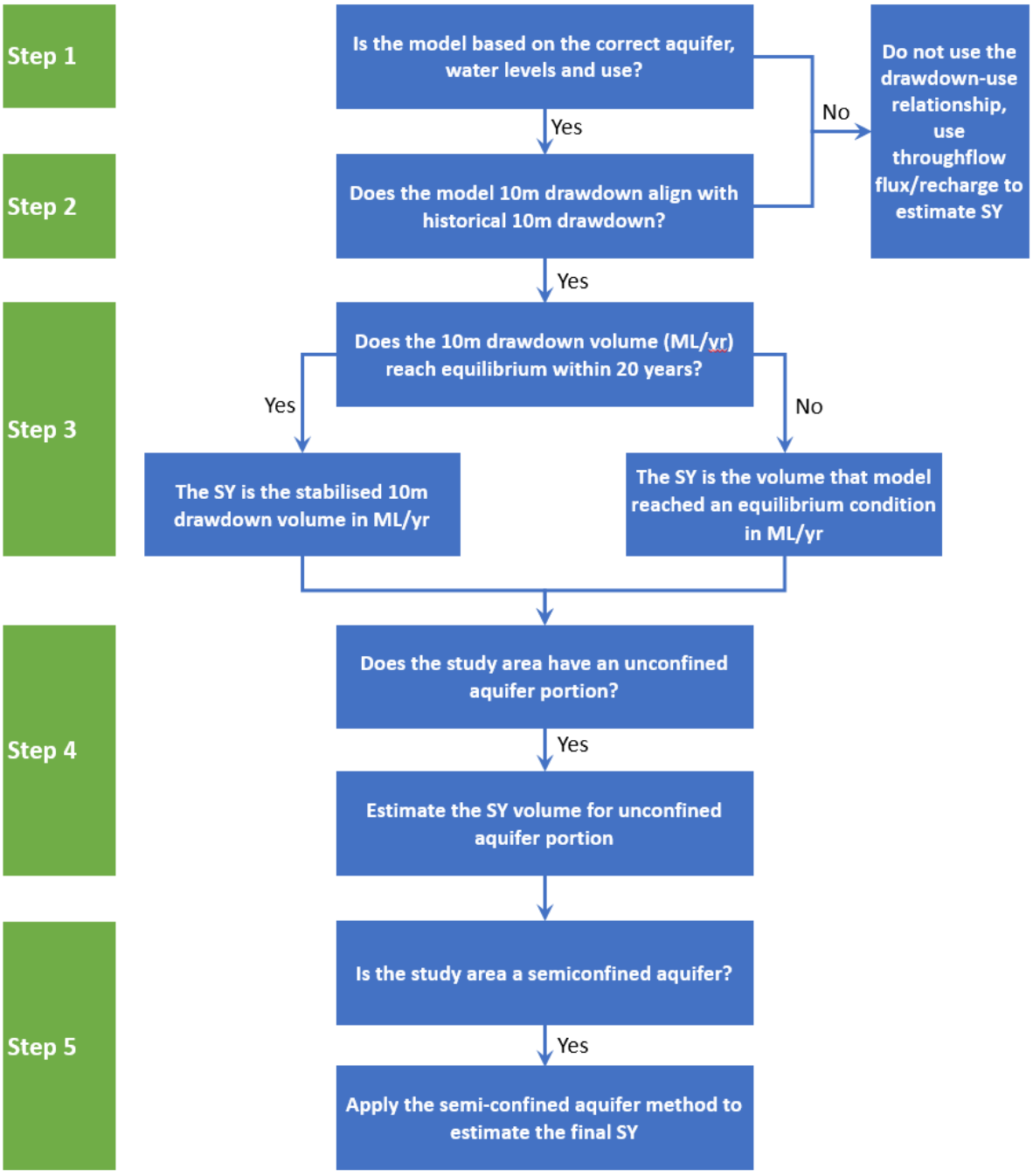

Figure 2. Steps to verify the synthesised results and estimate the sustainable yield volume

Step 3. Verifying synthesised results based on statistical model-based 10 m drawdown volume reaching equilibrium within 20 years

Once we verify (Step 2) that the statistical model-based 10 m drawdown volume aligns with the historical-based 10 m drawdown volume, we use it as the sustainable yield volume to predict groundwater levels until 2040 using the drawdown-use relationship/model (Step 3 in **Figure 2**). This

approach helps assess whether this volume reaches an equilibrium condition within the prediction period (2020-2040). If the annual changes in groundwater levels over two consecutive years are less than 0.1 m per year, it indicates that the groundwater level has reached equilibrium in that year. The adoption of the 0.1 m per year criterion is linked to the management prescriptions for Province 3 in the Designated Area (BGARC, 2001). As an example, in the Sale WSPA, Suite M_O_1, the statistical model-based 10 m drawdown volume is calculated as 14,252 ML/yr, which is utilised in the drawdown-use relationship/model to predict groundwater levels until 2040. **Figure 3** which illustrates the predicted groundwater levels for the Sale WSPA, Suite M_O_1, over the prediction period, is provided here as an example of the more detailed data provided in **Appendix 2**. This figure demonstrates that the groundwater level reaches equilibrium in 2024, with annual changes less than 0.1 m per year. The absence of fluctuation in the predicted groundwater levels compared to the historical groundwater levels is attributed to the use of a constant pumping volume in our predictions. This stands in contrast to the variable groundwater extractions that occurred during the historical period.

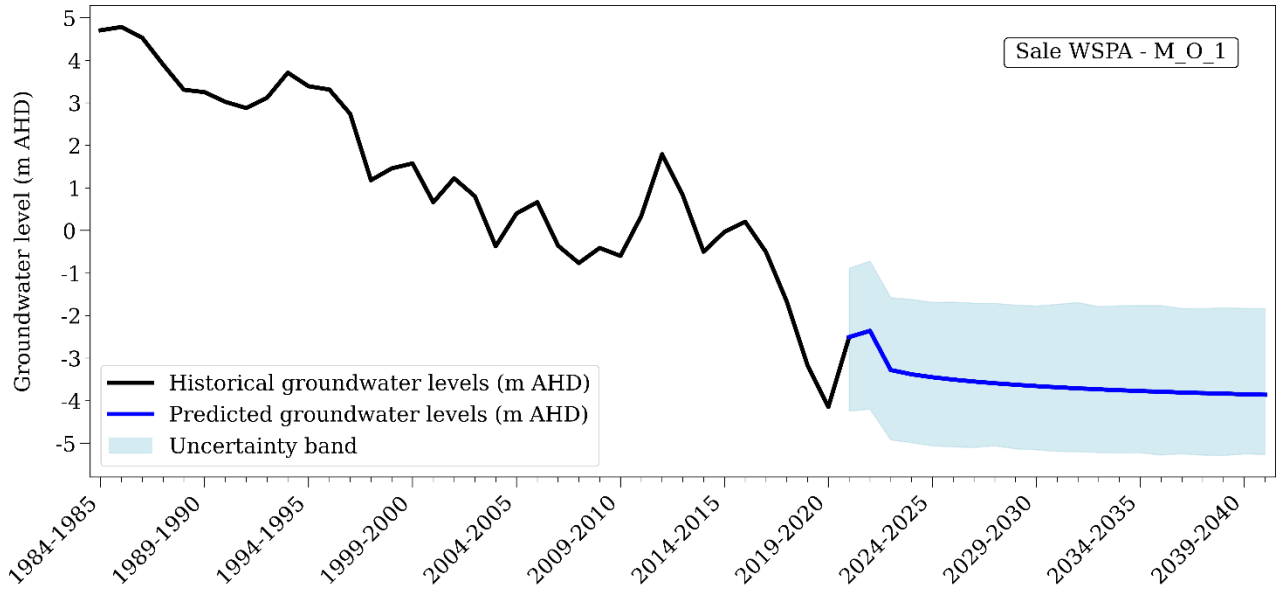

Figure 3. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period for the Sale WSPA, Representative Suite M_O_1

If the annual changes in groundwater level over two consecutive years until 2040 exceed 0.1 m per year, it indicates that equilibrium has not been reached over 20 years. In such cases, the statistical model-based 10 m drawdown volume is iteratively reduced to understand if equilibrium can eventually be achieved. This iterative process continues until an equilibrium condition is reached. Therefore, the stabilised volume is considered as the sustainable yield volume. For example, in the Sale WSPA, Suite M_O_1, the groundwater level reached equilibrium at a volume of 14,300 ML/year, which is considered as the sustainable yield volume. This process is applied to all GMUs to understand whether the statistical model-based 10 m drawdown volume reaches equilibrium. The results indicated that most GMUs did not reach an equilibrium condition using the 10 m drawdown volume. Therefore, the 10 m drawdown volume is reduced to reach an equilibrium condition. Please refer to **Table 2** for the outcomes of this step for all GMUs, presented under the "Comparing statistical model-based 10 m drawdown volume with historical and stabilised volume' column.

The uncertainty band for the stabilised volume, which is considered as the sustainable yield, is calculated using the uncertainty range of the statistical model–based 10 m drawdown volume. This is a reasonable assumption, as the same relationship is used to calculate both the statistical model–based 10 m drawdown volume and the stabilised volume. The uncertainty band for the statistical model–based 10 m drawdown volume is presented in **Table 2** under the column "Statistical model–based 10 m drawdown volume (ML/yr) (uncertainty band in ML/yr and %)" for GMUs where the drawdown–use relationship was accepted. These uncertainty percentages are used to calculate the lower and upper bands of the uncertainty range for the stabilised volume, which is considered as the sustainable yield volume.

For the GMUs where throughflow flux is used to calculate the sustainable yield volume, the uncertainty band is estimated by the lower and upper ranges of the calculated throughflow flux within each GMU.

Step 4. Incorporating the sustainable yield volume from the unconfined aquifer into the confined aquifer sustainable yield volume

This step involves including the sustainable yield volume from the unconfined aquifer portion of the GMU into the total sustainable yield volume, where the GMU contains an unconfined aquifer portion.

Step 5. Verifying synthesised results based on the semi-confined nature of the aquifers

Step 5 aims to assess whether the GMU is a semiconfined aquifer. If it is, the semi-confined aquifer synthesis method is used to estimate the final sustainable yield volume. If it is not a semi-confined aquifer, the sustainable yield volume from the step 3 is considered as the final sustainable yield.

The assessment showed that Mid Loddon GMA, and Lower Campaspe Valley WSPA are semi-confined aquifers. For these GMUs, the final sustainable yield is estimated using the semi-confined aquifer synthesis method and presented in the semi-confined aquifer results section.

Table 2. Comparison of statistical model–based 10 m drawdown volume with historical use and drawdown to estimate sustainable yield volume

GMU	Representative Suite / aquifer	Statistical model–based 10 m drawdown volume (ML/yr) (uncertainty band in ML/yr and %)	Historical average use (ML/yr)	Drawdown at 2020 (m)	10 m drawdown volume based on historical average use and drawdown (ML/yr)	Stabilised volume (ML/yr)	Comparing statistical model–based 10 m drawdown volume with historical one and stabilised volume	Sustainable yield volume (ML/yr) (uncertainty band in ML/yr)
Mallee Basin								
Murrayville GMA – Confined aquifer							A review of the representative Suite M_AC_2 hydrograph identified that the predevelopment level originally inferred by GHD (8.6 m) was influenced by limited data availability before 2000. Prior to 1987, only one bore was contributing to the suite, and the addition of a second bore in 1987 introduced an artificial jump of approximately 3 m in the normalised hydrograph. Because groundwater development in Murrayville GMA commenced around 2000 and the bore network becomes more reliable from this period onward, the year 2000 was adopted as a more appropriate predevelopment reference. This results in an adjusted predevelopment level of approximately 5 m. The correction does not materially affect the groundwater level–use relationship. However, the revised predevelopment level changes the use–drawdown relationship used to derive sustainable yield. Using the updated relationship, the Murrayville GMA SY is estimated at 10,400 ML/yr (9,500–11,400 ML/yr), which is greater than average use of 5,408 ML/yr and the entitlement of 9,755 ML/yr.	10,400 (9,500-11,400) (Statistical model–based 10 m drawdown volume)
West Wimmera GMA – TCSA confined aquifer							The use–drawdown relationship represents the unconfined part of the GMA (Murray Group Limestone (MGL)/Tertiary Limestone Aquifer (TLA)/Upper Mid-Tertiary Aquifer (UMTA – 107)) and is excluded from the confined aquifer results. The SY volume for this aquifer is estimated through water table recharge and is presented in the unconfined aquifer results section. The Renmark Group/Tertiary Confined Sands Aquifer (TCSA)/ Lower Tertiary Aquifer (LTA-111) is a confined aquifer underlying the Lower Tertiary Aquitard. The sustainable yield volume is estimated through predevelopment throughflow flux. The throughflow flux is 3,599 (3,020 – 4,216) ML/year, with 30% of this volume, equating to 1,100 (900 – 1,300) ML/year, considered as the SY volume. The detailed methodology for how this 30% was determined is explained in the “Calculating Weighted Percentage of Throughflow Flux” section.	1,100 (900-1,300) (percentage of throughflow flux)
North Central Basin								

GMU	Representative Suite / aquifer	Statistical model–based 10 m drawdown volume (ML/yr) (uncertainty band in ML/yr and %)	Historical average use (ML/yr)	Drawdown at 2020 (m)	10 m drawdown volume based on historical average use and drawdown (ML/yr)	Stabilised volume (ML/yr)	Comparing statistical model–based 10 m drawdown volume with historical one and stabilised volume	Sustainable yield volume (ML/yr) (uncertainty band in ML/yr)
Katunga WSPA – Confined aquifer	M_I_2 (most representative Suite) / UTAF aquifer	25,863 (20,888–31,053) (-19% - +20%)	27,785	13.4	20,766	23,900	Historical 10 m drawdown volume aligns with lower band of statistical model-based 10 m drawdown volume Stabilised volume aligns with best estimate of statistical model-based 10 m drawdown volume	23,900 (19,300-28,700) (stabilised volume)
Lower Campaspe Valley WSPA – Semi-confined aquifer	M_H_1 (most representative Suite) / UTAF aquifer	33,665 (26,355–41,238) (-22% - +22%)	29,689	13.2	22,560	22,400	Historical 10 m drawdown volume aligns with lower band of statistical model-based 10 m drawdown volume Stabilised volume aligns with lower band of statistical model-based 10 m drawdown volume	22,400 (17,500-27,400) (stabilised volume)
Mid Loddon GMA – Semi-confined aquifer	M_F_2 (most representative Suite) / UTAF aquifer	25,078 (9,062–40,553) (-64% - +62%)	17,689	9.3	19,123	7,100	Historical 10 m drawdown volume aligns with uncertainty band of statistical model-based 10 m drawdown volume Stabilised volume does not align with statistical model-based 10 m drawdown volume	7,100 (2,600-11,500) (stabilised volume)
Otway–Torquay Basin								
Gellibrand GMA – Unconfined aquifer	A drawdown–use relationship could not be developed for the Gellibrand GMA due to no use. While the Gellibrand GMA was initially assessed under the confined aquifer framework, further analysis suggests that the system behaves more like an unconfined aquifer. As such, it has been treated as an unconfined system. Since SY does not align with prior metric for Boundary Creek, more detailed local studies are applied to management decisions through the Barwon Downs Remediation and Environmental Protection Plan (REPP). Therefore, SY volume is considered not suitable for this GMA.							No SY volume

GMU	Representative Suite / aquifer	Statistical model–based 10 m drawdown volume (ML/yr) (uncertainty band in ML/yr and %)	Historical average use (ML/yr)	Drawdown at 2020 (m)	10 m drawdown volume based on historical average use and drawdown (ML/yr)	Stabilised volume (ML/yr)	Comparing statistical model–based 10 m drawdown volume with historical one and stabilised volume	Sustainable yield volume (ML/yr) (uncertainty band in ML/yr)
Condah WSPA – Confined aquifer	L_A_1 (most representative Suite) / LMTA aquifer	4,396 (3,025–5,032) (-31% - +14%)	2,782	9.3	2,982	3,000	Historical 10 m drawdown volume aligns with lower band of statistical model-based 10 m drawdown volume Stabilised volume aligns with lower band of statistical model-based 10 m drawdown volume	3,000 (2,100-3,400) (stabilised volume)
Gerangamete GMA – Confined aquifer	Since SY does not align with prior metric for Boundary Creek, more detailed local studies are applied to management decisions through the Barwon Downs Remediation and Environmental Protection Plan (REPP). Therefore, SY volume is considered not suitable for this GMA.							No SY volume
Portland GMA – Confined aquifer	L_C_1 (most representative Suite) / LTA aquifer	15,517 (10,175–16,299) (-34% - +5%)	2,606	2.5	10,551	9,500	Historical 10 m drawdown volume aligns with lower band of statistical model-based 10m drawdown volume Stabilised volume aligns with lower band of statistical model-based 10 m drawdown volume	9,500 (6,200-10,000) (stabilised volume)
Newlingrook GMA – Confined aquifer	L_AA_99/ LTA aquifer	7,876 (1,233–11,144) (-84% - +41%)	145	0.9	1,667	2,000	Historical 10 m drawdown volume aligns with lower band of statistical model-based 10 m drawdown volume Stabilised volume aligns with lower band of statistical model-based 10 m drawdown volume	2,000 (300-2,800) (stabilised volume)
Paaratte GMA – Confined aquifer	The estimated sustainable yield volume based on the use-drawdown relationship is 2,500 (1,200-3,800) ML/yr. However, due to deep confined nature of the aquifer, the SY metric may not be suitable for this GMA. Process is underway to better understand the local context and identify a more appropriate metric to inform the sustainable yield volume.							No SY volume

GMU	Representative Suite / aquifer	Statistical model–based 10 m drawdown volume (ML/yr) (uncertainty band in ML/yr and %)	Historical average use (ML/yr)	Drawdown at 2020 (m)	10 m drawdown volume based on historical average use and drawdown (ML/yr)	Stabilised volume (ML/yr)	Comparing statistical model–based 10 m drawdown volume with historical one and stabilised volume	Sustainable yield volume (ML/yr) (uncertainty band in ML/yr)
Jan Juc GMA – LEVF confined aquifer	The target aquifer for the Jan Juc GMA is the Lower Tertiary Aquifer (LTA), which consists of two distinct systems: the Upper Eastern View Formation (UEVF) and the Lower Eastern View Formation (LEVF). The modelled suite is L_X_2, representing the LEVF. However, this suite does not cover the main extraction area in the GMU. Therefore, the developed model may not accurately represent groundwater use or levels within the extraction area, given its distance from the suite area. As a result, the developed use-drawdown relationship is not used to estimate the sustainable yield volume for the LEVF. Furthermore, we could not use the percentage of throughflow flux for the LEVF aquifer, as the throughflow flux was calculated for the LTA aquifer and is not differentiated between these two systems. Given these limitations, the SY volume is considered not suitable for this GMA.							No SY volume
Glenelg GMA (revoked) – Unconfined aquifer	The modelled suite is M_AF_1, where the aquifer is the Port Campbell Limestone (Tertiary Limestone Aquifer (TLA)/Upper Mid-Tertiary Aquifer, UMTA-107). This aquifer is unconfined. Since the Glenelg GMA is generally treated as unconfined aquifer, the use-drawdown relationship has been applied using the 2 m drawdown metric for unconfined aquifers. The resulting SY volume is estimated at 6,100 ML/year, with an uncertainty range of 4,400 to 6,900 ML/year.							6,100 (4,400-6,900) (Confined use-drawdown method for 2m drawdown)
Central Basin								
Frankston GMA – Confined aquifer	L_U_1 (most representative Suite) / LTA aquifer	2,288 (345–2,737) (-85% - +20%)	230	3.4	682	2,300	Historical 10 m drawdown volume aligns with uncertainty band of statistical model-based 10 m drawdown volume Stabilised volume aligns with best estimate of statistical model-based 10 m drawdown volume	2,300 (300-2,800) (stabilised volume)
Cut Paw Paw GMA – Confined aquifer	Historical 10 m drawdown volume does not align with statistical model-based 10 m drawdown volume. Therefore, the developed use-drawdown relationship is not used to estimate the sustainable yield volume, which is instead estimated based on percentage of the throughflow flux. The throughflow flux is 3,120 (NA) ML/year, with 30% of this volume, equating to 900 (NA) ML/year, considered as the SY volume.							900 (NA) (percentage of throughflow flux))

GMU	Representative Suite / aquifer	Statistical model–based 10 m drawdown volume (ML/yr) (uncertainty band in ML/yr and %)	Historical average use (ML/yr)	Drawdown at 2020 (m)	10 m drawdown volume based on historical average use and drawdown (ML/yr)	Stabilised volume (ML/yr)	Comparing statistical model–based 10 m drawdown volume with historical one and stabilised volume	Sustainable yield volume (ML/yr) (uncertainty band in ML/yr)
Corinella GMA – Confined and unconfined aquifers	M_S_88 / LTA aquifer	7,675 (2,280–14,588) (-70% - +90%)	60	0.0	-	1,500	It is not possible to calculate historical 10 m drawdown volume Stabilised volume aligns with lower band of statistical model-based 10 m drawdown volume	Confined aquifer: 1,500 (400-2,900) (stabilised volume) Unconfined aquifer: 260 (percentage of recharge) Total SY: 1,760 (400-2,900)
Koo Wee Rup WSPA – Confined and unconfined aquifers	The modelled suite is M_S_1, which corresponds to the Upper Tertiary Aquifer Fluvial (UTAF-105) / Upper Mid-Tertiary Aquifer (UMTA-107). Although the Koo Wee Rup WSPA was initially assessed under the confined aquifer framework, further analysis indicates that the UTAF/UMTA aquifers exhibit unconfined behaviour. Accordingly, the use–drawdown relationship has been applied using the 2 m drawdown metric appropriate for unconfined aquifers. The resulting SY volume is estimated at 4,100 ML/year, with an uncertainty range of 1,500 to 8,400 ML/year. For the confined Lower Tertiary Aquifer (LTA-111) / Lower Tertiary Basalt (LTB) aquifers, the SY volume is estimated using the percentage of throughflow flux method. The total throughflow is estimated at 2,020 ML/year (1,500–2,500), with 30% of this volume, equating to 600 (450 – 750) ML/year, considered as the SY volume.							Unconfined aquifer portion: 4,100 (1,500-8,400) (Confined use-drawdown method for 2m drawdown) Confined aquifer portion: 600 (450-750) (percentage of throughflow flux) Total SY: 4,700 (1,950-9,150)

GMU	Representative Suite / aquifer	Statistical model–based 10 m drawdown volume (ML/yr) (uncertainty band in ML/yr and %)	Historical average use (ML/yr)	Drawdown at 2020 (m)	10 m drawdown volume based on historical average use and drawdown (ML/yr)	Stabilised volume (ML/yr)	Comparing statistical model–based 10 m drawdown volume with historical one and stabilised volume	Sustainable yield volume (ML/yr) (uncertainty band in ML/yr)
Moorabbin GMA – Confined and unconfined aquifers	The modelled suite is M_T_3, corresponding to the Upper Tertiary Aquifer Fluvial (UTAF-105). Although the Moorabbin GMA was initially assessed under the confined aquifer framework, further analysis suggests that the UTAF aquifers behave more like an unconfined system. As such, the use–drawdown relationship has been applied using the 2 m drawdown metric appropriate for unconfined aquifers. The resulting SY volume is estimated at 2,000 ML/year, with an uncertainty range of 1,450 to 2,400 ML/year. For the confined Lower Tertiary Aquifer (LTA-111), the SY volume has been estimated using the percentage-of-throughflow method. The total throughflow is approximately 1,280 ML/year (range not available), with 30%—equating to 400 ML/year—considered as the sustainable yield.							Unconfined aquifer portion: 2,000 (1,450-2,400) (Confined use-drawdown method for 2m drawdown) Confined aquifer portion: 400 (NA) (percentage of throughflow flux) Total SY: 2,400 (1,850-2,800)
Boneo GMA – Confined aquifer	Boneo GMA was not assessed using the use-drawdown relationship. The throughflow flux method was not accepted due to high uncertainty in potentiometric levels. According to the **Error! Unknown document property name.** undertaken by Southern Rural Water (2015) for Boneo GMA, the estimated throughflow flux is 4,000 ML/yr. According to the DEECA's SY assessment, 30% of this flow is considered as the sustainable yield, equating to 1,200 ML/yr. To verify the reasonableness of the 1,200 ML/year SY estimate, historical extraction and groundwater level trends were evaluated. Between 2011/2012 and 2020/2021, the average annual net extraction (extraction minus injection) was 195 ML/year. Over this period, groundwater levels declined by 1.9 m, from the predevelopment level of 7.4 m AHD to 5.5 m AHD in 2021. Based on a rough linear extrapolation, this would equate to an SY of approximately 1,050 ML/yr to achieve a 10 m drawdown by 2040, which is broadly consistent with the throughflow-based estimate.							1,200 (NA) (the SRW **Error! Unknown document property name.**)
Gippsland Basin								

GMU	Representative Suite / aquifer	Statistical model–based 10 m drawdown volume (ML/yr) (uncertainty band in ML/yr and %)	Historical average use (ML/yr)	Drawdown at 2020 (m)	10 m drawdown volume based on historical average use and drawdown (ML/yr)	Stabilised volume (ML/yr)	Comparing statistical model–based 10 m drawdown volume with historical one and stabilised volume	Sustainable yield volume (ML/yr) (uncertainty band in ML/yr)
Moe GMA – Confined and unconfined aquifers	L_Q_1 (most representative Suite) / LTBa aquifer	2,021 (1,160–2,588) (-43% - +28%)	826	6.4	1,295	1,200	Historical 10 m drawdown volume aligns with lower band of statistical model-based 10 m drawdown volume Stabilised volume aligns with lower band of statistical model-based 10 m drawdown volume	Confined aquifer: 1,200 (700-1,500) (stabilised volume) Unconfined aquifer: 2,400 (1,500-3,000) (unconfined use-drawdown method) Total SY: 3,600 (2,200-4,500)
Sale WSPA – Confined aquifer	M_O_1 (most representative Suite) / UTAF aquifer	14,252 (12,580–18,050) (-12% - +27%)	11,029	9.1	12,120	14,300	Historical 10 m drawdown volume aligns with lower band of statistical model-based 10m drawdown volume Stabilised volume aligns with best estimate of statistical model-based 10 m drawdown volume	14,300 (12,600-18,100) (stabilised volume)
Rosedale GMA – Confined aquifer	M_O_2/ UTAF aquifer	8,480 (4,521–15,096) (-47% - +78%)	8,828	14.1	6,270	5,700	Historical 10 m drawdown volume aligns with uncertainty band of statistical model-based 10 m drawdown volume Stabilised volume aligns with lower band of statistical model-based 10 m drawdown volume	5,700 (3,000-10,100) (stabilised volume)

GMU	Representative Suite / aquifer	Statistical model–based 10 m drawdown volume (ML/yr) (uncertainty band in ML/yr and %)	Historical average use (ML/yr)	Drawdown at 2020 (m)	10 m drawdown volume based on historical average use and drawdown (ML/yr)	Stabilised volume (ML/yr)	Comparing statistical model–based 10 m drawdown volume with historical one and stabilised volume	Sustainable yield volume (ML/yr) (uncertainty band in ML/yr)
Yarram WSPA – Confined aquifer	L_O_2/ LTA aquifer	9,227 (3,418–17,947) (-63% - +95%)	11,482	10.8	10,651	9,200	Historical 10 m drawdown volume aligns with uncertainty band of statistical model-based 10 m drawdown volume Stabilised volume aligns with best estimate of statistical model-based 10 m drawdown volume	9,200 (3,400-17,900) (stabilised volume)
Stratford GMA – Confined aquifer	Historical 10 m drawdown volume does not align with statistical model-based 10 m drawdown volume. Therefore, the developed use-drawdown relationship is not used to estimate the sustainable yield volume, which is instead estimated based on predevelopment throughflow flux. The throughflow flux is 36,873 (22,082-50,588) ML/year, with 30% of this volume, equating to 11,100 (6,600-15,200) ML/year, considered as the SY volume.							11,100 (6,600-15,200) (percentage of throughflow flux)
Giffard GMA – Confined aquifer	The possible external influence of offshore oil and gas extraction was not considered in the development of the use–drawdown relationship. As a result, the derived relationship was not accepted for this GMA. Moreover, the throughflow flux method was not adopted due to high uncertainty in potentiometric levels arising from the impacts of oil and gas activities. Therefore, no SY volume has been estimated for this area.							No SY volume
Orbost GMA – Confined aquifer	U_Y_1/ UTQA aquifer	4,191 (2,963–5,365) (-29% - +28%)	294	0.5	6,533	3,000	Historical 10 m drawdown volume aligns with upper band of statistical model-based 10 m drawdown volume Stabilised volume aligns with lower band of statistical model-based 10 m drawdown volume	3,000 (2,100-3,800) (stabilised volume)

2.1.4. Discussion on synthesised results for individual confined GMUs

This section provides a detailed discussion of the synthesised results for each GMU, grouped by groundwater basin. **Figure 4** shows the location of all GMUs assessed under confined aquifers assessment across the state.

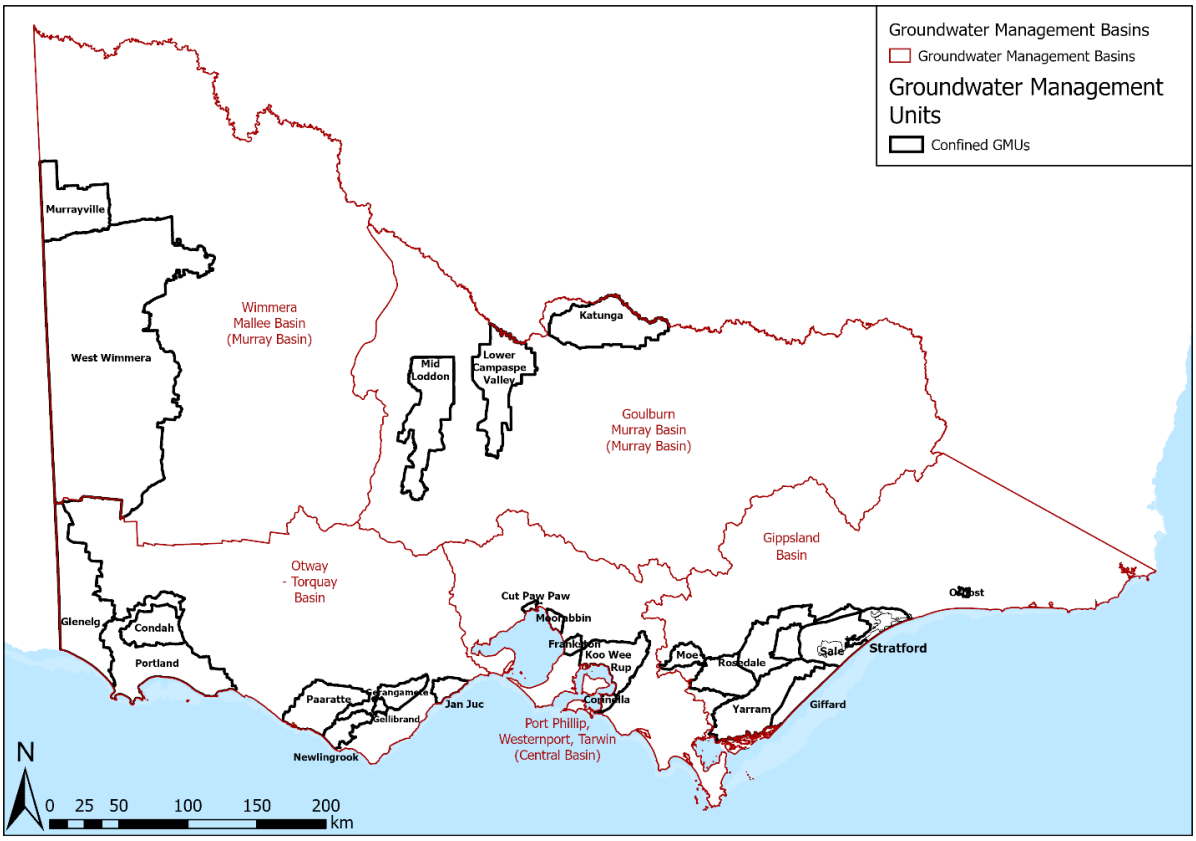

Figure 4. Location of the GMUs assessed under confined aquifer assessment across the state

Mallee Basin

Murrayville GMA: A review of the representative Suite M_AC_2 hydrograph identified that the predevelopment level originally inferred by GHD (8.6 m) was influenced by limited data availability before 2000. Prior to 1987, only one bore was contributing to the suite, and the addition of a second bore in 1987 introduced an artificial jump of approximately 3 m in the normalised hydrograph. Because groundwater development in Murrayville GMA commenced around 2000 and the bore network becomes more reliable from this period onward, the year 2000 was adopted as a more appropriate predevelopment reference. This results in an adjusted predevelopment level of approximately 5 m.

The correction does not materially affect the groundwater level–use relationship. However, the revised predevelopment level changes the use–drawdown relationship used to derive sustainable yield. Using the updated relationship, the Murrayville GMA SY is estimated at 10,400 ML/yr (9,500–11,400 ML/yr), which is greater than average use of 5,408 ML/yr and the entitlement of 9,755 ML/yr.

West Wimmera GMA: The modelled Suite is M_AD_1 which primarily covers the Neuarpur zone within the GMA. The aquifer is the Murray Group Limestone (MGL)/Tertiary Limestone Aquifer (TLA)/Upper Mid-Tertiary Aquifer (UMTA – 107). It is considered unconfined in the Neuarpur zone (western portion of the GMA) where the Bookpurnong Beds/Upper Tertiary Aquitard (UTD – 106) are absent and the Pliocene (Parilla) Sands Aquifer is unsaturated. It is partially confined by the overlying Bookpurnong Beds in the east and north. Therefore, the use–drawdown relationship represents the unconfined part of the GMU and is excluded from the confined aquifer results. The SY assessment for the Neuarpur zone is presented in the unconfined aquifer results section.

The Renmark Group/Tertiary Confined Sands Aquifer (TCSA)/ Lower Tertiary Aquifer (LTA-111) is a confined aquifer underlying the Lower Tertiary Aquitard. The sustainable yield volume is estimated through predevelopment throughflow flux. The throughflow flux is 3,599 (3,020 – 4,216) ML/year, with 30% of this volume, equating to 1,100 (900 – 1,300) ML/year, considered as the sustainable yield volume. The detailed methodology for how this 30% was determined is explained in the "Calculating Weighted Percentage of Throughflow Flux" section. Therefore, the proposed sustainable yield volume is 1,100 ML/yr for the TSCA aquifer, which is higher than average use (~ 0 ML/yr) and the entitlement of 0 ML/yr.

North Central Basin

Katunga WSPA: The drawdown (as of 2020) compared to the pre-development date, 1981–1982, is 13.4 m. Average groundwater use since the pre-development date was 18,226 ML/yr, and there was a higher average use of 27,785 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 23,900 ML/yr, which aligns with the best estimate of 10 m drawdown volume. Since there is a 10% reduction in stabilised volume compared to the recent average use volume, this reduction helps the aquifer recover and ensures that groundwater level decline over 20 years remains within a 10 m drawdown. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 23,900 (19,300-28,700) ML/yr, which is less than average use and the entitlement of 60,209 ML/yr.

Since the drawdown (as of 2020) compared to the pre-development period (1981–1982) is 13.4 m, the current mechanism for managing groundwater levels uses trigger levels from representative observation bores within the WSPA.

Lower Campaspe Valley WSPA: The drawdown (as of 2020) compared to the pre-development date, 1978–1979, is 13.1 m. Average groundwater use was 17,102 ML/yr, and there was a higher average use of 29,689 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 22,380 ML/yr, which aligns with the lower uncertainty band of 10 m drawdown volume. Since the recent average use was almost twice the average use over the entire period, this resulted in a greater decline in recent years. The 12% reduction in stabilised volume compared to the recent average volume helps the aquifer recover and ensures that groundwater level decline over the next 20 years remains within a 10 m drawdown. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 22,400 (17,500-27,400) ML/yr, which is less than average use and the entitlement of 55,860 ML/yr.

The assessment of semi-confined aquifer mapping across the state identified the Lower Campaspe Valley WSPA as a semi-confined aquifer. Therefore, this GMU has been analysed with consideration of its semi-confined nature, and the findings are presented in the semi-confined aquifers results section.

Since the drawdown (as of 2020) compared to the pre-development date, 1978–1979, is 13.1 m, the current mechanism for managing groundwater levels uses trigger levels from representative observation bores within the WSPA.

Mid Loddon GMA: The drawdown (as of 2020) compared to the pre-development date, 1983–1984 is 9.2 m. Average groundwater use since the pre-development date was 12,381 ML/yr, and there was a higher average use of 17,689 ML/yr between 2016 and 2021. Mid Loddon GMA did not reach an equilibrium condition using the 10 m drawdown volume. Therefore, the 10 m drawdown volume is reduced to reach an equilibrium condition. The stabilised volume within the next 20 years is projected to be 7,100 ML/yr. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 7,100 (2,600-11,500) ML/yr which is less than average use and the entitlement of 33,917 ML/yr.

The assessment of semi-confined aquifer mapping across the state identified the Mid Loddon GMA as a semi-confined aquifer. Therefore, this GMU has been analysed with consideration of its semi-confined nature, and the findings are presented in the semi-confined aquifers results section.

Since the drawdown (as of 2020) compared to the pre-development date, 1983–1984, is 9.2 m, the current mechanism for managing groundwater levels uses trigger levels from representative observation bores within the GMA.

Otway–Torquay Basin

Gellibrand GMA: A drawdown–use relationship could not be developed for the Gellibrand GMA due to no use. While the Gellibrand GMA was initially assessed under the confined aquifer framework, further analysis suggests that the system behaves more like an unconfined aquifer. As such, it has been treated as an unconfined system. Since SY does not align with prior metric for Boundary Creek, more detailed local studies are applied to management decisions through the Barwon Downs Remediation and Environmental Protection Plan (REPP). Therefore, SY volume is considered not suitable for this GMA.

Condah WSPA: The drawdown (as of 2020) compared to the pre-development, 1995–1996, is 9.3 m. Average groundwater use since the pre-development date was 2,325 ML/yr, and there was a higher average use of 2,782 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 3,000 ML/yr, which aligns with the average use and lower uncertainty band of 10 m drawdown volume. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 3,000 (2,100-3,400) ML/yr, which is greater than average use but less than the entitlement of 7,469 ML/yr.

Gerangamete GMA: The drawdown (as of 2020) compared to the pre-development date, 1973–1974, is 19.4 m. Average groundwater use since the pre-development date was 2,442 ML/yr, and there was a higher average use of 3,524 ML/yr between 2016 and 2021. As the confined aquifer outcrops and becomes unconfined, it is unclear at what confined aquifer level a connection to local waterways (e.g., Boundary Creek) would occur. Moreover, since SY does not align with prior metric for Boundary Creek, more detailed local studies are applied to management decisions through the Barwon Downs Remediation and Environmental Protection Plan (REPP). Therefore, SY volume is considered not suitable for this GMA.

Portland GMA: The drawdown (as of 2020) compared to the pre-development date, 1974–1975, is 2.5 m. Average groundwater use since the pre-development date was 1,854 ML/yr, and there was a higher average use of 2,606 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 9,500 ML/yr, which aligns with the lower uncertainty band of 10 m drawdown volume. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 9,500 (6,200-10,000) ML/yr, which is greater than average use and the entitlement of 7,794 ML/yr.

Newlingrook GMA: The drawdown (as of 2020) compared to the pre-development date, 1976–1977, is 0.9 m. Average groundwater use since the pre-development date was 117 ML/yr, and there was a higher average use of 145 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 2,000 ML/yr, which aligns with the lower uncertainty band of 10 m drawdown volume. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 2,000 (300-2,800) ML/yr, which is greater than average use and the entitlement of 1,957 ML/yr.

Paaratte GMA: The drawdown (as of 2020) compared to the pre-development date, 1976–1977, is 0.9 m. Average groundwater use since the predevelopment date was 251 ML/yr, and there was a higher average use of 321 ML/yr between 2016 and 2021. The estimated sustainable yield volume based on the use-drawdown relationship is 2,500 (1,200-3,800) ML/yr. However, due to deep confined nature of the aquifer, the SY metric may not be suitable for this GMA. Process is underway to better understand the local context and identify a more appropriate metric to inform the sustainable yield volume.

Jan Juc GMA – LEVF confined aquifer: The target aquifer for the Jan Juc GMA is the Lower Tertiary Aquifer (LTA), which consists of two distinct systems: the Upper Eastern View Formation (UEVF) and the Lower Eastern View Formation (LEVF).

The modelled suite is L_X_2, representing the LEVF. However, this suite does not cover the main extraction area in the GMU. Therefore, the developed model may not accurately represent groundwater use or levels within the extraction area, given its distance from the suite area. As a result, the developed use-drawdown relationship is not used to estimate the sustainable yield volume for the LEVF.

Furthermore, the percentage of throughflow flux for the LEVF aquifer was not applied, as the throughflow flux was calculated for the whole LTA aquifer and is not differentiated between the two aquifers systems. Given these limitations, the SY volume is considered not suitable for this GMA.

Glenelg GMA (revoked): The Glenelg GMA was abolished in September 2022, but the management area is still used by DEECA for reporting purposes. Most of the former GMA are located within the South Australian- Victoria Border Designated Area (Zones 1B, 2B, 3B (partial), and 4B (partial).

The modelled suite is M_AF_1, which corresponds to the Port Campbell Limestone (Tertiary Limestone Aquifer, TLA / Upper Mid-Tertiary Aquifer, UMTA-107), classified as an unconfined aquifer. The confined aquifer in the region is the Dilwyn Formation (Tertiary Confined Sands Aquifer, TCSA / Lower Tertiary Aquifer, LTA-111), overlain by the Upper Mid-Tertiary Aquitard (UMTD-108) and Lower Mid-Tertiary Aquitard (LMTD-110).

Hydrogeological investigations conducted under the South Australia - Victoria Border Zone groundwater study (SKM, 2012) indicate moderate to very good hydraulic connectivity between the TCSA and TLA aquifers, particularly in the Lake Mundi area (Zones 2B and 3B). Based on this connectivity, the Glenelg GMA has been assessed as an unconfined system. Therefore, the use–drawdown relationship was applied using the 2 m drawdown metric for unconfined aquifers. The resulting sustainable yield volume is estimated at 6,100 ML/year, with an uncertainty range of 4,400 to 6,900 ML/year, which is less than average use (5,957 ML/yr) and the entitlement of 33,262 ML/yr.

Central Basin

Frankston GMA: The drawdown (as of 2020) compared to the pre-development date, 1989–1990, is 3.3 m. Average groundwater use since the pre-development date was 94 ML/yr, and there was a higher average use of 230 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 2,300 ML/yr, which aligns with the best estimate of 10 m drawdown volume. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 2,300 (300-2,800) ML/yr, which is greater than average and the entitlement of 2,273 ML/yr.

Cut Paw Paw GMA: The drawdown (as of 2020) compared to the pre-development date, 1989–1990, is 2.5 m. Average groundwater use since the pre-development date was 84 ML/yr, and there was a slightly higher average use of 99 ML/yr between 2016 and 2021. The historical 10 m drawdown volume does not align with statistical model-based 10 m drawdown volume. Therefore, the developed use-drawdown relationship is not used to estimate the sustainable yield volume, which is instead estimated based on percentage of the throughflow flux. The throughflow flux is 3,120 (NA) ML/year, with 30% of this volume, equating to 900 (NA) ML/year, considered as the sustainable yield volume. This volume is greater than average use but less than the entitlement of 517 ML/y).

Corinella GMA: The drawdown for the confined portion of the GMA (Suite M_S_88), as of 2020 compared to the pre-development period (1968–1969), is negligible, approximately zero metres. The average groundwater use since the pre-development period has been 56 ML/year, with a slightly higher average of 60 ML/year between 2016 and 2021.

The stabilised volume over the next 20 years is projected to be 1,500 ML/year, which aligns with the lower uncertainty band of the estimated volume associated with a 10 m drawdown. For the unconfined portion of the GMA, the sustainable yield is estimated using the percentage of recharge method, resulting in a sustainable yield of 260 ML/year.

Therefore, the total proposed sustainable yield volume for the entire GMA—considering both confined and unconfined aquifer portions—is 1,760 ML/year (400–2,900 ML/year). This is greater than both the average use and the total entitlement volume of 662 ML/year.

Koo Wee Rup WSPA: The modelled suite is M_S_1, which corresponds to the Upper Tertiary Aquifer Fluvial (UTAF-105) / Upper Mid-Tertiary Aquifer (UMTA-107). Although the Koo Wee Rup WSPA was initially assessed under the confined aquifer framework, further analysis indicates that the UTAF/UMTA aquifers exhibit unconfined behaviour. Accordingly, the use–drawdown relationship has been applied using the 2 m drawdown metric appropriate for unconfined aquifers. The resulting sustainable yield volume for this aquifer is estimated at 4,100 ML/year, with an uncertainty range of 1,500 to 8,400 ML/year. For the confined Lower Tertiary Aquifer (LTA-111) / Lower Tertiary Basalt (LTB) aquifers, the sustainable yield volume is estimated using the percentage of throughflow flux

method. The throughflow is estimated at 2,020 ML/year (1,500–2,500), with 30% of this volume, equating to 600 (450 – 750) ML/year, considered as the sustainable yield volume. Therefore, the total proposed sustainable yield volume for the entire WSPA—considering both confined and unconfined aquifer portions—is 4,700 ML/year (1,950–9,150 ML/year). This is greater than the average use and less than the entitlement volume of 12,589 ML/year.

Moorabbin GMA: The drawdown (as of 2020) compared to the pre-development date, 1973–1974, is 0.9 m. Average groundwater use since the pre-development date was 634 ML/yr, and there was a higher average use of 1,096 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 10,900 ML/yr, which aligns with the best estimate of 10 m drawdown volume. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 10,900 (9,500-11,300) ML/yr, which is greater than average use and the entitlement of 2,606 ML/yr. The modelled suite is M_T_3, corresponding to the Upper Tertiary Aquifer Fluvial (UTAF-105). Although the Moorabbin GMA was initially assessed under the confined aquifer framework, further analysis suggests that the UTAF aquifers behave more like an unconfined system. As such, the use–drawdown relationship has been applied using the 2 m drawdown metric appropriate for unconfined aquifers. The resulting sustainable yield volume is estimated at 2,000 ML/year, with an uncertainty range of 1,450 to 2,400 ML/year. For the confined Lower Tertiary Aquifer (LTA-111), the sustainable yield volume is estimated using the percentage of throughflow method. The throughflow is 1,280 ML/year (range not available), with 30% - equating to 400 ML/year - considered as the sustainable yield. Therefore, the total proposed sustainable yield volume for the entire GMA—considering both confined and unconfined aquifer portions—is 2,400 ML/year (1,850–2,800 ML/year). This is less than the average use and greater than the entitlement volume of 2,606 ML/year.

Boneo GMA: It was not assessed using the use-drawdown relationship. The throughflow flux method was not accepted due to high uncertainty in potentiometric levels. However, according to the Hydrogeological Risk Assessment undertaken by Southern Rural Water (Jacobs, 2015) for Boneo GMA, the estimated throughflow flux is 4,000 ML/yr. According to the DEECA's SY assessment, 30% of this flow is considered as the sustainable yield, equating to 1,200 ML/yr. To verify the reasonableness of the 1,200 ML/year sustainable yield estimate, historical extraction and groundwater level trends were evaluated. Between 2011/2012 and 2020/2021, the average annual net extraction (extraction minus injection) was 195 ML/year. Over this period, groundwater levels declined by 1.9 m, from the predevelopment level of 7.4 m AHD to 5.5 m AHD in 2021. Based on a rough linear extrapolation, this would equate to a sustainable yield of approximately 1,050 ML/yr to achieve a 10 m drawdown by 2040, which is broadly consistent with the throughflow-based estimate.

Gippsland Basin

Moe GMA: The drawdown for the confined portion (Suite L-Q_1) (as of 2020) compared to the pre-development date, 1977-1978, is 6.4 m. Average groundwater use since the predevelopment date was 535 ML/yr, and there was a higher average use of 826 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 1,200 ML/yr, which aligns with the lower uncertainty band of 10 m drawdown volume. Therefore, the proposed sustainable yield volume for the confined portion of the GMA based on use-drawdown relationship is 1,200 (700-1,500) ML/yr. For the unconfined portion of the GMA, the sustainable yield is estimated using the unconfined use-drawdown relationship method, resulting in a sustainable yield of 2,400 (1,500 – 3,000) ML/year. Therefore, the total proposed sustainable yield volume for the entire GMA—considering both confined and unconfined aquifer portions—is 3,600 ML/year (2,200–4,500 ML/year). This is greater than the average use and less than the entitlement volume of 3,861 ML/year.

Sale WSPA: The drawdown (as of 2020) compared to the pre-development date, 1985–1986, is 9.1 m. Average groundwater use since the pre-development date was 9,158 ML/yr, and there was a higher average use of 11,029 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 14,300 ML/yr, which aligns with the best estimate of 10 m drawdown volume. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 14,300 (12,600-18,100) ML/yr, which is greater than average use but less than the entitlement of 21,205 ML/yr.

Rosedale GMA: The drawdown (as of 2020) compared to the pre-development date, 1979–1980, is 14.1 m. Average groundwater use since the pre-development date was 4,621 ML/yr, and there was a

higher average use of 8,828 ML/yr between 2016 and 2021. Since the recent average use was almost twice the average use over the entire period, this resulted in a greater decline in recent years. The stabilised volume within the next 20 years is projected to be 5,700 ML/yr, which aligns with the lower uncertainty band of 10 m drawdown volume. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 5,700 (3,000-10,100) ML/yr, which is less than average use and the entitlement of 22,312 ML/yr.

Yarram WSPA: The drawdown (as of 2020) compared to the pre-development date, 1984–1985, is 10.8 m. Average groundwater use since the pre-development date was 9,509 ML/yr, and there was a higher average use of 11,482 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 9,200 ML/yr, which aligns with the best estimate of 10 m drawdown volume. Since the recent average was 22% higher than the average use over the entire period, this resulted in a greater decline in recent years. The significant decline in groundwater levels is attributed to offshore oil and gas extraction. There was a 20% reduction in stabilised volume compared to the recent average volume, which helps the aquifer recover and ensures that groundwater level decline over the next 20 years remains within a 10 m drawdown. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 9,200 (3,400-17,900) ML/yr, which is less than average use and the entitlement of 25,665 ML/yr.

Stratford GMA: The drawdown (as of 2020) compared to the pre-development date, 1978–1979, is 32.1 m. The average groundwater use since the pre-development date was 23,053 ML/yr, with a slightly lower average use of 22,625 ML/yr between 2016 and 2021. Verification of the synthesis results indicated that the statistical model-based 10 m drawdown volume does not align with the historical-based 10 m drawdown volume for this GMA. Moreover, Stratford is classified as moderate for model calibration and poor for the drawdown-use relationship. Therefore, the use-drawdown relationship could not be verified for this GMA and was not used to estimate the sustainable yield volume. Instead, the sustainable yield was estimated based on throughflow flux. The throughflow flux is 36,873 (22,082-50,588) ML/year, with 30% of this volume, equating to 11,100 (6,600-15,200) ML/year, considered as the SY volume, which is less than average use and the entitlement of 37,119 ML/yr. Groundwater is extracted for mine dewatering in this GMA, and the significant declining trend is attributed to this activity.

Giffard GMA: The possible external influence of offshore oil and gas extraction was not considered in the development of the use–drawdown relationship. As a result, the derived relationship was not accepted for this GMA. Moreover, the throughflow flux method was not adopted due to high uncertainty in potentiometric levels and not aligning with 10m drawdown volume. Therefore, no SY volume has been estimated for this area.

Orbost GMA: The drawdown (as of 2020) compared to the pre-development date, 2001–2002, is 0.4 m. Average groundwater use since the pre-development date was 315 ML/yr, and there was a slightly lower average use of 294 ML/yr between 2016 and 2021. The stabilised volume within the next 20 years is projected to be 3,000 ML/yr, which aligns with the lower uncertainty band of 10 m drawdown volume. Therefore, the proposed sustainable yield volume based on use-drawdown relationship is 3,000 (2,100-3,800) ML/yr, which is greater than average use and the entitlement of 1,216 ML/yr.

2.1.5. Uncertainty of the estimated sustainable yield volumes

As previously mentioned, for the GMUs where the stabilised volume is used to calculate the sustainable yield volume, the uncertainty band is derived from the uncertainty range of the statistical model–based 10 m drawdown volume. For the GMUs where throughflow flux is used to calculate the sustainable yield volume, the uncertainty band is estimated by the lower and upper ranges of the calculated throughflow flux within each GMU. **Table 3** presents the uncertainty band in both volume (ML/year) and percentages for GMUs assessed under the confined aquifer assessment. Some GMUs display high uncertainty bands, reflecting greater variability in the estimated sustainable yield volumes. For instance, Gerangamete GMA shows a significant range, with a 100% lower band and a 229% upper band, while Frankston GMA (85% lower band) and Newlingrook GMA (84% lower band) also exhibit considerable uncertainty. In contrast, Murrayville GMA demonstrate relatively low uncertainty, with a range of -9% to +10%, indicating higher confidence in the sustainable yield estimates. The average uncertainty band across all GMUs is -45% for the lower band and 46% for the

upper band, suggesting that, on average, the groundwater yield estimates have an acceptable level of uncertainty. We acknowledge the uncertainty and limitations arising from unlicensed bores are not included in the modelling process.

Table 3. Sustainable yield volume with uncertainty band in ML/year and percentage (%) for all confined GMUs

GMU	SY volume (ML/yr)	Lower band (ML/yr)	Upper band (ML/yr)	Lower band (%)	Upper band (%)
Murrayville GMA	10,400	9,500	11,400	-9%	10%
West Wimmera GMA – TCSA aquifer	1,100	900	1,300	-18%	18%
Katunga WSPA	23,900	19,300	28,700	-19%	20%
Gellibrand GMA	No SY volume	NA	NA	NA	NA
Condah WSPA	3,000	2,100	3,400	-30%	13%
Gerangamete GMA	No SY volume	NA	NA	NA	NA
Portland GMA	9,500	6,200	10,000	-35%	5%
Newlingrook GMA	2,000	300	2,800	-85%	40%
Paaratte GMA	2,500	1,200	3,800	-52%	52%
Glenelg GMA (revoked)	6,100	4,400	6,900	-28%	13%
Jan Juc GMA - LEVF	No SY volume	NA	NA	NA	NA
Frankston GMA	2,300	300	2,800	-87%	22%
Cut Paw Paw GMA	900	NA	NA	NA	NA
Corinella GMA	1,760	400	2,900	-77%	65%
Koo Wee Rup WSPA	4,700	1,950	9,150	-59%	95%
Moorabbin GMA	2,400	1,850	2,800	-23%	17%
Boneo GMA	1,200	NA	NA	NA	NA
Moe GMA	3,600	2,200	4,500	-39%	25%
Sale WSPA	14,300	12,600	18,100	-12%	27%
Rosedale GMA	5,700	3,000	10,100	-47%	77%
Yarram WSPA	9,200	3,400	17,900	-63%	95%
Stratford GMA	11,100	6,600	15,200	-41%	37%
Giffard GMA	No SY volume	NA	NA	NA	NA
Orbost GMA	3,000	2,100	3,800	-30%	27%
Average Percentage				**-42%**	**36%**

A visual representation of these uncertainty bands is also provided in **Figure 5**. It highlights GMUs such as Katunga WSPA, Mid Loddon GMA, Lower Campaspe Valley WSPA, Yarram WSPA, and Stratford GMA, where notable uncertainty is observed.

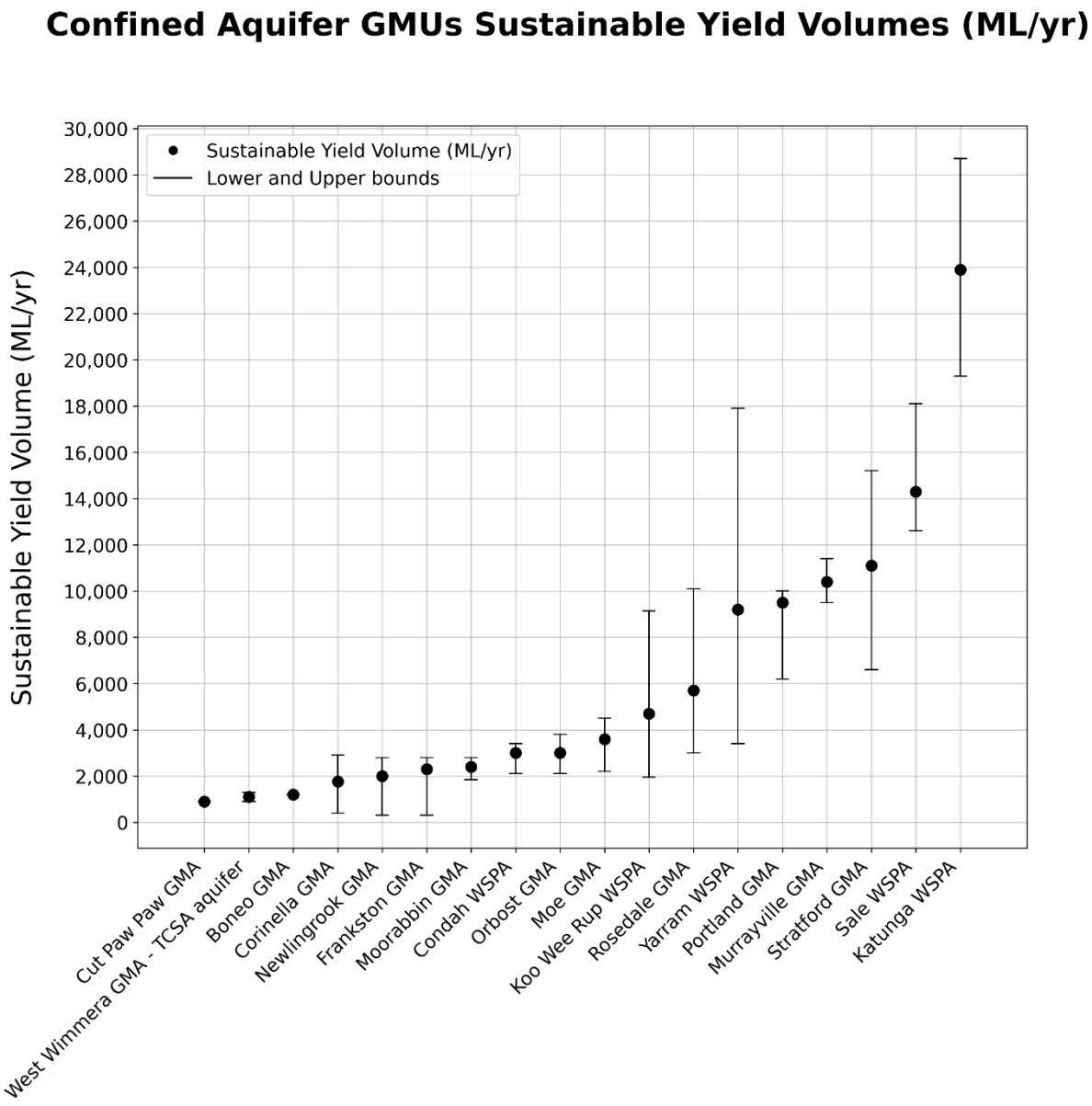

Figure 5. A visual presentation of the uncertainty bands

2.1.6. Calculating weighted percentage of throughflow flux

Step 7. Calculating the weighted percentage of throughflow flux

Of the 25 GMUs, 13 were considered to calculate the weighted percentage of the throughflow flux (**Table 4**). 10 GMUs were excluded from calculating the weighted average percentage of throughflow flux based on the following reasons, as follows:

- The zero usage in the Gellibrand GMU meant it was not possible to calculate a 10 m drawdown volume, therefore calculating the percentage of throughflow flux for a 10 m drawdown volume was not possible.
- The Orbost GMU, being small in size and covered by only one 5 × 5 km cell, was not possible calculate the percentage of throughflow flux for a 10 m drawdown volume.
- For the West Wimmera and Glenelg GMUs, most use occurred from the unconfined areas, and the use–drawdown relationship primarily represented the unconfined part of the GMU. Therefore, it was not possible to calculate a 10 m drawdown volume, and the percentage of throughflow flux for a 10 m drawdown volume.

- The throughflow fluxes in Corinella, Moorabbin and Koo Wee Rup GMUs are probably underestimated due to the cell size adopted by Jacobs. The groundwater level contour lines show high gradients in these GMUs. However, since the cell size is 5 × 5 km, it was not possible to define different cross-sections for each contour line to calculate the throughflow flux accurately.
- For Jan Juc GMA - LEVF, the modelled suite is L_X_2, which represents the LEVF. However, this suite does not cover the main extraction area in the GMU. Therefore, the developed use-drawdown relationship is not used to estimate the sustainable yield volume for the LEVF. Therefore, it was not possible to calculate a 10 m drawdown volume, and the percentage of throughflow flux for a 10 m drawdown volume.

Based on the 13 GMUs, the state-wide area-weighted average percentage of throughflow flux was 30%. Additionally, the groundwater basin area-weighted average percentage of throughflow flux was calculated as follows: 95% for the Mallee Basin, 55% for the North Central Basin, 10% for the Otway-Torquay Basin, 60% for the Central Basin, and 25% for the Gippsland Basin.

Table 4. The percentage of throughflow flux for 10 m drawdown volume for accepted GMUs

Groundwater Management Unit (GMU)	Suite/Aquifer	Percentage of throughflow flux for 10 m drawdown volume	GMU area (km^2)	Area-weighted average percentage of throughflow flux (%)
Mallee Basin				
Murrayville GMA	M_AC_2 / UMTA (TLA) aquifer	95%	1,918	95%
North Central Basin				
Mid Loddon GMA	M_F_2 (Most rep. Suite) / UTAF aquifer	31%	2,323	55%
Katunga WSPA	M_I_2 (Most rep. Suite) / UTAF aquifer	25%	2,116	
Lower Campaspe Valley WSPA	M_H_1 (Most rep. Suite) / UTAF aquifer	110%	2,154	
Otway–Torquay Basin				
Newlingrook GMA	L_AA_99 / LTA aquifer	4%	447	10%
Paaratte GMA	L_AA_99 / LTA aquifer	4%	1,346	
Portland GMA	L_C_1 (Most rep. Suite) / LTA aquifer	8%	3,974	
Condah WSPA	L_A_1 (Most rep. Suite) / LMTA aquifer	17%	975	
Central Basin				
Frankston GMA	L_U_1 (Most rep. Suite) / LTA aquifer	71%	142	71%
Gippsland Basin				
Moe GMA	L_Q_1 (Most rep. Suite) / LTBa aquifer	10%	358	25%

Rosedale GMA	M_O_2 / UTAF aquifer	9%	2,643	
Yarram WSPA	L_O_2 / LTA aquifer	13%	2,595	
Sale WSPA	M_O_1 (Most rep. Suite) / UTAF aquifer	74%	1,739	
The State-wide area-weighted average percentage of throughflow flux				**30%**

2.2. Confined UAs

In many areas across the state, there is no licensed take and no use, making it impossible to develop drawdown-use relationships. These areas generally occur in UAs, areas where a GMA has not been established. The method applied in these areas relies on calculating the sustainable yield using Darcy's law through the estimation of throughflow volumes based on predevelopment potentiometry in these areas. The key question is: how much of the throughflow flux should be considered as the sustainable yield volume? The 30% weighted average percentage of throughflow flux figure was used for estimating the sustainable yield for all confined UAs across the state. **Figure 6** shows the location of all confined UAs across the state. **Appendix 3** presents the calculated sustainable yield for all UAs along with contextual information, such as the aquifer type and average use and entitlement, if available. It also presents synthesised results and sustainable yield volumes. Table 5, which shows synthesised results for LTA-NW1 UA, is provided as an example of the data provided in **Appendix 3**.

Table 6 presents the estimated sustainable yield for all confined UAs along with their uncertainty bands across the state. A visual representation of these uncertainty bands is provided in **Figure 7,** highlighting UAs such as LTA-SW3, and LMTA-SW2-A, where notable uncertainty exists.

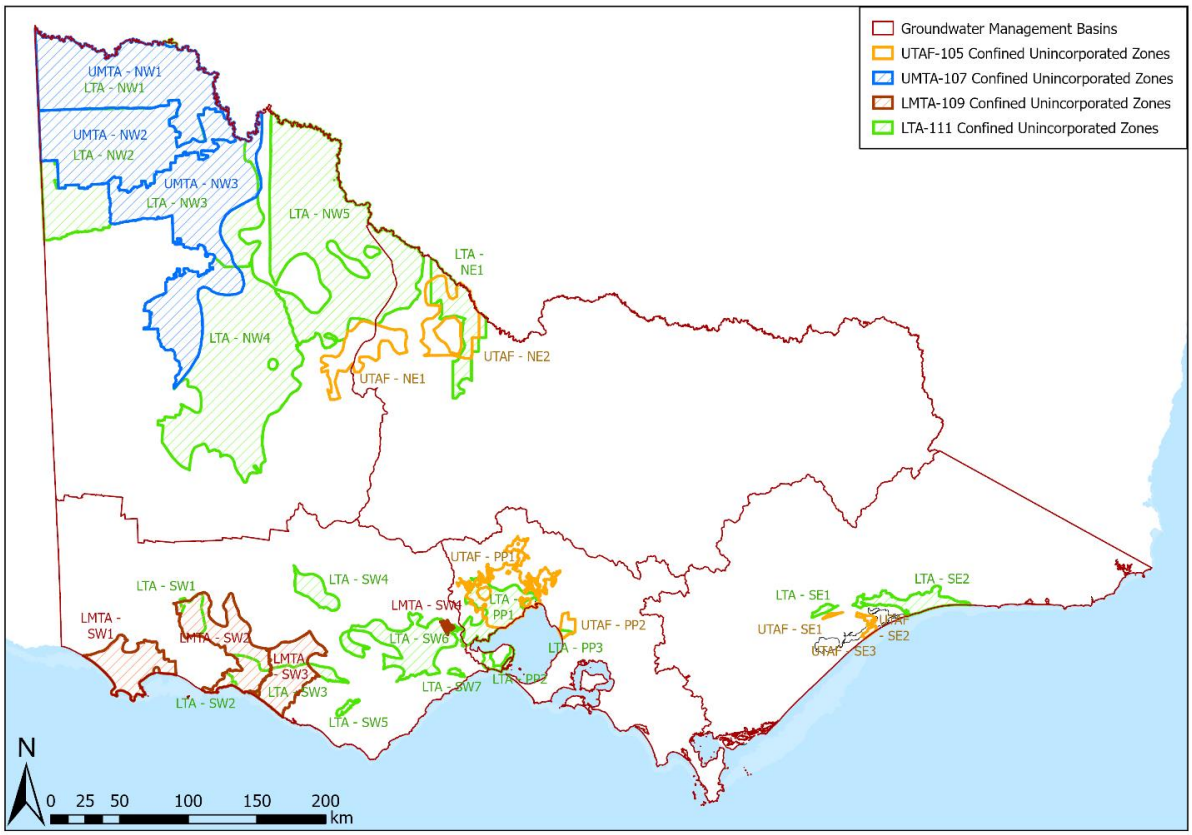

Figure 6. Location of all confined UAs across the state

Table 5. Synthesis information for the Unincorporated Area LTA-NW1

Assessment area	Unincorporated Area	LTA-NW1
	Aquifer	LTA
Context	Licensed entitlement (ML/yr)	0
	Licensed average use (ML/yr)	0
Synthesis results	Pre-development throughflow flux (ML/yr) (lower band–upper band)	2,670 (NA)

Table 6. Proposed sustainable yield for confined UAs across the state

Unincorporated Area	Throughflow flux volume (ML/yr) (lower band–upper band)	Sustainable yield volume (ML/yr) (lower band–upper band)
Wimmera–Mallee		
UTAF-NE1	13,682 (6,714 - 20,650)	4,100 (2,000 – 6,200)
UMTA-NW1	3,545 (1,431 - 5,659)	1,100 (400 – 1,700)
UMTA-NW2	12,441 (NA)	3,700 (NA)
UMTA-NW3	7,848 (NA)	2,400 (NA)
LTA-NW1	2,670 (NA)	800 (NA)
LTA-NW2	2,488 (NA)	700 (NA)
LTA-NW3	2,674 (2,446 - 2,910)	800 (700 – 900)
LTA-NW4	2,763 (2,316 - 3,251)	800 (700 – 1,000)
LTA-NW5	23,619 (19,287 - 27,554)	7,100 (5,800 – 8,300)
Goulburn–Murray		
UTAF – NE2	5,714 (5,467- 5,961)	1,700 (1,600 – 1,800)
LTA – NE1	6,339 (2,790 - 8,774)	1,900 (800 – 2,600)
Otway–Torquay		
LMTA-SW1	7,491 (5,567- 9,415)	2,200 (1,700 – 2,800)
LMTA-SW2-A	11,965 (3,443- 26,104)	3,600 (1,000 – 7,800)
LMTA-SW2-B	14,188 (4,204 - 23,127)	4,300 (1,300 – 7,000)
LMTA-SW3	5,824 (2,559- 7,561)	1,700 (700 – 2,300)
LMTA-SW4	*-	-
LTA-SW1	12,288 (NA)	3,700 (NA)
LTA-SW2	14,051 (6,632- 21,470)	4,200 (2,000 – 6,400)
LTA-SW3	90,701 (25,216- 133,253)	27,200 (7,600 – 40,000)
LTA-SW4	17,060 (9,939- 21,541)	5,100 (3,000 – 6,500)
LTA-SW5	*-	-
LTA-SW6	45,950 (39,652- 52,248)	13,800 (12,000 – 15,700)
LTA-SW7	*-	-
Central		
UTAF-PP2	374 (NA)	100 (NA)
UTAF-PP1	1,766 (802-2,600)	500 (200 – 800)
LTA-PP1	21,886 (16,867- 26,165)	6,600 (5,100 – 7,800)
LTA-PP2	45,745 (NA)	13,700 (NA)
LTA-PP3	*-	-

Unincorporated Area	Throughflow flux volume (ML/yr) (lower band–upper band)	Sustainable yield volume (ML/yr) (lower band–upper band)
Gippsland		
UTAF – SE1	*-	-
UTAF – SE2	*-	-
UTAF – SE3	*-	-
LTA – SE1	*-	-
LTA – SE2	499 (444 - 554)	150 (100 – 200)

* It is not possible to calculate the throughflow flux for these UAs due to their small size.

a.

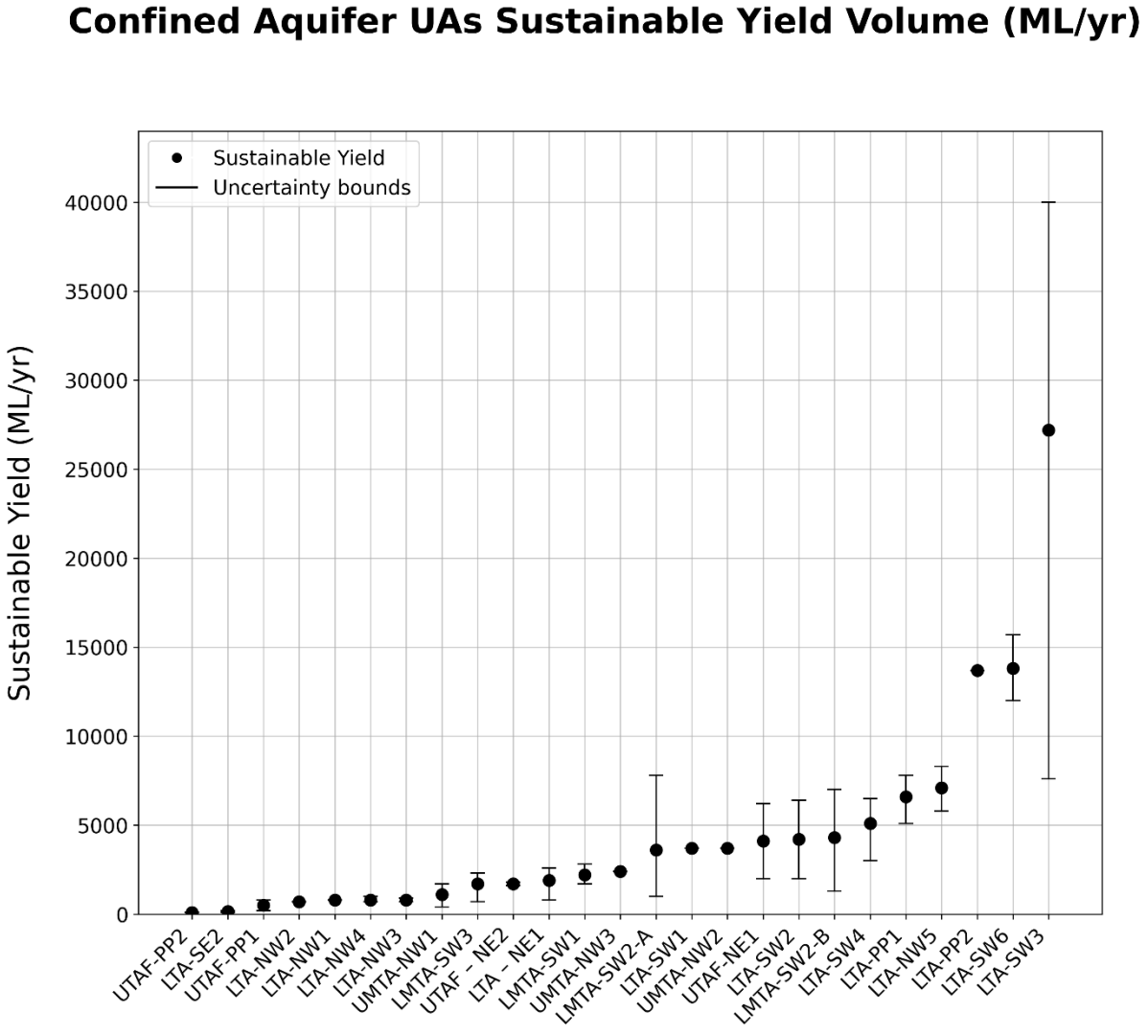

Figure 7. A visual presentation of the uncertainty bands

3. Unconfined aquifer synthesis

Detailed results and estimates of the sustainable yield volume for unconfined aquifers are provided for all GMUs and UAs across the state.

To compile and review the calculated sustainable yield volumes for unconfined aquifers in each GMU across the state the following steps were undertaken:

1. Drawdown–use relationships were developed from the statistical modelling (report by CDM Smith, 2024).
2. Recharge volumes were estimated for GMUs and UAs (report by CDM Smith, 2024).
3. The results were synthesised and calculated for each assessed value in each (report by CDM Smith, 2024).
4. The synthesised results were verified against historical average use and drawdown.
5. Sustainable yield was estimated for each GMU.
6. Sustainable yields were classified against historical average use and entitlements to assess the risk to the resource.

Once we estimated sustainable yield volumes for all GMUs, the following steps were taken to estimate sustainable yield volumes for UAs:

7. Sustainable yield volumes were calculated for UAs based on a percentage of recharge in the GMUs where drawdown-use relationships were accepted. The percentage of recharge applied was based on analysis of aquifer type (volcanics, sedimentary, or bedrock) and on region and land use (irrigated/non-irrigated).
8. The state-wide average of the non-irrigated recharge percentage was used to estimate sustainable yield for all UAs.
9. The UAs are defined by the Winterfill sustainable diversion limit areas (SDLs).

These steps are described below for GMUs (**Section 3.1**) and UAs (**Section 3.2**).

3.1. GMUs

3.1.1. Assessment Method

Developing drawdown–use relationship using statistical modelling

The unconfined statistical modelling provided results for 32 climate and use scenario combinations which were used to develop the drawdown-use-climate relationships. Each climate change scenario had its own relationship developed with four resulting drawdown-use relationships for:

- No climate change scenario (current climate modelled into the future),
- Low climate change scenario,
- Medium climate change scenario, and
- High climate change scenario.

Equations are developed with the assumption that at pre-development there is zero use and zero drawdown. These drawdown-use relationships were then plotted. From these graphs the sustainable yield volume and range could be determined for each value and metric. For each modelled drawdown-use relationship a recharge-use relationship was also developed. These two relationships form the basis of the synthesised results for the unconfined GMUs.

Drawdown-use relationships were developed for 47 GMUs. Drawdown-use relationships could not be developed for 3 GMUs/GMU zones (West Wimmera Big Desert and Little Desert zones and Gellibrand GMA) where there is no use.

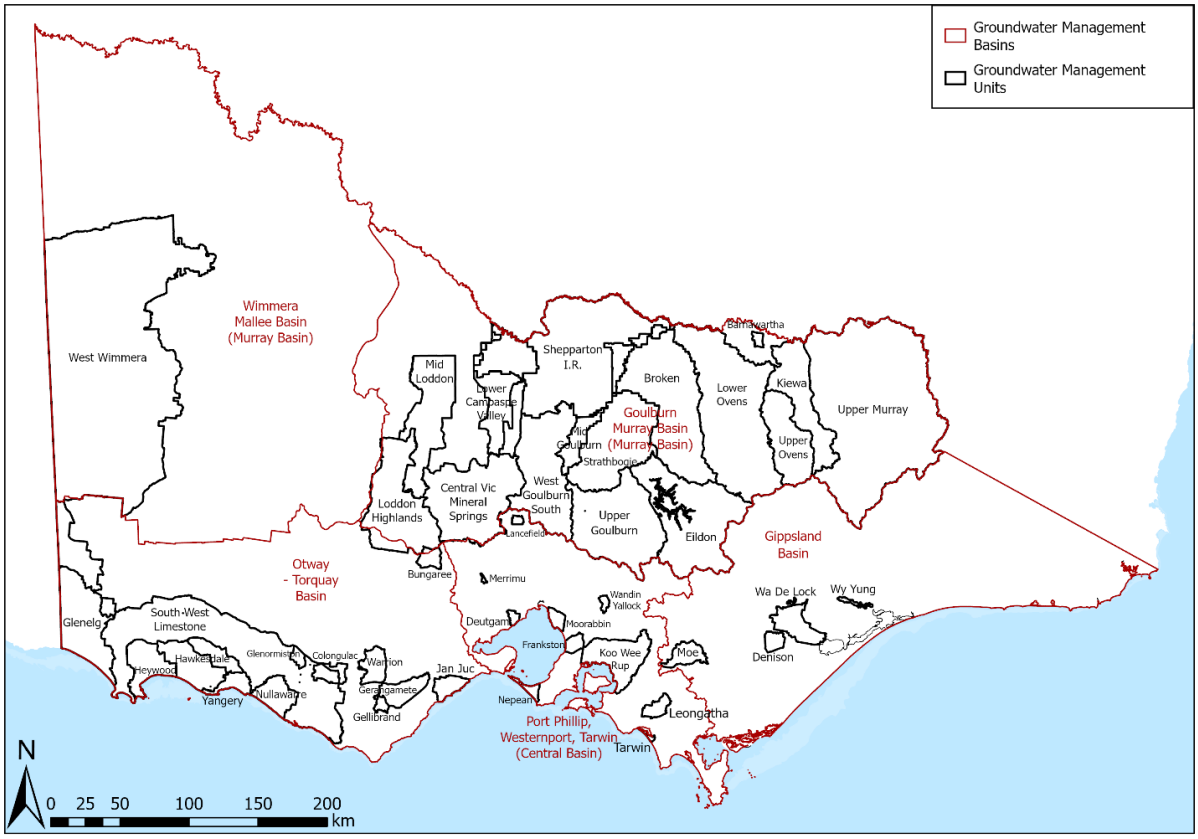

Figure 8. Statewide map of unconfined GMUs and groundwater basins.

Estimating recharge volumes

Recharge volumes were estimated statewide and calculated for all GMUs and areas outside of the GMUs using surface water catchments using the Winterfill SDL areas (**Figure 9**) as the unit of reporting.

The percentage of recharge used to calculate the sustainable yield volume was determined by comparing the recharge volumes against the GMU sustainable yield volumes for areas where the drawdown-use relationship result was accepted. Only non-irrigated areas were used to estimate this percentage of recharge as most of the UAs are in the highlands where there is no irrigation. The percentage of recharge was determined for each aquifer type (bedrock, volcanics, or sedimentary) to provide the basis for the UA SY Volume calculation.

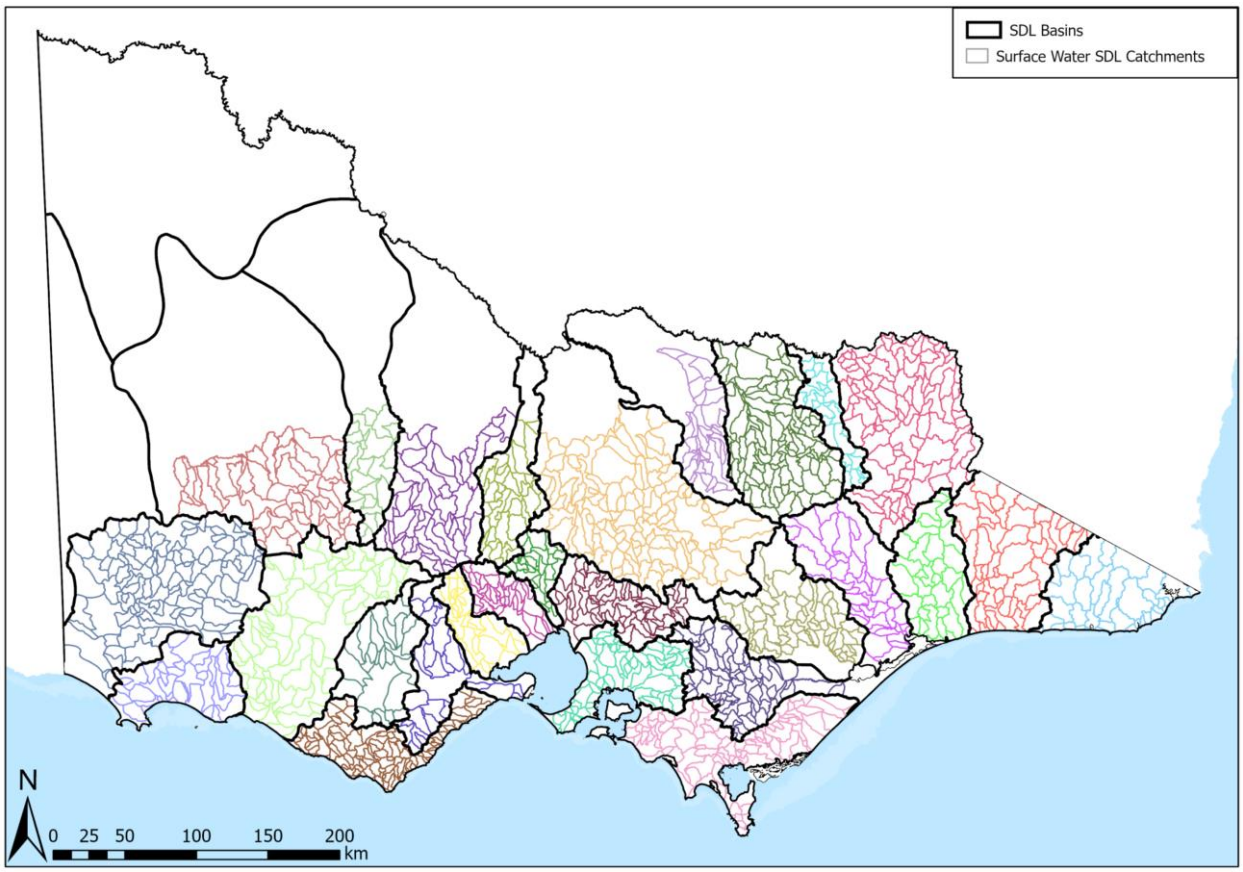

Figure 9. Surface water Winterfill Sustainable Diversion Limit catchments shown against major river basins.

3.1.2. Synthesis example for GMUs

Only key results for each GMU are presented in this report.

The synthesised results for GMUs includes:

1. Sustainable yield volume using drawdown-use relationships calculated for a 2m drawdown for each GMU for climate scenarios for 2040 (described further below).
2. Assessment of the risk of seawater intrusion for coastal GMUs using drawdown-use relationships for climate scenarios for 2040.
3. Assessment of the risk to waterways from groundwater use, with the sustainable yield volume compared to waterway flow metrics (10% of Mean Annual Flow) Complete results are included in the synthesised tables in **Appendix 4**.

The values assessed for each GMU are summarised and tabulated in **Table A1 - A6** with a description of the values assessed in **Section 4.1** of Sustainable Yield Project: Methodology Report (DEECA, 2024).

The GMU scale sustainable yield volume is calculated as follows:

- Sustainable yield is the volume derived from the statistical method for each area (GMA) relating to the value's metric, including GMU scale (2 m drawdown), consumptive use (2 m drawdown), environmental (2 m drawdown), waterways (2 m drawdown and <10% MAF/Q90) and seawater intrusion (1.5 mAHD). It requires consideration of current climate (1998–2020) and the low, medium and high climate scenarios in 2040 and 2065.
- The drawdown metric is an average of drawdown for each grid cell for the relevant values across each GMU.

- The drawdown in each grid cell is an average of the maximum recovered levels for each reporting period for GMU scale. The assessment used this method to avoid using results from any ‘one’ year which may be either a very wet or very dry year. This means results represent the longer-term variability not annual seasonality in groundwater levels.
- The recommended sustainable yield volume is taken from the current climate (or “no climate change”) scenario for 2021-40, which includes the Millenium drought climate sequence in the modelled scenario. This is referred to as the SY 2040 (noCC) result.
- The range in the recommended sustainable yield volume is taken from the low and high climate change volumes for 2021-40 for a 2m drawdown.
- Uncertainty estimates are not available for the calculated sustainable yield volumes. Uncertainty assessments would require extensive modelling that was not within the project scope or timeframe.
- The sustainable yield volume lower and upper bands from climate change scenarios are taken as indicative range of the sustainable yield volume.

An example of the synthesised outputs for the Barnawatha GMU is provided below (**Figure 10** and **Table 7**), showing the basic drawdown-use and recharge relationships developed from synthesis of the results. Additional relationships were developed for each dependent value for each GMU. These are all plotted and shown in **Appendix 5**.

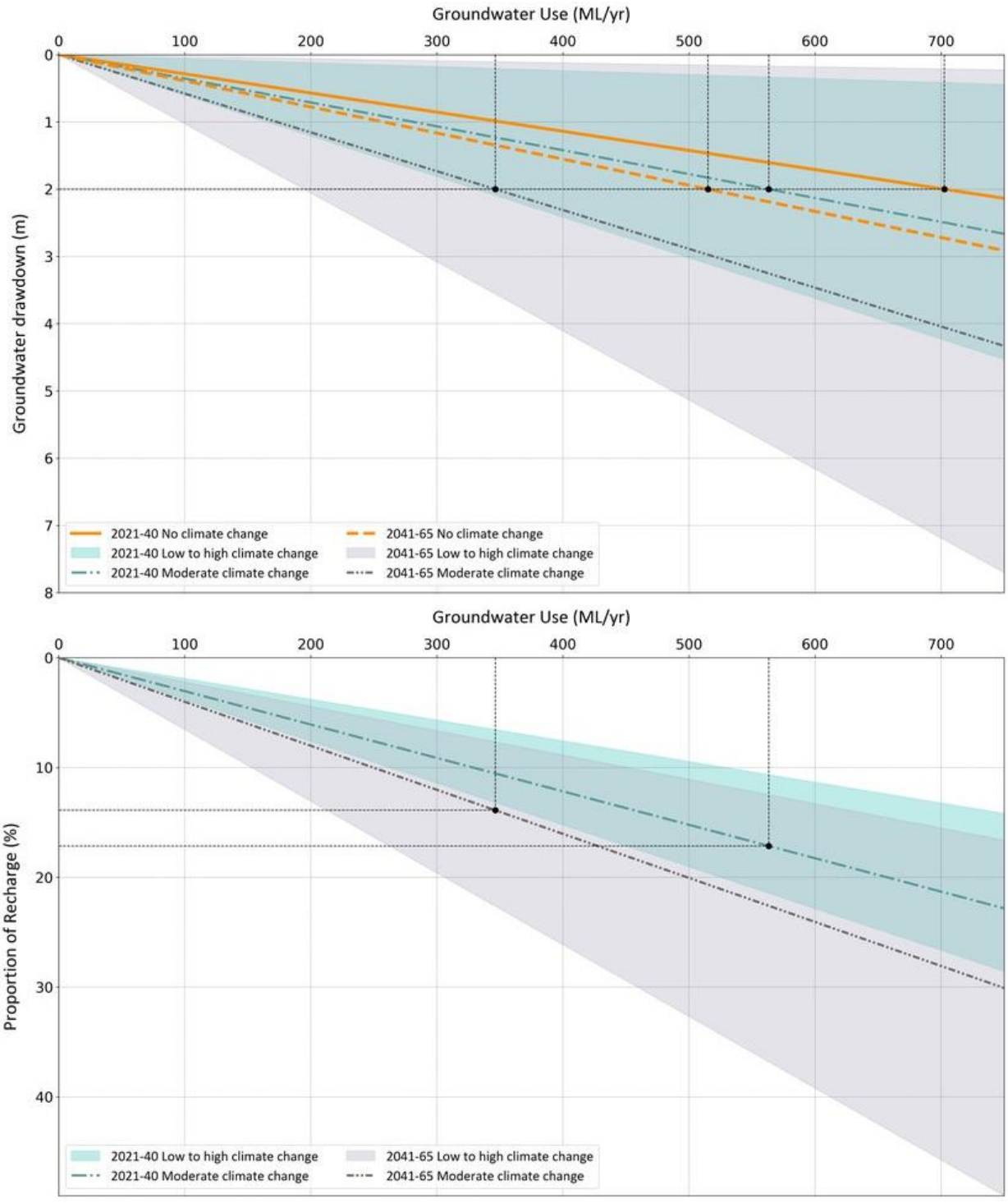

Figure 10. visual representation of the synthesised information for the Barnawatha GMA

Table 7. Drawdown-use at GMU scale synthesis results summary table for Barnawartha GMA

Assessment area	**GMU**					Barnawartha GMA
	Representative Suite/bore					WRK053314
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All depths
Catchment	**Permissible Consumptive Volume (ML/yr)**					2,100
	Licensed Entitlement (ML/yr)					61
	Licensed avg use (ML/yr)					375
Synthesis results	**All dependent values**	Avg Use 7 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	1.8 (-0.55 to 3.4)
			2041-2065	Drawdown from baseline (m)	No CC	2.1
					MCC (LCC to HCC)	2.1 (-0.34 to 5.9)
		PCV use 375 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
					MCC (LCC to HCC)	2.0 (0.22 to 3.6)
			2041-2065	Drawdown from baseline (m)	No CC	2.1
					MCC (LCC to HCC)	3.3 (-0.06 to 6.1)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	351
					MCC (HCC to LCC)	282 (166 to 1,702)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	8.57% (6.30% to 32.15%)
			2041-2065	Volume (ML/yr)	No CC	258
					MCC (HCC to LCC)	173 (97 to 3,325)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	6.95% (6.36% to 73.67%)
		Use at 2 metre drawdowns	2021-2040	Volume (ML/yr)	No CC	703
					MCC (HCC to LCC)	563 (331 to 3,403)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	17.14% (12.60% to 64.29%)
			2041-2065	Volume (ML/yr)	No CC	515
					MCC (HCC to LCC)	346 (195 to 6,649)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	13.89% (12.72% to 147.33%)

The risk of seawater intrusion differs from the GMU scale sustainable yield calculated volume in the following ways:

- The drawdown for seawater intrusion is taken from the minimum water levels for the reporting period within 1km of the coastline (i.e. one grid cell).
- The sustainable yield volume calculated is the volume of take allowable within 1km of the coastline, not for the entire GMU.

3.1.3. Verifying results

Criteria for validation of method and results by CDM Smith entailed:

- Statistical models were verified using the Coefficient of Efficiency (CoE) as a measure of the calibration.
  - Models including pumping and climate influences were used if the CoE > 0.7, with 24 of the 27 models meeting this criterion.
  - Models with climate only were used if the CoE > 0.3. Visual inspection of the hydrographs was used to further verify the outputs as typically a CoE of 0.3 would not be accepted.
- Spatial representation of the areas of groundwater use, and different climate zones was important to ensure the models were representative of all areas of the state.
  - 15 of the 19 high use GMUs were explicitly modelled, with only Central Victorian Mineral Springs, Nepean, Mid-Goulburn and Shepparton GMUs not explicitly modelled.
  - All climate regions and groundwater systems were represented in the statistical models.
- Modelled results were reviewed against prior works including depth to watertable maps and recharge rates.
- Recharge rates were reviewed against annual rainfall rates (mm/yr) for different land uses (especially irrigation districts).

The verification criteria applied to the SY results by DEECA is shown in **Figure 11**.

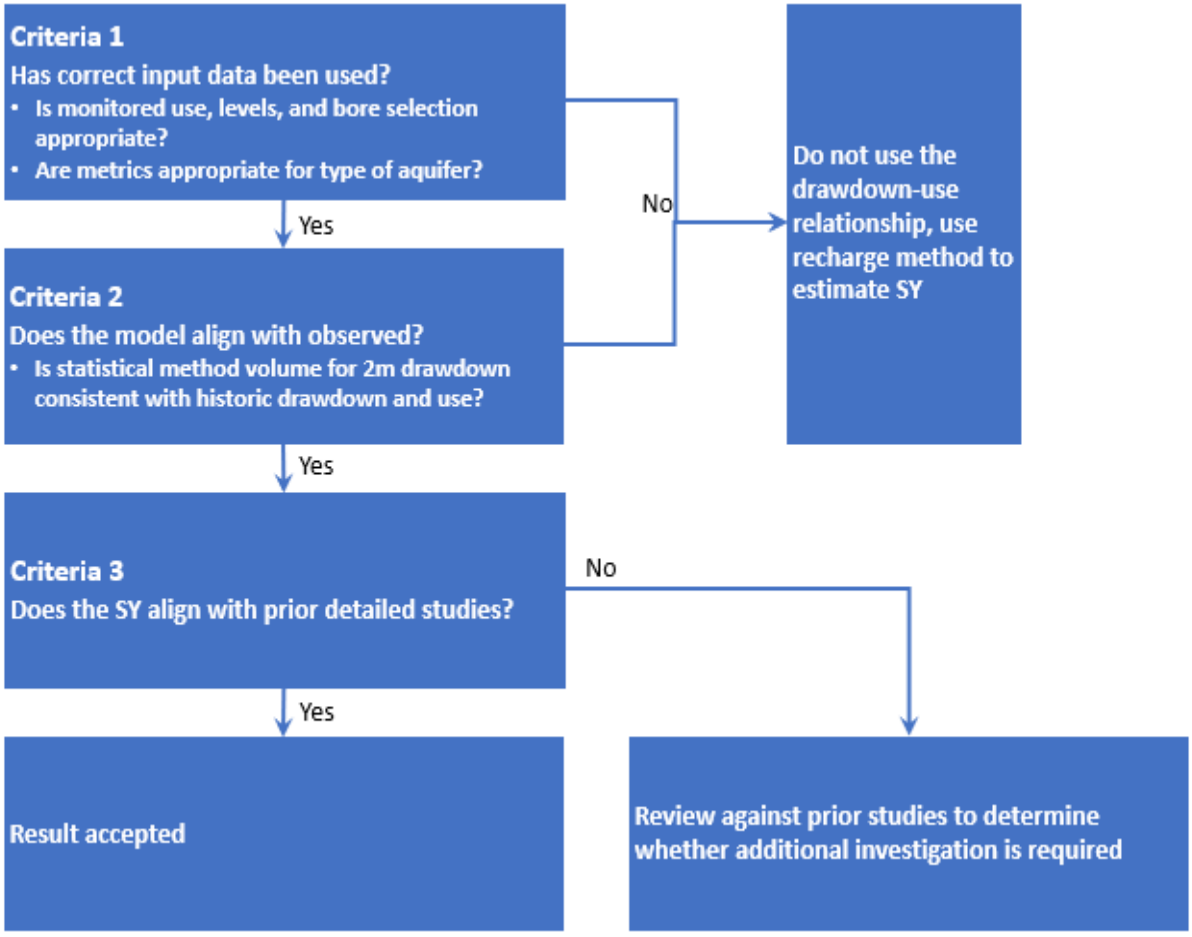

Figure 11. Criteria used to verify the unconfined aquifer sustainable yield volume results

Where the drawdown-use relationship is not accepted a percentage of recharge volumes are used to estimate the sustainable yield volumes in these GMUs. In some areas where sustainable yield volumes exceed the waterways flow metrics and/or results require more certainty further studies have

been recommended. In areas where more detailed studies are underway no sustainable yield volume has been recommended, pending the results of those studies.

High Use GMUs – discussion of criteria

Only one area was not accepted under criteria 1 (incorrect data usage): Neuarpur zone of West Wimmera GMA, due to incorrect assignment of bores to the zone. Prior studies were used to estimate the sustainable yield volume for this zone.

The areas that were not accepted under criteria 2 due to modelled volumes exceeding historic use and drawdown are: Glenelg GMA, Mid Goulburn GMA, and Shepparton IR. Recharge percentages were used from the statewide averages for these GMAs. In Shepparton Irrigation Region a sustainable yield estimate was not calculated as there is no need to restrict use in an area where the primary purpose is to keep watertables low to manage the risk of land salinisation.

The Lower Ovens GMA was not accepted under criteria 1 after further reviews identified incorrect assignment of usage data and monitoring bores for the modelling. This GMA has been identified as requiring additional studies.

The 4 GMUs (Hawkesdale GMA, Heywood GMA, Nullawarre GMA and Yangery GMA) in the Southwest were not accepted under criteria 2 due to modelled volumes exceeding historic drawdown. A sustainable yield volume could not be estimated for these GMUs as the recharge volumes were also not accepted. These have been identified as requiring additional studies.

Low Use GMUs – discussion of criteria

In the West Wimmera GMA, each zone has been reported on. The drawdown-use relationship for the Northern Zone was accepted, but not for the four other zones due to limited data on use or results being inconsistent with historic use and drawdown.

There was no groundwater level data for Broken GMA, Eildon GMA, Kiewa GMA, West Goulburn GMA and Upper Murray GMA. In these areas, and other highlands GMUs (Strathbogie, Upper Goulburn, and West Goulburn), recharge percentage excluding the bedrock outcrop areas was used.

In the Tarwin GMA drawdown-use estimates did not match historic use and drawdown and sustainable yield estimate is based on percentage of recharge. In Glenormiston there were no monitoring bores from which to validate a drawdown-use estimate so recharge volumes were used to calculate the sustainable yield volume. Because the recharge volumes in South West had not been accepted (as per other 4 GMUs) the sustainable yield volume was not accepted and further studies are required for Glenormiston GMA.

Gellibrand, Gerangamete and Jan Juc were assessed but the sustainable yield volumes were not accepted as there are more detailed studies available (Criteria 3) to estimate sustainable yield volumes with.

3.1.4. Estimated sustainable yield volume

The estimated sustainable yield volume for each unconfined GMU is summarised in **Table 8** and **Table 9**.

The results are split into two categories: high and low use which is defined by those GMUs with average use > 3700 ML/yr and those less than. The criteria were based on setting a limit that included 75% of total use in the unconfined GMUs.

Where results were accepted the sustainable yield volume is calculated from either the drawdown-use relationship or a percentage of recharge volumes. For four of the GMUs the drawdown/use relationship from the confined assessment has been used as the target aquifers are confined (Koo Wee Rup, Glenelg, Frankston and Moorabbin GMUs). Only one area has prior studies to inform a volume (Neuarpur zone in West Wimmera GMA) and there are nine areas without a sustainable yield volume, eight of which require further assessment. Shepparton IR does not have a proposed sustainable yield:

- Jan Juc GMA - UEVF, Gerangamete GMA, and Gellibrand GMA will be assessed using results from more detailed studies that are currently underway

- Shepparton does not require a sustainable yield volume
- Heywood, Hawkesdale, Nullawarre, Yangery and Glenormiston GMUs require further assessment due to risk to waterways from groundwater use and high climate sensitivity.
- Lower Ovens GMA requires further assessment to increase certainty in the result, given risk to waterways from groundwater use.

Table 8. Sustainable yield volumes for unconfined GMUs by region for 2m drawdown metric for High Use GMUs (average use 2016-21) > 3700 ML/yr

GMU	Calculated DD/use/climate volume (ML/yr) (uncertainty band (ML/yr) taken from low to high climate change range)	Average historic drawdown between 1998-2020 and 1975-97 (m)	Current use (m)	2m drawdown volume (ML/year) based on observed use & drawdown	Climate sensitivity (% drawdown due to other) (current climate)	Method accepted (Y/N) Comment	SY volume (ML/yr)
Mallee							
West Wimmera - Neuarpur Zone	840 (380 - 1560)	2.2m	13,860	12,320	61%	N Criteria 1 Prior studies (Xiang et al, 2019) indicate historic use sustainable.	14,000
North Central							
Central Victorian Mineral Springs GMA	2,750 (1,630-3,770)	1.0	1,154	2,617	35%	Y	2,800
Loddon Highlands WSPA	10,100 (5,800 - 13,200)	1.82	7,407	8,134	41%	Y	10,100
Lower Campaspe Valley WSPA	33,690 (24,900 - 40,950)	1.7	38,225	44,970	44%	Y	33,700
Lower Ovens GMA	15,500 (9,400-22,800)	1.1	8,948	16,269	57%	N Criteria 1 Further studies required.	No SY

GMU	Calculated DD/use/climate volume (ML/yr) (uncertainty band (ML/yr) taken from low to high climate change range)	Average historic drawdown between 1998-2020 and 1975-97 (m)	Current use (m)	2m drawdown volume (ML/year) based on observed use & drawdown	Climate sensitivity (% drawdown due to other) (current climate)	Method accepted (Y/N) Comment	SY volume (ML/yr)
Mid Goulburn GMA	24,200 (16,700 - 29,000)	2.1	3,535	3,367	72%	N Criteria 2 Recharge volume used.	4,500
Mid Loddon GMA	19,880 (12,060 - 25,700)	2.5	21,450	17,160	27%	Y	19,900
Shepparton Irrigation Region	233,800 (164,200 - 281,350)	2.9	86,860	59,904	94%	N Criteria 3. Method not appropriate for salinity management.	No SY recommended
Gippsland							
Denison GMA	15,160 (11,500-19,080)	1.2	7,679	12,798	39%	Y	15,200
Wa De Lock GMA	43,500 (31,800-57,180)	0.4	7,750	38,750	88%	Y	43,500
Central							
Deutgam WSPA	5,480 (3,350-7,130)	0.8	625	1,563	15%	Y	5,500

GMU	Calculated DD/use/climate volume (ML/yr) (uncertainty band (ML/yr) taken from low to high climate change range)	Average historic drawdown between 1998-2020 and 1975-97 (m)	Current use (m)	2m drawdown volume (ML/year) based on observed use & drawdown	Climate sensitivity (% drawdown due to other) (current climate)	Method accepted (Y/N) Comment	SY volume (ML/yr)
Koo Wee Rup WSPA	13,340 (7,000 - 20,340)	0.7	4,355	12,443	33%	N Criteria 1 Confined dd/use model & throughflow used	4,700 See confined use section.
Nepean GMA	2,950 (2,150-3,540)	2.0	2,812 metered use	2,800	61%	Y.	3,000
South West							
Glenelg WSPA	121,613 (46,600-185,116)	0.5	5,957	23,828	46%	N Criteria 2 Confined DD/Use model used.	6,100 See confined aquifer section
Hawkesdale GMA	38,200 (15,500 - 85,600)	0.5	5,040	20,000	34%	N. Criteria 2.	No SY
Nullawarre WSPA	82,000 (22,850-460,000)	1.3	10,909	16,780	1%	N. Criteria 2.	No SY
Warrion WSPA	10,250 (5,500-15,300)	0.9	3,555	7,900	88%	Y	10,200
Yangery WSPA	45,500 (15,870-119,000)	0.4	4,295	17,500	33%	N. Criteria 2.	No SY

Table 9. Sustainable yield volumes for unconfined GMUs by region for 2m drawdown metric for Low Use GMUs (average use 2016-21 < 3700 ML/yr)

GMU	Calculated DD/use/climate volume (ML/yr) (uncertainty band (ML/yr) taken from low to high climate change range)	Average drawdown between 1998-2020 and 1975-97 (m)	Current use (m)	2m drawdown volume (ML/year) based on observed use & drawdown	Climate sensitivity (% dd due to other) (current climate)	Method accepted (Y/N) Comment	SY Volume (ML/yr)
West Wimmera							
Big Desert Zone	No drawdown use relationship. Recharge volume = 6900 ML	0.31 modelled	0	n.a	43%	N Criteria 1 Recharge volume used.	6,900 (5,600-9,700)
Gymbowen Zone	180 (107-260)	?	232	?	34%	N Criteria 1 Recharge volume used	1800 (1,700-3,100)
Little Desert Zone	No drawdown use relationship. Recharge volume = 1200	0.49 modelled	0	n.a	62%	N Criteria 1 Recharge volume used	1,200 (1,000 – 2,100)
Northern Zone	18,600 (9,190-31,020)	0.37 modelled	1,097	5,930	80%	Y.	18,600
Southern Zone	8,200 (4,640-12,530)	0.75 modelled	1,950	5,648	31%	N Criteria 1. Recharge volume used.	5,800 (4,500-6,600)

GMU	Calculated DD/use/climate volume (ML/yr) (uncertainty band (ML/yr) taken from low to high climate change range)	Average drawdown between 1998-2020 and 1975-97 (m)	Current use (m)	2m drawdown volume (ML/year) based on observed use & drawdown	Climate sensitivity (% dd due to other) (current climate)	Method accepted (Y/N) Comment	SY Volume (ML/yr)
North Central							
Barnawartha GMA	700 (330-3,400)	1.7	61	72	43%	Y	700
Broken GMA	4,190 (2,430-5,290)	n.a	1217	n.a	87%	N Criteria 1 No data to validate against. Recharge volume used.	6,300 (6,300 – 10,200)
Cardigan GMA	2,080 (1,120-2,910)	2.1	895	852	91%	Y	2080
Eildon GMA	290 (190-380)	n.a	200	n.a	65%	N Criteria 1 - No data to validate against. Recharge volume excl. highlands used.	1,400 (1,400-2,200)
Kiewa GMA	2,160 (1,325 – 3,520)	n.a	876	n.a	51%	Y No data to validate against.	2160
Lancefield GMA	920 (520 –1,400)	0.6	303	1,010	32%	Y	900 (500-1,400)

GMU	Calculated DD/use/climate volume (ML/yr) (uncertainty band (ML/yr) taken from low to high climate change range)	Average drawdown between 1998-2020 and 1975-97 (m)	Current use (m)	2m drawdown volume (ML/year) based on observed use & drawdown	Climate sensitivity (% dd due to other) (current climate)	Method accepted (Y/N) Comment	SY Volume (ML/yr)
Strathbogie GMA	1,000 (650 – 1,350)	0.5	974	3,896	71%	N Criteria 2 Recharge volume excl. highlands used.	4,800 (4,800-7,300)
Upper Goulburn GMA	3,350 (2,190-4,470)	0.6	1,992	6,640	51%	N Criteria 2. Recharge volume excl highlands used.	3,500 (3,300-5,800)
Upper Murray GMA	1,930 (1,250-2,800)	n.a	814	n.a	60%	N Criteria 1 Recharge volume excl highlands used.	9,300 (5,300-9,300)
Upper Ovens WSPA	2,260 (1,460-3,270)	0.25	1317	10,536	55%	Y	2,260

GMU	Calculated DD/use/climate volume (ML/yr) (uncertainty band (ML/yr) taken from low to high climate change range)	Average drawdown between 1998-2020 and 1975-97 (m)	Current use (m)	2m drawdown volume (ML/year) based on observed use & drawdown	Climate sensitivity (% dd due to other) (current climate)	Method accepted (Y/N) Comment	SY Volume (ML/yr)
West Goulburn GMA	71,000 (49,700-86,700)	n.a	1,359	n.a	88%	N Criteria 1 No data to validate against. Recharge volume excl highlands used.	6,800 (5,600 – 9,100)
Gippsland							
Moe GMA (confined and unconfined aquifer assessments)	2,370 (1,550 – 3,000)	0.2	858	8,580	48%	Y Unconfined Aquifer SY volume	2,400
Leongatha GMA	1,880 (1,075 – 2,690)	1.0	184	368	62%	Y	1,900
Tarwin GMA	80 (50-105)	0.1	10 ML metered use	11,700	20%	N Criteria 2 Recharge volume used.	300 (250-350)
Wy Yung GMA	22,000 (14,600 - 34,000)	0.4	970	4,850	84%	N Criteria 2	No SY

GMU	Calculated DD/use/climate volume (ML/yr) (uncertainty band (ML/yr) taken from low to high climate change range)	Average drawdown between 1998-2020 and 1975-97 (m)	Current use (m)	2m drawdown volume (ML/year) based on observed use & drawdown	Climate sensitivity (% dd due to other) (current climate)	Method accepted (Y/N) Comment	SY Volume (ML/yr)
Central							
Bungaree GMA	2,800 (1,600-3,910)	1.07	2700	5,047	89%	Y	2,800
Frankston GMA	1,140 (535-1,970)	0.5	418	1,672	30%	N Criteria 1 Confined use/dd method used.	2,300 See confined aquifer section
Moorabbin GMA	440 (210 - 755)	1.0	1238	2,476	15%	N Criteria 1 Confined dd/use method used.	2,400 See confined aquifer section
Wandin Yallock GMA	2,000 (1,140-2,800)	0.8	638	1,595	88%	Y	2000
Southwest							
Colongulac GMA	4,610 (1,240 - 75,400)	0.63	1,331	4,225	91%	Y	4,600
Gellibrand GMA	No drawdown-use relationship	1.4	0	n.a	96%	N Criteria 3	No SY
Gerangamete GMA*	4 (3 - 5)	4.5	375	167	87%	N Criteria 3	No SY

GMU	Calculated DD/use/climate volume (ML/yr) (uncertainty band (ML/yr) taken from low to high climate change range)	Average drawdown between 1998-2020 and 1975-97 (m)	Current use (m)	2m drawdown volume (ML/year) based on observed use & drawdown	Climate sensitivity (% dd due to other) (current climate)	Method accepted (Y/N) Comment	SY Volume (ML/yr)
Glenormiston GMA	21,050 (2,200 - NA)	0.5	1,273	5,092	34%	N Criteria 2	No SY
Heywood GMA	26,810 (14,850 - 36,000)	0.2	1,688	16,880	48%	N Criteria 2.	No SY
Jan Juc GMA	1280 (1080 - 1420)	2.2	591	537	86%	N Criteria 3	No SY
Merrimu GMA	200 (125 - 260)	0.7	15	43	14%	Y	200
Newlingrook GMA	1190 (915-1450)	0.7	47	134	80%	N Criteria 1 Confined use/dd method used.	2,000 See confined aquifer section

Discussion of seawater intrusion risks

The SY assessment has calculated the potential seawater intrusion risk based on drawdown of groundwater levels from use and climate within 300 m of the coast to below 1.5 mAHD (**Figure 12**). Some of the areas assessed indicate the need for a zero volume of take along the coastline, such as in Deutgam GMA and KooWeeRup WSPA, where groundwater levels are already below 1.5 mAHD at the coast. Only areas where the drawdown-use results for the GMU were accepted are reported below (**Table 10**). Other key drivers for coastal processes, including sea level rise have not been included in this assessment.

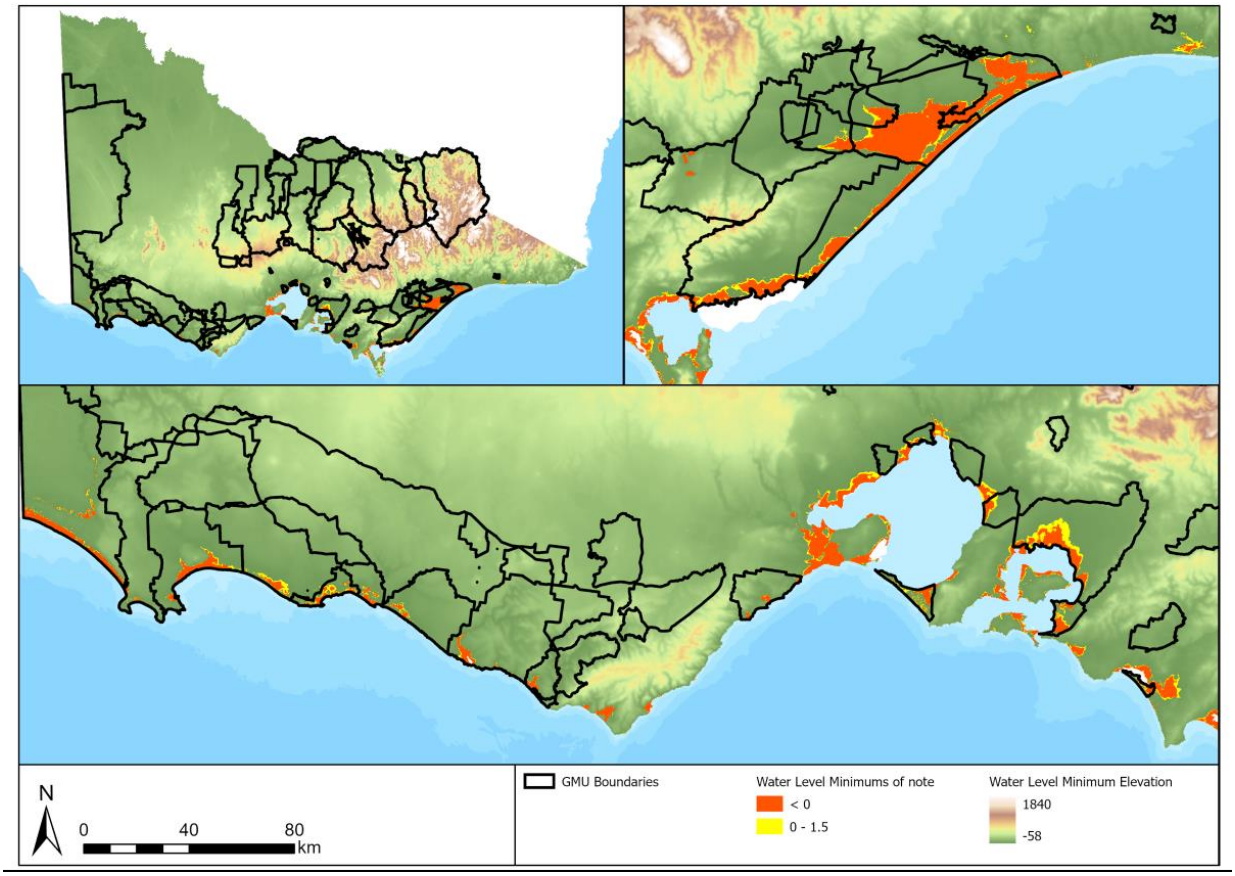

Figure 12. Mapped coastal areas where minimum recorded levels are less than 1.5mAHD. (a) statewide; (b) Gippsland; (c) South West and Central Victoria

Table 10. Sustainable yield volumes for seawater intrusion risk in unconfined aquifers

GMU*	Coastal Zone SY volume 2040 noCC to maintain 1.5mAHD	Coastal Zone SY volume range (HCC to LCC)
Deutgam WSPA	114	0 – 2,034
Frankston GMA	0	0 - 0
Koo Wee Rup WSPA	0	0 - 0
Moorabbin GMA	1,316	1,141-1,543
Tarwin GMA	27	109-121

*Results for the sustainable yield drawdown-use volumes were not accepted for the Otway Coastal GMUs of Glenelg, Nullawarre, Hawkesdale, Heywood, Yangery and Jan Juc and Nepean GMU in Central region and so results for seawater intrusion risk are not presented here.

Discussion of waterway flow risks

The SY assessment has calculated the potential waterway flows risk at gauged locations in GMUs with groundwater/surface water connections (**Figure 13**). The basis of the assessment is that the risk to waterways occurs when:

- Groundwater levels are shallow (< 10m depth to watertable) and connected to the waterways
- Groundwaters contribute significant baseflows to waterways (particularly unregulated waterways)
- Groundwater take exceeds 10% of the mean annual flow (MAF) of the waterways in the GMU

Typically, regulated waterways elevate stream levels in those reaches and in turn become losing streams which are not dependent on groundwater for baseflows. These areas are usually not at risk from groundwater extractions.

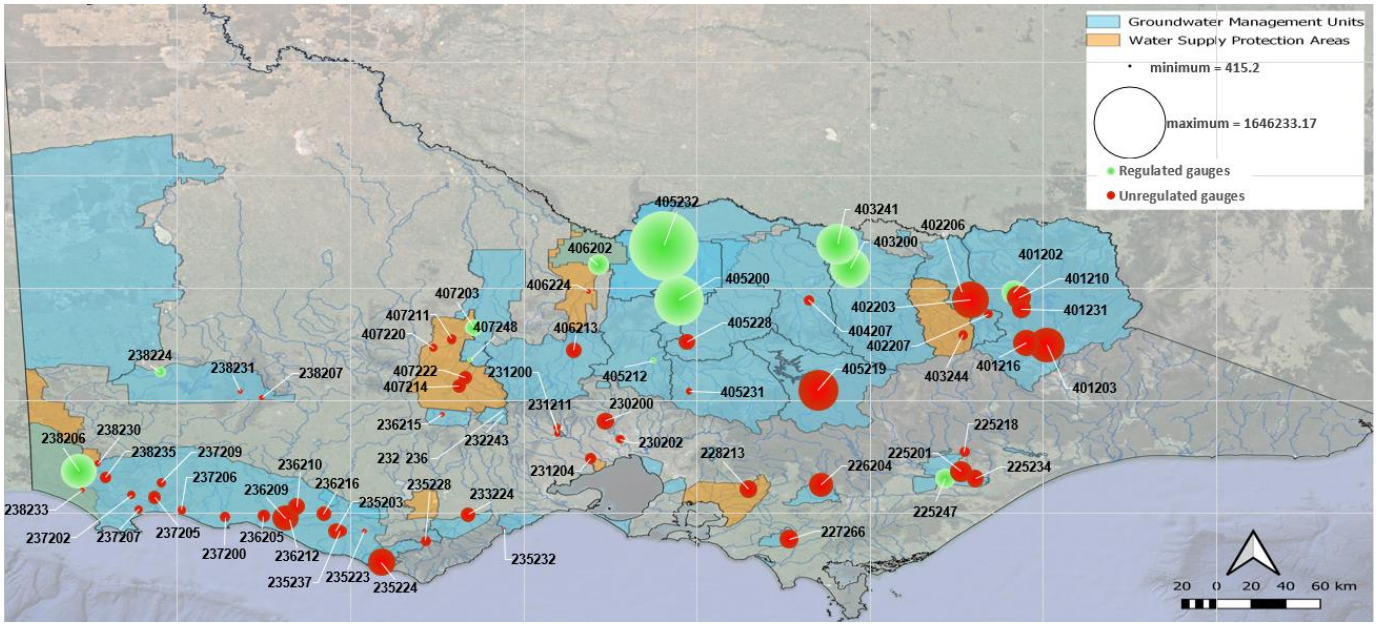

Figure 13: Waterway gauge sites assessed for baseflow analyses and GMUs showing the MAF (ML/yr) values (HARC, 2024)

All unconfined aquifer GMUs were assessed for environmental values, with many GMUs connected to waterways. Of the 39 GMUs with waterways it was found that 26 GMUs had significant connection to

waterways and data available for the assessment. These GMUs were assessed against the 10% of MAF criteria with results presented in **Table 11** below.

Table 11. GMUs assessed for waterway flow criteria (10% of MAF) and compared to sustainable yield volumes

Aquifer system	GMU Names	GMUs waterway & 10% MAF volume	10% MAF (ML/yr)	SY volume
Unregulated highlands areas	Bungaree	Moorabool River (233236)	95	2,800
	Broken	Broken River (404207)	3,700	6,300
	Central Victorian Mineral Springs	Loddon River (406213)	9,000	2,800
	Loddon Highlands	Creswick Ck, Tullaroop Ck (407214)	5,600	10,100
	Strathbogie	Honeysuckle Ck (405228)	9,100	4,800
	Upper Goulburn	King Parrot Ck (405231)	1,600	3,500
	Upper Murray	Various (401202)	19,200	9,300
	Upper Ovens	Ovens River (403244)	3,500	2,300
	West Goulburn	Goulburn River (405202), Sugarloaf Ck (405212)	66,800 & 1,500	6,800
Alluvial valleys & Deep Leads	Kiewa	Kiewa River (402203)	46,700	2,200
	Lower Ovens	Ovens River (403200)	55,400	No SY
	Lower Campaspe Valley	Campaspe River (406202)	15,200	33,700
	Mid Loddon	Loddon River (407203), Bullock Ck (407248)	10,600 & 1,000	19,900
Sedimentary Plains	Moe	Bear, Moe, & Shady Creeks, Latrobe River (226204)	18,600	3,600
	Wa De Lock	Macalister (225247) & Avon Rivers (225201)	13,600 & 15,500	43,500
	Wy Yung	Mitchell River (224200)	80,410	No SY
	Deutgam	Werribee River (231204)	4,400	5,500
	Koo Wee Rup	Various (228213)	10,600	4,700
	Leongatha	Tarwin River (227266)	12,100	1,900
	Merrimu	Lerderderg River, Werribee River (231211)	1,700	200
	Former Glenelg	Glenelg River (238206)	41,200	6,100
	Hawkesdale	Moyne R, Eumeralla R (237206)	2,700	No SY
	Heywood	Fitzroy River (237202)	2,600	No SY
	Nullawarre	Hopkins River, Brucknell Ck (236212)	2,600	No SY
	Yangery	Albert River, Tarra River, Bruthen Creek	23,000	No SY

The results indicate that there may be some waterways in some GMUs where further assessment of the sensitivity of the waterways to groundwater take is required. This includes the:

- Southwest Limestone aquifer GMUs (Heywood, Hawkesdale, Nullawarre, and Yangery) in the Otways where waterways are heavily incised into the limestone and dependent on groundwaters during summer low flows.
- GMUs in northern Victoria with unregulated waterways including the Loddon Highlands, Bungaree and Barnawatha GMUs. The other GMUs where sustainable yield exceeds 10% of

the MAF are either highly regulated (Broken, Mid Loddon, and Lower Campaspe Valley) or have specific measures in place to manage this risk (eg Lower Ovens GMA).

- Wa-De-Lock GMU in Gippsland, noting that it is an irrigation district with land salinisation issues, so extractions are required here to manage watertable levels, and Deutgam WSPA.

3.1.5. Discussion of synthesised results for individual unconfined GMUs

High Use GMUs

West Wimmera GMA: Neuarpur zone (West Wimmera GMA): The sustainable yield volume for Neuarpur is based on prior studies as the statewide model used incorrect bore data with the drawdown-use result not accepted under criteria 1. A prior study (Cheng, 2019) used the same method and technique (Hydrosight model) as used by the Groundwater sustainable yield assessment. The results from this study were used in conjunction with historic use and groundwater monitoring data to estimate a sustainable yield of 14,000 ML/yr. The calculated volume is based on the premise of stabilising groundwater levels with no further declines in the Neuarpur zone. Further assessment of this sustainable yield volume is required.

North Central

Seven high use unconfined GMUs were assessed in the North Central region with 4 of them (Mid Loddon, Lower Campaspe Valley, Mid Goulburn and Lower Ovens GMAs) also mapped as semi-confined aquifers (discussed further in Section 4). The drawdown-use volumes were accepted for all GMAs except for Shepparton and Mid Goulburn GMAs. Recharge volume was used for Mid Goulburn. No sustainable yield volume is proposed for Shepparton.

Shepparton Irrigation Region - Metered use data for all licensed bores is limited, and use is estimated. As a result, the use volumes could not be validated for the use–drawdown method, and a use–drawdown relationship was not verified. Recharge was estimated and found to be high, reflecting irrigation recharge within the area. Importantly, the primary purpose of this irrigation region is to manage the risk of land salinisation from rising and shallow watertables, which is achieved by promoting groundwater extraction to help lower watertable levels.

Mid Goulburn GMA drawdown-use results did not align with the historic drawdown (2.1m) and use (3,535 ML/yr) results. A percentage of recharge was used to estimate the sustainable yield volume of 4,500 ML/yr. The northern part (zone 1070) of Mid Goulburn GMA is semi-confined.

Central Victorian Mineral Springs GMA The drawdown-use relationship was accepted for this GMA at 2,800 ML/yr.

Mid Loddon GMA drawdown-use results aligned with historic drawdown (2.5m) and use (21,450) with current use exceeding the sustainable yield volume of 19,900 ML/yr. The region is highly sensitive to climate and the deeper calivil formation is connected to local waterways. The drawdown-use results for all climate scenarios are less than the current entitlements and use in most years. The northern zone of Mid Loddon GMA is semi-confined.

Loddon Highlands WSPA has historic drawdown of 1.8m and use of 7,400 which aligns with the drawdown-use results. A sustainable yield volume of 10,100 was calculated based on current climate. Drawdown in some zones exceeds the 2m metric and allocation restrictions are in place to manage seasonal drawdowns.

Lower Campaspe Valley WSPA has historic drawdown of 1.7m and average use for 2016-21 of 38,225 ML/yr. The drawdown-use results align with historic records with a sustainable yield of 33,700 ML/yr. The northern zone of the WSPA is semi-confined.

Lower Ovens GMA Historic drawdown of 1.1 m has been recorded for an average use of 8,950 ML/yr. The aquifer system shows high connectivity with the Ovens River and strong hydraulic connection between the two aquifers that extend along the valley. The use–drawdown relationship was developed based on three groundwater level patterns; two of these were validated, while the third (northern zone) did not represent the area of pumping or primary interest. Because of this limitation, although a sustainable yield of 15,500 ML/yr was estimated for the GMA, it is not accepted. Further investigation is required to determine a SY volume for the area.

Gippsland

Two GMAs were assessed using drawdown-use calculations with both results accepted. Both Denison GMA and Wa De Lock GMA are in the Wellington Salinity Management Plan area and associated surface water districts near the Gippsland Lakes. They are in the Thomson and Latrobe River catchment with high connectivity to these highly regulated rivers.

Denison GMA sustainable yield volume of 15,160 ML/yr aligns with historic records.

Wa De Lock GMA sustainable yield volume of 43,500 ML/yr aligns with historic records.

Central

Three GMUs were assessed using drawdown-use method with 2 accepted and one did not accept due to results not aligning with historic drawdown and use records. All three coastal GMUs were assessed for the risk of aquifer salinisation due to seawater intrusion which is discussed further in section 3.2.5.

Deutgam WSPA is located in the Werribee Irrigation District. The Werribee River runs through the middle of the WSPA and is highly connected to the watertable. The sustainable yield for the GMU for a 2m metric of 5,500 ML/yr aligns with historic drawdown and use records. This volume relates to the consumptive user (seawater intrusion) measure of 1.5 mAHD 300m from the coast.

KooWeeRup WSPA covers an extensive portion of the Westernport Bay and includes multiple aquifers, including semi-confined and confined aquifers. Use has significantly decreased since the 1980s with levels recovering in recent decades.

To maintain groundwater levels above 1.5mAHD within 300m of the coastline a sustainable yield volume of 0 ML/yr is required as groundwater levels are already below sea-level (0 mAHD) along most of the coastline.

Since this WSPA includes multiple aquifers, most of which are confined, the confined use/dd method was used to estimate the sustainable yield volume.

Nepean GMA Drawdown and use align with historic records. The sustainable yield volume is 3,000 ML/yr.

Risk of seawater intrusion was assessed and exceeds the sustainable yield for this GMA.

South West

Five GMUs were assessed using the drawdown-use method with four sustainable yield volumes accepted (three using the lower bound) and one did not accept (revoked Glenelg WSPA). Results were synthesised for the proposed South West Limestone GMA and are included in the appendix. Only the GMUs with allocation limits are reported on here. These same four GMUs were also assessed for risk of aquifer salinisation from seawater intrusion.

Glenelg WSPA (revoked) Hydrogeological investigations conducted under the South Australia - Victoria Border Zone groundwater study (SKM, 2012) indicate moderate to very good hydraulic connectivity between the TCSA and TLA aquifers, particularly in the Lake Mundi area (Zones 2B and 3B). Based on this connectivity, the Glenelg (revoked) GMA has been assessed as an unconfined system. Therefore, the use–drawdown relationship was applied using the 2 m drawdown metric for unconfined aquifers. The resulting sustainable yield volume is estimated at 6,100 ML/year, with an uncertainty range of 4,400 to 6,900 ML/year, which is less than average use (5,957 ML/yr) and the entitlement of 33,262 ML/yr

Hawkesdale GMA, Heywood GMA, Nullawarre WSPA and Yangery WSPA The use–drawdown relationship did not align with the observed historical drawdown. In addition, the recharge method produced values that were higher than the historical use. Therefore, no SY volumes are proposed for these GMUs, and further work is required to estimate their sustainable yield volumes.

Warrion WSPA The sustainable yield volume calculated from the drawdown-use method was accepted and is 10,200 ML/yr.

Low Use GMUs

There are 29 GMUs/GMU zones that were assessed for drawdown-use relationships with another 3 that could not be assessed due to no use (West Wimmera Little Desert and Big Desert zones and Gellibrand GMA).

Of the 29 areas assessed for drawdown/use relationships 12 were accepted, another 3 GMUs use confined dd/use relationships (Frankston, Newlingrook, Moorabbin); 9 use recharge volumes; 1 GMU uses historic use (Wy Yung); 3 GMUs (Gerangamete, Gellibrand and Jan Juc) are awaiting results from more detailed studies and 1 GMU (Heywood) does not have a recommended sustainable yield volume and require further work.

West Wimmera

In the West Wimmera GMA Each zone has been reported on. Only the Northern Zone was accepted for drawdown-use relationships. Gymbowen and Southern were estimated from recharge as well as Little Desert and Big Desert zones where there is no licensed use.

North Central

There are 11 GMUs with low use with 4 accepted volumes from the drawdown-use method. Five of the GMAs had no data to validate against (Broken, Eildon, Kiewa, West Goulburn and Upper Murray GMAs) other than current use. The 7 GMAs where recharge percentage was used cover the highlands region in northern Victoria. The dd/use relationships were developed based on groundwater use in alluvial valleys, which is a small portion of the GMA. These were not considered representative of the GMAs due to the high area of outcropping bedrock in the highlands.

Barnawatha GMA drawdown-use method was accepted with sustainable yield volume of 700 ML/yr.

Cardigan GMA drawdown-use method was accepted with sustainable yield volume of 2,090 ML/yr.

Kiewa GMA drawdown-use method was accepted with sustainable yield volume of 2,160 ML/yr.

Lancefield GMA drawdown-use method was accepted with sustainable yield volume of 920 ML/yr.

Upper Ovens GMA drawdown-use method was accepted with sustainable yield volume of 2,260 ML/yr.

Many of the GMUs in the north central area include a small area within alluvial valleys with the greater portion of the GMU in the highlands groundwater systems. The drawdown-use relationships mostly relate to the alluvial valleys where the use and monitoring bores are. For this reason, the sustainable yield volumes provided for the GMUs below are an estimate with further assessment required to determine the separate volumes for each groundwater system.

Broken GMA drawdown-use method was not accepted, and recharge volume was used to calculate the sustainable yield volume of 6,300 ML/yr.

Eildon GMA drawdown-use method was not accepted, and recharge volume was used to calculate the sustainable yield volume of 1,400 ML/yr.

Strathbogie GMA drawdown-use method was not accepted, and recharge volume was used to calculate the sustainable yield volume of 4,800 ML/yr.

Upper Goulburn GMA drawdown-use method was not accepted, and recharge volume was used to calculate the sustainable yield volume of 3,500 ML/yr.

Upper Murray GMA drawdown-use method was not accepted, and recharge volume was used to calculate the sustainable yield volume of 9,300 ML/yr.

West Goulburn GMA drawdown-use method was not accepted, and recharge volume was used to calculate the sustainable yield volume of 6,800 ML/yr.

Gippsland

There were four low use GMUs assessed with drawdown-use results accepted for 3.

Tarwin GMA the drawdown-use estimates did not match historic use and drawdowns, and recharge volume was used to calculate the sustainable yield volume of 300 ML/yr.

Moe GMA and **Leongatha GMA** drawdown-use method was accepted with sustainable yield volumes of 2400 ML/yr and 1900 ML/yr respectively for these GMUs. Moe GMA includes all aquifers at all depths which has been assessed under the confined aquifer method to develop the final sustainable yield volume.

Wy-Yung GMA the use–drawdown relationship was not accepted, as it did not align with observed historical drawdown. The recharge method produced high values that significantly exceed historical use and the likely capacity of the aquifer, given its shallow base. As a result, no sustainable yield volume is proposed.

Central

There were four low use GMUs assessed with drawdown-use method with results accepted for all 4. Two of the areas are primarily confined systems and so the confined use/drawdown method was used for these two GMAs (Frankston and Moorabbin).

Bungaree GMA drawdown-use method was accepted with sustainable yield volume of 2,800 ML/yr.

Wandin Yallock drawdown-use method was accepted with sustainable yield volume of 2,000 ML/yr.

Both Frankston and Moorabbin GMAs have sustainable yield volumes calculated from the confined aquifer assessments as these GMAs include all aquifers at all depths. The unconfined assessment results are presented here for completeness:

Frankston GMA drawdown-use method was accepted with sustainable yield volume of 1,140 ML/yr. To maintain groundwater levels above 1.5mAHD within 300m of the coastline a sustainable yield volume of 0 ML/yr is required due to the area already having groundwater levels close to sea level.

Moorabbin GMA drawdown-use method was accepted with sustainable yield volume of 400 ML/yr. At this volume it will also maintain groundwater levels above 1.5mAHD within 300m of the coastline.

South West

There were 8 GMUs assessed for drawdown-use method with 3 GMUs accepted (1 using lower bound) and five GMUs with no sustainable yield volume recommended and further studies required. Three other GMUs (Gellibrand, Gerangamete, Jan Juc UEVF) have more detailed assessments being undertaken which will inform future SY volumes.

Gellibrand GMA Although the Gellibrand GMA was initially assessed under the confined aquifer framework, further analysis indicates that the system behaves more like an unconfined aquifer. Therefore, it has been classified as an unconfined system, and the sustainable yield volume has been estimated using the percentage of recharge method. Since SY does not align with prior metric for Boundary Creek, more detailed local studies are applied to management decisions through the Barwon Downs Remediation and Environmental Protection Plan (REPP). Therefore, SY volume is considered not suitable for this GMA.

Gerangamete GMA This GMA contains both confined and unconfined portions, with the unconfined area representing an outcrop of the confined aquifer. Accordingly, both confined and unconfined use–drawdown relationships have been applied to estimate the sustainable yield volume. As the confined aquifer outcrops and becomes unconfined, it is unclear at what confined aquifer level a connection to local waterways (e.g., Boundary Creek) would occur. Moreover, since SY does not align with prior metric for Boundary Creek, more detailed local studies are applied to management decisions through the Barwon Downs Remediation and Environmental Protection Plan (REPP). Therefore, SY volume is considered not suitable for this GMA.

Jan Juc GMA – UEVF The target aquifer in the Jan Juc GMA is the Lower Tertiary Aquifer (LTA), comprising two distinct systems: the Upper Eastern View Formation (UEVF) and the Lower Eastern View Formation (LEVF). The UEVF is treated as an unconfined aquifer. The developed use–drawdown relationship was not accepted because groundwater use data from the main licensee was not incorporated. Therefore, no SY volume is proposed for this area.

Glenormiston GMA The use–drawdown relationship was not accepted due to a lack of sufficient data to validate the sustainable yield volume. In addition, the recharge volumes assessed for the limestone and volcanics aquifers across the South West region were not accepted, with further work required to estimate the sustainable yield volume.

Heywood GMA, Hawkesdale GMA, Nullawarre GMA, Yangery GMA The use–drawdown relationship did not align with the observed historical drawdown. In addition, the recharge volumes assessed for the limestone and volcanics aquifers across the South West region were not accepted, with further work required to estimate the sustainable yield volumes.

Colongulac GMA drawdown-use method was accepted with sustainable yield volume of 4,610 ML/yr.

Merrimu GMA drawdown-use method was accepted with sustainable yield volume of 200 ML/yr.

Newlingrook GMA drawdown-use method was accepted with sustainable yield volume of 1,190 ML/yr.

3.1.6. Uncertainty

The sustainable yield volumes for unconfined aquifers do not have a directly calculated uncertainty band; instead, uncertainty is illustrated through sensitivity to climate change scenarios (**Figure 14**). These scenarios demonstrate a wide range in sustainable yield estimates, with values varying between -50% and +200% depending on future climate conditions. This sensitivity to climate change introduces a level of uncertainty that is far greater than other sources of error and should strongly inform how the results are interpreted and applied.

The sustainable yield range shown is representative of the average climate conditions for the reporting periods (2021-40 and 2041-65) for the future climate scenarios to avoid reporting a sustainable yield volume for either a wet or dry year. This means that the drawdown metric of 2m represents both a spatial (GMU scale) and temporal (reporting period) average for the reported scenario. The no climate change scenario for 1998-2020 was used as the basis of the sustainable yield volumes and is comparable to the medium climate change scenario results in most areas. This was used as the basis of the risk assessment.

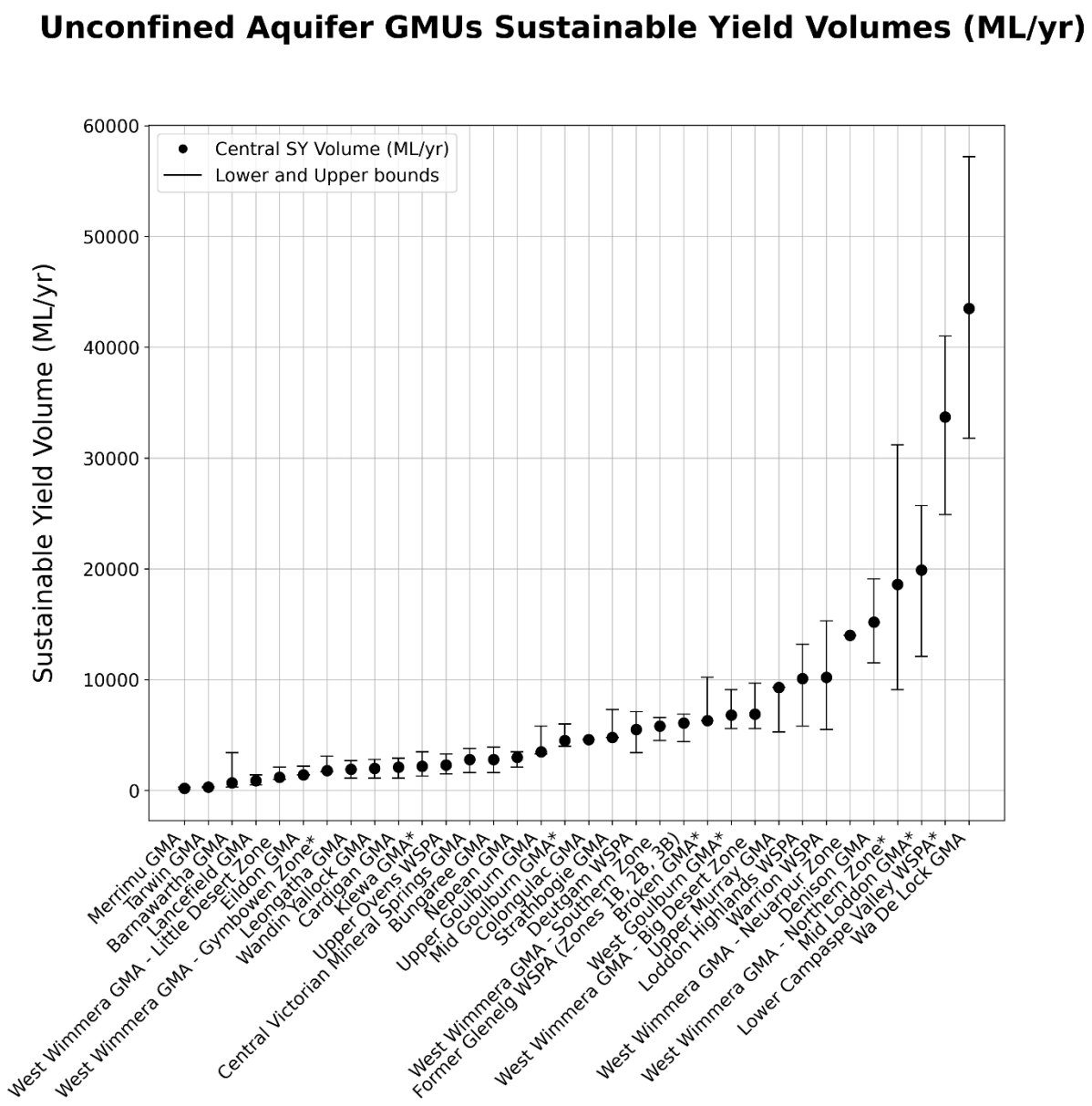

Figure 14. A visual presentation of the uncertainty bands for unconfined GMUs

3.1.7. Calculation of percentage of recharge

Recharge as a percentage of the sustainable yield volume was assessed for unconfined GMUs where a drawdown–use relationship was developed and accepted. These areas are listed in **Table 12** below with the sustainable yield volume and percentage of recharge that the volume is equivalent to. Recharge is significantly higher in surface water irrigation districts and where surface water contributes as a source to the aquifer. To differentiate the percentage of recharge in these areas compared to more typical dryland areas the GMUs were categorised and recharge percentages split according to these recharge processes.

Additional analysis of the verified SY dd/use/climate volumes against recharge by aquifer type (sedimentary, volcanics, bedrock) was undertaken to assess SY volumes in the highlands where recharge rates are high and based primarily off SoilFlux results due to limited monitoring. This allowed for refinement of the SY volumes in those areas where there is higher uncertainty in the recharge results.

Recharge percentages ranged from 0.2% in West Wimmera GMA to 50% in Denison GMA with GMUs in surface water irrigation districts recording significantly higher range from 11% to 50%. Areas

with significant connectivity to waterways such as Wy Yung exceeded 100% of the recharge when compared to the sustainable yield estimate.

Regionally, and across similar groundwater systems percentages are more consistent. The highest rates of recharge assessed are in the Riverine plains and the Otways (averaging 25%), with higher rates in irrigation districts (averaging 28%). In the highlands and upland valleys, the average percentage was 3%.

The statewide average percentage of recharge (3%) excluding irrigation areas and surface water sourced areas was used to calculate the sustainable yield volumes for GMUs where drawdown-use results weren't accepted. The UAs (surface water SDLs) were calculated using representative recharge rates for each aquifer type (0.2% bedrock, 10% volcanics, 3% sedimentary) and reported against the surface water winterfill reporting areas. The calculated SY volume range is provided from each 2021-2040 climate scenario modelled.

Table 12. Percentage recharge for sustainable yield volumes calculated for accepted sustainable yield volumes in GMUs from drawdown-use relationships accepted

GMU	Verified SY DD/use/climate Volume (ML)	Area by aquifer type (km2)			Recharge volume by aquifer type (ML)			% Recharge volume by aquifer type			% Recharge rate for all aquifer types	Estimated Recharge SY Volume
		Bedrock	Volcanics	Sedimentary	Bedrock	Volcanics	Sedimentary	Bedrock	Volcanics	Sedimentary		
Barnawartha GMA	700	3	-	67	60	-	7,060	0.2%	-	10%	10%	706
Central Victorian Mineral Springs GMA	2,800	2,534	522	258	127,000	68,000	18,660	0.2%	3%	3%	1%	2,854
Kiewa GMA	2,200	1,479	-	402	910,450	-	155,300	0.2%	-	0.3%	0%	2,287
Loddon Highlands WSPA	10,100	1,270	1,210	390	85,000	132,000	22,100	0.2%	7%	3%	4%	10,073
Lower Campaspe Valley WSPA*	33,700	210	10	1,930	13,800	740	108,000	0.2%	10%	**31%**	28%	33,582
Lower Ovens GMA	15,500	35	-	2,050	744,000	-	259,000	0.2%	-	5.5%	2%	15,733
Mid Loddon GMA*	19,900	231	300	1,790	14,250	21,500	122,000	0.2%	10%	**14.0%**	13%	19,259
Upper Ovens WSPA	2,300	1,425	-	222	699,000	-	97,700	0.2%	-	1%	0%	2,375
North Central Victoria							**Avg % excl irrigation areas**	**0.20%**	**5%**	**4%**	**3%**	
Deutgam WSPA*	5,500	-	-	50	-	-	10,400	-	-	**55%**	53%	5,720
Frankston GMA	2,300	7	-	136	1,230	-	18,800	0.2%	-	12%	11%	2,258
Koo Wee Rup WSPA	4,700	282	-	830	84,000	-	196,000	0.2%	-	3.0%	2%	6,048
Merrimu GMA*	200	7	-	7	480	-	550	0.2%	-	**40.0%**	19%	221
Moorabbin GMA	2,400	24	-	112	4,870	-	15,500	0.2%	-	15.0%	12%	2,335

Wandin Yallock GMA	2,000	54	-	4	19,400	-	500	10.0%	-	10%	10%	1,990
Central Victoria							**Avg % excl irrigation areas**	**2.16%**	**-**	**10%**	**9%**	
Corinella GMA	1,760	4	-	106	1,000	-	18,400	0.2%	-	9%	9%	1,658
Denison GMA*	15,200	-	-	171	-	-	27,300	-	-	**55%**	56%	15,015
Lancefield GMA	900	16	30	-	980	2,570	-	0.2%	35%	-	25%	901
Leongatha GMA	1,900	27	-	174	5,310	-	48,400	0.2%	-	4%	4%	1,947
Moe GMA	3,600	-	49	309	-	13,500	87,400	-	7%	3.0%	4%	3,567
Wa De Lock GMA*	43,500	38	-	590	8,350	-	89,400	0.2%	-	**49%**	45%	43,823
Gippsland							**Avg % excl irrigation areas**	**0.20%**	**21%**	**5%**	**10%**	
Bungaree GMA	2,800	30	176	-	2,880	32,540	-	0.2%	10%	-	8%	3,260
Cardigan GMA	2,100	120	220	-	15,100	25,000	-	0.2%	8%	-	5%	2,030
Colongulac GMA	4,600	-	241	42	-	40,000	6,800	-	11%	3%	10%	4,604
Former Glenelg WSPA (Zones 1B, 2B, 3B)	6,100	15	-	2,970	1,650	-	221,000	0.2%	-	3%	3%	6,633
Warrion WSPA*	10,200	-	250	143	-	35,000	18,000	-	10%	**40%**	19%	10,700
South West Victoria	**-**						**Avg % excl irrigation areas**	**0.20%**	**10%**	**3%**	**6%**	**-**
Victoria	**-**						**Avg % excl irrigation areas**	**0.78%**	**11%**	**6%**	**7%**	**-**
Victoria	**-**						**Representative recharge rate for SY Volumes**	**0.20%**	**10%**	**3%**	**3%**	**-**

3.1.8. Unconfined Aquifer GMU recharge assessment

For those GMUs where the drawdown-use relationship was not accepted, the statewide average of recharge has been applied to calculate the sustainable yield volumes (**Table 13**). provides all recharge maps across the state for all climate scenarios.

Table 13. Percentage recharge for sustainable yield volumes calculated for GMUs without accepted drawdown-use sustainable yield volumes

GMU	% Recharge used for SY	Calculated SY volume (% recharge)
West Wimmera		
Big Desert Zone (West Wimmera)	3%	6,900
Little Desert Zone (West Wimmera)	3%	1,200
Gymbowen Zone (West Wimmera)	3%	1,800
Southern Zone (West Wimmera)	3%	5,800
North Central		
Broken GMA	3%	6,300
Eildon GMA	3%	1,400
Mid Goulburn GMA	3%	4,500
Strathbogie GMA	3%	4,800
Upper Goulburn GMA	3%	3,500
Upper Murray GMA	3%	9,300
West Goulburn GMA	3%	6,800
Gippsland		
Tarwin GMA	3%	300
Central (no GMUs)		
South West (no GMUs)		

3.2. Unconfined UAs

For the watertable UAs, the areas were defined based on winterfill SDL surface water catchments (see **Figure 15**). There are 1648 winterfill SDL areas in Victoria with 755 wholly outside of existing GMUs and 330 partially contained in a GMU.

Most of the areas outside of the existing GMUs have very low use and entitlements. Any areas with use or entitlements above the calculated sustainable yield volume generally align with:

- neighbouring GMUs where development of the aquifer is occurring close to the existing GMU
- quarries and other mining activities which require dewatering to undertake works.

Of the 1,085 winterfill SDL that overlay groundwater UAs 600 have no licensed entitlement, and 777 have no metered use. The other 485 UAs have entitlements in the range of 50-500 ML/yr, aside from a few exceptions where quarrying and mining activities occur.

The unconfined aquifer UAs and their sustainable yield volumes are listed in **Appendix 6**.

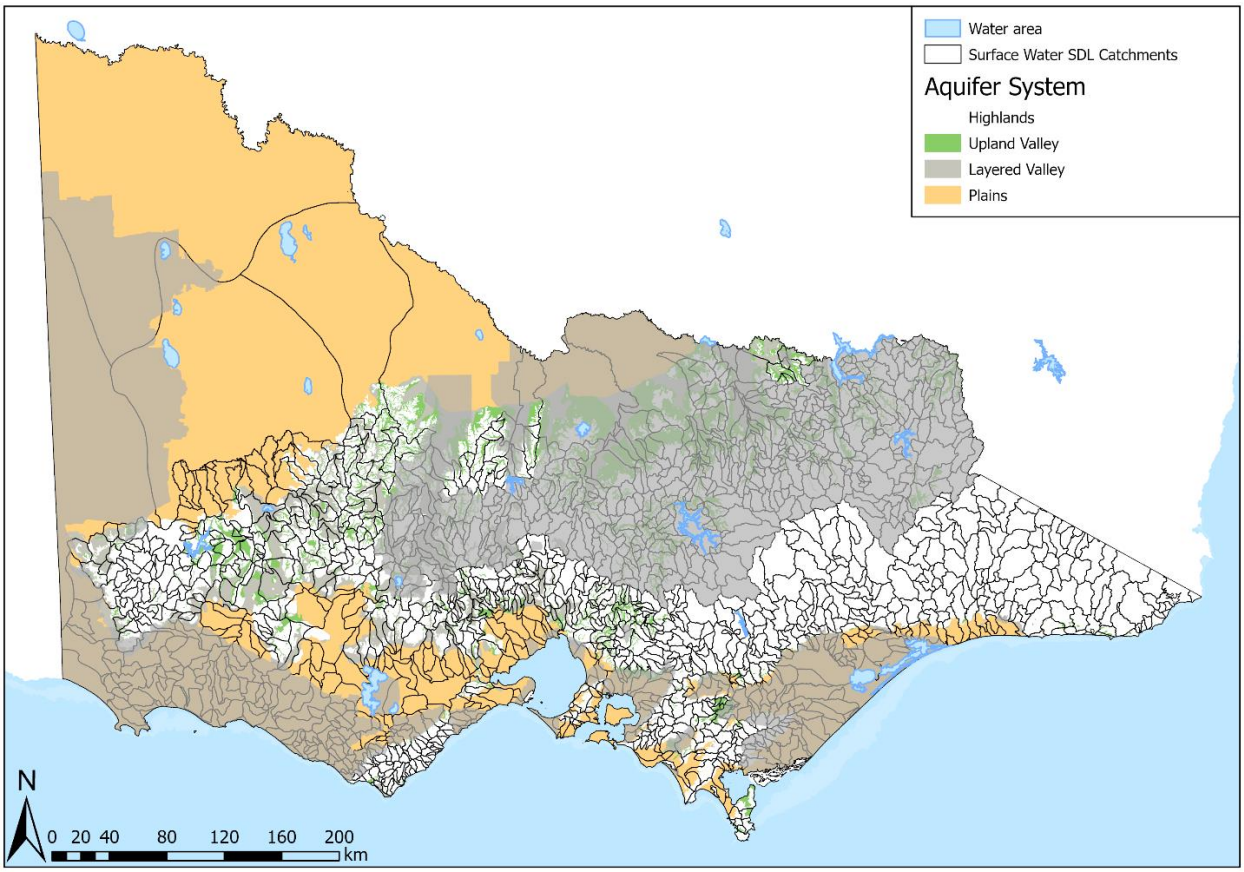

Figure 15. Surface water Winterfill SDL catchments shown against groundwater systems and area covered by GMUs.

A visual representation of the uncertainty bands for unconfined SDLs is provided in **Figure 16**.

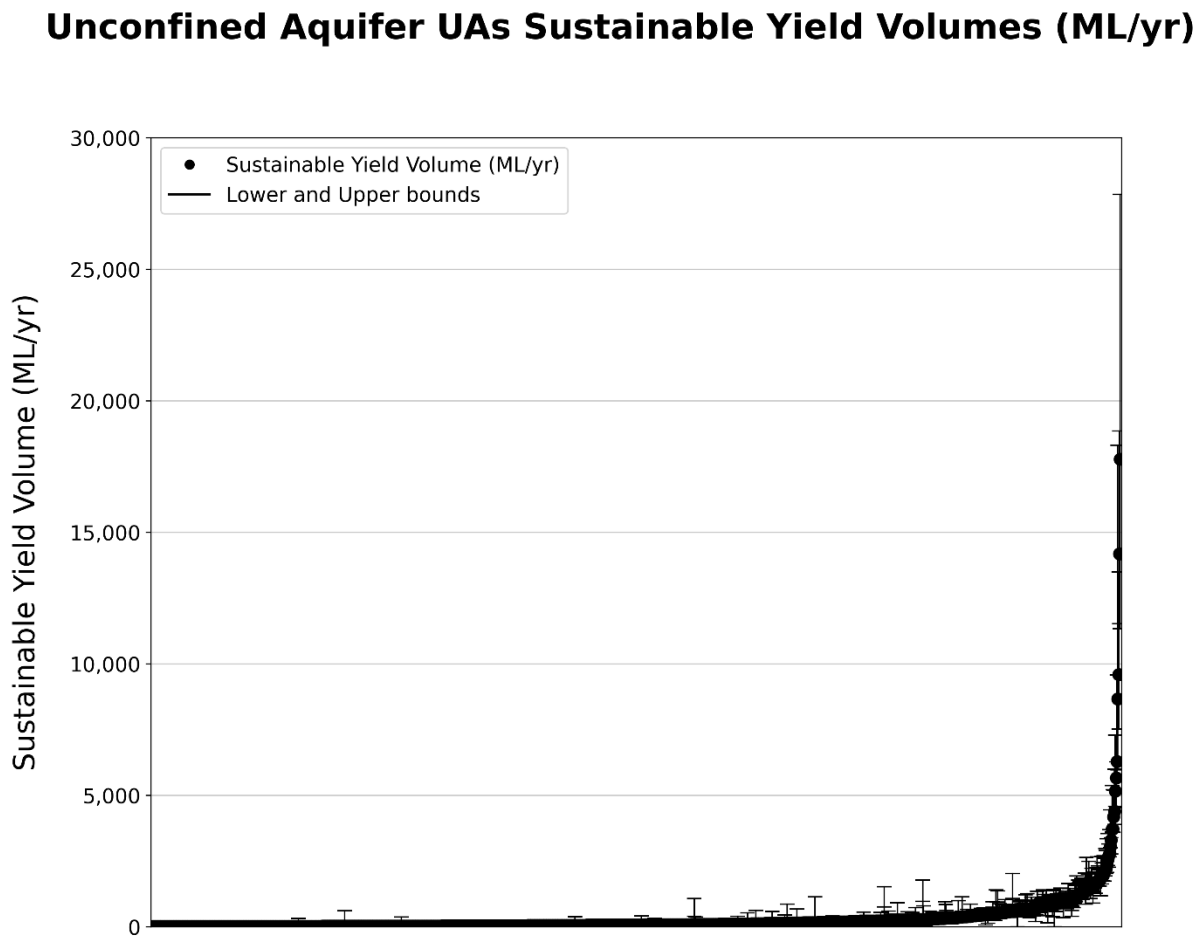

Figure 16. A visual presentation of the uncertainty bands for unconfined UAs

5. Semi-confined aquifers synthesis

The following steps were undertaken to estimate the sustainable yield volume for semi-confined GMUs and UAs:

1. Mapping semi-confined GMUs and UAs across the state

Semi-confined aquifers were identified through inter-aquifer leakage assessments (GHD Pty Ltd, 2014) and mapped across GMUs and UAs. The methodologies for mapping these semi-confined aquifers are detailed in Part 6: *Sustainable Yield Synthesis Paper – Semi-confined Aquifers Mapping Approach* (DEECA) in the Methodology Report.

2. Identifying connectivity degree in semi-confined GMUs and UAs

To identify the degree of connectivity in semi-confined aquifers, two key parameters are assessed: the correlation coefficient (R) and the fluctuation ratio (FR). The groundwater trends in the upper and lower aquifers are visually compared using hydrographs. The correlation coefficient quantifies the similarity between the groundwater level time series of both aquifers. The fluctuation ratio measures the magnitude difference in groundwater level fluctuations between the two aquifers. The classification rules are as follows:

- Highly connected: R > 90% and 0.8 < FR < 1.2.
- Partially connected: 60% < R < 90% and 0.4 < FR < 0.8 or 1.2 < FR < 1.6.
- No significant connection: R < 60% and 0.4>FR>1.6.

It should be noted that the connectivity degree is valid only for the assessed suites/bores within the GMU and does not necessarily represent the connectivity across the entire GMU. This distinction is crucial in GMUs where the lower confined aquifer covers only a small portion of the GMU, and the confined aquifer may outcrop and be recharged through the unconfined part.

3. Estimating sustainable yield volume for semi-confined GMUs and UAs

To avoid double accounting of groundwater resources, the following principles are applied for estimating the sustainable yield volume in semi-confined aquifers:

- **Highly connected aquifers (R > 90% and 0.8 < FR < 1.2)**: A single sustainable yield volume is proposed for both aquifers based on unconfined assessment method.
- **Partially connected aquifers (60% < R < 90% and 0.4 < FR < 0.8 or 1.2 < FR < 1.6)**: A single sustainable yield volume is proposed based on the unconfined aquifer assessment for both aquifers. However, it is acknowledged that further investigation is needed to refine the sustainable yield estimation if independent sustainable yield volumes are required for each aquifer.
- **No significant connection (R < 60% and FR < 0.4 or FR > 1.6):** Separate sustainable yield volumes are estimated for each aquifer based on the specific assessment for each aquifer.

The detailed methodology for estimating the sustainable yield volume for semi-confined GMUs and UAs is outlined in *Part 7: Sustainable Yield Synthesis Paper – Semi-Confined Aquifers Synthesis Approach (DEECA)* in the Methodology Report.

5.1. GMUs

Table 14 divides semi-confined GMUs into three connectivity classes: highly connected, partially connected, and no significant connection. Based on the principles outlined, the sustainable yield volume is estimated for each semi-confined GMU.

No significant connection GMUs

Mid Goulburn 1070 GMA (overlain by Shepparton I.R. GMA) shows no significant hydraulic connection. Hence, the sustainable yield volumes for both confined and unconfined aquifers remain

unchanged. Further work is needed for the Mid Goulburn 1070 GMA to estimate the sustainable yield volume for the confined aquifer, while the unconfined sustainable yield volume is accepted.

Highly connected GMUs

The Lower Ovens GMA exhibits a high degree of connectivity between the upper unconfined and lower confined aquifers. Hence, a single sustainable yield volume is proposed for both aquifers based on the unconfined assessment method. However, since the use–drawdown relationship was developed based on three groundwater level patterns; two of these were validated, while the third (northern zone) did not represent the area of pumping or primary interest. Because of this limitation, although a sustainable yield of 15,500 ML/yr was estimated for the GMA, it is not accepted. Further investigation is required to determine a SY volume for the area.

Partially connected GMUs

The Mid Loddon GMA, Lower Campaspe Valley WSPA, Broken GMA, and Kiewa GMA exhibit partial connectivity. Therefore, a single sustainable yield volume is proposed based on the unconfined aquifer assessment for both aquifers, with the acknowledgment that further investigation is required to refine the sustainable yield estimation if independent sustainable yield volumes are required for each aquifer.

Connectivity is not assessed

The connectivity has not been assessed in the Mid Goulburn 1071 GMA and West Goulburn North GMA (overlain by Shepparton I.R. GMA) due to data limitations regarding the connectivity degree between upper unconfined and lower confined aquifers.

Table 14. Sustainable yield volumes for semi-confined GMUs

GMU	GMU depth range (m)	Target VAF and Formations	Degree of connection	Confined-based SY volume (ML/yr)	Unconfined-based SY volume (ML/yr)	Semi-confined SY volume (ML/yr)
Highly connected GMUs						
Lower Ovens GMA	All formations from ground surface to 50 metres into bedrock or 200 metres from the surface (whichever is the greater depth)	UL: UTQA (Shepparton) ML: UTAF (Calivil)	Highly connected	No SY volume estimated	No SY volume	No SY volume
Partially connected GMUs						
Mid Loddon GMA	All formations below surface	UL: UTB (Newer Volcanics – highlands only) UTQA (Shepparton) ML: UTAF (Calivil)	Partially connected	7,100 (M_F_2 (Most rep. Suite) / UTAF aquifer) (based on drawdown-use relationship)	19,900 (based on drawdown-use relationship)	19,900 (based on the unconfined aquifer assessment - further work is needed if independent SY volumes are required for each aquifer)
Lower Campaspe Valley WSPA	All formations below the surface with the exception of all formations from the surface to 25 metres below the surface north of the Waranga West Channel	UL: UTB (Newer Volcanics – highlands only), UTQA (Shepparton)	Lower Campaspe Valley WSPA	All formations below the surface with the exception of all formations from the surface to 25 metres below the surface north of the Waranga West Channel	UL: UTB (Newer Volcanics – highlands only), UTQA (Shepparton)	Lower Campaspe Valley WSPA
Broken GMA	All formations from ground surface to	UL: UTQA (Shepparton)	Partially connected	No SY volume estimated	6,300	6,300

GMU	GMU depth range (m)	Target VAF and Formations	Degree of connection	Confined-based SY volume (ML/yr)	Unconfined-based SY volume (ML/yr)	Semi-confined SY volume (ML/yr)
	50 metres into bedrock or 200 metres from the surface (whichever is the greater depth)	ML: UTAF (Calivil)			(recharge percentage)	(based on the unconfined aquifer assessment - further work is needed to estimate SY volume for confined aquifer if independent SY volumes are required for each aquifer).
Kiewa GMA	All formations from ground surface to 50 metres into bedrock or 200 metres from the surface (whichever is the greater depth)	UL: UTQA (Shepparton) ML: UTAF (Calivil)	Partially connected	No SY volume estimated	2,200 (drawdown-use relationship)	2,200 (based on the unconfined aquifer assessment - further work is needed to estimate SY volume for confined aquifer if independent SY volumes are required for each aquifer).
The connectivity is not assessed						
Mid Goulburn 1071 GMA	All formations from ground surface to 50 metres into bedrock or 200 metres from the surface (whichever is the greater depth)	UL: UTQA (Shepperton) ML: UTAF (Calivil)	It is not assessed	No SY volume estimated	1,500 (recharge percentage)	1,500 (Based on the unconfined aquifer assessment. Further work is needed to assess the connectivity

GMU	GMU depth range (m)	Target VAF and Formations	Degree of connection	Confined-based SY volume (ML/yr)	Unconfined-based SY volume (ML/yr)	Semi-confined SY volume (ML/yr)
						and to estimate SY volume for confined aquifer if independent SY volumes are required for each aquifer).
West Goulburn North GMA (overlain by Shepparton I.R. GMA)	All formations from 25 metres below ground surface	UL: UTQA (Lower Shepperton) ML: UTAF (Calivil)	It is not assessed	No SY volume estimated	6,800 (recharge percentage)	6,800 (Based on the unconfined aquifer assessment. Further work is needed to assess the connectivity and to estimate SY volume for confined aquifer if independent SY volumes are required for each aquifer

5.2. UAs

Table 15 classifies semi- UAs into three distinct connectivity categories: highly connected, partially connected, and no significant connection. Based on the principles outlined, the sustainable yield volume is estimated for each semi-confined UA.

West of Mid Loddon (UTAF-NE1) UA demonstrates a high degree of connectivity. Therefore, a single sustainable yield volume of 4,300 ML/yr is proposed for both aquifers, derived from the unconfined assessment method. This sustainable yield volume applies to all formations below the surface.

North of Mid Loddon (UTAF-NE2) UA exhibits partial connectivity. Therefore, a single sustainable yield volume of 2,600 ML/yr is proposed based on the unconfined aquifer assessment for both aquifers, with acknowledging that further evaluation is necessary if independent sustainable yield volumes are required for each aquifer.

In the Northwest Port Philip (UTAF-PP1) UA, connectivity assessment has not been conducted due to data limitations. Hence, the sustainable yield volumes is proposed separately for each aquifer. Since the connectivity is not assessed, the volume for semi-confined aquifers is not proposed.

Table 15. Semi-confined UAs across the State and their degree of connectivity

UA	UA depth range (m)	Target VAF and Formations	Degree of connection	Confined-based SY volume (ML/yr)	Unconfined-based SY volume (ML/yr)	Semi-confined SY volume (ML/yr)
West of Mid Loddon (UTAF-NE1)	All formations below the surface	UP: UTQA (Shepparton) ML: UTAM (Parilla Sand), UTAF (Calivil)	Highly connected	1,900	4,300 (based on recharge percentage)	4,300 (based on unconfined aquifer assessment)
North of Mid Loddon (UTAF-NE2)	All formations below the surface	UP: UTQA (Shepparton) ML: UTAM (Parilla Sand), UTAF (Calivil)	Partially connected	1,700	2,600 (based on recharge percentage)	2,600 (based on the unconfined aquifer assessment - further work is needed if independent SY volumes are required for each aquifer)
Northwest Port Philip (UTAF-PP1)	All formations below the surface	UL: UTB (Newer Volcanics) ML: UTAF (Brighton Group)	It is not assessed.	500	6,600 (based on recharge percentage)	The SY volumes is proposed separately for each aquifer. Since the connectivity is not assessed, the SY volume for semi-confined aquifers is not proposed.

5.3. Limitations and uncertainties of the semi-confined aquifer synthesis

The synthesis approach for estimating sustainable yield in semi-confined aquifers is based on a classification of aquifer connectivity using R and FR. While this method provides a structured framework for groundwater resource assessment, some limitations and uncertainties should be acknowledged:

1. The degree of hydraulic connectivity between upper and lower aquifers is inferred from current available monitoring bore hydrographs. However, climate variability and future extraction patterns may alter groundwater dynamics, potentially affecting the assumed degree of connectivity.
2. The classification thresholds for R and FR (e.g., R > 90% for high connectivity) are based on statistical correlations that may not fully capture complex groundwater flow dynamics.
3. Localised geological variations, such as heterogeneities in aquitard permeability, may result in inconsistencies that are not well-represented by the defined connectivity categories.
4. Current assessments do not account for potential changes in land use and groundwater demands, which could impact the assumed degree of connectivity.

6. Sustainable Yield volumes for all aquifers

The consolidated sustainable yield volumes for all GMUs are presented in **Table 16** according to the proposed sustainable yield volumes for GMUs assessed under the “confined” and “unconfined/semi-confined” aquifer assessments (as detailed in the previous chapters). The table summarises the sustainable yield volumes by aquifer type and indicates the method applied to estimate each volume. The GMUs are listed in sequence, starting with the Wimmera Mallee region and progressing clockwise around the state by region.

Table 16. The "confined", and "unconfined and semi-confined" aquifers GMUs sustainable yield volumes, PCV, licence entitlement, and use

Region	GMU	Aquifer type	SY Method	SY volume (ML/yr)	Lower band (ML/yr)	Upper band (ML/yr)	PCV (ML/yr)	Entitlements (ML/yr)	Average use (ML/yr)	High /Low use
Confined aquifers										
Western Victoria	Murrayville GMA	Confined aquifer	Confined use-drawdown method	10,400	9,500	11,400	11,005	9,755	5,408	Low use
Western Victoria	West Wimmera GMA - TCSA aquifer	Confined aquifer	Percentage of throughflow flux	1,100	900	1,300	1,550	0	0	Low use
North Central Victoria	Katunga WSPA	Confined aquifer	Confined use-drawdown method	23,900	19,300	28,700	60,577	60,209	27,785	High use
Gippsland	Corinella GMA	Confined aquifer	Confined use-drawdown method and Unconfined percentage of recharge	1,760	400	2,900	2,550	662	60	Low use
Gippsland	Moe GMA	Confined aquifer	Confined use-drawdown method and unconfined use-drawdown method	3,600	2,200	4,500	8,200	3,861	826	Low use
Gippsland	Orbost GMA	Confined aquifer	Confined use-drawdown method	3,000	2,100	3,800	1,217	1,216	294	Low use
Gippsland	Giffard GMA	Confined aquifer	NA	No SY volume	NA	NA	5,689	5,688	2,475	Low use
Gippsland	Rosedale GMA	Confined aquifer	Confined use-drawdown method	5,700	3,000	10,100	23 ,372	22,312	8,828	High use
Gippsland	Sale WSPA	Confined aquifer	Confined use-drawdown method	14,300	12,600	18,100	21,238	21,205	11,029	High use
Gippsland	Yarram WSPA	Confined aquifer	Confined use-drawdown method	9,200	3,400	17,900	25,690	25,665	11,482	High use
Gippsland	Stratford GMA	Confined aquifer	Percentage of throughflow flux	11,100	6,600	15,200	27,686	37,119	22,625	High use

Central Victoria	Frankston GMA	Confined aquifer	Confined use-drawdown method	2,300	300	2,800	3,200	2,273	230	Low use
Central Victoria	Koo Wee Rup WSPA	Confined aquifer	Confined use-drawdown method for 2m drawdown and Percentage of throughflow flux for LTA	4,700	1,950	9,150	12,915	12,589	3,610	Low use
Central Victoria	Moorabbin GMA	Confined aquifer	Confined use-drawdown method for 2m drawdown and Percentage of throughflow flux for LTA	2,400	1,850	2,800	2,700	2,606	1,096	Low use
Central Victoria	Boneo GMA	Confined aquifer	Percentage of throughflow flux	1,200	NA	NA	NA	Extraction: 2700 Injection: 2700	Extraction (2011-2021): 448 Injection (2011-2021): 322 Net extraction (2011-2021): 126	Low use
Southwest Victoria	Condah WSPA	Confined aquifer	Confined use-drawdown method	3,000	2,100	3,400	7,475	7,469	2,782	Low use
South-West Victoria	Cut Paw Paw GMA	Confined aquifer	Percentage of throughflow flux	900	NA	NA	3,650	517	99	Low use
Southwest Victoria	Gerangamete GMA	Confined aquifer	NA	No SY volume	NA	NA	239	12,142	3,524	Low use
Southwest Victoria	Portland GMA	Confined aquifer	Confined use-drawdown method	9,500	6,200	10,000	7,795	7,794	2,606	Low use
Southwest Victoria	Newlingrook GMA	Confined aquifer	Confined use-drawdown method	2,000	300	2,800	1,977	1,957	145	Low use

Southwest Victoria	Paaratte GMA	Confined aquifer	NA	No SY volume	NA	NA	4,606	3,190	321	Low use
Southwest Victoria	Jan Juc GMA - LEVF aquifer	Confined aquifer	NA	No SY volume	NA	NA	7,000	7,000	2,801	Low use
Unconfined and semi-confined aquifers										
West Wimmera	West Wimmera GMA - Big Desert Zone	Unconfined	Percentage of recharge volume	6,900	5,600	9,700	25	0	0	low use
West Wimmera	West Wimmera GMA - Gymbowen Zone*	Unconfined	Percentage of recharge volume	1,800	1,700	3,100	2,000	1,052	232	low use
West Wimmera	West Wimmera GMA - Little Desert Zone	Unconfined	Percentage of recharge volume	1,200	1,000	2,100	25	0	0	low use
West Wimmera	West Wimmera GMA - Neuarpurr Zone	Unconfined	Prior studies	14,000	NA	NA	24,750	24,691	13,860	high use
West Wimmera	West Wimmera GMA - Northern Zone*	Unconfined	Unconfined use-drawdown method	18,600	9,100	31,200	22,390	21,932	5,900	low use
West Wimmera	West Wimmera GMA - Southern Zone	Unconfined	Percentage of recharge volume	5,800	4,500	6,600	6,469	5,648	1,950	low use
North Central Victoria	Barnawartha GMA	Unconfined	Unconfined use-drawdown method	700	300	3,400	2,100	375	61	low use
North Central Victoria	Broken GMA*	Unconfined	Percentage of recharge volume excluding highlands	6,300	6,300	10,200	3,732	2,902	1,217	low use
North Central Victoria	Cardigan GMA	Unconfined	Unconfined use-drawdown method	2,100	1,100	2,900	3,967	3,888	895	low use

North Central Victoria	Central Victorian Mineral Springs GMA	Unconfined	Unconfined use-drawdown method	2,800	1,600	3,800	6,024	5,044	1,154	high use
North Central Victoria	Eildon GMA	Unconfined	Percentage of recharge volume excluding highlands	1,400	1,400	2,200	1,496	607	200	low use
North Central Victoria	Kiewa GMA*	Unconfined	Unconfined use-drawdown method	2,200	1,300	3,500	3,852	3,115	876	low use
North Central Victoria	Loddon Highlands WSPA	Unconfined	Unconfined use-drawdown method	10,100	5,800	13,200	20,697	20,503	7,407	high use
North Central Victoria	Lower Campaspe Valley WSPA*	Unconfined	Unconfined use-drawdown method	33,700	24,900	41,000	55,875	55,860	38,225	high use
North Central Victoria	Lower Ovens GMA*	Unconfined	NA	No SY Volume	NA	NA	25,200	19,888	8,948	high use
North Central Victoria	Mid Goulburn GMA*	Unconfined	Percentage of recharge volume excluding highlands	4,500	4,000	6,000	12,470	12,432	3,535	high use
North Central Victoria	Mid Loddon GMA*	Unconfined	Unconfined use-drawdown method	19,900	12,100	25,700	34,037	33,917	21,450	high use
North Central Victoria	Shepparton Irrigation Region	Unconfined	NA	No SY volume	NA	NA	NA	187,114	86,860	high use
North Central Victoria	Strathbogie GMA	Unconfined	Percentage of recharge volume excluding highlands	4,800	4,800	7,300	1,660	1,417	974	low use
North Central Victoria	Upper Goulburn GMA	Unconfined	Percentage of recharge volume excluding highlands	3,500	3,300	5,800	8,568	6,086	1,992	low use
North Central Victoria	Upper Murray GMA	Unconfined	Percentage of recharge volume excluding highlands	9,300	5,300	9,300	7,674	3,496	814	low use
North Central Victoria	Upper Ovens WSPA	Unconfined	Unconfined use-drawdown method	2,300	1,500	3,300	NA	3,625	1,317	low use
North Central Victoria	West Goulburn GMA*	Unconfined	Percentage of recharge volume excluding highlands	6,800	5,600	9,100	NA	2,997	1,359	low use

Gippsland	Denison GMA	Unconfined	Unconfined use-drawdown method	15,200	11,500	19,100	18,502	18,499	7,679	high use
Gippsland	Leongatha GMA	Unconfined	Unconfined use-drawdown method	1,900	1,100	2,700	6,500	1,803	184	low use
Gippsland	Tarwin GMA	Unconfined	Percentage of recharge volume	300	250	350	1,300	54	10	low use
Gippsland	Wa De Lock GMA	Unconfined	Unconfined use-drawdown method	43,500	31,800	57,200	30,375	29,131	7,750	high use
Gippsland	Wy Yung GMA	Unconfined	NA	No SY Volume	NA	NA	7,463	7,462	970	low use
Central Victoria	Bungaree GMA	Unconfined	Unconfined use-drawdown method	2,800	1,600	3,900	5,334	5,293	2,700	low use
Central Victoria	Deutgam WSPA	Unconfined	Unconfined use-drawdown method	5,500	3,400	7,100	5,100	5,082	625	high use
Central Victoria	Lancefield GMA	Unconfined	Unconfined use-drawdown method	900	500	1,400	1,485	1,378	303	low use
Central Victoria	Merrimu GMA	Unconfined	Unconfined use-drawdown method	200	150	300	451	6	15	low use
Central Victoria	Nepean GMA	Unconfined	Unconfined use-drawdown method	3,000	2,100	3,500	6,110	6,110	2,812	high use
Central Victoria	Wandin Yallock GMA	Unconfined	Unconfined use-drawdown method	2,000	1,100	2,800	3,027	3,015	638	low use
South West Victoria	Colongulac GMA	Unconfined	Unconfined use-drawdown method	4,600	NA	NA	4,695	4,405	1,331	low use
South West Victoria	Jan Juc GMA - Upper Eastern View Formation	Unconfined	NA	No SY Volume	NA	NA	4,250	4,000	591	low use
South West Victoria	Gellibrand	Unconfined	NA	No SY Volume	NA	NA	0	0	0	low use

South West Victoria	Former Glenelg WSPA (Zones 1B, 2B, 3B)	Unconfined	Confined use-drawdown method for 2m drawdown	6,100	4,400	6,900	33,262	16,025	5,957	high use
South West Victoria	Glenormiston GMA	Unconfined	NA	No SY Volume	NA	NA	2,698	2,636	1,273	low use
South West Victoria	Hawkesdale GMA	Unconfined	NA	No SY Volume	NA	NA	16,161	12,451	5,040	high use
South West Victoria	Heywood GMA	Unconfined	NA	No SY Volume	NA	NA	8,500	7,011	1,688	low use
South West Victoria	Nullawarre WSPA	Unconfined	NA	No SY Volume	NA	NA	22,741	22,741	10,909	high use
South West Victoria	Yangery WSPA	Unconfined	NA	No SY Volume	NA	NA	14,352	13,978	4,295	high use
South West Victoria	Warrion WSPA	Unconfined	Unconfined use-drawdown method	10,200	5,500	15,300	14,086	14,077	3,555	high use

7. Review of limits of take

7.1. Risk to sustainability

SY is an estimation of the available groundwater that minimises adverse impacts on assessed values and serves to review the limits of take under licences as foundational work to inform broader groundwater reform initiatives under Groundwater Management 2030 (GM2030). The primary objective is to provide technical advice on sustainable yield volumes to facilitate discussions on various management outcomes. While these outcomes are not directly part of the SY project, they will be addressed under the GM2030 process. The specific outcomes sought include reviewing current limits of take and determining whether current controls to manage and/or mitigate regional drawdown risks are appropriate and effective.

Key results from this assessment include:

- Sustainable yield volume (ML/yr) for each reporting area.
- Uncertainty in sustainable yield volumes.
- Assessment of the potential risk to sustainability (current and future), that is the potential for groundwater level declines below acceptable levels taking into account the review of limits of take under licences.

The risk to groundwater sustainability is assessed through comparison of groundwater use against sustainable yield volumes to identify current risk and against entitlement volumes to identify future risk.

The results are summarised in **Table 17** for “confined”, and “unconfined and semi-confined” aquifer GMUs. The following sections discuss the risk to sustainability for GMUs and UAs.

Table 17. Comparison of the sustainable yield volumes against average use and Entitlements for "confined", and "unconfined and semi-confined" aquifer GMUs

Region	GMU	SY volume (ML/yr)	SY Lower band (ML/yr)	SY Upper band (ML/yr)	PCV (ML/yr)	Entitlement (ML/yr)	Average use (2016-2021) (ML/yr)	Current risk	Future risk
Confined aquifer GMUs									
Western Victoria	Murrayville GMA	10,400	9,500	11,400	11,005	9,755	5,408	SY > use	SY > Entitlements
Western Victoria	West Wimmera GMA – Tertiary Confined Sand Aquifer	1,100	900	1,300	1,550	0	0	SY > use	SY > Entitlements
Northern Victoria	Katunga WSPA	23,900	19,300	28,700	60,577	60,209	27,785	SY < use	SY < Entitlements
Gippsland	Corinella GMA	1,760	400	2,900	2,550	662	60	SY > use	SY > Entitlements
Gippsland	Moe GMA	3,600	2200	4,500	8,200	3,861	826	SY > use	SY < Entitlements
Gippsland	Orbost GMA	3,000	2,100	3,800	1,217	1,216	294	SY > use	SY > Entitlements
Gippsland	Giffard GMA	No SY Volume	NA	NA	5,689	5,688	2,475	-	-
Gippsland	Rosedale GMA	5,700	3,000	10,100	22,372	22,312	8,828	SY < use	SY < Entitlements

Gippsland	Sale WSPA	14,300	12,600	18,100	21,238	21,205	11,029	SY > use	SY < Entitlements
Gippsland	Yarram WSPA	9,200	3,400	17,900	25,690	25,665	11,482	SY < use	SY < Entitlements
Gippsland	Stratford GMA	11,100	6,600	15,200	27,686	37,119	22,625	SY < use	SY < Entitlements
Central Victoria	Frankston GMA	2,300	300	2,800	3,200	2,273	230	SY > use	SY > Entitlements
Central Victoria	Koo Wee Rup WSPA	4,700	1,950	9,150	12,915	12,589	3,610	SY > use	SY < Entitlements
Central Victoria	Moorabbin GMA	2,400	1,850	2,800	2,700	2,606	1,096	SY > use	SY < Entitlements
Central Victoria	Boneo GMA	1,200	-	-		Extraction: 2700 Injection: 2700	Extraction (2011-2021): 448 Injection (2011-2021): 322 Net extraction (2011-2021): 126	SY > use	SY > Entitlements
South West Victoria	Condah WSPA	3,000	2,100	3,400	7,475	7,469	2,782	SY > use	SY < Entitlements
South West Victoria	Cut Paw Paw GMA	900	NA	NA	3,650	517	99	SY > use	SY > Entitlements

South West Victoria	Gerangamete GMA	No SY Volume	NA	NA	239	12,142	3,524	-	-
South West Victoria	Portland GMA	9,500	6,200	10,000	7,795	7,794	2,606	SY > use	SY > Entitlements
South West Victoria	Newlingrook GMA	2,000	300	2,800	1,977	1,957	145	SY > use	SY > Entitlements
South West Victoria	Paaratte GMA	No SY Volume	NA	NA	4,606	3,190	321	-	-
South West Victoria	Jan Juc GMA – Lower Eastern View Formation	No SY Volume	NA	NA	7,000	7,000	2,801	-	-
Unconfined and semi-confined aquifer GMUs									
West Wimmera	West Wimmera GMA - Big Desert Zone	6,900	5,600	9,700	25	0	0	SY > use	SY > Entitlements
West Wimmera	West Wimmera GMA - Gymbowen Zone*	1,800	1,700	3,100	2,000	1,052	232	SY > use	SY > Entitlements
West Wimmera	West Wimmera GMA - Little Desert Zone	1,200	1,000	2,100	25	0	0	SY > use	SY > Entitlements
West Wimmera	West Wimmera GMA - Neuarpur Zone	14,000	NA	NA	24,750	24,691	13,860	SY > use	SY < Entitlements
West Wimmera	West Wimmera GMA - Northern Zone*	18,600	9,100	31,200	22,390	21,932	5,900	SY > use	SY < Entitlements

West Wimmera	West Wimmera GMA - Southern Zone	5,800	4,500	6,600	6,469	5,648	1,950	SY > use	SY > Entitlements
Northern Central	Barnawartha GMA	700	300	3,400	2,100	375	61	SY > use	SY > Entitlements
Northern Central	Broken GMA*	6,300	6,300	10,200	3,732	2,902	1,217	SY > use	SY > Entitlements
Northern Central	Cardigan GMA	2,100	1,100	2,900	3,967	3,888	895	SY > use	SY < Entitlements
Northern Central	Central Victorian Mineral Springs GMA	2,800	1,600	3,800	6,024	5,044	1,154	SY > use	SY < Entitlements
Northern Central	Eildon GMA	1,400	1,400	2,200	1,496	607	200	SY > use	SY > Entitlements
Northern Central	Kiewa GMA*	2,200	1,300	3,500	3,852	3,115	876	SY > use	SY < Entitlements
Northern Central	Loddon Highlands WSPA	10,100	5,800	13,200	20,697	20,503	7,407	SY > use	SY < Entitlements
Northern Central	Lower Campaspe Valley WSPA*	33,700	24,900	41,000	55,875	55,860	38,225	SY < use	SY < Entitlements
Northern Central	Lower Ovens GMA*	No SY Volume	NA	NA	25,200	19,888	8,948	-	-
Northern Central	Mid Goulburn GMA*	4,500	4,000	6,000	12,470	12,432	3,535	SY > use	SY < Entitlements

Northern Central	Mid Loddon GMA*	19,900	12,100	25,700	34,037	33,917	21,450	SY < use	SY < Entitlements
Northern Central	Shepparton Irrigation Region	No SY volume	NA	NA	NA	187,114	86,860	-	-
Northern Central	Strathbogie GMA	4,800	4,800	7,300	1,660	1,417	974	SY > use	SY > Entitlements
Northern Central	Upper Goulburn GMA	3,500	3,300	5,800	8,568	6,086	1,992	SY > use	SY < Entitlements
Northern Central	Upper Murray GMA	9,300	5,300	9,300	7,674	3,496	814	SY > use	SY > Entitlements
Northern Central	Upper Ovens WSPA	2,300	1,500	3,300	NA	3,625	1,317	SY > use	SY < Entitlements
Northern Central	West Goulburn GMA*	6,800	5,600	9,100	NA	2,997	1,359	SY > use	SY > Entitlements
Gippsland	Denison GMA	15,200	11,500	19,100	18,502	18,499	7,679	SY > use	SY < Entitlements
Gippsland	Leongatha GMA	1,900	1,100	2,700	6,500	1,803	184	SY > use	SY > Entitlements
Gippsland	Tarwin GMA	300	250	350	1,300	54	10	SY > use	SY > Entitlements
Gippsland	Wa De Lock GMA	43,500	31,800	57,200	30,375	29,131	7,750	SY > use	SY > Entitlements

Gippsland	Wy Yung GMA	No SY Volume	NA	NA	7,463	7,462	970	-	-
Central Victoria	Bungaree GMA	2,800	1,600	3,900	5,334	5,293	2,700	SY > use	SY < Entitlements
Central Victoria	Deutgam WSPA	5,500	3,400	7,100	5,100	5,082	625	SY > use	SY > Entitlements
Central Victoria	Lancefield GMA	900	500	1,400	1,485	1,378	303	SY > use	SY < Entitlements
Central Victoria	Merrimu GMA	200	150	300	451	6	15	SY > use	SY > Entitlements
Central Victoria	Nepean GMA	3,000	2,100	3,500	6,110	6,110	2,812	SY > use	SY < Entitlements
Central Victoria	Wandin Yallock GMA	2,000	1,100	2,800	3,027	3,015	638	SY > use	SY < Entitlements
South West Victoria	Colongulac GMA	4,600	NA	NA	4,695	4,405	1,331	SY > use	SY > Entitlements
South West Victoria	Jan Juc GMA - Upper Eastern View Formation	No SY Volume	NA	NA	4,250	4,000	591	-	-
South West Victoria	Gellibrand GMA	No SY Volume	NA	NA	0	0	0	-	-
South West Victoria	Former Glenelg WSPA (Zones 1B, 2B, 3B)	6,100	4,400	6,900	33,262	16,025	5,957	SY > use	SY < Entitlements

South West Victoria	Glenormiston GMA	No SY Volume	NA	NA	2,698	2,636	1,273	-	-
South West Victoria	Hawkesdale GMA	No SY Volume	NA	NA	16,161	12,451	5,040	-	-
South West Victoria	Heywood GMA	No SY Volume	NA	NA	8,500	7,011	1,688	-	-
South West Victoria	Nullawarre WSPA	No SY Volume	NA	NA	22,741	22,741	10,909	-	-
South West Victoria	Yangery WSPA	No SY Volume	NA	NA	14,352	13,978	4,295	-	-
South West Victoria	Warrion WSPA	10,200	5,500	15,300	14,086	14,077	3,555	SY > use	SY < Entitlements

7.1.1. GMUs

Confined aquifer

Current Risk to Sustainability

The current risk to groundwater sustainability is assessed by comparing current use with sustainable yield volumes. The following identifies GMUs where current use is less than the sustainable yield volume and those where current use exceeds the sustainable yield volume:

- Current use < sustainable yield volume – use is less than the derived sustainable yield (14 GMUs – West Wimmera GMA – TCSA aquifer, Murrayville GMA, Corinella GMA, Orbost GMA, Moe GMA, Sale WSPA, Boneo GMA, Frankston GMA, Koo Wee Rup WSPA, Cut Paw Paw GMA, Condah WSPA, Newlingrook GMA, Portland GMA, and Moorabbin GMA)
- Current use > sustainable yield volume – use is greater than the derived sustainable yield (4 GMUs – Katunga WSPA, Rosedale GMA, Yarram WSPA, and Stratford GMA)
- No category – derived sustainable yield was either not suitable or is under review (4 GMUs - Jan Juc GMA – Lower Eastern View Formation, Gerangamete GMA, Paaratte GMA, and Giffard GMA)

The current risk provides an indication of the risk for each GMU; however, it is important to acknowledge the uncertainty associated with each sustainable yield volume. In confined GMUs, this uncertainty has been quantified and falls within -42% to 36% of the sustainable yield volume. GMUs currently classified as “current use < sustainable yield volume” may shift to “current use > sustainable yield volume” if the actual sustainable yield lies closer to the lower bound of the uncertainty range. Conversely, those classified as “current use > sustainable yield volume” could shift to “current use < sustainable yield volume” if the actual sustainable yield aligns more closely with the upper bound. These potential shifts are illustrated in **Figure 17**

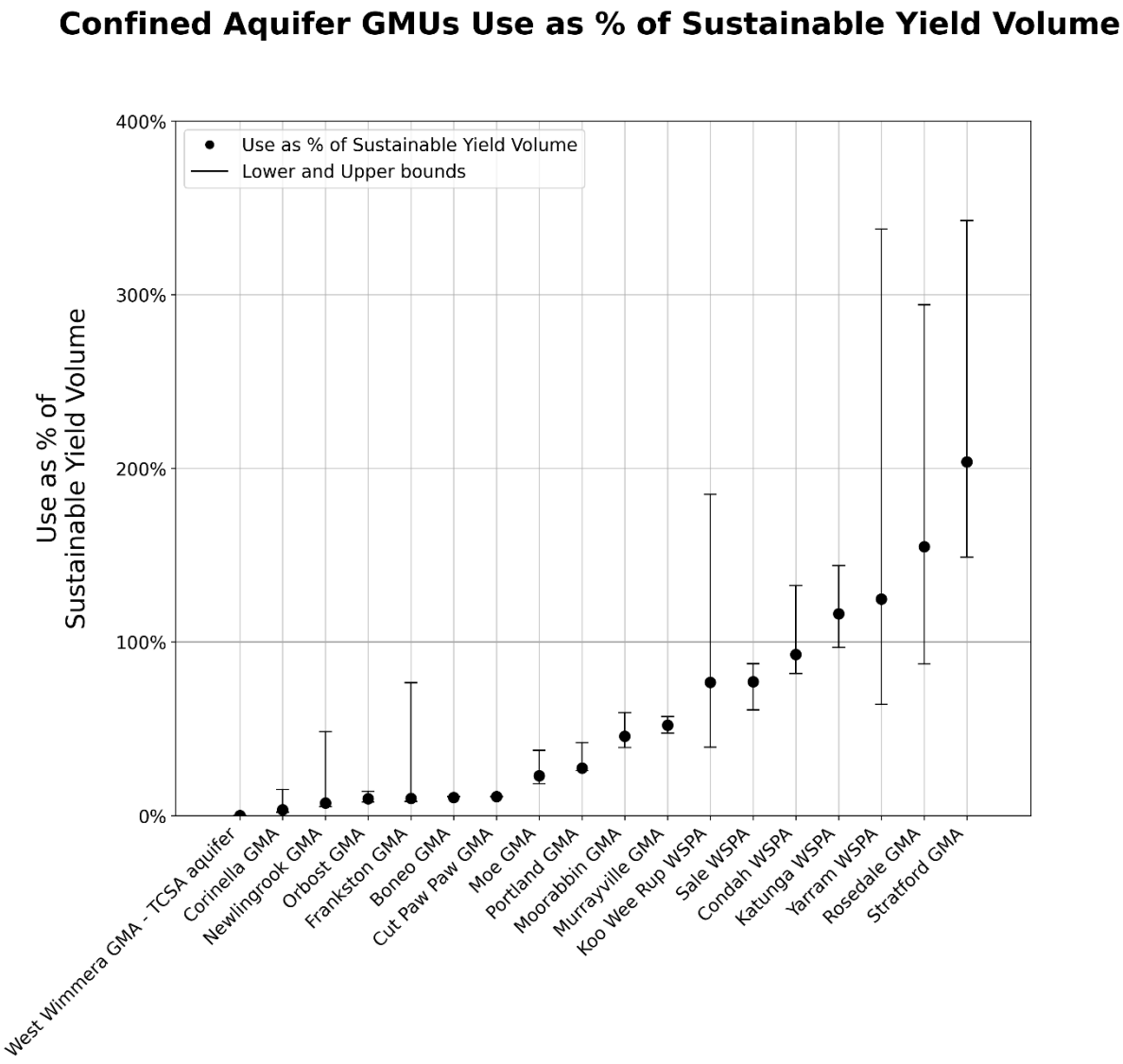

Figure 17. Impacts of uncertainty on current risk to sustainability for confined aquifer GMUs

The current risk to sustainability is mapped across the state for confined GMUs in **Figure 18**.

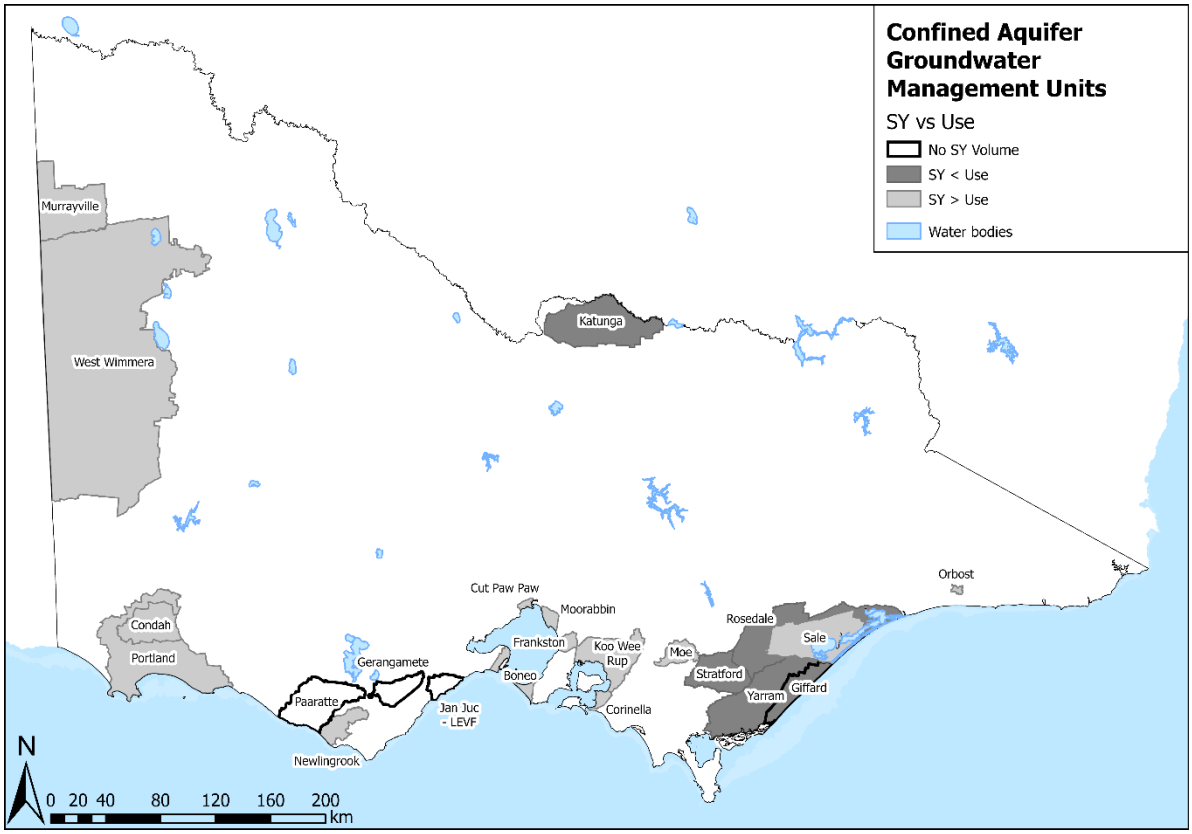

Figure 18. Current risk to sustainability for confined aquifer GMUs

Future risk to sustainability

Future sustainability risks are evaluated by considering the potential for increased groundwater use. Currently, groundwater use is approximately 40% of licensed entitlement, indicating the potential for increased use. This may occur through licence holders increasing take up to 100% of their entitlement and/or trading their unused part of their entitlement which may be used by the new entitlement holder. Therefore, licence entitlements are compared against sustainable yield volumes to assess future sustainability risks.

- Entitlement < sustainable yield volume – entitlement is less than the derived sustainable yield (9 GMUs – West Wimmera GMA – TCSA aquifer, Corinella GMA, Orbost GMA, Boneo GMA, Frankston GMA, Cut Paw Paw GMA, Newlingrook GMA, Murrayville GMA, and Portland GMA)
- Entitlement > sustainable yield volume – entitlement is greater than the derived sustainable yield (9 GMUs - Koo Wee Rup WSPA, Moorabbin GMA, Condah WSPA, Moe GMA, Sale WSPA, Katunga WSPA, Rosedale GMA, Yarram WSPA, and Stratford GMA)
- No category – derived sustainable yield was either not suitable or is under review (4 GMUs - Jan Juc GMA, Gerangamete GMA, Paaratte GMA, and Giffard GMA)

The impacts of uncertainty on future risk to sustainability are also assessed and presented in **Figure 19** for confined GMUs.

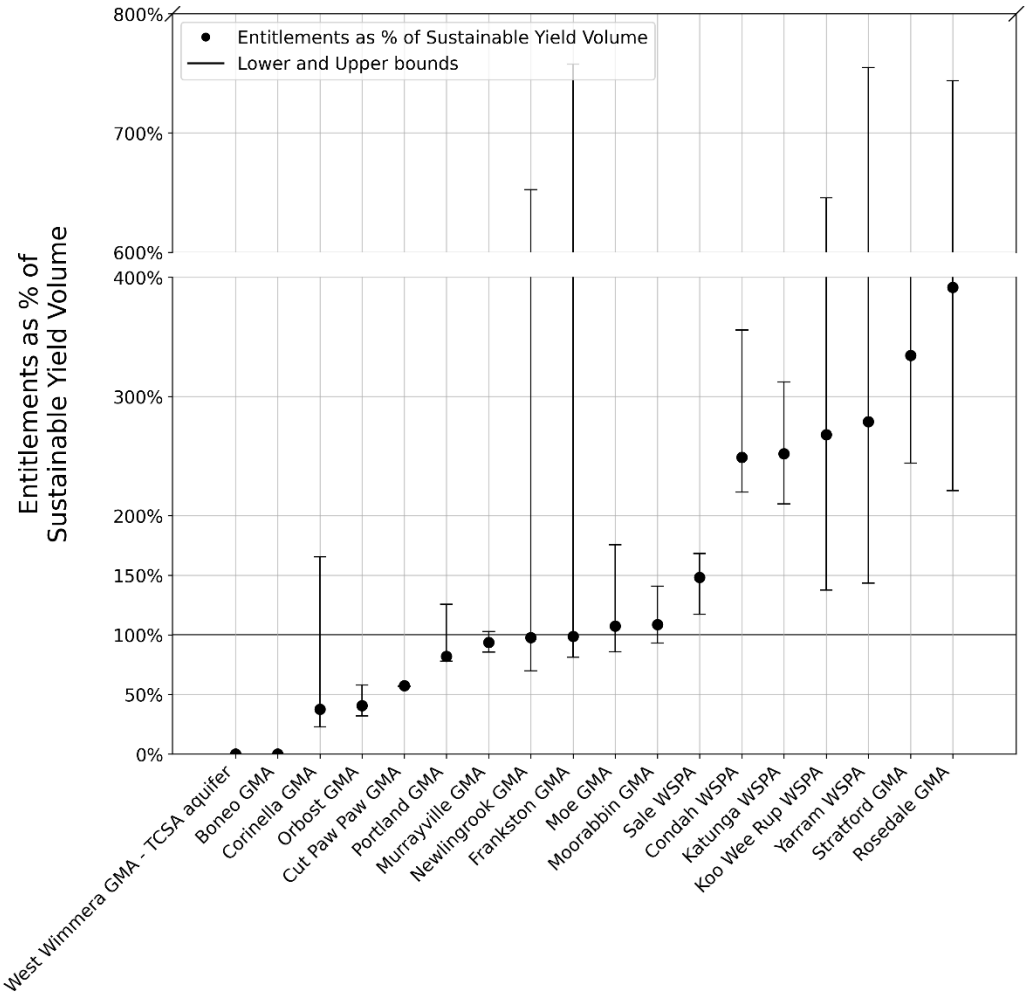

Figure 19. Impacts of uncertainty on future risk to sustainability for confined aquifer GMUs

The future risk to sustainability is mapped across the state for confined GMUs in **Figure 20**.

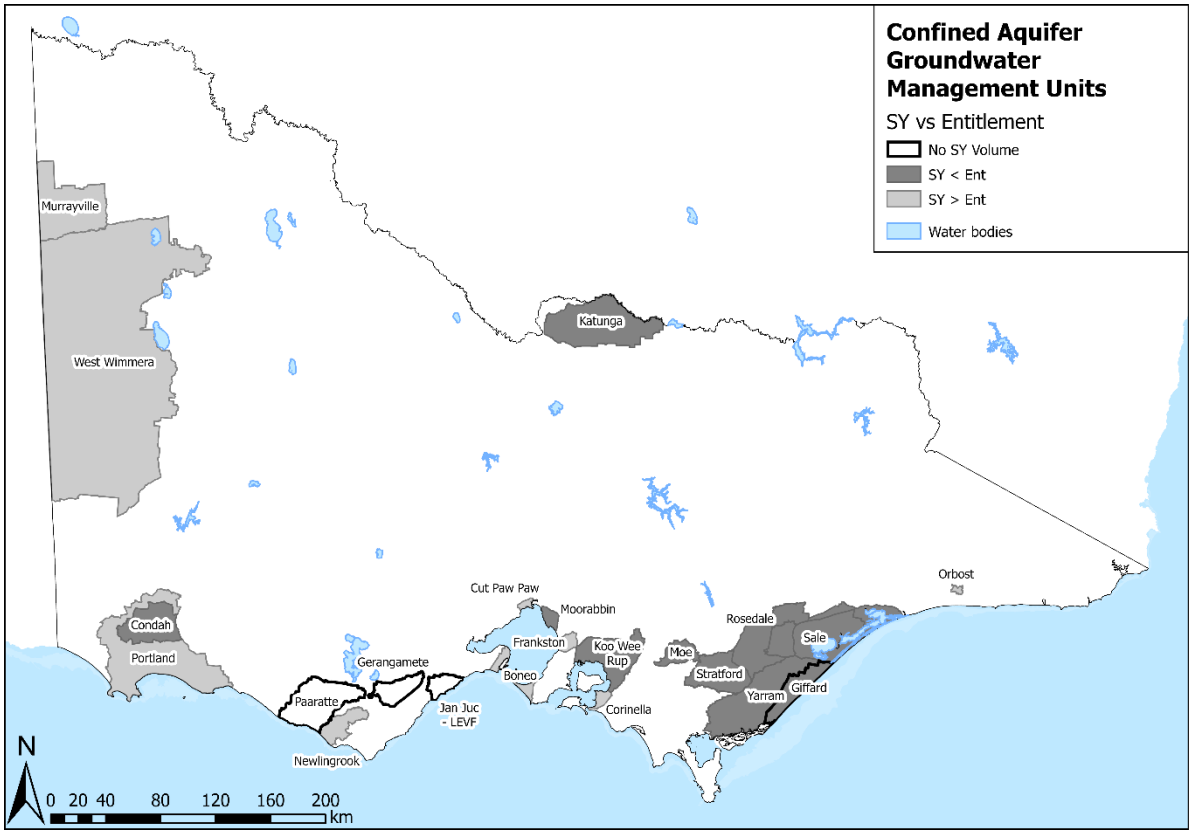

Figure 20 Future risk to sustainability for confined aquifer GMUs

Unconfined aquifer

Current Risk to Sustainability

The current risk to groundwater sustainability is assessed by comparing current use with sustainable yield volumes. The following identifies GMUs where current use is less than the sustainable yield volume and those where current use exceeds the sustainable yield volume:

- Current use < sustainable yield volume – use is less than the derived sustainable yield in the 32 unconfined GMUs/GMU zones with a sustainable yield volume
- Current use > sustainable yield volume – use is greater than the derived sustainable yield in 2 GMUs: Lower Campaspe Valley WSPA, and Mid Loddon GMA
- No category – derived sustainable yield was either not suitable or is under review in 10 GMUs (Jan Juc GMA– UEVF, Gellibrand GMA, Lower Ovens GMA, Wy Yung GMA, Shepparton IR, Glenormiston GMA, Hawkesdale GMA, Heywood GMA, Nullawarre WSPA and Yangery WSPA).

The uncertainty bands shown in **Figure 21** highlight the influence of climate on sustainable yield volumes, with several GMUs likely to exceed use under drier climate conditions including Loddon Highlands, Mid Goulburn, Nepean and Bungaree GMUs.

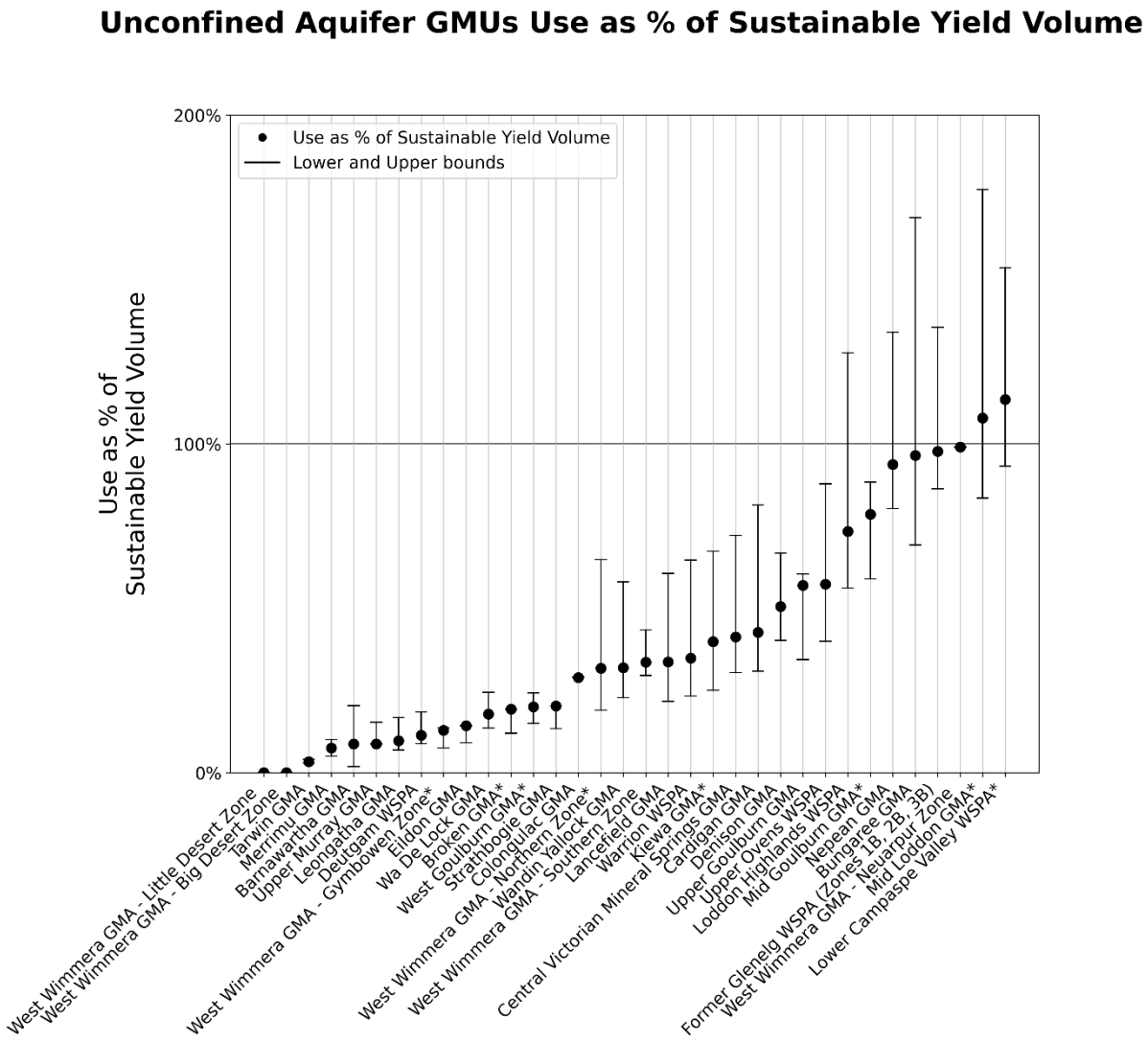

Figure 21. Impacts of uncertainty on current risk to sustainability for unconfined aquifer GMUs

The current risk to sustainability is mapped across the state for unconfined GMUs in **Figure 22**.

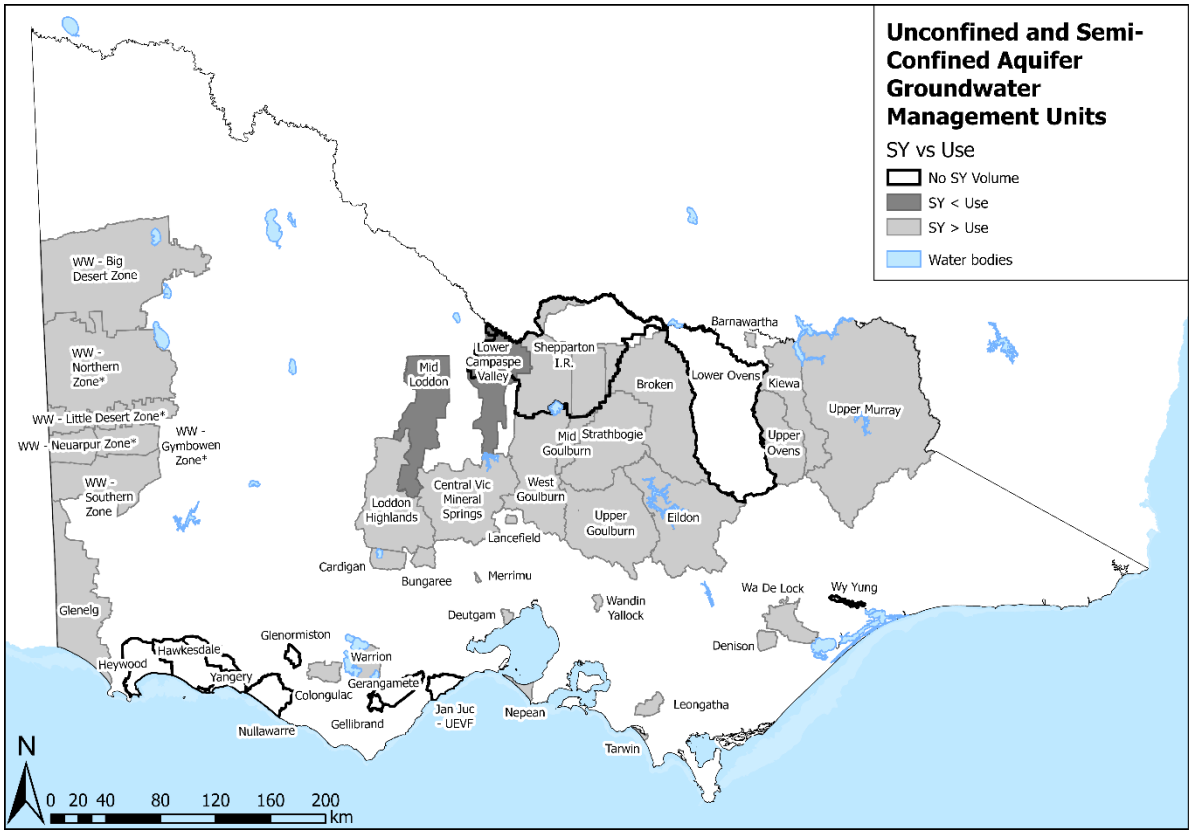

Figure 22. Current risk to sustainability for unconfined aquifer GMUs

Future risk to sustainability

Future sustainability risks are evaluated by considering both climate change impacts and the potential for increased groundwater use.

Figure 23 illustrates that projected sustainable yield volumes may decrease by up to 50% under a dry future scenario (high climate change) and increase by more than 200% under a wet future scenario (low climate change).

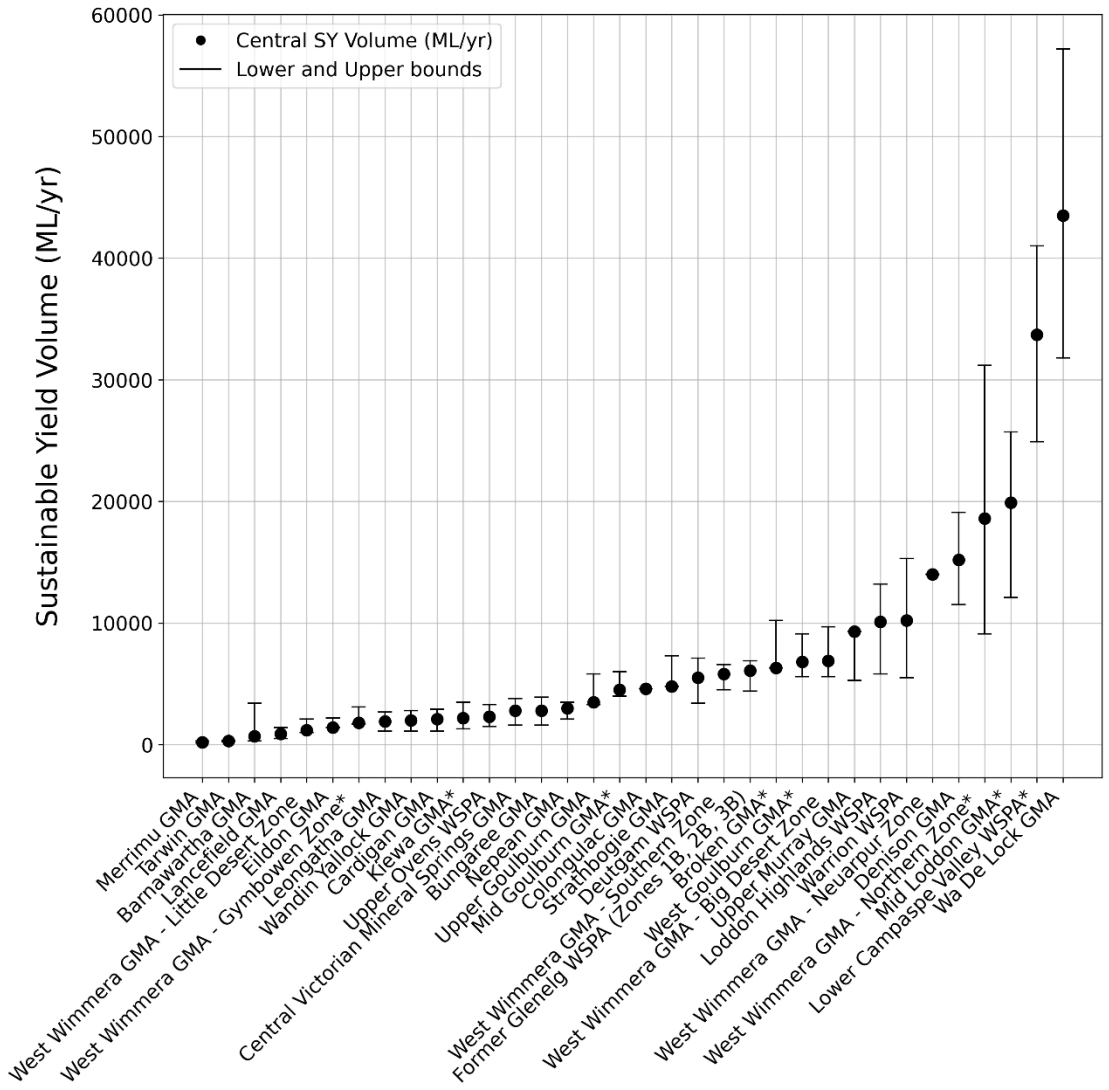

Figure 23. Projected impacts of climate change on sustainable yield volumes. The lower and upper bounds represent high (dry) and low (wet) climate change scenarios, respectively.

Currently, groundwater use is approximately 40% of licensed entitlement, indicating the potential for increased use. This may occur through licence holders increasing the take up to 100% of their entitlement and/or trading their unused part of their entitlement which may be used by the new entitlement holder. Therefore, licence entitlements are compared against sustainable yield volumes to assess future sustainability risks.

- Entitlement < sustainable yield volume – entitlement is less than the derived sustainable yield in 16 GMUs/GMU zones: West Wimmera GMA - Big Desert Zone, West Wimmera GMA - Gymbowen Zone, West Wimmera GMA - Southern Zone, West Wimmera GMA - Little Desert Zone, Barnawartha GMA, Broken GMA, Eildon GMA, Strathbogie GMA, Upper Murray GMA, Upper Murray GMA, West Goulburn GMA, Leongatha GMA, Tarwin GMA, Wa De Lock GMA, Deutgam WSPA, Merrimu GMA, and Colongulac GMA. The future risk in these areas is low, except in GMUs where climate is a significant influence on the sustainable yield volume such as Barnawatha GMA, Deutgam WSPA, Colongulac GMA and Leongatha GMAs where dry climate scenarios could reduce sustainable yield volumes to less than existing entitlements.

- Entitlement > sustainable yield volume – entitlement is greater than the derived sustainable yield in 18 GMUs/GMU zones: West Wimmera GMA - Neuarpur Zone, West Wimmera GMA - Northern Zone, Lower Campaspe Valley WSPA, Mid Loddon GMA, Cardigan GMA, Central Victorian Mineral Springs GMA, Kiewa GMA, Loddon Highlands WSPA, Mid Goulburn GMA, Upper Goulburn GMA, Upper Ovens WSPA, Denison GMA, Bungaree GMA, Lancefield GMA, Nepean GMA, Wandin Yallock GMA, Former Glenelg WSPA (Zones 1B, 2B, 3B), and Warrion WSPA
- No category – derived sustainable yield was either not suitable or is under review (10 GMUs - Jan Juc – UEVF, Gellibrand GMA, Lower Ovens GMA, Wy Yung GMA, Shepparton IR, Glenormiston GMA, Hawkesdale GMA, Heywood GMA, Nullawarre WSPA and Yangery WSPA).

The impacts of uncertainty on future risk to sustainability are assessed and presented in **Figure 24** for unconfined GMUs.

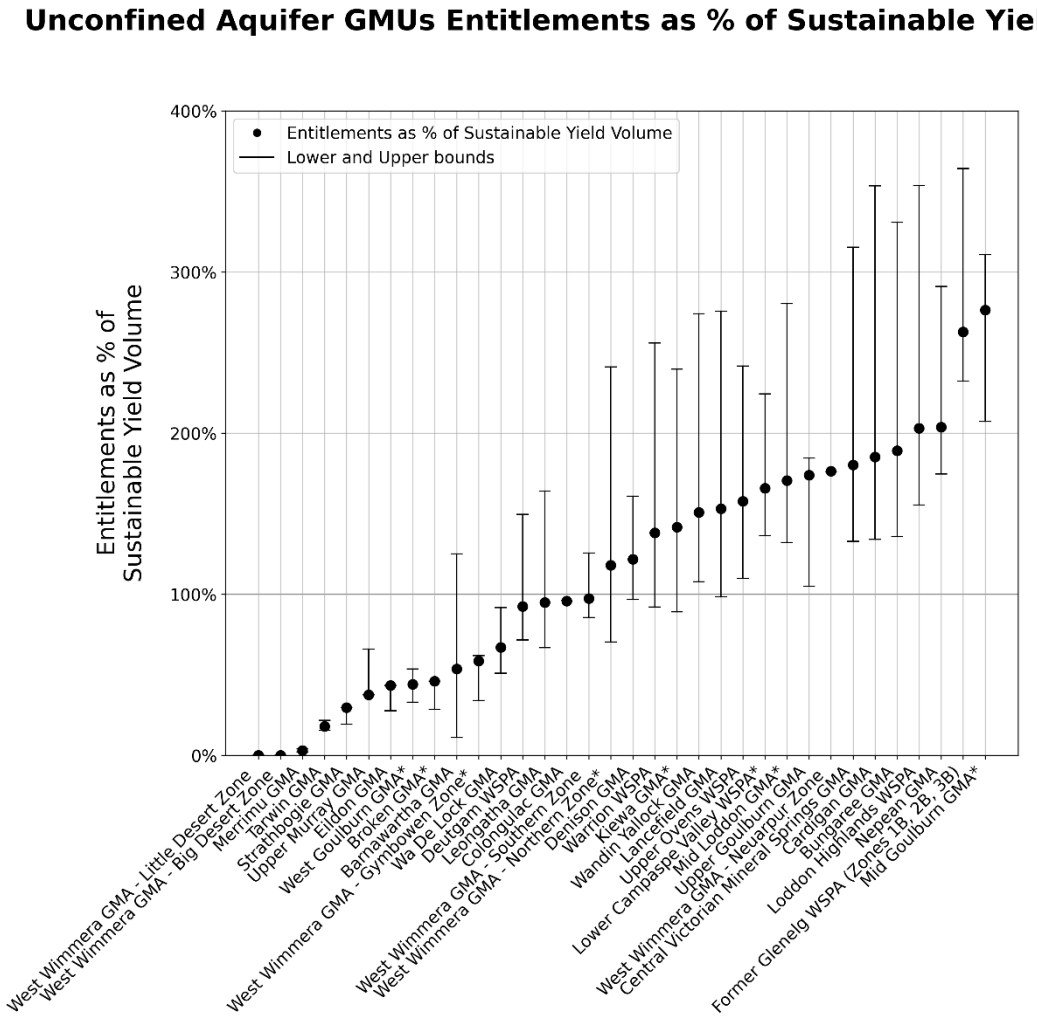

Figure 24. Impacts of uncertainty on future risk to sustainability for unconfined aquifer GMUs

The future risk to sustainability is mapped across the state for unconfined GMUs in **Figure 25**.

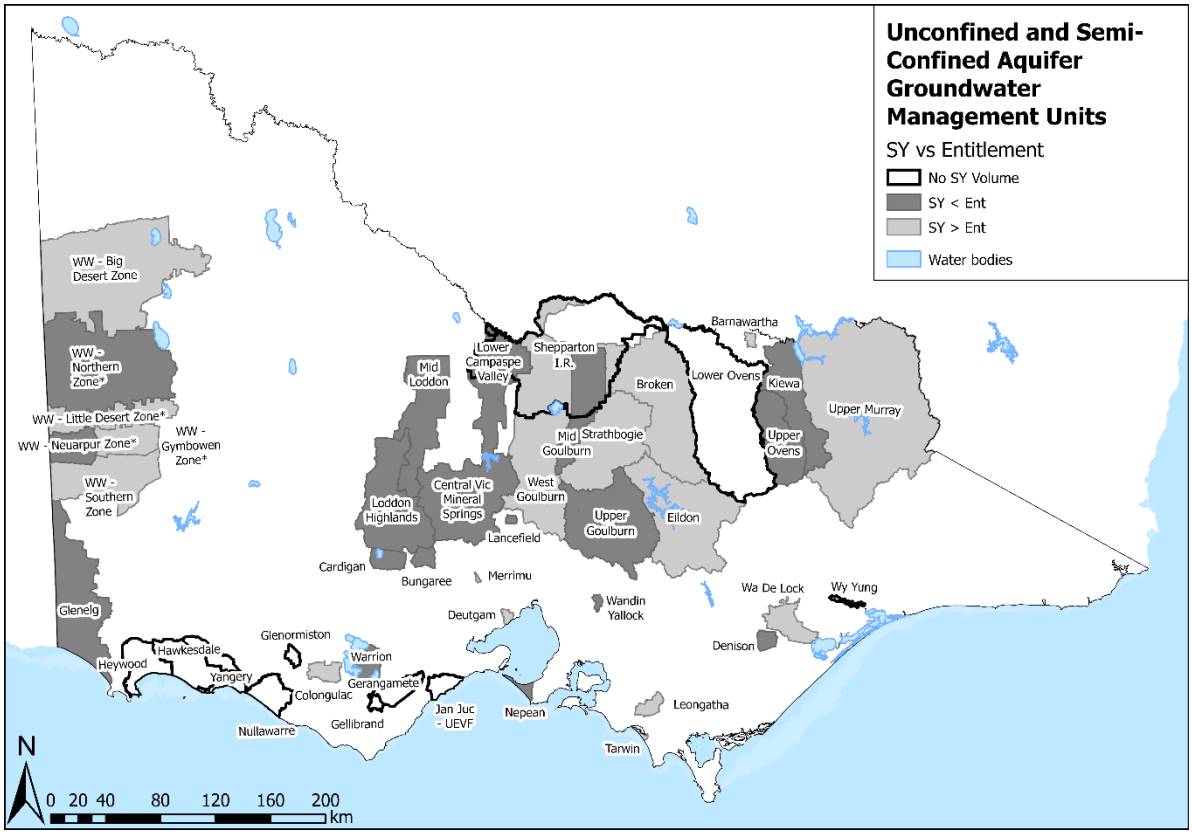

Figure 25. Future risk to sustainability for unconfined aquifer GMUs

7.1.2. UAs

Confined aquifer UAs

The derived sustainable yield volumes were assessed against average use for confined UA to identify current risk to sustainability of groundwater resources (**Table 18**). In all UAs, the proposed sustainable yield volume is greater than the average use and there is no current risk. This clearly indicates that these UAs are not yet developed; however, water quality should be considered in their future development. The LTA-SW3 and LTA-SW6 UAs have sustainable yield volumes of 28,100 and 14,200 ML/yr, respectively, which are significantly higher than the other UAs. The impacts of uncertainty on current risk to sustainability are presented in **Figure 26** for confined UAs.

Table 18. Comparison of the sustainable yield volumes against average use and Entitlements

Unincorporated Area	Sustainable yield volume (ML/yr) (uncertainty band in ML/yr and %)	Average use (ML/yr)	Entitlements (ML/yr)	Current risk	Future risk
Wimmera–Mallee					
UTAF-NE1	4,100 (2,000 – 6,200) (-51% - +51%)	0	0	Use < SY	Entitlement < SY
UMTA-NW1	1,100 (400 – 1,700) (-64% - +55%)	0	0	Use < SY	Entitlement < SY
UMTA-NW2	3,700 (NA)	0	0	Use < SY	Entitlement < SY
UMTA-NW3	2,400 (NA)	0	0	Use < SY	Entitlement < SY
LTA-NW1	800 (NA)	0	0	Use < SY	Entitlement < SY
LTA-NW2	700 (NA)	0	0	Use < SY	Entitlement < SY
LTA-NW3	800 (700 – 900) (-13% - +13%)	0	0	Use < SY	Entitlement < SY
LTA-NW4	800 (700 – 1,000) (-13% - +25%)	0	57	Use < SY	Entitlement < SY
LTA-NW5	7,100 (5,800 – 8,300) (-18% - +17%)	1	12	Use < SY	Entitlement < SY
Goulburn–Murray					
UTAF – NE2	1,700 (1,600 – 1,800) (-6% - +6%)	23	1,407	Use < SY	Entitlement < SY
LTA – NE1	1,900 (800 – 2,600) (-58% - +37%)	84	130	Use < SY	Entitlement < SY
Otway–Torquay					
LMTA-SW1	2,200 (1,700 – 2,800) (-23% - +27%)	0	0	Use < SY	Entitlement < SY
LMTA-SW2-A	3,600 (1,000 – 7,800) (-72% - +117%)	0	0	Use < SY	Entitlement < SY
LMTA-SW2-B	4,300 (1,300 – 7,000) (-70% - +63%)	0	0	Use < SY	Entitlement < SY
LMTA-SW3	1,700 (700 – 2,300) (-59% - +35%)	0	97	Use < SY	Entitlement < SY
LMTA-SW4	*-	0	0	Use < SY	Entitlement < SY
LTA-SW1	3,700 (NA)	0	0	Use < SY	Entitlement < SY
LTA-SW2	4,200 (2,000 – 6,400) (-52% - +52%)	221	500	Use < SY	Entitlement < SY

Unincorporated Area	Sustainable yield volume (ML/yr) (uncertainty band in ML/yr and %)	Average use (ML/yr)	Entitlements (ML/yr)	Current risk	Future risk
LTA-SW3	27,200 (7,600 – 40,000) (-72% - +47%)	23	99	Use < SY	Entitlement < SY
LTA-SW4	5,100 (3,000 – 6,500) (-41% - +27%)	10	20	Use < SY	Entitlement < SY
LTA-SW5	*-	0	0	No SY volume	No SY volume
LTA-SW6	13,800 (12,000 – 15,700) (-13% - +14%)	0	0	Use < SY	Entitlement < SY
LTA-SW7	*-	0	0	No SY volume	No SY volume
Central					
UTAF-PP2	100 (NA)	20	290	Use < SY	Entitlement > SY
UTAF-PP1	500 (200 – 800) (-60% - +60%)	109	487	Use < SY	Entitlement < SY
LTA-PP1	6,600 (5,100 – 7,800) (-23% - +18%)	357	2,334	Use < SY	Entitlement < SY
LTA-PP2	13,700 (NA)	0	3	Use < SY	Entitlement < SY
LTA-PP3	*-	0	86	No SY volume	No SY volume
Gippsland					
UTAF – SE1	*-	0	0	No SY volume	No SY volume
UTAF – SE2	*-	11	451	No SY volume	No SY volume
UTAF – SE3	*-	0	0	No SY volume	No SY volume
LTA – SE1	*-	0	0	No SY volume	No SY volume
LTA – SE2	150 (100 – 200) (-33% - +33%)	37	0	Use < SY	Entitlement < SY

* It is not possible to calculate the throughflow flux for these UAs due to their small size. Therefore, sustainable yield volume is not calculated for these UAs.

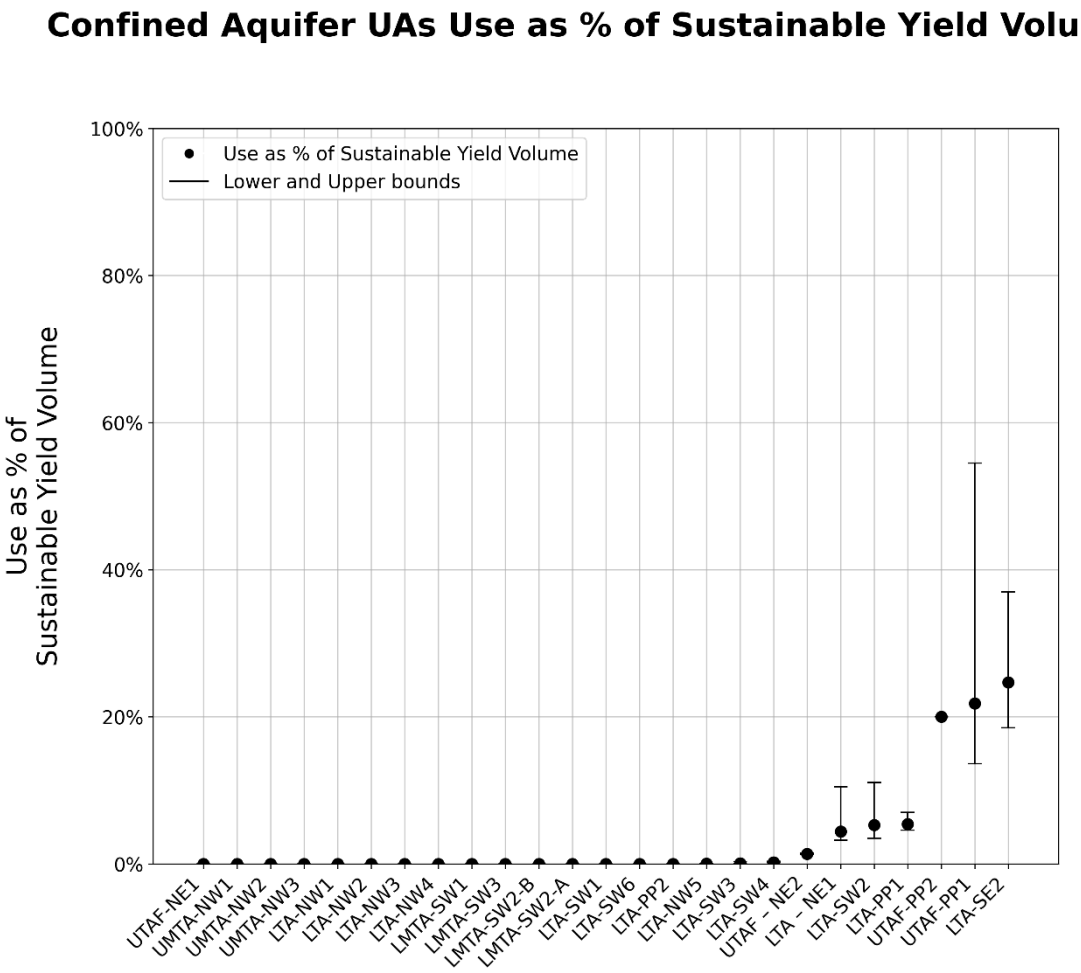

Figure 26. Uncertainty impacts on current risk to sustainability for confined aquifer UAs

Future risk to sustainability

Future sustainability risks are also evaluated by comparing the sustainable yield volumes against the entitlements (**Table 18**). In all UAs, the proposed sustainable yield volume exceeds entitlements, except in UTAF-PP2 UA, where the proposed sustainable yield volume is 100 ML/yr, while the entitlement is 290 ML/yr. Since there are no caps in Unincorporated Areas, there is future sustainability risk in these areas. The impacts of uncertainty on future risk to sustainability are presented in **Figure 27** for confined UAs.

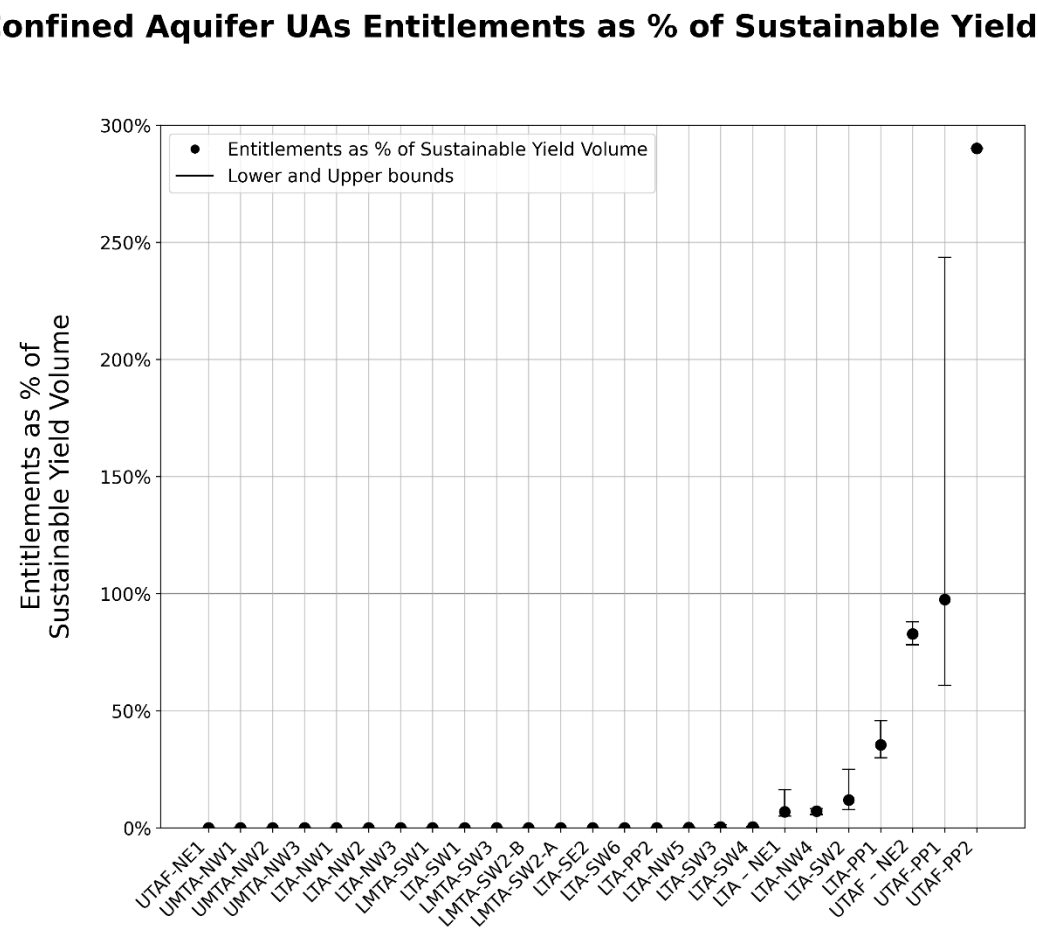

Figure 27. Uncertainty impacts on future risk to sustainability for confined aquifer UAs

Unconfined aquifer UAs

Current risk to sustainability

The derived sustainable yield volumes were compared against average use in unconfined UAs, which correspond to SDLs, to assess the current risk to groundwater sustainability. The impact of uncertainty on current risk is presented in **Figure 28** for unconfined SDLs.

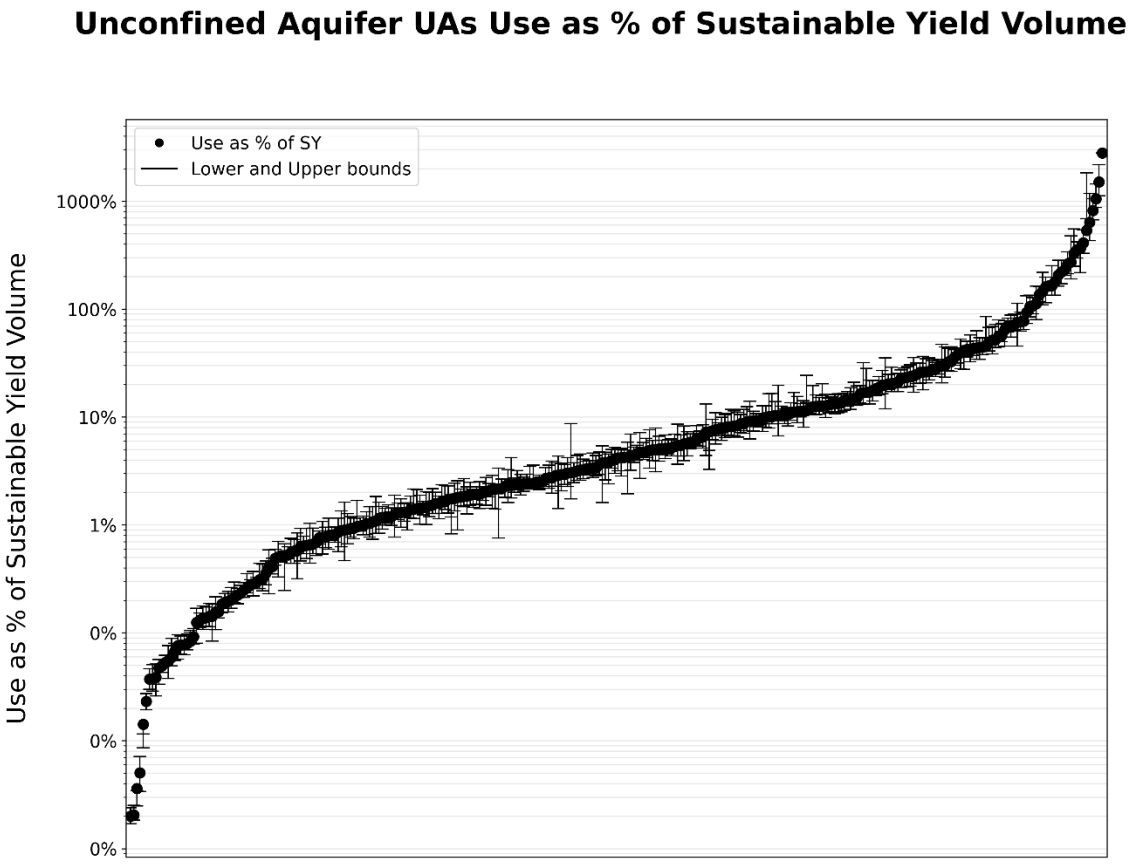

Figure 28. The impact of uncertainty on current risk for unconfined SDLs

Future risk to sustainability

Future sustainability risks are evaluated by considering both climate change impacts and the potential for increased groundwater use.

Figure 29 illustrates that projected sustainable yield volumes may decrease by up to **55**% under a dry future scenario (high climate change) and increase by more than **20**% under a wet future scenario (low climate change).

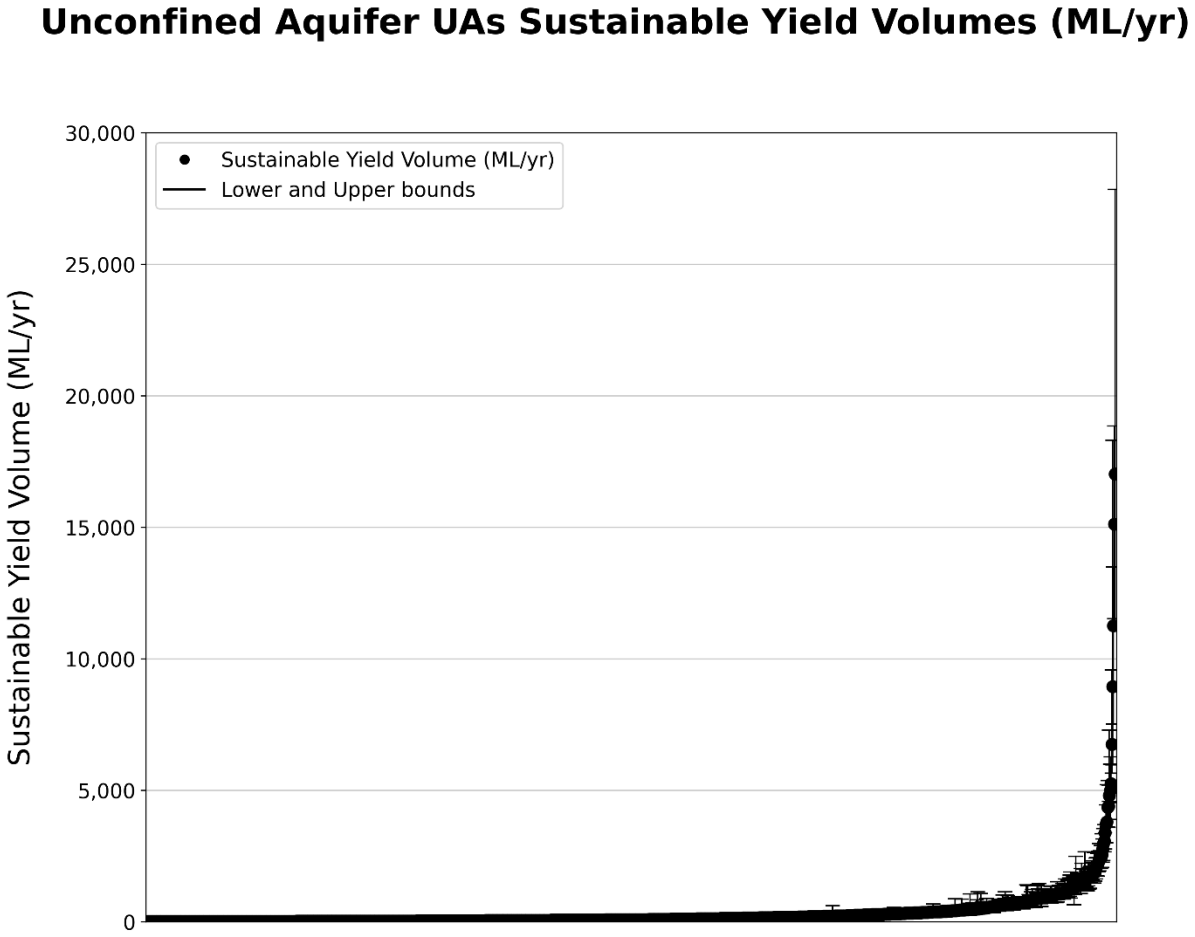

Figure 29. Projected impacts of climate change on sustainable yield volumes for unconfined SDLs. The lower and upper bounds represent high (dry) and low (wet) climate change scenarios, respectively.

Future sustainability risks are also evaluated by comparing the sustainable yield volumes against the entitlements (**Figure 30**).

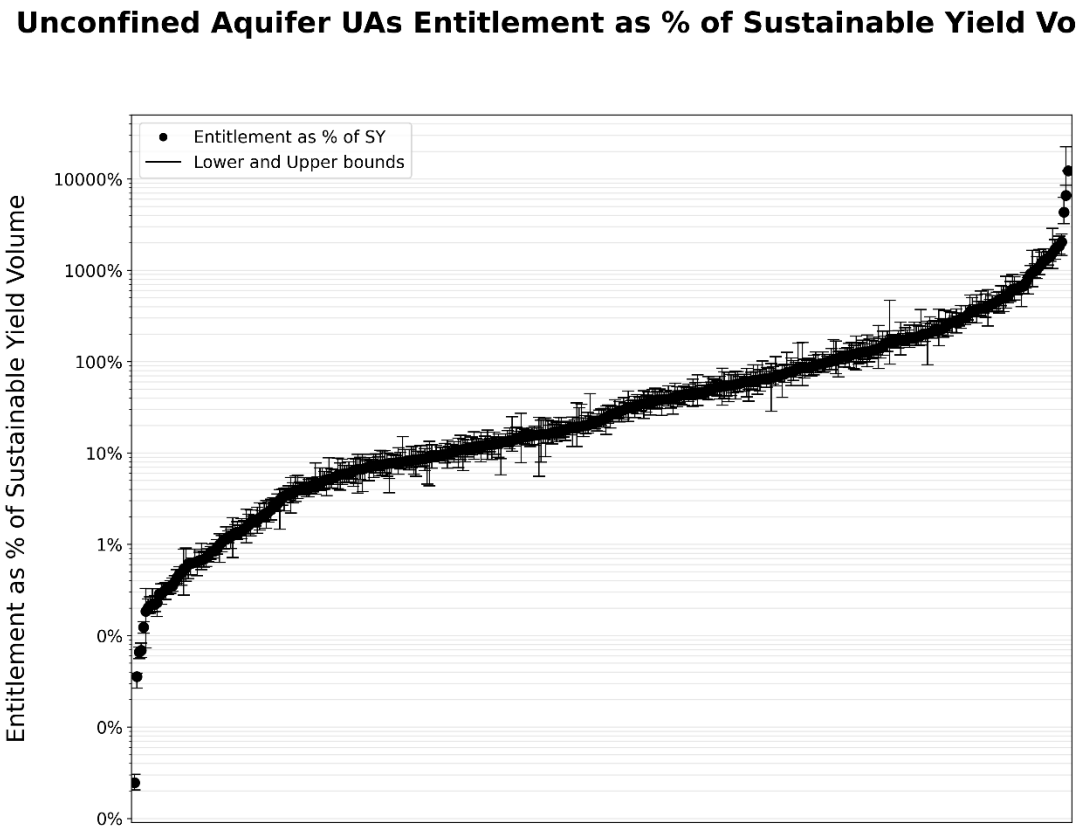

Figure 30. The impact of uncertainty on future risk for unconfined SDLs

7.1.3. State-wide summary of the risk to sustainability

The state-wide summary of the risk to sustainability for GMUs and UAs is presented in **Table 19**. The results indicate that 5 confined GMUs and 2 unconfined GMUs have sustainable yield volumes lower than current use, highlighting current risk in these areas. Additionally, 12 confined GMUs and 18 unconfined GMUs have sustainable yield volumes lower than entitlements, indicating potential future risk. 13 GMUs are not classified as they do not have SY volume as the derived volume was either no suitable or is under review.

Since there are no caps in UAs, there is future sustainability risk in these areas.

Table 19. The state-wide summary of the risk to sustainability for GMUs and UAs

Area		Current risk			Future risk		
		SY > Use	SY < Use	No SY volume	SY > Entitlements	SY < Entitlements	No SY volume
GMU/GMU Zone	Confined aquifer	14	4	4	9	9	4
	Unconfined aquifer	32	2	10	16	18	10
UA	Confined aquifer	26	0	7	25	1	7
	Unconfined aquifer	1,142	28	N/A	1,052	118	N/A

7.2. Suitability of the results – fit for purpose

The sustainable yield volumes, whilst having a level of uncertainty, are considered fit-for-purpose to:

- inform risks to groundwater resources and groundwater-dependent values
- inform groundwater resource management planning
- inform the setting and/or review of caps on entitlements for groundwater resources, where applicable.

The sustainable yield volumes are not considered suitable for implementing restrictions on use due to the uncertainty range in the assessed volumes. Instead, restrictions based on observed groundwater levels are preferred as they are simpler to implement and more accepted by the community. This is the approach currently used in some GMUs.

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Appendix 1: Synthesis results for all confined GMUs across the state

Wimmera–Mallee Basin

Murrayville GMA

Table A1-1. Synthesis results for the Murrayville GMA, Representative Suite M_AC_2

Assessment area	GMU		Murrayville GMA
	Representative Suite		M_AC_2
	Aquifer		Murray Group Limestone (UMTA, 107)
	Water system depth boundary (m below natural surface)		All formations from 70 to 200 m below the surface
Context	Permissible Consumptive Volume (ML/yr)		11,005
	Licensed entitlement (ML/yr)		9,755
	Licensed average use (ML/yr)		5,408
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	2.55 (1.67–3.46)
		Proportion of throughflow flux (%) [lower band–upper band]	50 (41–65)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	10.95 (9.5–12.41)
		Proportion of throughflow flux (%) [lower band–upper band]	101 (82–131)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	10,400 (9,500–11,400)
		Proportion of throughflow flux (%) [lower band–upper band]	95 (78–123)

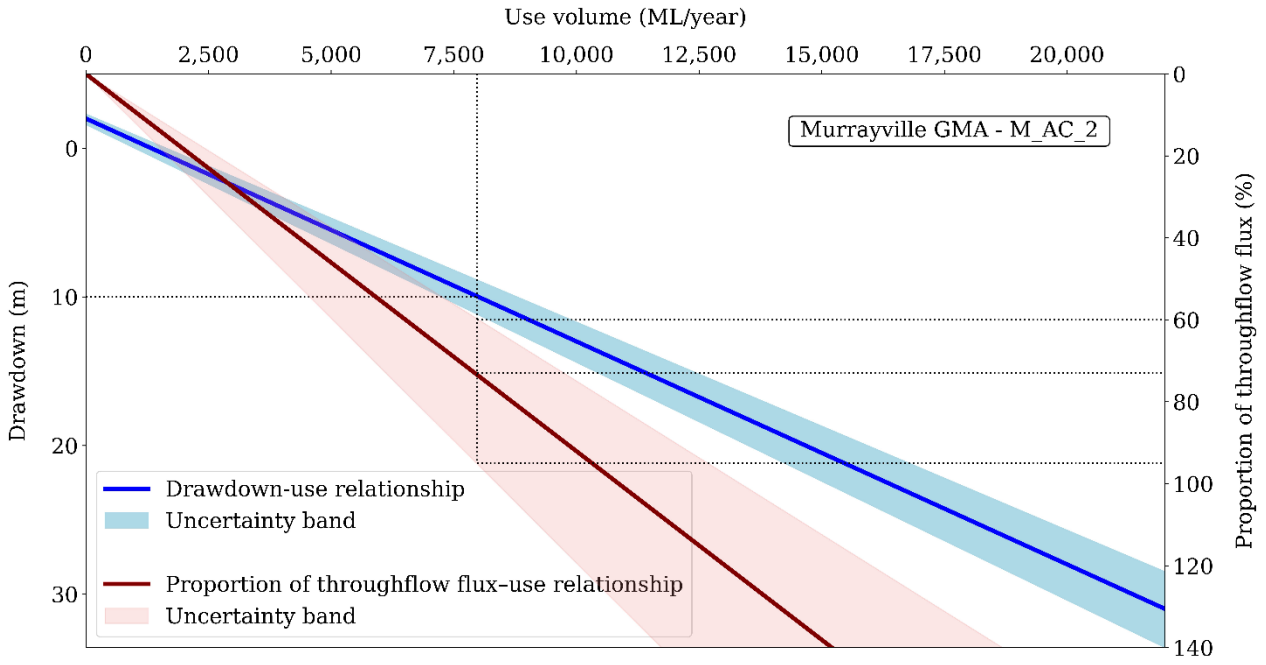

Figure A1-1. Visual representation of the synthesised information for the Murrayville GMA, Representative Suite M_AC_2

Goulburn–Murray Basin

Katunga WSPA

Table A1-2. Synthesis results for the Katunga WSPA, Representative Suite M_I_2

Assessment area	GMU		Katunga WSPA
	Representative Suite		M_I_2
	Aquifer		Calivil Formation (UTAF, 105)
	Water system depth boundary (m below natural surface)		All formations 25 m below from surface
Context	Permissible Consumptive Volume (ML/yr)		60,577
	Licensed entitlement (ML/yr)		60,203
	Licensed average use (ML/yr)		27,785
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	10.77 (12.76–8.69)
		Proportion of throughflow flux (%) [lower band–upper band]	26 (19–41)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	23.89 (25.88–21.81)
		Proportion of throughflow flux (%) [lower band–upper band]	58 (42–88)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	25,863 (20,888–31,053)
		Proportion of throughflow flux (%) [lower band–upper band]	25 (18–38)

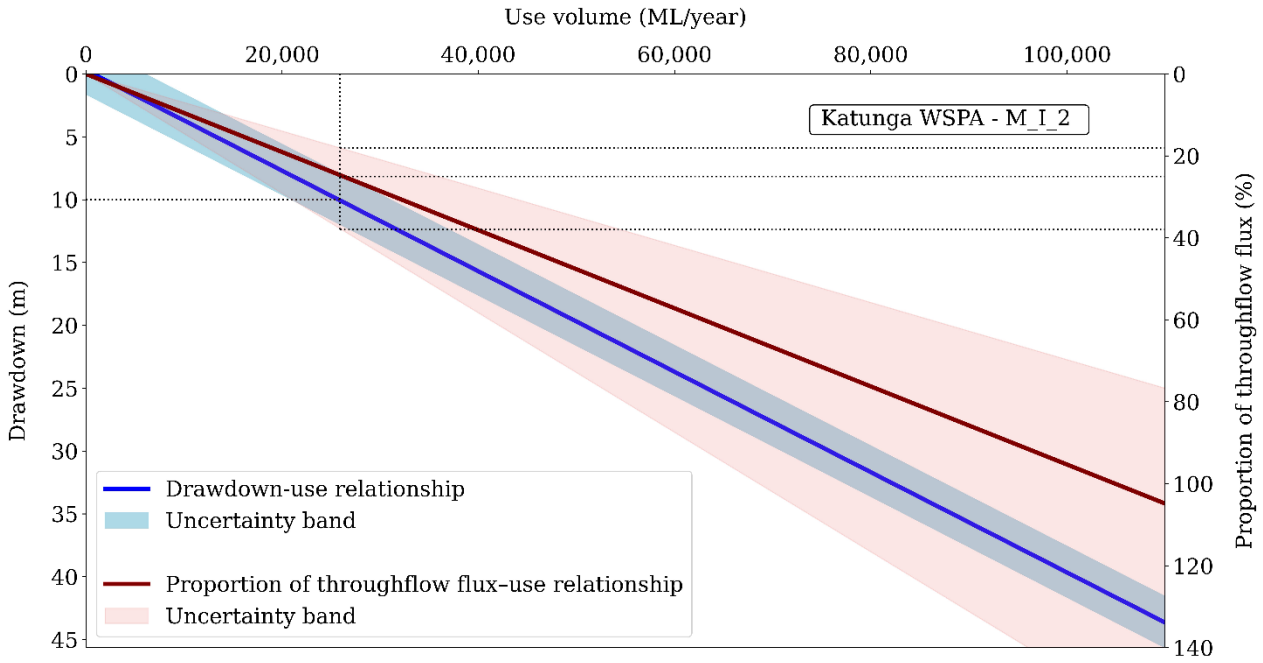

Figure A1-2. Visual representation of the synthesised information for the Katunga WSPA, Representative Suite M_I_2

Otway–Torquay Basin

Portland GMA

Table A1-3. Synthesis results for the Portland GMA, Suite L_C_1

Assessment area	GMU		Portland GMA
	Representative Suite		L_C_1
	Aquifer		Mepunga / Dilwyn Formation (LTA, 111)
	Water system depth boundary (m below natural surface)		All formations below 200 m below the surface
Context	Permissible Consumptive Volume (ML/yr)		7,795
	Licensed entitlement (ML/yr)		7,794
	Licensed average use (ML/yr)		2,606
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	2.25 (3.19–1.78)
		Proportion of throughflow flux (%) [lower band–upper band]	1 (1–3)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	5.37 (7.86–4.9)
		Proportion of throughflow flux (%) [lower band–upper band]	4 (2–10)

	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	15,517 (10,175–16,299)
		Proportion of throughflow flux (%) [lower band–upper band]	8 (5–21)

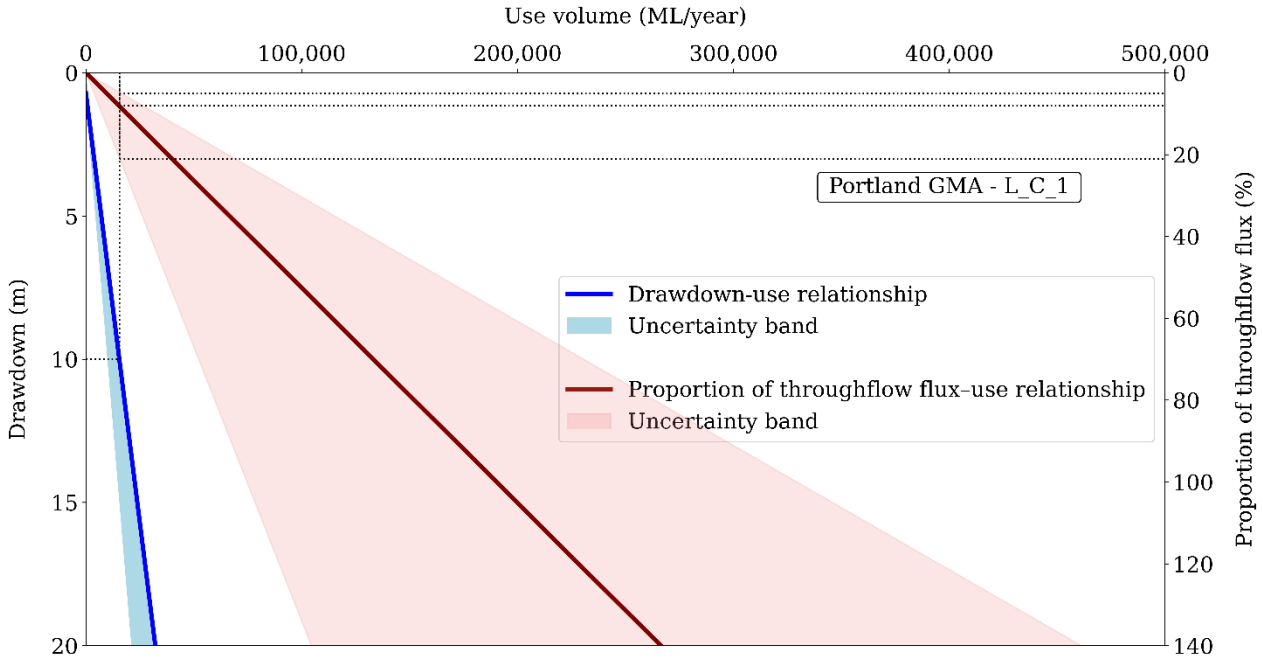

Figure A1-3. Visual representation of the synthesised information for the Portland GMA, Suite L_C_1

Condah WSPA

Table A1-4. Synthesis results for the Condah WSPA, Representative Suite L_A_1

Assessment area	GMU		Condah WSPA
	Representative Suite		L_A_1
	Aquifer		Clifton Formation (LMTA, 109)
	Water system depth boundary (m below natural surface)		All formations between 70 m to 200 m below surface
Context	Permissible Consumptive Volume (ML/yr)		7,475
	Licensed entitlement (ML/yr)		7,470
	Licensed average use (ML/yr)		2,782
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	7.42 (9.47–5.95)
		Proportion of throughflow flux (%) [lower band–upper band]	15 (11–23)

	Use at PCV volume	Drawdown (m) [lower band–upper band]	14.93 (19.79–14.4)
		Proportion of throughflow flux (%) [lower band–upper band]	39 (29–62)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	4,396 (3,025–5,032)
		Proportion of throughflow flux (%) [lower band–upper band]	23 (17–36)

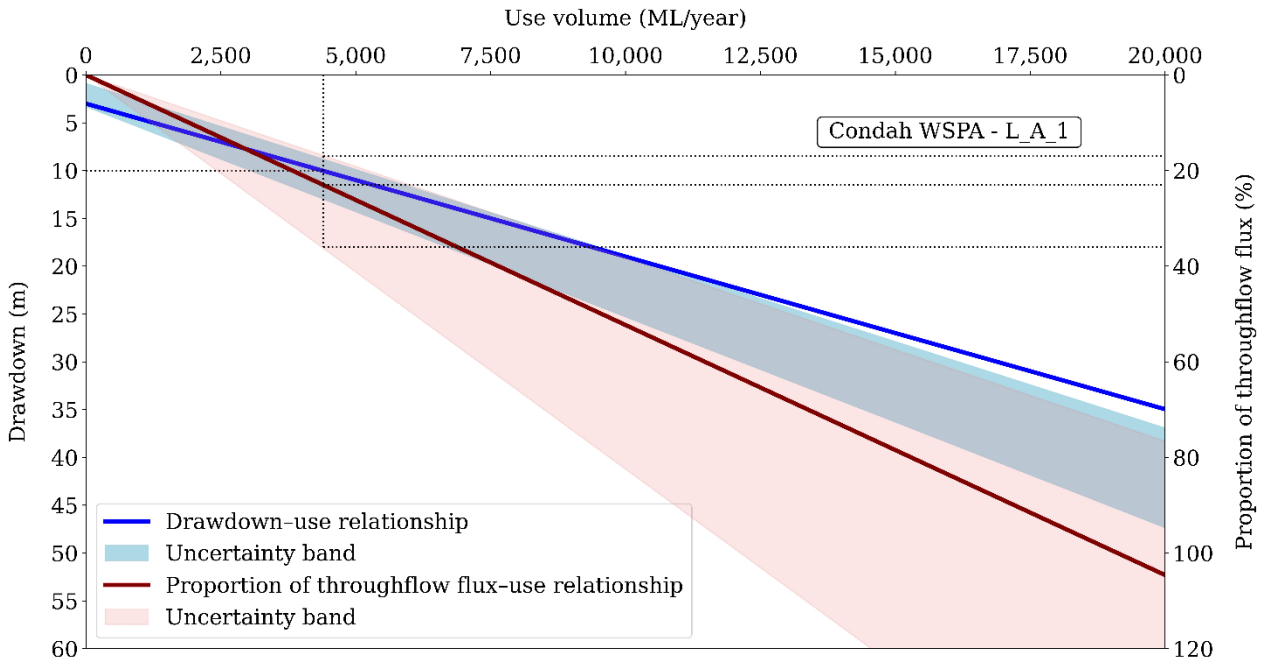

Figure A1-4. Visual representation of the synthesised information for the Condah WSPA, Representative Suite L_A_1

Paaratte GMA

Table A1-5. Synthesis results for the Paaratte GMA, Representative Suite L_AA_99

Assessment area	GMU	Paaratte GMA
	Representative Suite	L_AA_99
	Aquifer	Mepunga / Dilwyn Formation (LTA, 111)
	Water system depth boundary (m below natural surface)	The depth to which the Paaratte GMA pertains is based on contour lines to describe the upper and lower boundaries of the GMA, generally being depths of greater than 120 m below the surface (the GMU depth limit is greater than 200 m below surface).

Context	Permissible Consumptive Volume (ML/yr)		4,606
	Licensed entitlement (ML/yr)		3,159
	Licensed average use (ML/yr)		321
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	0.75 (1.23–0.49)
		Proportion of throughflow flux (%) [lower band–upper band]	0 (NA)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	7.18 (14.51–4.77)
		Proportion of throughflow flux (%) [lower band–upper band]	3 (2–5)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	6,489 (3,152–9,832)
		Proportion of throughflow flux (%) [lower band–upper band]	4 (3–6)

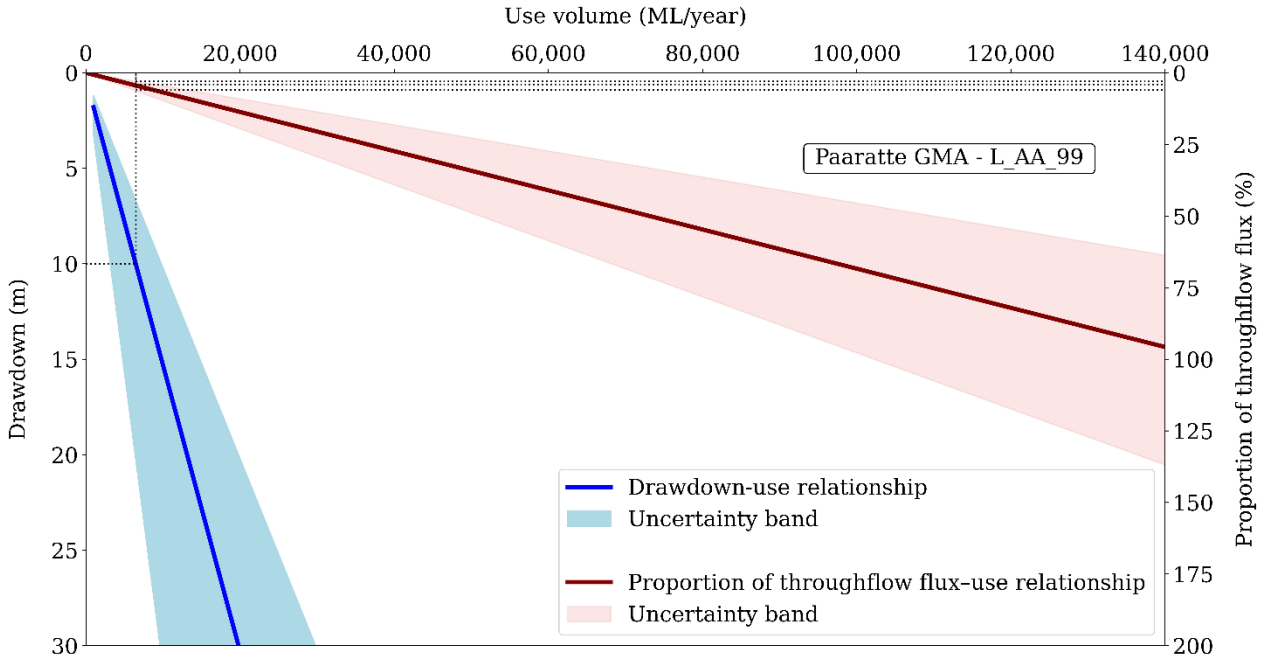

Figure A1-5. Visual representation of the synthesised information for the Paaratte GMA, Representative Suite L_AA_99

Newlingrook GMA

Table A1-6. Synthesis results for the Newlingrook GMA, Representative Suite L_AA_99

Assessment area	GMU		Newlingrook GMA
	Representative Suite		L_AA_99
	Aquifer		Pebble Point Formation (LTA, 111)
	Water system depth boundary (m below natural surface)		All formations below the surface
Context	Permissible Consumptive Volume (ML/yr)		1,977
	Licensed entitlement (ML/yr)		1,958
	Licensed average use (ML/yr)		145
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	0.72 (1.73–0.10)
		Proportion of throughflow flux (%) [lower band–upper band]	0 (NA)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	2.92 (15.66–1.75)
		Proportion of throughflow flux (%) [lower band–upper band]	1 (NA)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	7,876 (1,233–11,144)
		Proportion of throughflow flux (%) [lower band–upper band]	4 (NA)

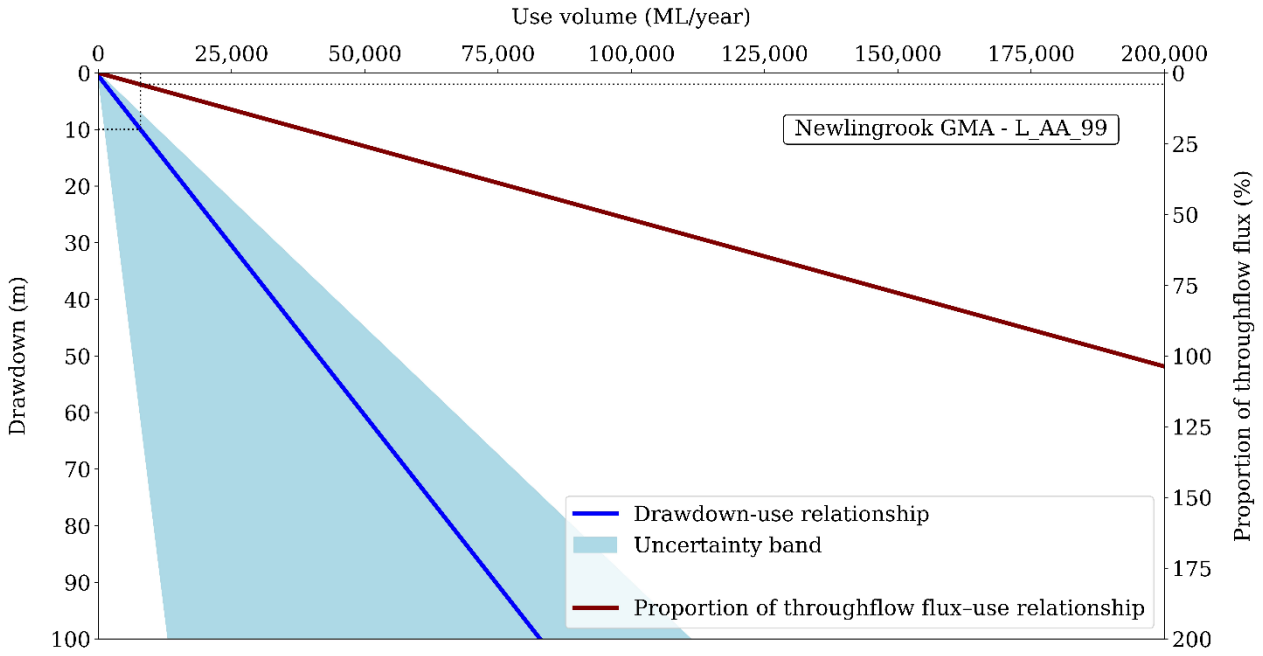

Figure A1-6. Visual representation of the synthesised information for the Newlingrook GMA, Representative Suite L_AA_99

Central Basin

Cut Paw Paw GMA

Table A1-7. Synthesis results for the Cut Paw Paw GMA, Representative Suite L_U_1

Assessment area	GMU		Cut Paw Paw GMA
	Representative Suite		L_U_1
	Aquifer		Werribee Formation (LTA, 111)
	Water system depth boundary (m below natural surface)		All formations below the surface
Context	Permissible Consumptive Volume (ML/yr)		3,650
	Licensed entitlement (ML/yr)		523
	Licensed average use (ML/yr)		99
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	2.14 (3.42–1.31)
		Proportion of throughflow flux (%) [lower band–upper band]	3 (NA)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	7.82 (29.35–5.92)
		Proportion of throughflow flux (%) [lower band–upper band]	117 (NA)

	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	5,010 (1,000–6,787)
		Proportion of throughflow flux (%) [lower band–upper band]	161 (NA)

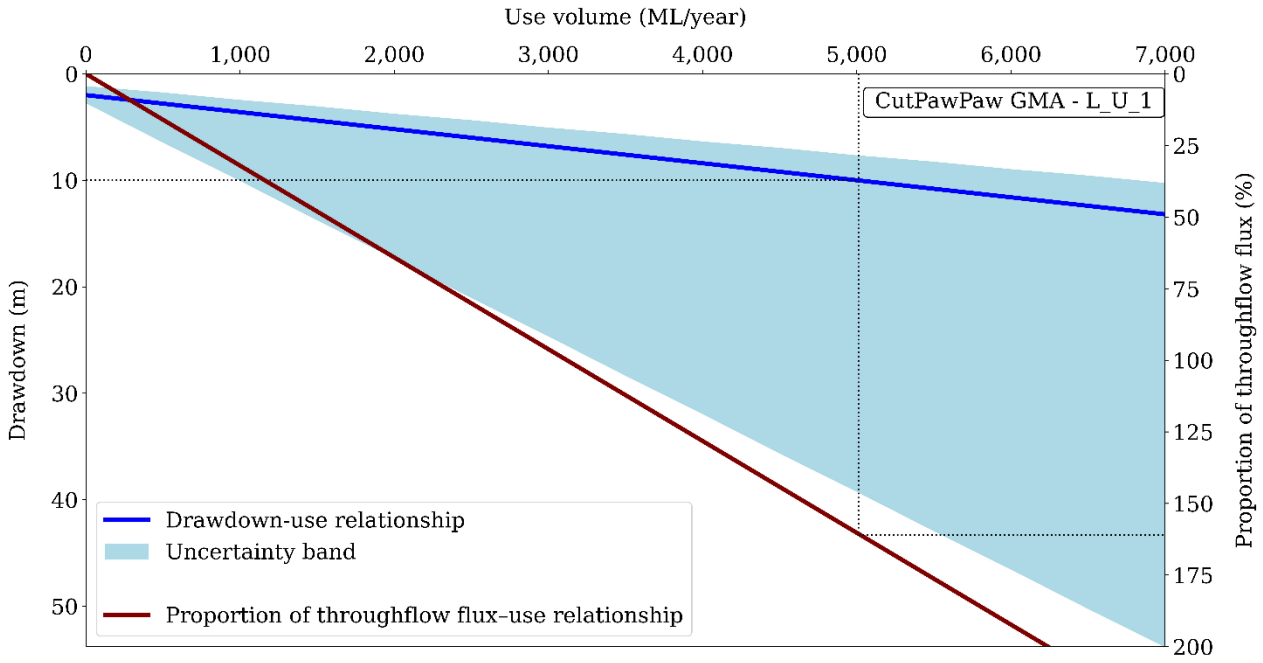

Figure A1-7. Visual representation of the synthesised information for the Cut Paw Paw GMA, Representative Suite L_U_1

Moorabbin GMA

Table A1-8. Synthesis results for the Moorabbin GMA, Representative Suite M_T_3

Assessment area	GMU		Moorabbin GMA
	Representative Suite		M_T_3
	Aquifer		Brighton Group (UTAF, 105) Sands within the Fyansford Formation (UMTD, 108)
	Water system depth boundary (m below natural surface)		All formations below the ground surface
Context	Permissible Consumptive Volume (ML/yr)		2,700
	Licensed entitlement (ML/yr)		2,624
	Licensed average use (ML/yr)		1,096
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	1.21 (1.63–0.82)
		Proportion of throughflow flux (%) [lower band–upper band]	86 (NA)

	Use at PCV volume	Drawdown (m) [lower band–upper band]	2.65 (3.23–2.27)
		Proportion of throughflow flux (%) [lower band–upper band]	211 (NA)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	10,868 (9,466–11,291)
		Proportion of throughflow flux (%) [lower band–upper band]	848 (NA)

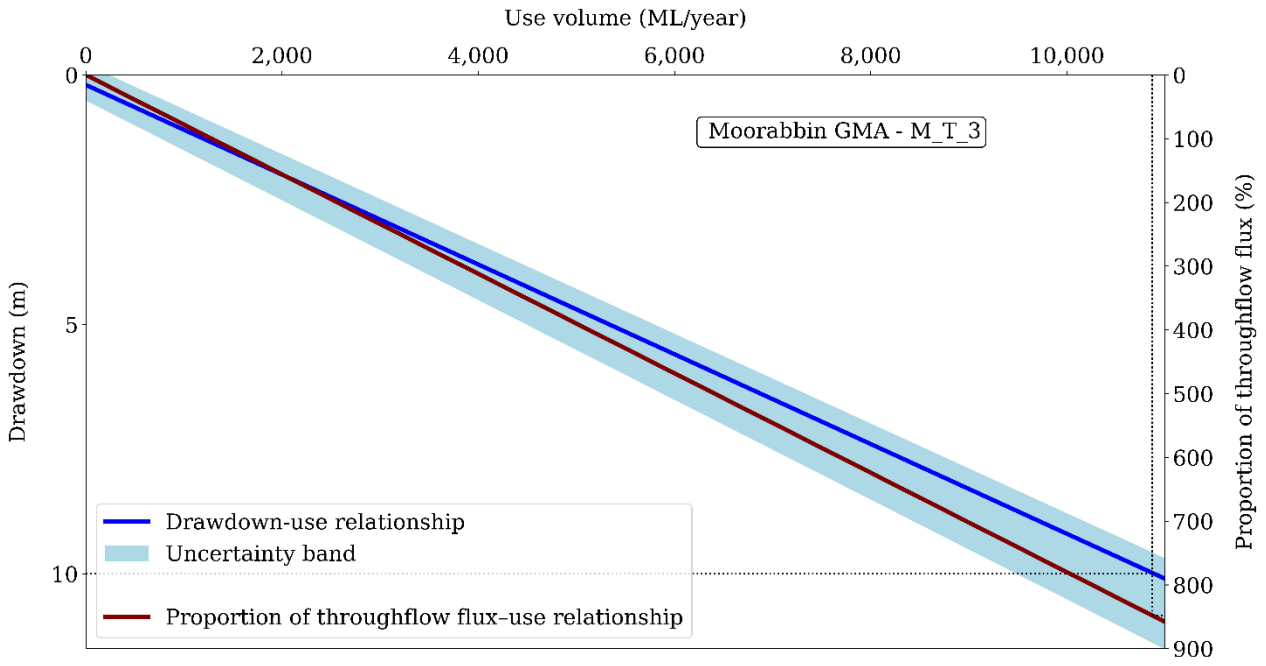

Figure A1-8. Visual representation of the synthesised information for the Moorabbin GMA, Representative Suite M_T_3

Frankston GMA

Table A1-9. Synthesis results for the Frankston GMA, Representative Suite L_U_1

Assessment area	GMU	Frankston GMA
	Representative Suite	L_U_1
	Aquifer	Brighton Group Aquifer (UTAF, 105)
	Water system depth boundary (m below natural surface)	All formations below the surface
Context	Permissible Consumptive Volume (ML/yr)	3,200
	Licensed entitlement (ML/yr)	2,542
	Licensed average use (ML/yr)	230

Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	2.8 (7.51–2.23)
		Proportion of throughflow flux (%) [lower band–upper band]	7 (6–9)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	13.19 (71.37–11.44)
		Proportion of throughflow flux (%) [lower band–upper band]	100 (81–130)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	2,288 (345–2,737)
		Proportion of throughflow flux (%) [lower band–upper band]	71 (58–93)

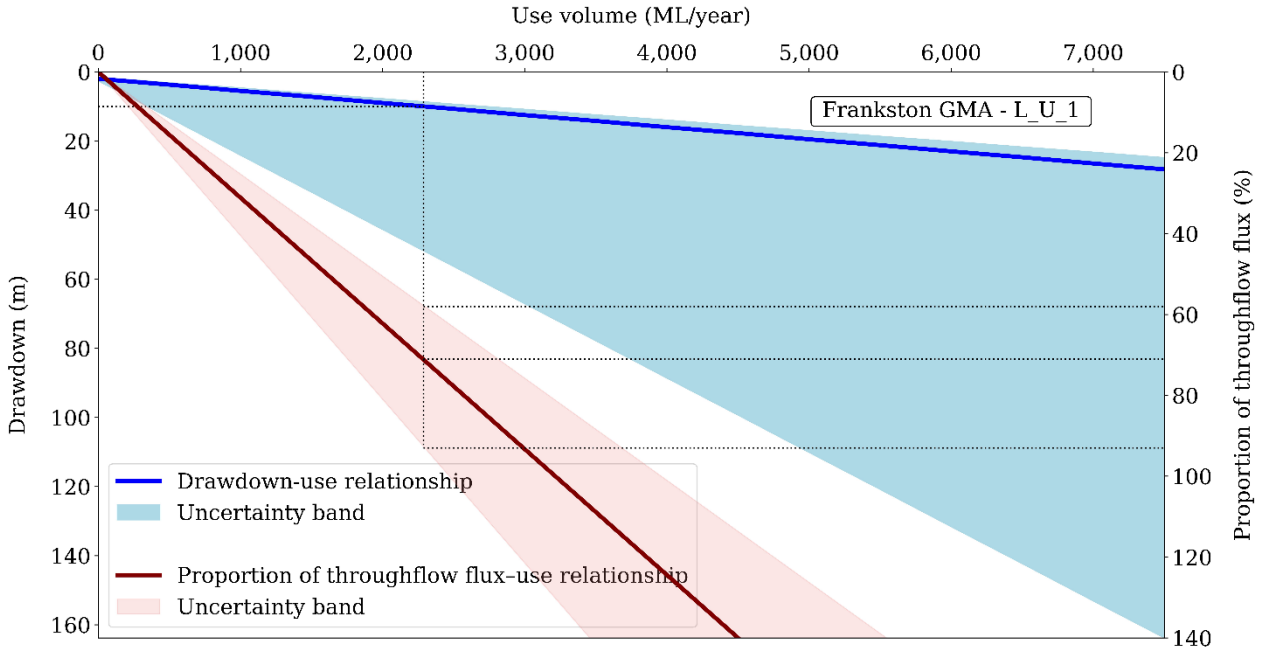

Figure A1-9 Visual representation of the synthesised information for the Frankston GMA, Representative Suite L_U_1

Koo Wee Rup WSPA

Table A1-10. Synthesis results for the Koo Wee Rup WSPA, Representative Suite M_S_1

Assessment area	GMU	Koo Wee Rup WSPA
	Representative Suite	M_S_1
	Aquifer	Tertiary Westernport Group which comprises the Baxter, Sherwood, and Yallock Formations (UTAF (105), UMTA (107))

	Water system depth boundary (m below natural surface)		All formations below the surface
Context	Permissible Consumptive Volume (ML/yr)		12,915
	Licensed entitlement (ML/yr)		12,566
	Licensed average use (ML/yr)		3,610
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	1.79 (3.04–0.56)
		Proportion of throughflow flux (%) [lower band–upper band]	36 (30–42)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	5.52 (7.69–3.35)
		Proportion of throughflow flux (%) [lower band–upper band]	128 (108–150)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	24,126 (17,532–35,066)
		Proportion of throughflow flux (%) [lower band–upper band]	240 (201–280)

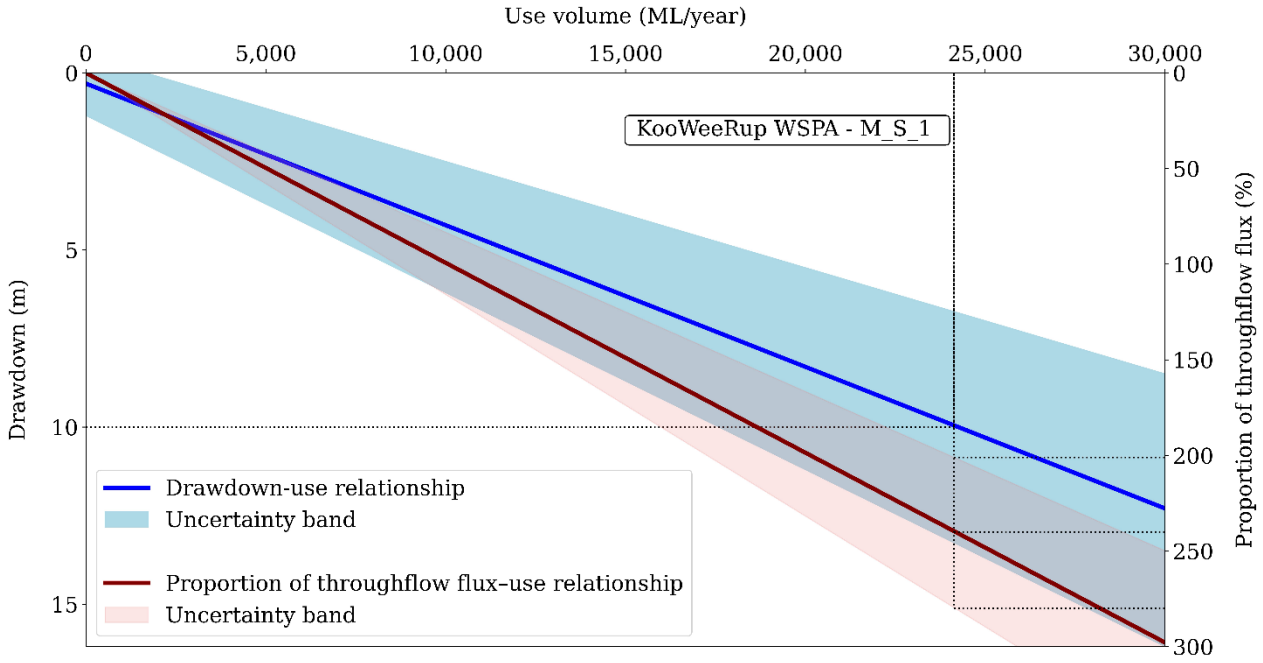

Figure A1-10. Visual representation of the synthesised information for the Koo Wee Rup WSPA, Representative Suite M_S_1

Corinella GMA

Table A1-11. Synthesis results for the Corinella WSPA, Representative Suite M_S_88

Assessment area	GMU		Corinella WSPA
	Representative Suite		M_S_88
	Aquifer		Childers Formation (LTA, 111)
	Water system depth boundary (m below natural surface)		All formations below the surface
Context	Permissible Consumptive Volume (ML/yr)		2,550
	Licensed entitlement (ML/yr)		662
	Licensed average use (ML/yr)		60
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	0.12 (0.45 – (-0.17))
		Proportion of throughflow flux (%) [lower band–upper band]	3 (NA)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	3.36 (11.16–1.57)
		Proportion of throughflow flux (%) [lower band–upper band]	115 (NA)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	7,657 (2,280–14,588)
		Proportion of throughflow flux (%) [lower band–upper band]	345 (NA)

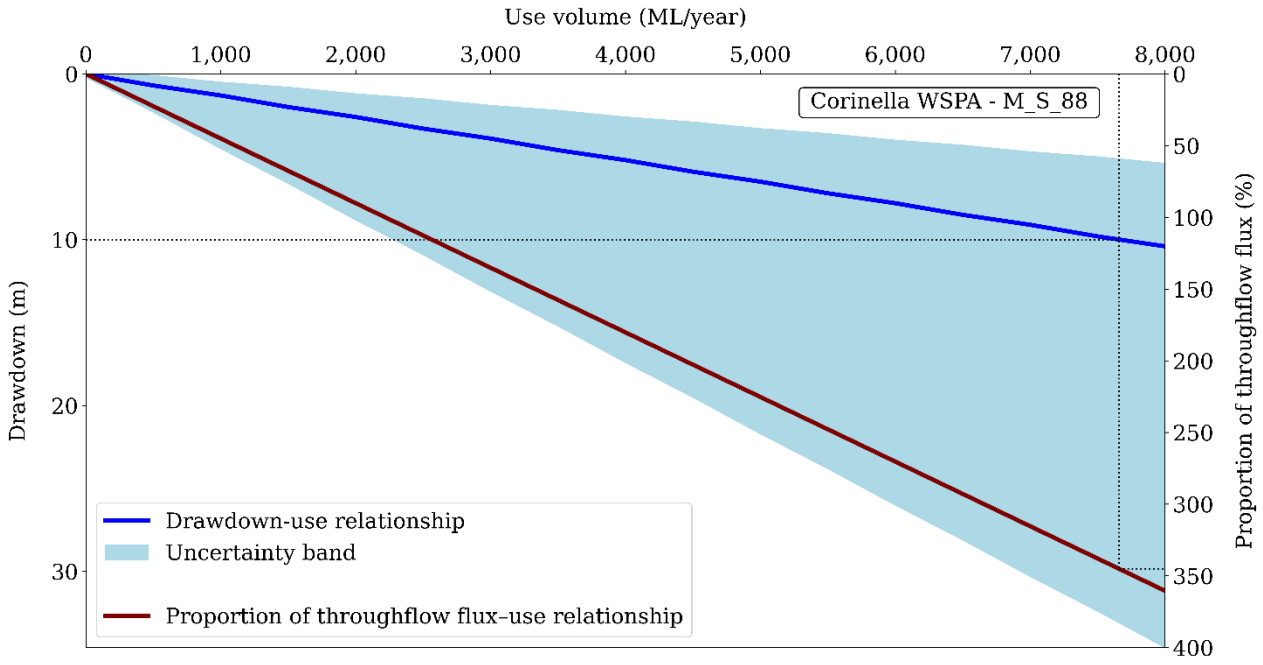

Figure A1-11. Visual representation of the synthesised information for the Corinella WSPA, Representative Suite M_S_88

Gippsland Basin

Orbost GMA

Table A1-12. Synthesis results for the Orbost GMA, Representative Suite U_Y_1

Assessment area	GMU		Orbost GMA
	Representative Suite		U_Y_1
	Aquifer		Curlip Gravels (UTQA, 102)
	Water system depth boundary (m below natural surface)		All formations between 20 m to 45 m below surface
Context	Permissible Consumptive Volume (ML/yr)		1,217
	Licensed entitlement (ML/yr)		1,217
	Licensed average use (ML/yr)		294
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	0.26 (0.66 – (-0.14)
		Proportion of throughflow flux (%) [lower band–upper band]	NA
	Use at PCV volume	Drawdown (m) [lower band–upper band]	2.56 (3.89–1.71)
		Proportion of throughflow flux (%) [lower band–upper band]	NA
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	4,191 (2,963–5,365)
		Proportion of throughflow flux (%) [lower band–upper band]	NA

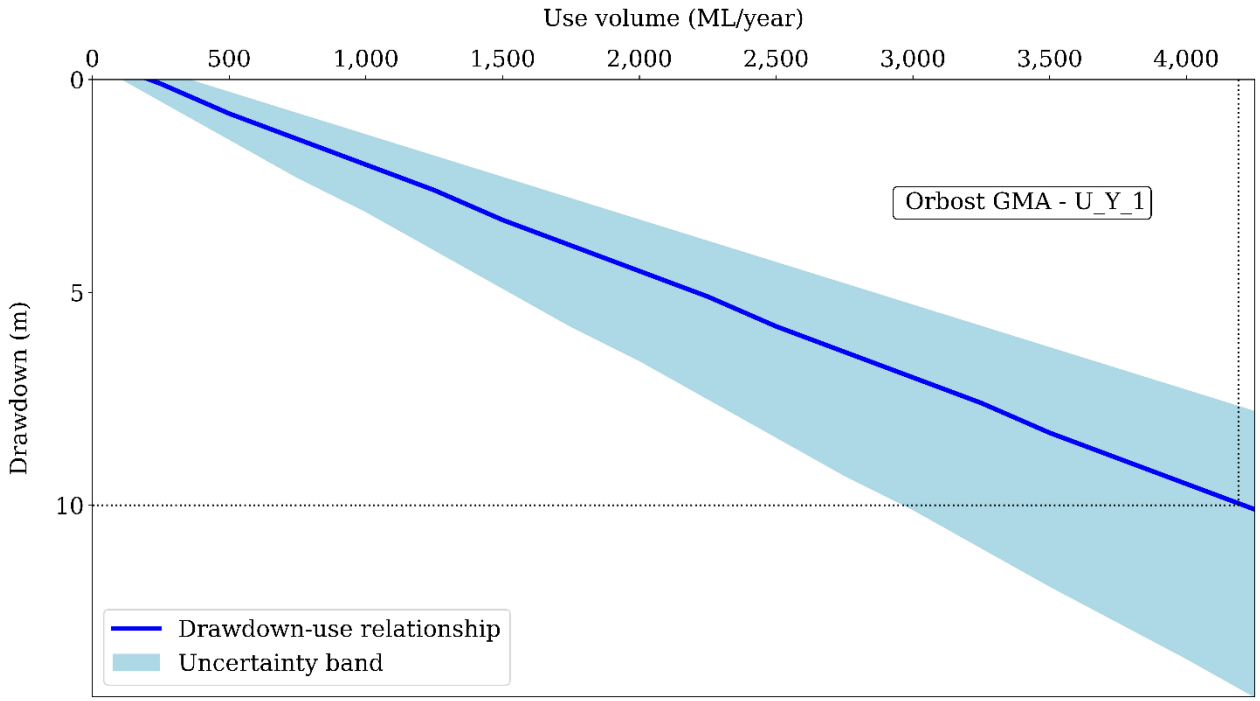

Figure A1-12. Visual representation of the synthesised information for the Orbost GMA, Representative Suite U_Y_1

Moe GMA

Table A1-13. Synthesis results for the Moe GMA, Suite L_Q_1

Assessment area	GMU		Moe GMA
	Representative Suite		L_Q_1
	Aquifer		Childers Formation (LTA, 111)
	Water system depth boundary (m below natural surface)		All formations 25 m below the surface
Context	Permissible Consumptive Volume (ML/yr)		8,200
	Licensed entitlement (ML/yr)		3,762
	Licensed average use (ML/yr)		826
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	4.75 (7.56–2.6)
		Proportion of throughflow flux (%) [lower band–upper band]	6 (4–8)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	37.19 (61.39–33.57)
		Proportion of throughflow flux (%) [lower band–upper band]	55 (41–82)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	2,021 (1,160–2,588)

	Proportion of throughflow flux (%) [lower band–upper band]	14 (10–20)

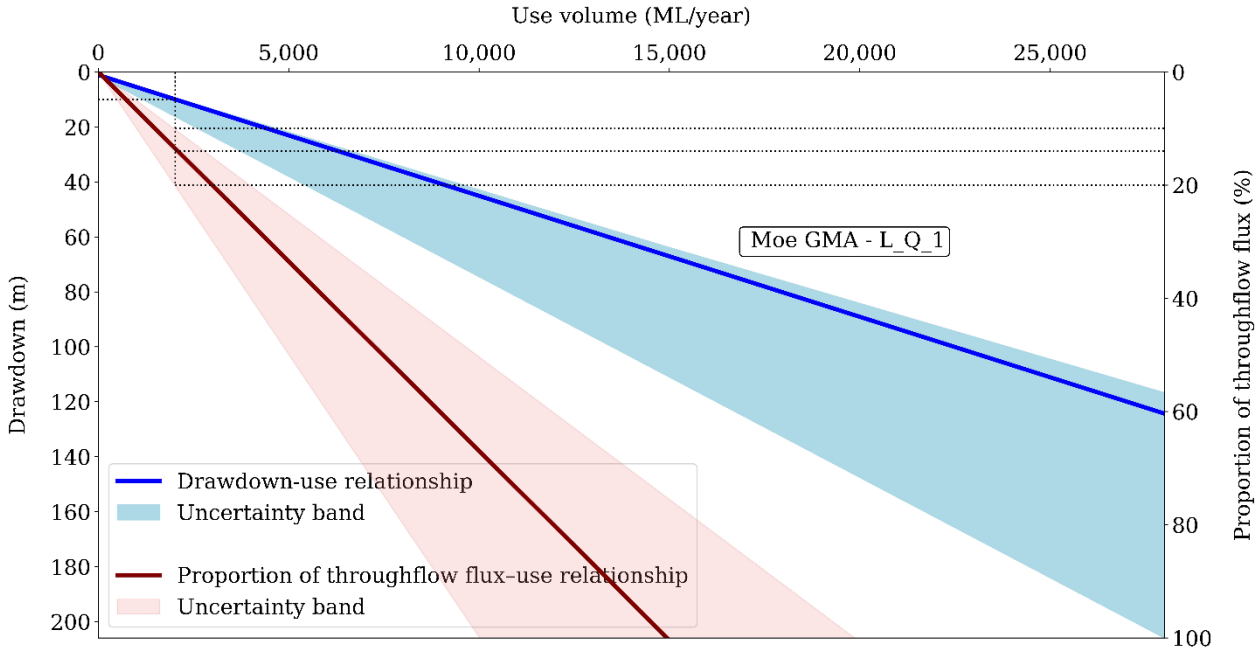

Figure A1-13: Visual representation of the synthesised information for the Moe GMA, Suite L_Q_1

Sale WSPA

Table A1-14. Synthesis results for the Sale WSPA, Representative Suite M_O_1

Assessment area	GMU		Sale WSPA
	Representative Suite		M_O_1
	Aquifer		Boisdale Formation (UTAF, 105)
	Water system depth boundary (m below natural surface)		All formations between 25 m to 200 m below surface
Context	Permissible Consumptive Volume (ML/yr)		21,238
	Licensed entitlement (ML/yr)		21,203
	Licensed average use (ML/yr)		11,029
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	7.42 (8.54–5.09)
		Proportion of throughflow flux (%) [lower band–upper band]	57 (43–90)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	15.59 (16.71–12.23)

	Use at 10 m drawdown	Proportion of throughflow flux (%) [lower band–upper band]	110 (83–173)
		Volume (ML/yr) [lower band–upper band]	14,252 (12,850–18,050)
		Proportion of throughflow flux (%) [lower band–upper band]	74 (56–116)

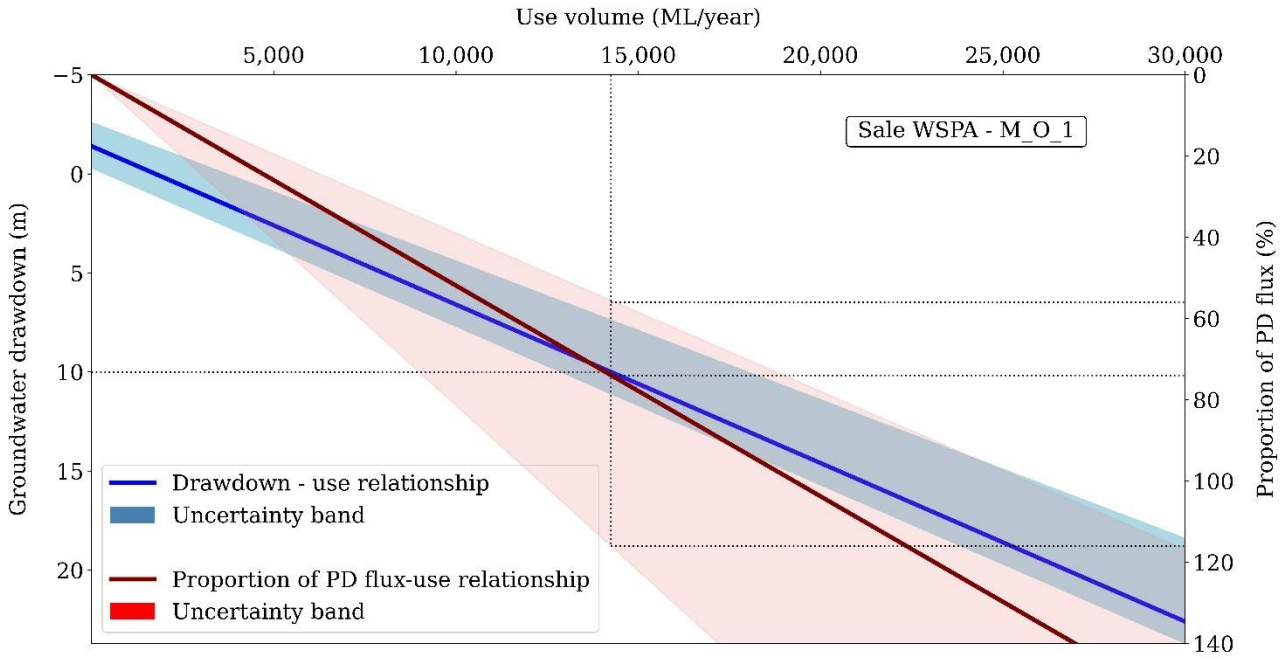

Figure A1-14. Visual representation of the synthesised information for the Sale WSPA, Representative Suite M_O_1

Rosedale GMA

Table A1-15. Synthesis results for the Rosedale GMA, Representative Suite M_O_2

Assessment area	GMU	Rosedale GMA
	Representative Suite	M_O_2
	Aquifer	Morwell Formation Aquifer (M2C) (UMTA (107)/LMTA (109)).
	Water system depth boundary (m below natural surface)	Rosedale GMA Zone 1 pertains to formations between 50 m and 150 m below the surface. Rosedale GMA Zone 2 pertains to formations between 25 m and 350 m below the surface. Rosedale GMA Zone 3 pertains to formations between

			200 m and 300 m below the surface.
Context	Permissible Consumptive Volume (ML/yr)		22,372
	Licensed entitlement (ML/yr)		22,272
	Licensed average use (ML/yr)		8,828
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	10.28 (14.31–6.24)
		Proportion of throughflow flux (%) [lower band–upper band]	9 (NA)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	21.11 (27.85–14.37)
		Proportion of throughflow flux (%) [lower band–upper band]	23 (NA)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	8,480 (4,521–15,096)
		Proportion of throughflow flux (%) [lower band–upper band]	9 (NA)

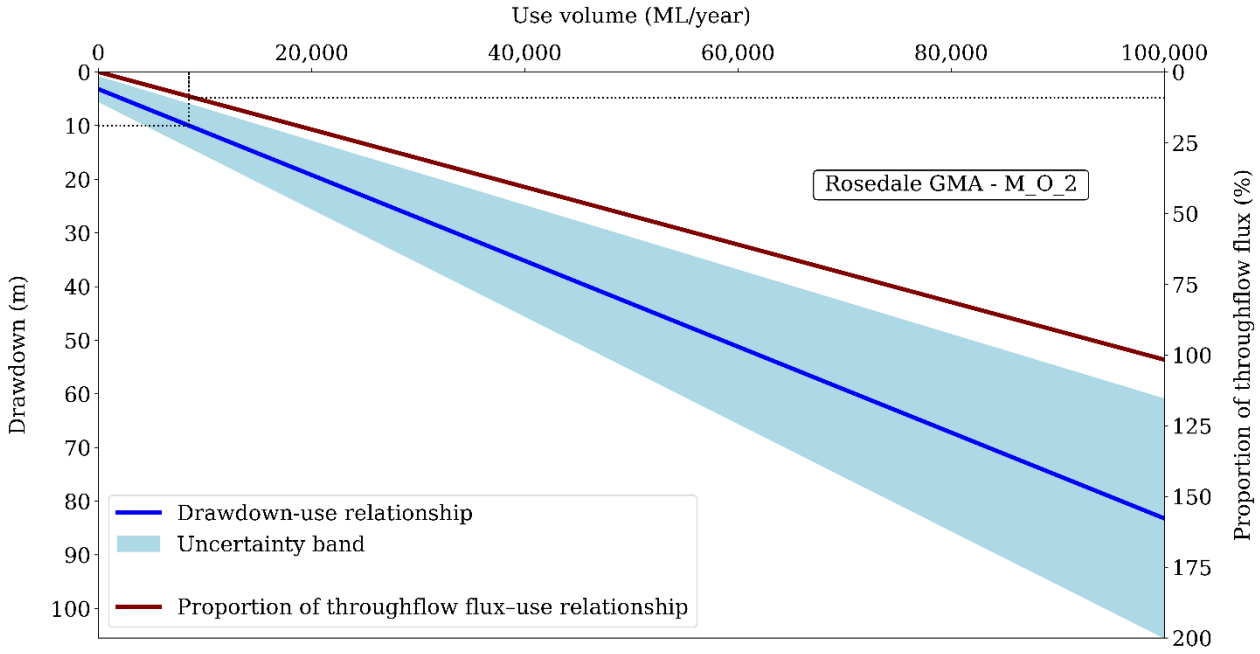

Figure A1-15. Visual representation of the synthesised information for the Rosedale GMA, Representative Suite M_O_2

Yarram WSPA

Table A1-16. Synthesis results for the Yarram WSPA, Representative Suite L_O_2

Assessment area	GMU		Yarram WSPA
	Representative Suite		L_O_2
	Aquifer		Latrobe Group Aquifer (LTA, 111)
	Water system depth boundary (m below natural surface)		Formations 200 m below the surface in zone 1 All formations below the surface in zone 2
Context	Permissible Consumptive Volume (ML/yr)		25,690
	Licensed entitlement (ML/yr)		25,688
	Licensed average use (ML/yr)		11,482
Synthesis results	Use at average volume	Drawdown (m) [lower band–upper band]	11.13 (14.03–7.41)
		Proportion of throughflow flux (%) [lower band–upper band]	21 (17–27)
	Use at PCV volume	Drawdown (m) [lower band–upper band]	18.23 (21.14–13.1)
		Proportion of throughflow flux (%) [lower band–upper band]	47 (60–38)
	Use at 10 m drawdown	Volume (ML/yr) [lower band–upper band]	9,227 (3,418–17,947)
		Proportion of throughflow flux (%) [lower band–upper band]	17 (22–13)

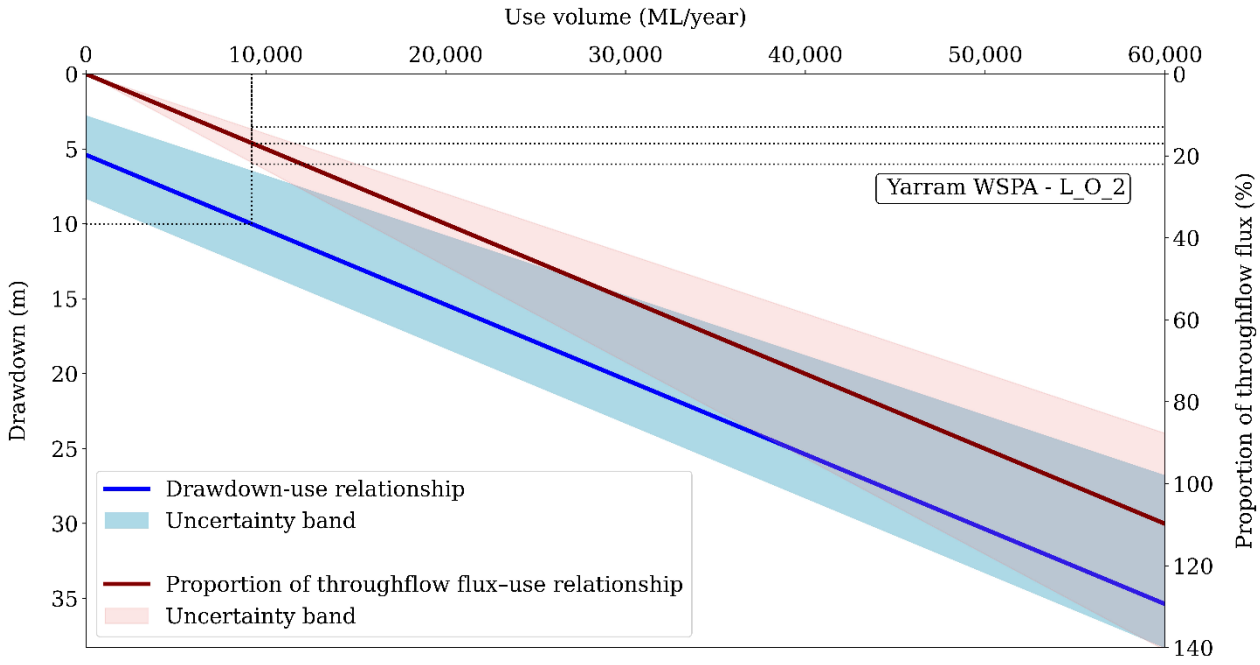

Figure A1-16. Visual representation of the synthesised information for the Yarram WSPA, Representative Suite L_O_2

Appendix 2. Stabilisation results for all confined GMUs across the state

Wimmera–Mallee Basin

Murrayville GMA

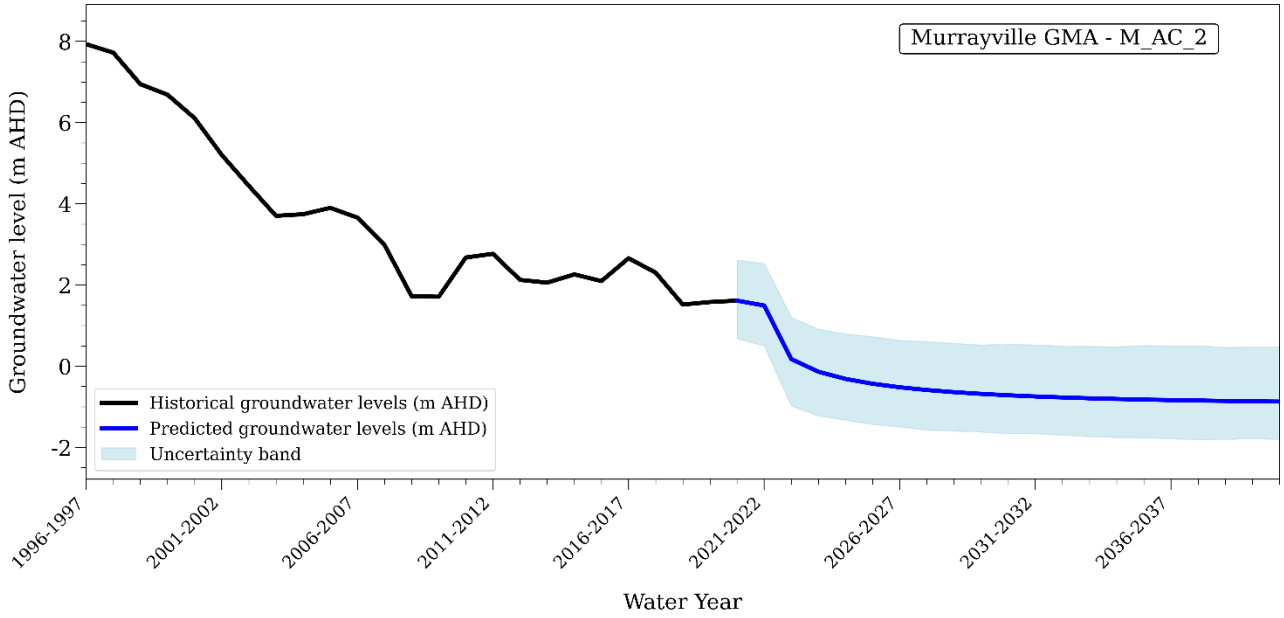

Figure A2-1. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Goulburn–Murray Basin

Katunga WSPA

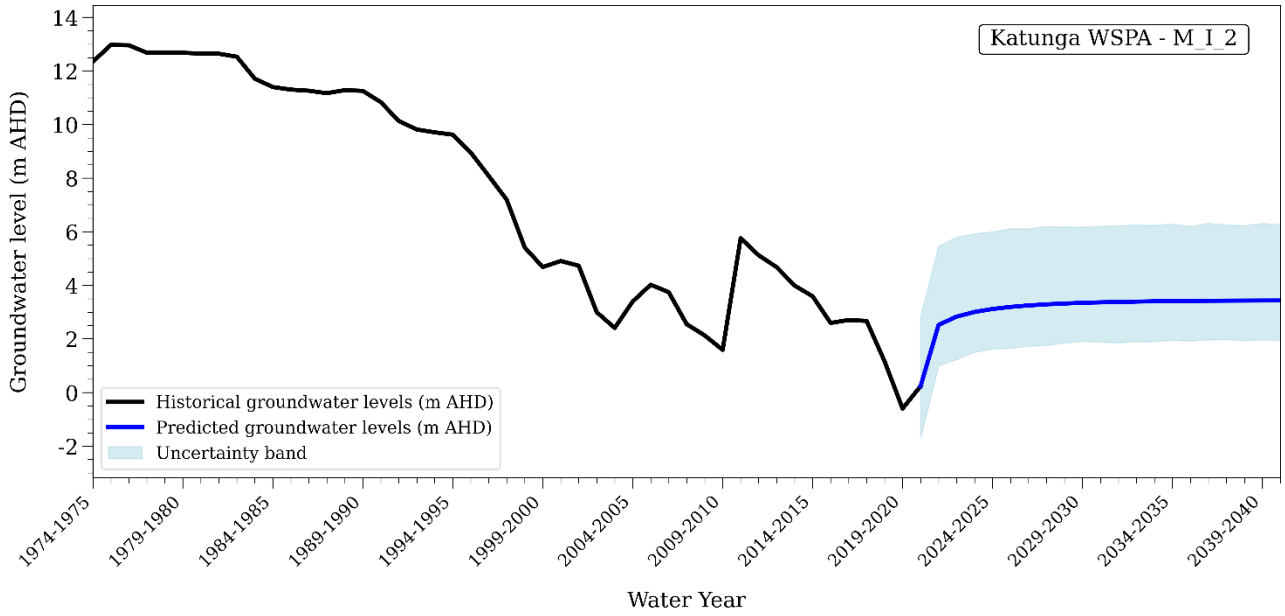

Figure A2-4. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Otway–Torquay Basin

Portland GMA

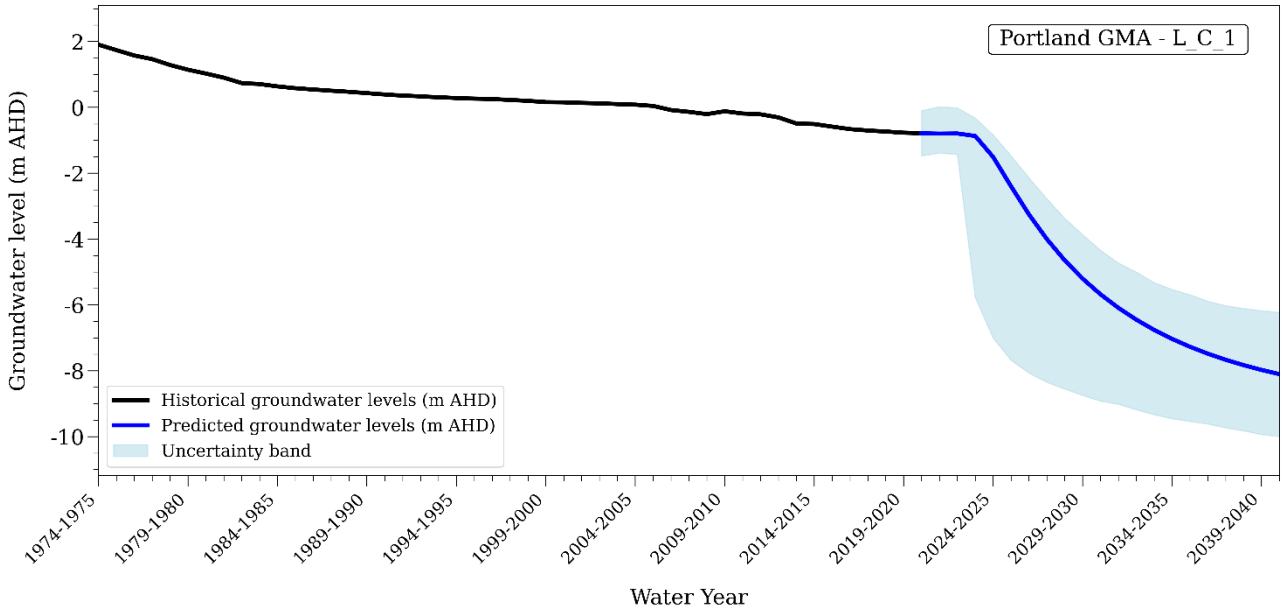

Figure A2-2. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Condah WSPA

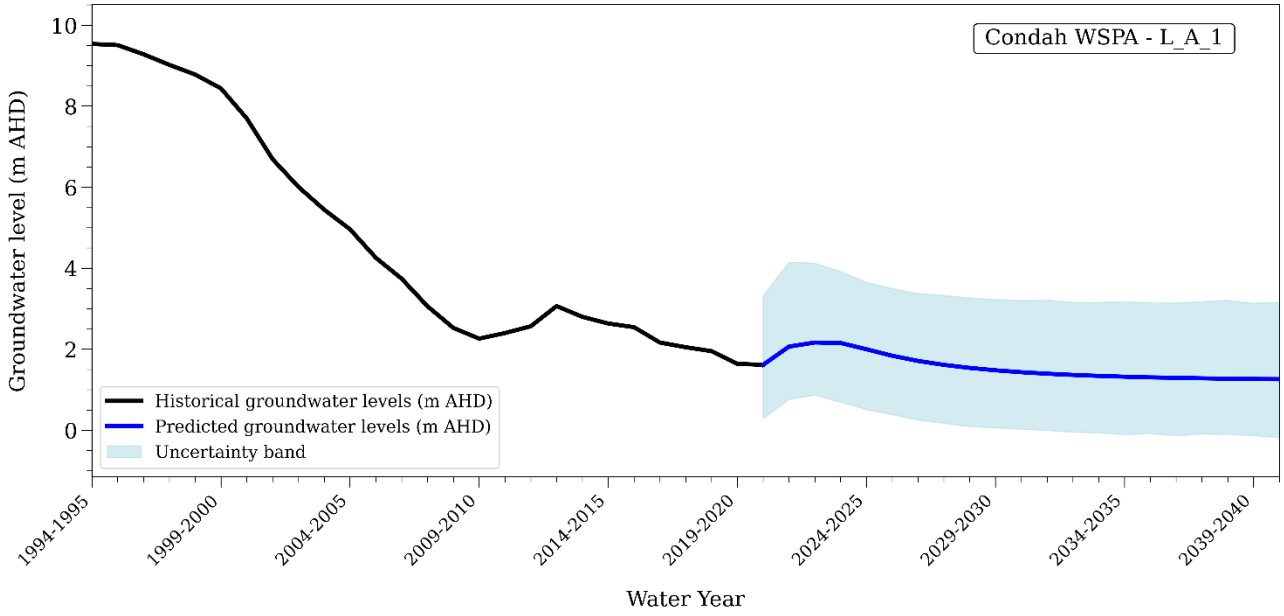

Figure A2-3. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Paaratte GMA

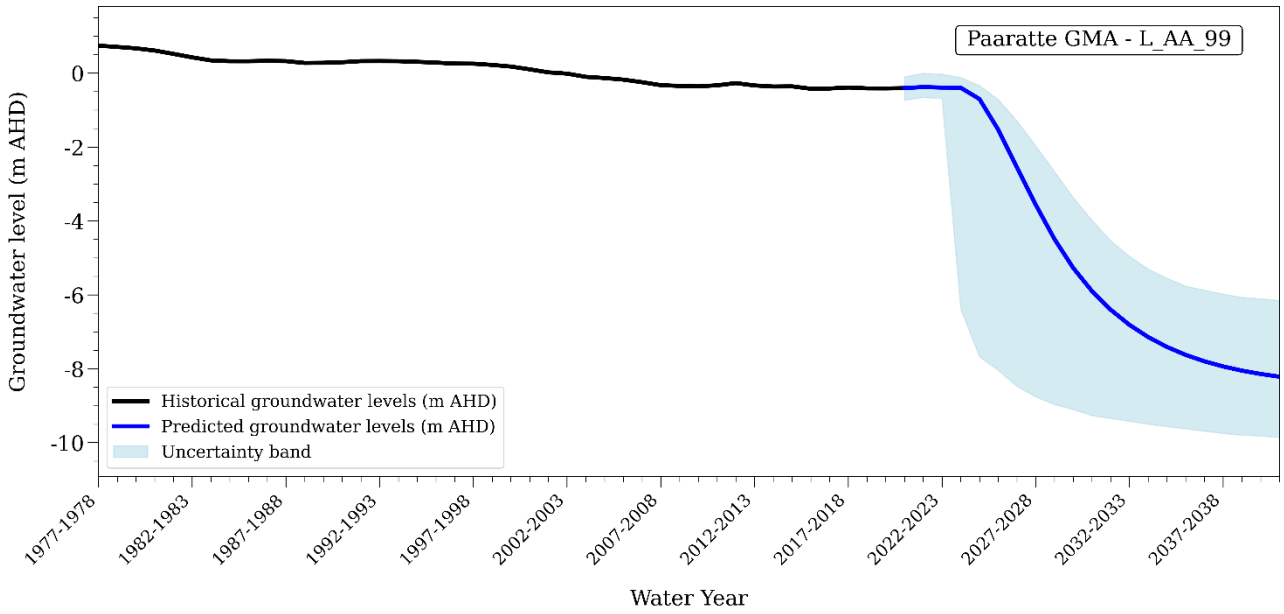

Figure A2-4. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Newlingrook GMA

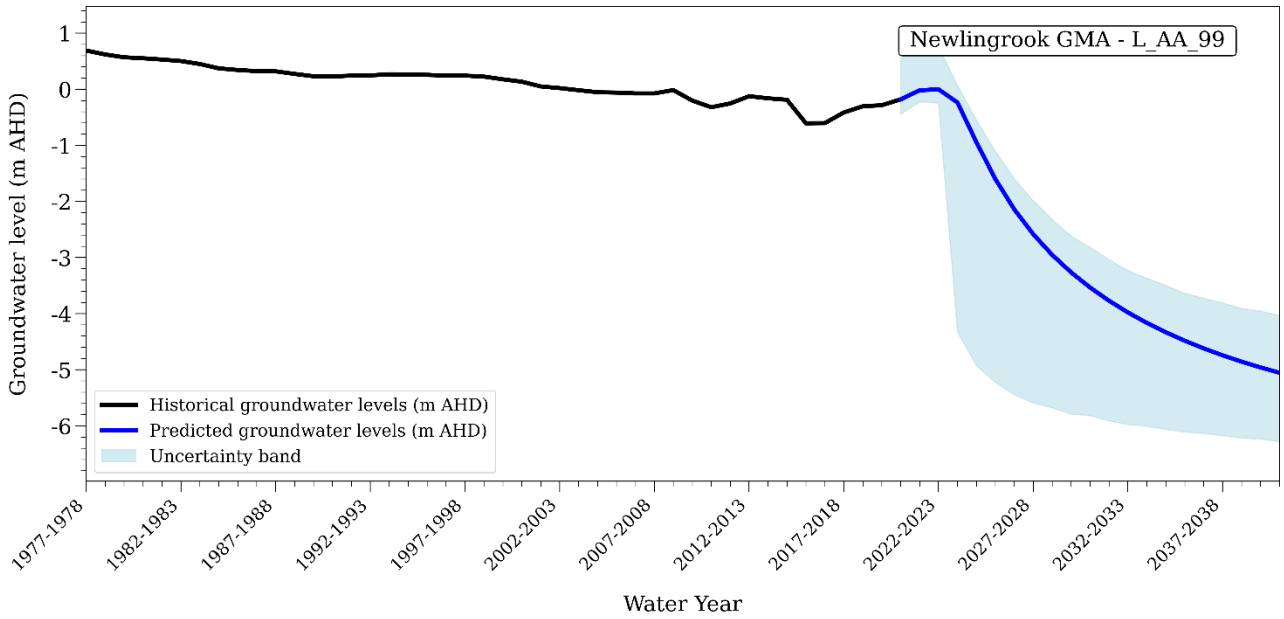

Figure A2-5. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Central Basin

Cut Paw Paw GMA

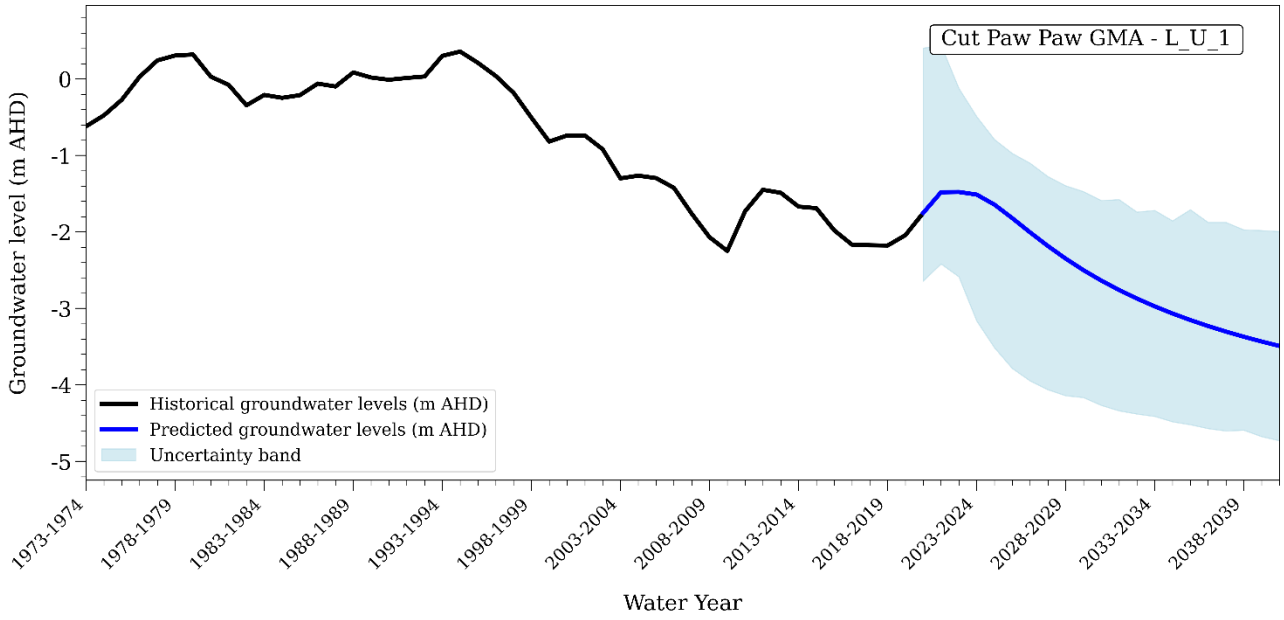

Figure A2-6. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Moorabbin GMA

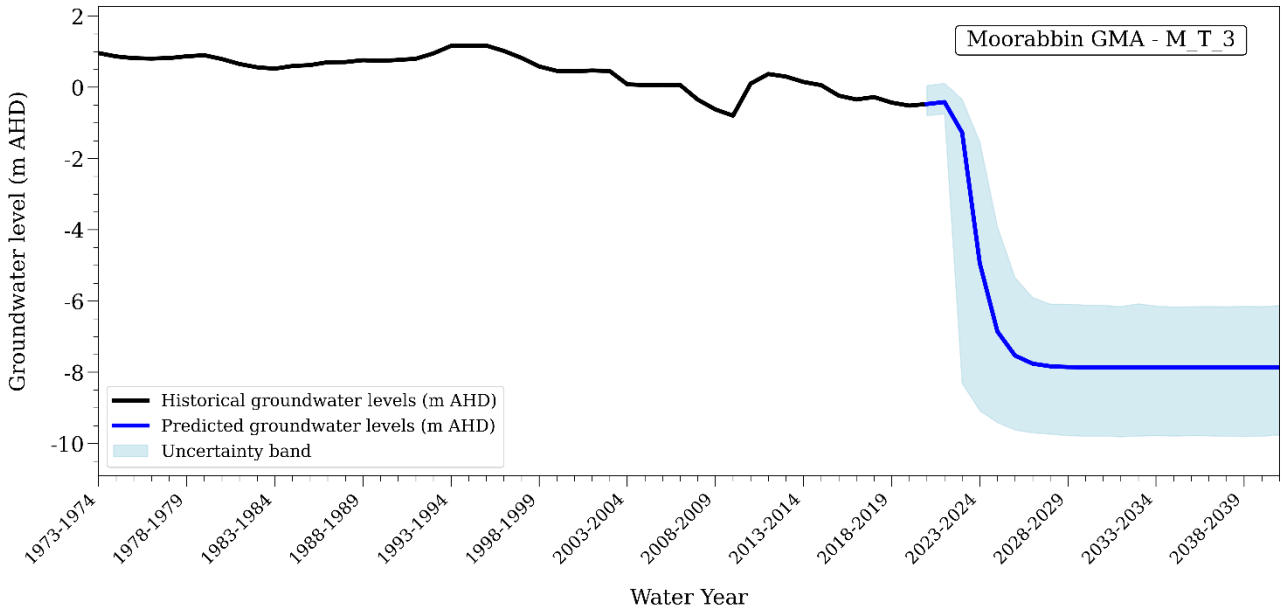

Figure A2-7. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Frankston GMA

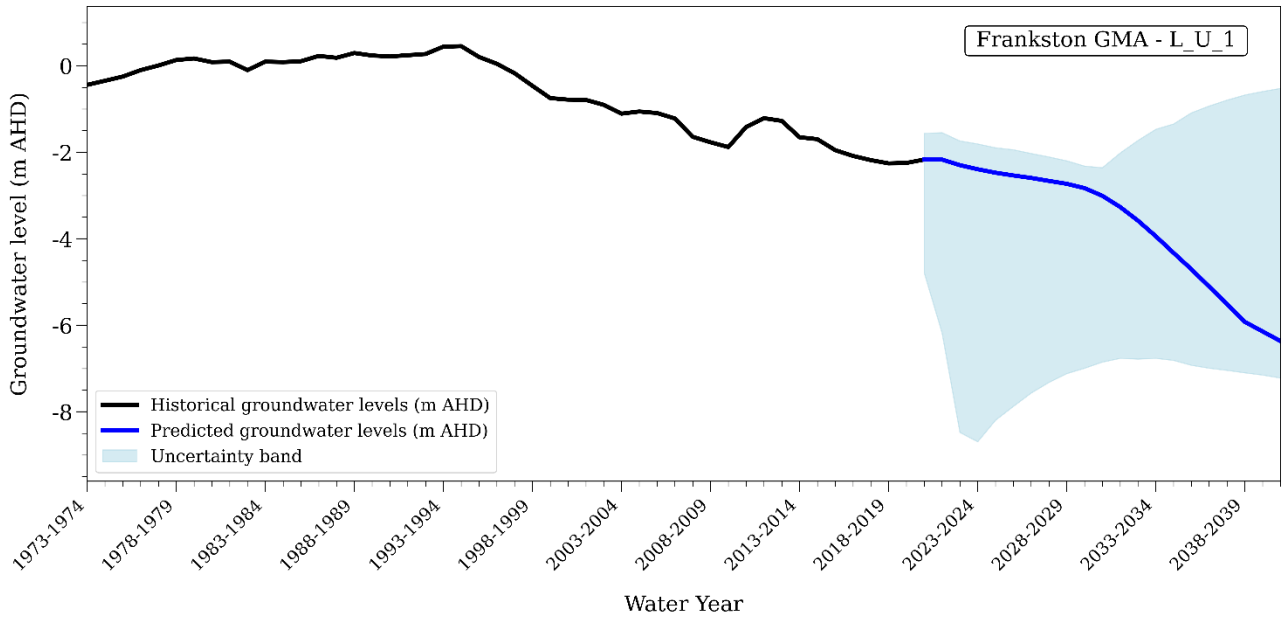

Figure A2-8. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Koo Wee Rup WSPA

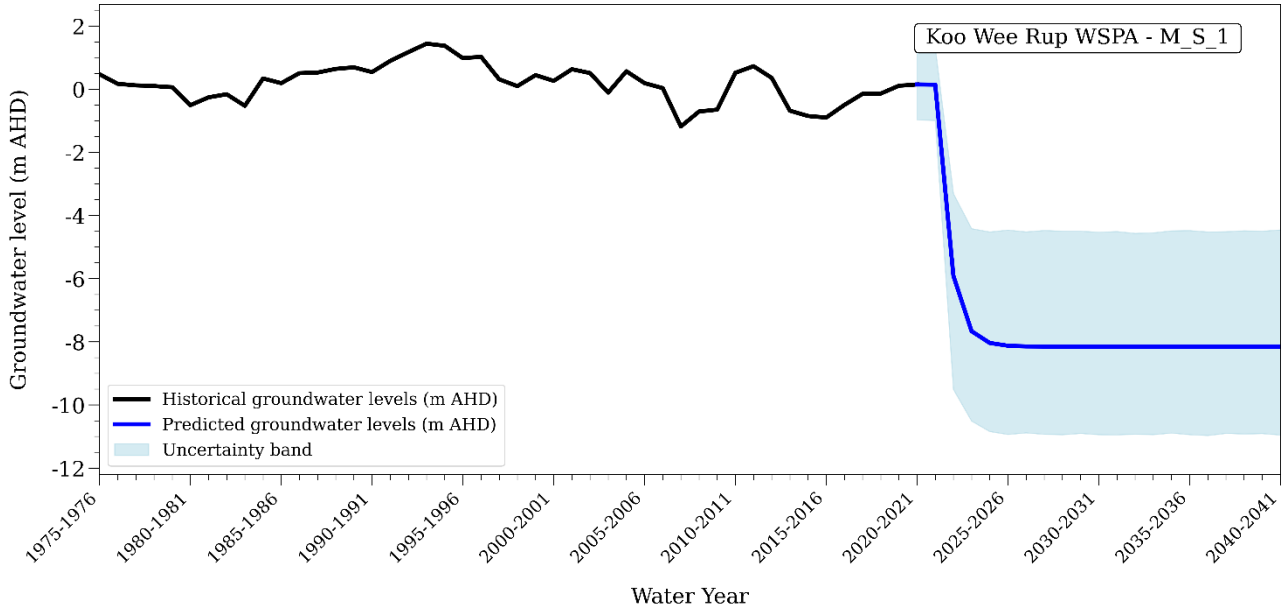

Figure A2-9. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Corinella GMA

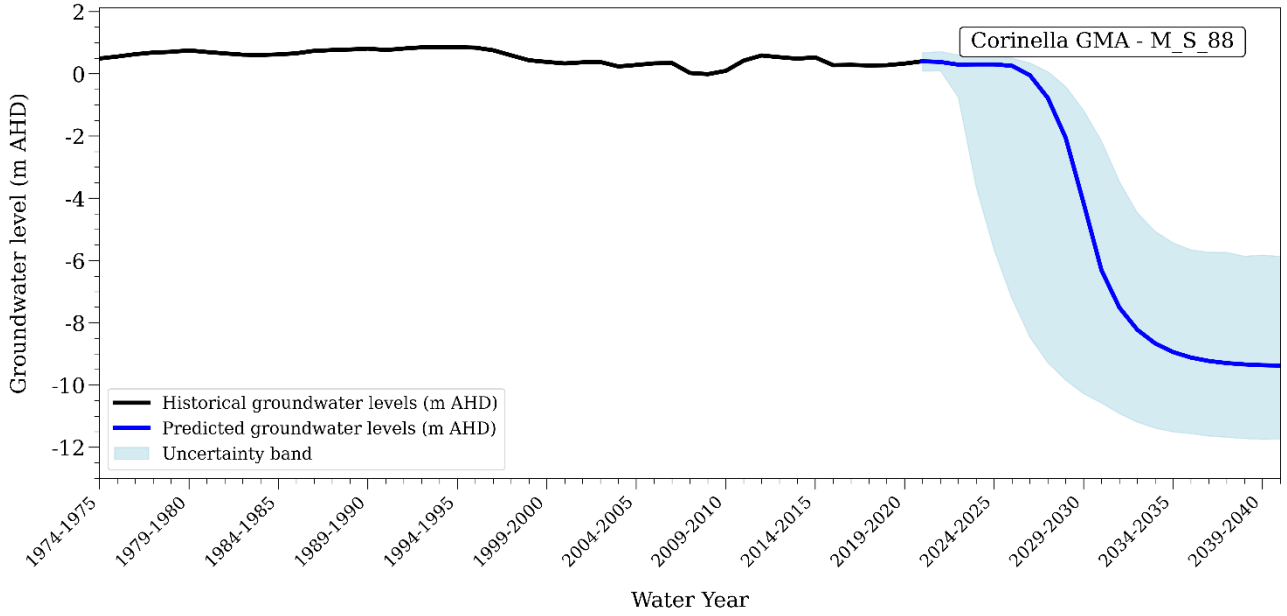

Figure A2-10. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Gippsland Basin

Orbost GMA

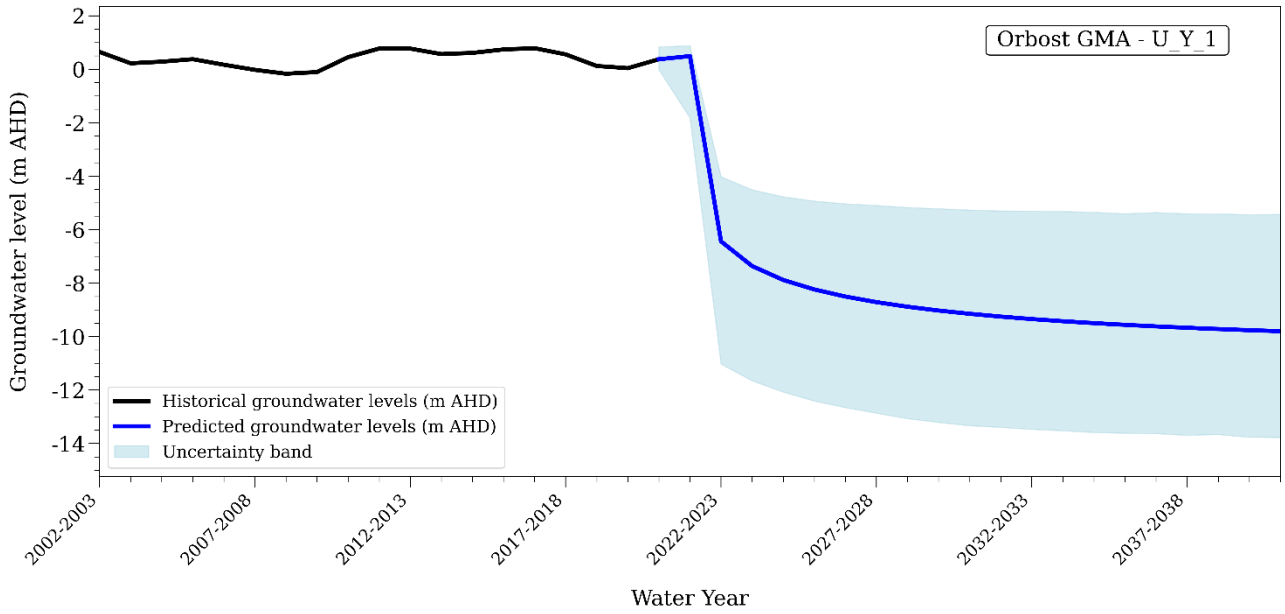

Figure A2-11. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Moe GMA

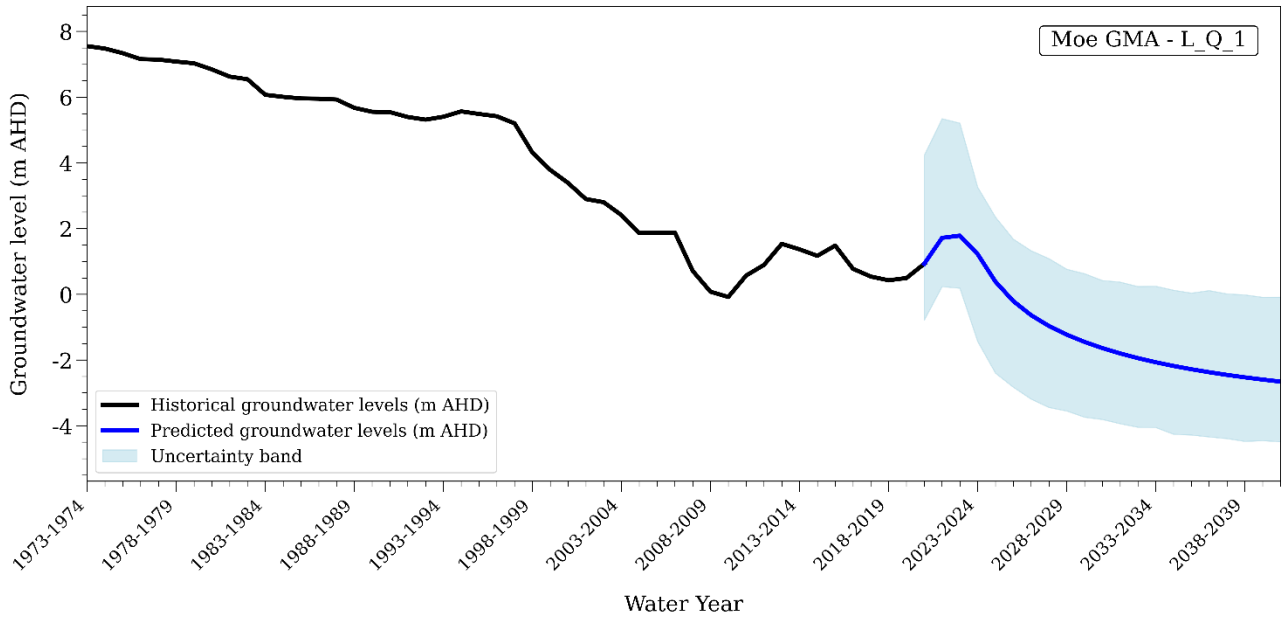

Figure A2-12. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Rosedale GMA

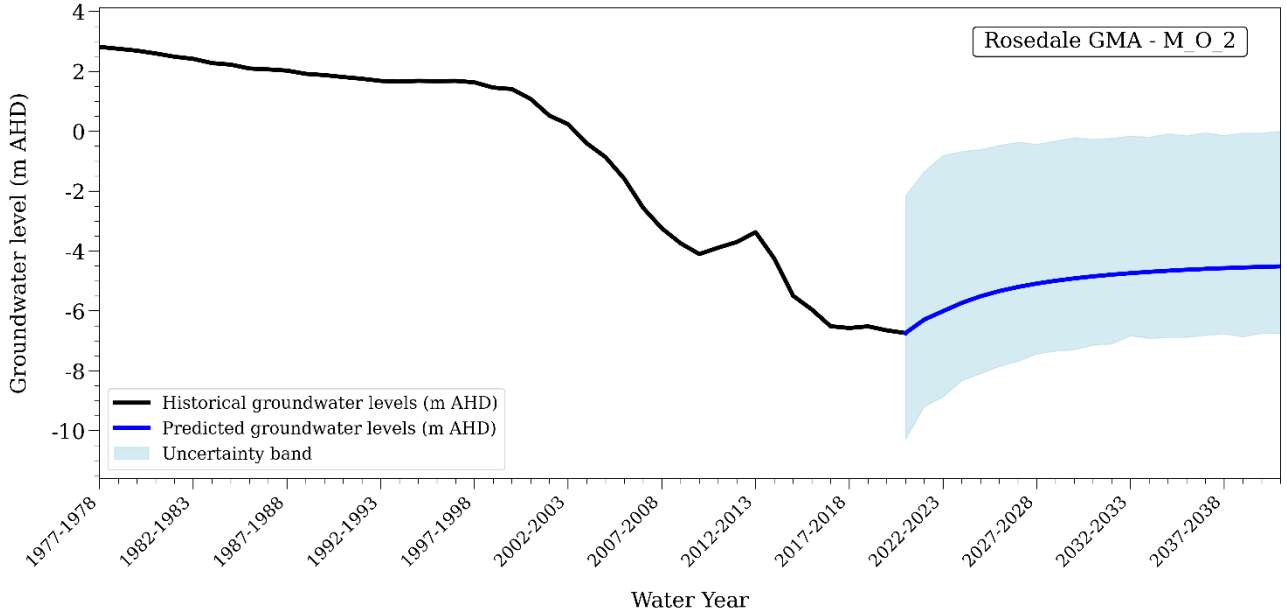

Figure A2-13 Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Yarram WSPA

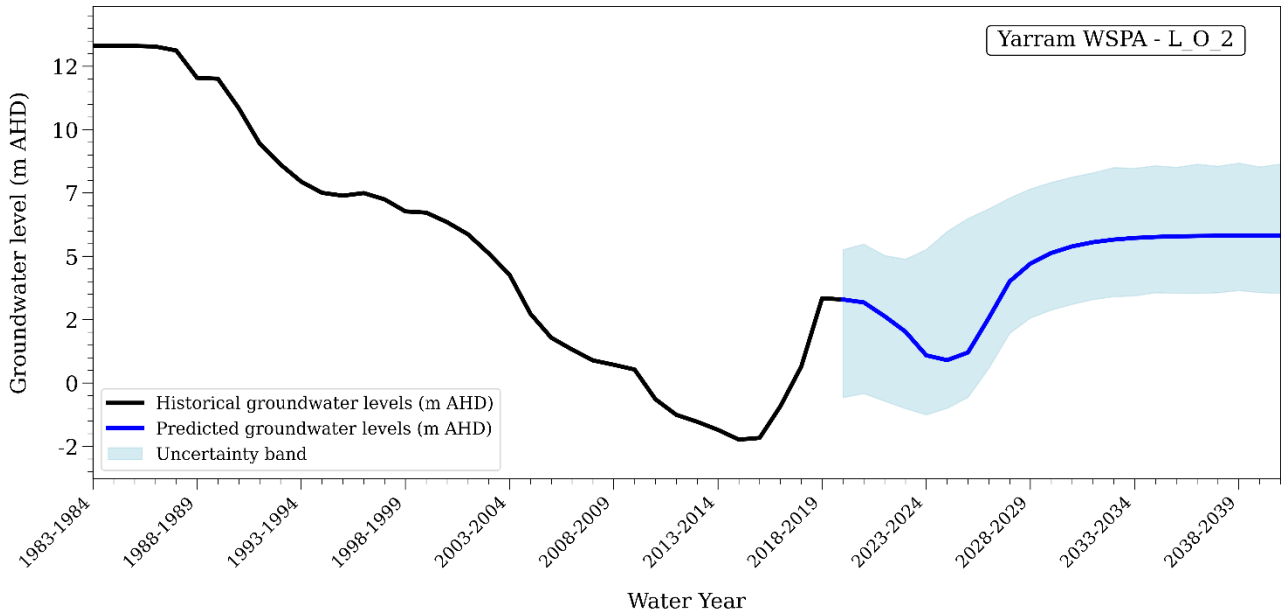

Figure A2-14. Prediction of groundwater level using a 10 m drawdown volume to assess groundwater level stabilisation over the prediction period

Appendix 3: Synthesis results for Confined Aquifer Unincorporated Areas across the state

Table A3-1. Synthesis results and sustainable yield volumes for the Unincorporated Areas across the state

Assessment area	Aquifer	Entitlement (2000) (ML/yr)	Average Annual Use (2016–21) (ML/yr)	Throughflow flux volume (ML/yr) (lower band – upper band)	Sustainable yield volume (ML/yr)* (lower band – upper band)
Wimmera - Mallee					
UTAF – NE1	UTAF	0	0	13,682 (6,714 - 20,650)	4,100 (2,000 – 20,700)
UMTA-NW1	UMTA	0	0	3,545 (1,431 - 5,659)	1,100 (1,400 – 1,700)
UMTA-NW2	UMTA	0	0	12,441 (NA)	3,700 (NA)
UMTA-NW3	UMTA	0	0	7,848 (NA)	2,400 (NA)
LTA-NW1	LTA	0	0	2,670 (NA)	800 (NA)
LTA-NW2	LTA	0	0	2,488 (NA)	700 (NA)
LTA-NW3	LTA	0	0	2,674 (2,446 - 2,910)	800 (700 – 900)
LTA-NW4	LTA	57	0	2,763 (2,316 - 3,251)	800 (700 – 1,000)
LTA-NW5	LTA	12	1	23,619 (19,287 - 27,554)	7,100 (7,800 – 8,300)
Goulburn-Murray					
UTAF – NE2	UTAF	1,407	23	5,714 (5,467- 5,961)	1,700 (1,600 – 1,800)
LTA – NE1	LTA	130	84	6,339 (2,790 - 8,774)	1,900 (800 – 2,600)
Otway-Torquay					
LMTA-SW1	LMTA	0	0	7,491 (5,567- 9,415)	2,200 (1,700 – 2,800)
LMTA-SW2-A	LMTA	0	0	11,965 (3,443- 26,104)	3,600 (1,000 – 7,800)
LMTA-SW2-B	LMTA	0	0	14,188 (4,204 - 23,127)	4,300 (1,300 – 7,000)
LMTA-SW3	LMTA	97	0	5,824 (2,559- 7,561)	1,700 (700 – 2,300)
LMTA-SW4	LMTA	0	0	**-	-
LTA-SW1	LTA	0	0	12,288 (NA)	3,700 (NA)
LTA-SW2	LTA	500	221	14,051 (6,632- 21,470)	4,200 (2,000 – 6,400)
LTA-SW3	LTA	99	23	90,701 (25,216- 133,253)	27,200 (7,600 – 40,000)
LTA-SW4	LTA	20	10	17,060 (9,939- 21,541)	5,100 (3,000 – 6,500)

LTA-SW5	LTA	0	0	*-	-
LTA-SW6	LTA	0	0	45,950 (39,652- 52,248)	13,800 (12,000 – 15,700)
LTA-SW7	LTA	0	0	*-	-
Central					
UTAF – PP2	UTAF	290	20	374 (NA)	100 (NA)
UTAF – PP1	UTAF	487	109	1,766 (802-2,600)	500 (200 – 800)
LTA-PP1	LTA	2,334	357	21,886 (16,867- 26,165)	6,600 (5,100 – 7,800)
LTA-PP2	LTA	3	0	45,745 (NA)	13,700 (NA)
LTA-PP3	LTA	86	0	*-	-
Gippsland					
UTAF – SE1	UTAF	0	0	*-	-
UTAF – SE2	UTAF	451	11	*-	-
UTAF – SE3	UTAF	0	0	*-	-
LTA – SE1	LTA	0	0	*-	-
LTA – SE2	LTA	0	37	499 (444 - 554)	150 (100 – 200)

* Principle to determine the sustainable yield is that it is derived as a percentage of predevelopment throughflow flux.

** It is not possible to calculate the throughflow flux in these UAs due to its small size.

Appendix 4: List of unconfined GMUs

Table A4-1. Unconfined and semi-confined GMUs by aquifer system

GMU	Aquifer system
Barnawartha	Sedimentary valleys
Big Desert (West Wimmera)	Sedimentary plains
Broken	Sedimentary valleys
Bungaree	Volcanics
Cardigan	Volcanics
Central Victorian Mineral Springs	Highlands and volcanics
Colongulac	Volcanics
Denison	Sedimentary plains
Deutgam	Sedimentary plains
Eildon	Highlands and sedimentary upland valleys
Frankston	Sedimentary plains
Gellibrand	Sedimentary plains
Gerangamete	Sedimentary plains
Glenelg	Sedimentary plains
Glenormiston	Volcanics
Gymbowen (West Wimmera)	Sedimentary plains
Hawkesdale	Sedimentary plains
Heywood	Sedimentary plains
Jan Juc	Sedimentary plains
Kiewa	Sedimentary upland valleys
Koo Wee Rup	Sedimentary plains
Lancefield	Volcanics
Leongatha	Sedimentary valleys
Little Desert (West Wimmera)	Sedimentary plains
Loddon Highlands	Volcanics and sedimentary upland valleys
Lower Campaspe Valley	Sedimentary valleys
Lower Ovens	Sedimentary valleys
Merrimu	Sedimentary plains
Mid Goulburn	Sedimentary valleys
Mid Loddon	Sedimentary valleys
Moe	Sedimentary plains
Moorabbin	Sedimentary plains
Nepean	Sedimentary plains
Neuarpur (West Wimmera)	Sedimentary plains
Newlingrook	Sedimentary plains
Northern (West Wimmera)	Sedimentary plains
Nullawarre	Sedimentary plains
Shepparton	Sedimentary plains

South West Limestone	Sedimentary plains
Southern (West Wimmera)	Sedimentary plains
Strathbogie	Sedimentary valleys
Tarwin	Sedimentary plains
Upper Goulburn	Highlands and sedimentary upland valleys
Upper Murray	Highlands and sedimentary upland valleys
Upper Ovens	Sedimentary upland valleys
Wa De Lock	Sedimentary plains
Wandin Yallock	Volcanics
Warrion	Volcanics
West Goulburn	Highlands and sedimentary upland valleys
Wy Yung	Sedimentary valleys
Yangery	Sedimentary plains

Table A4-2. Values assessed for unconfined GMUs

GMU	Consumptive users	GDEs – Wetlands	GDEs – Terrestrial	GDEs – Waterways	Streamflow	Consumptive Users Seawater intrusion
Barnawartha GMA	Y	N	Y	Y	N	N
Broken GMA	Y	Y	Y	Y	Y	N
Bungaree GMA	Y	N	Y	Y	Y	N
Cardigan GMA	Y	N	Y	Y	Y	N
Central Victorian Mineral Springs GMA	Y	N	Y	Y	Y	N
Colongulac GMA	Y	Y	Y	N	Y	N
Denison GMA	Y	N	Y	Y	N	N
Deutgam WSPA	Y	Y	Y	Y	Y	Y
Eildon GMA	Y	N	Y	Y	Y	N
Frankston GMA	Y	Y	Y	N	N	Y
Gellibrand GMA	N	N	N	N	Y	N
Gerangamete GMA	Y	N	Y	Y	Y	N
Glenelg WSPA	Y	Y	Y	Y	Y	Y
Glenormiston GMA	Y	N	Y	N	Y	N
Hawkesdale GMA	Y	N	Y	Y	Y	Y
Heywood GMA	Y	N	Y	Y	Y	Y
Jan Juc GMA	Y	N	Y	Y	Y	Y
Kiewa GMA	Y	Y	Y	Y	Y	N

GMU	Consumptive users	GDEs – Wetlands	GDEs – Terrestrial	GDEs – Waterways	Streamflow	Consumptive Users Seawater intrusion
Koo Wee Rup WSPA	Y	Y	Y	Y	Y	Y
Lancefield GMA	Y	N	Y	Y	N	N
Leongatha GMA	Y	N	Y	Y	Y	N
Loddon Highlands WSPA	Y	Y	Y	Y	Y	N
Lower Campaspe Valley WSPA	Y	Y	Y	Y	Y	N
Lower Ovens GMA	Y	Y	Y	Y	Y	N
Merrimu GMA	Y	N	Y	N	Y	N
Mid Goulburn GMA	Y	Y	Y	Y	Y	N
Mid Loddon GMA	Y	Y	Y	Y	Y	N
Moe GMA	Y	N	Y	Y	Y	N
Moorabbin GMA	Y	N	Y	N	N	Y
Nepean GMA	Y	Y	Y	N	N	Y
Newlingrook GMA	Y	N	Y	Y	Y	Y
Nullawarre WSPA	Y	N	Y	Y	Y	Y
Shepparton Irrigation GMA	Y	Y	Y	Y	Y	N
South West Limestone GMA	Y	Y	Y	Y	Y	Y
Strathbogie GMA	Y	N	Y	Y	Y	N
Tarwin GMA	Y	Y	Y	Y	N	Y

GMU	Consumptive users	GDEs – Wetlands	GDEs – Terrestrial	GDEs – Waterways	Streamflow	Consumptive Users Seawater intrusion
Upper Goulburn GMA	Y	Y	Y	Y	Y	N
Upper Murray GMA	Y	Y	Y	Y	Y	N
Upper Ovens WSPA	Y	Y	Y	Y	Y	N
Wa De Lock GMA	Y	Y	Y	Y	Y	N
Wandin Yallock GMA	Y	Y	Y	N	N	N
Warrion WSPA	Y	Y	Y	Y	N	N
West Goulburn GMA	Y	Y	Y	Y	Y	N
Big Desert Zone (West Wimmera)	N	N	N	N	N	N
Gymbowen Zone (West Wimmera)	Y	Y	Y	N	N	N
Little Desert Zone (West Wimmera)	N	N	N	N	N	N
Neuarpur Zone (West Wimmera)	Y	Y	Y	N	N	N
Northern Zone (West Wimmera)	Y	Y	Y	Y	N	N
Southern Zone (West Wimmera)	Y	Y	Y	Y	Y	N
Wy Yung GMA	Y	Y	Y	Y	N	N
Yangery WSPA	Y	Y	Y	Y	Y	Y

Note: GDEs = groundwater-dependent ecosystems

Appendix 5: Synthesis results for all unconfined GMUs across the state

BARNAWARTHA GMA

Table A5-1. Consumptive users synthesis Table A5-for Barnawartha GMA

Assessment area	**GMU**					**BARNAWARTHA GMA**
	Representative Bore					WRK053314
	Aquifer					Layered Valley
	Water system depth boundary (m below natural surface)					All formations below surface
Catchment	Permissible Consumptive Volume (ML/yr)					2,100
	Licensed Entitlement (ML/yr)					375
	Licensed avg use (ML/yr)					61
Consumptive use metric	**Consumptive users (bores)**	Avg Use 7 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
					MCC (LCC to HCC)	1.9 (-0.41 to 3.5)
			2041-2065	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	2.2 (-0.23 to 5.9)
		PCV use 375 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
					MCC (LCC to HCC)	2.1 (0.45 to 3.6)
			2041-2065	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	3.5 (0.34 to 6.1)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	307
					MCC (HCC to LCC)	259 (162 to 916)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	7.90% (6.18% to 17.30%)
			2041-2065	Volume (ML/yr)	No CC	347
					MCC (HCC to LCC)	159 (95 to 826)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	6.37% (6.24% to 18.31%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	614
					MCC (HCC to LCC)	519 (325 to 1,831)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	15.79% (12.36% to 34.60%)
			2041-2065	Volume (ML/yr)	No CC	693
					MCC (HCC to LCC)	318 (191 to 1,653)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	12.74% (12.47% to 36.63%)

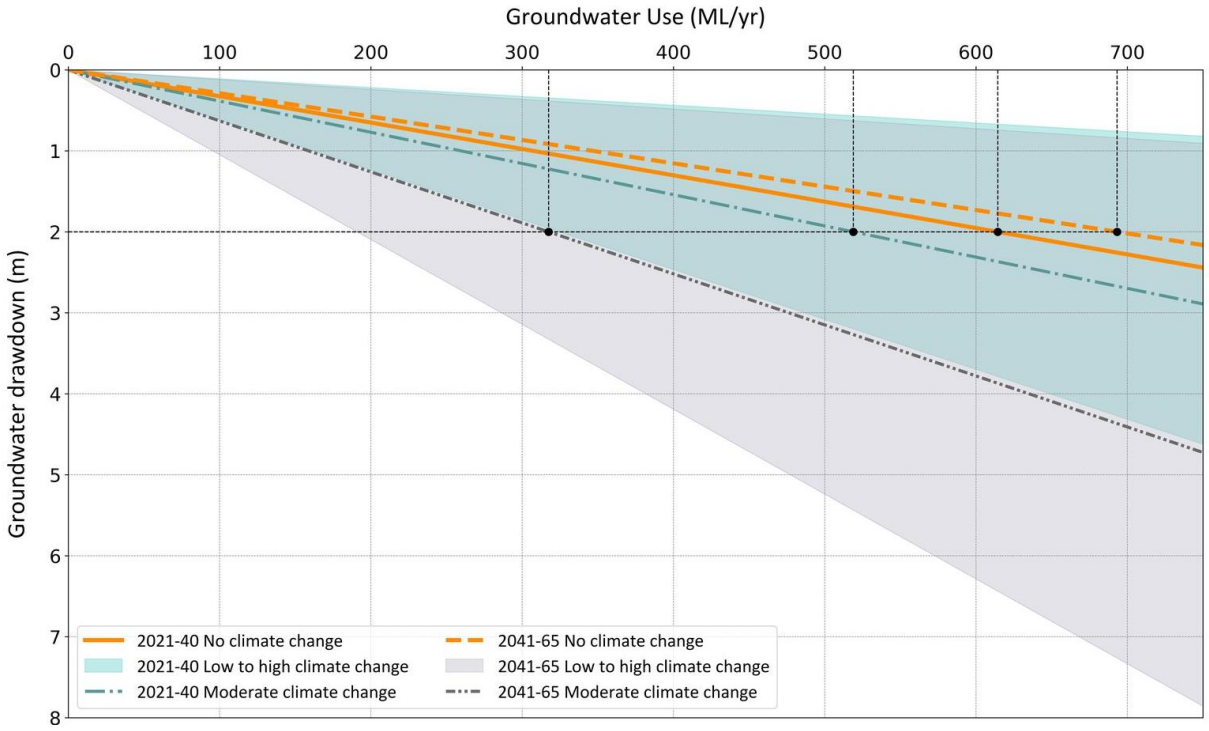

Figure A5-1. Plot for Barnawartha GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-2. Statewide drawdown use synthesis Table A5-for Barnawartha GMA

					BARNAWARTHA GMA
Consumptive users (bores)	Avg Use 7 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	1.8 (-0.55 to 3.4)
		2041-2065	Drawdown from baseline (m)	No CC	2.1
				MCC (LCC to HCC)	2.1 (-0.34 to 5.9)
	PCV use 375 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	2.0 (0.22 to 3.6)
		2041-2065	Drawdown from baseline (m)	No CC	2.1
				MCC (LCC to HCC)	3.3 (-0.06 to 6.1)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	351
				MCC (HCC to LCC)	282 (166 to 1,702)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.57% (6.30% to 32.15%)
		2041-2065	Volume (ML/yr)	No CC	258
				MCC (HCC to LCC)	173 (97 to 3,325)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.95% (6.36% to 73.67%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	703
				MCC (HCC to LCC)	563 (331 to 3,403)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	17.14% (12.60% to 64.29%)
		2041-2065	Volume (ML/yr)	No CC	515
				MCC (HCC to LCC)	346 (195 to 6,649)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.89% (12.72% to 147.33%)

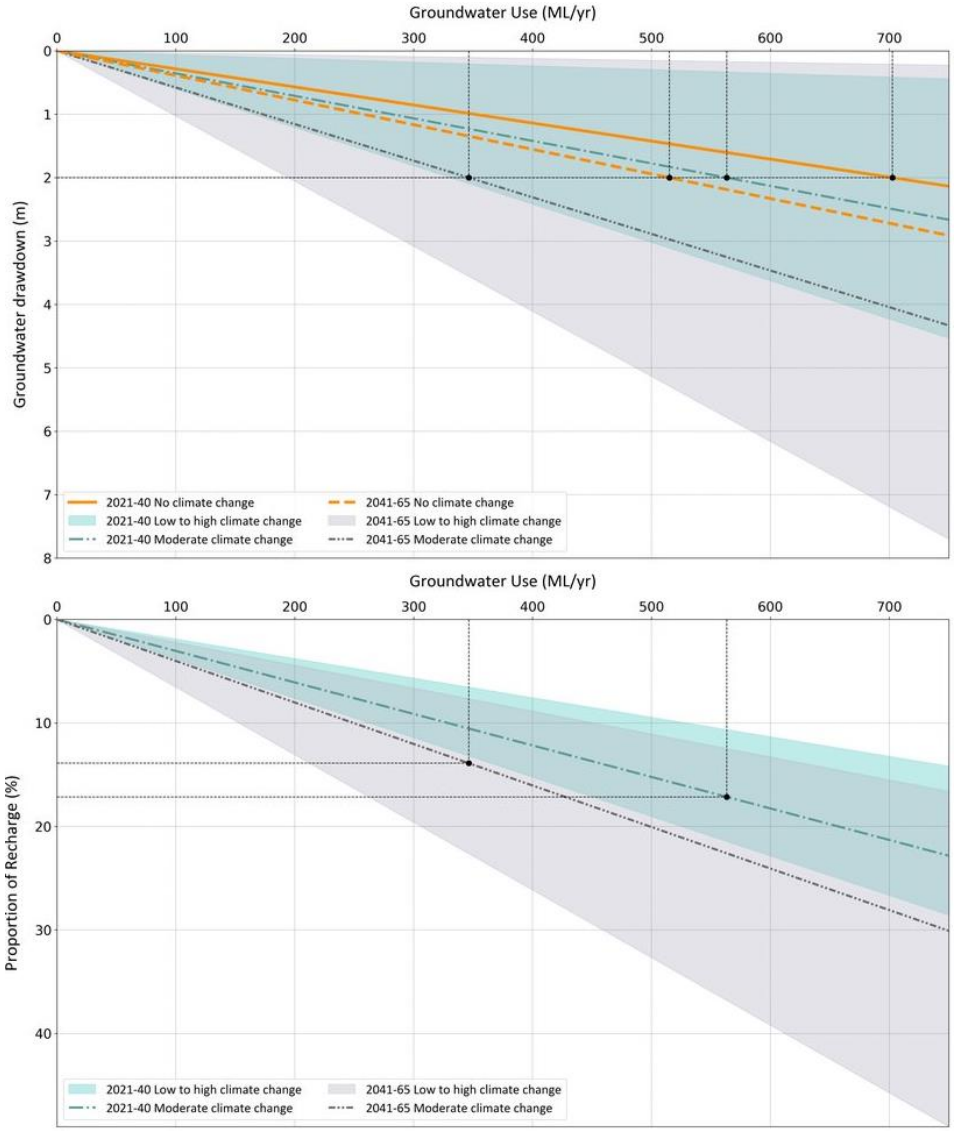

Figure A5-2. Upper Plot: Barnawartha GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Barnawartha GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-3. Terrestrial GDE synthesis Table A5-for Barnawartha GMA

GMU					BARNAWARTHA GMA
Terrestrial GDEs	Avg Use 7 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.94
				MCC (LCC to HCC)	1.2 (-1.02 to 2.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	1.5 (-0.85 to 5.3)
	PCV use 375 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.4 (-0.18 to 2.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.8 (-0.08 to 5.3)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	44
				MCC (HCC to LCC)	36 (20 to 626)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.09% (0.76% to 11.82%)
		2041-2065	Volume (ML/yr)	No CC	30
				MCC (HCC to LCC)	18 (11 to 136)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.73% (0.69% to 3.01%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	441
				MCC (HCC to LCC)	360 (200 to 6,258)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.95% (7.61% to 118.22%)
		2041-2065	Volume (ML/yr)	No CC	305
				MCC (HCC to LCC)	181 (106 to 1,359)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.26% (6.93% to 30.11%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	882
				MCC (HCC to LCC)	719 (400 to 12,515)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	21.90% (15.22% to 236.44%)
		2041-2065	Volume (ML/yr)	No CC	609
				MCC (HCC to LCC)	362 (212 to 2,717)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	14.52% (13.86% to 60.21%)

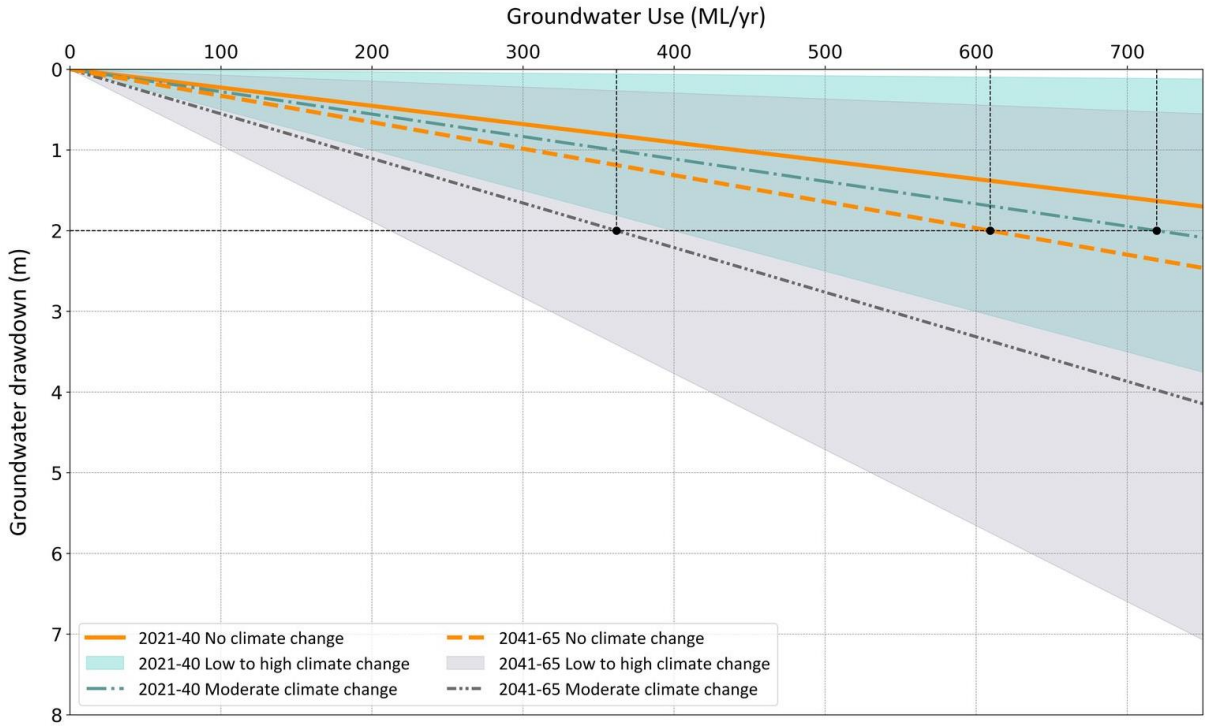

Figure A5-3. Plot for Barnawartha GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-4. Waterways GDE synthesis Table A5-for Barnawartha GMA

GMU					BARNAWARTHA GMA
Waterway GDEs	Avg Use 7 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.88
				MCC (LCC to HCC)	1.2 (-1.09 to 2.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	1.5 (-0.91 to 5.2)
	PCV use 375 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.4 (-0.25 to 2.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.8 (-0.16 to 5.3)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	46
				MCC (HCC to LCC)	37 (20 to 3,679)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.13% (0.77% to 69.50%)
		2041-2065	Volume (ML/yr)	No CC	29
				MCC (HCC to LCC)	18 (11 to 167)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.74% (0.70% to 3.69%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	464
				MCC (HCC to LCC)	372 (203 to 36,786)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.32% (7.73% to 694.97%)
		2041-2065	Volume (ML/yr)	No CC	289
				MCC (HCC to LCC)	184 (107 to 1,665)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.38% (6.99% to 36.90%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	927
				MCC (HCC to LCC)	744 (406 to 73,572)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	22.65% (15.46% to 1389.94%)
		2041-2065	Volume (ML/yr)	No CC	578
				MCC (HCC to LCC)	368 (214 to 3,330)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	14.76% (13.98% to 73.80%)

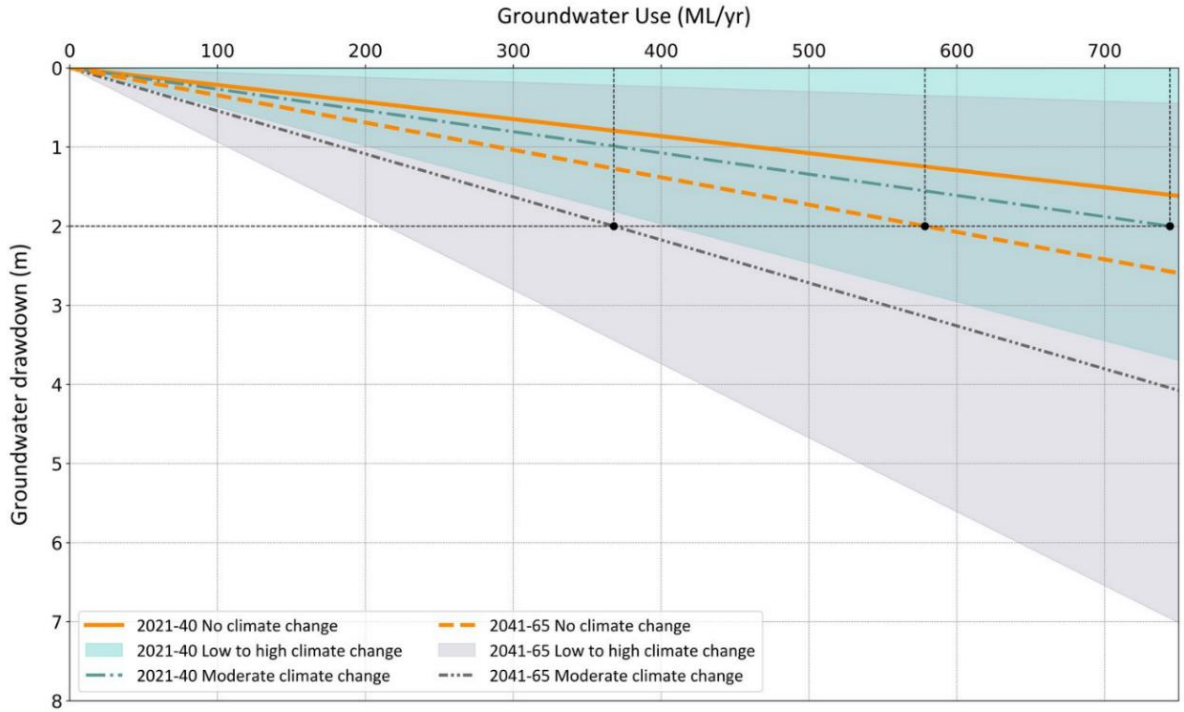

Figure A5-4. Plot for Barnawartha GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

BIG DESERT ZONE (WEST WIMMERA)

Table A5-5. Terrestrial GDE synthesis Table A5-for Big Desert Zone (West Wimmera)

Assessment area	**GMU**					**BIG DESERT ZONE (WEST WIMMERA)**
	Representative Bore					?
	Aquifer					Deep Basin
	Water system depth boundary (m below natural surface)					Aquifer dependent to Aquifer dependent
Catchment	Permissible Consumptive Volume (ML/yr)					25
	Licensed Entitlement (ML/yr)					2,902
	Licensed avg use (ML/yr)					1,218
Environmental metric	**Terrestrial GDEs**	Avg Use 0 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.07
					MCC (LCC to HCC)	-0.17 (-0.12 to 0.36)
			2041-2065	Drawdown from baseline (m)	No CC	0.05
					MCC (LCC to HCC)	0.05 (-0.21 to 0.26)
		PCV use 0 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.20
					MCC (LCC to HCC)	-0.04 (-0.08 to 0.58)
			2041-2065	Drawdown from baseline (m)	No CC	0.05
					MCC (LCC to HCC)	-0.09 (-0.26 to 0.57)
		Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	NA
					NA	NA
				Proportion of recharge (%)	No CC	NA
					NA	NA
			2041-2065	Volume (ML/yr)	No CC	NA
					NA	NA
				Proportion of recharge (%)	No CC	NA
					NA	NA
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	NA
					NA	NA
				Proportion of recharge (%)	No CC	NA
					NA	NA
			2041-2065	Volume (ML/yr)	No CC	NA
					NA	NA
				Proportion of recharge (%)	No CC	NA
					NA	NA
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	NA
					NA	NA
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	NA
			2041-2065	Volume (ML/yr)	No CC	NA
					NA	NA
				Proportion of recharge (%)	No CC	NA
					NA	NA

BROKEN GMA

Table A5-6. Consumptive users synthesis Table A5-for Broken GMA

Assessment area	**GMU**					**BROKEN GMA**
	Representative Bore					65,845
	Aquifer					Layered Valley
	Water system depth boundary (m below natural surface)					In the hatched area all formations below 25 metres from the surface to a depth of 200 metres otherwise all formations below the surface to a depth of 200 metres.
Catchment	Permissible Consumptive Volume (ML/yr)					3,732
	Licensed Entitlement (ML/yr)					2,902
	Licensed avg use (ML/yr)					1,218
Consumptive use metric	**Consumptive users (bores)**	Avg Use 654 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.7
					MCC (LCC to HCC)	2.3 (0.53 to 3.5)
			2041-2065	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	2.2 (0.81 to 6.0)
		PCV use 3,389 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.9
					MCC (LCC to HCC)	2.5 (1.5 to 3.6)
			2041-2065	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	3.7 (1.2 to 6.1)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,581
					MCC (HCC to LCC)	1,976 (1,414 to 3,268)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.35% (0.33% to 0.46%)
			2041-2065	Volume (ML/yr)	No CC	1,819
					MCC (HCC to LCC)	1,391 (849 to 3,749)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.32% (0.32% to 0.63%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,162
					MCC (HCC to LCC)	3,951 (2,828 to 6,536)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.69% (0.66% to 0.93%)
			2041-2065	Volume (ML/yr)	No CC	3,637
					MCC (HCC to LCC)	2,782 (1,698 to 7,499)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.63% (0.64% to 1.26%)

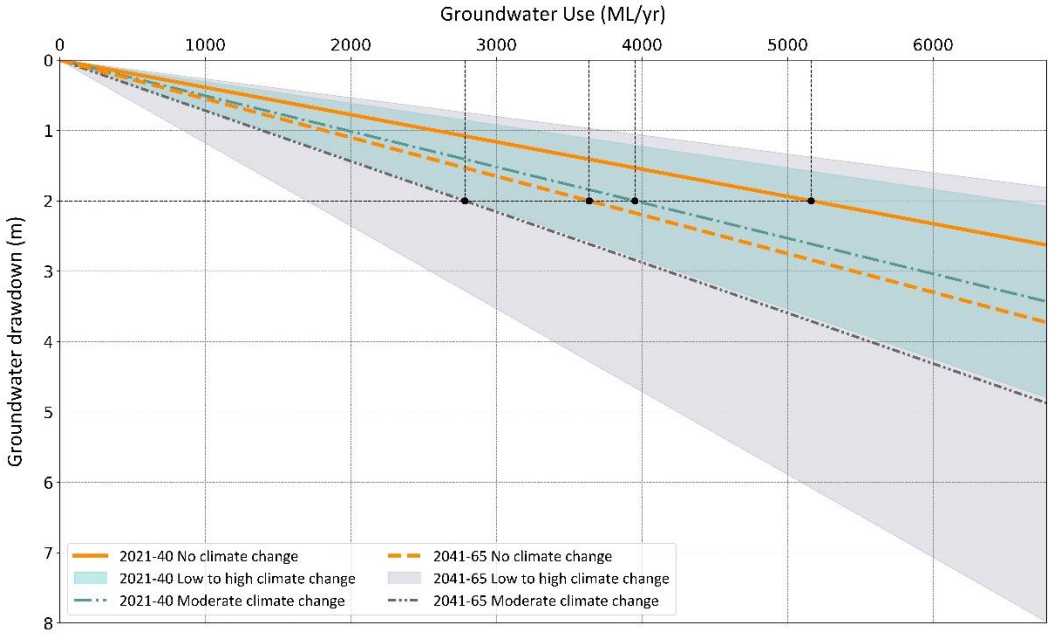

Figure A5-5. Plot for Broken GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-7. Statewide drawdown use synthesis Table A5-for Broken GMA

GMU					BROKEN GMA
Consumptive users (bores)	Avg Use 654 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.1
				MCC (LCC to HCC)	2.7 (0.90 to 3.8)
		2041-2065	Drawdown from baseline (m)	No CC	2.5
				MCC (LCC to HCC)	2.5 (1.2 to 6.3)
	PCV use 3,389 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.5
				MCC (LCC to HCC)	3.1 (1.9 to 4.3)
		2041-2065	Drawdown from baseline (m)	No CC	2.5
				MCC (LCC to HCC)	4.2 (1.4 to 6.9)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,096
				MCC (HCC to LCC)	1,669 (1,216 to 2,646)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.29% (0.28% to 0.38%)
		2041-2065	Volume (ML/yr)	No CC	2,018
				MCC (HCC to LCC)	1,232 (759 to 3,284)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.28% (0.29% to 0.55%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,191

				MCC (HCC to LCC)	3,338 (2,432 to 5,291)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.59% (0.57% to 0.75%)
		2041-2065	Volume (ML/yr)	No CC	4,036
				MCC (HCC to LCC)	2,465 (1,517 to 6,568)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.56% (0.57% to 1.10%)

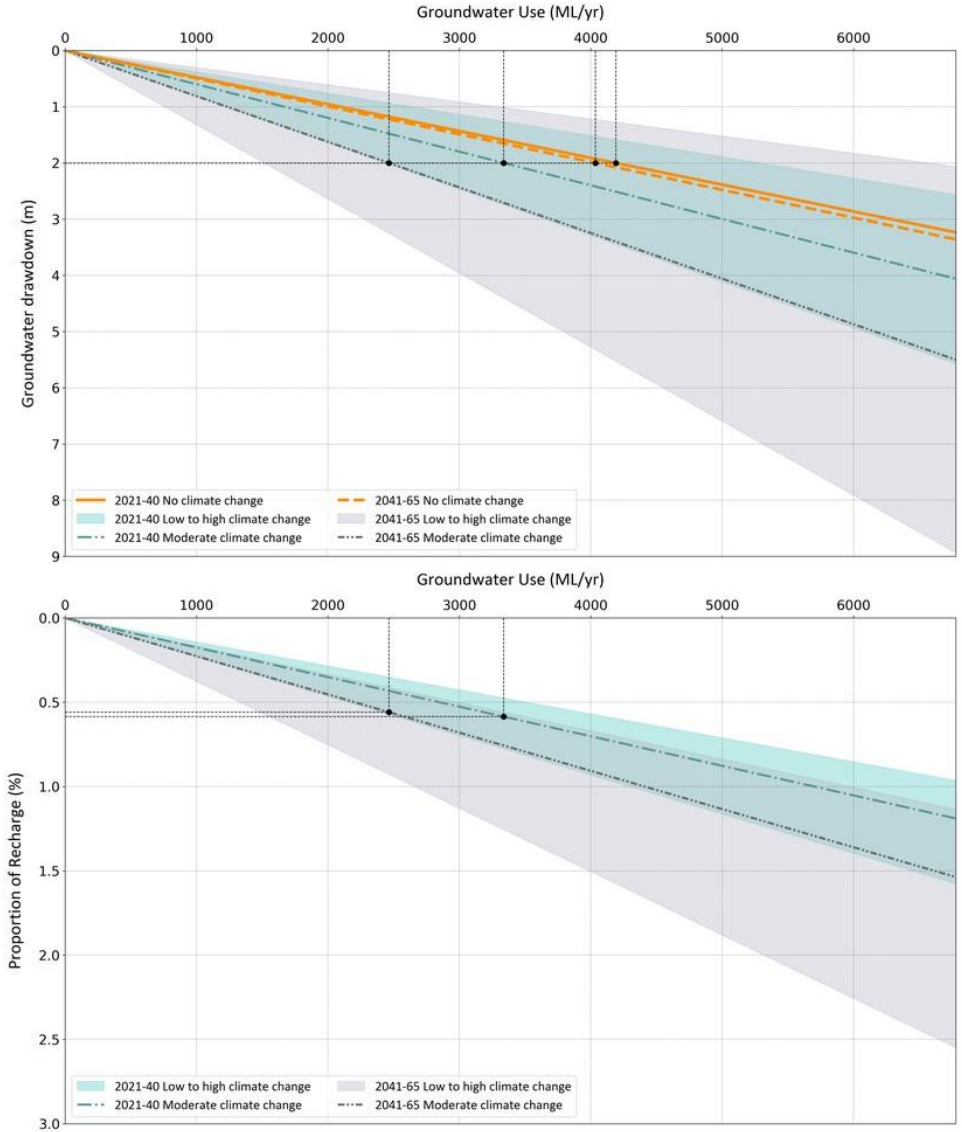

Figure A5-6. Upper Plot: Broken GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Broken GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-8. Terrestrial GDE synthesis Table A5-for Broken GMA

GMU					BROKEN GMA
Terrestrial GDEs	Avg Use 654 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.0 (0.43 to 3.1)
		2041-2065	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	1.9 (0.48 to 5.6)
	PCV use 3,389 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	2.1 (1.2 to 3.1)
		2041-2065	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	3.2 (0.93 to 5.4)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	301
				MCC (HCC to LCC)	234 (164 to 381)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.04% (0.04% to 0.05%)
		2041-2065	Volume (ML/yr)	No CC	219
				MCC (HCC to LCC)	158 (94 to 435)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.04% (0.04% to 0.07%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,011
				MCC (HCC to LCC)	2,345 (1,642 to 3,805)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.41% (0.38% to 0.54%)
		2041-2065	Volume (ML/yr)	No CC	2,191
				MCC (HCC to LCC)	1,579 (941 to 4,353)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.36% (0.35% to 0.73%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,023
				MCC (HCC to LCC)	4,690 (3,284 to 7,610)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.82% (0.76% to 1.08%)
		2041-2065	Volume (ML/yr)	No CC	4,382
				MCC (HCC to LCC)	3,159 (1,883 to 8,705)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.72% (0.71% to 1.46%)

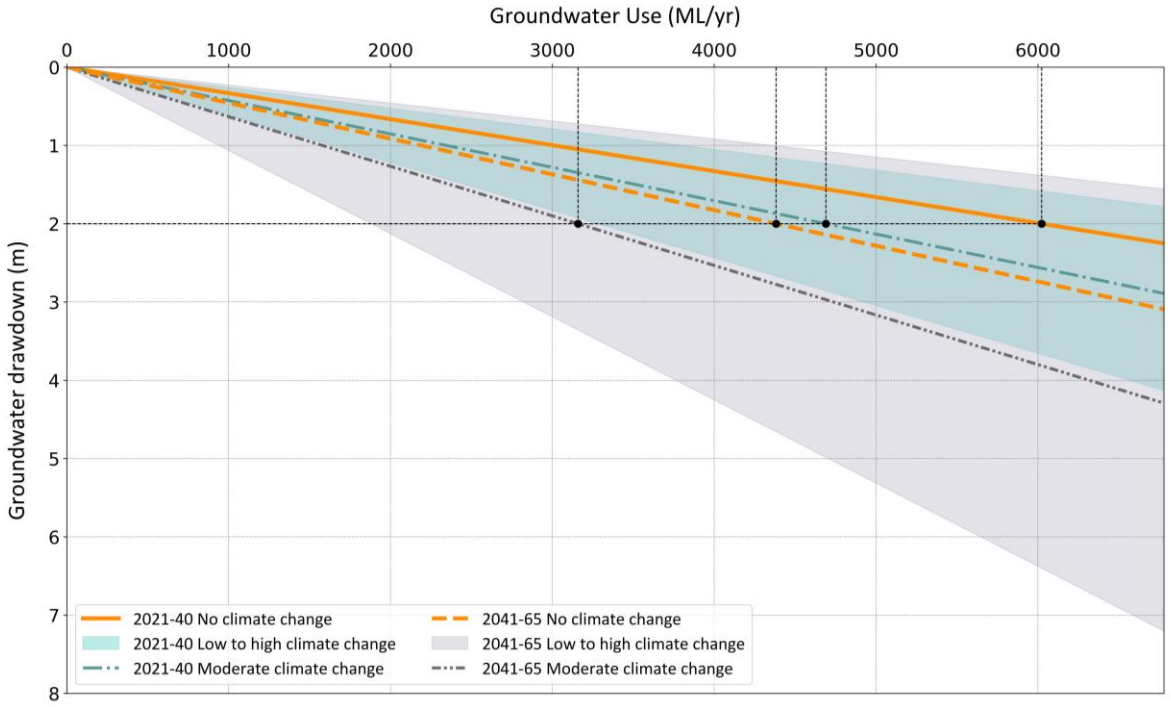

Figure A5-7. Plot for Broken GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-9. Waterways GDE synthesis Table A5-for Broken GMA

GMU					BROKEN GMA
Waterway GDEs	Avg Use 654 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.72
				MCC (LCC to HCC)	1.3 (-0.47 to 2.4)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.2 (-0.13 to 4.7)
	PCV use 3,389 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.77
				MCC (LCC to HCC)	1.3 (0.44 to 2.2)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	2.5 (0.41 to 4.4)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	555
				MCC (HCC to LCC)	349 (220 to 875)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.06% (0.05% to 0.12%)
		2041-2065	Volume (ML/yr)	No CC	174
				MCC (HCC to LCC)	193 (112 to 713)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.04% (0.04% to 0.12%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,549
				MCC (HCC to LCC)	3,494 (2,203 to 8,745)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.61% (0.51% to 1.24%)
		2041-2065	Volume (ML/yr)	No CC	1,743
				MCC (HCC to LCC)	1,934 (1,123 to 7,127)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.44% (0.42% to 1.19%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	11,097
				MCC (HCC to LCC)	6,988 (4,407 to 17,490)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.23% (1.03% to 2.49%)
		2041-2065	Volume (ML/yr)	No CC	3,486
				MCC (HCC to LCC)	3,868 (2,246 to 14,254)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.88% (0.84% to 2.39%)

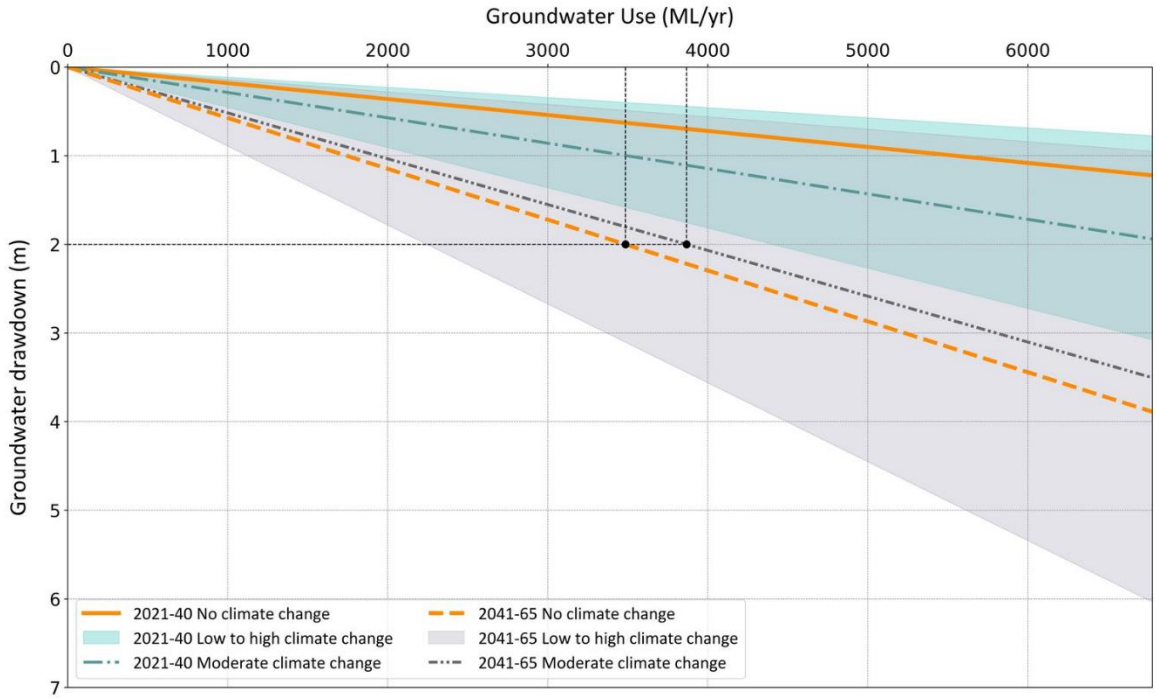

Figure A5-8. Plot for Broken GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-10. Stream gauge results for Broken GMA

GMU		BROKEN GMA		
Stream gauge/Catchment:		404207 - Holland Creek @ Kelfeera (Unregulated)		
Base flow index (1975-2020)		0.46		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	62,177 (44,137 to 81,663)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-13,268 (-31,308 to 6,219)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	57,288 (34,428 to 74,433)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-18,156 (-41,017 to -1,011)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.048% (0.067% to 0.036%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.224% (0.316% to 0.171%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.052% (0.086% to 0.040%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.243% (0.405% to 0.187%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	0.98 (0.69 to 1.28)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	0.90 (0.54 to 1.17)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	8.31% (11.71% to 6.33%)
		PCV use (ML/yr)	MCC (LCC to HCC)	39.06% (55.02% to 29.74%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	9.02% (15.01% to 6.94%)
		PCV use (ML/yr)	MCC (LCC to HCC)	42.39% (70.53% to 32.62%)

Table A5-11. Wetlands GDE synthesis Table A5-for Broken GMA

GMU					BROKEN GMA
Wetlands GDEs	Avg Use 654 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.7 (0.34 to 2.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	1.6 (0.15 to 5.2)
	PCV use 3,389 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	1.7 (0.85 to 2.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	2.7 (0.20 to 5.1)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	403
				MCC (HCC to LCC)	301 (188 to 606)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (0.04% to 0.09%)
		2041-2065	Volume (ML/yr)	No CC	260
				MCC (HCC to LCC)	204 (105 to 2,215)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (0.04% to 0.37%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,027
				MCC (HCC to LCC)	3,010 (1,885 to 6,060)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.53% (0.44% to 0.86%)
		2041-2065	Volume (ML/yr)	No CC	2,596
				MCC (HCC to LCC)	2,038 (1,046 to 22,150)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.46% (0.39% to 3.71%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	8,054
				MCC (HCC to LCC)	6,021 (3,769 to 12,120)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.06% (0.88% to 1.72%)
		2041-2065	Volume (ML/yr)	No CC	5,192
				MCC (HCC to LCC)	4,076 (2,092 to 44,301)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.92% (0.79% to 7.42%)

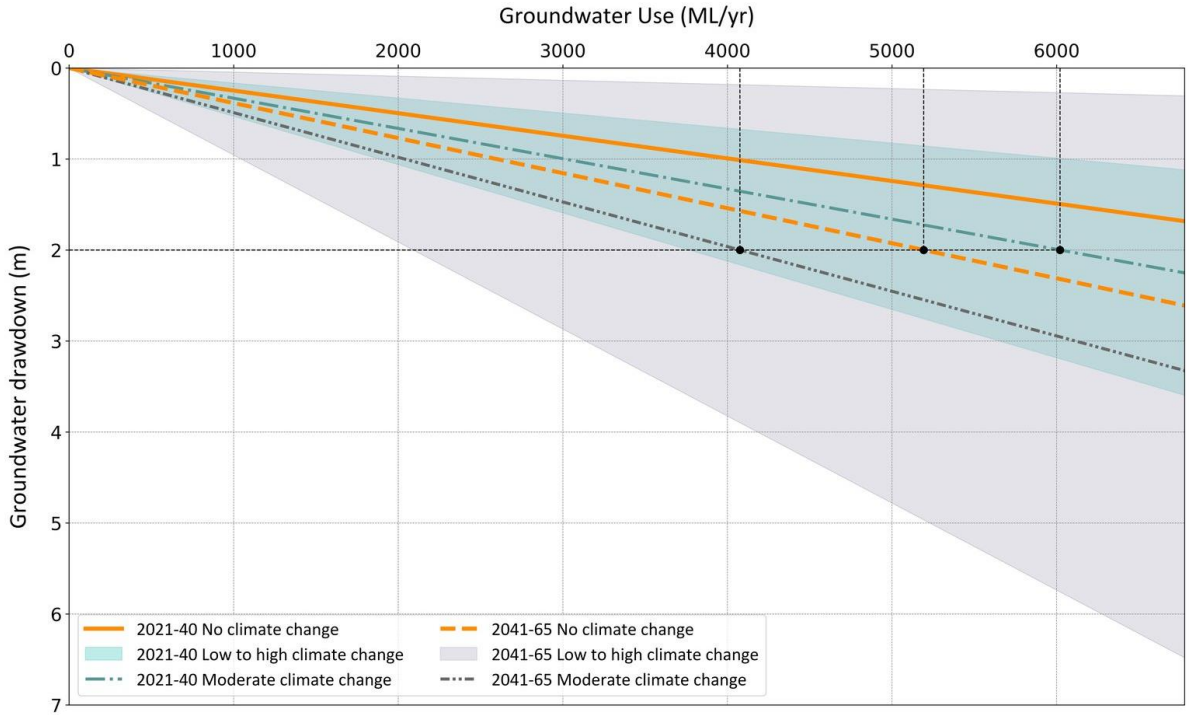

Figure A5-9. Plot for Broken GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

BUNGAREE GMA

Table A5-12. Consumptive users synthesis Table A5-for Bungaree GMA

Assessment area	**GMU**					**BUNGAREE GMA**
	Representative Bore					119329
	Aquifer					Layered Valley
	Water system depth boundary (m below natural surface)					All formations below the surface
Catchment	Permissible Consumptive Volume (ML/yr)					5,334
	Licensed Entitlement (ML/yr)					5,293
	Licensed avg use (ML/yr)					2,700
Consumptive use metric	Consumptive users (bores)	Avg Use 2,037 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.93
					MCC (LCC to HCC)	1.3 (0.52 to 2.0)
			2041-2065	Drawdown from baseline (m)	No CC	0.99
					MCC (LCC to HCC)	0.99 (0.81 to 3.0)
		PCV use 4,234 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.6
					MCC (LCC to HCC)	5.9 (3.2 to 8.5)
			2041-2065	Drawdown from baseline (m)	No CC	0.99
					MCC (LCC to HCC)	7.5 (1.1 to 14)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,445
					MCC (HCC to LCC)	1,133 (804 to 1,994)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.68% (2.34% to 3.77%)
			2041-2065	Volume (ML/yr)	No CC	1,482
					MCC (HCC to LCC)	916 (509 to 4,505)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.89% (2.39% to 10.10%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,890
					MCC (HCC to LCC)	2,266 (1,608 to 3,989)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	5.36% (4.68% to 7.53%)
			2041-2065	Volume (ML/yr)	No CC	2,964
					MCC (HCC to LCC)	1,832 (1,019 to 9,009)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	5.78% (4.77% to 20.20%)

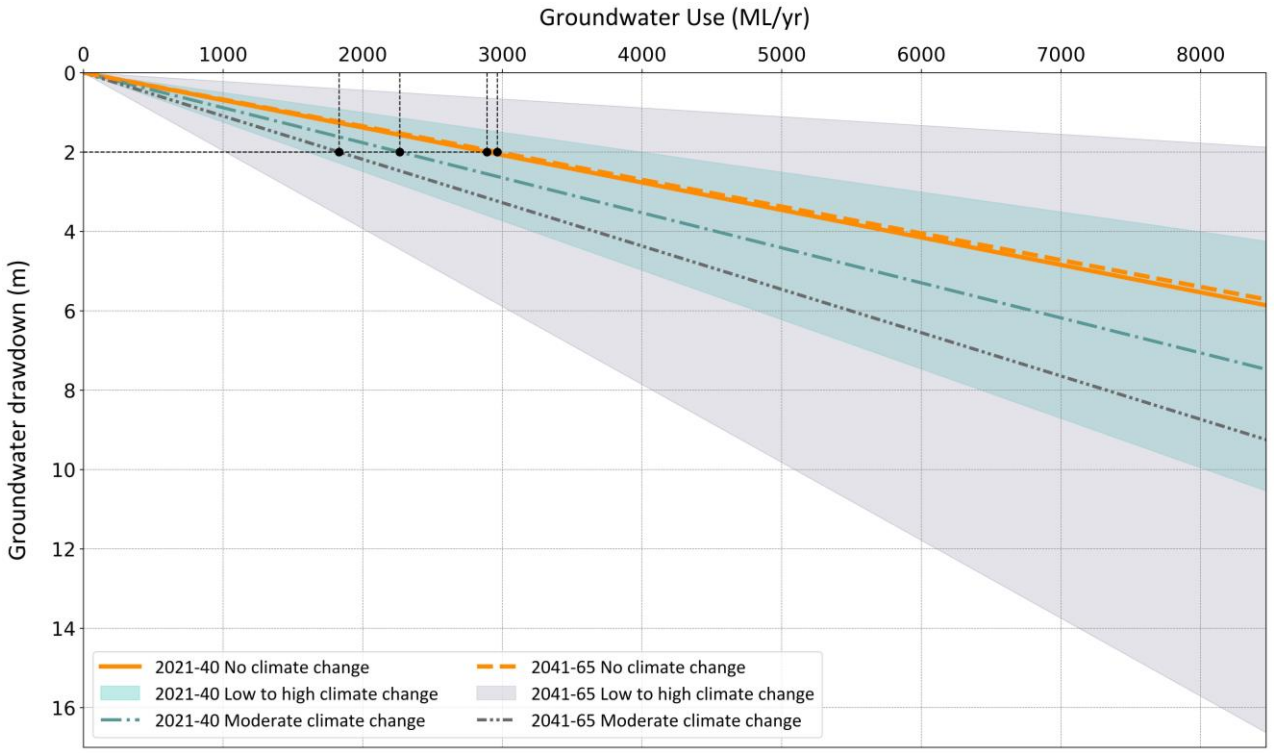

Figure A5-10. Plot for Bungaree GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-13. Statewide drawdown use synthesis Table A5-for Bungaree GMA

GMU					BUNGAREE GMA
Consumptive users (bores)	Avg Use 2,037 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.94
				MCC (LCC to HCC)	1.3 (0.53 to 2.0)
		2041-2065	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	1.0 (0.81 to 3.0)
	PCV use 4,234 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.6
				MCC (LCC to HCC)	6.0 (3.3 to 8.5)
		2041-2065	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	7.5 (1.2 to 14)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,428
				MCC (HCC to LCC)	1,125 (801 to 1,958)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.66% (2.33% to 3.70%)
		2041-2065	Volume (ML/yr)	No CC	1,519
				MCC (HCC to LCC)	899 (506 to 4,046)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.84% (2.37% to 9.07%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,857
				MCC (HCC to LCC)	2,249 (1,603 to 3,916)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.32% (4.67% to 7.40%)
		2041-2065	Volume (ML/yr)	No CC	3,038
				MCC (HCC to LCC)	1,798 (1,011 to 8,093)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.67% (4.74% to 18.14%)

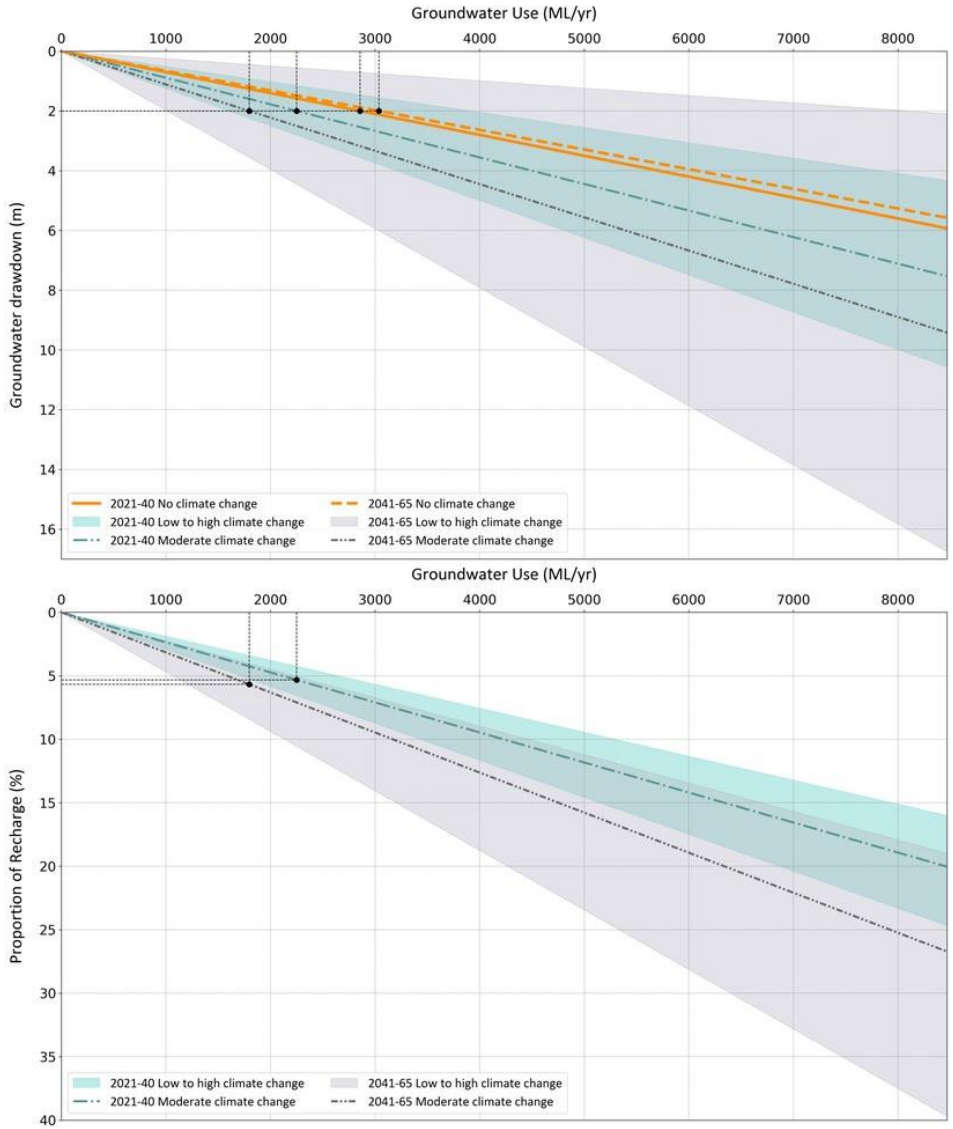

Figure A5-11. Upper Plot: Bungaree GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Bungaree GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-14. Terrestrial GDE synthesis Table A5-for Bungaree GMA

GMU					BUNGAREE GMA
Terrestrial GDEs	Avg Use 2,037 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.13
				MCC (LCC to HCC)	0.54 (-0.28 to 1.1)
		2041-2065	Drawdown from baseline (m)	No CC	0.17
				MCC (LCC to HCC)	0.17 (0.03 to 2.0)
	PCV use 4,234 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.6
				MCC (LCC to HCC)	4.9 (2.3 to 7.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.17
				MCC (LCC to HCC)	6.3 (0.23 to 12)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	184
				MCC (HCC to LCC)	138 (94 to 275)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.33% (0.27% to 0.52%)
		2041-2065	Volume (ML/yr)	No CC	143
				MCC (HCC to LCC)	109 (57 to 1,042)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.35% (0.27% to 2.34%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,842
				MCC (HCC to LCC)	1,384 (941 to 2,749)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.27% (2.74% to 5.19%)
		2041-2065	Volume (ML/yr)	No CC	1,427
				MCC (HCC to LCC)	1,094 (575 to 10,421)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.45% (2.69% to 23.37%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,684
				MCC (HCC to LCC)	2,768 (1,882 to 5,499)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.55% (5.48% to 10.39%)
		2041-2065	Volume (ML/yr)	No CC	2,855
				MCC (HCC to LCC)	2,188 (1,149 to 20,843)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.90% (5.39% to 46.73%)

Table A5-15. Waterways GDE synthesis Table A5-for Bungaree GMA

GMU					BUNGAREE GMA
Waterway GDEs	Avg Use 2,037 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.09
				MCC (LCC to HCC)	0.29 (-0.51 to 0.90)
		2041-2065	Drawdown from baseline (m)	No CC	-0.05
				MCC (LCC to HCC)	-0.05 (-0.21 to 1.8)
	PCV use 4,234 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.3
				MCC (LCC to HCC)	4.6 (2.1 to 6.9)
		2041-2065	Drawdown from baseline (m)	No CC	-0.05
				MCC (LCC to HCC)	6.0 (0.15 to 12)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	198
				MCC (HCC to LCC)	147 (99 to 302)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.35% (0.29% to 0.57%)
		2041-2065	Volume (ML/yr)	No CC	143
				MCC (HCC to LCC)	112 (59 to 1,068)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.35% (0.28% to 2.39%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,976
				MCC (HCC to LCC)	1,471 (989 to 3,018)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.48% (2.88% to 5.70%)
		2041-2065	Volume (ML/yr)	No CC	1,430
				MCC (HCC to LCC)	1,125 (591 to 10,678)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.55% (2.77% to 23.94%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,952
				MCC (HCC to LCC)	2,942 (1,978 to 6,037)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.96% (5.76% to 11.40%)
		2041-2065	Volume (ML/yr)	No CC	2,861
				MCC (HCC to LCC)	2,250 (1,182 to 21,356)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.10% (5.54% to 47.88%)

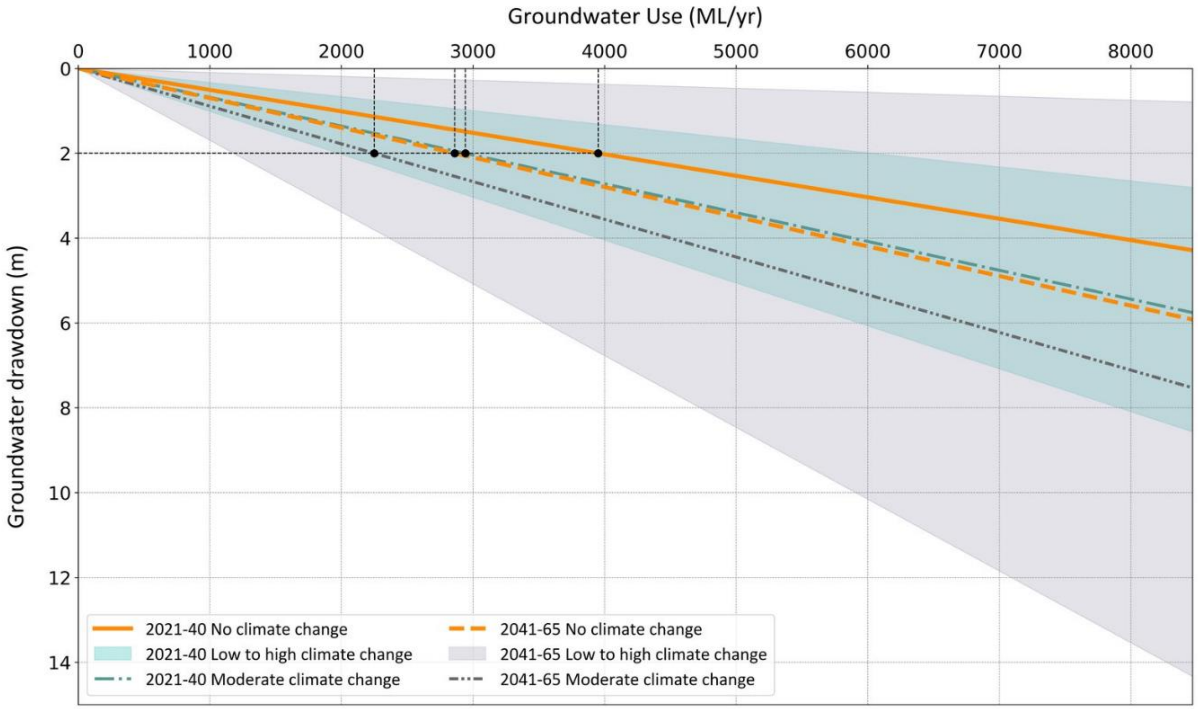

Figure A5-12. Plot for Bungaree GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-16. Stream Gauge results for Bungaree GMA

GMU		BUNGAREE GMA		
Stream gauge/Catchment:		232236 - West Moorabool River U/S Moorabool Reservoir (Unregulated)		
Base flow index (1975-2020)		0.61		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	875 (662 to 1,080)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-76 (-289 to 128)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	787 (517 to 1,004)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-165 (-434 to 52)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	3.4% (4.4% to 2.7%)
		PCV use (ML/yr)	MCC (LCC to HCC)	6.3% (8.3% to 5.1%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	3.7% (5.7% to 2.9%)
		PCV use (ML/yr)	MCC (LCC to HCC)	7.0% (11% to 5.5%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	0.07 (0.06 to 0.09)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	0.07 (0.04 to 0.08)
		Change from 1975-2020 (ML/yr)	NA	NA

Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	109% (145% to 88.62%)
		PCV use (ML/yr)	MCC (LCC to HCC)	204% (270% to 166%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	122% (185% to 95.34%)
		PCV use (ML/yr)	MCC (LCC to HCC)	227% (345% to 178%)
Stream gauge/Catchment:		232243 - Whisky Creek At Whisky Creek Diversion Weir (Unregulated)		
Base flow index (1975-2020)		0.62		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	534 (404 to 659)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-46 (-177 to 78)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	480 (316 to 613)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-100 (-265 to 32)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	39% (52% to 32%)
		PCV use (ML/yr)	MCC (LCC to HCC)	62% (82% to 50%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	44% (66% to 34%)
		PCV use (ML/yr)	MCC (LCC to HCC)	69% (104% to 54%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	0.85 (0.64 to 1.05)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	0.77 (0.50 to 0.98)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	67% (89% to 55%)
		PCV use (ML/yr)	MCC (LCC to HCC)	106% (140% to 86.00%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	75% (114% to 59%)
		PCV use (ML/yr)	MCC (LCC to HCC)	118% (179% to 93%)

CARDIGAN GMA

Table A5-17. Consumptive users synthesis Table A5-for Cardigan GMA

Assessment area	**GMU**					**CARDIGAN GMA**
	Representative Bore					54598
	Aquifer					Layered Valley
	Water system depth boundary (m below natural surface)					All formations below the surface
Catchment	Permissible Consumptive Volume (ML/yr)					3,967
	Licensed Entitlement (ML/yr)					3,888
	Licensed avg use (ML/yr)					896
Consumptive use metric	**Consumptive users (bores)**	Avg Use 537 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.77
					MCC (LCC to HCC)	1.4 (0.53 to 1.9)
			2041-2065	Drawdown from baseline (m)	No CC	0.96
					MCC (LCC to HCC)	0.96 (0.85 to 2.8)
		PCV use 2,742 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.3
					MCC (LCC to HCC)	5.8 (3.0 to 8.1)
			2041-2065	Drawdown from baseline (m)	No CC	0.96
					MCC (LCC to HCC)	7.3 (1.1 to 13)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	966
					MCC (HCC to LCC)	736 (532 to 1,330)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.86% (1.52% to 2.67%)
			2041-2065	Volume (ML/yr)	No CC	964
					MCC (HCC to LCC)	595 (341 to 2,949)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.06% (1.33% to 7.07%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,932
					MCC (HCC to LCC)	1,472 (1,065 to 2,660)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.72% (3.04% to 5.34%)
			2041-2065	Volume (ML/yr)	No CC	1,928
					MCC (HCC to LCC)	1,189 (682 to 5,899)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	4.13% (2.66% to 14.14%)

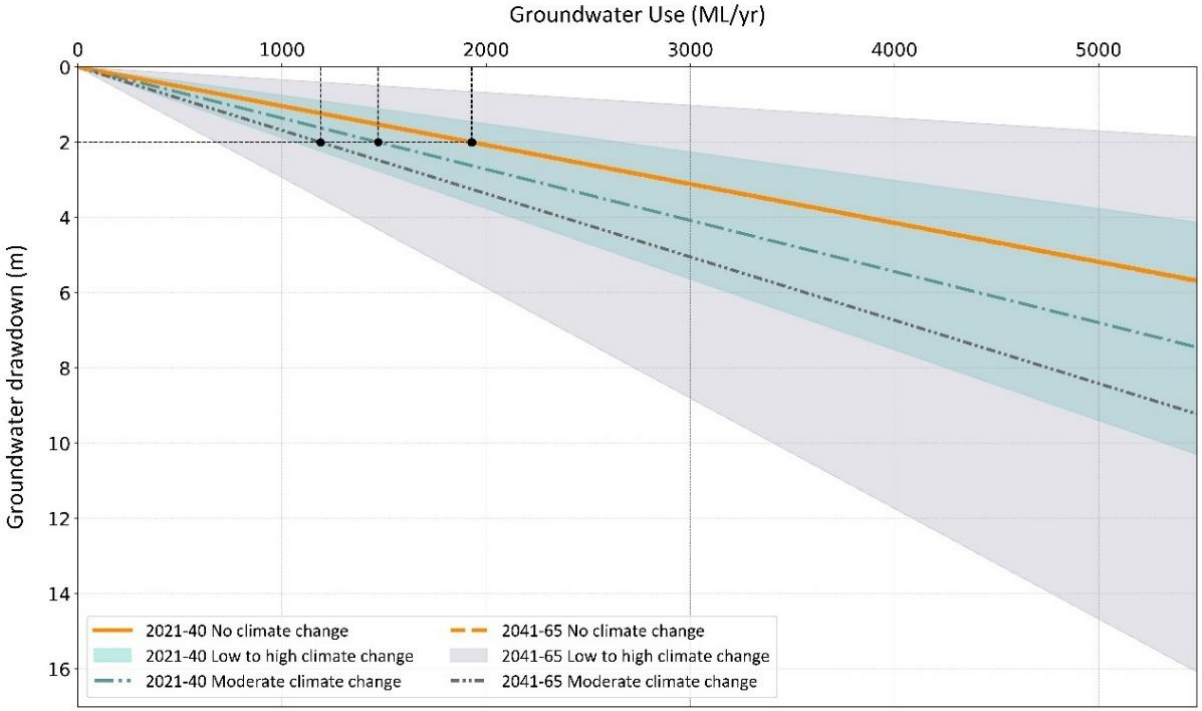

Figure A5-13. Plot for Cardigan GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-18. Statewide drawdown use synthesis Table A5-for Cardigan GMA

GMU					CARDIGAN GMA
Consumptive users (bores)	Avg Use 537 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.64
				MCC (LCC to HCC)	1.3 (0.40 to 1.8)
		2041-2065	Drawdown from baseline (m)	No CC	0.88
				MCC (LCC to HCC)	0.88 (0.74 to 2.8)
	PCV use 2,742 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.0
				MCC (LCC to HCC)	5.5 (2.7 to 7.7)
		2041-2065	Drawdown from baseline (m)	No CC	0.88
				MCC (LCC to HCC)	7.0 (0.92 to 12)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,039
				MCC (HCC to LCC)	770 (560 to 1,459)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.94% (1.60% to 2.93%)
		2041-2065	Volume (ML/yr)	No CC	1,022
				MCC (HCC to LCC)	623 (358 to 3,465)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.16% (1.40% to 8.30%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,078
				MCC (HCC to LCC)	1,540 (1,120 to 2,919)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.89% (3.20% to 5.86%)
		2041-2065	Volume (ML/yr)	No CC	2,044
				MCC (HCC to LCC)	1,246 (717 to 6,930)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.32% (2.80% to 16.61%)

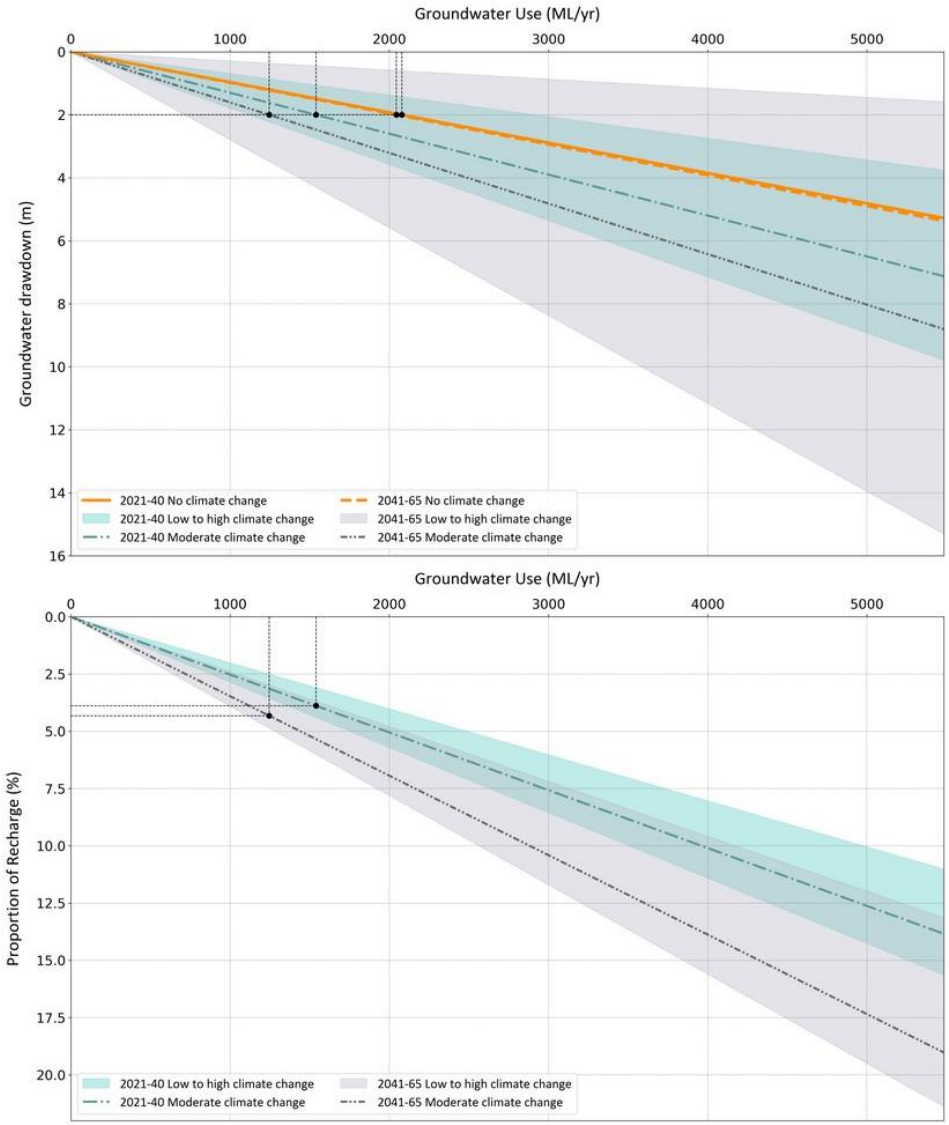

Figure A5-14. Upper Plot: Cardigan GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Cardigan GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-19. Terrestrial GDE synthesis Table A5-for Cardigan GMA

GMU					CARDIGAN GMA
Terrestrial GDEs	Avg Use 537 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.46
				MCC (LCC to HCC)	1.1 (0.23 to 1.5)
		2041-2065	Drawdown from baseline (m)	No CC	0.64
				MCC (LCC to HCC)	0.64 (0.55 to 2.4)
	PCV use 2,742 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.9
				MCC (LCC to HCC)	5.3 (2.6 to 7.6)
		2041-2065	Drawdown from baseline (m)	No CC	0.64
				MCC (LCC to HCC)	6.8 (0.79 to 12)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	107
				MCC (HCC to LCC)	80 (57 to 150)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.20% (0.16% to 0.30%)
		2041-2065	Volume (ML/yr)	No CC	99
				MCC (HCC to LCC)	64 (36 to 366)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.22% (0.14% to 0.88%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,066
				MCC (HCC to LCC)	796 (572 to 1,501)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.01% (1.63% to 3.01%)
		2041-2065	Volume (ML/yr)	No CC	988
				MCC (HCC to LCC)	639 (362 to 3,660)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.22% (1.41% to 8.77%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,131
				MCC (HCC to LCC)	1,592 (1,143 to 3,002)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.02% (3.26% to 6.03%)
		2041-2065	Volume (ML/yr)	No CC	1,976
				MCC (HCC to LCC)	1,278 (724 to 7,319)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.43% (2.83% to 17.54%)

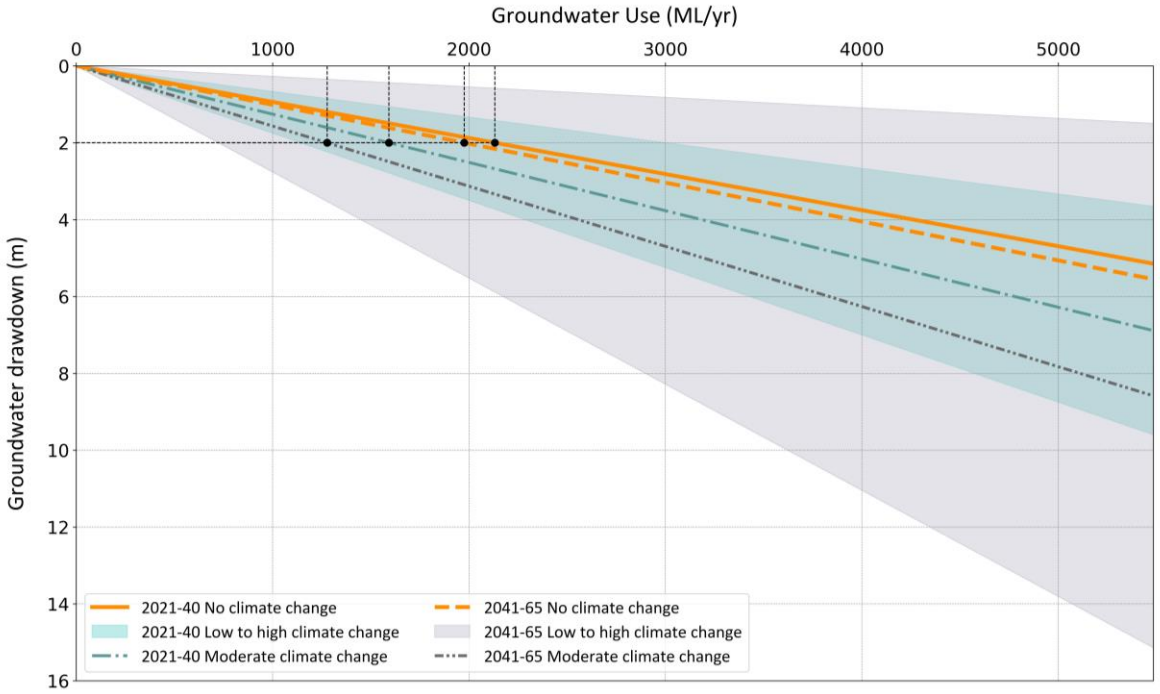

Figure A5-15. Plot for Cardigan GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-20. Waterways GDE synthesis Table A5-for Cardigan GMA

GMU					CARDIGAN GMA
Waterway GDEs	Avg Use 537 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.08
				MCC (LCC to HCC)	0.77 (-0.14 to 1.2)
		2041-2065	Drawdown from baseline (m)	No CC	0.32
				MCC (LCC to HCC)	0.32 (0.22 to 2.2)
	PCV use 2,742 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.4
				MCC (LCC to HCC)	4.8 (2.1 to 7.0)
		2041-2065	Drawdown from baseline (m)	No CC	0.32
				MCC (LCC to HCC)	6.3 (0.37 to 11)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	123
				MCC (HCC to LCC)	88 (62 to 185)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.22% (0.18% to 0.37%)
		2041-2065	Volume (ML/yr)	No CC	95
				MCC (HCC to LCC)	70 (39 to 621)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.24% (0.15% to 1.49%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,232
				MCC (HCC to LCC)	875 (619 to 1,846)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.21% (1.76% to 3.71%)
		2041-2065	Volume (ML/yr)	No CC	952
				MCC (HCC to LCC)	695 (387 to 6,211)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.41% (1.51% to 14.88%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,465
				MCC (HCC to LCC)	1,750 (1,237 to 3,692)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.42% (3.53% to 7.42%)
		2041-2065	Volume (ML/yr)	No CC	1,904
				MCC (HCC to LCC)	1,391 (773 to 12,421)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.83% (3.02% to 29.77%)

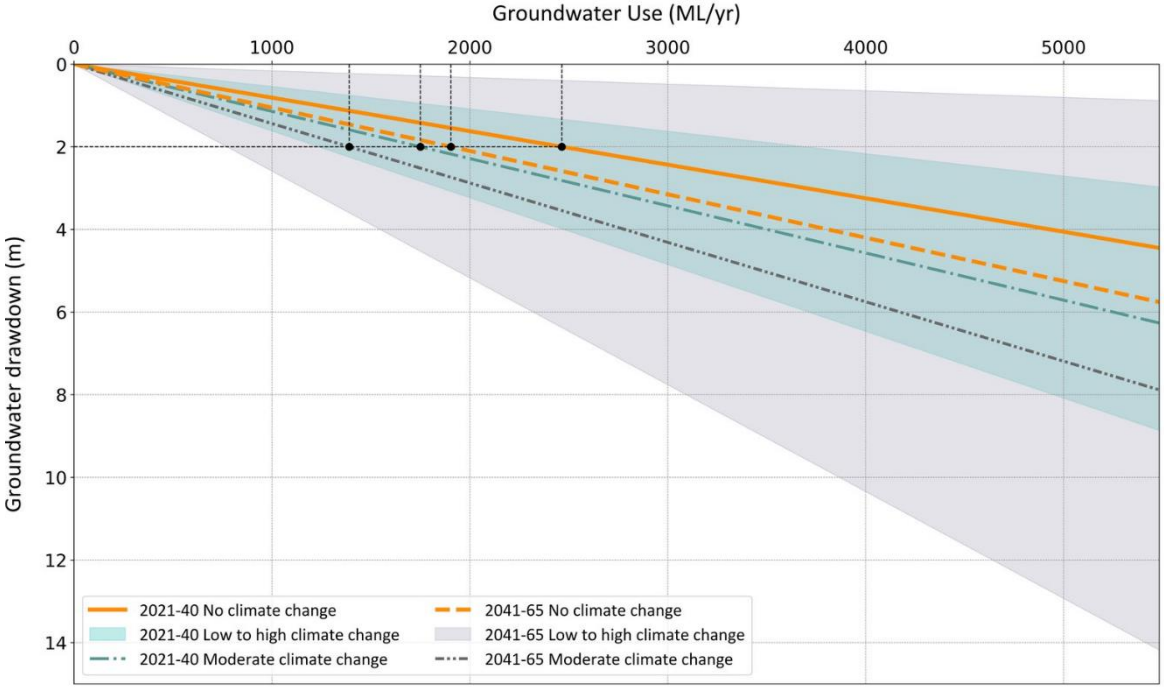

Figure A5-16. Plot for Cardigan GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-21. Stream gauge results for Cardigan GMA

GMU		CARDIGAN GMA		
Stream gauge/Catchment:		236215 - Burrumbeet Creek @ Lake Burrumbeet (Unregulated)		
Base flow index (1975-2020)		0.44		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	8,709 (6,437 to 11,502)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-1,301 (-3,574 to 1,492)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	7,158 (4,024 to 9,490)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-2,853 (-5,986 to -521)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	3.9% (5.3% to 3.0%)
		PCV use (ML/yr)	MCC (LCC to HCC)	31% (42% to 23%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	4.8% (8.5% to 3.6%)
		PCV use (ML/yr)	MCC (LCC to HCC)	38% (67% to 28%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	2.87 (2.12 to 3.79)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	2.36 (1.33 to 3.13)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	32.72% (44.27% to 24.77%)
		PCV use (ML/yr)	MCC (LCC to HCC)	257% (347% to 194%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	39.81% (70.81% to 30.03%)
		PCV use (ML/yr)	MCC (LCC to HCC)	312% (555% to 236%)

CENTRAL VICTORIAN MINERAL SPRINGS GMA

Table A5-22. Consumptive users synthesis Table A5-for Central Victorian Mineral Springs GMA

Assessment area	**GMU**					**CENTRAL VICTORIAN MINERAL SPRINGS GMA**
	Representative Bore					WRK017608
	Aquifer					Layered Valley
	Water system depth boundary (m below natural surface)					All formations to 200 metres below the surface, or 50 metres below the base of the basalt or deep lead whichever is the greater.
Catchment	Permissible Consumptive Volume (ML/yr)					6,024
	Licensed Entitlement (ML/yr)					5,045
	Licensed avg use (ML/yr)					3,417
Consumptive use metric	**Consumptive users (bores)**	Avg Use 1,369 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	3.0 (0.60 to 3.9)
			2041-2065	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	2.2 (0.90 to 6.6)
		PCV use 4,092 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.4
					MCC (LCC to HCC)	5.9 (3.2 to 7.9)
			2041-2065	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	7.6 (1.2 to 13)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,397
					MCC (HCC to LCC)	1,052 (809 to 1,938)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.21% (0.25% to 0.36%)
			2041-2065	Volume (ML/yr)	No CC	1,592
					MCC (HCC to LCC)	832 (493 to 3,998)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.24% (0.30% to 0.92%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,794
					MCC (HCC to LCC)	2,104 (1,619 to 3,877)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.42% (0.50% to 0.71%)
			2041-2065	Volume (ML/yr)	No CC	3,184
					MCC (HCC to LCC)	1,663 (986 to 7,996)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.48% (0.60% to 1.84%)

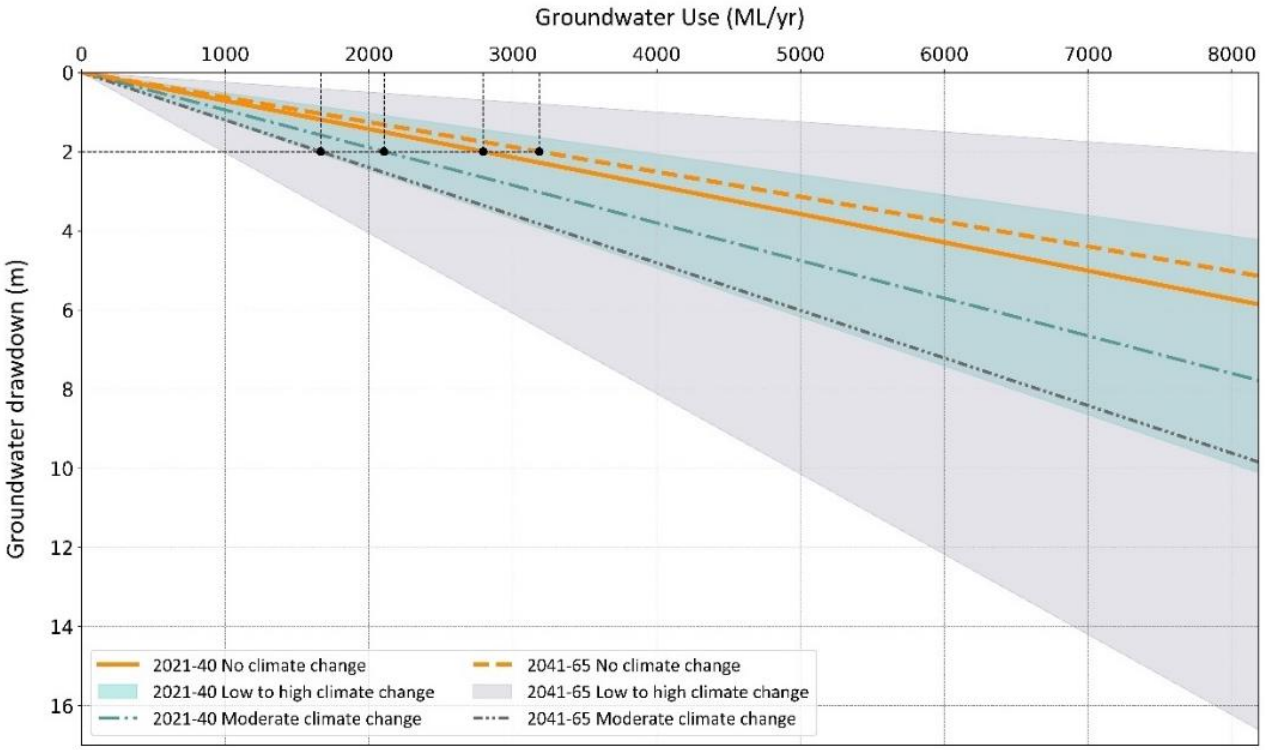

Figure A5-17. Plot for Central Victorian Mineral Springs GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-23. Statewide drawdown use synthesis Table A5-for Central Victorian Mineral Springs GMA

GMU					CENTRAL VICTORIAN MINERAL SPRINGS GMA
Consumptive users (bores)	Avg Use 1,369 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.6
				MCC (LCC to HCC)	3.7 (0.68 to 4.7)
		2041-2065	Drawdown from baseline (m)	No CC	2.8
				MCC (LCC to HCC)	2.8 (1.1 to 8.0)
	PCV use 4,092 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.4
				MCC (LCC to HCC)	6.0 (3.2 to 7.6)
		2041-2065	Drawdown from baseline (m)	No CC	2.8
				MCC (LCC to HCC)	8.0 (1.6 to 13)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,377
				MCC (HCC to LCC)	1,020 (817 to 1,889)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.20% (0.25% to 0.35%)
		2041-2065	Volume (ML/yr)	No CC	1,439
				MCC (HCC to LCC)	775 (485 to 2,965)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.22% (0.30% to 0.68%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,754
				MCC (HCC to LCC)	2,039 (1,633 to 3,777)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.41% (0.51% to 0.69%)
		2041-2065	Volume (ML/yr)	No CC	2,877
				MCC (HCC to LCC)	1,550 (970 to 5,930)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.45% (0.59% to 1.37%)

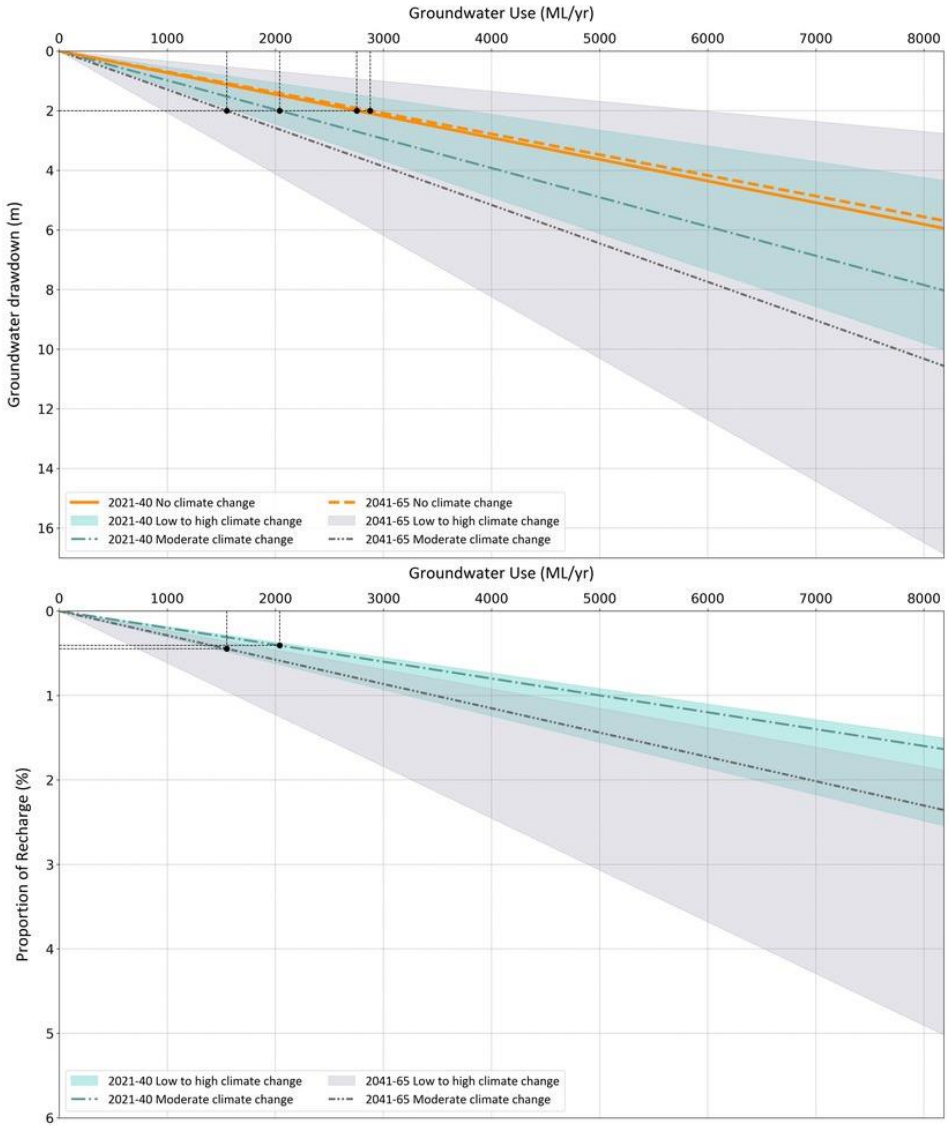

Figure A5-18. Upper Plot: Central Victorian Mineral Springs GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Central Victorian Mineral Springs GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-24. Terrestrial GDE synthesis Table A5-for Central Victorian Mineral Springs GMA

GMU					CENTRAL VICTORIAN MINERAL SPRINGS GMA
Terrestrial GDEs	Avg Use 1,369 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.5 (-0.50 to 3.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	1.7 (-0.12 to 7.2)
	PCV use 4,092 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	4.4 (2.0 to 5.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	6.6 (0.89 to 11)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	188
				MCC (HCC to LCC)	131 (103 to 278)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.03% (0.03% to 0.05%)
		2041-2065	Volume (ML/yr)	No CC	133
				MCC (HCC to LCC)	89 (55 to 378)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.03% (0.03% to 0.09%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,879
				MCC (HCC to LCC)	1,308 (1,030 to 2,778)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.26% (0.32% to 0.51%)
		2041-2065	Volume (ML/yr)	No CC	1,333
				MCC (HCC to LCC)	888 (549 to 3,783)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.26% (0.34% to 0.87%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,758
				MCC (HCC to LCC)	2,616 (2,060 to 5,556)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.52% (0.64% to 1.02%)
		2041-2065	Volume (ML/yr)	No CC	2,666
				MCC (HCC to LCC)	1,776 (1,098 to 7,567)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.51% (0.67% to 1.74%)

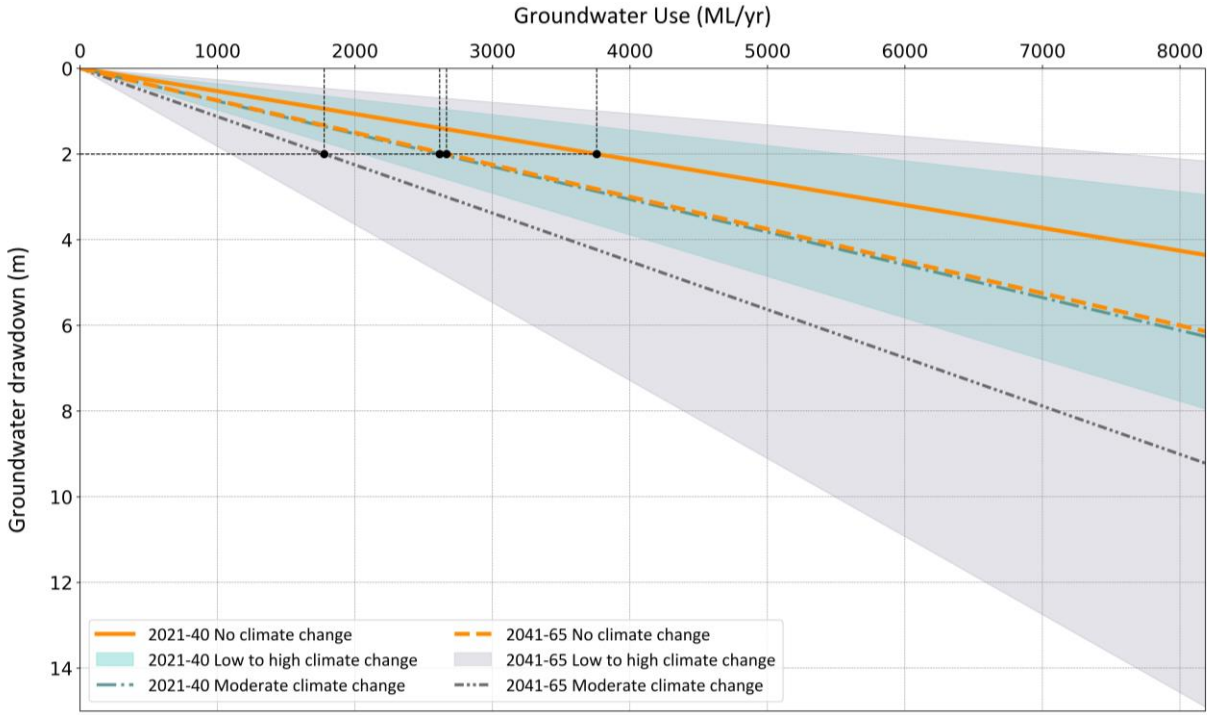

Figure A5-19. Plot for Central Victorian Mineral Springs GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-25. Waterways GDE synthesis Table A5-for Central Victorian Mineral Springs GMA

GMU					CENTRAL VICTORIAN MINERAL SPRINGS GMA
Waterway GDEs	Avg Use 1,369 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.41
				MCC (LCC to HCC)	1.5 (-1.67 to 2.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.64
				MCC (LCC to HCC)	0.64 (-1.20 to 5.8)
	PCV use 4,092 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	3.1 (0.66 to 4.2)
		2041-2065	Drawdown from baseline (m)	No CC	0.64
				MCC (LCC to HCC)	5.3 (-0.13 to 8.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	313
				MCC (HCC to LCC)	179 (139 to 669)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.04% (0.04% to 0.12%)
		2041-2065	Volume (ML/yr)	No CC	127
				MCC (HCC to LCC)	109 (67 to 986)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.03% (0.04% to 0.23%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,125
				MCC (HCC to LCC)	1,789 (1,391 to 6,691)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.36% (0.43% to 1.23%)
		2041-2065	Volume (ML/yr)	No CC	1,272
				MCC (HCC to LCC)	1,095 (665 to 9,861)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.32% (0.41% to 2.27%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,251
				MCC (HCC to LCC)	3,578 (2,782 to 13,383)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.71% (0.86% to 2.46%)
		2041-2065	Volume (ML/yr)	No CC	2,544
				MCC (HCC to LCC)	2,189 (1,331 to 19,721)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.63% (0.82% to 4.54%)

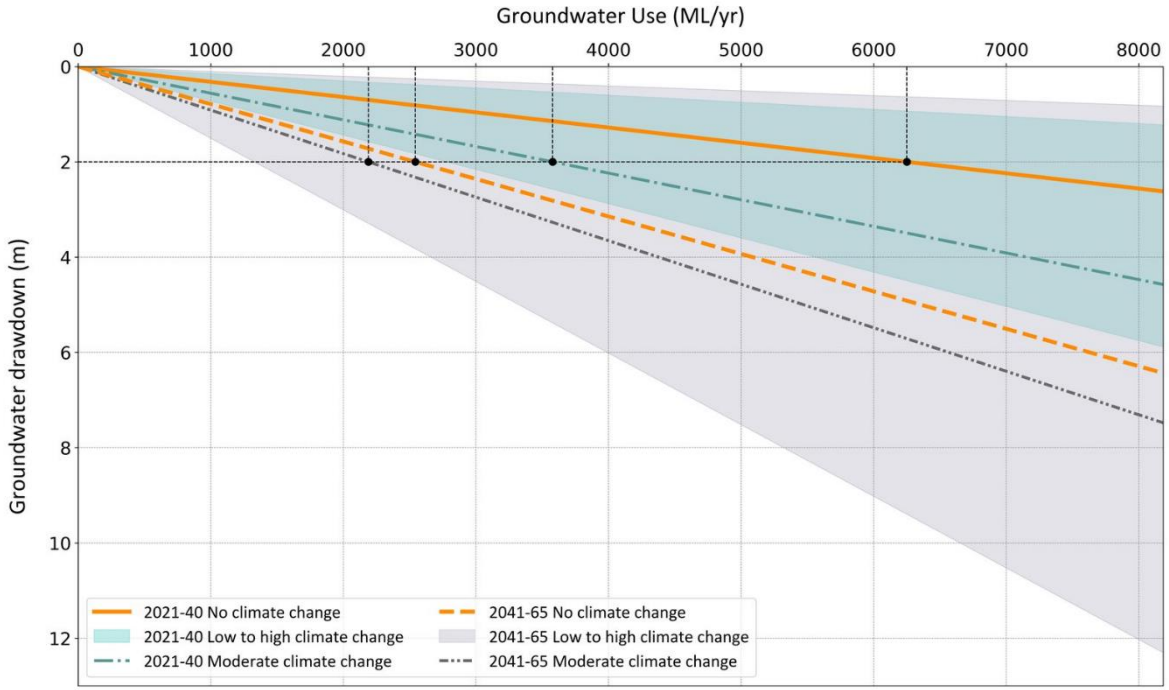

Figure A5-20. Plot for Central Victorian Mineral Springs GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-26. Stream gauge results for Central Victorian Mineral Springs GMA

Stream gauge/Catchment:		406213 - Campaspe River @ Redesdale (Unregulated)		
Base flow index (1975-2020)		0.36		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	53,054 (38,051 to 66,846)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-7,441 (-22,443 to 6,352)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	47,972 (26,013 to 61,099)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-12,522 (-34,482 to 605)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.551% (0.768% to 0.437%)
		PCV use (ML/yr)	MCC (LCC to HCC)	1.8% (2.5% to 1.4%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.609% (1.1% to 0.478%)
		PCV use (ML/yr)	MCC (LCC to HCC)	2.0% (3.6% to 1.6%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	0.41 (0.29 to 0.51)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	0.37 (0.20 to 0.47)
		Change from 1975-2020 (ML/yr)	NA	NA

Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	197% (274% to 156%)
		PCV use (ML/yr)	MCC (LCC to HCC)	639% (890% to 507%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	218% (401% to 171%)
		PCV use (ML/yr)	MCC (LCC to HCC)	706% (1,303% to 555%)

COLONGULAC GMA

Table A5-27. Consumptive users synthesis Table A5-for Colongulac GMA

Assessment area	**GMU**					**COLONGULAC GMA**
	Representative Bore					89040
	Aquifer					Deep Basin
	Water system depth boundary (m below natural surface)					All formations from surface to 60 metres below surface
Catchment	Permissible Consumptive Volume (ML/yr)					4,695
	Licensed Entitlement (ML/yr)					4,405
	Licensed avg use (ML/yr)					1,332
Consumptive use metric	**Consumptive users (bores)**	Avg Use 484 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.48
					MCC (LCC to HCC)	1.1 (0.08 to 2.3)
			2041-2065	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	1.2 (0.66 to 4.1)
		PCV use 1,718 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.90
					MCC (LCC to HCC)	1.9 (-0.22 to 4.1)
			2041-2065	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	4.1 (0.85 to 7.1)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,162
					MCC (HCC to LCC)	1,501 (-11835.89 to 675)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.72% (-19.57% to 1.45%)
			2041-2065	Volume (ML/yr)	No CC	1,082
					MCC (HCC to LCC)	721 (396 to 3,879)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.71% (1.16% to 7.63%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,324
					MCC (HCC to LCC)	3,003 (-23671.79 to 1,350)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	5.45% (-39.14% to 2.89%)
			2041-2065	Volume (ML/yr)	No CC	2,163
					MCC (HCC to LCC)	1,442 (792 to 7,758)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.42% (2.32% to 15.26%)

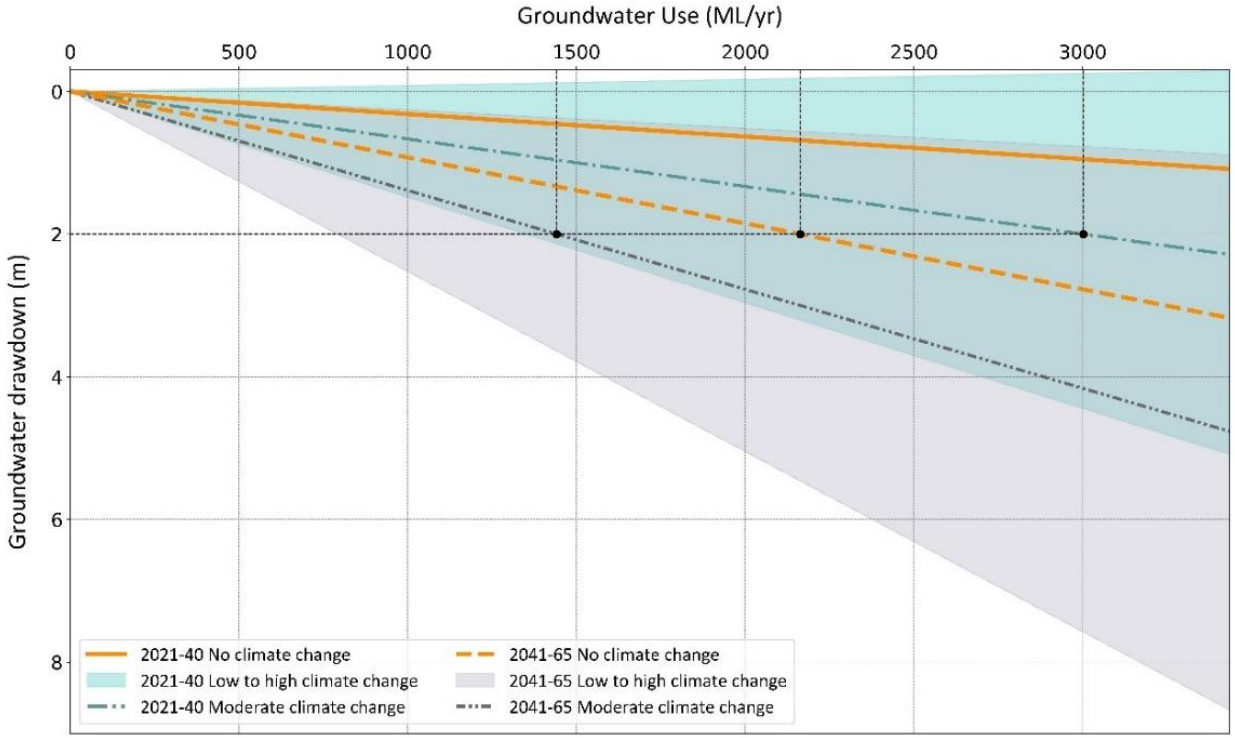

Figure A5-21. Plot for Colongulac GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-28. Statewide drawdown use synthesis Table A5-for Colongulac GMA

GMU					COLONGULAC GMA
Consumptive users (bores)	Avg Use 484 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.75
				MCC (LCC to HCC)	1.4 (0.35 to 2.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	1.5 (0.91 to 4.4)
	PCV use 1,718 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	2.2 (0.07 to 4.5)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	4.4 (1.1 to 7.6)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,306
				MCC (HCC to LCC)	1,277 (620 to 37,708)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.32% (1.33% to 62.34%)
		2041-2065	Volume (ML/yr)	No CC	1,098

				MCC (HCC to LCC)	657 (371 to 2,751)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.56% (1.09% to 5.41%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,612
				MCC (HCC to LCC)	2,553 (1,240 to 75,416)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.63% (2.66% to 124.69%)
		2041-2065	Volume (ML/yr)	No CC	2,196
				MCC (HCC to LCC)	1,314 (743 to 5,501)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.11% (2.17% to 10.82%)

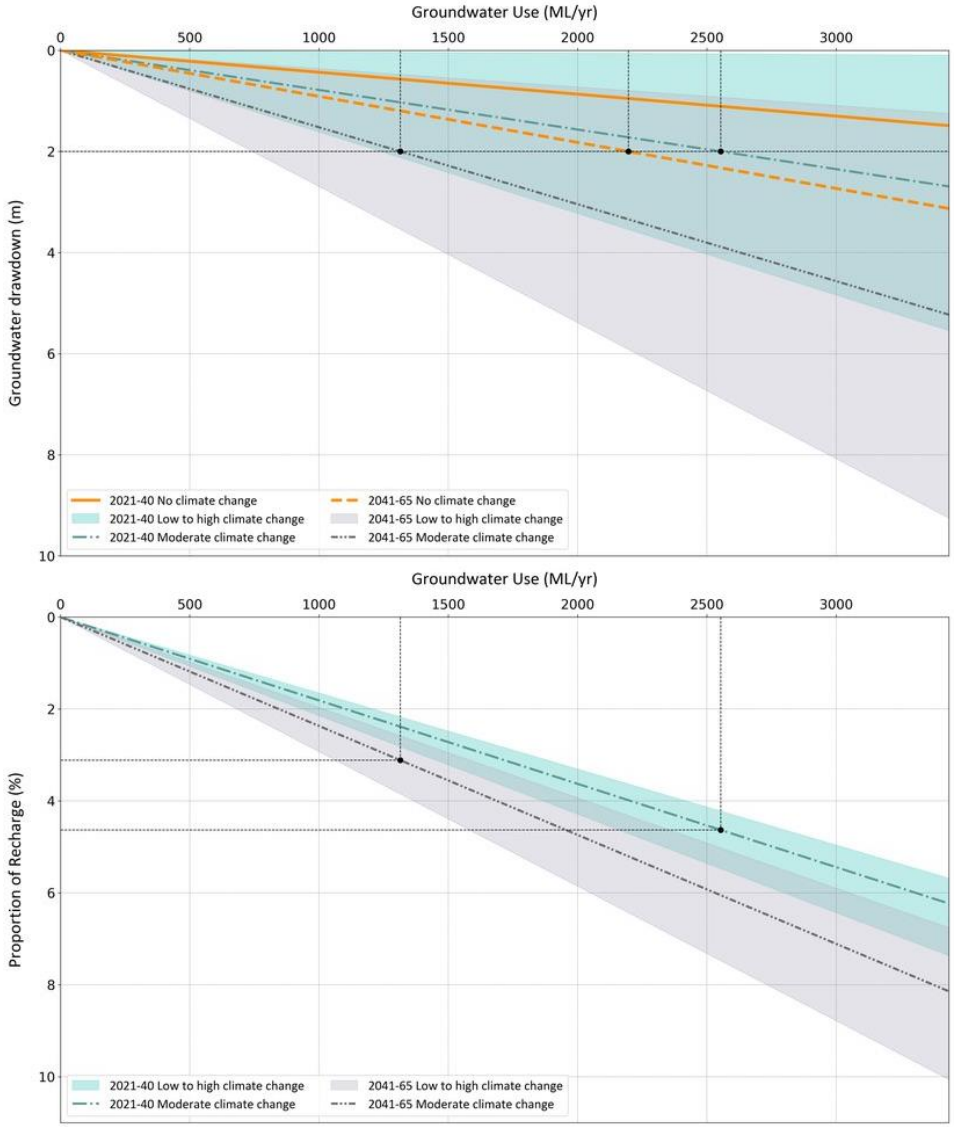

Figure A5-22. Upper Plot: Colongulac GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Colongulac GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-29. Terrestrial GDE synthesis Table A5-for Colongulac GMA

GMU					COLONGULAC GMA
Terrestrial GDEs	Avg Use 484 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.92
				MCC (LCC to HCC)	-0.11 (-1.32 to 1.1)
		2041-2065	Drawdown from baseline (m)	No CC	-0.01
				MCC (LCC to HCC)	-0.01 (-0.62 to 2.9)
	PCV use 1,718 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.77
				MCC (LCC to HCC)	0.32 (-1.84 to 2.4)
		2041-2065	Drawdown from baseline (m)	No CC	-0.01
				MCC (LCC to HCC)	2.5 (-0.58 to 5.2)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-312.34
				MCC (HCC to LCC)	1,229 (-142.11 to 119)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.23% (-0.23% to 0.26%)
		2041-2065	Volume (ML/yr)	No CC	95
				MCC (HCC to LCC)	128 (-327.59 to 56)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.30% (-0.64% to 0.16%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-3123.40
				MCC (HCC to LCC)	12,294 (-1421.14 to 1,195)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	22.30% (-2.35% to 2.56%)
		2041-2065	Volume (ML/yr)	No CC	953
				MCC (HCC to LCC)	1,277 (-3275.89 to 559)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.03% (-6.44% to 1.64%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-6246.79
				MCC (HCC to LCC)	24,588 (-2842.28 to 2,390)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	44.60% (-4.70% to 5.12%)
		2041-2065	Volume (ML/yr)	No CC	1,907
				MCC (HCC to LCC)	2,553 (-6551.78 to 1,119)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.05% (-12.89% to 3.27%)

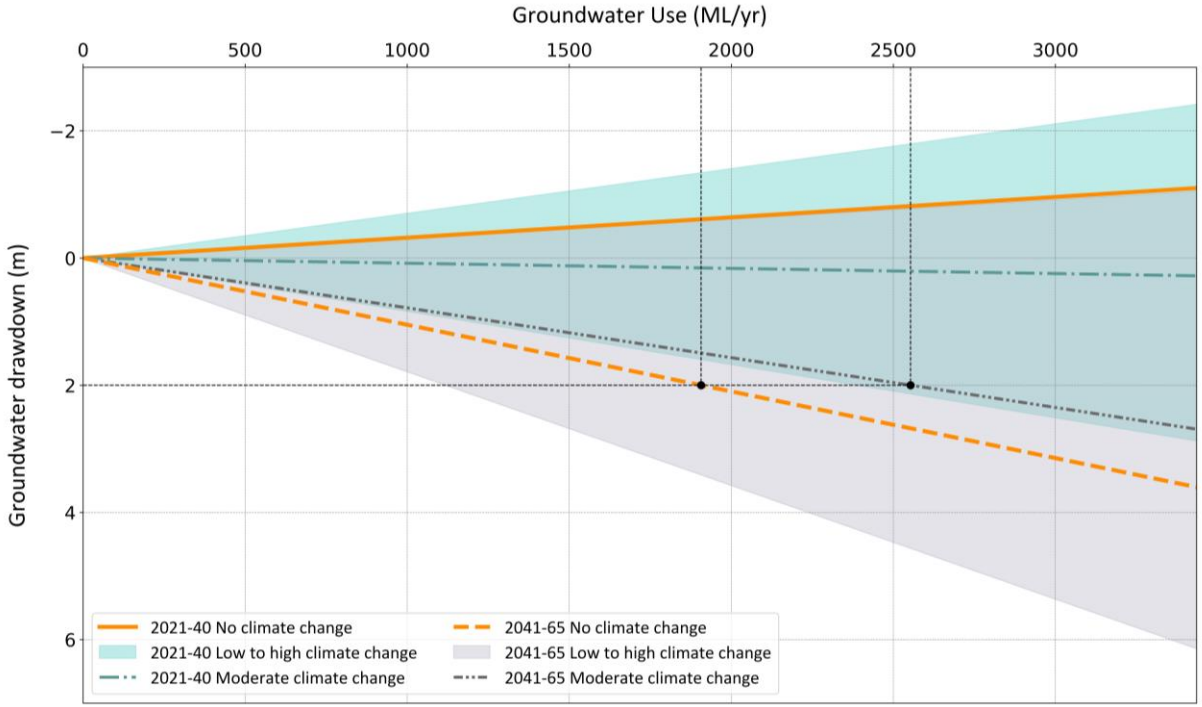

Figure A5-23. Plot for Colongulac GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-30. Wetlands GDE synthesis Table A5-for Colongulac GMA

GMU					COLONGULAC GMA
Wetlands GDEs	Avg Use 484 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.23
				MCC (LCC to HCC)	0.43 (-0.62 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	0.55
				MCC (LCC to HCC)	0.55 (-0.02 to 3.4)
	PCV use 1,718 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.03
				MCC (LCC to HCC)	0.96 (-1.04 to 3.1)
		2041-2065	Drawdown from baseline (m)	No CC	0.55
				MCC (LCC to HCC)	3.1 (0.14 to 5.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-17215.59
				MCC (HCC to LCC)	299 (-258.49 to 90)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.54% (-0.43% to 0.19%)
		2041-2065	Volume (ML/yr)	No CC	98
				MCC (HCC to LCC)	97 (-12198.78 to 48)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.23% (-24.00% to 0.14%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-172,156
				MCC (HCC to LCC)	2,986 (-2,585 to 898)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.42% (-4.27% to 1.93%)
		2041-2065	Volume (ML/yr)	No CC	985
				MCC (HCC to LCC)	966 (-121987.77 to 480)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.29% (-240% to 1.40%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-344311.78
				MCC (HCC to LCC)	5,971 (-5,170 to 1,796)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.83% (-8.55% to 3.85%)
		2041-2065	Volume (ML/yr)	No CC	1,970
				MCC (HCC to LCC)	1,932 (-243975.53 to 960)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.58% (-479.95% to 2.81%)

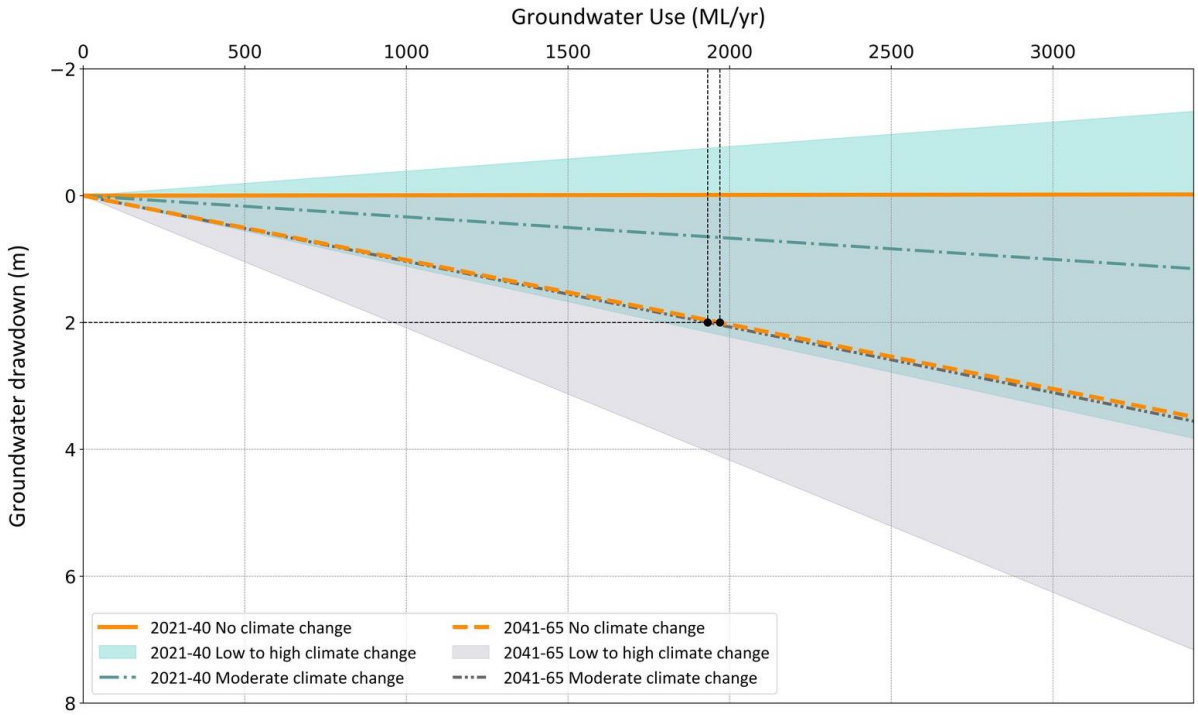

Figure A5-24. Plot for Colongulac GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

DENISON GMA

Table A5-31. Consumptive users synthesis Table A5-for Denison GMA

GMU						DENISON GMA
Assessment area	Representative Bore					45,762
	Aquifer					Plains
	Water system depth boundary (m below natural surface)					All formations from surface to 25 metres below surface
Catchment	Permissible Consumptive Volume (ML/yr)					18,502
	Licensed Entitlement (ML/yr)					18,499
	Licensed avg use (ML/yr)					7,680
Consumptive use metric	Consumptive users (bores)	Avg Use 5,580 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	1.3 (0.41 to 1.6)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	1.4 (0.90 to 2.3)
		PCV use 9,734 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
					MCC (LCC to HCC)	1.8 (1.3 to 2.3)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	2.5 (1.5 to 3.3)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	7,441
					MCC (HCC to LCC)	6,668 (5,622 to 9,390)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	21.78% (21.92% to 25.59%)
			2041-2065	Volume (ML/yr)	No CC	5,231
					MCC (HCC to LCC)	4,945 (3,862 to 7,115)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	21.07% (22.19% to 23.11%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	14,883
					MCC (HCC to LCC)	13,336 (11,243 to 18,780)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	43.56% (43.85% to 51.18%)
			2041-2065	Volume (ML/yr)	No CC	10,462
					MCC (HCC to LCC)	9,890 (7,725 to 14,230)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	42.14% (44.39% to 46.23%)

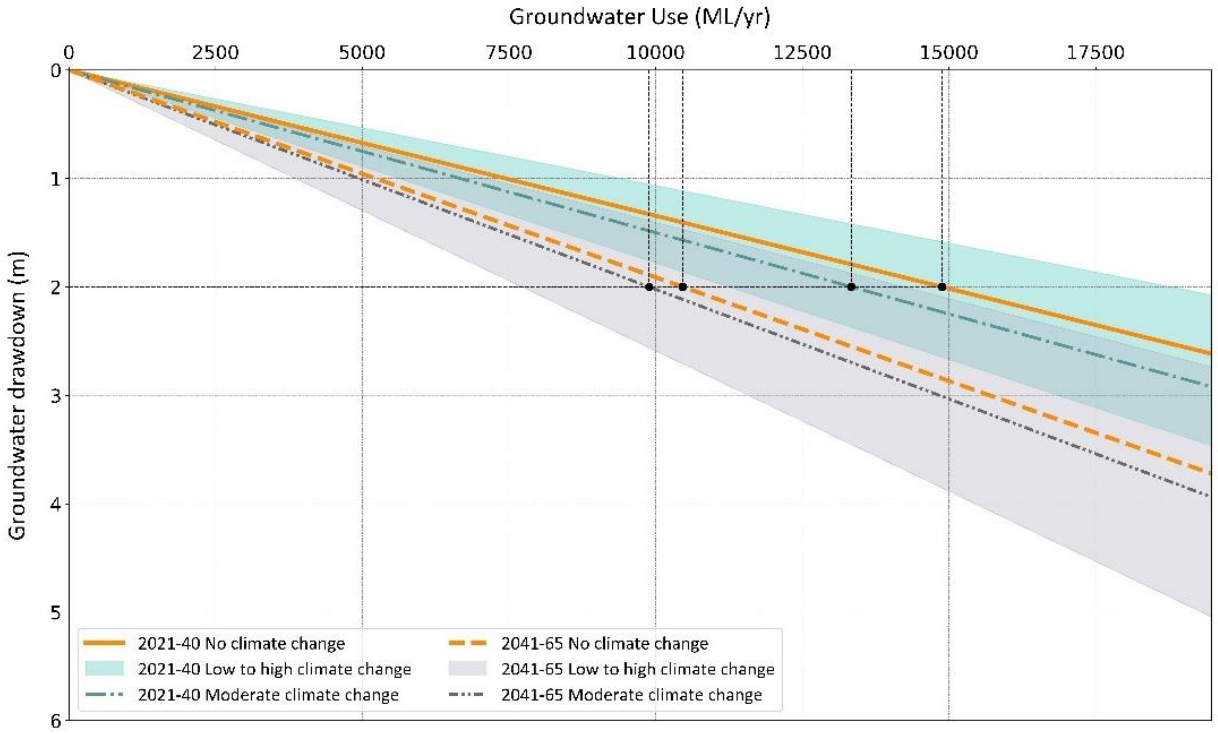

Figure A5-25. Plot for Denison GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-32. Statewide drawdown use synthesis Table A5-for Denison GMA

GMU					DENISON GMA
Consumptive users (bores)	Avg Use 5,580 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.3 (0.39 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	1.3 (0.87 to 2.3)
	PCV use 9,734 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	1.8 (1.2 to 2.2)
		2041-2065	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	2.5 (1.5 to 3.2)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	7,581
				MCC (HCC to LCC)	6,807 (5,753 to 9,541)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	22.24% (22.44% to 26.00%)
		2041-2065	Volume (ML/yr)	No CC	5,424

				MCC (HCC to LCC)	5,012 (3,934 to 7,156)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	21.36% (22.61% to 23.25%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	15,163
				MCC (HCC to LCC)	13,614 (11,506 to 19,081)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	44.47% (44.87% to 52.00%)
		2041-2065	Volume (ML/yr)	No CC	10,849
				MCC (HCC to LCC)	10,025 (7,869 to 14,312)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	42.72% (45.21% to 46.49%)

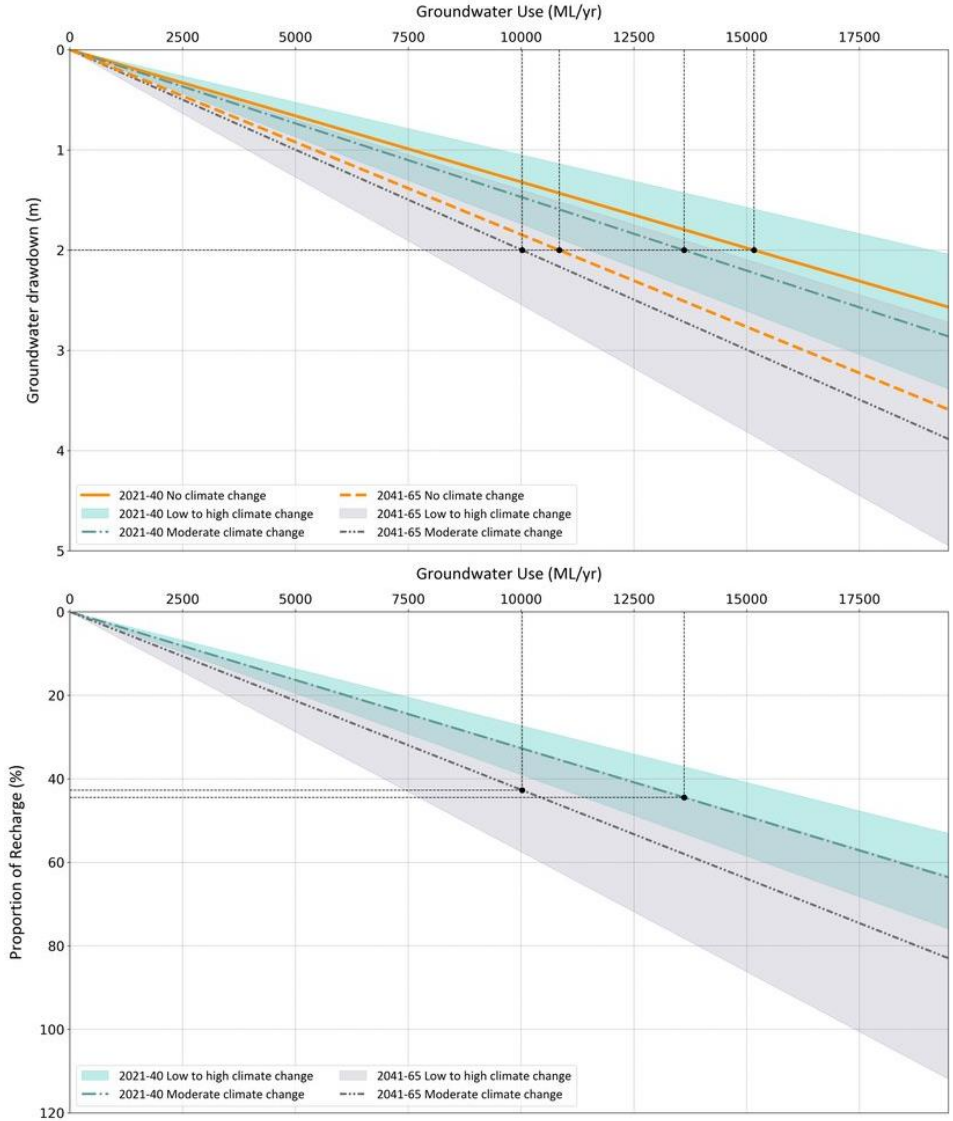

Figure A5-26. Upper Plot: Denison GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Denison GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-33. Terrestrial GDE synthesis Table A5-for Denison GMA

GMU					DENISON GMA
Terrestrial GDEs	Avg Use 5,580 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.3 (0.31 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	1.3 (0.82 to 2.3)
	PCV use 9,734 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	1.7 (1.2 to 2.2)
		2041-2065	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	2.4 (1.4 to 3.2)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	791
				MCC (HCC to LCC)	704 (586 to 1,025)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.30% (2.28% to 2.79%)
		2041-2065	Volume (ML/yr)	No CC	513
				MCC (HCC to LCC)	518 (399 to 766)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.21% (2.29% to 2.49%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	7,905
				MCC (HCC to LCC)	7,043 (5,856 to 10,246)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	23.01% (22.84% to 27.92%)
		2041-2065	Volume (ML/yr)	No CC	5,132
				MCC (HCC to LCC)	5,183 (3,992 to 7,659)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	22.09% (22.94% to 24.88%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	15,811
				MCC (HCC to LCC)	14,085 (11,712 to 20,491)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	46.01% (45.68% to 55.84%)
		2041-2065	Volume (ML/yr)	No CC	10,265
				MCC (HCC to LCC)	10,366 (7,984 to 15,319)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	44.17% (45.88% to 49.76%)

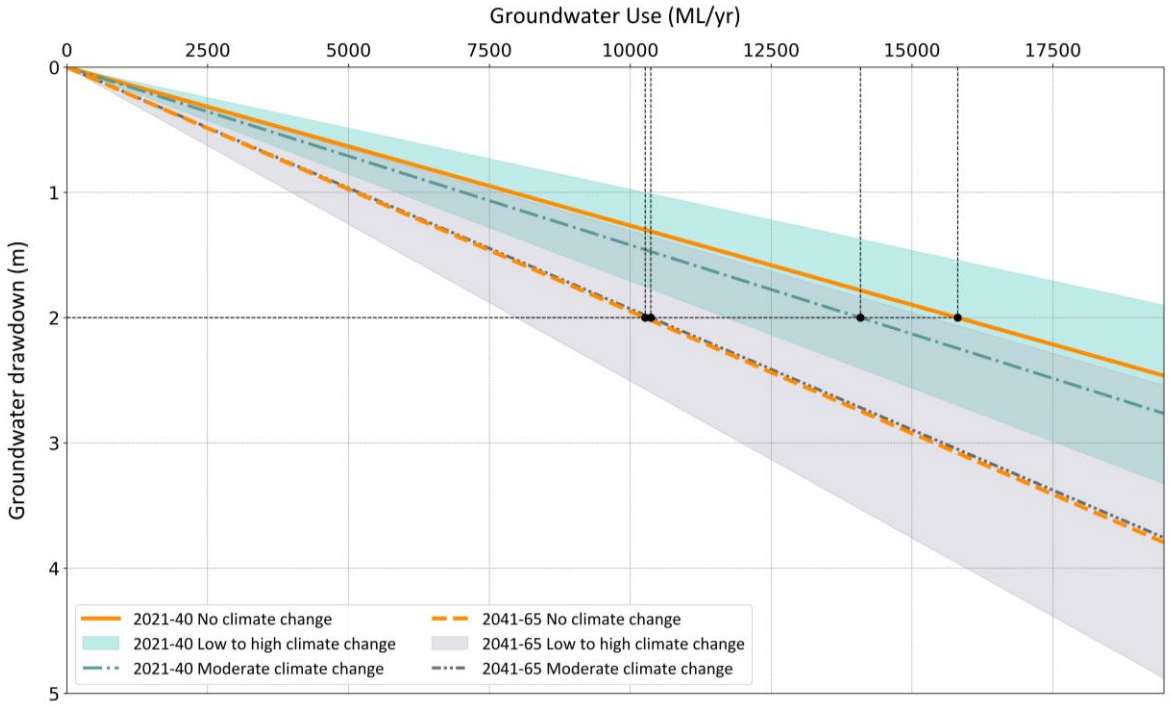

Figure A5-27. Plot for Denison GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-34. Waterways GDE synthesis Table A5-for Denison GMA

GMU					DENISON GMA
Waterway GDEs	Avg Use 5,580 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	1.2 (0.20 to 1.5)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.2 (0.73 to 2.2)
	PCV use 9,734 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	1.6 (1.0 to 2.1)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	2.3 (1.3 to 3.1)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	834
				MCC (HCC to LCC)	739 (609 to 1,103)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.41% (2.37% to 3.01%)
		2041-2065	Volume (ML/yr)	No CC	498
				MCC (HCC to LCC)	533 (408 to 796)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.27% (2.35% to 2.59%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	8,345
				MCC (HCC to LCC)	7,389 (6,086 to 11,030)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	24.14% (23.73% to 30.06%)
		2041-2065	Volume (ML/yr)	No CC	4,977
				MCC (HCC to LCC)	5,325 (4,083 to 7,959)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	23.69% (23.46% to 25.85%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	16,690
				MCC (HCC to LCC)	14,779 (12,171 to 22,061)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	48% (47% to 60%)
		2041-2065	Volume (ML/yr)	No CC	9,954
				MCC (HCC to LCC)	10,650 (8,165 to 15,917)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	45% (47% to 52%)

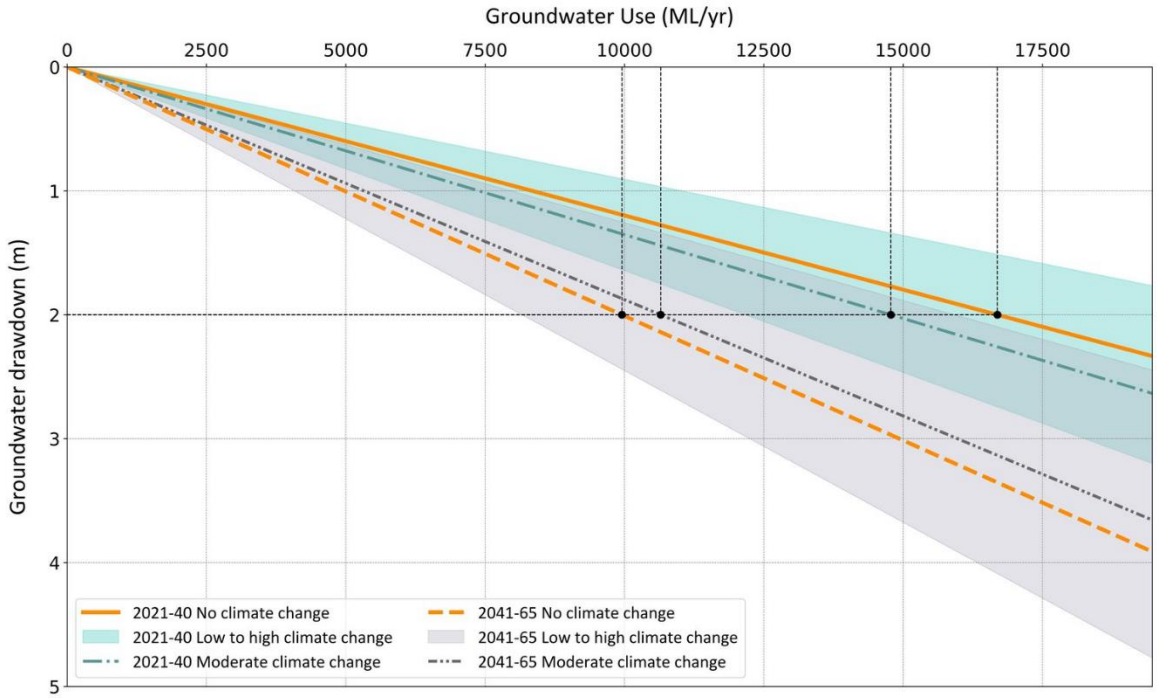

Figure A5-28. Plot for Denison GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

DEUTGAM WSPA

Table A5-35. Consumptive users synthesis Table A5-for Deutgam WSPA

Assessment area	**GMU**					**DEUTGAM WSPA**
	Representative Bore					59,535
	Aquifer					Plains
	Water system depth boundary (m below natural surface)					All formations from surface to 30 metres below surface
Catchment	Permissible Consumptive Volume (ML/yr)					5,100
	Licensed Entitlement (ML/yr)					5,082
	Licensed avg use (ML/yr)					626
Consumptive use metric	Consumptive users (bores)	Avg Use 708 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.61
					MCC (LCC to HCC)	0.97 (0.16 to 1.5)
			2041-2065	Drawdown from baseline (m)	No CC	1.0
					MCC (LCC to HCC)	1.0 (0.52 to 2.5)
		PCV use 4,274 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.1
					MCC (LCC to HCC)	2.6 (1.5 to 3.7)
			2041-2065	Drawdown from baseline (m)	No CC	1.0
					MCC (LCC to HCC)	4.4 (2.1 to 6.4)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,645
					MCC (HCC to LCC)	2,168 (1,649 to 3,396)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	14.44% (13.11% to 17.86%)
			2041-2065	Volume (ML/yr)	No CC	1,568
					MCC (HCC to LCC)	1,266 (926 to 2,082)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	10.14% (10.05% to 12.03%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,291
					MCC (HCC to LCC)	4,336 (3,298 to 6,792)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	28.89% (26.23% to 35.73%)
			2041-2065	Volume (ML/yr)	No CC	3,136
					MCC (HCC to LCC)	2,531 (1,852 to 4,164)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	20.27% (20.10% to 24.07%)

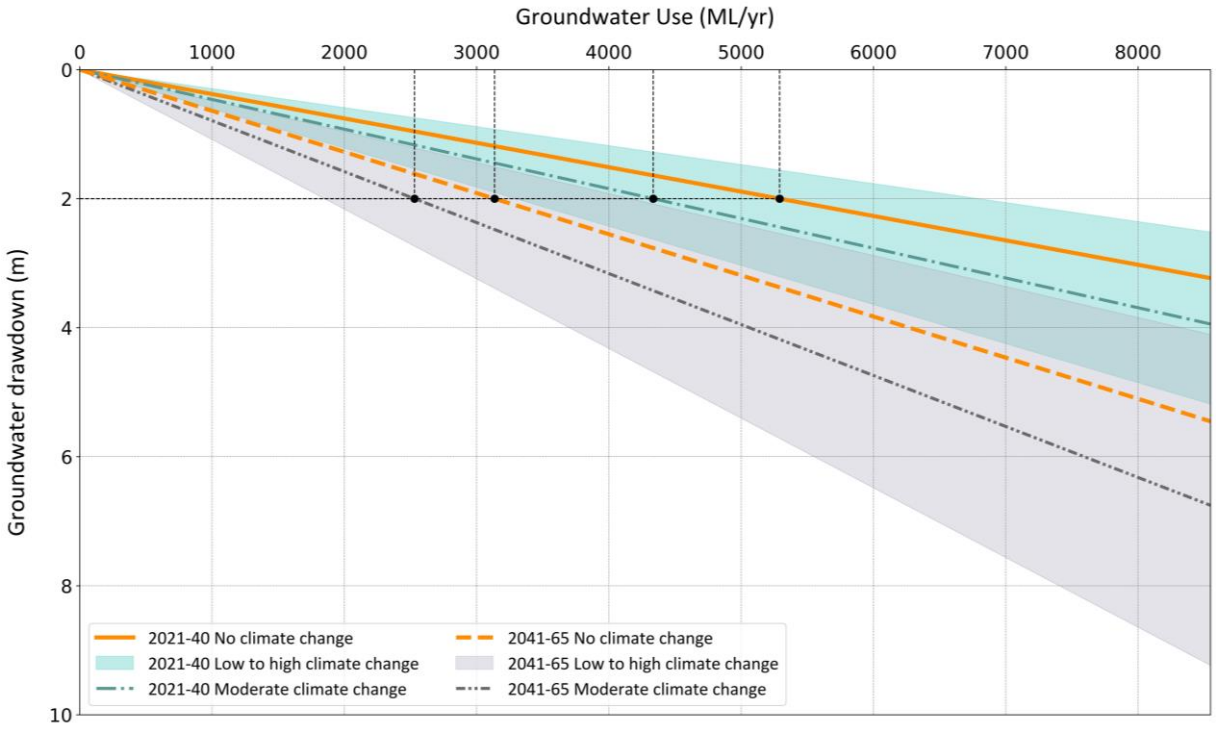

Figure A5-29. Plot for Deutgam WSPA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-36. Statewide drawdown use synthesis Table A5-for Deutgam WSPA

GMU					DEUTGAM WSPA
Consumptive users (bores)	Avg Use 708 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.60
				MCC (LCC to HCC)	0.96 (0.14 to 1.5)
		2041-2065	Drawdown from baseline (m)	No CC	0.99
				MCC (LCC to HCC)	0.99 (0.49 to 2.5)
	PCV use 4,274 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	2.6 (1.4 to 3.6)
		2041-2065	Drawdown from baseline (m)	No CC	0.99
				MCC (LCC to HCC)	4.2 (1.9 to 6.3)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,740
				MCC (HCC to LCC)	2,223 (1,677 to 3,565)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	14.81% (13.34% to 18.75%)
		2041-2065	Volume (ML/yr)	No CC	1,650

				MCC (HCC to LCC)	1,323 (948 to 2,296)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.60% (10.29% to 13.27%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,480
				MCC (HCC to LCC)	4,446 (3,354 to 7,130)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	29.62% (26.67% to 37.51%)
		2041-2065	Volume (ML/yr)	No CC	3,300
				MCC (HCC to LCC)	2,646 (1,897 to 4,591)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	21.19% (20.59% to 26.54%)

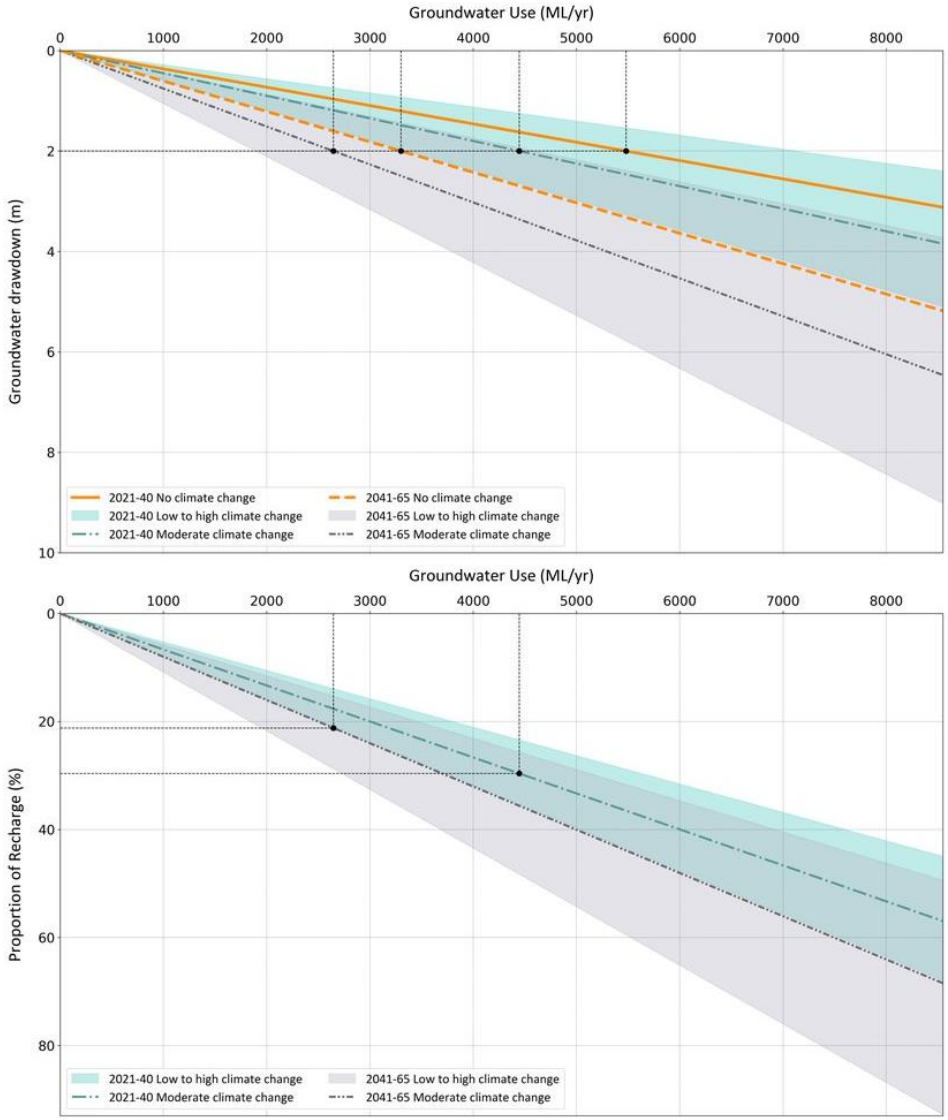

Figure A5-30. Upper Plot: Deutgam WSPA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Deutgam WSPA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-37. Seawater intrusion synthesis Table A5-for Deutgam WSPA

GMU					DEUTGAM WSPA
Seawater intrusion	Avg Use 708 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.54
				MCC (LCC to HCC)	0.92 (0.08 to 1.5)
			Area elev. <1.5 mAHD (%)	No CC	58%
				MCC (LCC to HCC)	70% (42% to 86%)
		2041-2065	Drawdown from baseline (m)	No CC	0.97
				MCC (LCC to HCC)	0.97 (0.45 to 2.5)
			Area elev. <1.5 mAHD (%)	No CC	71%
				MCC (LCC to HCC)	71% (54% to 98%)
	PCV use 4,274 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	2.5 (1.4 to 3.5)
			Area elev. <1.5 mAHD (%)	No CC	93%
				MCC (LCC to HCC)	98% (83% to 98%)
		2041-2065	Drawdown from baseline (m)	No CC	3.1
				MCC (LCC to HCC)	4.2 (2.1 to 6.2)
			Area elev. <1.5 mAHD (%)	No CC	98%
				MCC (LCC to HCC)	98% (96% to 98%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	114
				MCC (HCC to LCC)	-1,183 (-1,897 to 2,034)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-7.9% (-15% to 11%)
		2041-2065	Volume (ML/yr)	No CC	-358
				MCC (HCC to LCC)	-1,120 (-2,183 to 1,047)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-9.0% (-24% to 6.1%)

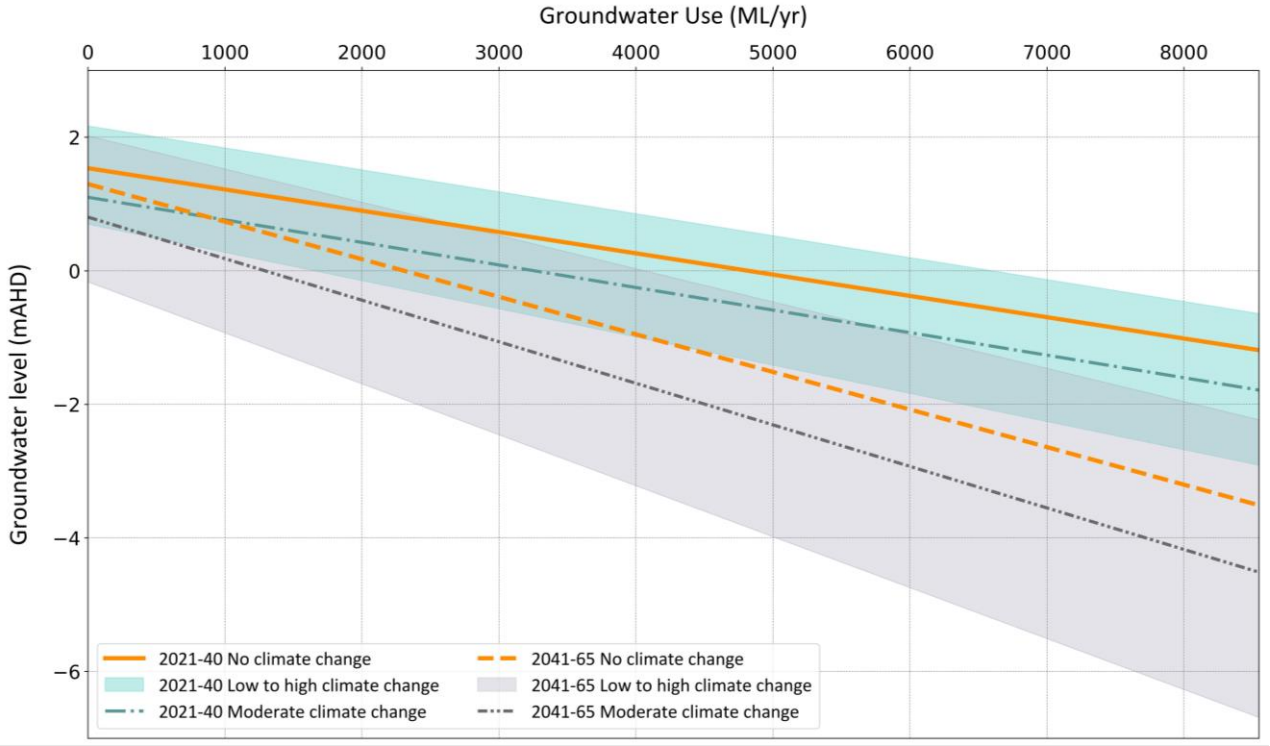

Figure A5-31. Plot for Deutgam WSPA Sewater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-38. Terrestrial GDE synthesis Table A5-for Deutgam WSPA

GMU					DEUTGAM WSPA
Terrestrial GDEs	Avg Use 708 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.09
				MCC (LCC to HCC)	0.46 (-0.34 to 0.98)
		2041-2065	Drawdown from baseline (m)	No CC	0.52
				MCC (LCC to HCC)	0.52 (0.04 to 2.0)
	PCV use 4,274 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.1 (0.95 to 3.1)
		2041-2065	Drawdown from baseline (m)	No CC	0.52
				MCC (LCC to HCC)	3.8 (1.6 to 5.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	336
				MCC (HCC to LCC)	261 (189 to 466)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.74% (1.51% to 2.45%)
		2041-2065	Volume (ML/yr)	No CC	143
				MCC (HCC to LCC)	141 (100 to 252)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.13% (1.09% to 1.46%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,356
				MCC (HCC to LCC)	2,613 (1,893 to 4,664)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	17.41% (15.05% to 24.53%)
		2041-2065	Volume (ML/yr)	No CC	1,429
				MCC (HCC to LCC)	1,414 (1,005 to 2,523)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.32% (10.90% to 14.58%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,713
				MCC (HCC to LCC)	5,227 (3,786 to 9,328)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	34.83% (30.11% to 49.07%)
		2041-2065	Volume (ML/yr)	No CC	2,857
				MCC (HCC to LCC)	2,828 (2,009 to 5,046)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	22.65% (21.81% to 29.16%)

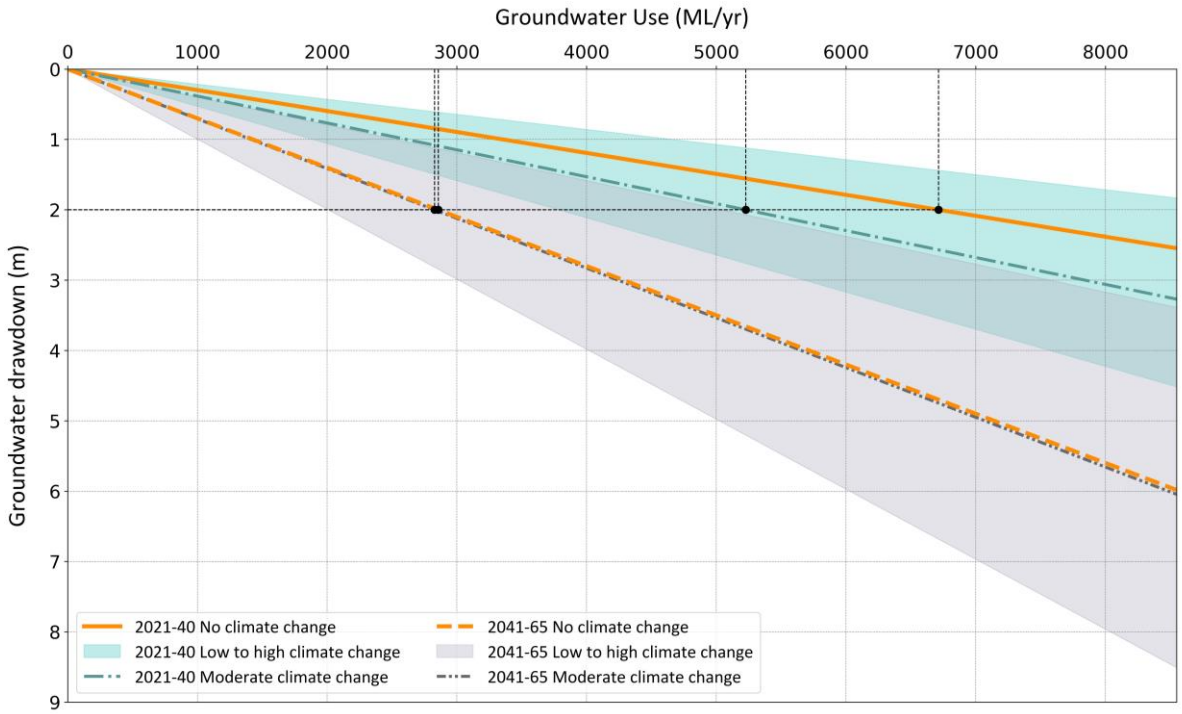

Figure A5-32. Plot for Deutgam WSPA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-39. Waterways GDE synthesis Table A5-for Deutgam WSPA

GMU					DEUTGAM WSPA
Waterway GDEs	Avg Use 708 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.16
				MCC (LCC to HCC)	0.52 (-0.26 to 1.0)
		2041-2065	Drawdown from baseline (m)	No CC	0.58
				MCC (LCC to HCC)	0.58 (0.11 to 2.0)
	PCV use 4,274 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	2.3 (1.1 to 3.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.58
				MCC (LCC to HCC)	4.0 (1.7 to 6.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	312
				MCC (HCC to LCC)	247 (181 to 424)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.64% (1.44% to 2.23%)
		2041-2065	Volume (ML/yr)	No CC	142
				MCC (HCC to LCC)	136 (97 to 240)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.09% (1.05% to 1.39%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,124
				MCC (HCC to LCC)	2,468 (1,808 to 4,236)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	16.44% (14.37% to 22.28%)
		2041-2065	Volume (ML/yr)	No CC	1,423
				MCC (HCC to LCC)	1,361 (970 to 2,402)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.90% (10.53% to 13.88%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,248
				MCC (HCC to LCC)	4,936 (3,615 to 8,472)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	32.89% (28.75% to 44.56%)
		2041-2065	Volume (ML/yr)	No CC	2,846
				MCC (HCC to LCC)	2,722 (1,940 to 4,804)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	21.79% (21.06% to 27.77%)

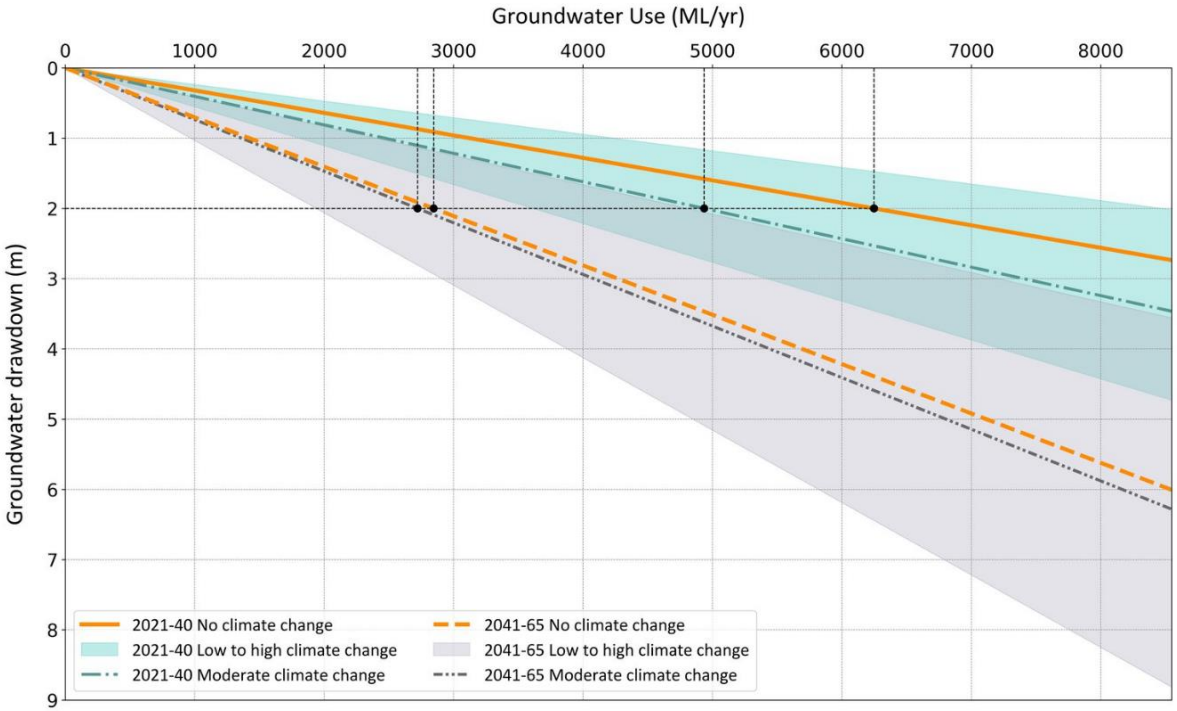

Figure A5-33. Plot for Deutgam WSPA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-40. Stream gauge results for Deutgam WSPA

GMU		DEUTGAM WSPA		
Stream gauge/Catchment:		231204 - Werribee River @ Werribee Diversion Weir (Regulated)		
Base flow index (1975-2020)		0.36		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	56,109 (43,221 to 67,962)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-1,625 (-14,512 to 10,229)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	49,786 (33,130 to 65,349)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-7,947 (-24,603 to 7,615)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.468% (0.607% to 0.386%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.4% (4.4% to 2.8%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.527% (0.792% to 0.401%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.9% (5.8% to 2.9%)
Q90 flow	2040	Flow (ML/yr)	MCC (LCC to HCC)	0.00 (0.00 to 0.00)
		Change from 1975-2020 (ML/yr)	MCC (LCC to HCC)	-16 (-16 to -16)
	2065	Flow (ML/yr)	MCC (LCC to HCC)	0.00 (0.00 to 0.00)
		Change from 1975-2020 (ML/yr)	MCC (LCC to HCC)	-16 (-16 to -16)

Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	NA
		PCV use (ML/yr)	MCC (HCC - LCC)	NA
	2065	Current use (ML/yr)	MCC (HCC - LCC)	NA
		PCV use (ML/yr)	MCC (HCC - LCC)	NA

Table A5-41. Wetlands GDE synthesis Table A5-for Deutgam WSPA

GMU					DEUTGAM WSPA
Wetlands GDEs	Avg Use 708 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.52
				MCC (LCC to HCC)	0.90 (0.02 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.90
				MCC (LCC to HCC)	0.90 (0.37 to 2.5)
	PCV use 4,274 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	2.4 (1.2 to 3.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.90
				MCC (LCC to HCC)	3.8 (1.5 to 5.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	314
				MCC (HCC to LCC)	247 (182 to 428)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.64% (1.44% to 2.25%)
		2041-2065	Volume (ML/yr)	No CC	181
				MCC (HCC to LCC)	149 (103 to 289)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.19% (1.12% to 1.67%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,138
				MCC (HCC to LCC)	2,466 (1,816 to 4,281)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	16.43% (14.44% to 22.52%)
		2041-2065	Volume (ML/yr)	No CC	1,810
				MCC (HCC to LCC)	1,491 (1,030 to 2,885)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.94% (11.18% to 16.68%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,275
				MCC (HCC to LCC)	4,933 (3,633 to 8,563)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	32.87% (28.89% to 45.04%)
		2041-2065	Volume (ML/yr)	No CC	3,621
				MCC (HCC to LCC)	2,981 (2,060 to 5,771)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	23.87% (22.36% to 33.35%)

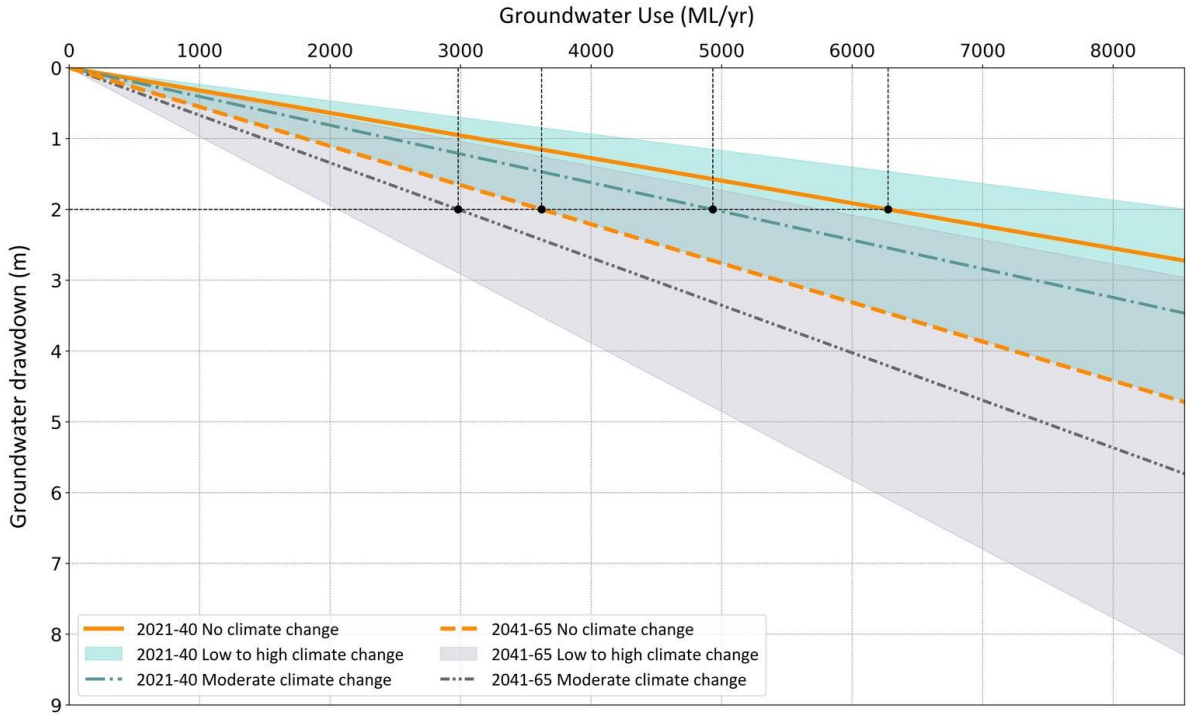

Figure A5-34. Plot for Deutgam WSPA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

EILDON GMA

Table A5-42. Consumptive users synthesis Table A5-for Eildon GMA

	GMU					EILDON GMA
Assessment area	Representative Bore					no bore
	Aquifer					Highlands
	Water system depth boundary (m below natural surface)					All formations below the surface to a depth of 200 metres
Catchment	Permissible Consumptive Volume (ML/yr)					1,496
	Licensed Entitlement (ML/yr)					607
	Licensed avg use (ML/yr)					767
Consumptive use metric	Consumptive users (bores)	Avg Use 164 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.0
					MCC (LCC to HCC)	3.5 (1.2 to 4.5)
			2041-2065	Drawdown from baseline (m)	No CC	3.2
					MCC (LCC to HCC)	3.2 (2.1 to 6.1)
		PCV use 501 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.8
					MCC (LCC to HCC)	4.4 (3.1 to 5.7)
			2041-2065	Drawdown from baseline (m)	No CC	3.2
					MCC (LCC to HCC)	5.5 (2.7 to 8.1)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	190
					MCC (HCC to LCC)	166 (132 to 241)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.01% (0.02% to 0.02%)
			2041-2065	Volume (ML/yr)	No CC	214
					MCC (HCC to LCC)	133 (92 to 246)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.01% (0.02% to 0.02%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	381
					MCC (HCC to LCC)	331 (264 to 483)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.03% (0.03% to 0.03%)
			2041-2065	Volume (ML/yr)	No CC	428
					MCC (HCC to LCC)	266 (183 to 492)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.03% (0.04% to 0.04%)

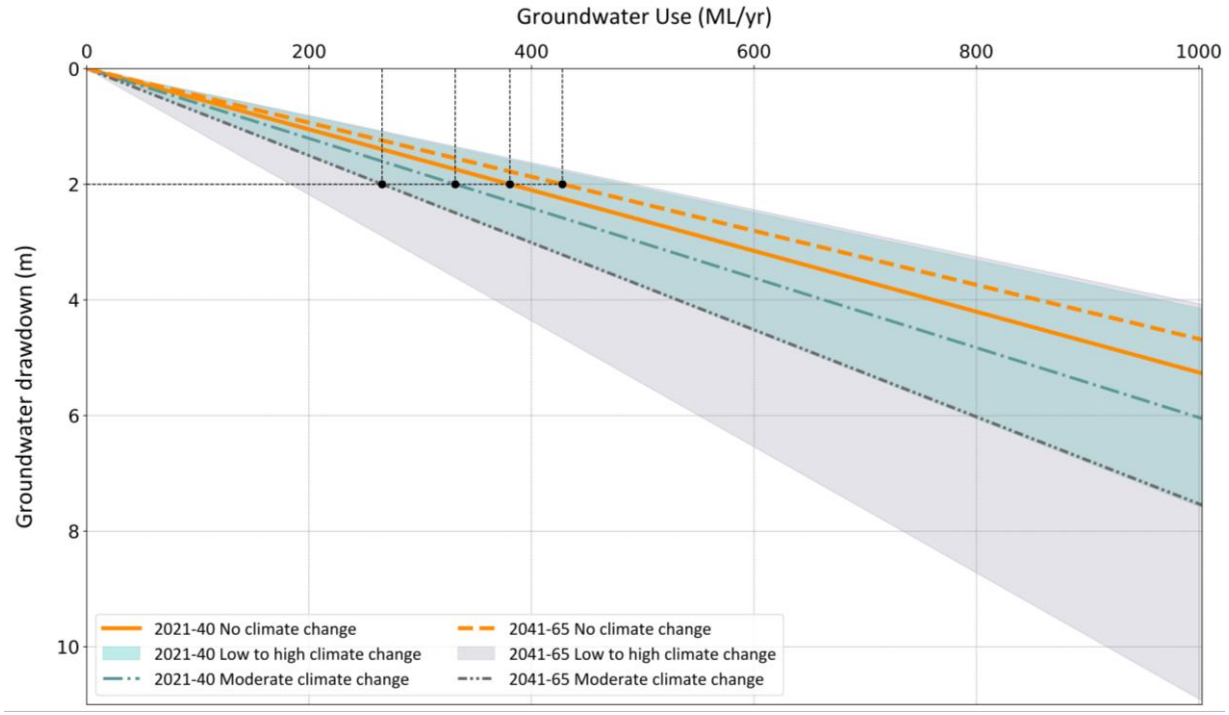

Figure A5-35. Plot for Eildon GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-43. Statewide drawdown use synthesis Table A5-for Eildon GMA

GMU					EILDON GMA
Consumptive users (bores)	Avg Use 164 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.3
				MCC (LCC to HCC)	3.6 (1.4 to 4.9)
		2041-2065	Drawdown from baseline (m)	No CC	3.5
				MCC (LCC to HCC)	3.5 (2.3 to 6.5)
	PCV use 501 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	5.2
				MCC (LCC to HCC)	5.9 (4.0 to 7.9)
		2041-2065	Drawdown from baseline (m)	No CC	3.5
				MCC (LCC to HCC)	7.7 (3.4 to 12)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	144
				MCC (HCC to LCC)	126 (97 to 189)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.01%)
		2041-2065	Volume (ML/yr)	No CC	175
				MCC (HCC to LCC)	95 (64 to 190)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.02%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	288
				MCC (HCC to LCC)	253 (194 to 379)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.02% to 0.03%)
		2041-2065	Volume (ML/yr)	No CC	350
				MCC (HCC to LCC)	191 (129 to 381)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.03% to 0.03%)

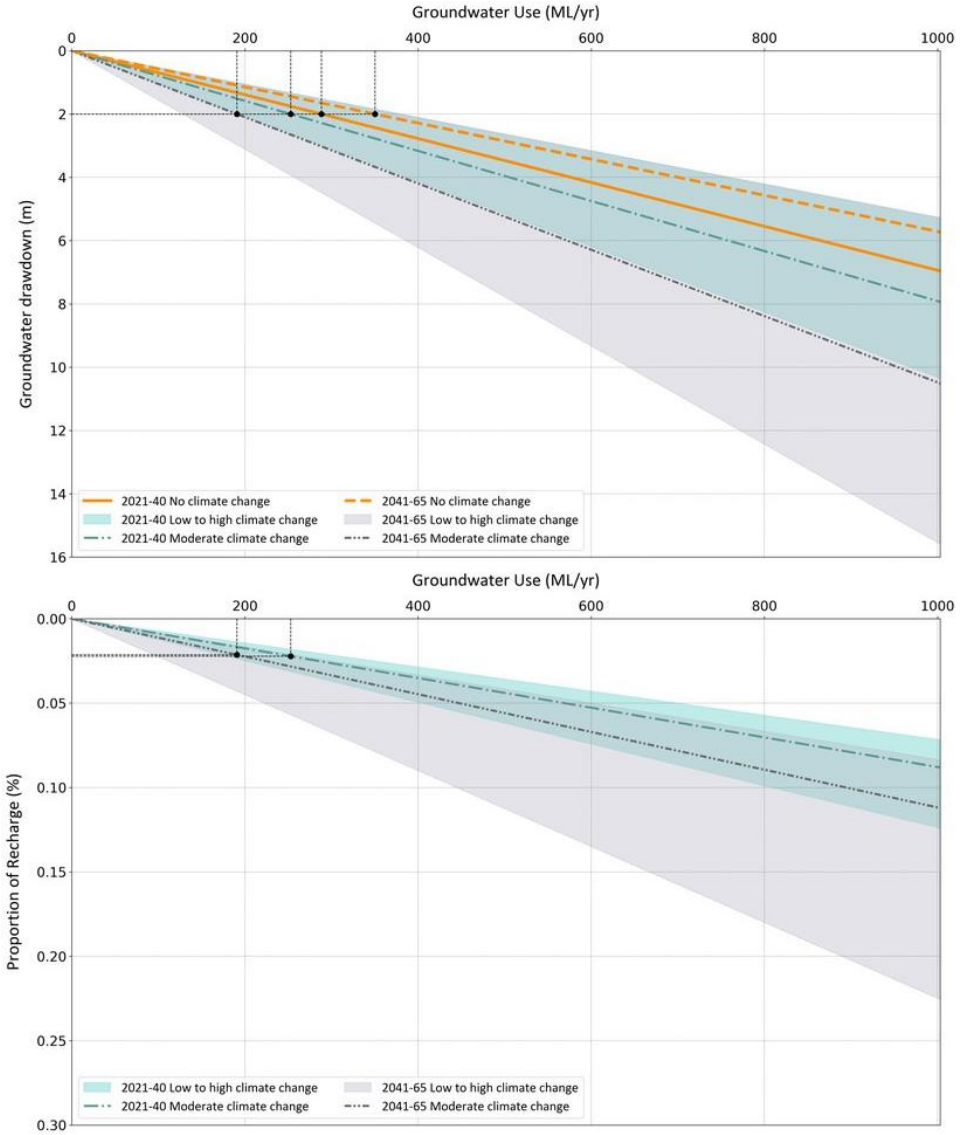

Figure A5-36. Upper Plot: Eildon GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Eildon GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-44. Terrestrial GDE synthesis Table A5-for Eildon GMA

GMU					EILDON GMA
Terrestrial GDEs	Avg Use 164 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.6 (-0.72 to 2.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	1.3 (0.17 to 4.3)
	PCV use 501 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	2.1 (1.0 to 3.1)
		2041-2065	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	3.3 (1.1 to 5.2)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	40
				MCC (HCC to LCC)	32 (23 to 63)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
		2041-2065	Volume (ML/yr)	No CC	20
				MCC (HCC to LCC)	20 (13 to 45)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	398
				MCC (HCC to LCC)	316 (228 to 632)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.03% (0.03% to 0.05%)
		2041-2065	Volume (ML/yr)	No CC	203
				MCC (HCC to LCC)	204 (134 to 453)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.03% to 0.04%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	797
				MCC (HCC to LCC)	632 (456 to 1,263)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.06% (0.06% to 0.09%)
		2041-2065	Volume (ML/yr)	No CC	407
				MCC (HCC to LCC)	408 (267 to 906)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (0.06% to 0.08%)

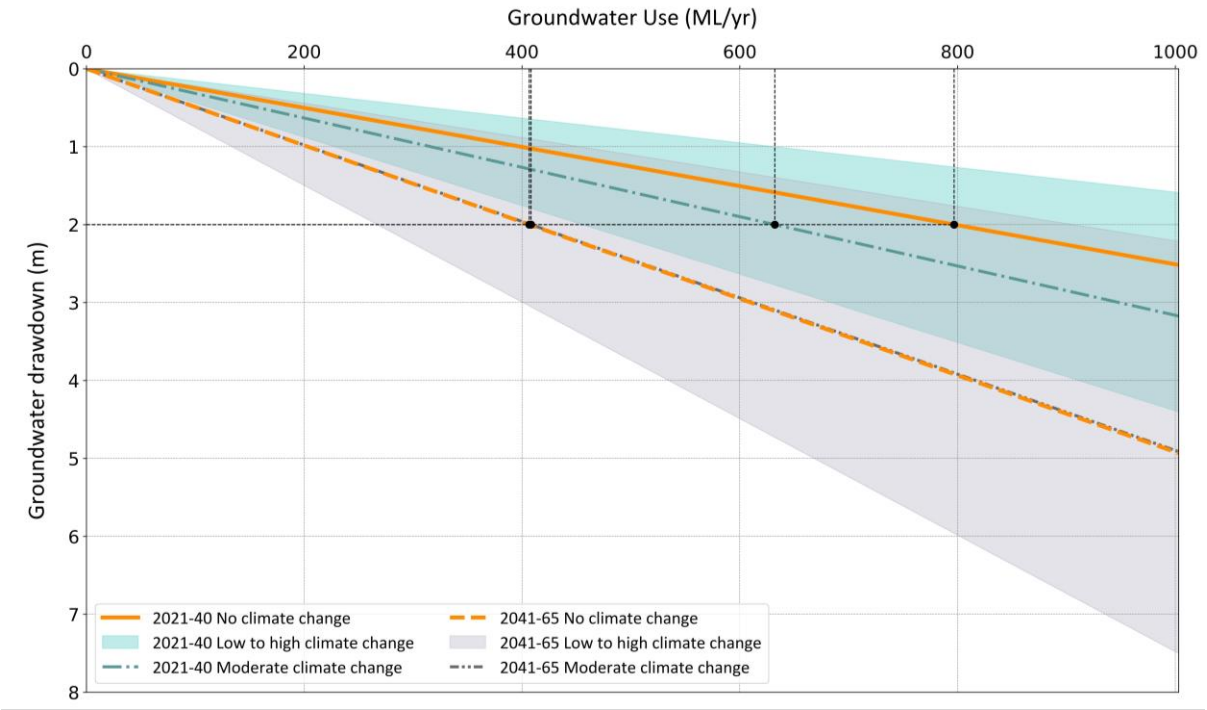

Figure A5-37. Plot for Eildon GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-45. Waterways GDE synthesis Table A5-for Eildon GMA

GMU					EILDON GMA
Waterway GDEs	Avg Use 164 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-2.75
				MCC (LCC to HCC)	-2.38 (-4.59 to -1.34)
		2041-2065	Drawdown from baseline (m)	No CC	-2.33
				MCC (LCC to HCC)	-2.33 (-3.40 to 0.15)
	PCV use 501 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-2.05
				MCC (LCC to HCC)	-1.61 (-2.76 to -0.56)
		2041-2065	Drawdown from baseline (m)	No CC	-2.33
				MCC (LCC to HCC)	0.05 (-1.92 to 1.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-48.92
				MCC (HCC to LCC)	-69.56 (-911.22 to -32.37)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-0.01% (-0.11% to 0.00%)
		2041-2065	Volume (ML/yr)	No CC	10
				MCC (HCC to LCC)	83 (-77.96 to 29)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (-0.01% to 0.01%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-489.18
				MCC (HCC to LCC)	-695.57 (-9112.18 to -323.66)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-0.06% (-1.13% to -0.02%)
		2041-2065	Volume (ML/yr)	No CC	101
				MCC (HCC to LCC)	827 (-779.63 to 287)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.09% (-0.07% to 0.06%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-978.35
				MCC (HCC to LCC)	-1391.13 (-18224.36 to -647.33)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-0.12% (-2.25% to -0.05%)
		2041-2065	Volume (ML/yr)	No CC	202
				MCC (HCC to LCC)	1,655 (-1559.27 to 574)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.19% (-0.13% to 0.13%)

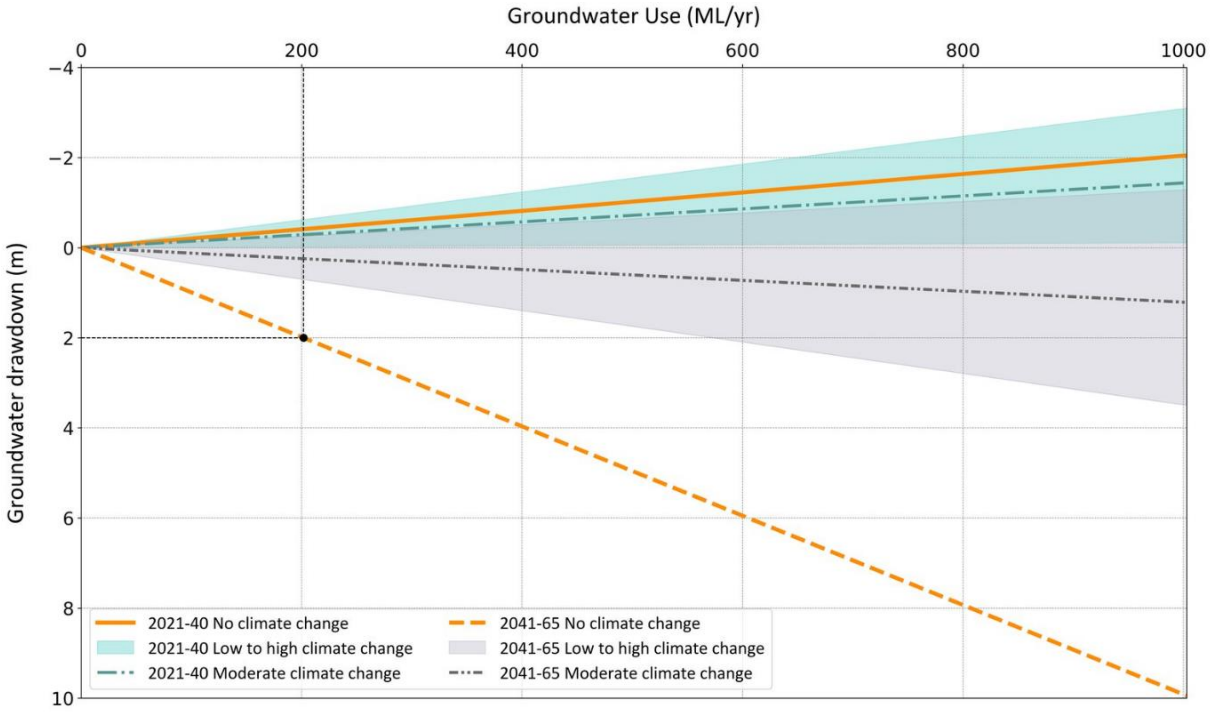

Figure A5-38. Plot for Eildon GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-46. Stream gauge results for Eildon GMA

				Eildon GMA
Stream gauge/Catchment:				**405219 - Goulburn River @ Dohertys (Unregulated)**
Base flow index (1975-2020)				**0.58**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	262,304 (205,495 to 318,532)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-47,090 (-103,898 to 9,139)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	250,131 (168,396 to 293,606)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-59,263 (-140,997 to -15,787)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.026% (0.033% to 0.022%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.061% (0.078% to 0.050%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.027% (0.041% to 0.023%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.064% (0.095% to 0.054%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	58.39 (45.74 to 70.91)

		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	55.68 (37.49 to 65.36)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.32% (0.41% to 0.27%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.75% (0.96% to 0.62%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.34% (0.50% to 0.29%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.79% (1.17% to 0.67%)
Stream gauge/Catchment:		**405232 - GOULBURN RIVER @ Mccoys BRIDGE (Regulated)**		
Base flow index (1975-2020)		**0.53**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	1,026,335 (804,057 to 1,246,345)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-107,737 (-330,015 to 112,273)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	978,704 (658,896 to 1,148,815)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-155,368 (-475,176 to 14,743)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.62% (0.79% to 0.51%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.0% (3.9% to 2.5%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.65% (0.96% to 0.55%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.2% (4.7% to 2.7%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	362.17 (283.73 to 439.81)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-38 (-116 to 40)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	345.36 (232.51 to 405.39)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-55 (-168 to 5)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	4.8% (6.1% to 4.0%)
		PCV use (ML/yr)	MCC (LCC to HCC)	23.54% (30.05% to 19.38%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	5.0% (7.5% to 4.3%)
		PCV use (ML/yr)	MCC (LCC to HCC)	25% (37% to 21%)

FRANKSTON GMA

Table A5-47. Consumptive users synthesis Table A5-for Frankston GMA

Assessment area	**GMU**					**FRANKSTON GMA**
	Representative Bore					62,949
	Aquifer					Plains
	Water system depth boundary (m below natural surface)					All formations below the surface
Catchment	Permissible Consumptive Volume (ML/yr)					3,200
	Licensed Entitlement (ML/yr)					2,274
	Licensed avg use (ML/yr)					418
Consumptive use metric	**Consumptive users (bores)**	Avg Use 56 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.83
					MCC (LCC to HCC)	1.5 (0.06 to 2.4)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	1.4 (0.60 to 4.1)
		PCV use 665 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
					MCC (LCC to HCC)	2.5 (0.77 to 3.8)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	3.7 (0.76 to 6.3)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	593
					MCC (HCC to LCC)	399 (269 to 1,076)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.29% (1.05% to 2.80%)
			2041-2065	Volume (ML/yr)	No CC	396
					MCC (HCC to LCC)	271 (165 to 999)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.07% (0.85% to 2.93%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,186
					MCC (HCC to LCC)	798 (538 to 2,152)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.59% (2.09% to 5.60%)
			2041-2065	Volume (ML/yr)	No CC	792
					MCC (HCC to LCC)	542 (330 to 1,998)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.15% (1.70% to 5.87%)

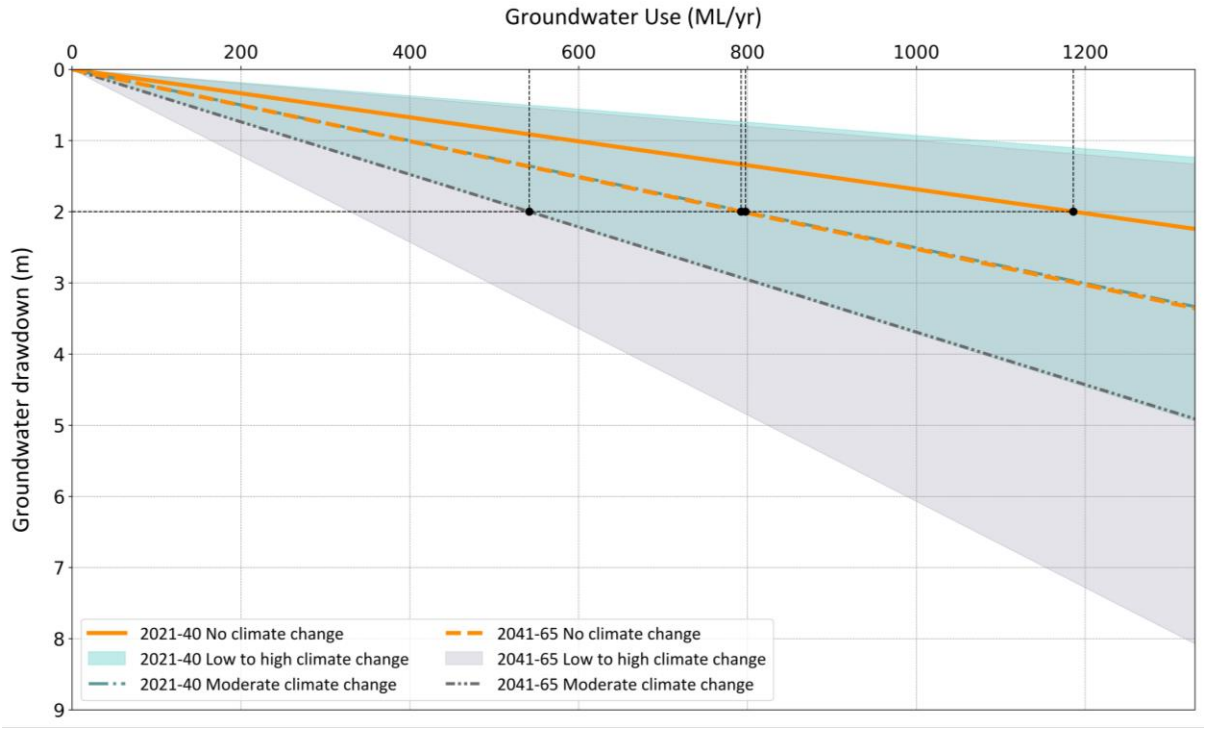

Figure A5-39. Plot for Frankston GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-48. Statewide drawdown use synthesis Table A5-for Frankston GMA

GMU					FRANKSTON GMA
Consumptive users (bores)	Avg Use 56 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.91
				MCC (LCC to HCC)	1.6 (0.13 to 2.4)
		2041-2065	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	1.4 (0.63 to 4.1)
	PCV use 665 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	2.6 (0.87 to 3.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	3.7 (0.74 to 6.3)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	570
				MCC (HCC to LCC)	392 (268 to 987)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.27% (1.04% to 2.57%)
		2041-2065	Volume (ML/yr)	No CC	432

				MCC (HCC to LCC)	275 (166 to 1,047)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.09% (0.85% to 3.07%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,141
				MCC (HCC to LCC)	784 (535 to 1,975)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.54% (2.08% to 5.14%)
		2041-2065	Volume (ML/yr)	No CC	864
				MCC (HCC to LCC)	551 (332 to 2,093)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.18% (1.71% to 6.15%)

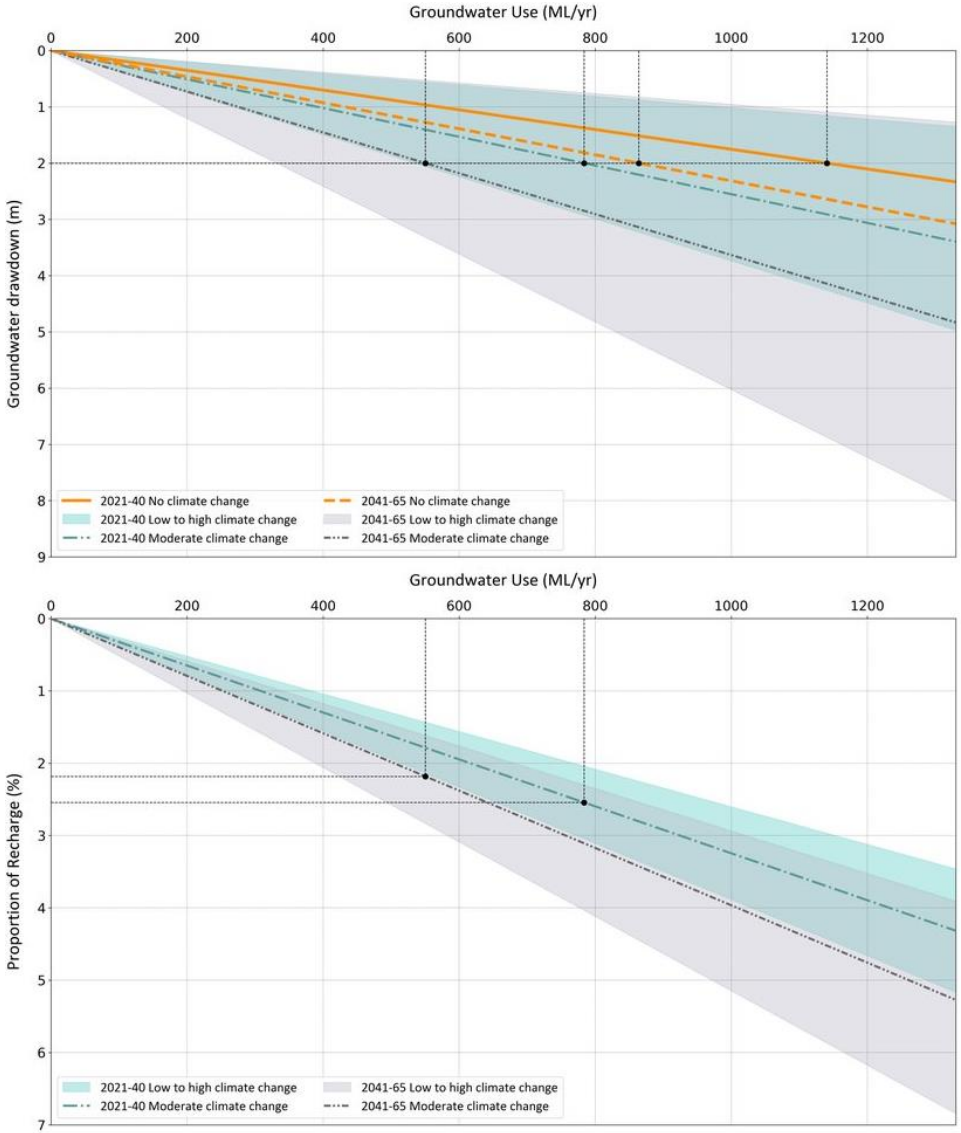

Figure A5-40. Upper Plot: Frankston GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Frankston GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-49. Seawater intrusion synthesis Table A5-for Frankston GMA

GMU					FRANKSTON GMA
Seawater intrusion	Avg Use 56 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.70
				MCC (LCC to HCC)	1.2 (-0.01 to 2.0)
			Area elev. <1.5 mAHD (%)	No CC	95%
				MCC (LCC to HCC)	96% (88% to 98%)
		2041-2065	Drawdown from baseline (m)	No CC	0.93
				MCC (LCC to HCC)	1.7 (0.50 to 3.7)
			Area elev. <1.5 mAHD (%)	No CC	96%
				MCC (LCC to HCC)	97% (95% to 99%)
	PCV use 665 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.2 (1.2 to 3.1)
			Area elev. <1.5 mAHD (%)	No CC	97%
				MCC (LCC to HCC)	98% (96% to 99%)
		2041-2065	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	3.3 (1.3 to 5.3)
			Area elev. <1.5 mAHD (%)	No CC	98%
				MCC (LCC to HCC)	99% (97% to 99%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	-933
				MCC (HCC to LCC)	-990 (-1,316 to -431)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-3.2% (-5.1% to -1.1%)
		2041-2065	Volume (ML/yr)	No CC	-676
				MCC (HCC to LCC)	-841 (-1,322 to -387)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-3.3% (-6.8% to -1.1%)

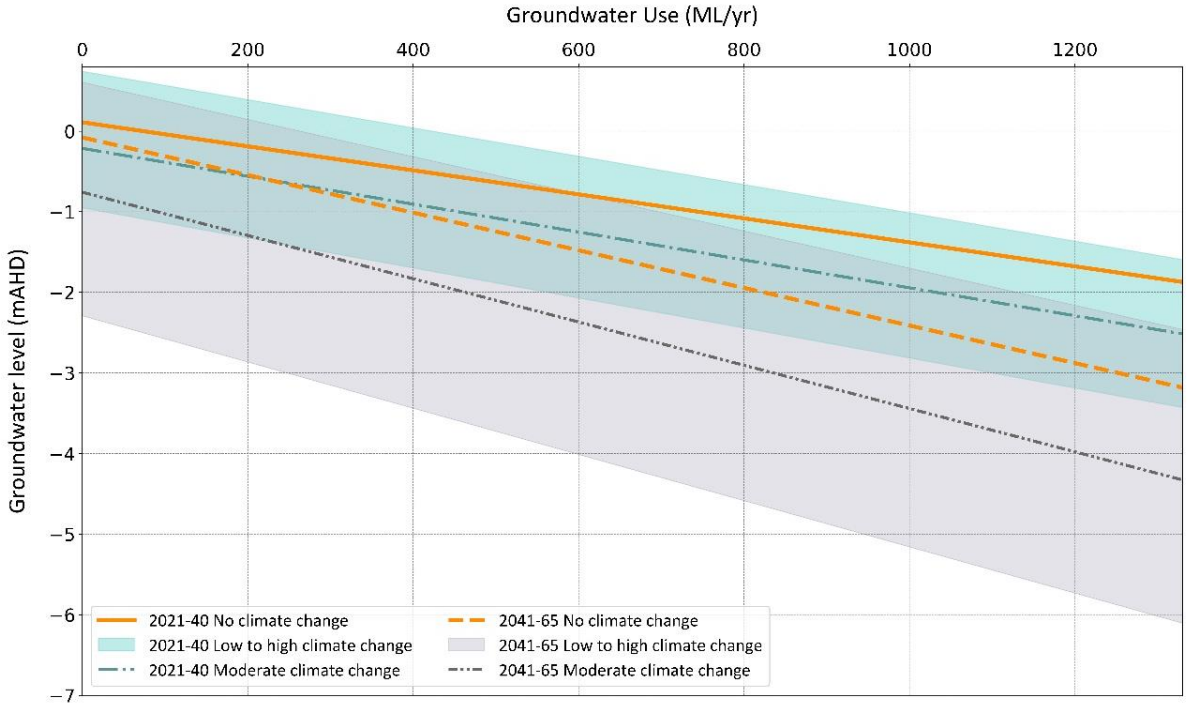

Figure A5-41. Plot for Frankston GMA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-50. Terrestrial GDE synthesis Table A5-for Frankston GMA

GMU					FRANKSTON GMA
Terrestrial GDEs	Avg Use 56 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.88
				MCC (LCC to HCC)	1.5 (0.12 to 2.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	1.4 (0.57 to 3.9)
	PCV use 665 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	2.4 (0.92 to 3.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	3.7 (1.0 to 6.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	56
				MCC (HCC to LCC)	40 (28 to 89)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.13% (0.11% to 0.23%)
		2041-2065	Volume (ML/yr)	No CC	54
				MCC (HCC to LCC)	27 (17 to 73)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.11% (0.09% to 0.21%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	557
				MCC (HCC to LCC)	399 (280 to 892)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.29% (1.09% to 2.32%)
		2041-2065	Volume (ML/yr)	No CC	543
				MCC (HCC to LCC)	266 (169 to 731)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.05% (0.87% to 2.15%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,114
				MCC (HCC to LCC)	797 (559 to 1,785)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.59% (2.17% to 4.64%)
		2041-2065	Volume (ML/yr)	No CC	1,087
				MCC (HCC to LCC)	531 (338 to 1,462)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.11% (1.74% to 4.30%)

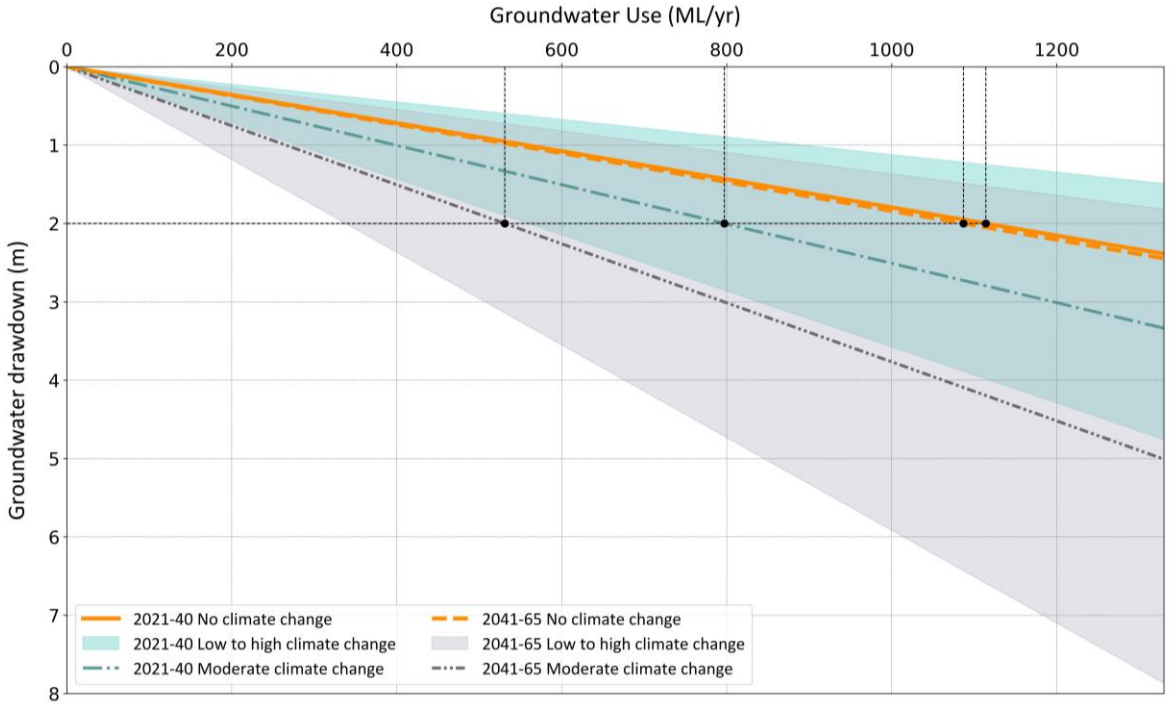

Figure A5-42. Plot for Frankston GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-51. Wetlands GDE synthesis Table A5-for Frankston GMA

GMU					FRANKSTON GMA
Wetlands GDEs	Avg Use 56 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.92
				MCC (LCC to HCC)	1.4 (0.19 to 2.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	1.4 (0.56 to 3.9)
	PCV use 665 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	2.4 (1.2 to 3.4)
		2041-2065	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	4.0 (1.9 to 5.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	47
				MCC (HCC to LCC)	37 (28 to 64)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.12% (0.11% to 0.17%)
		2041-2065	Volume (ML/yr)	No CC	128
				MCC (HCC to LCC)	22 (16 to 38)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.09% (0.08% to 0.11%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	468
				MCC (HCC to LCC)	369 (278 to 643)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.20% (1.08% to 1.67%)
		2041-2065	Volume (ML/yr)	No CC	1,285
				MCC (HCC to LCC)	218 (158 to 380)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.86% (0.81% to 1.12%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	935
				MCC (HCC to LCC)	739 (555 to 1,286)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.40% (2.16% to 3.35%)
		2041-2065	Volume (ML/yr)	No CC	2,569
				MCC (HCC to LCC)	436 (315 to 760)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.73% (1.62% to 2.23%)

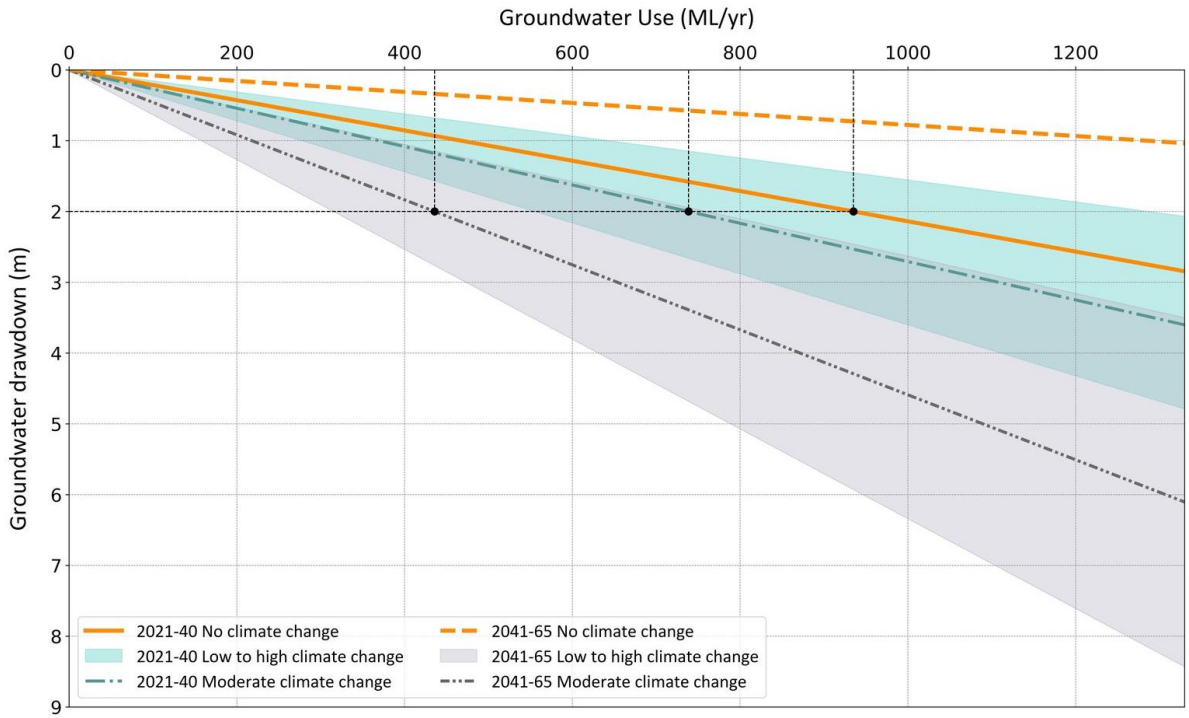

Figure A5-43. Plot for Frankston GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-52. Terrestrial GDE synthesis Table A5-for Gellibrand GMA

GMU					GELLIBRAND GMA
Terrestrial GDEs	Avg Use 0 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.92
				MCC (LCC to HCC)	-1.62 (-1.53 to 0.14)
		2041-2065	Drawdown from baseline (m)	No CC	-0.15
				MCC (LCC to HCC)	-0.15 (-1.14 to 2.4)
	PCV use 0 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.4
				MCC (LCC to HCC)	2.0 (1.4 to 4.3)
		2041-2065	Drawdown from baseline (m)	No CC	-0.15
				MCC (LCC to HCC)	8.4 (6.9 to 11)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	0.09
				NA	NA
			Proportion of recharge (%)	No CC	NA
				NA	NA
		2041-2065	Volume (ML/yr)	No CC	NA
				NA	NA
			Proportion of recharge (%)	No CC	NA
				NA	NA
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	0.87
				NA	NA
			Proportion of recharge (%)	No CC	NA
				NA	NA
		2041-2065	Volume (ML/yr)	No CC	NA
				NA	NA
			Proportion of recharge (%)	No CC	NA
				NA	NA
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1.7
				NA	NA
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	NA
		2041-2065	Volume (ML/yr)	No CC	NA
				NA	NA
			Proportion of recharge (%)	No CC	NA
				NA	NA

GELIBRAND GMA

No results

GERANGAMETE GMA

Table A5-53. Consumptive users synthesis Table A5-for Gerangamete GMA

Assessment area	**GMU**					**GERANGAMETE GMA**
	Representative Bore					114164
	Aquifer					Plains
	Water system depth boundary (m below natural surface)					All formations below the surface
Catchment	Permissible Consumptive Volume (ML/yr)					239
	Licensed Entitlement (ML/yr)					12,143
	Licensed avg use (ML/yr)					375
Consumptive use metric	**Consumptive users (bores)**	Avg Use 0 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.87
					MCC (LCC to HCC)	0.58 (0.30 to 1.8)
			2041-2065	Drawdown from baseline (m)	No CC	1.6
					MCC (LCC to HCC)	1.6 (0.88 to 3.5)
		PCV use 11 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	6.3
					MCC (LCC to HCC)	6.4 (5.3 to 8.4)
			2041-2065	Drawdown from baseline (m)	No CC	1.6
					MCC (LCC to HCC)	14 (12 to 17)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1.8
					MCC (HCC to LCC)	1.8 (1.5 to 2.0)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
			2041-2065	Volume (ML/yr)	No CC	0.88
					MCC (HCC to LCC)	0.80 (0.72 to 0.88)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3.6
					MCC (HCC to LCC)	3.5 (3.0 to 4.0)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
			2041-2065	Volume (ML/yr)	No CC	1.8
					MCC (HCC to LCC)	1.6 (1.4 to 1.8)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.00% (0.00% to 0.00%)

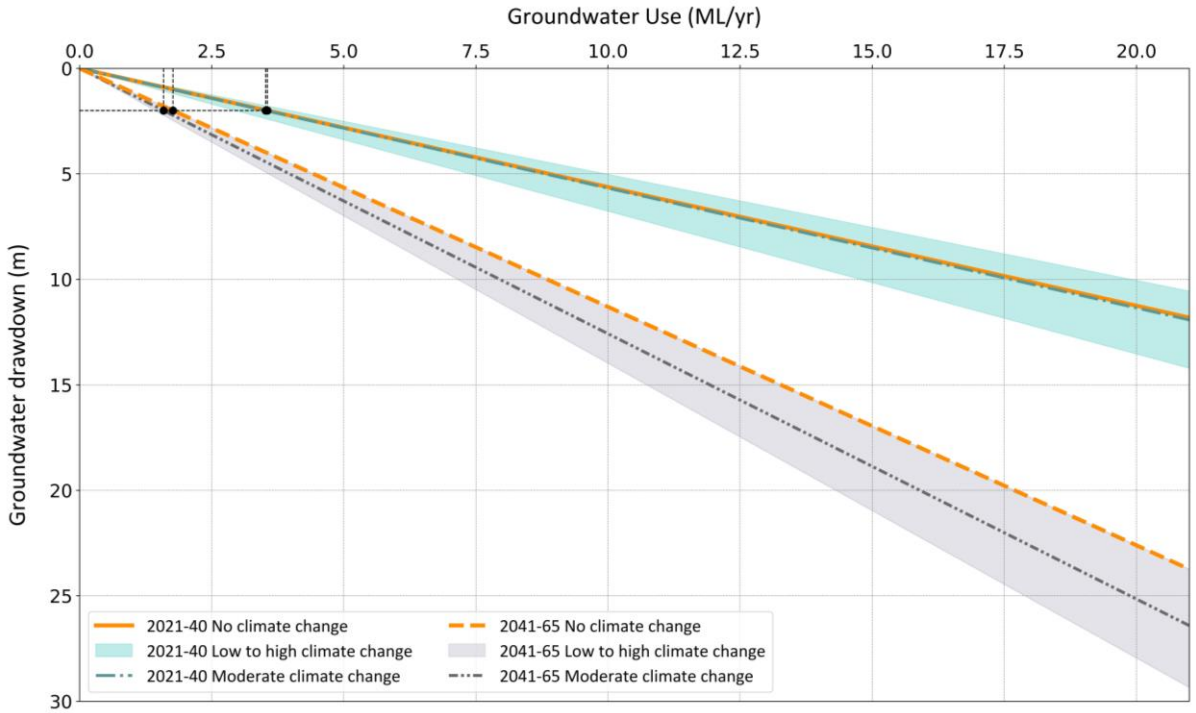

Figure A5-44. Plot for Gerangamete GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-54. Statewide drawdown use synthesis Table A5-for Gerangamete GMA

GMU					GERANGAMETE GMA
Consumptive users (bores)	Avg Use 0 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	0.79 (0.54 to 2.1)
		2041-2065	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	1.8 (1.0 to 4.0)
	PCV use 11 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	5.4
				MCC (LCC to HCC)	5.5 (4.3 to 7.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	12 (9.9 to 15)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2.2
				MCC (HCC to LCC)	2.1 (1.7 to 2.5)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
		2041-2065	Volume (ML/yr)	No CC	1.1
				MCC (HCC to LCC)	0.96 (0.83 to 1.1)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4.3
				MCC (HCC to LCC)	4.3 (3.3 to 5.0)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
		2041-2065	Volume (ML/yr)	No CC	2.1
				MCC (HCC to LCC)	1.9 (1.7 to 2.2)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)

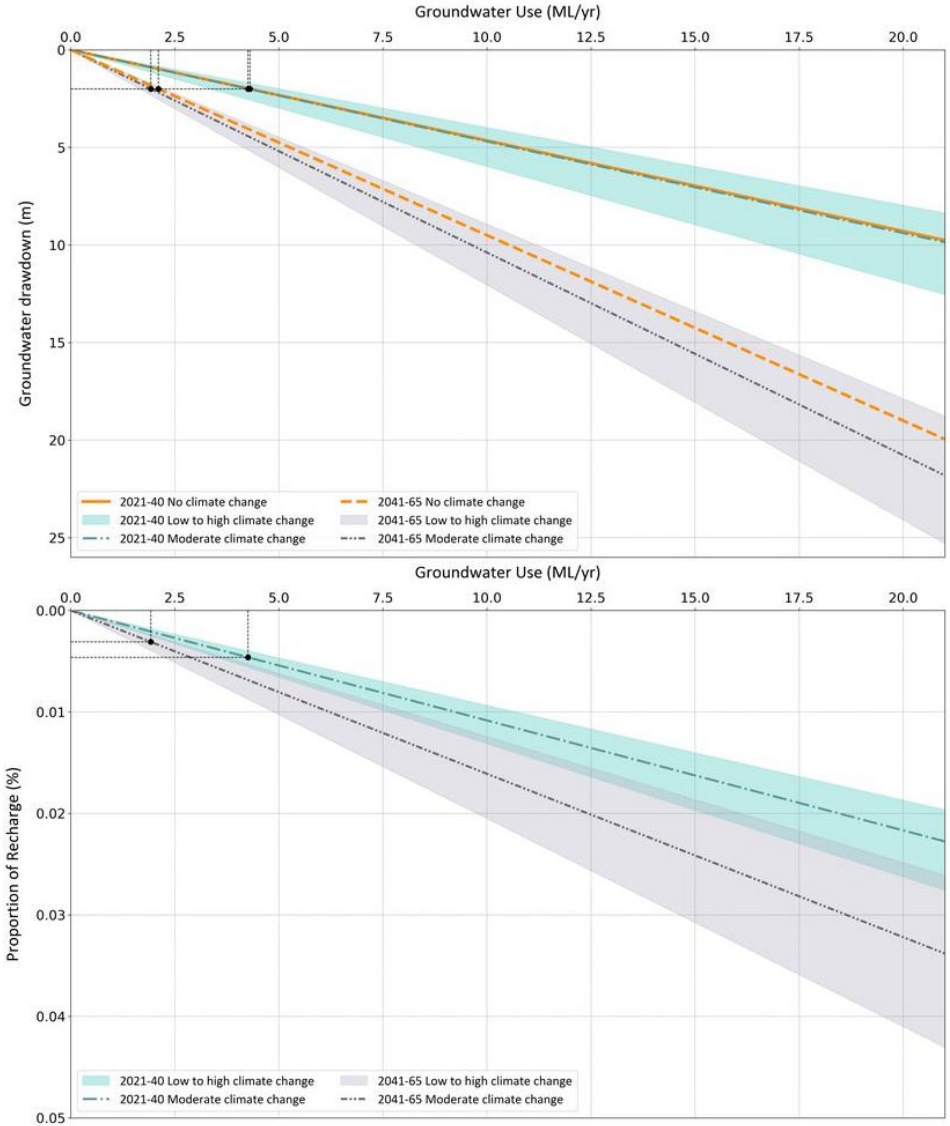

Figure A5-45. Upper Plot: Gerangamete GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Gerangamete GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-55. Terrestrial GDE synthesis Table A5-for Gerangamete GMA

GMU					GERANGAMETE GMA
Terrestrial GDEs	Avg Use 0 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.36
				MCC (LCC to HCC)	-0.78 (-0.94 to 0.66)
		2041-2065	Drawdown from baseline (m)	No CC	0.35
				MCC (LCC to HCC)	0.35 (-0.43 to 2.6)
	PCV use 11 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.6
				MCC (LCC to HCC)	3.5 (2.5 to 5.8)
		2041-2065	Drawdown from baseline (m)	No CC	0.35
				MCC (LCC to HCC)	10 (8.1 to 13)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	0.28
				MCC (HCC to LCC)	0.28 (0.21 to 0.34)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
		2041-2065	Volume (ML/yr)	No CC	0.11
				MCC (HCC to LCC)	0.11 (0.09 to 0.13)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2.8
				MCC (HCC to LCC)	2.8 (2.1 to 3.4)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
		2041-2065	Volume (ML/yr)	No CC	1.1
				MCC (HCC to LCC)	1.1 (0.94 to 1.3)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5.6
				MCC (HCC to LCC)	5.7 (4.2 to 6.9)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.01%)
		2041-2065	Volume (ML/yr)	No CC	2.1
				MCC (HCC to LCC)	2.2 (1.9 to 2.5)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)

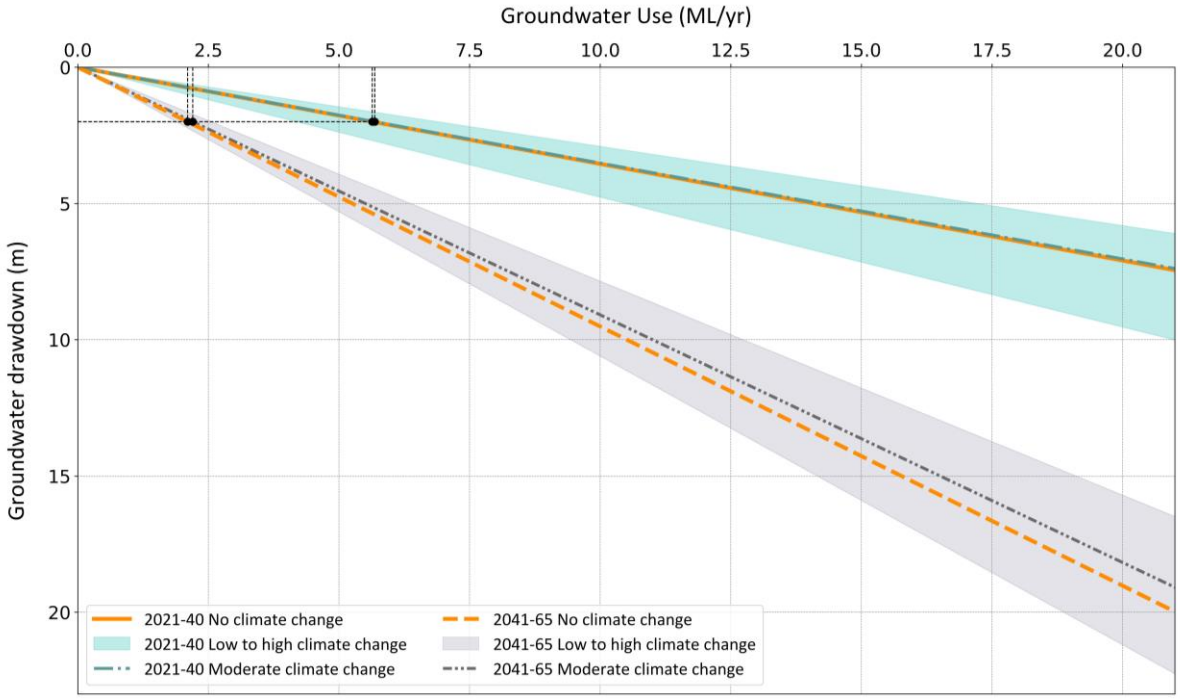

Figure A5-46. Plot for Gerangamete GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-56. Waterways GDE synthesis Table A5-for Gerangamete GMA

GMU					GERANGAMETE GMA
Waterway GDEs	Avg Use 0 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.21
				MCC (LCC to HCC)	-0.66 (-0.76 to 0.69)
		2041-2065	Drawdown from baseline (m)	No CC	0.48
				MCC (LCC to HCC)	0.48 (-0.28 to 2.6)
	PCV use 11 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.1
				MCC (LCC to HCC)	3.9 (3.1 to 5.9)
		2041-2065	Drawdown from baseline (m)	No CC	0.48
				MCC (LCC to HCC)	11 (9.4 to 13)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	0.25
				MCC (HCC to LCC)	0.25 (0.20 to 0.29)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
		2041-2065	Volume (ML/yr)	No CC	0.10
				MCC (HCC to LCC)	0.10 (0.09 to 0.11)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2.5
				MCC (HCC to LCC)	2.5 (2.0 to 2.9)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
		2041-2065	Volume (ML/yr)	No CC	1.0
				MCC (HCC to LCC)	1.0 (0.89 to 1.1)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5.0
				MCC (HCC to LCC)	5.1 (4.0 to 5.8)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.01%)
		2041-2065	Volume (ML/yr)	No CC	2.0
				MCC (HCC to LCC)	2.0 (1.8 to 2.2)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.00%)

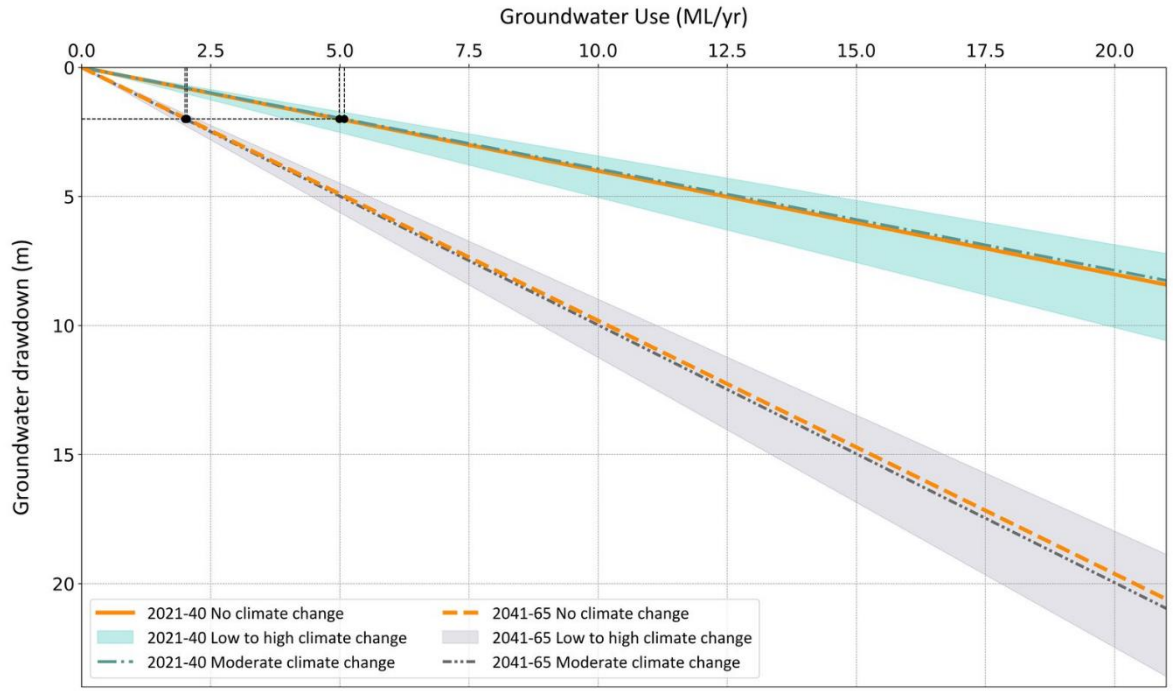

Figure A5-47. Plot for Gerangamete GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-57. Stream gauge results for Gerangamete GMA

GMU				GERANGAMETE GMA
Stream gauge/Catchment:				**233224 - Barwon River @ Ricketts Marsh (Regulated)**
Base flow index (1975-2020)				**0.36**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	62,626 (44,618 to 77,432)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-8,423 (-26,431 to 6,383)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	52,288 (34,948 to 66,160)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-18,761 (-36,101 to -4,889)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	NA	NA
		PCV use (ML/yr)	NA	NA
	2065	Current use (ML/yr)	NA	NA
		PCV use (ML/yr)	NA	NA
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	4.25 (3.02 to 5.25)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-1 (-2 to 0)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	3.54 (2.37 to 4.48)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-2 (-3 to -1)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	NA	NA
		PCV use (ML/yr)	NA	NA
	2065	Current use (ML/yr)	NA	NA
		PCV use (ML/yr)	NA	NA

GLENELG WSPA

Table A5-58. Consumptive users synthesis Table A5-for Glenelg WSPA

Assessment area	**GMU**					**GLENELG WSPA**
	Representative Bore					83,446
	Aquifer					Plains
	Water system depth boundary (m below natural surface)					All formations below surface
Catchment	Permissible Consumptive Volume (ML/yr)					33,262
	Licensed Entitlement (ML/yr)					16,025
	Licensed avg use (ML/yr)					5,958
Consumptive use metric	**Consumptive users (bores)**	Avg Use 6,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.06
					MCC (LCC to HCC)	0.40 (0.16 to 0.65)
			2041-2065	Drawdown from baseline (m)	No CC	0.18
					MCC (LCC to HCC)	0.18 (0.02 to 1.4)
		PCV use 23,625 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.29
					MCC (LCC to HCC)	0.81 (0.08 to 1.4)
			2041-2065	Drawdown from baseline (m)	No CC	0.18
					MCC (LCC to HCC)	1.6 (0.09 to 2.8)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	86,165
					MCC (HCC to LCC)	39,593 (25,176 to 149,116)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	23.94% (18.29% to 65.48%)
			2041-2065	Volume (ML/yr)	No CC	53,284
					MCC (HCC to LCC)	21,766 (12,858 to 131,822)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	15.48% (11.78% to 60.51%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	172,331
					MCC (HCC to LCC)	79,185 (50,353 to 298,232)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	47.88% (36.58% to 130.96%)
			2041-2065	Volume (ML/yr)	No CC	106,567
					MCC (HCC to LCC)	43,531 (25,717 to 263,643)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	30.96% (23.56% to 121.03%)

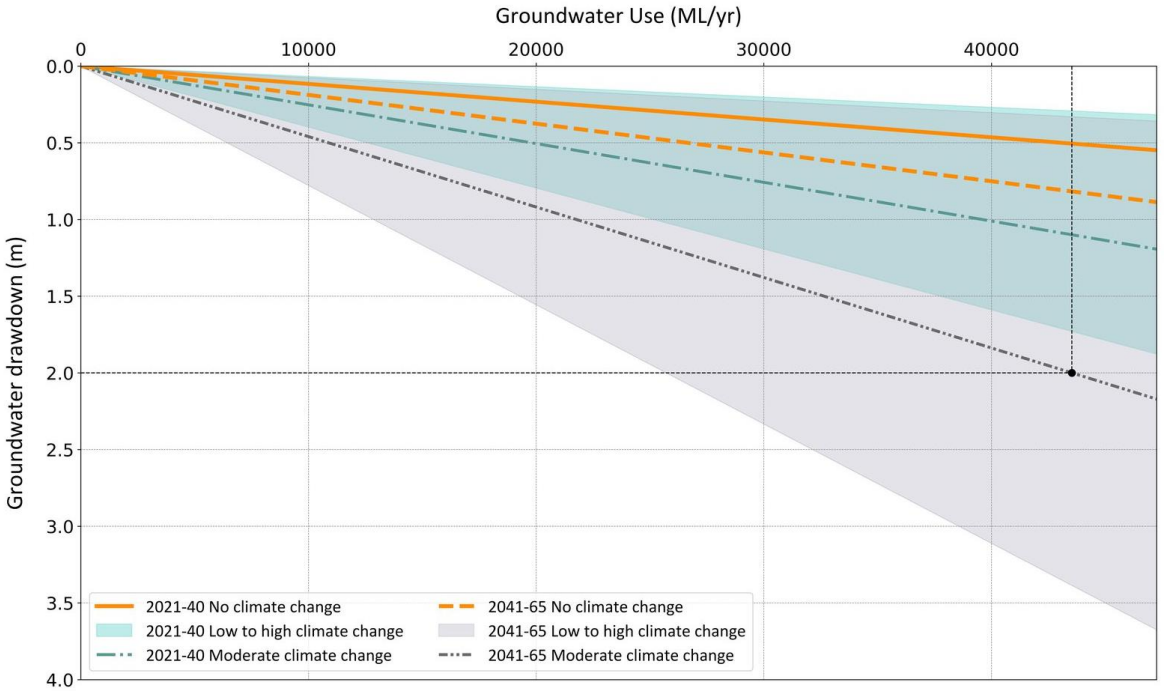

Figure A5-48. Plot for Glenelg WSPA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-59. Statewide drawdown use synthesis Table A5-for Glenelg WSPA

GMU					GLENELG WSPA
Consumptive users (bores)	Avg Use 6,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.14
				MCC (LCC to HCC)	0.42 (0.17 to 0.68)
		2041-2065	Drawdown from baseline (m)	No CC	0.26
				MCC (LCC to HCC)	0.26 (0.07 to 1.4)
	PCV use 23,625 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.47
				MCC (LCC to HCC)	0.94 (0.24 to 1.5)
		2041-2065	Drawdown from baseline (m)	No CC	0.26
				MCC (LCC to HCC)	1.8 (0.27 to 2.9)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	60,807
				MCC (HCC to LCC)	34,488 (23,296 to 92,558)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	20.85% (16.92% to 40.64%)
		2041-2065	Volume (ML/yr)	No CC	42,661
				MCC (HCC to LCC)	19,553 (12,188 to 75,006)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	13.90% (11.17% to 34.43%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	121,613
				MCC (HCC to LCC)	68,977 (46,592 to 185,116)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	41.71% (33.84% to 81.29%)
		2041-2065	Volume (ML/yr)	No CC	85,323
				MCC (HCC to LCC)	39,106 (24,375 to 150,012)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	27.81% (22.33% to 68.86%)

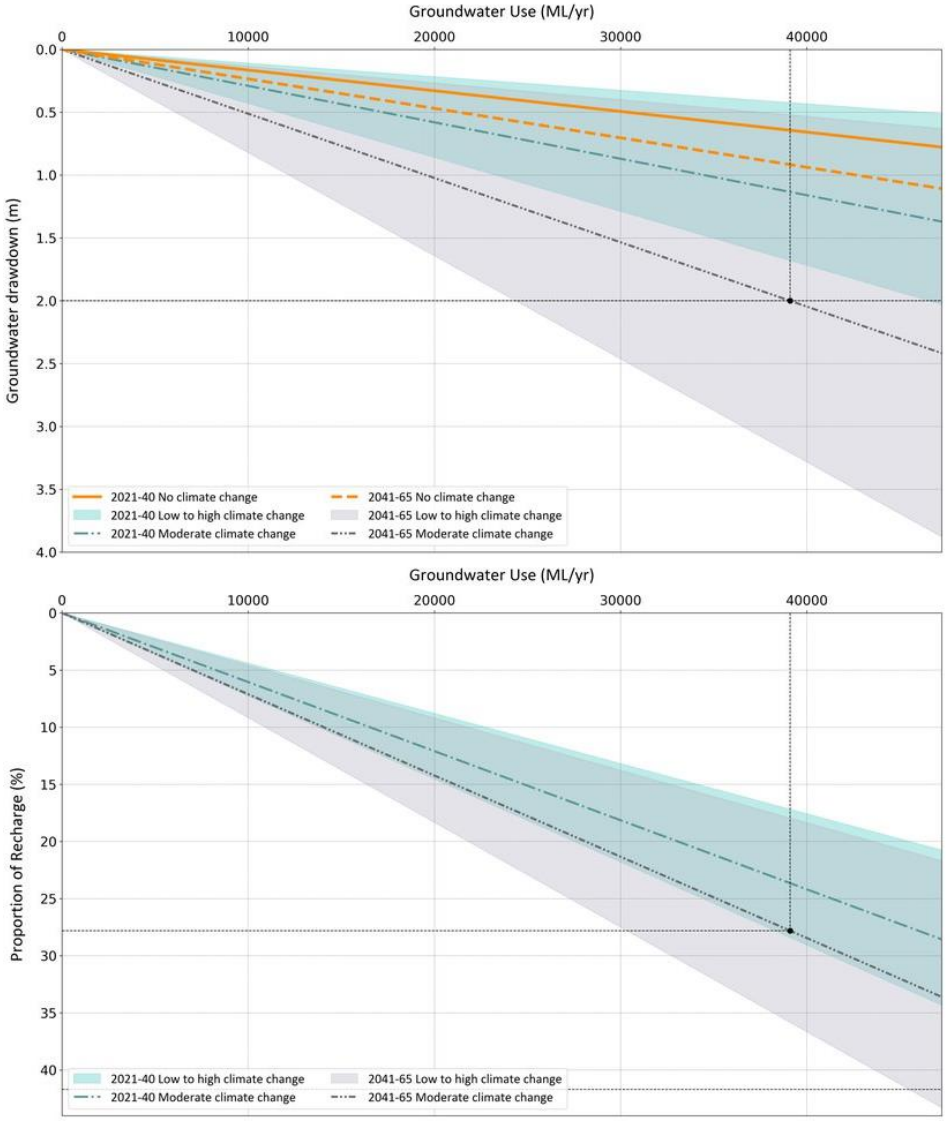

Figure A5-49. Upper Plot: Glenelg WSPA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Glenelg WSPA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-60. Seawater synthesis Table A5-for Glenelg WSPA

GMU					GLENELG WSPA
Seawater intrusion	Avg Use 6,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.06
				MCC (LCC to HCC)	-0.03 (0.07 to 0.36)
			Area elev. <1.5 mAHD (%)	No CC	97%
				MCC (LCC to HCC)	96% (96% to 96%)
		2041-2065	Drawdown from baseline (m)	No CC	-0.08
				MCC (LCC to HCC)	0.15 (0.03 to 1.2)
			Area elev. <1.5 mAHD (%)	No CC	97%
				MCC (LCC to HCC)	97% (97% to 97%)
	PCV use 23,625 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.29
				MCC (LCC to HCC)	0.64 (0.31 to 1.1)
			Area elev. <1.5 mAHD (%)	No CC	97%
				MCC (LCC to HCC)	97% (97% to 97%)
		2041-2065	Drawdown from baseline (m)	No CC	0.56
				MCC (LCC to HCC)	1.3 (0.50 to 2.1)
			Area elev. <1.5 mAHD (%)	No CC	97%
				MCC (LCC to HCC)	98% (97% to 98%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	-240,682
				MCC (LCC to HCC)	-411,500 (-1,910,492 to -703,322)
			Proportion of recharge (%)	No CC	NA
				MCC (LCC to HCC)	-249% (-839% to -511%)
		2041-2065	Volume (ML/yr)	No CC	-321,806
				MCC (HCC to LCC)	-351,115 (-2,423,698 to -451,704)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-250% (-2220% to -207%)

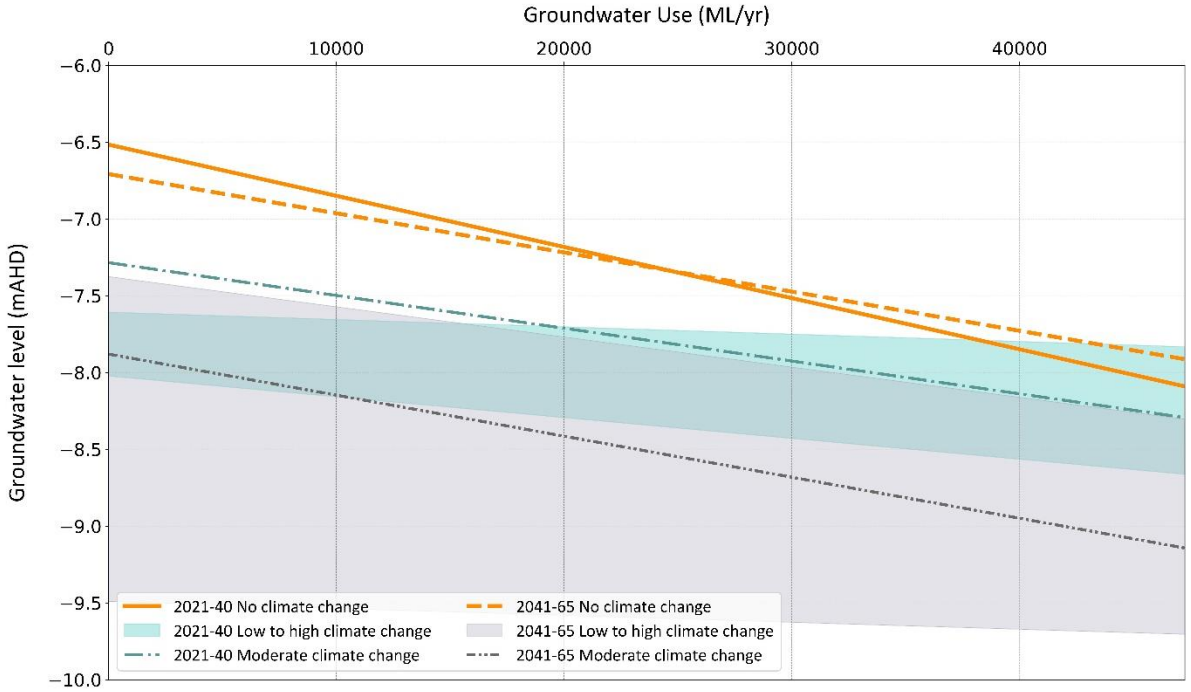

Figure A5-50. Plot for Glenelg WSPA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-61. Terrestrial GDE synthesis Table A5-for Glenelg WSPA

GMU					GLENELG WSPA
Terrestrial GDEs	Avg Use 6,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.20
				MCC (LCC to HCC)	0.00 (-0.27 to 0.26)
		2041-2065	Drawdown from baseline (m)	No CC	-0.05
				MCC (LCC to HCC)	-0.05 (-0.34 to 1.0)
	PCV use 23,625 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.15
				MCC (LCC to HCC)	0.54 (-0.10 to 1.0)
		2041-2065	Drawdown from baseline (m)	No CC	-0.05
				MCC (LCC to HCC)	1.6 (0.28 to 2.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	9,477
				MCC (HCC to LCC)	4,771 (3,049 to 24,457)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.88% (2.21% to 10.74%)
		2041-2065	Volume (ML/yr)	No CC	3,219
				MCC (HCC to LCC)	1,863 (1,259 to 5,152)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.32% (1.15% to 2.36%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	94,769
				MCC (HCC to LCC)	47,712 (30,489 to 244,570)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	28.85% (22.15% to 107.39%)
		2041-2065	Volume (ML/yr)	No CC	32,187
				MCC (HCC to LCC)	18,626 (12,585 to 51,519)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.25% (11.53% to 23.65%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	189,538
				MCC (HCC to LCC)	95,425 (60,978 to 489,139)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	57.70% (44.29% to 214.79%)
		2041-2065	Volume (ML/yr)	No CC	64,373
				MCC (HCC to LCC)	37,253 (25,170 to 103,038)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	26.49% (23.06% to 47.30%)

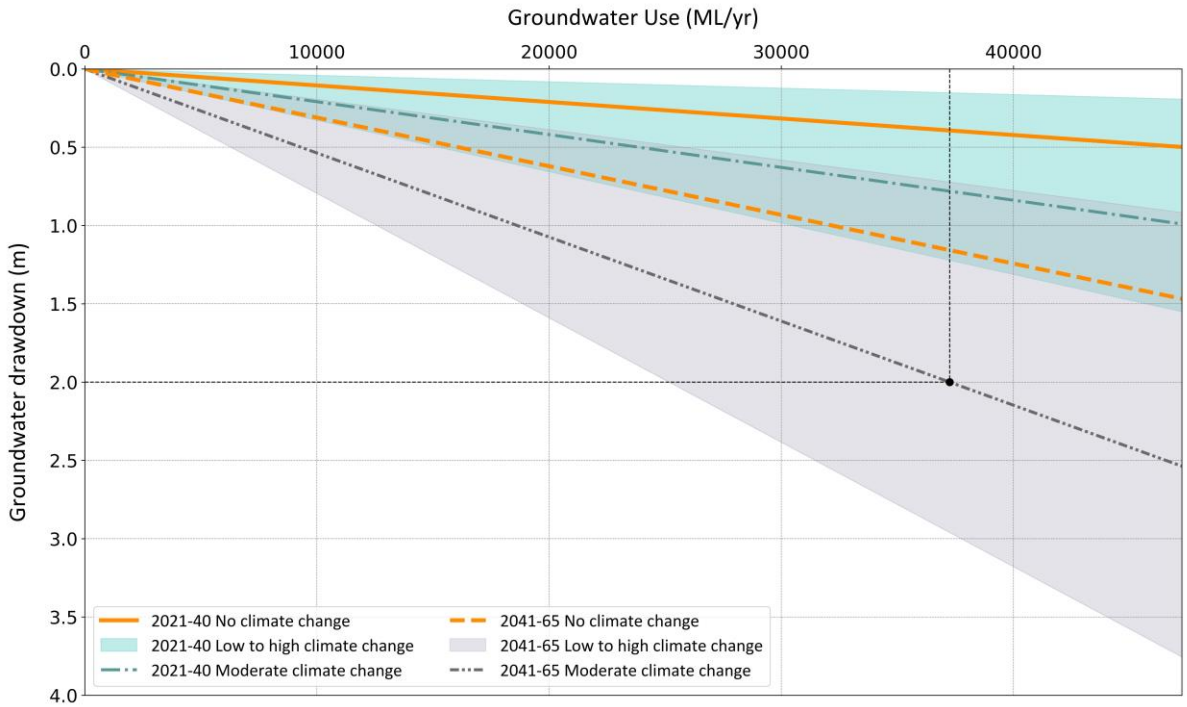

Figure A5-51. Plot for Glenelg WSPA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-62. Waterways GDE synthesis Table A5-for Glenelg WSPA

GMU					GLENELG WSPA
Waterway GDEs	Avg Use 6,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.45
				MCC (LCC to HCC)	-1.34 (-1.46 to -0.92)
		2041-2065	Drawdown from baseline (m)	No CC	-1.22
				MCC (LCC to HCC)	-1.22 (-1.53 to -0.09)
	PCV use 23,625 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.01
				MCC (LCC to HCC)	-0.80 (-1.13 to -0.48)
		2041-2065	Drawdown from baseline (m)	No CC	-1.22
				MCC (LCC to HCC)	0.59 (0.01 to 0.99)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-6093.58
				MCC (HCC to LCC)	-9545.37 (-42565.50 to -5142.13)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-5.77% (-30.92% to -2.26%)
		2041-2065	Volume (ML/yr)	No CC	2,948
				MCC (HCC to LCC)	2,571 (2,021 to 4,466)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.83% (1.85% to 2.05%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-60,936
				MCC (HCC to LCC)	-95,454 (-425,655 to -51,421)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-57.72% (-309.20% to -22.58%)
		2041-2065	Volume (ML/yr)	No CC	29,480
				MCC (HCC to LCC)	25,709 (20,212 to 44,663)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	18.28% (18.52% to 20.50%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-121871.56
				MCC (HCC to LCC)	-190,907 (-851,310 to -102,842)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-115% (-618% to -45%)
		2041-2065	Volume (ML/yr)	No CC	58,959
				MCC (HCC to LCC)	51,418 (40,425 to 89,327)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	36.57% (37.03% to 41.01%)

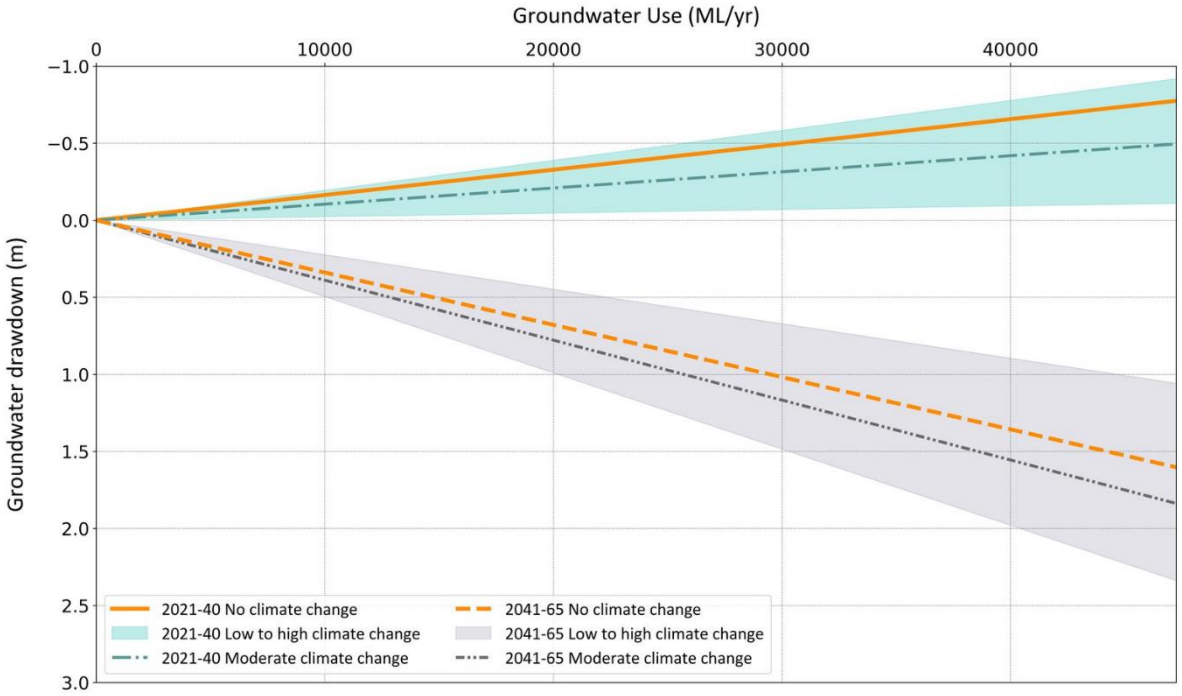

Figure A5-52. Plot for Glenelg WSPA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-63. Stream gauge results for Glenelg WSPA

GMU				**GLENELG WSPA**
Stream gauge/Catchment:				**238206 - Glenelg River @ Dartmoor (Unregulated)**
Base flow index (1975-2020)				**0.46**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	355,715 (258,140 to 442,997)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-55,992 (-153,567 to 31,290)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	282,431 (161,389 to 397,709)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-129,276 (-250,318 to -13,998)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	1.2% (1.6% to 0.950%)
		PCV use (ML/yr)	MCC (LCC to HCC)	5.5% (7.6% to 4.4%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	1.5% (2.6% to 1.1%)
		PCV use (ML/yr)	MCC (LCC to HCC)	7.0% (12% to 4.9%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	35.95 (26.09 to 44.77)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	28.54 (16.31 to 40.20)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	32.08% (44.20% to 25.76%)
		PCV use (ML/yr)	MCC (LCC to HCC)	150% (207% to 120%)

	2065	Current use (ML/yr)	MCC (LCC to HCC)	40.40% (70.70% to 28.69%)
		PCV use (ML/yr)	MCC (LCC to HCC)	189% (331% to 134%)
Stream gauge/Catchment:		**238233 - Moleside Creek @ Kentbruck (Unregulated)**		
Base flow index (1975-2020)		**0.69**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC - LCC)	7,762 (5,633 to 9,667)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-1,222 (-3,351 to 683)
	2065	Flow (ML/yr)	MCC (HCC - LCC)	6,163 (3,522 to 8,679)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-2,821 (-5,462 to -305)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	NA
		PCV use (ML/yr)	MCC (HCC - LCC)	NA
	2065	Current use (ML/yr)	MCC (HCC - LCC)	NA
		PCV use (ML/yr)	MCC (HCC - LCC)	NA
Q90 flow	2040	Flow (ML/yr)	MCC (HCC - LCC)	7.15 (5.19 to 8.90)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC - LCC)	5.68 (3.24 to 7.99)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	NA
		PCV use (ML/yr)	MCC (HCC - LCC)	NA
	2065	Current use (ML/yr)	MCC (HCC - LCC)	NA
		PCV use (ML/yr)	MCC (HCC - LCC)	NA

Table A5-64. Wetlands GDE synthesis Table A5-for Glenelg WSPA

GMU					GLENELG WSPA
Wetlands GDEs	Avg Use 6,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.04
				MCC (LCC to HCC)	0.27 (0.06 to 0.50)
		2041-2065	Drawdown from baseline (m)	No CC	0.07
				MCC (LCC to HCC)	0.07 (-0.09 to 1.2)
	PCV use 23,625 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.23
				MCC (LCC to HCC)	0.71 (0.06 to 1.2)
		2041-2065	Drawdown from baseline (m)	No CC	0.07
				MCC (LCC to HCC)	1.5 (0.15 to 2.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	9,435
				MCC (HCC to LCC)	4,293 (2,823 to 14,962)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.60% (2.05% to 6.57%)
		2041-2065	Volume (ML/yr)	No CC	5,863
				MCC (HCC to LCC)	2,182 (1,355 to 9,128)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.55% (1.24% to 4.19%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	94,346
				MCC (HCC to LCC)	42,932 (28,234 to 149,615)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	25.96% (20.51% to 65.70%)
		2041-2065	Volume (ML/yr)	No CC	58,625
				MCC (HCC to LCC)	21,821 (13,547 to 91,278)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	15.52% (12.41% to 41.90%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	188,691
				MCC (HCC to LCC)	85,864 (56,469 to 299,231)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	51.92% (41.02% to 131.40%)
		2041-2065	Volume (ML/yr)	No CC	117,250
				MCC (HCC to LCC)	43,643 (27,094 to 182,556)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	31.04% (24.82% to 83.80%)

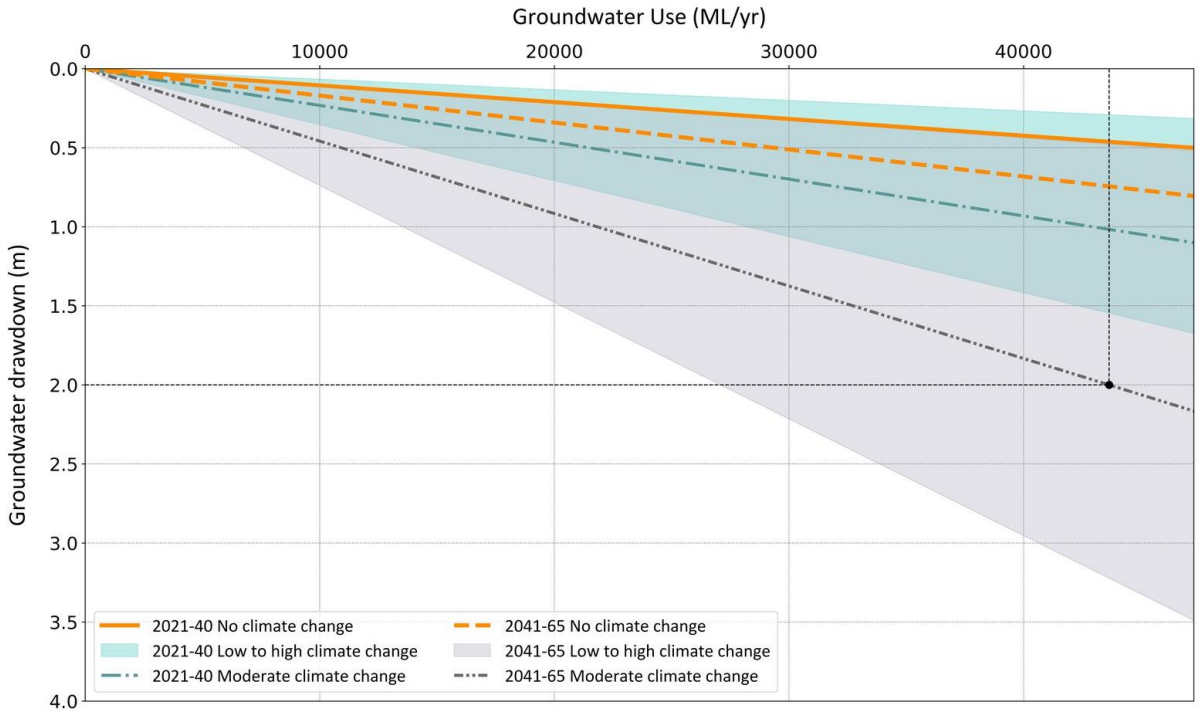

Figure A5-53. Plot for Glenelg WSPA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

GLENORMISTON GMA

Table A5-65. Consumptive users synthesis Table A5-for Glenormiston GMA

Assessment area	**GMU**					**GLENORMISTON GMA**
	Representative Bore					no bore
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations from surface to 60 metres below surface
Catchment	Permissible Consumptive Volume (ML/yr)					2,698
	Licensed Entitlement (ML/yr)					2,636
	Licensed avg use (ML/yr)					1,273
Consumptive use metric	Consumptive users (bores)	Avg Use 1,253 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.56
					MCC (LCC to HCC)	1.8 (0.10 to 2.7)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	1.4 (0.81 to 4.5)
		PCV use 2,399 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.48
					MCC (LCC to HCC)	2.0 (-0.51 to 3.6)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	3.6 (0.14 to 5.9)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	12,827
					MCC (HCC to LCC)	2,076 (-5650.13 to 1,106)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	11.26% (-28.46% to 7.21%)
			2041-2065	Volume (ML/yr)	No CC	3,979
					MCC (HCC to LCC)	1,342 (-11355.66 to 704)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	9.77% (-70.48% to 6.70%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	25,653
					MCC (HCC to LCC)	4,152 (-11300.25 to 2,213)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	22.53% (-56.92% to 14.43%)
			2041-2065	Volume (ML/yr)	No CC	7,957
					MCC (HCC to LCC)	2,684 (-22711.31 to 1,407)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	19.54% (-140.96% to 13.39%)

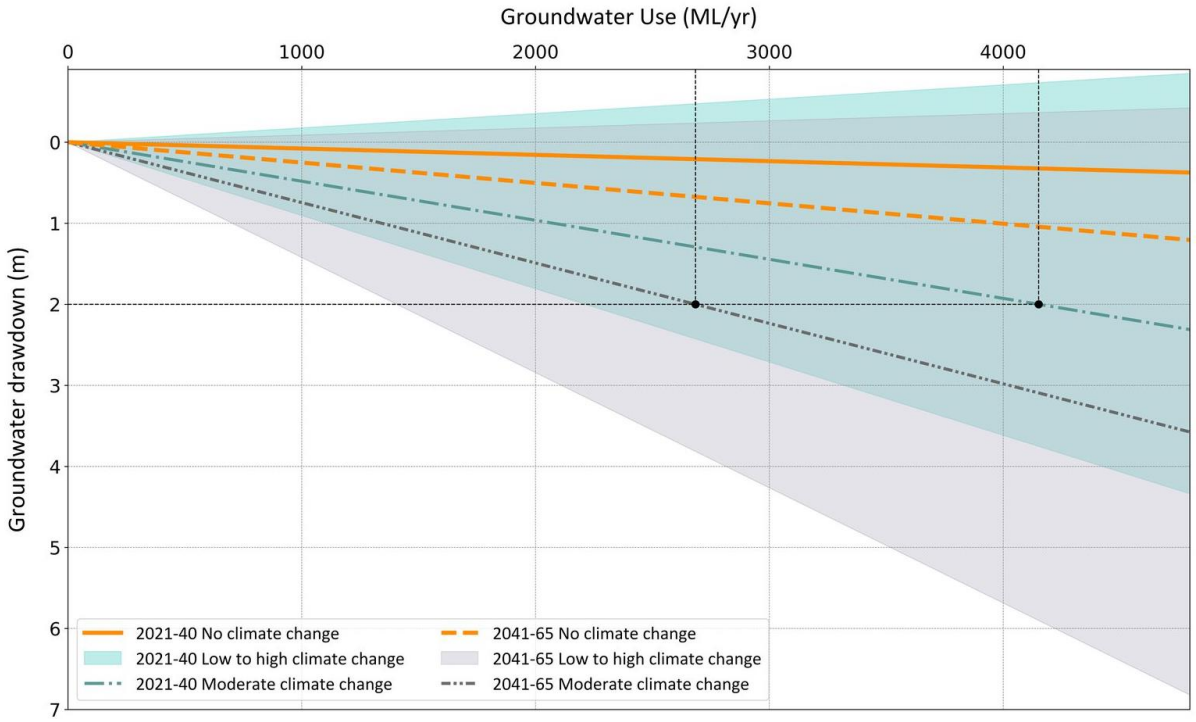

Figure A5-54. Plot for Glenormiston GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-66. Statewide drawdown use synthesis Table A5-for Glenormiston GMA

GMU					GLENORMISTON GMA
Consumptive users (bores)	Avg Use 1,253 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.63
				MCC (LCC to HCC)	1.9 (0.17 to 2.7)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	1.5 (0.88 to 4.5)
	PCV use 2,399 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.54
				MCC (LCC to HCC)	2.0 (-0.44 to 3.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	3.6 (0.20 to 5.8)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	10,528
				MCC (HCC to LCC)	1,982 (-6469.92 to 1,104)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.75% (-32.59% to 7.20%)
		2041-2065	Volume (ML/yr)	No CC	4,640
				MCC (HCC to LCC)	1,326 (-14274.54 to 711)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.66% (-88.60% to 6.76%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	21,056
				MCC (HCC to LCC)	3,964 (-12939.84 to 2,208)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	21.51% (-65.18% to 14.39%)
		2041-2065	Volume (ML/yr)	No CC	9,279
				MCC (HCC to LCC)	2,653 (-28549.09 to 1,422)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	19.32% (-177.20% to 13.53%)

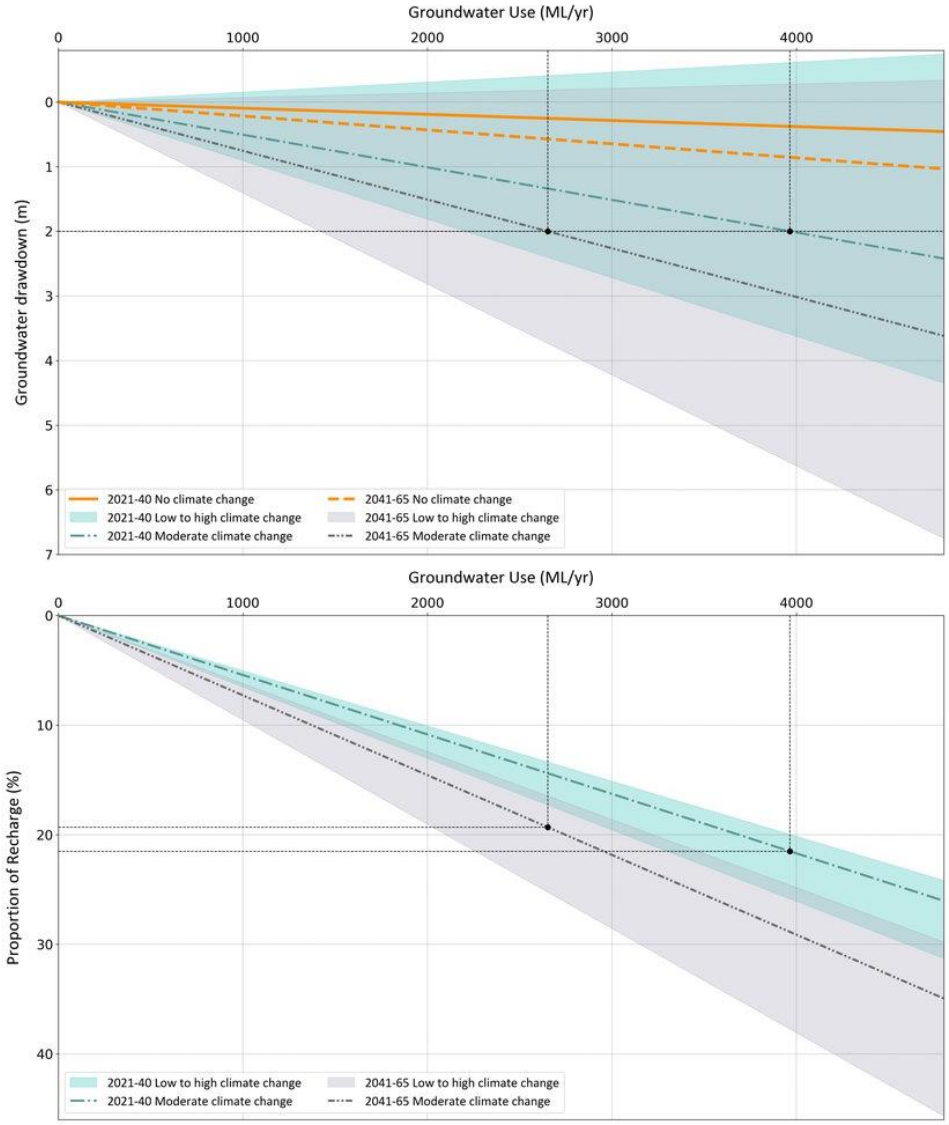

Figure A5-55. Upper Plot: Glenormiston GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Glenormiston GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-67. Terrestrial GDE synthesis Table A5-for Glenormiston GMA

GMU					GLENORMISTON GMA
Terrestrial GDEs	Avg Use 1,253 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.61
				MCC (LCC to HCC)	2.2 (0.12 to 2.7)
		2041-2065	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	1.4 (0.86 to 4.5)
	PCV use 2,399 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.49
				MCC (LCC to HCC)	2.2 (-0.44 to 3.4)
		2041-2065	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	3.7 (0.19 to 5.5)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,176
				MCC (HCC to LCC)	181 (-643.65 to 114)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.98% (-3.24% to 0.75%)
		2041-2065	Volume (ML/yr)	No CC	726
				MCC (HCC to LCC)	130 (-1382.18 to 75)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.95% (-8.58% to 0.71%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	11,762
				MCC (HCC to LCC)	1,807 (-6436.51 to 1,145)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.81% (-32.42% to 7.46%)
		2041-2065	Volume (ML/yr)	No CC	7,262
				MCC (HCC to LCC)	1,299 (-13821.80 to 750)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.46% (-85.79% to 7.14%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	23,524
				MCC (HCC to LCC)	3,614 (-12873.03 to 2,290)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	19.61% (-64.84% to 14.93%)
		2041-2065	Volume (ML/yr)	No CC	14,525
				MCC (HCC to LCC)	2,599 (-27643.61 to 1,500)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	18.92% (-171.58% to 14.27%)

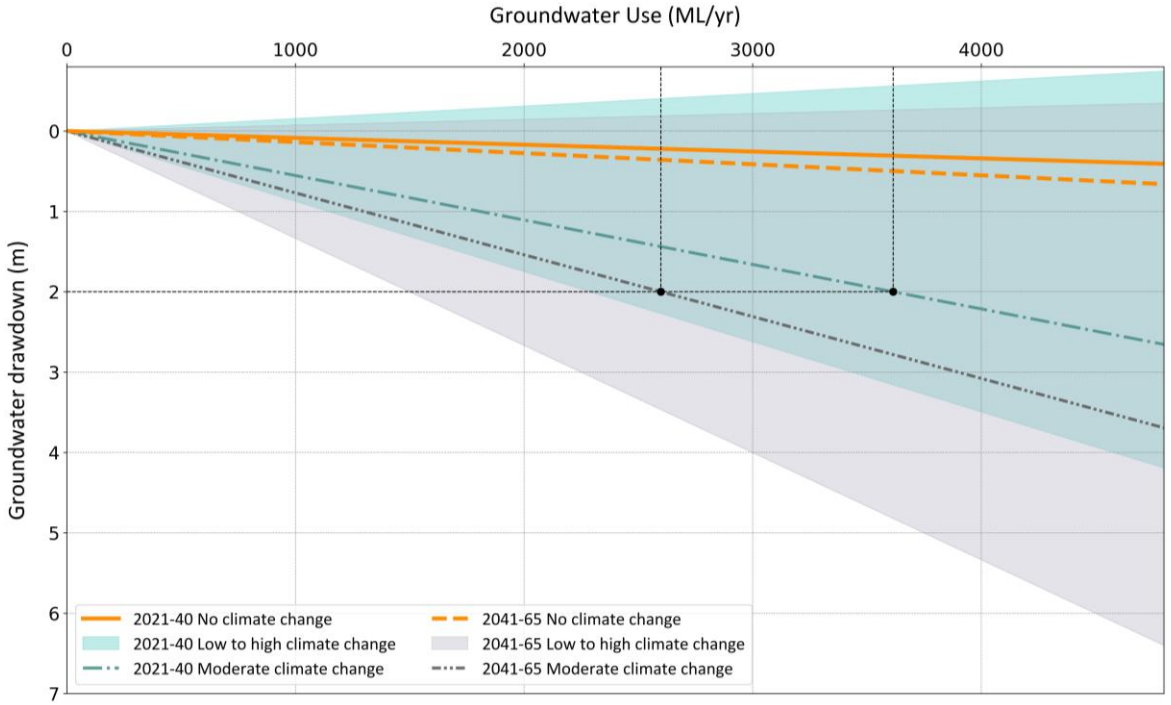

Figure A5-56. Plot for Glenormiston GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

GYMBOWEN ZONE (WEST WIMMERA)

Table A5-68. Consumptive users synthesis Table A5-for Gymbowen Zone (West Wimmera)

Assessment area	**GMU**					**GYMBOWEN ZONE (WEST WIMMERA)**
	Representative Bore					Empty
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					Aquifer dependent
Catchment	Permissible Consumptive Volume (ML/yr)					2,050
	Licensed Entitlement (ML/yr)					749
	Licensed avg use (ML/yr)					267
Consumptive use metric	Consumptive users (bores)	Avg Use 37 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.93
					MCC (LCC to HCC)	1.00 (0.70 to 1.1)
			2041-2065	Drawdown from baseline (m)	No CC	1.0
					MCC (LCC to HCC)	1.0 (0.71 to 1.6)
		PCV use 63 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
					MCC (LCC to HCC)	1.4 (0.77 to 1.9)
			2041-2065	Drawdown from baseline (m)	No CC	1.0
					MCC (LCC to HCC)	2.0 (0.60 to 3.2)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	81
					MCC (HCC to LCC)	66 (50 to 109)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.08% (0.09% to 0.11%)
			2041-2065	Volume (ML/yr)	No CC	86
					MCC (HCC to LCC)	47 (30 to 127)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.09% (0.10% to 0.16%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	161
					MCC (HCC to LCC)	132 (100 to 219)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.16% (0.18% to 0.21%)
			2041-2065	Volume (ML/yr)	No CC	172
					MCC (HCC to LCC)	94 (61 to 255)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.18% (0.21% to 0.32%)

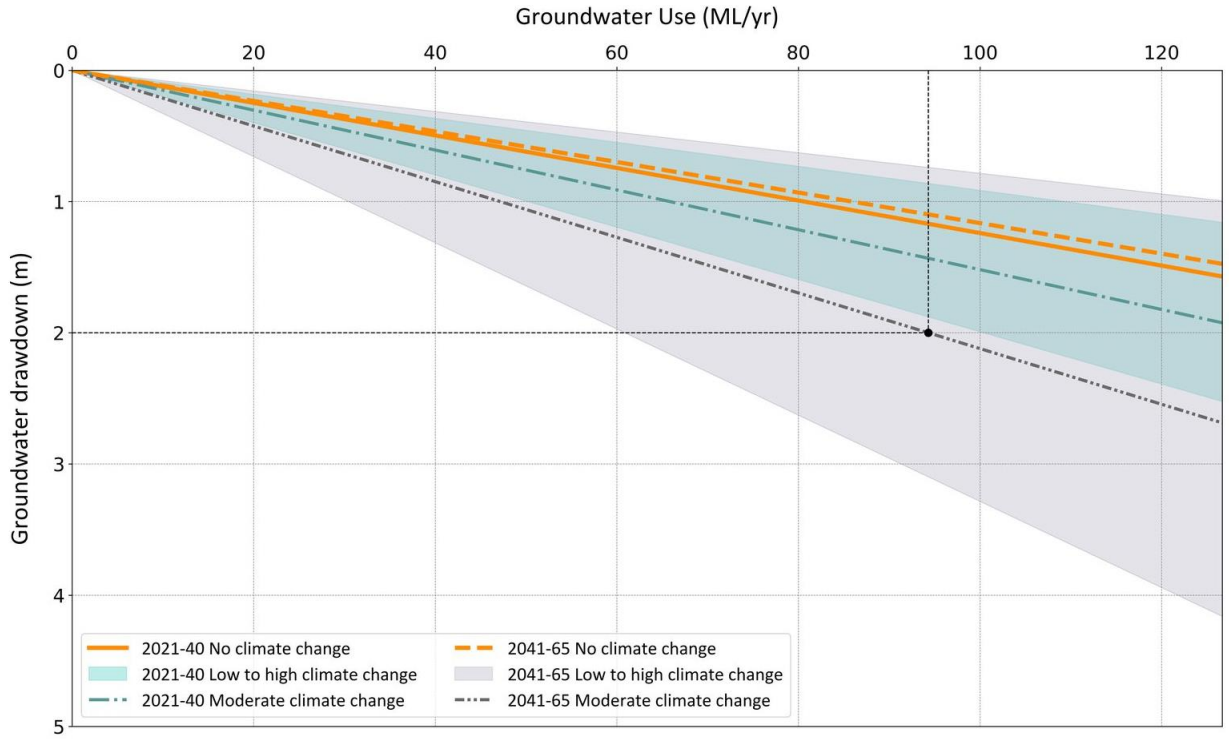

Figure A5-57. Plot for Gymbowen Zone (West Wimmera) Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-69. Statewide drawdown use synthesis Table A5-for Gymbowen Zone (West Wimmera)

GMU					GYMBOWEN ZONE (WEST WIMMERA)
Consumptive users (bores)	Avg Use 37 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.80
				MCC (LCC to HCC)	0.95 (0.56 to 1.1)
		2041-2065	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	1.0 (0.64 to 1.7)
	PCV use 63 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.96
				MCC (LCC to HCC)	1.3 (0.66 to 1.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	2.0 (0.60 to 3.1)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	92
				MCC (HCC to LCC)	71 (53 to 128)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.08% (0.09% to 0.12%)

		2041-2065	Volume (ML/yr)	No CC	70
				MCC (HCC to LCC)	48 (31 to 129)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.09% (0.11% to 0.16%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	183
				MCC (HCC to LCC)	141 (107 to 256)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.17% (0.19% to 0.25%)
		2041-2065	Volume (ML/yr)	No CC	140
				MCC (HCC to LCC)	95 (62 to 259)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.18% (0.21% to 0.32%)

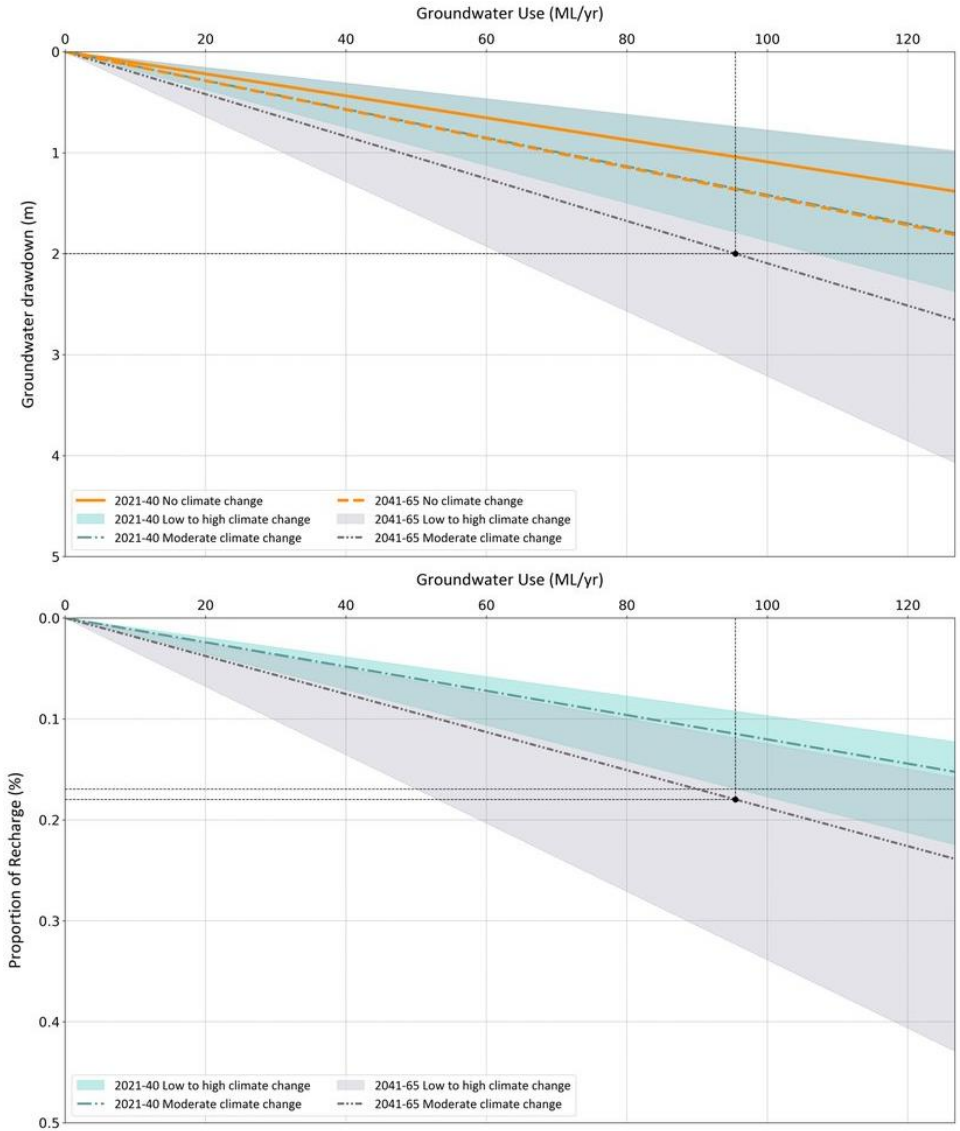

Figure A5-58. Upper Plot: Gymbowen Zone (West Wimmera) statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Gymbowen Zone (West Wimmera) statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-70. Terrestrial GDE synthesis Table A5-for Gymbowen Zone (West Wimmera)

GMU					GYMBOWEN ZONE (WEST WIMMERA)
Terrestrial GDEs	Avg Use 37 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.50
				MCC (LCC to HCC)	0.68 (0.25 to 0.82)
		2041-2065	Drawdown from baseline (m)	No CC	0.74
				MCC (LCC to HCC)	0.74 (0.36 to 1.5)
	PCV use 63 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.59
				MCC (LCC to HCC)	0.93 (0.31 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.74
				MCC (LCC to HCC)	1.7 (0.34 to 2.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	14
				MCC (HCC to LCC)	9.5 (6.9 to 23)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.02%)
		2041-2065	Volume (ML/yr)	No CC	6.0
				MCC (HCC to LCC)	5.7 (3.6 to 19)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.02%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	140
				MCC (HCC to LCC)	95 (69 to 234)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.11% (0.12% to 0.23%)
		2041-2065	Volume (ML/yr)	No CC	60
				MCC (HCC to LCC)	57 (36 to 194)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.11% (0.12% to 0.24%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	281
				MCC (HCC to LCC)	190 (138 to 468)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.23% (0.24% to 0.45%)
		2041-2065	Volume (ML/yr)	No CC	119
				MCC (HCC to LCC)	114 (73 to 388)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.21% (0.25% to 0.48%)

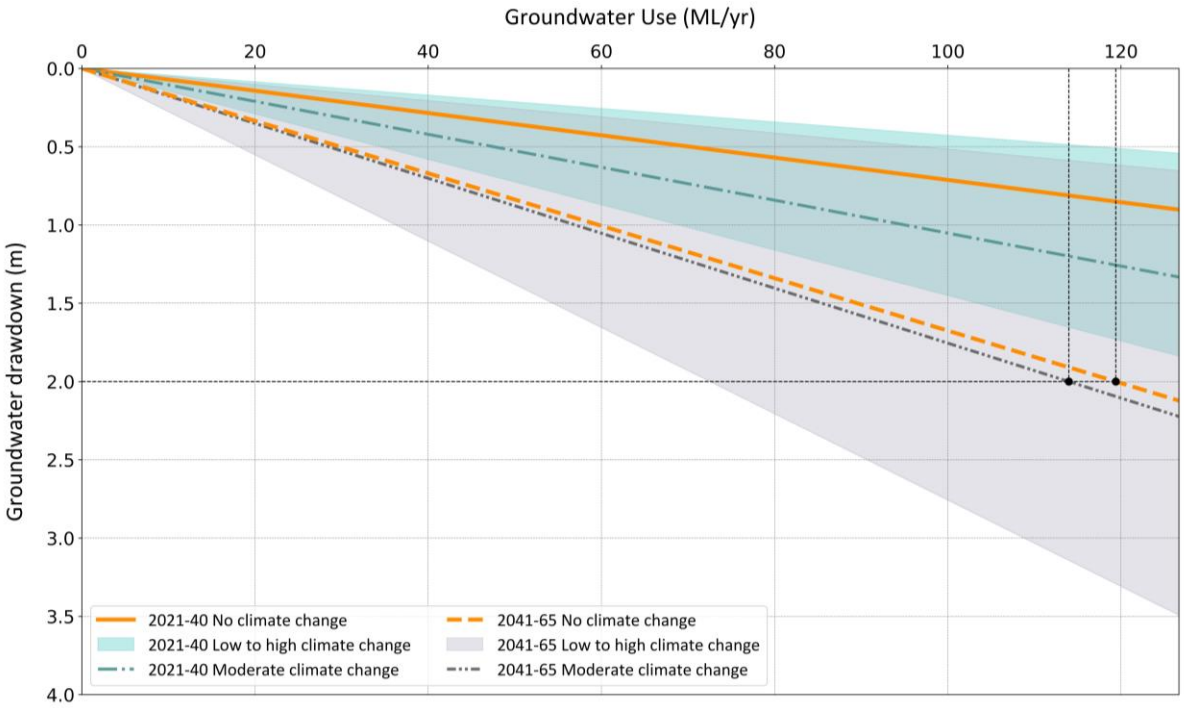

Figure A5-59. Plot for Gymbowen Zone (West Wimmera) Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-71. Wetlands GDE synthesis Table A5-for Gymbowen Zone (West Wimmera)

GMU					GYMBOWEN ZONE (WEST WIMMERA)
Wetlands GDEs	Avg Use 37 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.61
				MCC (LCC to HCC)	0.85 (0.38 to 0.99)
		2041-2065	Drawdown from baseline (m)	No CC	0.90
				MCC (LCC to HCC)	0.90 (0.51 to 1.7)
	PCV use 63 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.66
				MCC (LCC to HCC)	1.0 (0.43 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.90
				MCC (LCC to HCC)	1.7 (0.52 to 2.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	13
				MCC (HCC to LCC)	8.8 (6.7 to 18)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.02%)
		2041-2065	Volume (ML/yr)	No CC	6.3
				MCC (HCC to LCC)	5.5 (3.7 to 15)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.01% (0.01% to 0.02%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	127
				MCC (HCC to LCC)	88 (67 to 183)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.11% (0.12% to 0.18%)
		2041-2065	Volume (ML/yr)	No CC	63
				MCC (HCC to LCC)	55 (37 to 146)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.10% (0.12% to 0.18%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	255
				MCC (HCC to LCC)	175 (134 to 367)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.21% (0.24% to 0.35%)
		2041-2065	Volume (ML/yr)	No CC	126
				MCC (HCC to LCC)	110 (74 to 292)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.21% (0.25% to 0.36%)

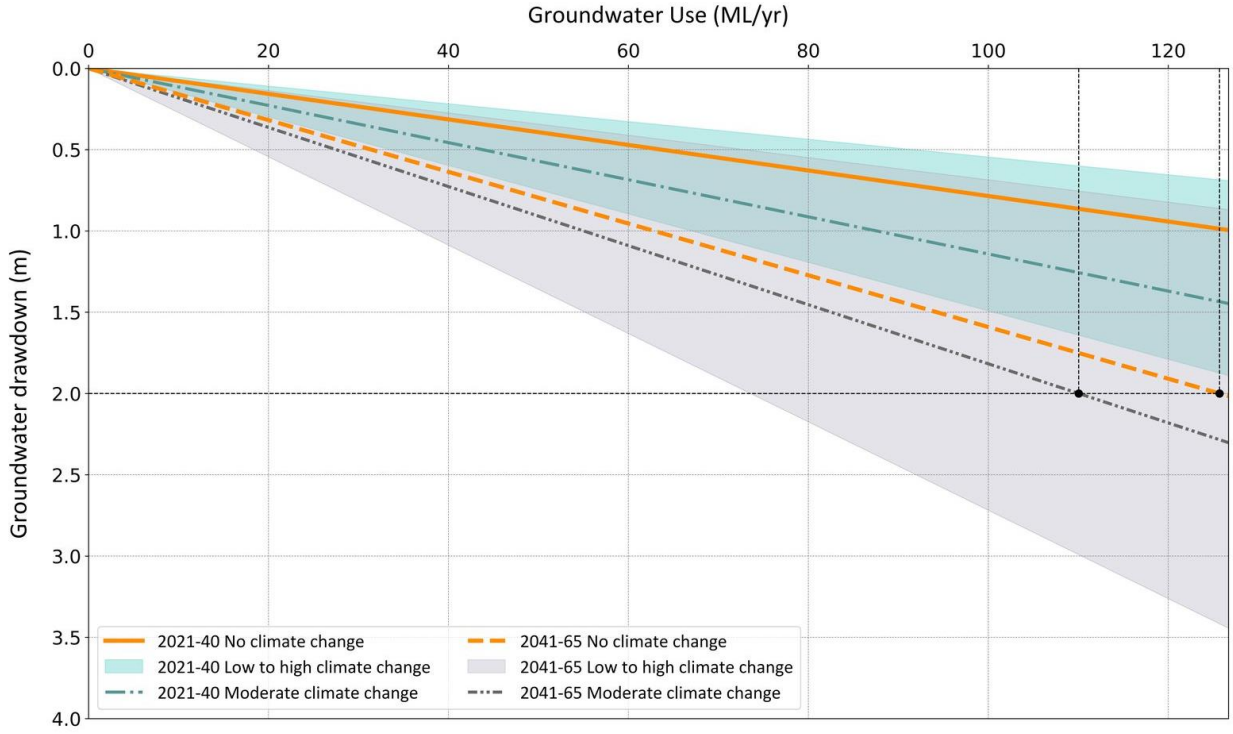

Figure A5-60. Plot for Gymbowen Zone (West Wimmera) Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

HAWKESDALE GMA

Table A5-72. Consumptive users synthesis Table A5-for Hawkesdale GMA

Assessment area	**GMU**					**HAWKESDALE GMA**
	Representative Bore					WRK988726
	Aquifer					Deep Basin
	Water system depth boundary (m below natural surface)					The surface substratum of land and the geological formations applicable to the zones and depths marked on the Plan.
Catchment	Permissible Consumptive Volume (ML/yr)					16,161
	Licensed Entitlement (ML/yr)					12,451
	Licensed avg use (ML/yr)					7,882
Consumptive use metric	**Consumptive users (bores)**	Avg Use 4,790 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.34
					MCC (LCC to HCC)	0.67 (0.06 to 0.96)
			2041-2065	Drawdown from baseline (m)	No CC	0.50
					MCC (LCC to HCC)	0.50 (0.31 to 1.5)
		PCV use 11,192 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.74
					MCC (LCC to HCC)	1.2 (0.30 to 2.0)
			2041-2065	Drawdown from baseline (m)	No CC	0.50
					MCC (LCC to HCC)	2.0 (0.72 to 3.0)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	20,722
					MCC (HCC to LCC)	13,462 (8,568 to 42,501)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	4.30% (3.22% to 11.90%)
			2041-2065	Volume (ML/yr)	No CC	12,003
					MCC (HCC to LCC)	8,635 (5,626 to 19,876)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.23% (2.87% to 6.15%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	41,444
					MCC (HCC to LCC)	26,924 (17,135 to 85,003)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	8.59% (6.44% to 23.80%)
			2041-2065	Volume (ML/yr)	No CC	24,007
					MCC (HCC to LCC)	17,269 (11,252 to 39,751)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	6.45% (5.74% to 12.29%)

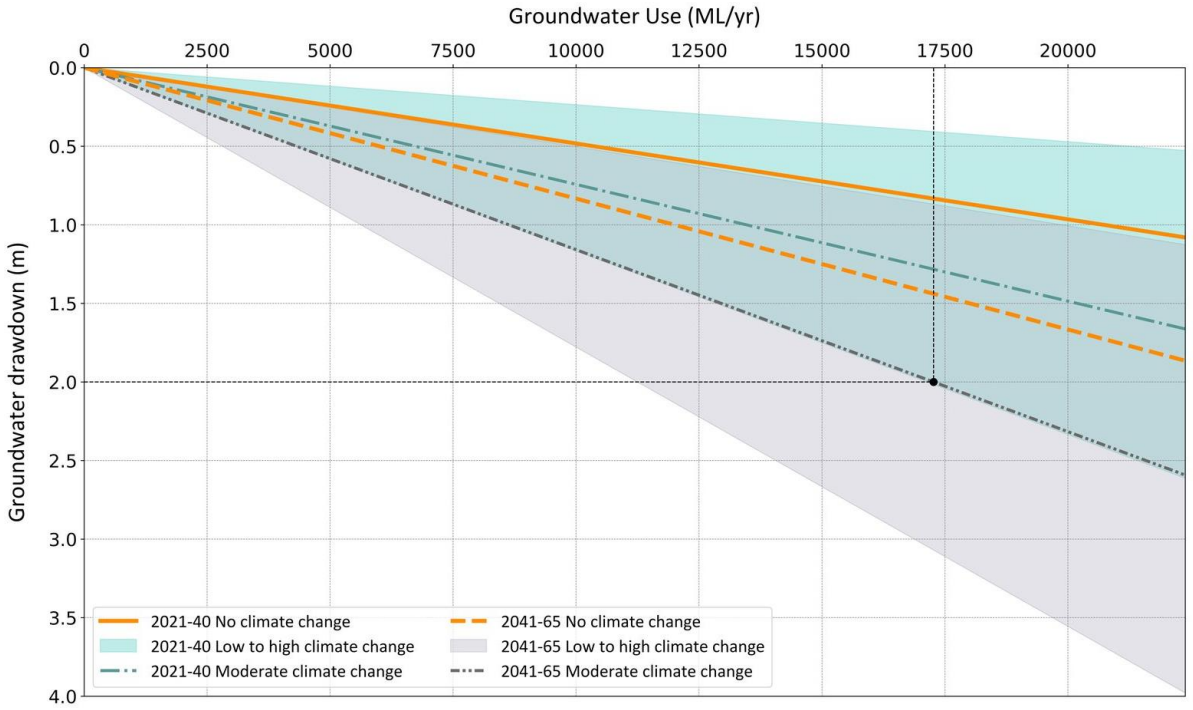

Figure A5-61. Plot for Hawkesdale GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-73. Statewide drawdown use synthesis Table A5-for Hawkesdale GMA

GMU					HAWKESDALE GMA
Consumptive users (bores)	Avg Use 4,790 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.38
				MCC (LCC to HCC)	0.89 (0.00 to 1.1)
		2041-2065	Drawdown from baseline (m)	No CC	0.63
				MCC (LCC to HCC)	0.63 (0.35 to 1.8)
	PCV use 11,192 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.81
				MCC (LCC to HCC)	1.5 (0.30 to 2.2)
		2041-2065	Drawdown from baseline (m)	No CC	0.63
				MCC (LCC to HCC)	2.3 (0.80 to 3.3)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	19,094
				MCC (HCC to LCC)	11,179 (7,793 to 42,826)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.57% (2.93% to 11.99%)
		2041-2065	Volume (ML/yr)	No CC	10,206
				MCC (HCC to LCC)	7,303 (5,068 to 18,146)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.73% (2.59% to 5.61%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	38,189
				MCC (HCC to LCC)	22,357 (15,586 to 85,652)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.14% (5.86% to 23.98%)
		2041-2065	Volume (ML/yr)	No CC	20,413
				MCC (HCC to LCC)	14,605 (10,136 to 36,292)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.46% (5.17% to 11.22%)

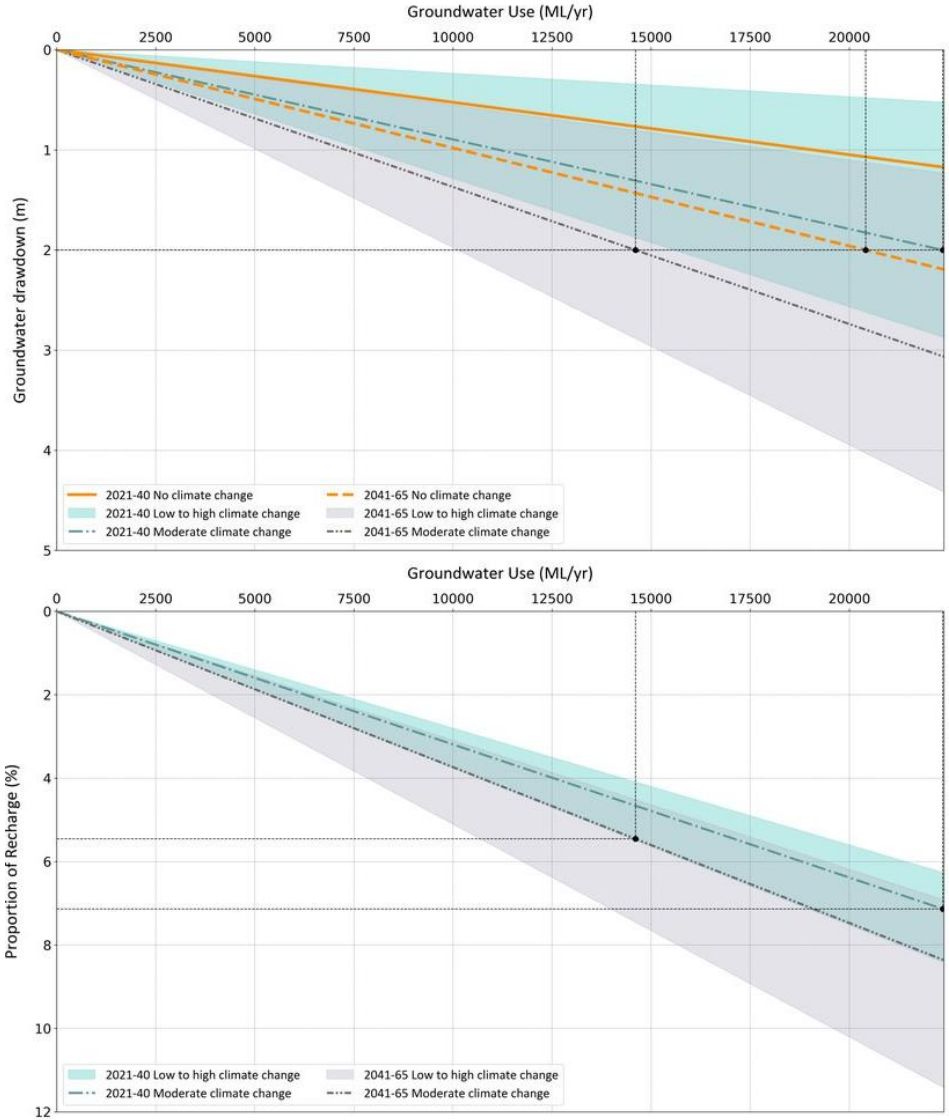

Figure A5-62. Upper Plot: Hawkesdale GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Hawkesdale GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-74. Seawater intrusion synthesis Table A5-for Hawkesdale GMA

GMU			HAWKESDALE GMA		
Seawater intrusion	Avg Use 4,790 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.46
				MCC (LCC to HCC)	0.04 (-0.05 to 0.38)
			Area elev. <1.5 mAHD (%)	No CC	32%
				MCC (LCC to HCC)	28% (28% to 30%)
		2041-2065	Drawdown from baseline (m)	No CC	0.40
				MCC (LCC to HCC)	0.54 (0.43 to 0.96)
			Area elev. <1.5 mAHD (%)	No CC	28%
				MCC (LCC to HCC)	31% (30% to 34%)
	PCV use 11,192 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.76
				MCC (LCC to HCC)	0.84 (0.48 to 1.3)
			Area elev. <1.5 mAHD (%)	No CC	34%
				MCC (LCC to HCC)	34% (30% to 37%)
		2041-2065	Drawdown from baseline (m)	No CC	0.72
				MCC (LCC to HCC)	1.1 (0.57 to 1.9)
			Area elev. <1.5 mAHD (%)	No CC	34%
				MCC (LCC to HCC)	36% (31% to 41%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	48,397
				MCC (HCC to LCC)	55,938 (47,371 to 70,553)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	18% (18% to 20%)
		2041-2065	Volume (ML/yr)	No CC	39,142
				MCC (HCC to LCC)	65,327 (43,216 to 76,968)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	24% (22% to 24%)

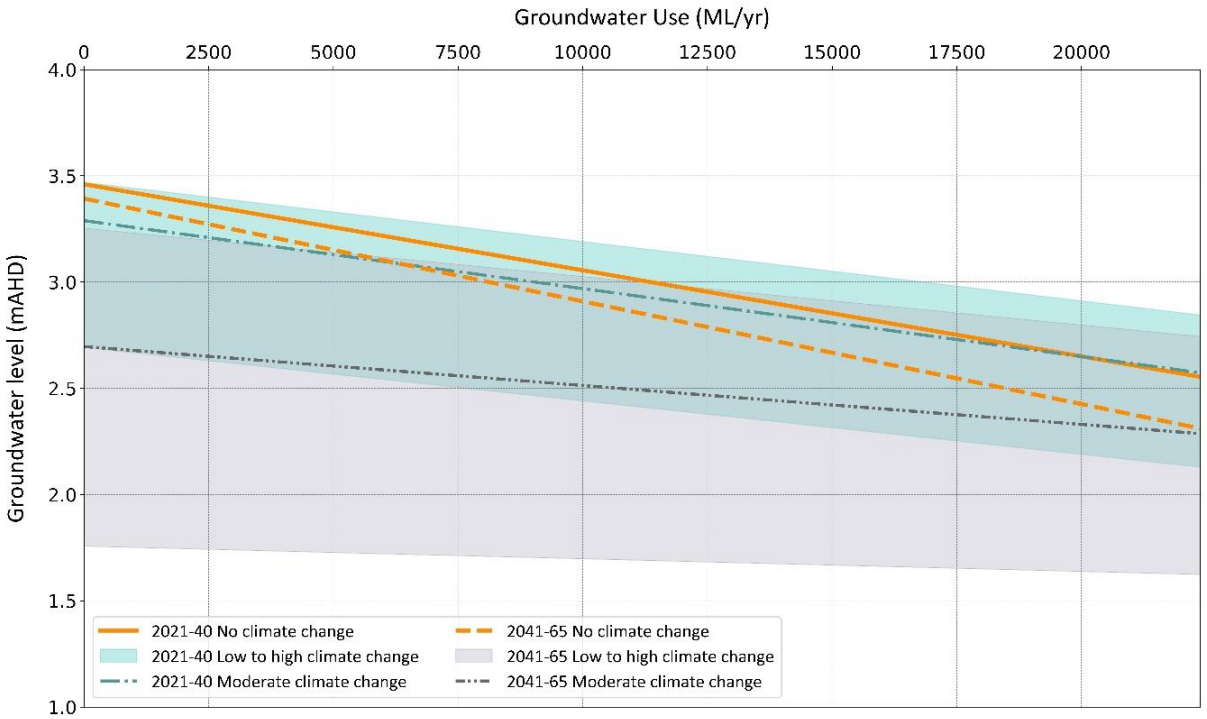

Figure A5-63. Plot for Hawkesdale GMA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-75. Terrestrial GDE synthesis Table A5-for Hawkesdale GMA

GMU					HAWKESDALE GMA
Terrestrial GDEs	Avg Use 4,790 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.05
				MCC (LCC to HCC)	0.50 (-0.32 to 0.73)
		2041-2065	Drawdown from baseline (m)	No CC	0.28
				MCC (LCC to HCC)	0.28 (0.01 to 1.3)
	PCV use 11,192 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.51
				MCC (LCC to HCC)	1.1 (0.05 to 1.7)
		2041-2065	Drawdown from baseline (m)	No CC	0.28
				MCC (LCC to HCC)	2.0 (0.67 to 2.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,667
				MCC (HCC to LCC)	1,420 (963 to 9,075)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.45% (0.36% to 2.54%)
		2041-2065	Volume (ML/yr)	No CC	997
				MCC (HCC to LCC)	814 (582 to 1,912)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.30% (0.30% to 0.59%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	26,672
				MCC (HCC to LCC)	14,200 (9,626 to 90,755)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.53% (3.62% to 25.41%)
		2041-2065	Volume (ML/yr)	No CC	9,965
				MCC (HCC to LCC)	8,138 (5,816 to 19,120)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.04% (2.97% to 5.91%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	53,343
				MCC (HCC to LCC)	28,399 (19,253 to 181,509)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.06% (7.24% to 50.82%)
		2041-2065	Volume (ML/yr)	No CC	19,931
				MCC (HCC to LCC)	16,277 (11,631 to 38,240)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.08% (5.93% to 11.83%)

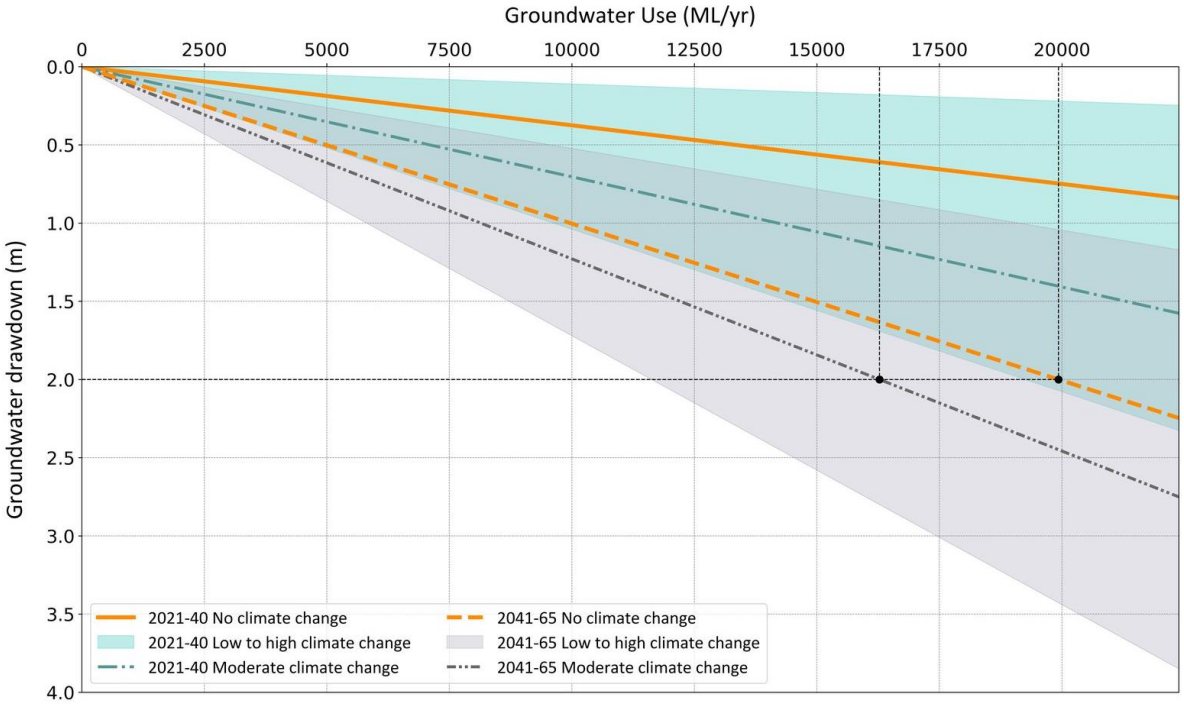

Figure A5-64. Plot for Hawkesdale GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-76. Waterways GDE synthesis Table A5-for Hawkesdale GMA

GMU					HAWKESDALE GMA
Waterway GDEs	Avg Use 4,790 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.00
				MCC (LCC to HCC)	0.40 (-0.35 to 0.65)
		2041-2065	Drawdown from baseline (m)	No CC	0.22
				MCC (LCC to HCC)	0.22 (-0.04 to 1.2)
	PCV use 11,192 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.47
				MCC (LCC to HCC)	0.98 (0.03 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	0.22
				MCC (LCC to HCC)	1.9 (0.75 to 2.7)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,722
				MCC (HCC to LCC)	1,510 (998 to 8,845)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.48% (0.38% to 2.48%)
		2041-2065	Volume (ML/yr)	No CC	1,062
				MCC (HCC to LCC)	804 (584 to 1,661)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.30% (0.30% to 0.51%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	27,223
				MCC (HCC to LCC)	15,099 (9,985 to 88,449)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.82% (3.76% to 24.76%)
		2041-2065	Volume (ML/yr)	No CC	10,622
				MCC (HCC to LCC)	8,043 (5,841 to 16,613)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.00% (2.98% to 5.14%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	54,447
				MCC (HCC to LCC)	30,198 (19,970 to 176,898)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.64% (7.51% to 49.52%)
		2041-2065	Volume (ML/yr)	No CC	21,244
				MCC (HCC to LCC)	16,087 (11,683 to 33,226)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.01% (5.96% to 10.28%)

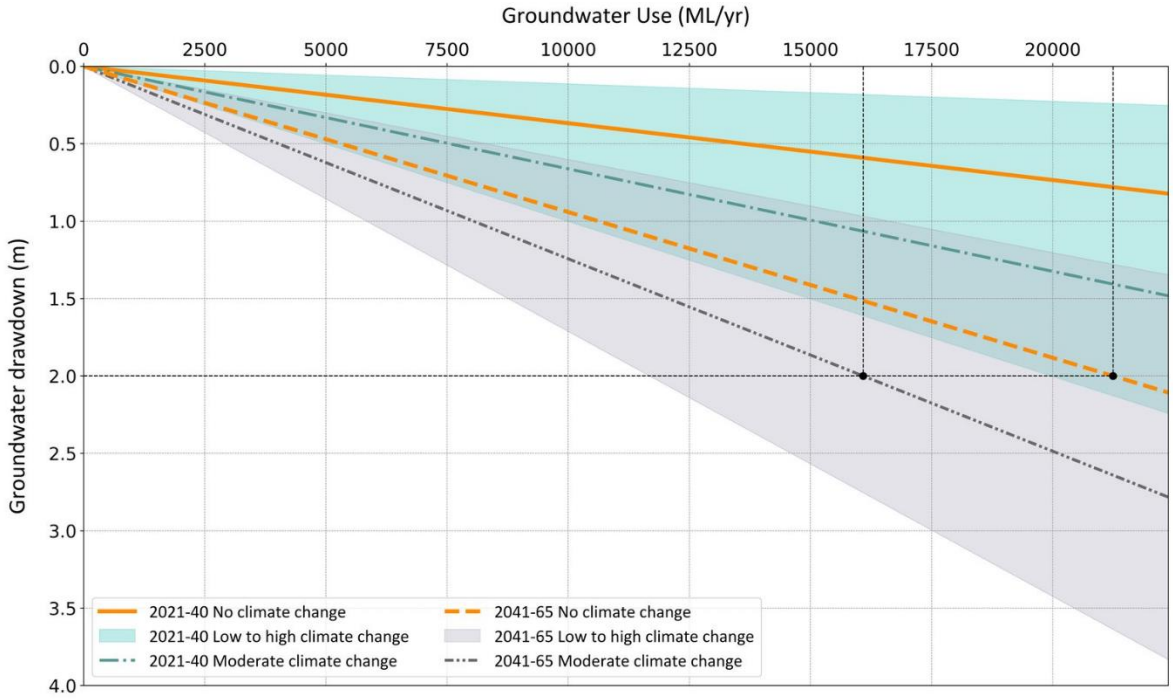

Figure A5-65. Plot for Hawkesdale GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-77. Stream gauge results for Hawkesdale GMA

GMU				HAWKESDALE GMA
Stream gauge/Catchment:				**237200 - Moyne River @ Toolong (Unregulated)**
Base flow index (1975-2020)				**0.33**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	34,953 (25,078 to 45,258)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-4,232 (-14,107 to 6,074)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	27,273 (17,712 to 38,127)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-11,912 (-21,473 to -1,058)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	3.6% (5.0% to 2.8%)
		PCV use (ML/yr)	MCC (LCC to HCC)	11% (15% to 8.2%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	4.6% (7.1% to 3.3%)
		PCV use (ML/yr)	MCC (LCC to HCC)	14% (21% to 9.7%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	3.26 (2.34 to 4.23)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	2.55 (1.65 to 3.56)

		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	105% (146% to 81.02%)
		PCV use (ML/yr)	MCC (LCC to HCC)	312% (435% to 241%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	134% (207% to 96.17%)
		PCV use (ML/yr)	MCC (LCC to HCC)	400% (615% to 286%)
Stream gauge/Catchment:		**237206 - Eumeralla River @ Codrington (Unregulated)**		
Base flow index (1975-2020)		**0.49**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	24,435 (17,532 to 31,639)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-2,959 (-9,862 to 4,246)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	19,066 (12,382 to 26,654)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-8,328 (-15,012 to -740)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	1.0% (1.4% to 0.77%)
		PCV use (ML/yr)	MCC (LCC to HCC)	1.5% (2.1% to 1.2%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	1.3% (2.0% to 0.92%)
		PCV use (ML/yr)	MCC (LCC to HCC)	1.9% (3.0% to 1.4%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	5.66 (4.06 to 7.33)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	4.42 (2.87 to 6.18)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	12% (16% to 9.1%)
		PCV use (ML/yr)	MCC (LCC to HCC)	17.70% (24.66% to 13.67%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	15% (23% to 11%)
		PCV use (ML/yr)	MCC (LCC to HCC)	23% (35% to 16%)

HEYWOOD GMA

Table A5-78. Consumptive users synthesis Table A5-for Heywood GMA

Assessment area	**GMU**					**HEYWOOD GMA**
	Representative Bore					WRK990031
	Aquifer					Semi-Confined
	Water system depth boundary (m below natural surface)					All formations from surface to 70 metres below surface
Catchment	Permissible Consumptive Volume (ML/yr)					8,500
	Licensed Entitlement (ML/yr)					7,011
	Licensed avg use (ML/yr)					3,550
Consumptive use metric	Consumptive users (bores)	Avg Use 2,320 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.07
					MCC (LCC to HCC)	0.15 (0.02 to 0.31)
			2041-2065	Drawdown from baseline (m)	No CC	0.06
					MCC (LCC to HCC)	0.06 (0.02 to 0.55)
		PCV use 7,137 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.64
					MCC (LCC to HCC)	0.81 (0.46 to 1.2)
			2041-2065	Drawdown from baseline (m)	No CC	0.06
					MCC (LCC to HCC)	1.2 (0.58 to 1.8)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	14,502
					MCC (HCC to LCC)	11,879 (8,362 to 18,413)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	10.03% (9.41% to 12.94%)
			2041-2065	Volume (ML/yr)	No CC	13,257
					MCC (HCC to LCC)	7,934 (5,540 to 13,440)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	8.64% (9.94% to 11.51%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	29,003
					MCC (HCC to LCC)	23,757 (16,724 to 36,827)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	20.06% (18.82% to 25.87%)
			2041-2065	Volume (ML/yr)	No CC	26,515
					MCC (HCC to LCC)	15,868 (11,079 to 26,879)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	17.29% (19.88% to 23.02%)

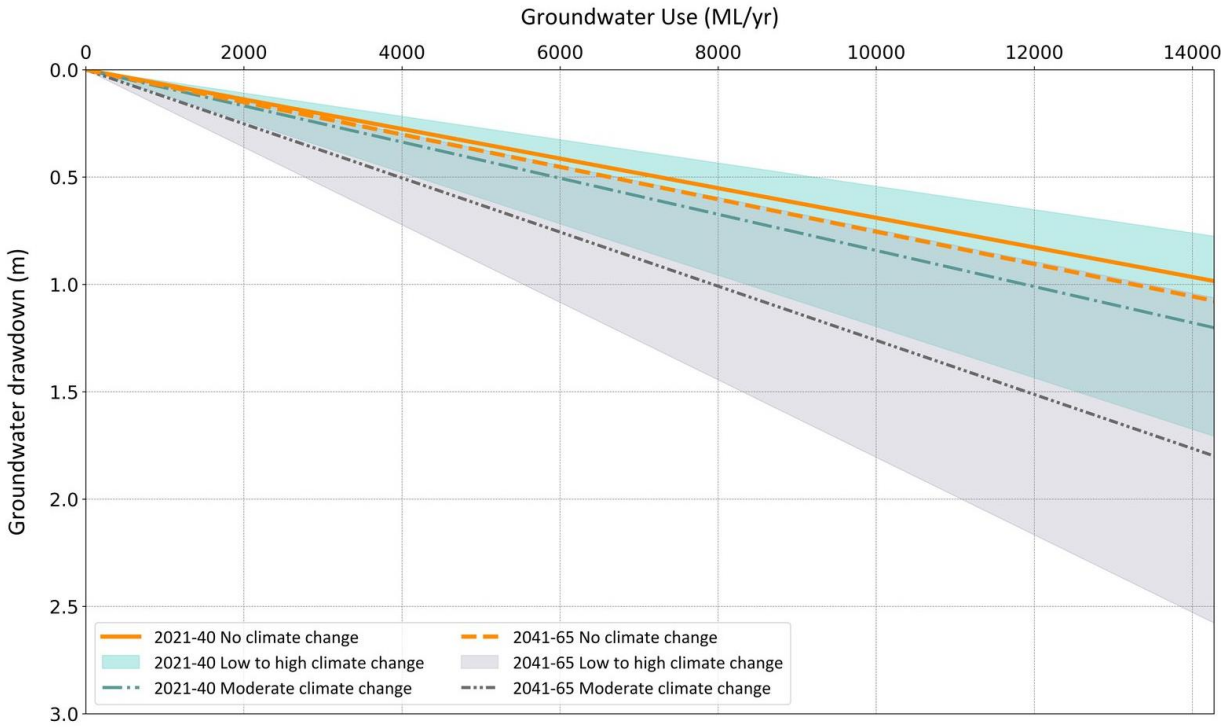

Figure A5-66. Plot for Heywood GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-79. Statewide drawdown use synthesis Table A5-for Heywood GMA

GMU					HEYWOOD GMA
Consumptive users (bores)	Avg Use 2,320 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.10
				MCC (LCC to HCC)	0.20 (0.02 to 0.40)
		2041-2065	Drawdown from baseline (m)	No CC	0.13
				MCC (LCC to HCC)	0.13 (0.05 to 0.70)
	PCV use 7,137 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.71
				MCC (LCC to HCC)	0.93 (0.48 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.13
				MCC (LCC to HCC)	1.4 (0.62 to 2.1)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	13,406
				MCC (HCC to LCC)	10,632 (7,425 to 17,994)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.98% (8.35% to 12.64%)
		2041-2065	Volume (ML/yr)	No CC	10,585

				MCC (HCC to LCC)	6,971 (4,830 to 12,832)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.59% (8.67% to 10.99%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	26,812
				MCC (HCC to LCC)	21,264 (14,850 to 35,987)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	17.95% (16.71% to 25.28%)
		2041-2065	Volume (ML/yr)	No CC	21,170
				MCC (HCC to LCC)	13,941 (9,660 to 25,663)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	15.19% (17.34% to 21.98%)

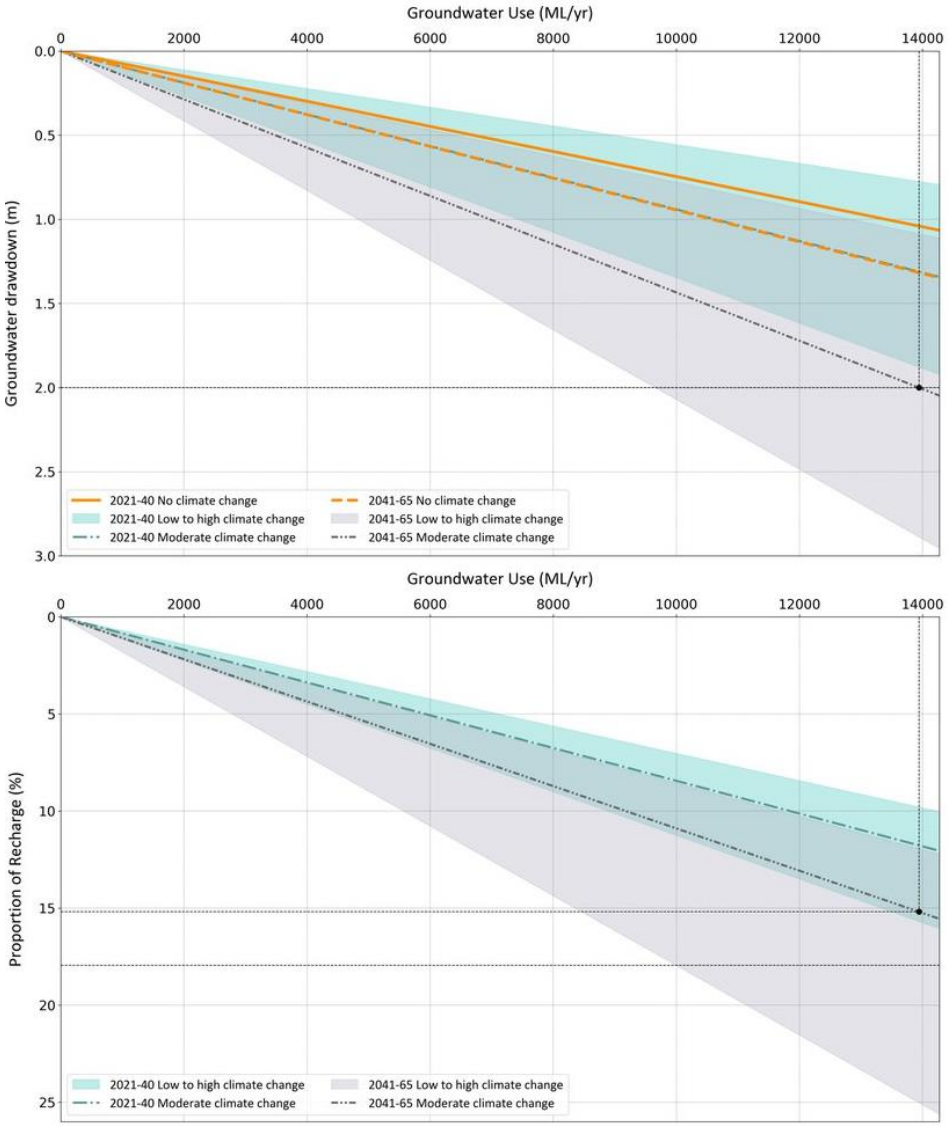

Figure A5-67. Upper Plot: Heywood GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Heywood GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-80. seawater synthesis Table A5-for Heywood GMA

GMU			HEYWOOD GMA		
Seawater intrusion	Avg Use 2,320 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.11
				MCC (LCC to HCC)	-1.21 (-1.11 to -1.02)
			Area elev. <1.5 mAHD (%)	No CC	64%
				MCC (LCC to HCC)	62% (62% to 62%)
		2041-2065	Drawdown from baseline (m)	No CC	-0.22
				MCC (LCC to HCC)	0.09 (0.06 to 0.33)
			Area elev. <1.5 mAHD (%)	No CC	62%
				MCC (LCC to HCC)	64% (64% to 64%)
	PCV use 7,137 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.45
				MCC (LCC to HCC)	0.50 (0.25 to 0.87)
			Area elev. <1.5 mAHD (%)	No CC	65%
				MCC (LCC to HCC)	65% (64% to 66%)
		2041-2065	Drawdown from baseline (m)	No CC	0.64
				MCC (LCC to HCC)	0.90 (0.41 to 1.5)
			Area elev. <1.5 mAHD (%)	No CC	65%
				MCC (LCC to HCC)	66% (65% to 68%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	16,994
				MCC (HCC to LCC)	16,662 (13,603 to 20,399)
			Proportion of recharge (%)	No CC	NA
				MCC (LCC to HCC)	14% (14% to 15%)
		2041-2065	Volume (ML/yr)	No CC	15,928
				MCC (HCC to LCC)	10,569 (1,643 to 15,983)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12% (2.9% to 14%)

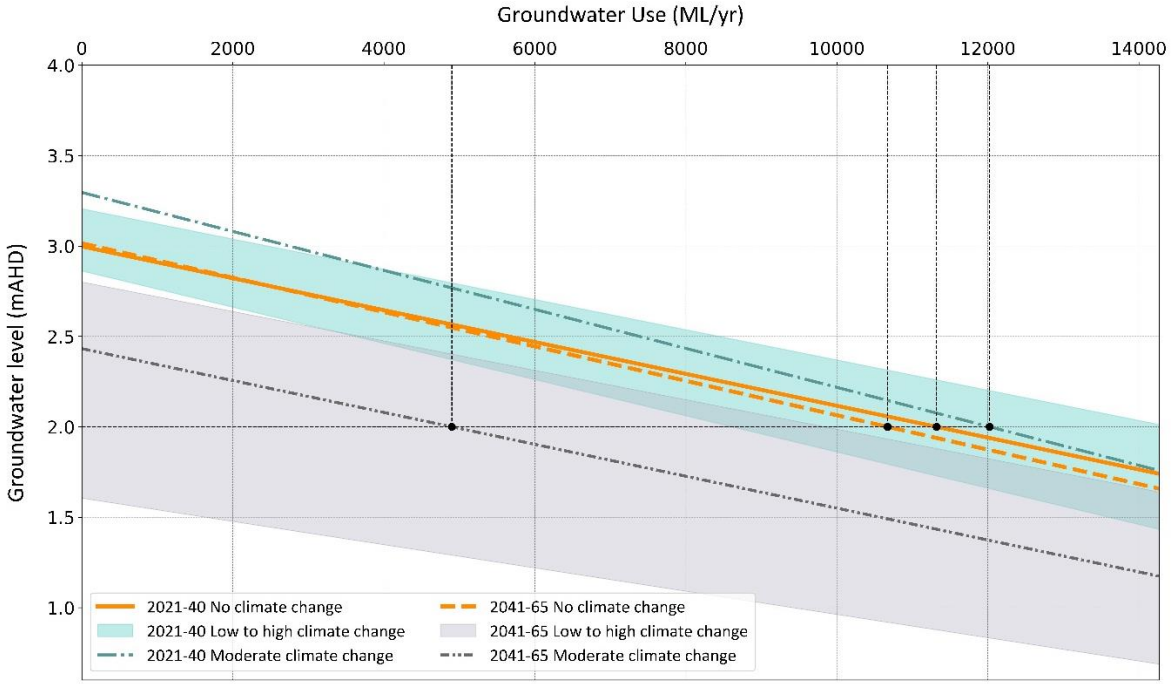

Figure A5-68. Plot for Heywood GMA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-81. Terrestrial GDE synthesis Table A5-for Heywood GMA

GMU					HEYWOOD GMA
Terrestrial GDEs	Avg Use 2,320 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.13
				MCC (LCC to HCC)	-0.09 (-0.20 to 0.09)
		2041-2065	Drawdown from baseline (m)	No CC	-0.14
				MCC (LCC to HCC)	-0.14 (-0.21 to 0.36)
	PCV use 7,137 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.45
				MCC (LCC to HCC)	0.56 (0.31 to 0.91)
		2041-2065	Drawdown from baseline (m)	No CC	-0.14
				MCC (LCC to HCC)	1.1 (0.71 to 1.5)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,676
				MCC (HCC to LCC)	1,432 (1,014 to 2,115)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.21% (1.14% to 1.49%)
		2041-2065	Volume (ML/yr)	No CC	1,796
				MCC (HCC to LCC)	727 (571 to 978)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.79% (0.84% to 1.02%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	16,756
				MCC (HCC to LCC)	14,316 (10,140 to 21,152)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.08% (11.41% to 14.86%)
		2041-2065	Volume (ML/yr)	No CC	17,959
				MCC (HCC to LCC)	7,269 (5,710 to 9,781)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.92% (8.38% to 10.25%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	33,511
				MCC (HCC to LCC)	28,631 (20,280 to 42,303)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	24.17% (22.82% to 29.72%)
		2041-2065	Volume (ML/yr)	No CC	35,917
				MCC (HCC to LCC)	14,537 (11,420 to 19,562)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	15.84% (16.75% to 20.49%)

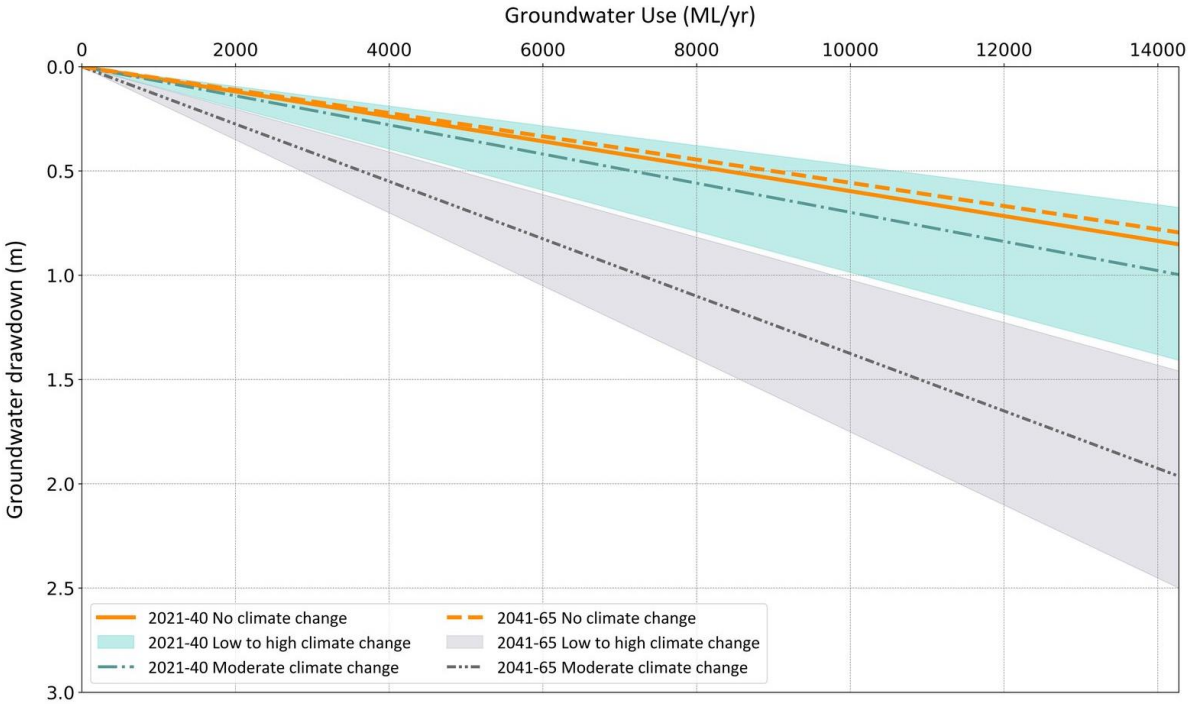

Figure A5-69. Plot for Heywood GMA Terrestrial Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-82. Waterways GDE synthesis Table A5-for Heywood GMA

GMU					HEYWOOD GMA
Waterway GDEs	Avg Use 2,320 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.44
				MCC (LCC to HCC)	-0.44 (-0.53 to -0.23)
		2041-2065	Drawdown from baseline (m)	No CC	-0.41
				MCC (LCC to HCC)	-0.41 (-0.49 to 0.01)
	PCV use 7,137 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.23
				MCC (LCC to HCC)	0.32 (0.06 to 0.69)
		2041-2065	Drawdown from baseline (m)	No CC	-0.41
				MCC (LCC to HCC)	1.1 (0.71 to 1.4)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,318
				MCC (HCC to LCC)	1,923 (1,216 to 3,486)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.62% (1.37% to 2.45%)
		2041-2065	Volume (ML/yr)	No CC	1,183
				MCC (HCC to LCC)	699 (578 to 891)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.76% (0.76% to 1.04%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	23,183
				MCC (HCC to LCC)	19,226 (12,158 to 34,863)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	16.23% (13.68% to 24.49%)
		2041-2065	Volume (ML/yr)	No CC	11,829
				MCC (HCC to LCC)	6,995 (5,781 to 8,912)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.62% (7.63% to 10.37%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	46,365
				MCC (HCC to LCC)	38,451 (24,316 to 69,727)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	32.46% (27.36% to 48.99%)
		2041-2065	Volume (ML/yr)	No CC	23,658
				MCC (HCC to LCC)	13,990 (11,562 to 17,825)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	15.24% (15.27% to 20.75%)

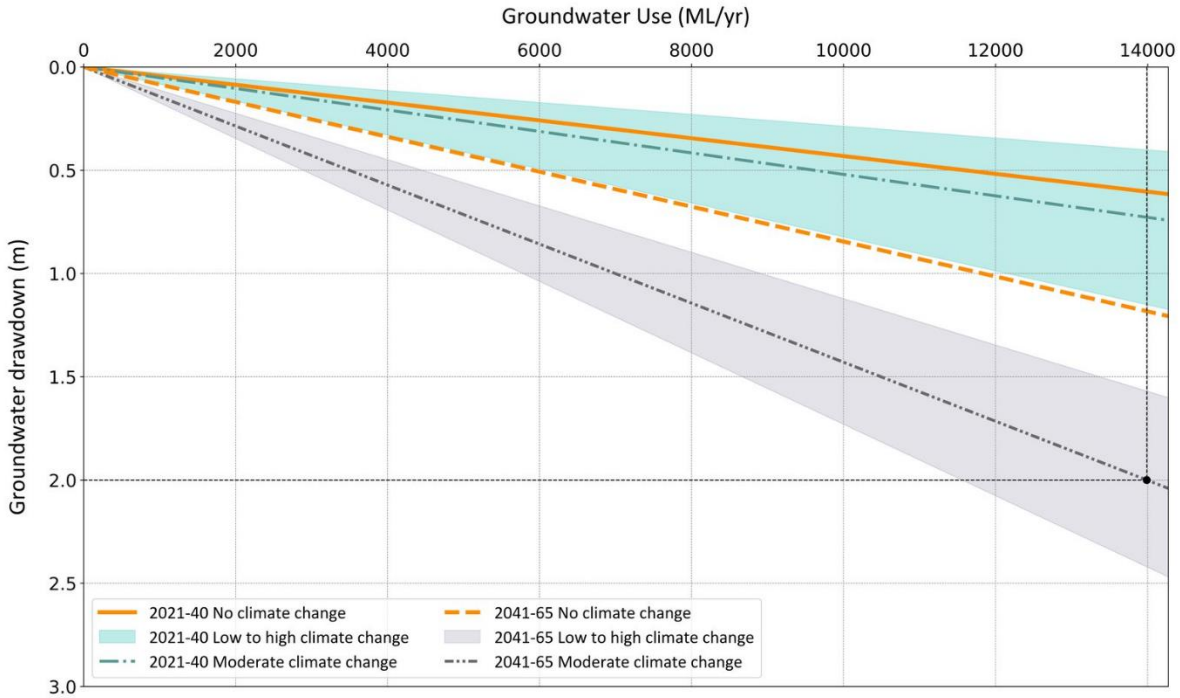

Figure A5-70. Plot for Heywood GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-83. Stream gauge results for Heywood GMA

Heywood GMA				
Stream gauge/Catchment:		237202 - Fitzroy River @ Heywood (Unregulated)		
Base flow index (1975-2020)		0.41		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	21,171 (15,190 to 27,413)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-4,510 (-10,491 to 1,733)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	16,519 (10,728 to 23,094)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-9,162 (-14,953 to -2,587)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.803% (1.1% to 0.620%)
		PCV use (ML/yr)	MCC (LCC to HCC)	6.3% (8.8% to 4.9%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	1.0% (1.6% to 0.736%)
		PCV use (ML/yr)	MCC (LCC to HCC)	8.1% (13% to 5.8%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	1.22 (0.88 to 1.58)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	0.95 (0.62 to 1.33)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	38.12% (53.13% to 29.44%)
		PCV use (ML/yr)	MCC (LCC to HCC)	301% (419% to 232%)

	2065	Current use (ML/yr)	MCC (LCC to HCC)	48.86% (75.23% to 34.95%)
		PCV use (ML/yr)	MCC (LCC to HCC)	385% (593% to 276%)
Stream gauge/Catchment:		237207 - Surry River @ Heathmere (Unregulated)		
Base flow index (1975-2020)		0.4		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	23,438 (16,816 to 30,348)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-2,838 (-9,459 to 4,073)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	18,288 (11,877 to 25,566)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-7,988 (-14,399 to -709)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.53% (0.73% to 0.41%)
		PCV use (ML/yr)	MCC (LCC to HCC)	8.3% (12% to 6.4%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.67% (1.0% to 0.48%)
		PCV use (ML/yr)	MCC (LCC to HCC)	11% (16% to 7.6%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	1.36 (0.98 to 1.77)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	1.06 (0.69 to 1.49)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	25% (34% to 19%)
		PCV use (ML/yr)	MCC (LCC to HCC)	390% (544% to 301%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	32% (49% to 23%)
		PCV use (ML/yr)	MCC (LCC to HCC)	500% (770% to 358%)

JAN JUC GMA

Table A5-84. Consumptive users synthesis Table A5-for Jan Juc GMA

	GMU					JAN JUC GMA
Assessment area	Representative Bore					116460
	Aquifer					Both
	Water system depth boundary (m below natural surface)					Zone 1 – All formations below the surface. Zone 2 – Upper Eastern View Formation. Zone 2 – Lower Eastern View Formation. Zone 2 – All formations below the surface other than the Lower Eastern View formation and the Upper Eastern View formation.
Catchment	Permissible Consumptive Volume (ML/yr)					4,250
	Licensed Entitlement (ML/yr)					14,250
	Licensed avg use (ML/yr)					591
Consumptive use metric	Consumptive users (bores)	Avg Use 370 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.42
					MCC (LCC to HCC)	0.28 (-0.20 to 1.4)
			2041-2065	Drawdown from baseline (m)	No CC	1.3
					MCC (LCC to HCC)	1.3 (0.51 to 3.4)
		PCV use 4,250 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	6.3
					MCC (LCC to HCC)	6.3 (5.5 to 7.7)
			2041-2065	Drawdown from baseline (m)	No CC	1.3
					MCC (LCC to HCC)	15 (14 to 17)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	674
					MCC (HCC to LCC)	670 (593 to 733)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.97% (2.88% to 3.20%)
			2041-2065	Volume (ML/yr)	No CC	304
					MCC (HCC to LCC)	291 (274 to 310)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.70% (1.51% to 2.43%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,349
					MCC (HCC to LCC)	1,339 (1,186 to 1,465)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	5.95% (5.77% to 6.39%)
			2041-2065	Volume (ML/yr)	No CC	609
					MCC (HCC to LCC)	581 (548 to 619)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.40% (3.01% to 4.87%)

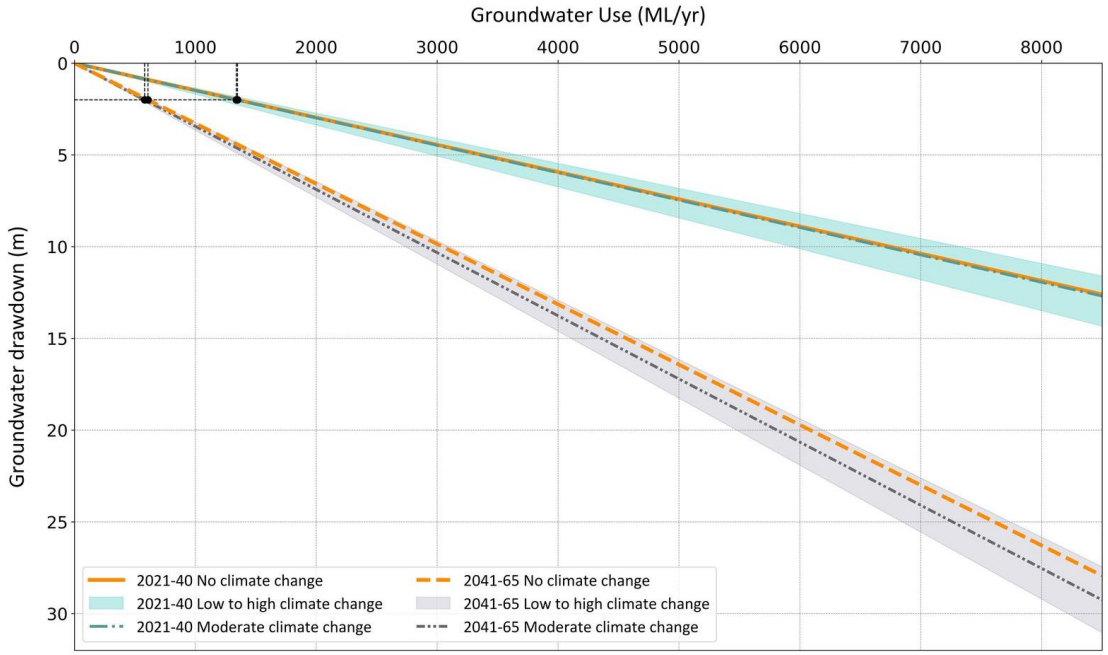

Figure A5-71. Plot for Jan Juc GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-85. Statewide drawdown use synthesis Table A5-for Jan Juc GMA

GMU					JAN JUC GMA
Consumptive users (bores)	Avg Use 370 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.1 (0.51 to 2.3)
		2041-2065	Drawdown from baseline (m)	No CC	2.1
				MCC (LCC to HCC)	2.1 (1.3 to 4.3)
	PCV use 4,250 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	7.1
				MCC (LCC to HCC)	7.3 (6.1 to 9.2)
		2041-2065	Drawdown from baseline (m)	No CC	2.1
				MCC (LCC to HCC)	16 (14 to 18)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	642
				MCC (HCC to LCC)	625 (540 to 709)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.78% (2.79% to 2.91%)
		2041-2065	Volume (ML/yr)	No CC	307
				MCC (HCC to LCC)	288 (263 to 319)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.68% (1.55% to 2.34%)

	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,283
				MCC (HCC to LCC)	1,251 (1,081 to 1,418)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.56% (5.58% to 5.82%)
		2041-2065	Volume (ML/yr)	No CC	614
				MCC (HCC to LCC)	575 (526 to 638)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.36% (3.10% to 4.67%)

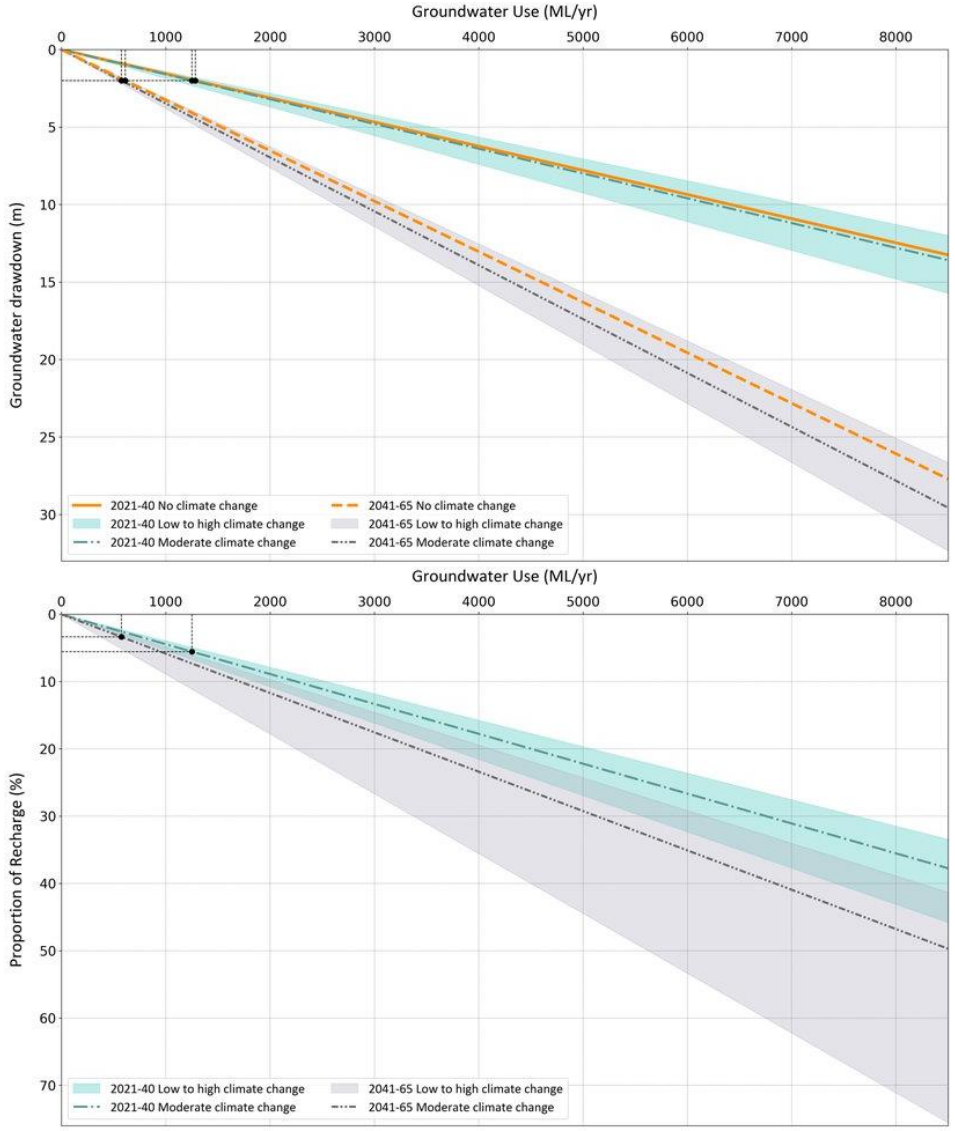

Figure A5-72. Upper Plot: Jan Juc GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Jan Juc GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-86. seawater synthesis Table A5-for Jan Juc GMA

GMU			JAN JUC GMA		
Seawater intrusion	Avg Use 370 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.7 (1.2 to 3.1)
			Area elev. <1.5 mAHD (%)	No CC	22%
				MCC (LCC to HCC)	23% (23% to 25%)
		2041-2065	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	2.3 (1.3 to 4.6)
			Area elev. <1.5 mAHD (%)	No CC	23%
				MCC (LCC to HCC)	24% (22% to 27%)
	PCV use 4,250 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	6.8
				MCC (LCC to HCC)	7.0 (5.9 to 8.6)
			Area elev. <1.5 mAHD (%)	No CC	30%
				MCC (LCC to HCC)	29% (27% to 32%)
		2041-2065	Drawdown from baseline (m)	No CC	15
				MCC (LCC to HCC)	16 (14 to 18)
			Area elev. <1.5 mAHD (%)	No CC	49%
				MCC (LCC to HCC)	50% (46% to 56%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	10,563
				MCC (HCC to LCC)	10,320 (9,338 to 11,366)
			Proportion of recharge (%)	No CC	NA
				MCC (LCC to HCC)	46% (45% to 50%)
		2041-2065	Volume (ML/yr)	No CC	4,604
				MCC (HCC to LCC)	4,258 (3,596 to 4,799)
			Proportion of recharge (%)	No CC	NA
				MCC (LCC to HCC)	25% (23% to 32%)

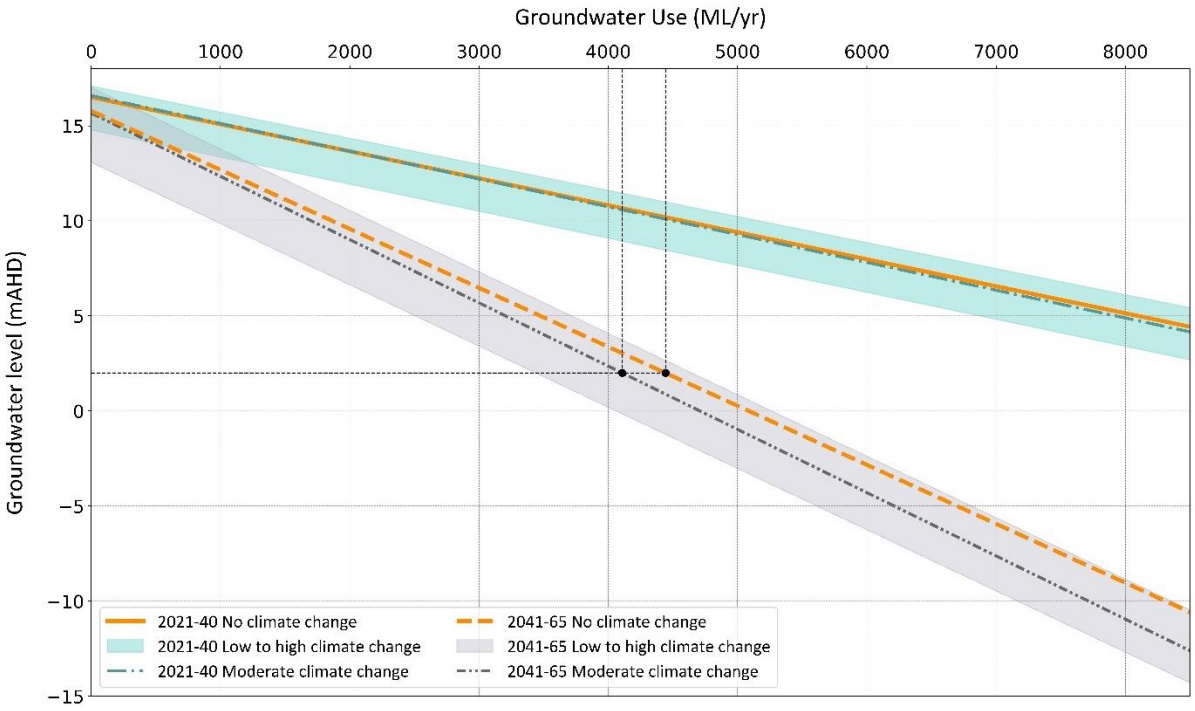

Figure A5-73. Plot for Jan Juc GMA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-87. Terrestrial GDE synthesis Table A5-for Jan Juc GMA

GMU					JAN JUC GMA
Terrestrial GDEs	Avg Use 370 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.13
				MCC (LCC to HCC)	-1.33 (-1.75 to -0.07)
		2041-2065	Drawdown from baseline (m)	No CC	-0.12
				MCC (LCC to HCC)	-0.12 (-0.96 to 1.9)
	PCV use 4,250 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.7
				MCC (LCC to HCC)	4.7 (3.9 to 6.3)
		2041-2065	Drawdown from baseline (m)	No CC	-0.12
				MCC (LCC to HCC)	14 (12 to 15)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	80
				MCC (HCC to LCC)	79 (68 to 88)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.35% (0.35% to 0.36%)
		2041-2065	Volume (ML/yr)	No CC	29
				MCC (HCC to LCC)	31 (29 to 33)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.18% (0.16% to 0.26%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	795
				MCC (HCC to LCC)	790 (677 to 885)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.51% (3.48% to 3.65%)
		2041-2065	Volume (ML/yr)	No CC	289
				MCC (HCC to LCC)	308 (289 to 331)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.80% (1.61% to 2.57%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,591
				MCC (HCC to LCC)	1,580 (1,353 to 1,770)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.02% (6.96% to 7.29%)
		2041-2065	Volume (ML/yr)	No CC	577
				MCC (HCC to LCC)	616 (577 to 661)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.60% (3.21% to 5.13%)

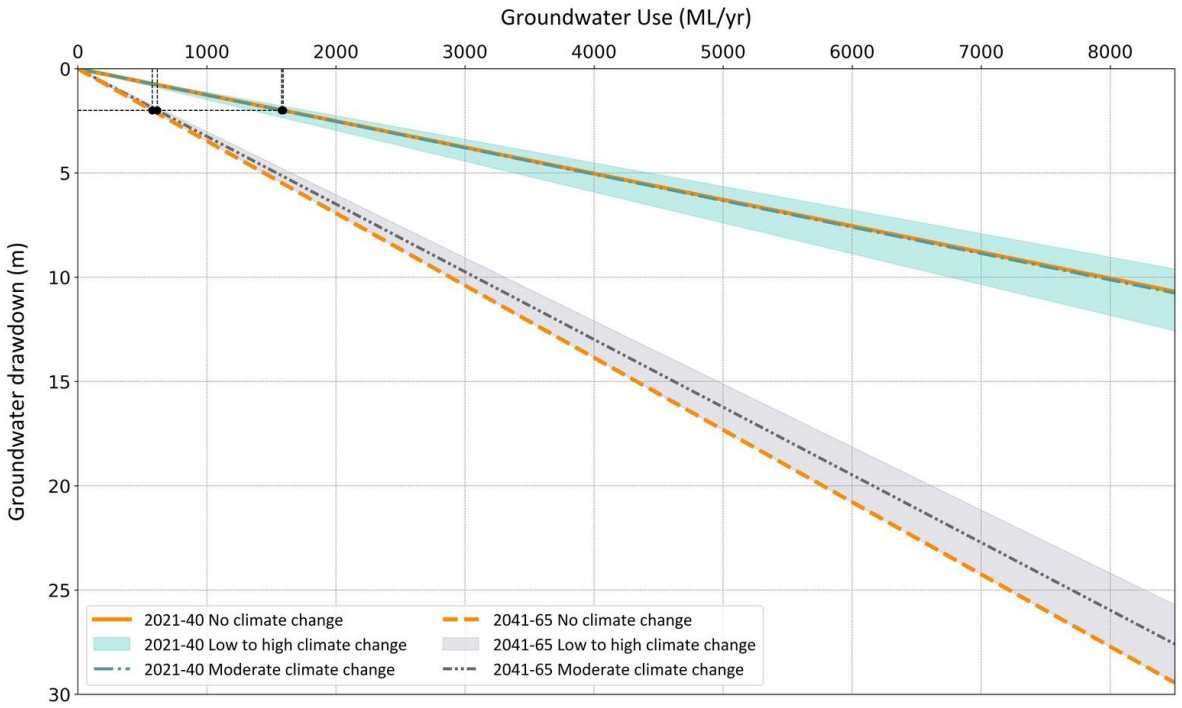

Figure A5-74. Plot for Jan Juc GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-88. Waterways GDE synthesis Table A5-for Jan Juc GMA

GMU					JAN JUC GMA
Waterway GDEs	Avg Use 370 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.46
				MCC (LCC to HCC)	-0.62 (-1.06 to 0.58)
		2041-2065	Drawdown from baseline (m)	No CC	0.51
				MCC (LCC to HCC)	0.51 (-0.30 to 2.5)
	PCV use 4,250 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	5.3
				MCC (LCC to HCC)	5.4 (4.4 to 7.0)
		2041-2065	Drawdown from baseline (m)	No CC	0.51
				MCC (LCC to HCC)	14 (13 to 16)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	75
				MCC (HCC to LCC)	74 (64 to 83)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.33% (0.33% to 0.35%)
		2041-2065	Volume (ML/yr)	No CC	30
				MCC (HCC to LCC)	31 (29 to 33)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.18% (0.16% to 0.25%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	753
				MCC (HCC to LCC)	744 (641 to 834)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.31% (3.28% to 3.45%)
		2041-2065	Volume (ML/yr)	No CC	298
				MCC (HCC to LCC)	306 (285 to 331)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.79% (1.61% to 2.54%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,507
				MCC (HCC to LCC)	1,489 (1,282 to 1,668)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.61% (6.56% to 6.91%)
		2041-2065	Volume (ML/yr)	No CC	595
				MCC (HCC to LCC)	612 (571 to 661)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.58% (3.22% to 5.07%)

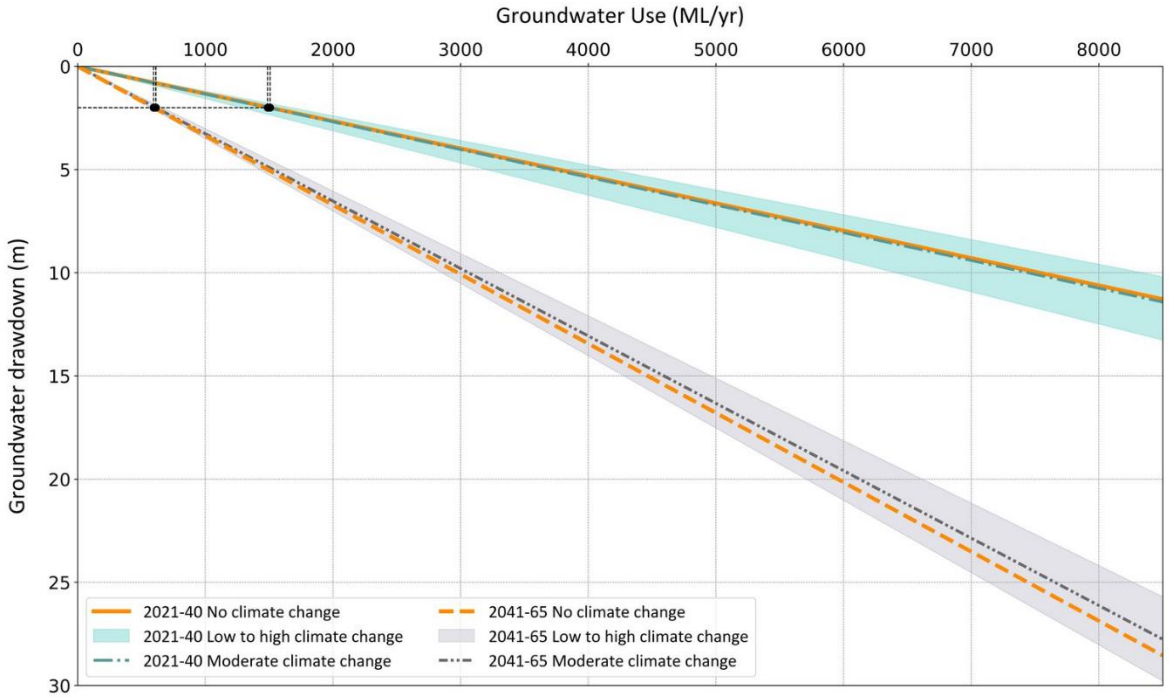

Figure A5-75. Plot for Jan Juc GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-89. Stream gauge results for Jan Juc GMA

GMU		JAN JUC GMA		
Stream gauge/Catchment:		235232 - Painkalac Creek @ Painkalac Creek Dam (Unregulated)		
Base flow index (1975-2020)		0.3		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC - LCC)	3,841 (3,092 to 4,412)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-298 (-1,047 to 273)
	2065	Flow (ML/yr)	MCC (HCC - LCC)	3,485 (2,405 to 3,945)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-654 (-1,734 to -195)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	NA
		PCV use (ML/yr)	MCC (HCC - LCC)	NA
	2065	Current use (ML/yr)	MCC (HCC - LCC)	NA
		PCV use (ML/yr)	MCC (HCC - LCC)	NA
Q90 flow	2040	Flow (ML/yr)	MCC (HCC - LCC)	0.15 (0.12 to 0.17)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC - LCC)	0.13 (0.09 to 0.15)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	NA
		PCV use (ML/yr)	MCC (HCC - LCC)	NA

	2065	Current use (ML/yr)	MCC (HCC - LCC)	NA
		PCV use (ML/yr)	MCC (HCC - LCC)	NA

KIEWA GMA

Table A5-90. Consumptive users synthesis Table A5-for Kiewa GMA

	GMU					KIEWA GMA
Assessment area	Representative Bore					93,379
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations to 200 metres below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					3,852
	Licensed Entitlement (ML/yr)					3,115
	Licensed avg use (ML/yr)					876
Consumptive use metric	Consumptive users (bores)	Avg Use 666 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.9
					MCC (LCC to HCC)	2.5 (-0.57 to 3.7)
			2041-2065	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	2.2 (0.31 to 5.7)
		PCV use 2,864 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.3
					MCC (LCC to HCC)	3.0 (1.1 to 4.3)
			2041-2065	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	4.0 (0.66 to 6.6)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,797
					MCC (HCC to LCC)	1,401 (1,009 to 3,782)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.15% (0.13% to 0.39%)
			2041-2065	Volume (ML/yr)	No CC	1,476
					MCC (HCC to LCC)	1,064 (655 to 4,712)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.13% (0.12% to 0.53%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,595
					MCC (HCC to LCC)	2,802 (2,018 to 7,565)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.30% (0.27% to 0.78%)
			2041-2065	Volume (ML/yr)	No CC	2,953
					MCC (HCC to LCC)	2,127 (1,311 to 9,425)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.26% (0.24% to 1.06%)

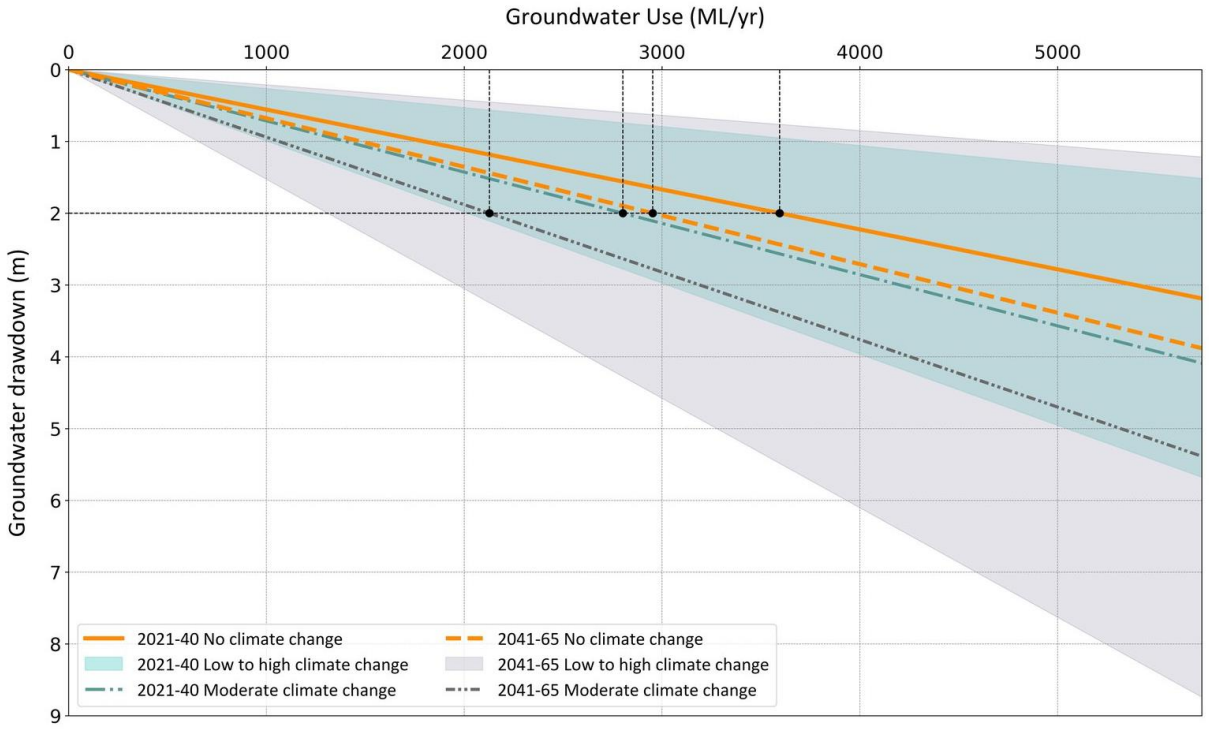

Figure A5-76. Plot for Kiewa GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-91. Statewide drawdown use synthesis Table A5-for Kiewa GMA

GMU					KIEWA GMA
Consumptive users (bores)	Avg Use 666 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.9
				MCC (LCC to HCC)	3.4 (0.38 to 4.8)
		2041-2065	Drawdown from baseline (m)	No CC	3.2
				MCC (LCC to HCC)	3.2 (1.2 to 6.9)
	PCV use 2,864 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.1
				MCC (LCC to HCC)	4.9 (2.5 to 6.7)
		2041-2065	Drawdown from baseline (m)	No CC	3.2
				MCC (LCC to HCC)	6.2 (1.7 to 10)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,080
				MCC (HCC to LCC)	901 (663 to 1,762)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.10% (0.09% to 0.18%)
		2041-2065	Volume (ML/yr)	No CC	1,886
				MCC (HCC to LCC)	704 (442 to 2,271)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.09% (0.08% to 0.26%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,159
				MCC (HCC to LCC)	1,803 (1,325 to 3,524)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.19% (0.18% to 0.36%)
		2041-2065	Volume (ML/yr)	No CC	3,771
				MCC (HCC to LCC)	1,407 (884 to 4,542)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.17% (0.16% to 0.51%)

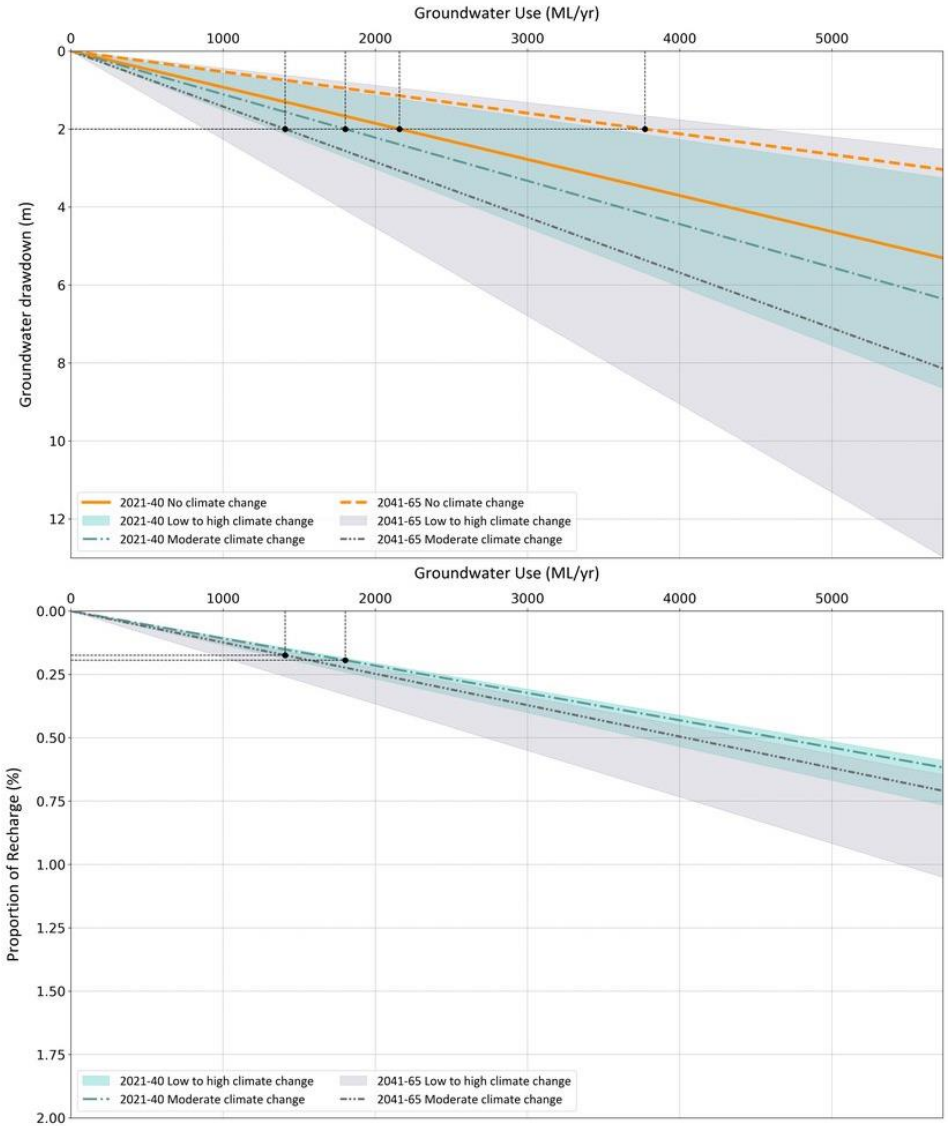

Figure A5-77. Upper Plot: Kiewa GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Kiewa GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-92. Terrestrial GDE synthesis Table A5-for Kiewa GMA

GMU					KIEWA GMA
Terrestrial GDEs	Avg Use 666 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	2.4 (-0.65 to 3.6)
		2041-2065	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	2.2 (0.05 to 5.8)
	PCV use 2,864 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	2.6 (0.72 to 3.8)
		2041-2065	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	3.7 (0.68 to 5.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	195
				MCC (HCC to LCC)	154 (111 to 488)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.01% to 0.05%)
		2041-2065	Volume (ML/yr)	No CC	198
				MCC (HCC to LCC)	109 (70 to 400)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.05%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,950
				MCC (HCC to LCC)	1,543 (1,109 to 4,882)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.17% (0.15% to 0.50%)
		2041-2065	Volume (ML/yr)	No CC	1,976
				MCC (HCC to LCC)	1,086 (698 to 3,998)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.13% (0.13% to 0.45%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,901
				MCC (HCC to LCC)	3,085 (2,219 to 9,765)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.33% (0.30% to 1.00%)
		2041-2065	Volume (ML/yr)	No CC	3,951
				MCC (HCC to LCC)	2,173 (1,396 to 7,995)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.27% (0.26% to 0.90%)

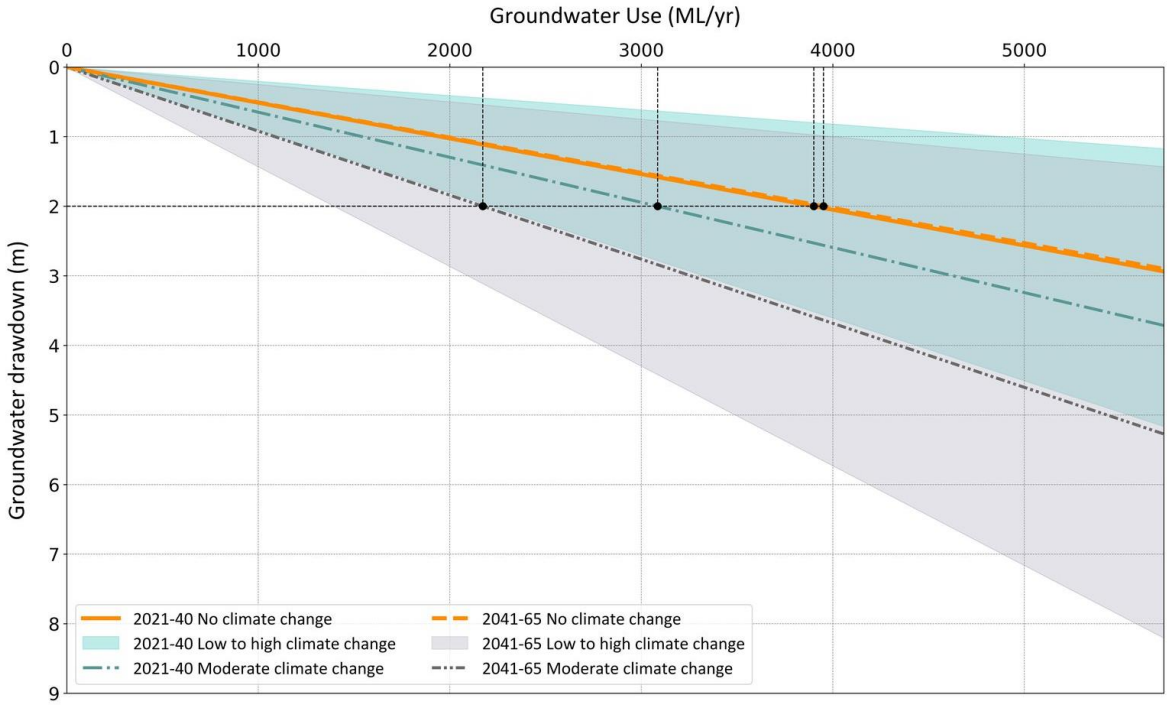

Figure A5-78. Plot for Kiewa GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-93. Waterways GDE synthesis Table A5-for Kiewa GMA

GMU					KIEWA GMA
Waterway GDEs	Avg Use 666 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.22
				MCC (LCC to HCC)	0.33 (-2.67 to 1.5)
		2041-2065	Drawdown from baseline (m)	No CC	0.12
				MCC (LCC to HCC)	0.12 (-1.74 to 3.4)
	PCV use 2,864 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.06
				MCC (LCC to HCC)	0.59 (-1.07 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	0.12
				MCC (LCC to HCC)	1.7 (-0.94 to 3.7)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,148
				MCC (HCC to LCC)	478 (-544.45 to 229)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (-0.06% to 0.03%)
		2041-2065	Volume (ML/yr)	No CC	123
				MCC (HCC to LCC)	200 (-1176.59 to 106)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (-0.13% to 0.02%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	11,485
				MCC (HCC to LCC)	4,782 (-5444.47 to 2,288)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.52% (-0.56% to 0.31%)
		2041-2065	Volume (ML/yr)	No CC	1,226
				MCC (HCC to LCC)	2,004 (-11765.86 to 1,058)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.25% (-1.33% to 0.19%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	22,970
				MCC (HCC to LCC)	9,564 (-10888.93 to 4,576)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.03% (-1.12% to 0.61%)
		2041-2065	Volume (ML/yr)	No CC	2,452
				MCC (HCC to LCC)	4,008 (-23531.72 to 2,115)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.50% (-2.66% to 0.39%)

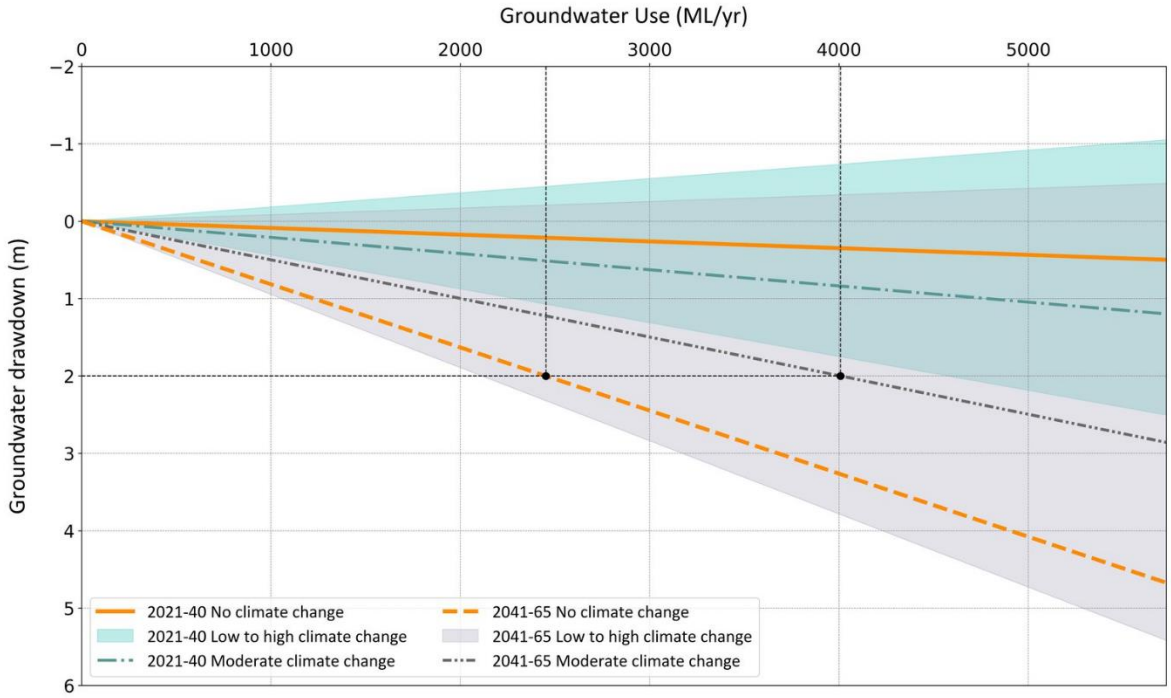

Figure A5-79. Plot for Kiewa GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-94. Stream gauge results for Kiewa GMA

GMU		KIEWA GMA		
Stream gauge/Catchment:		402203 - Kiewa River @ Mongans Bridge (Unregulated)		
Base flow index (1975-2020)		0.66		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	400,022 (341,493 to 489,356)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-67,503 (-126,032 to 21,831)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	386,820 (266,682 to 446,670)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-80,705 (-200,843 to -20,855)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.071% (0.083% to 0.058%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.209% (0.245% to 0.171%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.073% (0.106% to 0.063%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.216% (0.314% to 0.187%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	191.26 (163.28 to 233.97)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	184.95 (127.51 to 213.56)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.405% (0.474% to 0.331%)
		PCV use (ML/yr)	MCC (LCC to HCC)	1.20% (1.40% to 0.980%)

	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.418% (0.607% to 0.362%)
		PCV use (ML/yr)	MCC (LCC to HCC)	1.24% (1.80% to 1.07%)
Stream gauge/Catchment:		402206 - Running Creek @ Running Creek (Unregulated)		
Base flow index (1975-2020)		0.65		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	25,323 (21,618 to 30,978)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-2,535 (-6,240 to 3,120)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	24,487 (16,882 to 28,276)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-3,371 (-10,976 to 418)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.67% (0.78% to 0.55%)
		PCV use (ML/yr)	MCC (LCC to HCC)	2.3% (2.7% to 1.9%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.69% (1.0% to 0.60%)
		PCV use (ML/yr)	MCC (LCC to HCC)	2.4% (3.5% to 2.1%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	8.43 (7.19 to 10.31)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	8.15 (5.62 to 9.41)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	5.5% (6.4% to 4.5%)
		PCV use (ML/yr)	MCC (LCC to HCC)	19.18% (22.47% to 15.68%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	5.7% (8.3% to 4.9%)
		PCV use (ML/yr)	MCC (LCC to HCC)	20% (29% to 17%)

Table A5-95. Wetlands GDE synthesis Table A5-for Kiewa GMA

GMU					KIEWA GMA
Wetlands GDEs	Avg Use 666 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	2.0 (-0.82 to 2.9)
		2041-2065	Drawdown from baseline (m)	No CC	0.97
				MCC (LCC to HCC)	0.97 (0.11 to 3.3)
	PCV use 2,864 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.4
				MCC (LCC to HCC)	3.9 (1.9 to 6.1)
		2041-2065	Drawdown from baseline (m)	No CC	0.97
				MCC (LCC to HCC)	2.9 (-2.08 to 8.3)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	149
				MCC (HCC to LCC)	130 (80 to 323)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.03%)
		2041-2065	Volume (ML/yr)	No CC	-751.52
				MCC (HCC to LCC)	260 (-151.62 to 64)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.03% (-0.02% to 0.01%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,492
				MCC (HCC to LCC)	1,304 (804 to 3,226)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.14% (0.11% to 0.33%)
		2041-2065	Volume (ML/yr)	No CC	-7515.15
				MCC (HCC to LCC)	2,602 (-1516.17 to 643)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.32% (-0.17% to 0.12%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,985
				MCC (HCC to LCC)	2,608 (1,608 to 6,453)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.28% (0.21% to 0.66%)
		2041-2065	Volume (ML/yr)	No CC	-15030.31
				MCC (HCC to LCC)	5,204 (-3032.33 to 1,287)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.64% (-0.34% to 0.24%)

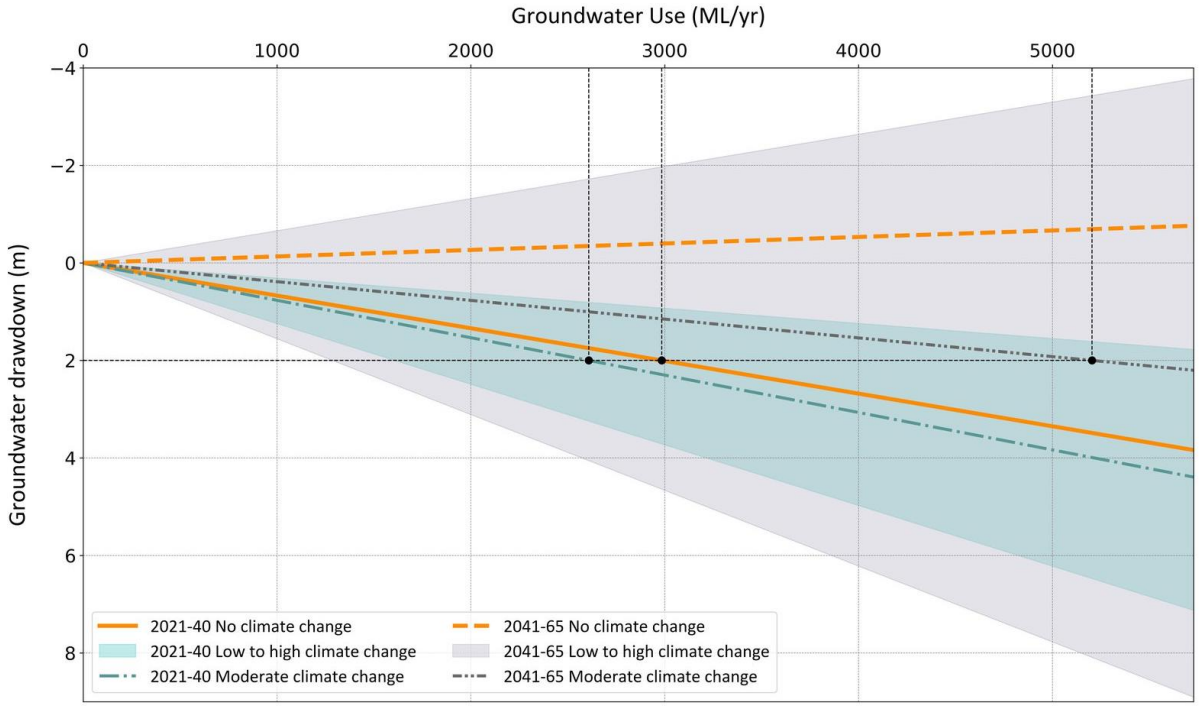

Figure A5-80. Plot for Kiewa GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

KOO WEE RUP WSPA

Table A5-96. Consumptive users synthesis Table A5-for Koo Wee Rup WSPA

	GMU					KOO WEE RUP WSPA
Assessment area	Representative Bore					71,190
	Aquifer					Both
	Water system depth boundary (m below natural surface)					All formations below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					12,915
	Licensed Entitlement (ML/yr)					12,590
	Licensed avg use (ML/yr)					4,355
Consumptive use metric	Consumptive users (bores)	Avg Use 3,483 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	2.0 (0.48 to 2.9)
			2041-2065	Drawdown from baseline (m)	No CC	1.9
					MCC (LCC to HCC)	1.9 (1.1 to 4.7)
		PCV use 11,497 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	3.3 (1.3 to 4.7)
					No CC	1.9

			2041-2065	Drawdown from baseline (m)	MCC (LCC to HCC)	4.9 (1.7 to 7.5)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,737
					MCC (HCC to LCC)	4,892 (3,552 to 10,172)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.56% (1.36% to 2.74%)
			2041-2065	Volume (ML/yr)	No CC	4,605
					MCC (HCC to LCC)	3,372 (2,235 to 7,614)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.26% (1.30% to 2.23%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	13,474
					MCC (HCC to LCC)	9,784 (7,105 to 20,345)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.12% (2.73% to 5.47%)
			2041-2065	Volume (ML/yr)	No CC	9,210
					MCC (HCC to LCC)	6,744 (4,470 to 15,228)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.53% (2.61% to 4.47%)

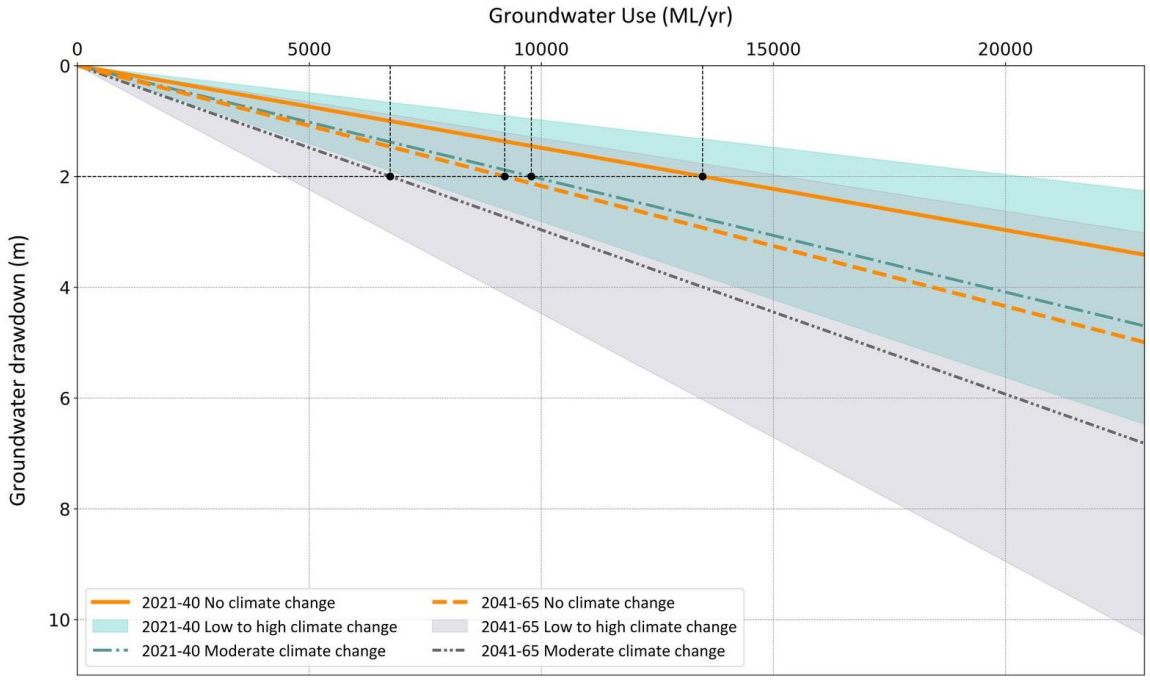

Figure A5-81. Plot for Koo Wee Rup WSPA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-97. Statewide drawdown use synthesis Table A5-for Koo Wee Rup WSPA

GMU					KOO WEE RUP WSPA
Consumptive users (bores)	Avg Use 3,483 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.9 (0.44 to 2.9)
		2041-2065	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	1.9 (1.1 to 4.7)
	PCV use 11,497 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.3
				MCC (LCC to HCC)	3.3 (1.3 to 4.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	5.0 (1.7 to 7.7)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,671
				MCC (HCC to LCC)	4,829 (3,490 to 10,171)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.54% (1.34% to 2.74%)
		2041-2065	Volume (ML/yr)	No CC	4,350
				MCC (HCC to LCC)	3,308 (2,186 to 7,591)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.24% (1.28% to 2.23%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	13,342

				MCC (HCC to LCC)	9,657 (6,980 to 20,342)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.08% (2.68% to 5.47%)
		2041-2065	Volume (ML/yr)	No CC	8,701
				MCC (HCC to LCC)	6,616 (4,373 to 15,181)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.48% (2.55% to 4.45%)

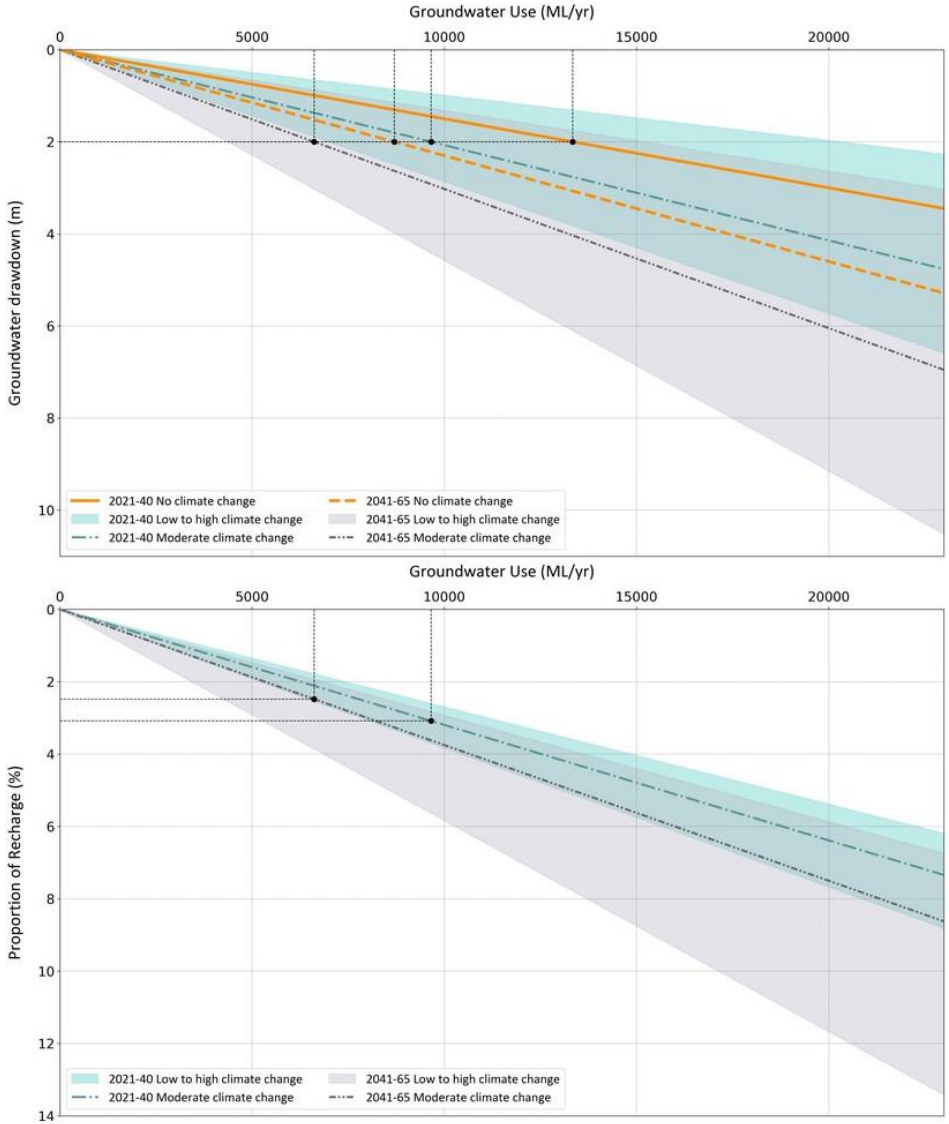

Figure A5-82. Upper Plot: Koo Wee Rup WSPA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Koo Wee Rup WSPA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-98. seawater synthesis Table A5-for Koo Wee Rup WSPA

GMU					KOO WEE RUP WSPA
Seawater intrusio	Avg Use 3,483 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.81
				MCC (LCC to HCC)	1.0 (-0.43 to 2.0)
			Area elev. <1.5 mAHD (%)	No CC	87%
				MCC (LCC to HCC)	88% (80% to 90%)
		2041-2065	Drawdown from baseline (m)	No CC	0.87
				MCC (LCC to HCC)	2.7 (0.66 to 4.2)
			Area elev. <1.5 mAHD (%)	No CC	87%
				MCC (LCC to HCC)	91% (86% to 93%)
	PCV use 11,497 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.2 (1.4 to 3.1)
			Area elev. <1.5 mAHD (%)	No CC	89%
				MCC (LCC to HCC)	91% (88% to 92%)
		2041-2065	Drawdown from baseline (m)	No CC	2.5
				MCC (LCC to HCC)	3.6 (1.5 to 5.4)
			Area elev. <1.5 mAHD (%)	No CC	91%
				MCC (LCC to HCC)	92% (89% to 93%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	-13,765
				MCC (HCC to LCC)	-12,842 (-16,405 to -3,595)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-4.1% (-6.3% to -0.97%)
		2041-2065	Volume (ML/yr)	No CC	-9,589
				MCC (HCC to LCC)	-16,261 (-21,332 to -4,809)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-6.1% (-12% to -1.4%)

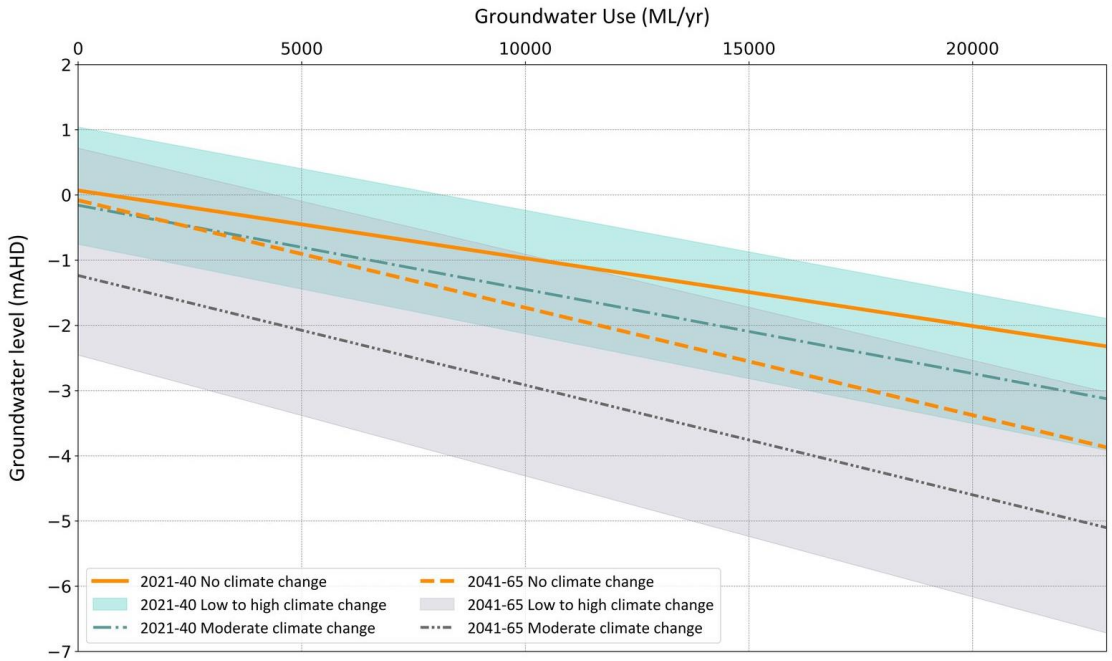

Figure A5-83. Plot for Koo Wee Rup WSPA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-99. Terrestrial GDE synthesis Table A5-for Koo Wee Rup WSPA

GMU					KOO WEE RUP WSPA
Terrestrial GDEs	Avg Use 3,483 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	1.7 (0.26 to 2.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	1.7 (0.88 to 4.5)
	PCV use 11,497 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	3.0 (1.2 to 4.4)
		2041-2065	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	4.7 (1.7 to 7.3)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	715
				MCC (HCC to LCC)	514 (371 to 1,102)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.16% (0.14% to 0.30%)
		2041-2065	Volume (ML/yr)	No CC	451
				MCC (HCC to LCC)	339 (228 to 736)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.13% (0.13% to 0.22%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	7,147
				MCC (HCC to LCC)	5,144 (3,713 to 11,024)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.64% (1.42% to 2.97%)
		2041-2065	Volume (ML/yr)	No CC	4,507
				MCC (HCC to LCC)	3,390 (2,275 to 7,362)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.27% (1.33% to 2.16%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	14,294
				MCC (HCC to LCC)	10,289 (7,426 to 22,048)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.29% (2.85% to 5.93%)
		2041-2065	Volume (ML/yr)	No CC	9,014
				MCC (HCC to LCC)	6,781 (4,551 to 14,725)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.54% (2.66% to 4.32%)

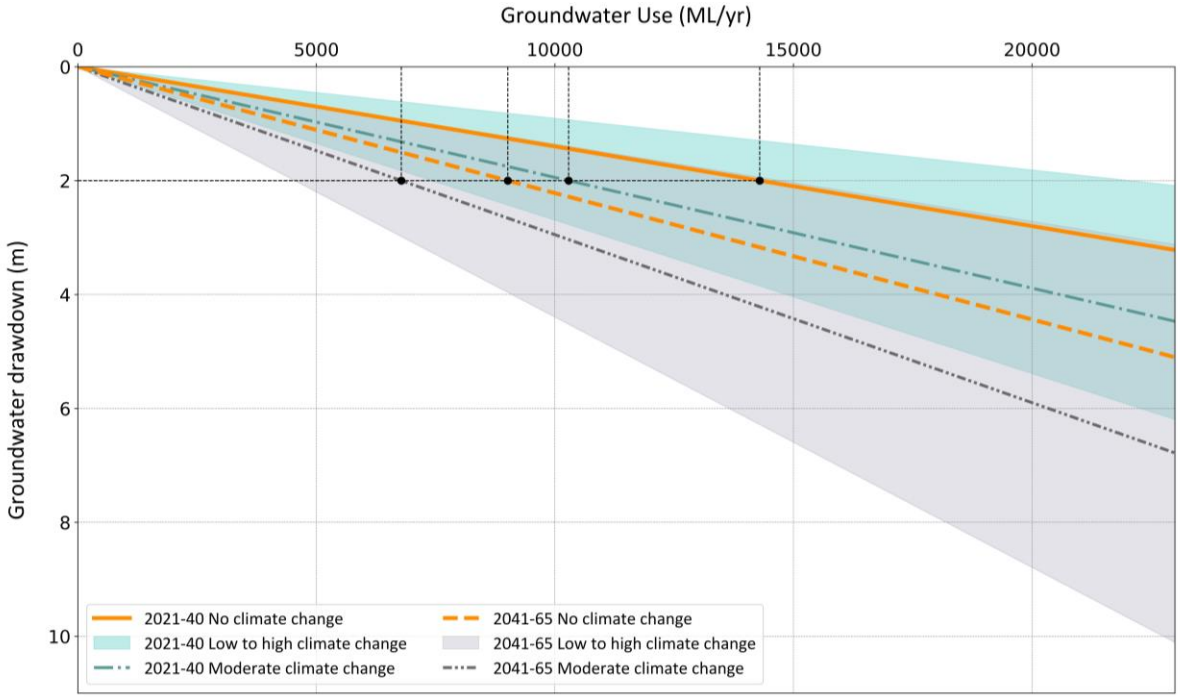

Figure A5-84. Plot for Koo Wee Rup WSPA Terrestrial GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-100. Waterways GDE synthesis Table A5-for Koo Wee Rup WSPA

GMU					KOO WEE RUP WSPA
Waterway GDEs	Avg Use 3,483 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.7 (0.30 to 2.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	1.7 (0.90 to 4.4)
	PCV use 11,497 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.3
				MCC (LCC to HCC)	3.3 (1.4 to 4.7)
		2041-2065	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	5.2 (2.2 to 7.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	620
				MCC (HCC to LCC)	467 (346 to 895)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.15% (0.13% to 0.24%)
		2041-2065	Volume (ML/yr)	No CC	421
				MCC (HCC to LCC)	298 (209 to 563)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.11% (0.12% to 0.17%)
		2021-2040	Volume (ML/yr)	No CC	6,201

	Use at 1 metre drawdown			MCC (HCC to LCC)	4,667 (3,457 to 8,947)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.49% (1.33% to 2.41%)
		2041-2065	Volume (ML/yr)	No CC	4,206
				MCC (HCC to LCC)	2,983 (2,089 to 5,632)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.12% (1.22% to 1.65%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	12,402
				MCC (HCC to LCC)	9,334 (6,914 to 17,895)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.98% (2.65% to 4.81%)
		2041-2065	Volume (ML/yr)	No CC	8,412
				MCC (HCC to LCC)	5,967 (4,178 to 11,263)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.24% (2.44% to 3.30%)

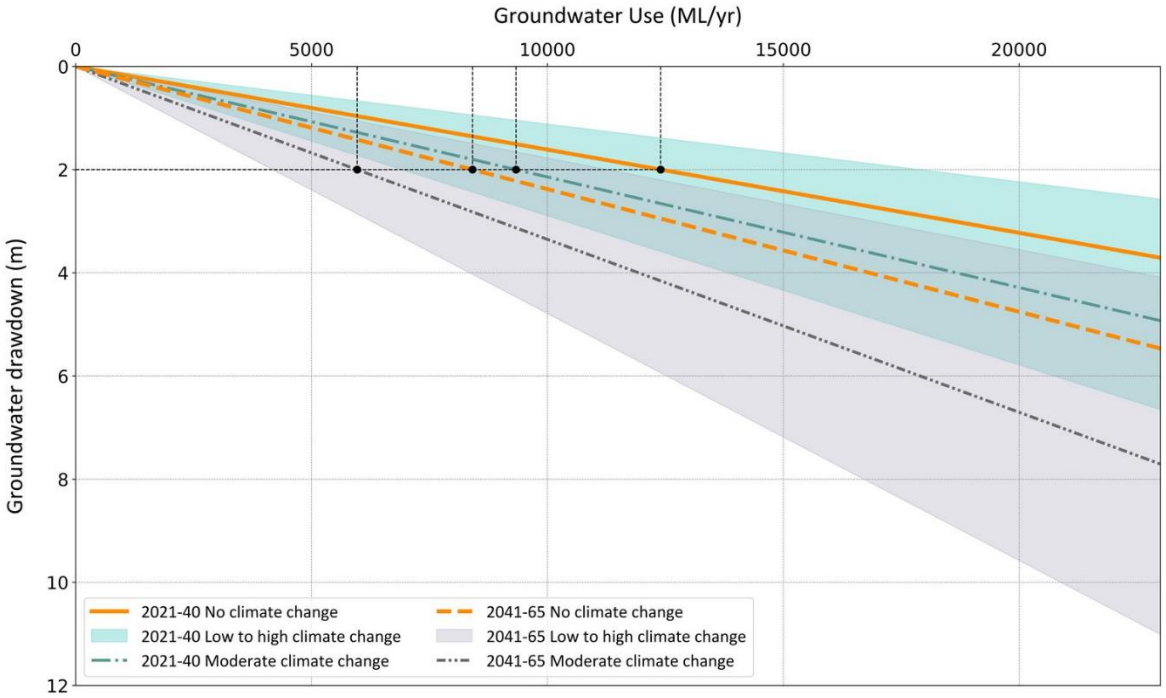

Figure A5-85. Plot for Koo Wee Rup WSPA Waterways GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-101. Stream gauge results for Koo Wee Rup WSPA

GMU				**KOO WEE RUP WSPA**
Stream gauge/Catchment:				**228213 - Bunyip River @ Iona (Unregulated)**
Base flow index (1975-2020)				**0.57**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC - LCC)	90,438 (70,212 to 115,903)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-15,431 (-35,657 to 10,034)
	2065	Flow (ML/yr)	MCC (HCC - LCC)	84,779 (55,541 to 106,367)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-21,090 (-50,328 to 497)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.041% (0.053% to 0.032%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.450% (0.580% to 0.351%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	0.043% (0.066% to 0.035%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.480% (0.733% to 0.383%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC - LCC)	45.61 (35.41 to 58.45)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC - LCC)	42.75 (28.01 to 53.64)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.221% (0.285% to 0.173%)
		PCV use (ML/yr)	MCC (HCC - LCC)	2.45% (3.15% to 1.91%)

	2065	Current use (ML/yr)	MCC (HCC - LCC)	0.236% (0.361% to 0.188%)
		PCV use (ML/yr)	MCC (HCC - LCC)	2.61% (3.98% to 2.08%)

Table A5-102. Wetlands GDE synthesis Table A5-for Koo Wee Rup WSPA

GMU					KOO WEE RUP WSPA
Wetlands GDEs	Avg Use 3,483 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.93
				MCC (LCC to HCC)	1.7 (0.19 to 2.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	1.6 (0.80 to 4.6)
	PCV use 11,497 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.4 (0.75 to 3.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	3.9 (1.3 to 6.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	937
				MCC (HCC to LCC)	638 (449 to 1,583)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.20% (0.17% to 0.43%)
		2041-2065	Volume (ML/yr)	No CC	692
				MCC (HCC to LCC)	416 (274 to 968)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.16% (0.16% to 0.28%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	9,365
				MCC (HCC to LCC)	6,381 (4,494 to 15,833)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.04% (1.72% to 4.26%)
		2041-2065	Volume (ML/yr)	No CC	6,922
				MCC (HCC to LCC)	4,156 (2,739 to 9,678)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.56% (1.60% to 2.84%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	18,730
				MCC (HCC to LCC)	12,763 (8,989 to 31,666)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.08% (3.45% to 8.52%)
		2041-2065	Volume (ML/yr)	No CC	13,844
				MCC (HCC to LCC)	8,313 (5,477 to 19,357)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.12% (3.20% to 5.68%)

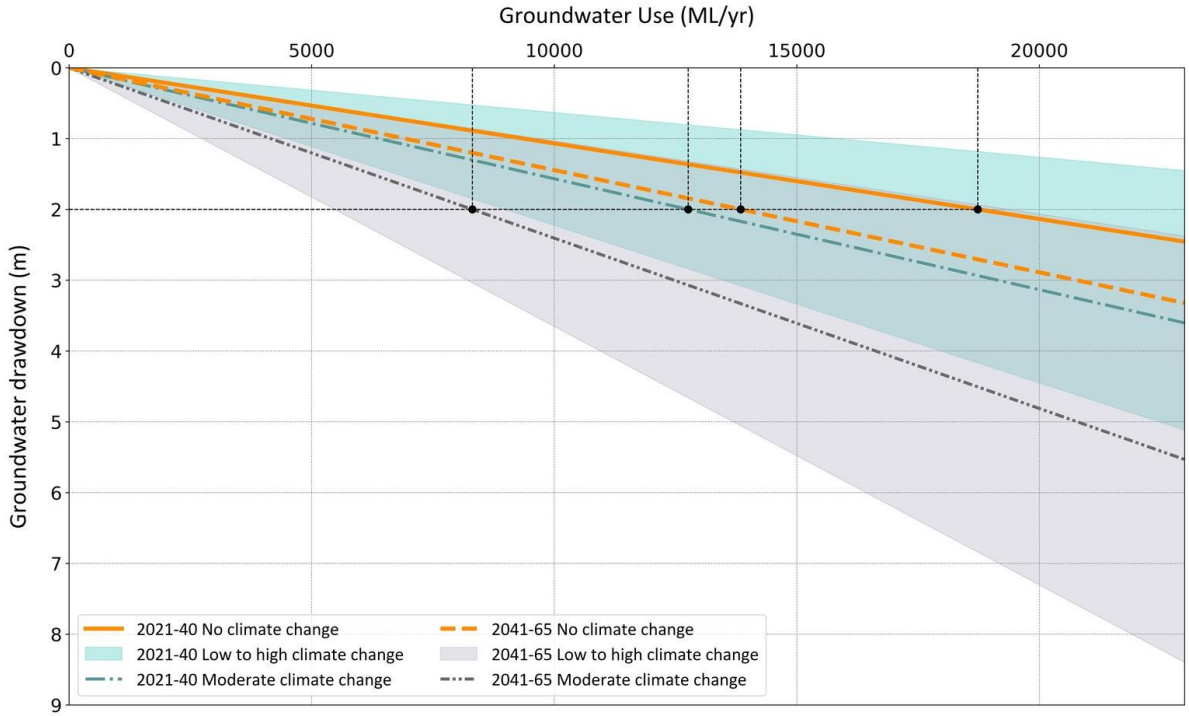

Figure A5-86. Plot for Koo Wee Rup WSPA Wetlands GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

LANCEFIELD GMA

Table A5-103. Consumptive users synthesis Table A5-for Lancefield GMA

Assessment area	**GMU**					**LANCEFIELD GMA**
	Representative Bore					144,974
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					1,485
	Licensed Entitlement (ML/yr)					1,378
	Licensed avg use (ML/yr)					304
Consumptive use metric	**Consumptive users (bores)**	Avg Use 206 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
					MCC (LCC to HCC)	2.7 (0.06 to 3.3)
			2041-2065	Drawdown from baseline (m)	No CC	1.8
					MCC (LCC to HCC)	1.8 (0.46 to 5.2)
		PCV use 968 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.2
					MCC (LCC to HCC)	4.7 (2.1 to 6.0)
					No CC	1.8

			2041-2065	Drawdown from baseline (m)	MCC (LCC to HCC)	5.6 (0.23 to 9.5)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	477
					MCC (HCC to LCC)	331 (261 to 758)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	5.10% (5.19% to 5.86%)
			2041-2065	Volume (ML/yr)	No CC	519
					MCC (HCC to LCC)	285 (166 to 8,704)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	6.86% (6.45% to 84.13%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	955
					MCC (HCC to LCC)	663 (522 to 1,517)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	10.20% (10.38% to 11.72%)
			2041-2065	Volume (ML/yr)	No CC	1,038
					MCC (HCC to LCC)	569 (332 to 17,407)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	13.73% (12.90% to 168.27%)

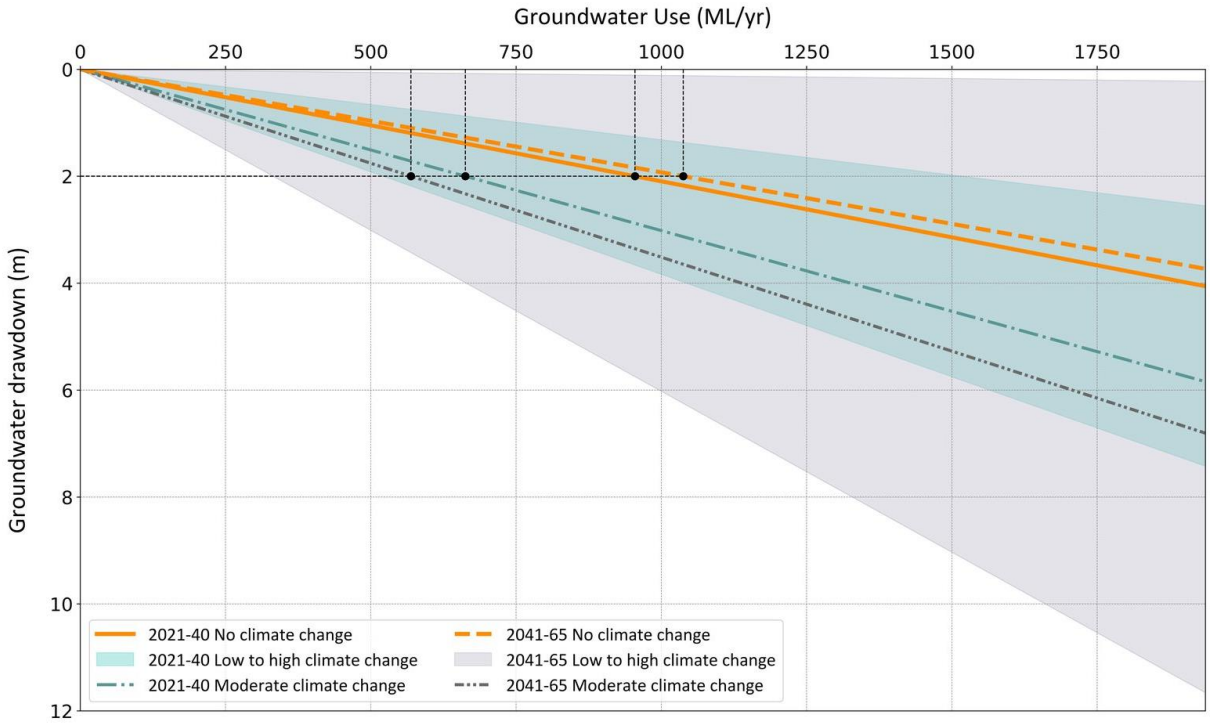

Figure A5-87. Plot for Lancefield GMA Consumptive Users modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-104. Statewide drawdown use synthesis Table A5-for Lancefield GMA

GMU					LANCEFIELD GMA
Consumptive users (bores)	Avg Use 206 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	2.9 (0.21 to 3.4)
		2041-2065	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	1.9 (0.58 to 5.4)
	PCV use 968 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.4
				MCC (LCC to HCC)	4.7 (2.2 to 6.0)
		2041-2065	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	5.7 (0.33 to 9.5)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	461
				MCC (HCC to LCC)	325 (259 to 711)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.00% (5.15% to 5.50%)
		2041-2065	Volume (ML/yr)	No CC	557
				MCC (HCC to LCC)	283 (167 to 5,537)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	6.82% (6.47% to 53.52%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	923
				MCC (HCC to LCC)	649 (517 to 1,423)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.99% (10.29% to 10.99%)
		2041-2065	Volume (ML/yr)	No CC	1,113
				MCC (HCC to LCC)	566 (333 to 11,073)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.64% (12.93% to 107.04%)

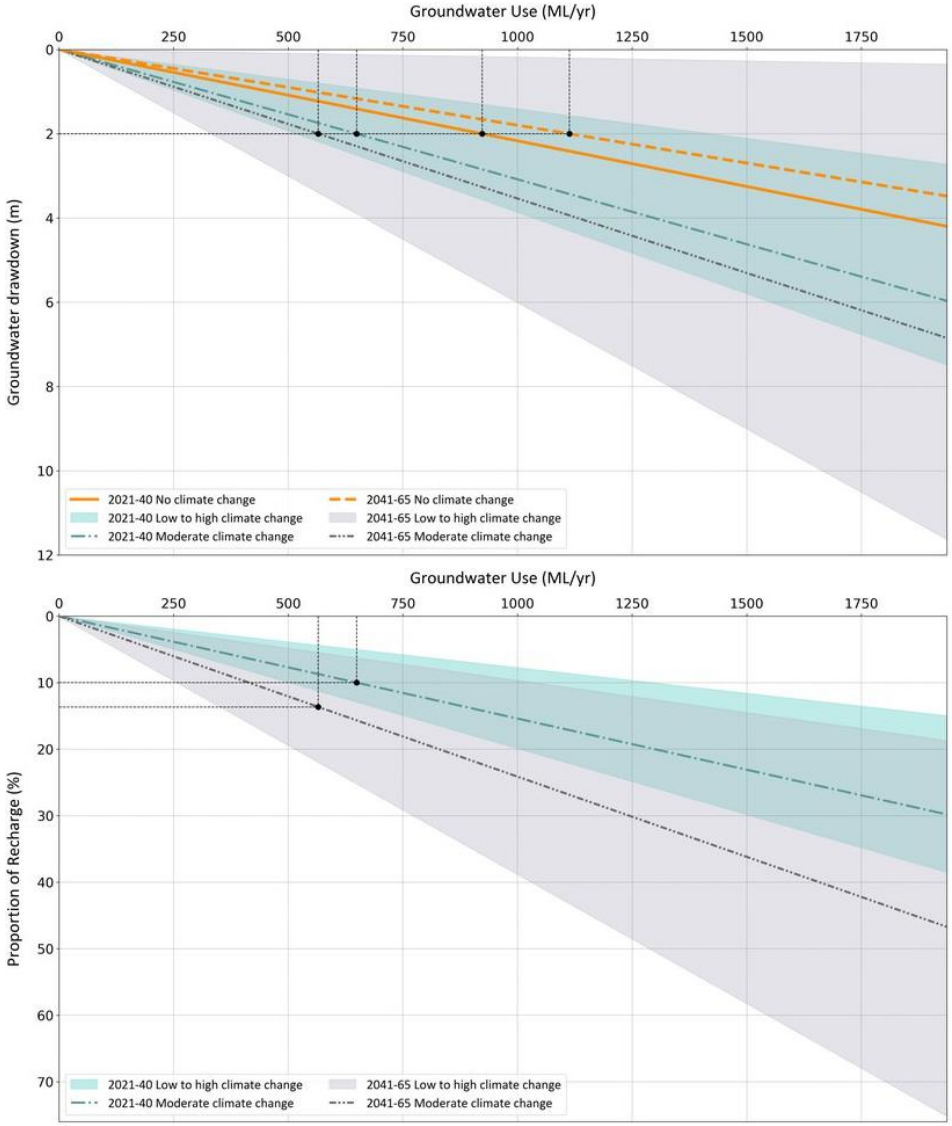

Figure A5-88. Upper Plot: Lacnefield GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Lancefield GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-105. Terrestrial GDE synthesis Table A5-for Lancefield GMA

GMU					LANCEFIELD GMA
Terrestrial GDEs	Avg Use 206 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	2.7 (-0.16 to 3.1)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	1.6 (0.27 to 5.1)
	PCV use 968 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.7
				MCC (LCC to HCC)	4.1 (1.7 to 5.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	4.8 (-0.31 to 8.3)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	57
				MCC (HCC to LCC)	38 (30 to 99)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.58% (0.59% to 0.77%)
		2041-2065	Volume (ML/yr)	No CC	47
				MCC (HCC to LCC)	35 (-296.68 to 19)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.83% (-2.87% to 0.75%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	575
				MCC (HCC to LCC)	375 (298 to 992)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.77% (5.92% to 7.66%)
		2041-2065	Volume (ML/yr)	No CC	472
				MCC (HCC to LCC)	346 (-2966.78 to 193)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.34% (-28.68% to 7.48%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,150
				MCC (HCC to LCC)	750 (595 to 1,984)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.55% (11.85% to 15.33%)
		2041-2065	Volume (ML/yr)	No CC	945
				MCC (HCC to LCC)	692 (-5933.57 to 386)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	16.69% (-57.36% to 14.97%)

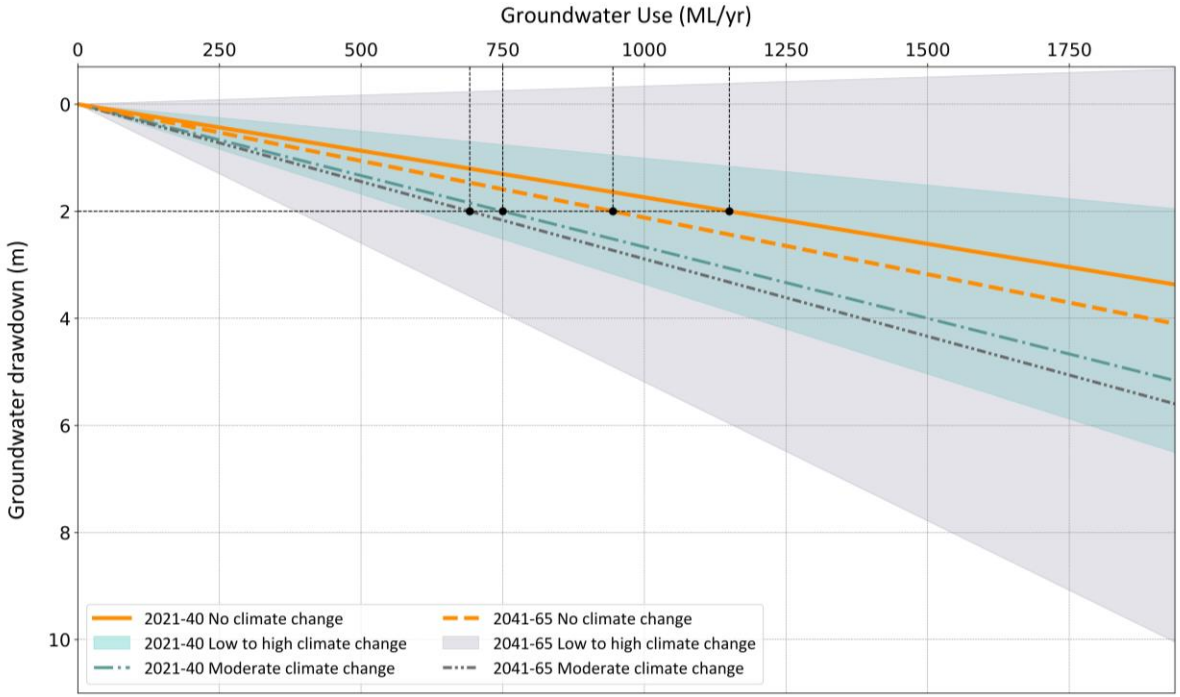

Figure A5-89. Plot for Lancefield GMA Consumptive Users modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-106. Waterways GDE synthesis Table A5-for Lancefield GMA

GMU					LANCEFIELD GMA
Waterway GDEs	Avg Use 206 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	1.9 (-0.76 to 2.4)
		2041-2065	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	1.0 (-0.35 to 4.3)
	PCV use 968 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	3.5 (1.2 to 4.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	4.4 (-0.36 to 7.7)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	68
				MCC (HCC to LCC)	43 (34 to 131)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.66% (0.67% to 1.01%)
		2041-2065	Volume (ML/yr)	No CC	50
				MCC (HCC to LCC)	35 (-539.59 to 20)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.84% (-5.22% to 0.78%)
		2021-2040	Volume (ML/yr)	No CC	683

				MCC (HCC to LCC)	430 (336 to 1,312)
	Use at 1 metre drawdown		Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.62% (6.69% to 10.14%)
		2041-2065	Volume (ML/yr)	No CC	495
				MCC (HCC to LCC)	350 (-5395.89 to 200)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.45% (-52.16% to 7.78%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,366
				MCC (HCC to LCC)	861 (673 to 2,625)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.25% (13.38% to 20.28%)
		2041-2065	Volume (ML/yr)	No CC	990
				MCC (HCC to LCC)	700 (-10791.77 to 401)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	16.90% (-104.32% to 15.56%)

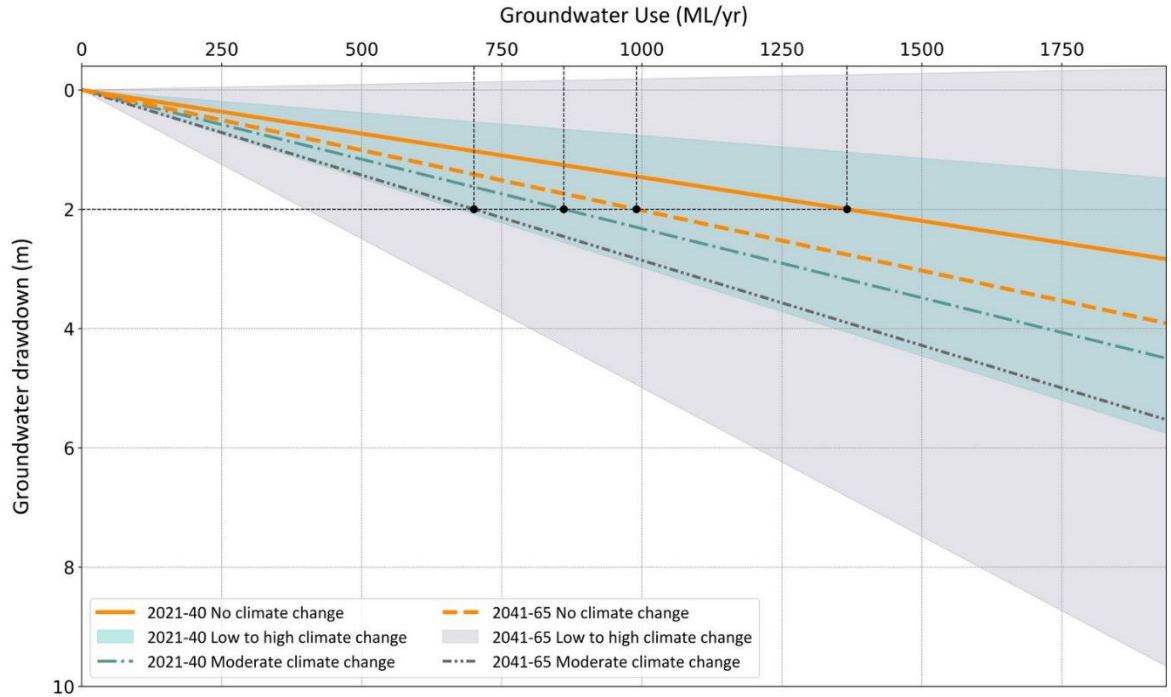

Figure A5-90. Plot for Lancefield GMA Waterways GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

LEONGATHA GMA

Table A5-107. Consumptive users synthesis Table A5-for Leongatha GMA

Assessment area	**GMU**					**LEONGATHA GMA**
	Representative Bore					71,149
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					6,500
	Licensed Entitlement (ML/yr)					1,803
	Licensed avg use (ML/yr)					184
Consumptive use metric	**Consumptive users (bores)**	Avg Use 121 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.88
					MCC (LCC to HCC)	1.5 (0.40 to 2.1)
			2041-2065	Drawdown from baseline (m)	No CC	1.6
					MCC (LCC to HCC)	1.6 (1.0 to 3.5)
		PCV use 1,409 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.7
					MCC (LCC to HCC)	2.6 (1.0 to 3.5)
			2041-2065	Drawdown from baseline (m)	No CC	1.6
					MCC (LCC to HCC)	4.4 (2.4 to 5.7)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	909
					MCC (HCC to LCC)	676 (536 to 1,260)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.17% (1.10% to 1.83%)
			2041-2065	Volume (ML/yr)	No CC	595
					MCC (HCC to LCC)	418 (337 to 659)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.85% (0.95% to 1.04%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,817
					MCC (HCC to LCC)	1,351 (1,072 to 2,520)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.34% (2.20% to 3.66%)
			2041-2065	Volume (ML/yr)	No CC	1,190
					MCC (HCC to LCC)	837 (673 to 1,318)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.70% (1.91% to 2.08%)

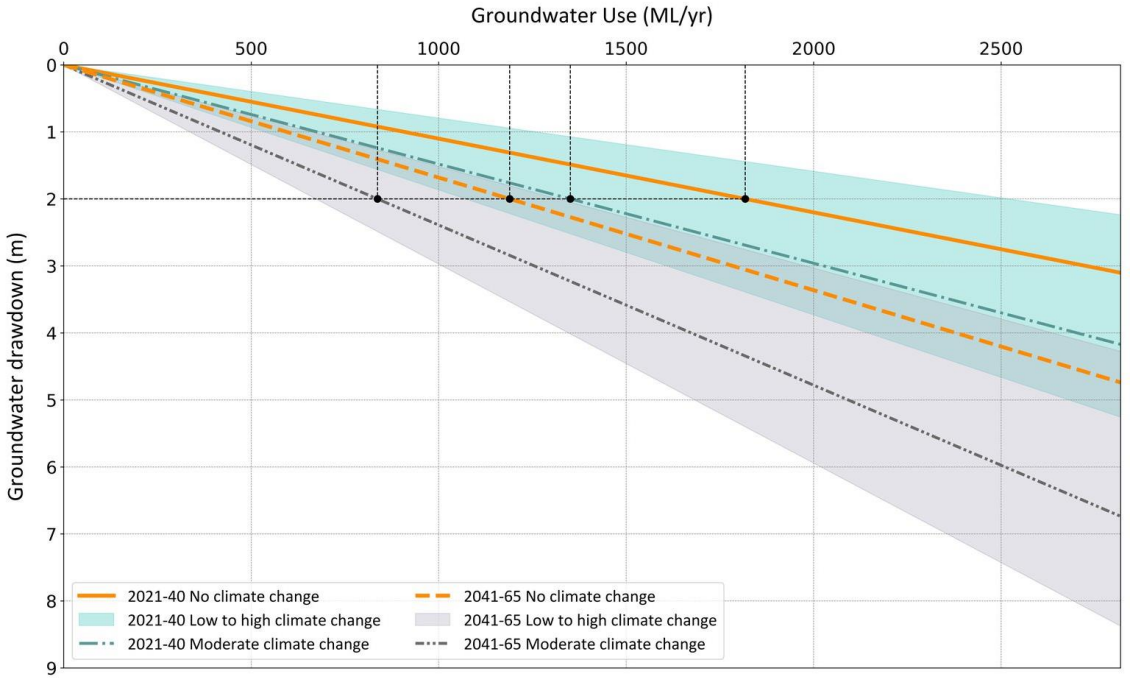

Figure A5-91. Plot for Leongatha GMA Waterways GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-108. Statewide drawdown use synthesis Table A5-for Leongatha GMA

GMU					LEONGATHA GMA
Consumptive users (bores)	Avg Use 121 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.81
				MCC (LCC to HCC)	1.4 (0.32 to 2.1)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	1.5 (0.95 to 3.5)
	PCV use 1,409 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	2.6 (0.94 to 3.5)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	4.4 (2.2 to 5.8)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	942
				MCC (HCC to LCC)	688 (538 to 1,346)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.19% (1.10% to 1.95%)
		2041-2065	Volume (ML/yr)	No CC	567
				MCC (HCC to LCC)	423 (336 to 690)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.86% (0.95% to 1.09%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,884

				MCC (HCC to LCC)	1,376 (1,076 to 2,692)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.38% (2.21% to 3.91%)
		2041-2065	Volume (ML/yr)	No CC	1,134
				MCC (HCC to LCC)	846 (671 to 1,381)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.72% (1.90% to 2.18%)

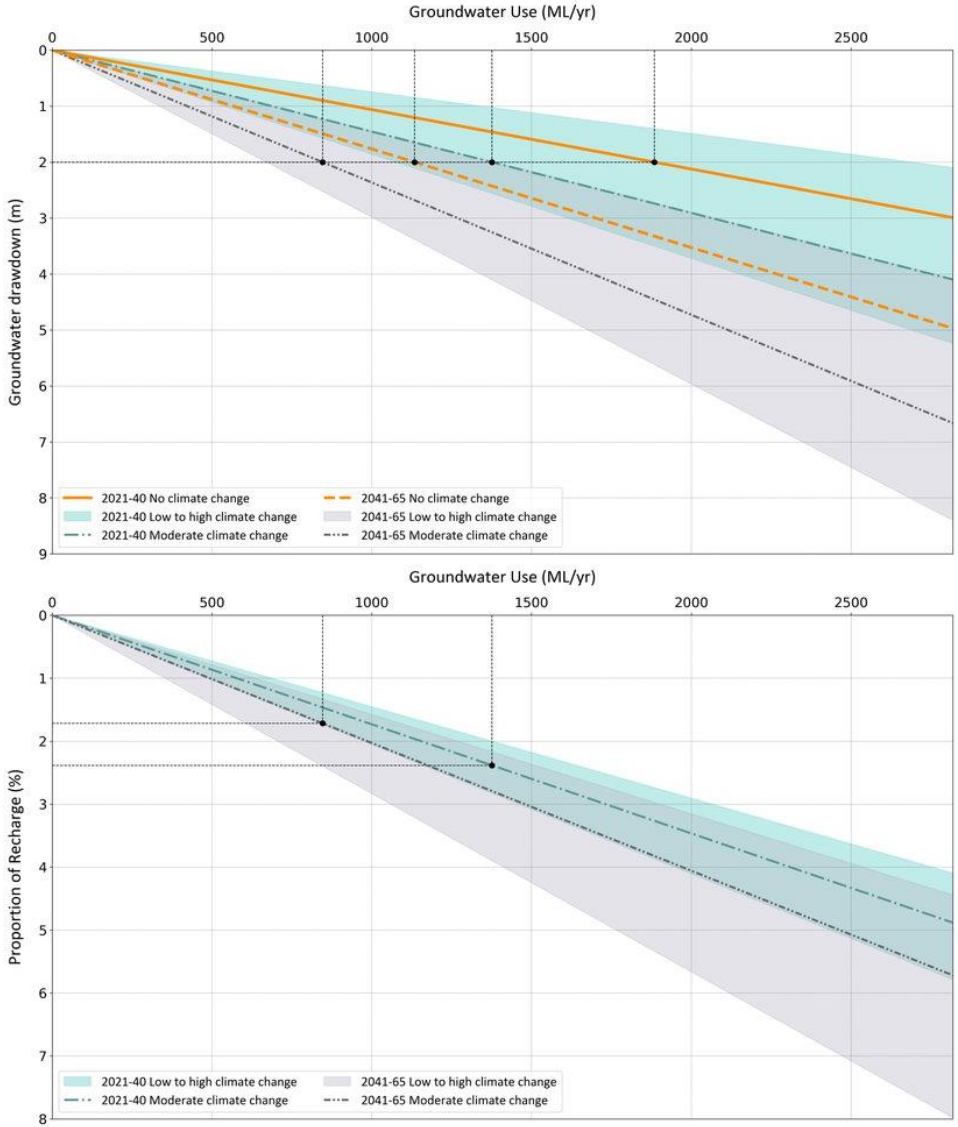

Figure A5-92. Upper Plot: Leongatha GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Leongatha GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-109. Terrestrial GDE synthesis Table A5-for Leongatha GMA

GMU					LEONGATHA GMA
Terrestrial GDEs	Avg Use 121 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.32
				MCC (LCC to HCC)	0.82 (-0.13 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.98
				MCC (LCC to HCC)	0.98 (0.44 to 2.7)
	PCV use 1,409 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.9 (0.59 to 2.7)
		2041-2065	Drawdown from baseline (m)	No CC	0.98
				MCC (LCC to HCC)	3.9 (2.3 to 4.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	109
				MCC (HCC to LCC)	80 (64 to 154)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.14% (0.13% to 0.22%)
		2041-2065	Volume (ML/yr)	No CC	64
				MCC (HCC to LCC)	43 (37 to 62)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.09% (0.10% to 0.10%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,089
				MCC (HCC to LCC)	803 (642 to 1,535)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.39% (1.32% to 2.23%)
		2041-2065	Volume (ML/yr)	No CC	642
				MCC (HCC to LCC)	435 (368 to 620)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.88% (0.98% to 1.04%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,178
				MCC (HCC to LCC)	1,607 (1,284 to 3,070)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.78% (2.64% to 4.46%)
		2041-2065	Volume (ML/yr)	No CC	1,284
				MCC (HCC to LCC)	870 (737 to 1,240)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.76% (1.96% to 2.09%)

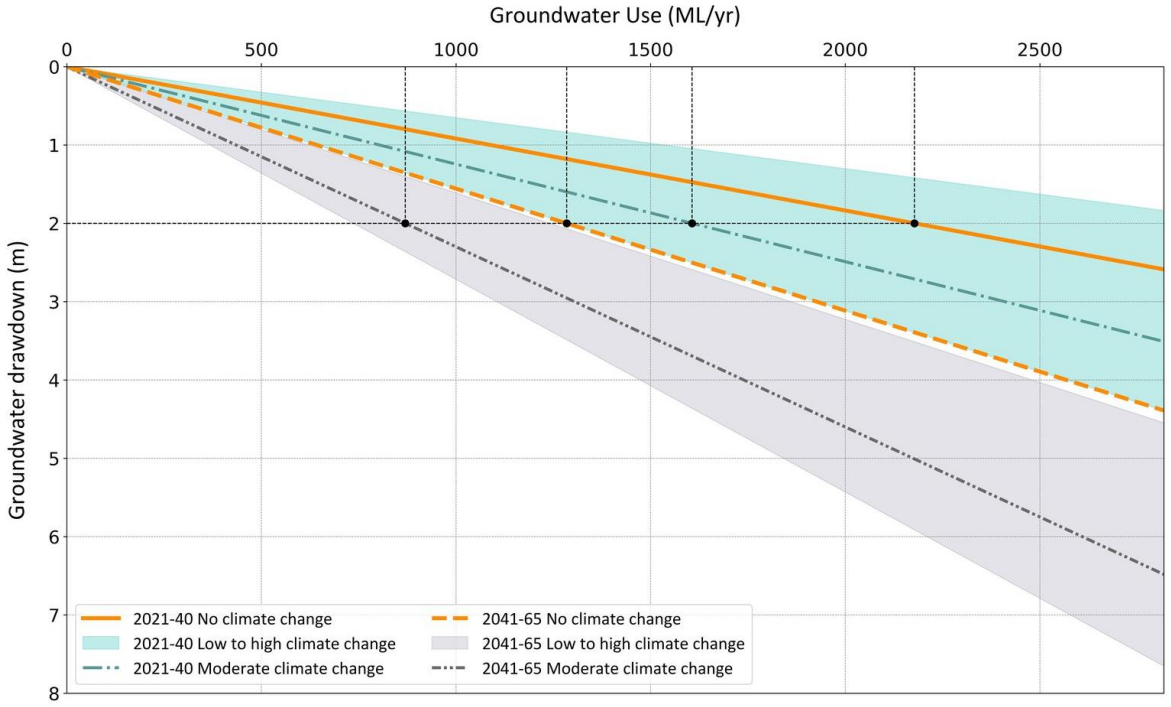

Figure A5-93. Plot for Leongatha GMA Terrestrial GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-110. Waterways GDE synthesis Table A5-for Leongatha GMA

GMU					LEONGATHA GMA
Waterway GDEs	Avg Use 121 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.62
				MCC (LCC to HCC)	-1.18 (-2.07 to -0.46)
		2041-2065	Drawdown from baseline (m)	No CC	-0.82
				MCC (LCC to HCC)	-0.82 (-1.38 to 0.88)
	PCV use 1,409 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.57
				MCC (LCC to HCC)	0.19 (-1.23 to 1.1)
		2041-2065	Drawdown from baseline (m)	No CC	-0.82
				MCC (LCC to HCC)	2.6 (0.98 to 3.5)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	521
				MCC (HCC to LCC)	188 (-1023.74 to 113)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.33% (-1.49% to 0.23%)
		2041-2065	Volume (ML/yr)	No CC	41
				MCC (HCC to LCC)	54 (44 to 86)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.11% (0.12% to 0.14%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,207
				MCC (HCC to LCC)	1,880 (-10237.35 to 1,126)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.26% (-14.87% to 2.31%)
		2041-2065	Volume (ML/yr)	No CC	412
				MCC (HCC to LCC)	536 (441 to 860)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.09% (1.25% to 1.36%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	10,414
				MCC (HCC to LCC)	3,760 (-20474.71 to 2,251)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.51% (-29.74% to 4.62%)
		2041-2065	Volume (ML/yr)	No CC	825
				MCC (HCC to LCC)	1,072 (882 to 1,720)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.18% (2.50% to 2.71%)

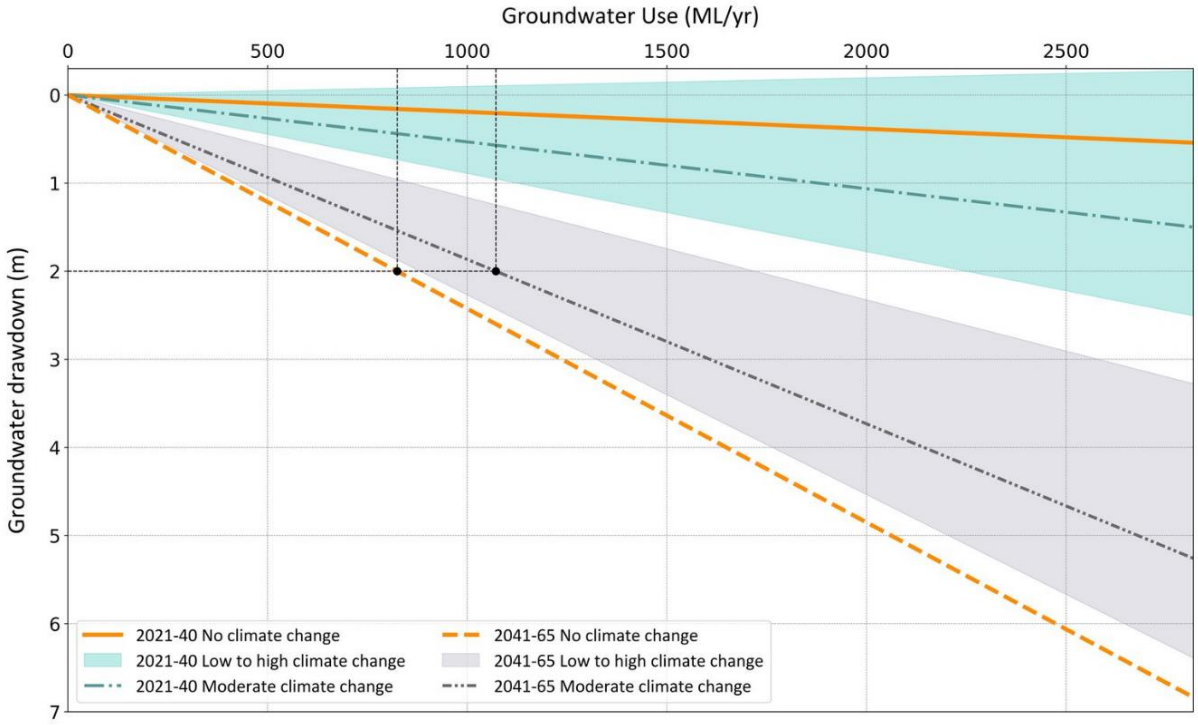

Figure A5-94. Plot for Leongatha GMA Waterways GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-111. Stream gauge results for Leongatha GMA

GMU		LEONGATHA GMA		
Stream gauge/Catchment:		**227266 - Tarwin River @ Koonwarra (Unregulated)**		
Base flow index (1975-2020)		**0.51**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC - LCC)	107,006 (80,528 to 132,148)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-14,454 (-40,932 to 10,689)
	2065	Flow (ML/yr)	MCC (HCC - LCC)	100,933 (67,046 to 123,403)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-20,527 (-54,414 to 1,943)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.126% (0.168% to 0.102%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.681% (0.905% to 0.551%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	0.134% (0.201% to 0.109%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.722% (1.1% to 0.590%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC - LCC)	25.27 (19.01 to 31.20)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC - LCC)	23.83 (15.83 to 29.14)

		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	1.46% (1.94% to 1.19%)
		PCV use (ML/yr)	MCC (HCC - LCC)	7.90% (10.50% to 6.40%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	1.55% (2.34% to 1.27%)
		PCV use (ML/yr)	MCC (HCC - LCC)	8.38% (12.61% to 6.85%)

LITTLE DESERT ZONE (WEST WIMMERA)

Table A5-112. Terrestrial GDE synthesis Table A5-for Little Desert Zone (West Wimmera)

GMU					LITTLE DESERT ZONE (WEST WIMMERA)
Terrestrial GDEs	Avg Use 0 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.28
				MCC (LCC to HCC)	0.28 (0.26 to 0.58)
		2041-2065	Drawdown from baseline (m)	No CC	0.48
				MCC (LCC to HCC)	0.48 (0.36 to 0.89)
	PCV use 0 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.35
				MCC (LCC to HCC)	0.55 (0.14 to 1.2)
		2041-2065	Drawdown from baseline (m)	No CC	0.48
				MCC (LCC to HCC)	1.2 (0.27 to 2.2)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	0.16
				NA	NA
			Proportion of recharge (%)	No CC	NA
				NA	NA
		2041-2065	Volume (ML/yr)	No CC	NA
				NA	NA
			Proportion of recharge (%)	No CC	NA
				NA	NA
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1.6
				NA	NA
			Proportion of recharge (%)	No CC	NA
				NA	NA
		2041-2065	Volume (ML/yr)	No CC	NA
				NA	NA
			Proportion of recharge (%)	No CC	NA
				NA	NA
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3.3
				NA	NA
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	NA
		2041-2065	Volume (ML/yr)	No CC	NA
				NA	NA
			Proportion of recharge (%)	No CC	NA
				NA	NA

LODDON HIGHLANDS WSPA

Table A5-113. Consumptive users synthesis Table A5-for Loddon Highlands WSPA

Assessment area	**GMU**					**LODDON HIGHLANDS WSPA**
	Representative Bore					119,342
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					20,697
	Licensed Entitlement (ML/yr)					20,503
	Licensed avg use (ML/yr)					7,408
Consumptive use metric	Consumptive users (bores)	Avg Use 4,954 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	1.8 (0.46 to 2.8)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	1.4 (0.73 to 4.8)
		PCV use 14,559 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.4
					MCC (LCC to HCC)	5.8 (3.2 to 8.1)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	7.7 (1.3 to 13)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,922
					MCC (HCC to LCC)	3,779 (2,774 to 6,672)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.42% (1.26% to 1.84%)
			2041-2065	Volume (ML/yr)	No CC	4,923
					MCC (HCC to LCC)	2,900 (1,692 to 12,105)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.50% (1.33% to 4.20%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	9,845
					MCC (HCC to LCC)	7,559 (5,549 to 13,343)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.84% (2.52% to 3.68%)
			2041-2065	Volume (ML/yr)	No CC	9,847
					MCC (HCC to LCC)	5,799 (3,384 to 24,209)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.01% (2.67% to 8.41%)

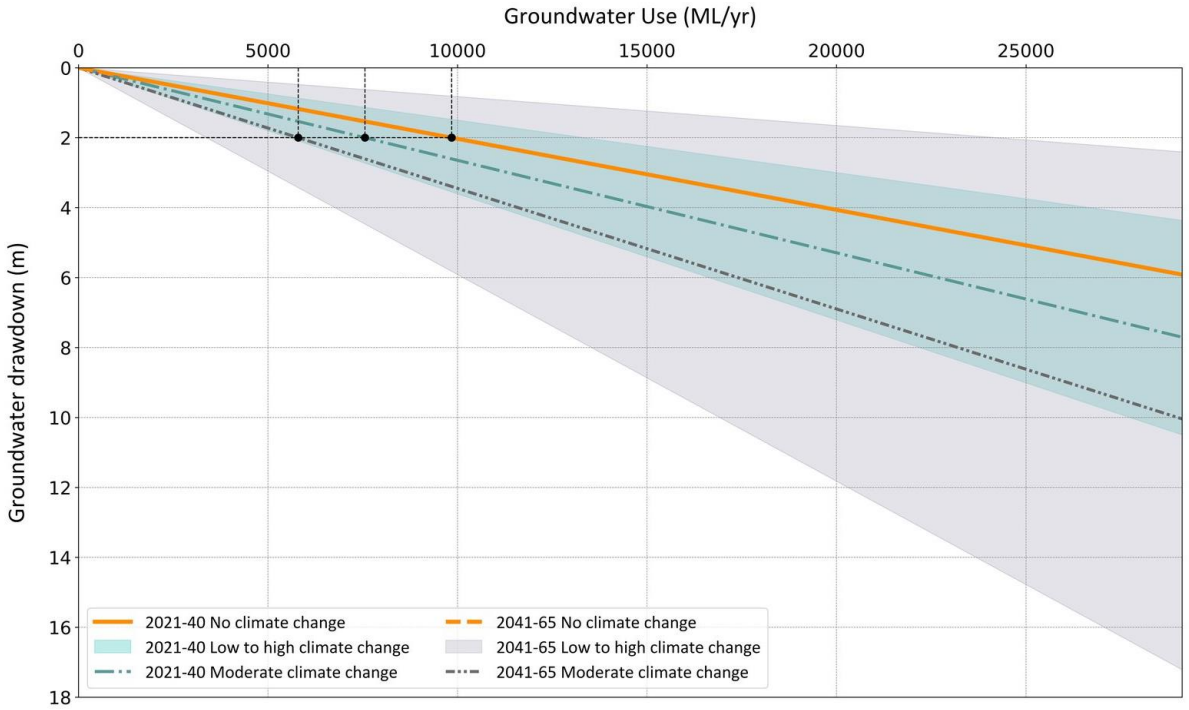

Figure A5-95. Plot for Loddon Highlands WSPA Consumptive Users modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-114. Statewide drawdown use synthesis Table A5-for Loddon Highlands WSPA

GMU					LODDON HIGHLANDS WSPA
Consumptive users (bores)	Avg Use 4,954 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	2.6 (0.68 to 3.8)
		2041-2065	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	2.2 (0.92 to 7.1)
	PCV use 14,559 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.2
				MCC (LCC to HCC)	5.6 (3.1 to 7.6)
		2041-2065	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	7.8 (1.7 to 13)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,050
				MCC (HCC to LCC)	3,864 (2,903 to 6,619)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.45% (1.32% to 1.82%)
		2041-2065	Volume (ML/yr)	No CC	4,940

				MCC (HCC to LCC)	2,801 (1,689 to 9,683)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.45% (1.33% to 3.36%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	10,101
				MCC (HCC to LCC)	7,729 (5,806 to 13,239)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.90% (2.64% to 3.65%)
		2041-2065	Volume (ML/yr)	No CC	9,879
				MCC (HCC to LCC)	5,603 (3,377 to 19,367)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.91% (2.66% to 6.73%)

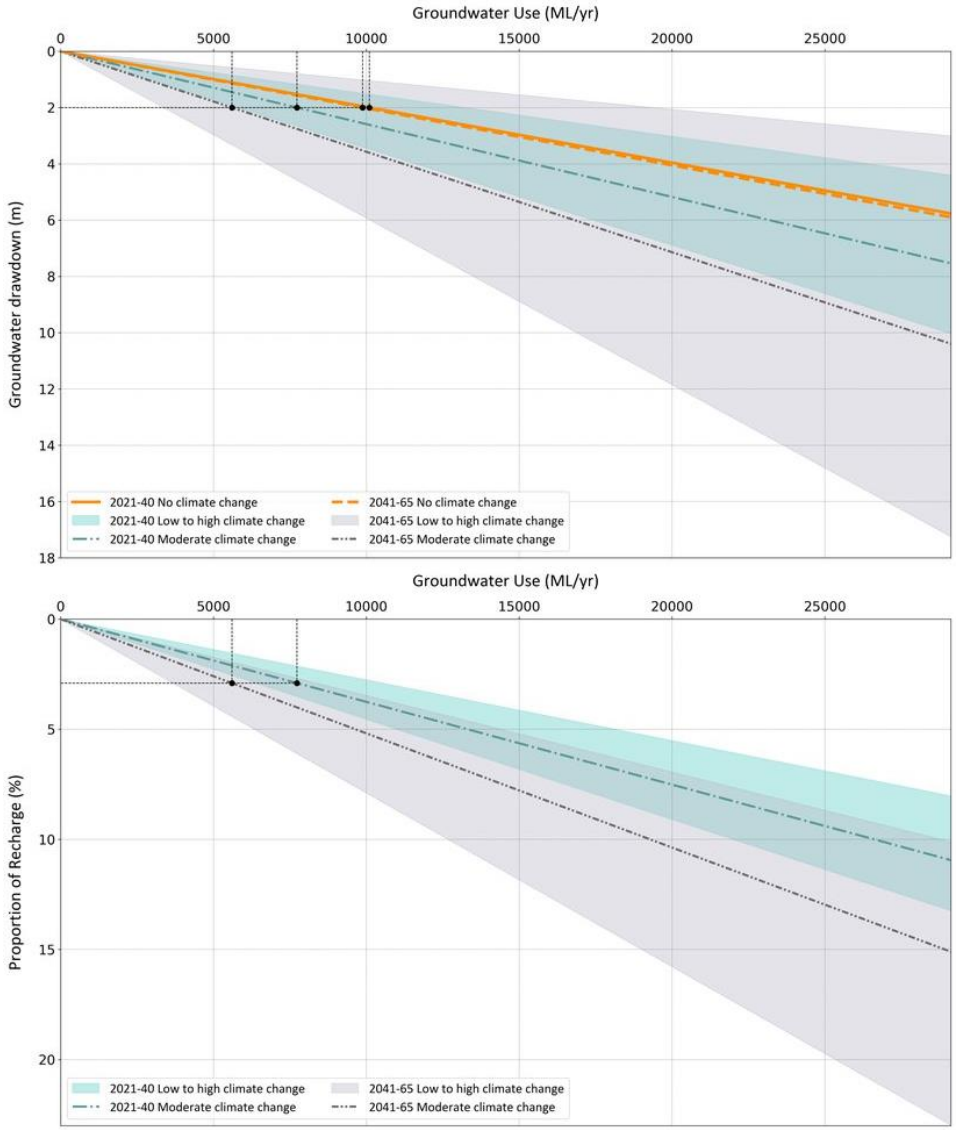

Figure A5-96. Upper Plot: Loddon Highlands WSPA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Loddon Highlands WSPA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-115. Terrestrial GDE synthesis Table A5-for Loddon Highlands WSPA

GMU					LODDON HIGHLANDS WSPA
Terrestrial GDEs	Avg Use 4,954 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	2.2 (0.02 to 3.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	1.8 (0.22 to 7.7)
	PCV use 14,559 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.1
				MCC (LCC to HCC)	4.3 (2.3 to 6.1)
		2041-2065	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	6.8 (1.3 to 12)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	636
				MCC (HCC to LCC)	470 (349 to 848)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.18% (0.16% to 0.23%)
		2041-2065	Volume (ML/yr)	No CC	483
				MCC (HCC to LCC)	309 (185 to 1,088)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.16% (0.15% to 0.38%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,356
				MCC (HCC to LCC)	4,705 (3,488 to 8,477)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.77% (1.59% to 2.34%)
		2041-2065	Volume (ML/yr)	No CC	4,826
				MCC (HCC to LCC)	3,089 (1,851 to 10,876)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.60% (1.46% to 3.78%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	12,712
				MCC (HCC to LCC)	9,409 (6,975 to 16,954)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.54% (3.17% to 4.67%)
		2041-2065	Volume (ML/yr)	No CC	9,651
				MCC (HCC to LCC)	6,179 (3,701 to 21,752)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.20% (2.92% to 7.56%)

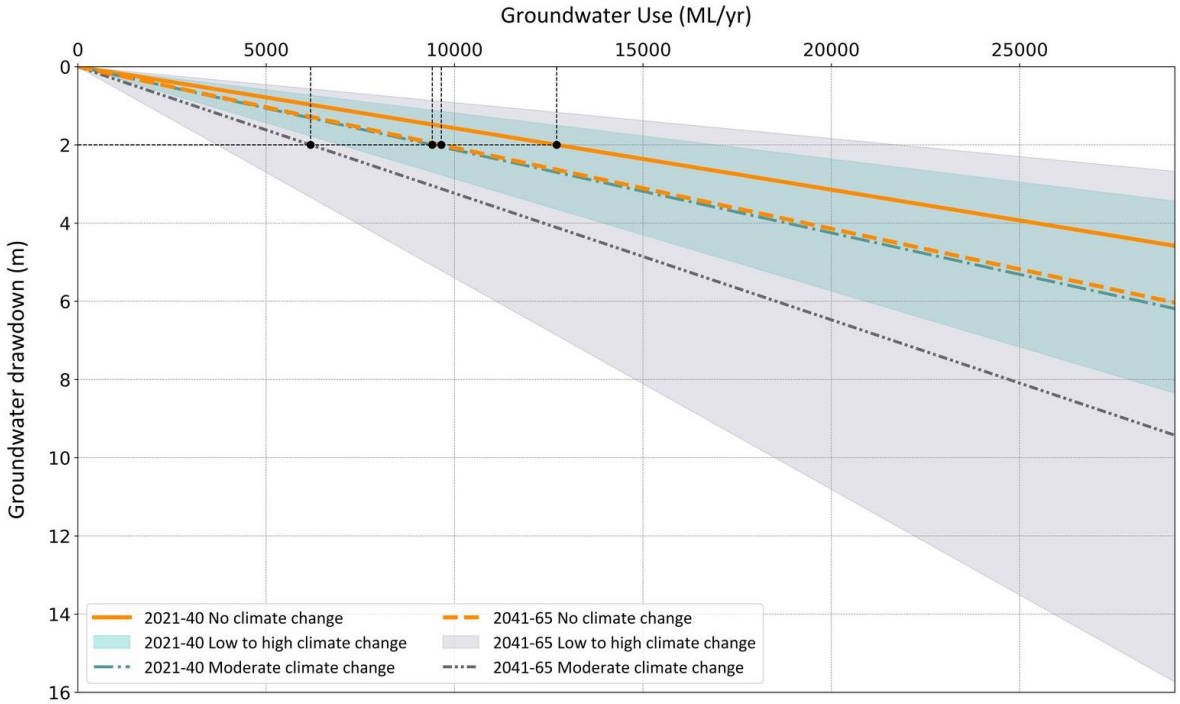

Figure A5-97. Plot for Loddon Highlands WSPA Terrestrial GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-116. Waterways GDE synthesis Table A5-for Loddon Highlands WSPA

GMU					LODDON HIGHLANDS WSPA
Waterway GDEs	Avg Use 4,954 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.02
				MCC (LCC to HCC)	0.51 (-0.84 to 1.5)
		2041-2065	Drawdown from baseline (m)	No CC	0.22
				MCC (LCC to HCC)	0.22 (-0.61 to 3.8)
	PCV use 14,559 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	4.2 (1.9 to 6.2)
		2041-2065	Drawdown from baseline (m)	No CC	0.22
				MCC (LCC to HCC)	6.4 (0.87 to 12)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	668
				MCC (HCC to LCC)	494 (350 to 961)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.19% (0.16% to 0.26%)
		2041-2065	Volume (ML/yr)	No CC	490
				MCC (HCC to LCC)	319 (188 to 1,204)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.17% (0.15% to 0.42%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,682
				MCC (HCC to LCC)	4,941 (3,502 to 9,613)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.86% (1.59% to 2.65%)
		2041-2065	Volume (ML/yr)	No CC	4,905
				MCC (HCC to LCC)	3,190 (1,885 to 12,042)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.65% (1.49% to 4.18%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	13,364
				MCC (HCC to LCC)	9,881 (7,005 to 19,227)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.71% (3.18% to 5.30%)
		2041-2065	Volume (ML/yr)	No CC	9,809
				MCC (HCC to LCC)	6,380 (3,770 to 24,083)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.31% (2.97% to 8.37%)

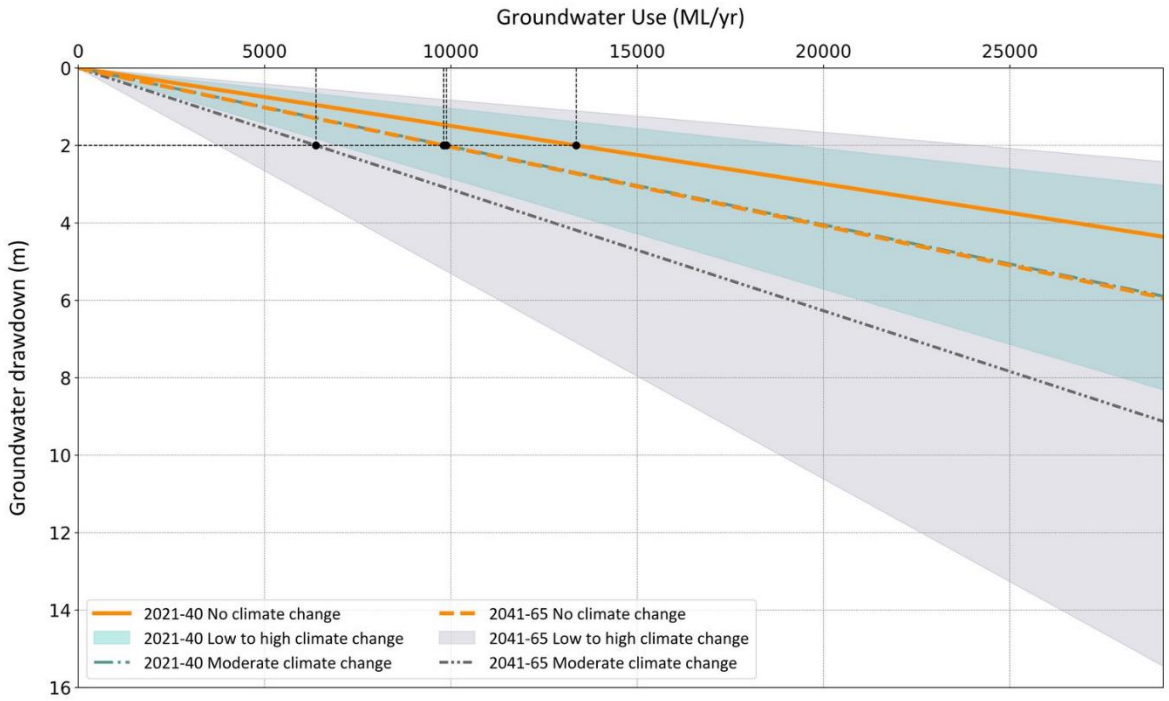

Figure A5-98. Plot for Loddon Highlands WSPA Waterways GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-117. Stream gauge results for Loddon Highlands WSPA

GMU		LODDON HIGHLANDS WSPA		
Stream gauge/Catchment:		407203 - Loddon River @ Laanecoorie (Regulated)		
Base flow index (1975-2020)		0.46		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	138,216 (94,632 to 167,770)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-26,275 (-69,859 to 3,279)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	122,992 (63,287 to 159,561)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-41,500 (-101,204 to -4,930)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	6.1% (8.9% to 5.0%)
		PCV use (ML/yr)	MCC (LCC to HCC)	14% (21% to 12%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	6.9% (13% to 5.3%)
		PCV use (ML/yr)	MCC (LCC to HCC)	16% (32% to 12%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	16.19 (11.08 to 19.65)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-3 (-8 to 1)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	14.41 (7.41 to 18.69)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-4 (-11 to 0)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	143% (209% to 118%)

		PCV use (ML/yr)	MCC (LCC to HCC)	338% (493% to 278%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	161% (313% to 124%)
		PCV use (ML/yr)	MCC (LCC to HCC)	379% (737% to 292%)

Table A5-118. Wetlands GDE synthesis Table A5-for Loddon Highlands WSPA

GMU					LODDON HIGHLANDS WSPA
Wetlands GDEs	Avg Use 4,954 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	2.4 (0.41 to 3.5)
		2041-2065	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	1.9 (0.64 to 6.7)
	PCV use 14,559 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.0
				MCC (LCC to HCC)	5.4 (2.9 to 7.4)
		2041-2065	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	7.3 (1.3 to 13)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	525
				MCC (HCC to LCC)	398 (298 to 697)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.15% (0.14% to 0.19%)
		2041-2065	Volume (ML/yr)	No CC	444
				MCC (HCC to LCC)	297 (175 to 1,178)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.15% (0.14% to 0.41%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,248
				MCC (HCC to LCC)	3,983 (2,977 to 6,969)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.50% (1.35% to 1.92%)
		2041-2065	Volume (ML/yr)	No CC	4,443
				MCC (HCC to LCC)	2,969 (1,747 to 11,785)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.54% (1.38% to 4.09%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	10,495
				MCC (HCC to LCC)	7,966 (5,953 to 13,938)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.99% (2.71% to 3.84%)
		2041-2065	Volume (ML/yr)	No CC	8,886
				MCC (HCC to LCC)	5,938 (3,494 to 23,569)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.08% (2.76% to 8.19%)

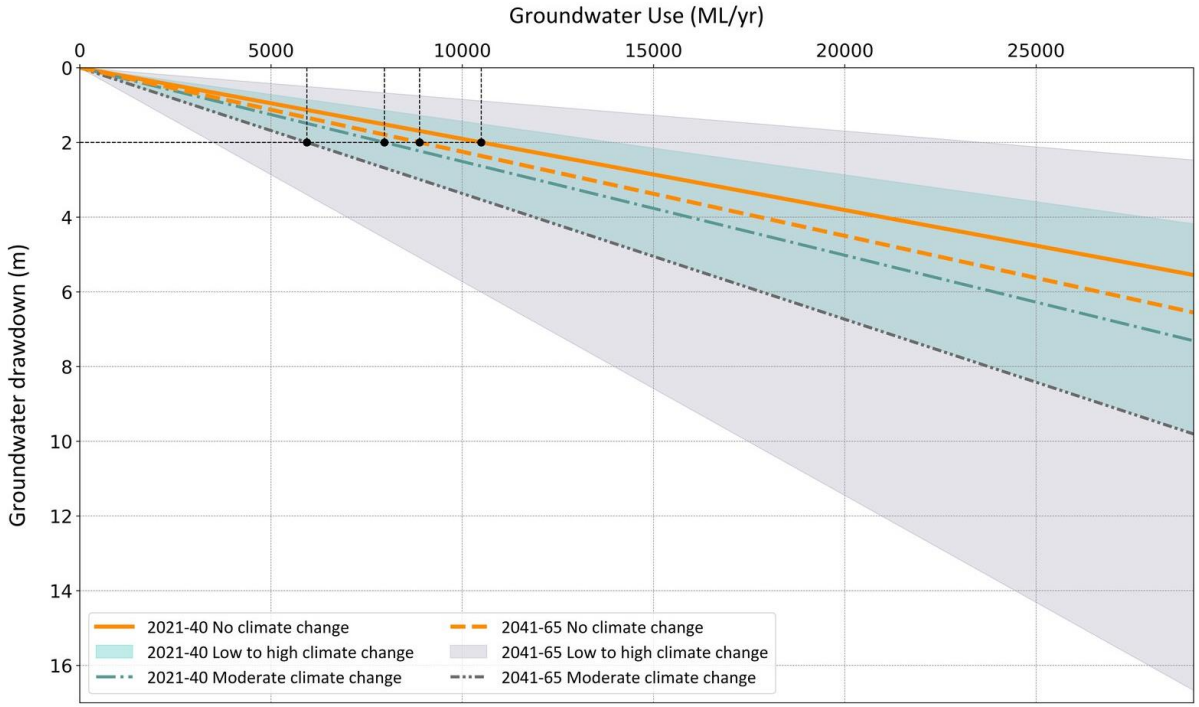

Figure A5-99. Plot for Loddon Highlands WSPA Wetlands GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

LOWER CAMPASPE VALLEY WSPA

Table A5-119. Consumptive users synthesis Table A5-for Lower Campaspe Valley WSPA

Assessment area	**GMU**					**LOWER CAMPASPE VALLEY WSPA**
	Representative Bore					89,580
	Aquifer					Semi-Confined
	Water system depth boundary (m below natural surface)					All formations below the surface with the exception of all formations from the surface to 25 metres below the surface north of the Waranga Western Channel.
Catchment	Permissible Consumptive Volume (ML/yr)					55,875
	Licensed Entitlement (ML/yr)					55,860
	Licensed avg use (ML/yr)					38,225
Consumptive use metric	**Consumptive users (bores)**	Avg Use 34,733 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.4
					MCC (LCC to HCC)	5.2 (1.8 to 6.3)
			2041-2065	Drawdown from baseline (m)	No CC	4.6
					MCC (LCC to HCC)	4.6 (2.8 to 9.6)
		PCV use 63,411 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.9
					MCC (LCC to HCC)	5.7 (4.1 to 6.9)
			2041-2065	Drawdown from baseline (m)	No CC	4.6
					MCC (LCC to HCC)	7.1 (3.4 to 10)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	16,274
					MCC (HCC to LCC)	14,312 (12,183 to 19,608)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	10.18% (10.35% to 11.40%)
			2041-2065	Volume (ML/yr)	No CC	14,280
					MCC (HCC to LCC)	11,649 (8,118 to 20,063)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	11.40% (12.63% to 13.02%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	32,548
					MCC (HCC to LCC)	28,624 (24,366 to 39,216)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	20.36% (20.71% to 22.80%)
			2041-2065	Volume (ML/yr)	No CC	28,559
					MCC (HCC to LCC)	23,297 (16,236 to 40,126)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	22.81% (25.26% to 26.04%)

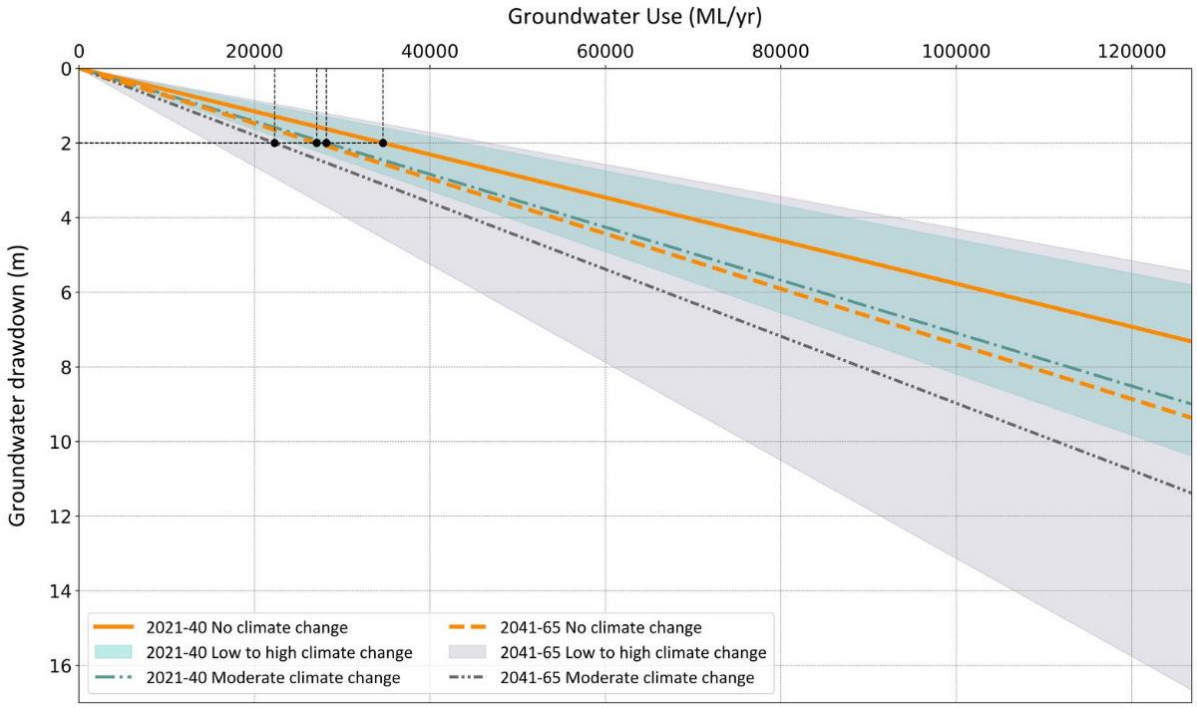

Figure A5-100. Plot for Lower Campaspe Valley WSPA Consumptive Users modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-120. Statewide drawdown use synthesis Table A5-for Lower Campaspe Valley WSPA

Assessment area	GMU					LOWER CAMPASPE VALLEY WSPA
Consumptive use metric	Consumptive users (bores)	Avg Use 34,733 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.3
					MCC (LCC to HCC)	5.1 (1.7 to 6.2)
			2041-2065	Drawdown from baseline (m)	No CC	4.5
					MCC (LCC to HCC)	4.5 (2.7 to 9.6)
		PCV use 63,411 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.7
					MCC (LCC to HCC)	5.6 (4.0 to 6.8)
			2041-2065	Drawdown from baseline (m)	No CC	4.5
					MCC (LCC to HCC)	7.1 (3.3 to 10)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	16,846
					MCC (HCC to LCC)	14,622 (12,458 to 20,478)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	10.40% (10.81% to 11.66%)
			2041-2065	Volume (ML/yr)	No CC	14,879
					MCC (HCC to LCC)	11,802 (8,182 to 21,076)

				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	11.55% (12.73% to 13.68%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	33,692
					MCC (HCC to LCC)	29,244 (24,917 to 40,957)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	20.80% (21.63% to 23.32%)
			2041-2065	Volume (ML/yr)	No CC	29,758
					MCC (HCC to LCC)	23,603 (16,365 to 42,153)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	23.11% (25.46% to 27.36%)

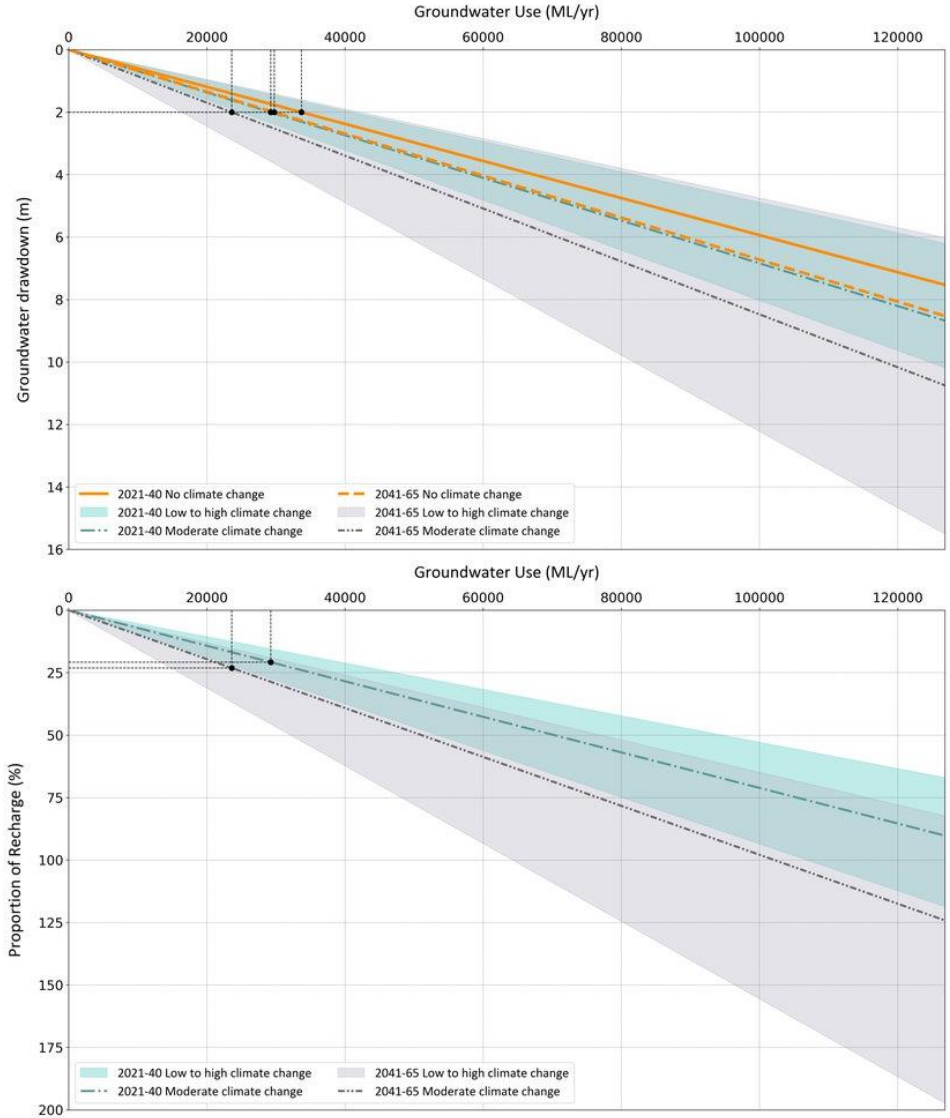

Figure A5-101. Upper Plot: Lower Campaspe Valley WSPA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Lower Campaspe Valley WSPA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-121. Terrestrial GDE synthesis Table A5-for Lower Campaspe Valley WSPA

GMU					LOWER CAMPASPE VALLEY WSPA
Terrestrial GDEs	Avg Use 34,733 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.9
				MCC (LCC to HCC)	4.6 (1.5 to 5.7)
		2041-2065	Drawdown from baseline (m)	No CC	4.1
				MCC (LCC to HCC)	4.1 (2.3 to 8.9)
	PCV use 63,411 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.3
				MCC (LCC to HCC)	5.1 (3.6 to 6.2)
		2041-2065	Drawdown from baseline (m)	No CC	4.1
				MCC (LCC to HCC)	6.6 (3.1 to 9.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,816
				MCC (HCC to LCC)	1,578 (1,342 to 2,221)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.12% (1.17% to 1.26%)
		2041-2065	Volume (ML/yr)	No CC	1,598
				MCC (HCC to LCC)	1,244 (867 to 2,200)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.22% (1.35% to 1.43%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	18,163
				MCC (HCC to LCC)	15,783 (13,423 to 22,211)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.23% (11.73% to 12.56%)
		2041-2065	Volume (ML/yr)	No CC	15,976
				MCC (HCC to LCC)	12,443 (8,669 to 22,004)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.18% (13.49% to 14.28%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	36,326
				MCC (HCC to LCC)	31,566 (26,847 to 44,423)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	22.46% (23.46% to 25.12%)
		2041-2065	Volume (ML/yr)	No CC	31,952
				MCC (HCC to LCC)	24,885 (17,338 to 44,007)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	24.36% (26.97% to 28.56%)

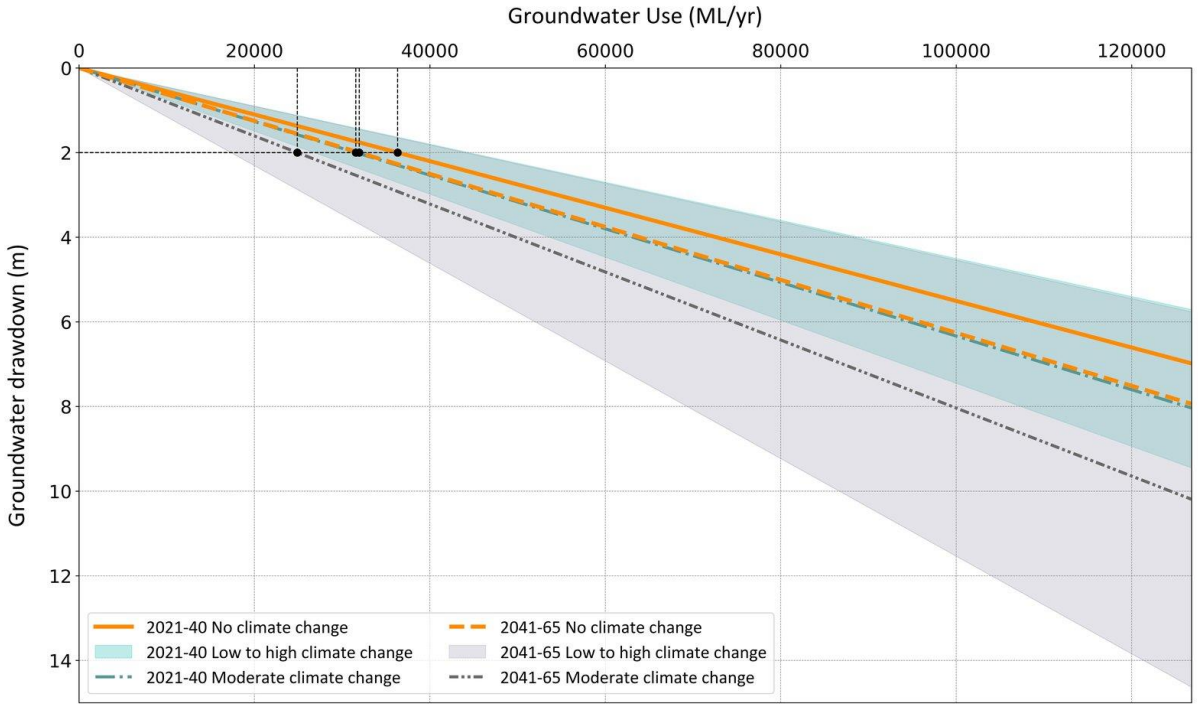

Figure A5-102. Plot for Lower Campaspe Valley WSPA Terrestrial GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-122. Waterways GDE synthesis Table A5-for Lower Campaspe Valley WSPA

GMU					LOWER CAMPASPE VALLEY WSPA
Waterway GDEs	Avg Use 34,733 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.3
				MCC (LCC to HCC)	5.5 (1.3 to 6.5)
		2041-2065	Drawdown from baseline (m)	No CC	4.6
				MCC (LCC to HCC)	4.6 (2.4 to 11)
	PCV use 63,411 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.7
				MCC (LCC to HCC)	5.9 (3.8 to 7.0)
		2041-2065	Drawdown from baseline (m)	No CC	4.6
				MCC (LCC to HCC)	7.8 (2.9 to 11)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,733
				MCC (HCC to LCC)	1,410 (1,221 to 2,185)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.00% (1.14% to 1.15%)
		2041-2065	Volume (ML/yr)	No CC	1,354
				MCC (HCC to LCC)	1,114 (762 to 2,328)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	1.09% (1.19% to 1.51%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	17,327
				MCC (HCC to LCC)	14,095 (12,210 to 21,849)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.03% (11.43% to 11.54%)
		2041-2065	Volume (ML/yr)	No CC	13,541
				MCC (HCC to LCC)	11,142 (7,617 to 23,275)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.91% (11.85% to 15.11%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	34,654
				MCC (HCC to LCC)	28,190 (24,421 to 43,698)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	20.05% (22.85% to 23.07%)
		2041-2065	Volume (ML/yr)	No CC	27,081
				MCC (HCC to LCC)	22,285 (15,234 to 46,550)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	21.82% (23.70% to 30.21%)

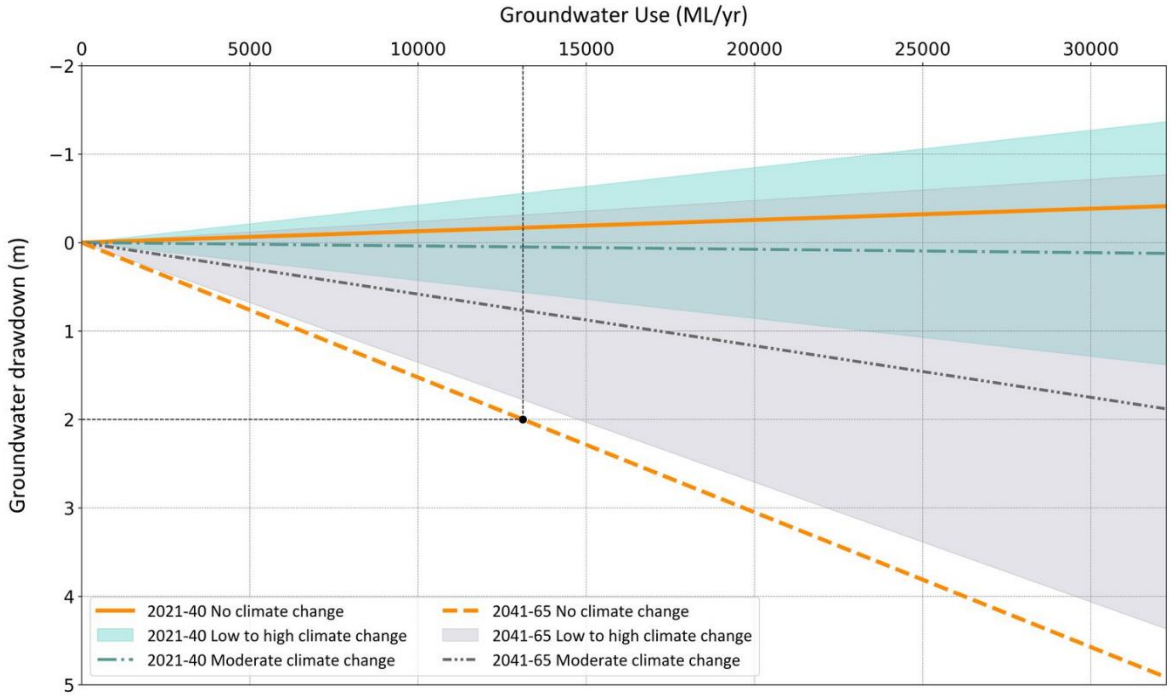

Figure A5-103. Plot for Lower Campaspe Valley WSPA Waterways GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-123. Stream gauge results for Lower Campaspe WSPA

GMU		**LOWER CAMPASPE VALLEY WSPA**		
Stream gauge/Catchment:		**406202 - Campaspe River @ Rochester D/S Waranga Western Ch Syphn (Regulated)**		
Base flow index (1975-2020)				**0.36**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	101,065 (72,486 to 127,340)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-37,318 (-65,897 to -11,043)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	91,385 (49,553 to 116,392)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-46,998 (-88,830 to -21,991)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	5.0% (6.9% to 3.9%)
		PCV use (ML/yr)	MCC (LCC to HCC)	9.0% (12% to 7.1%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	5.5% (10% to 4.3%)
		PCV use (ML/yr)	MCC (LCC to HCC)	9.9% (18% to 7.8%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	5.49 (3.93 to 6.91)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-1 (-2 to 1)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	4.96 (2.69 to 6.32)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-1 (-4 to 0)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	251% (350% to 199%)

		PCV use (ML/yr)	MCC (LCC to HCC)	452% (630% to 359%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	278% (512% to 218%)
		PCV use (ML/yr)	MCC (LCC to HCC)	500% (922% to 392%)

Table A5-124. Wetlands GDE synthesis Table A5-for Lower Campaspe Valley WSPA

GMU					LOWER CAMPASPE VALLEY WSPA
Wetlands GDEs	Avg Use 34,733 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.6
				MCC (LCC to HCC)	4.0 (1.8 to 5.2)
		2041-2065	Drawdown from baseline (m)	No CC	3.7
				MCC (LCC to HCC)	3.7 (2.3 to 7.5)
	PCV use 63,411 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.1
				MCC (LCC to HCC)	4.5 (3.4 to 5.7)
		2041-2065	Drawdown from baseline (m)	No CC	3.7
				MCC (LCC to HCC)	5.5 (2.8 to 8.3)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,927
				MCC (HCC to LCC)	1,764 (1,459 to 2,333)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.26% (1.23% to 1.36%)
		2041-2065	Volume (ML/yr)	No CC	1,751
				MCC (HCC to LCC)	1,462 (1,010 to 2,389)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.43% (1.55% to 1.57%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	19,274
				MCC (HCC to LCC)	17,643 (14,586 to 23,326)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.55% (12.32% to 13.65%)
		2041-2065	Volume (ML/yr)	No CC	17,508
				MCC (HCC to LCC)	14,615 (10,099 to 23,888)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	14.31% (15.50% to 15.71%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	38,548
				MCC (HCC to LCC)	35,287 (29,171 to 46,651)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	25.10% (24.63% to 27.30%)
		2041-2065	Volume (ML/yr)	No CC	35,015
				MCC (HCC to LCC)	29,230 (20,197 to 47,777)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	28.62% (31.01% to 31.42%)

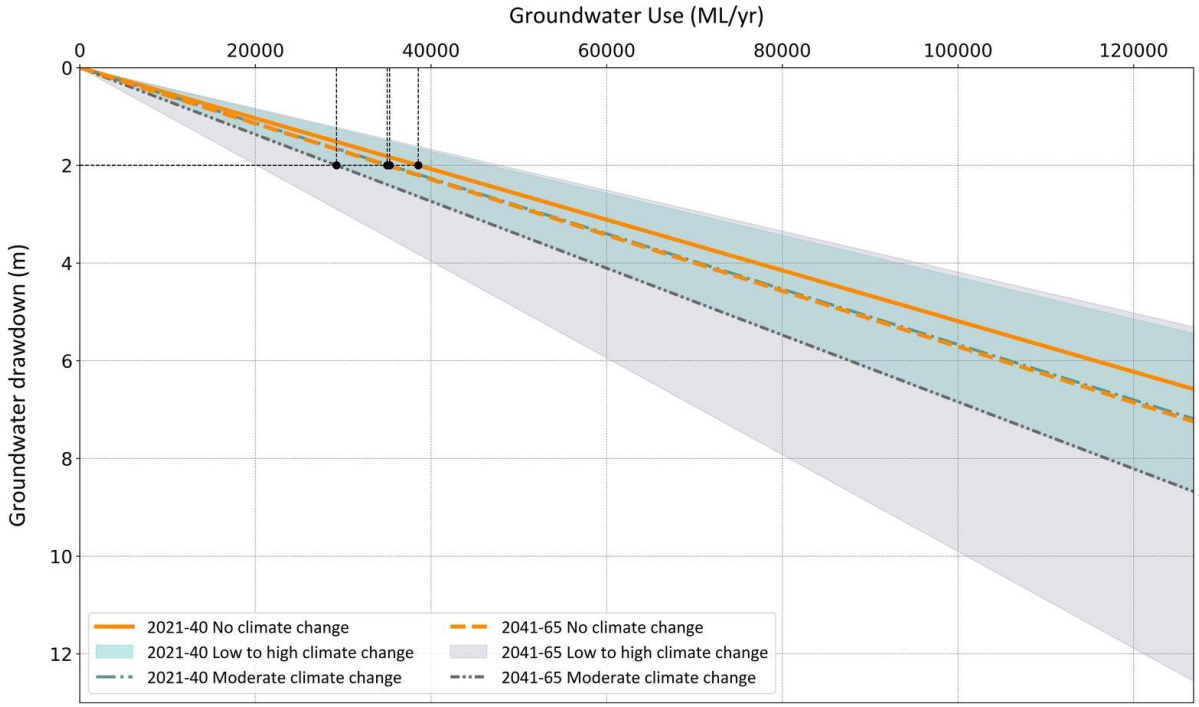

Figure A5-104. Plot for Lower Campaspe Valley WSPA Wetlands GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

LOWER OVENS GMA

Table A5-125. Consumptive users synthesis Table A5-for Lower Ovens GMA

Assessment area	**GMU**					**LOWER OVENS GMA**
	Representative Bore					WRK054545
	Aquifer					Semi-Confined
	Water system depth boundary (m below natural surface)					All formations below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					25,200
	Licensed Entitlement (ML/yr)					19,888
	Licensed avg use (ML/yr)					8,948
Consumptive use metric	**Consumptive users (bores)**	Avg Use 4,933 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.9
					MCC (LCC to HCC)	2.4 (0.11 to 3.5)
			2041-2065	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	2.2 (0.64 to 5.6)
		PCV use	2021-2040	Drawdown from baseline (m)	No CC	2.1
					MCC (LCC to HCC)	2.6 (1.4 to 3.7)

		16,120 (ML/yr)	2041-2065	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	3.6 (0.99 to 5.8)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	10,960
					MCC (HCC to LCC)	8,910 (6,468 to 17,074)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.62% (0.57% to 0.90%)
			2041-2065	Volume (ML/yr)	No CC	10,722
					MCC (HCC to LCC)	6,574 (4,059 to 19,504)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.57% (0.56% to 1.20%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	21,919
					MCC (HCC to LCC)	17,819 (12,937 to 34,148)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.24% (1.14% to 1.81%)
			2041-2065	Volume (ML/yr)	No CC	21,444
					MCC (HCC to LCC)	13,148 (8,119 to 39,007)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.14% (1.12% to 2.41%)

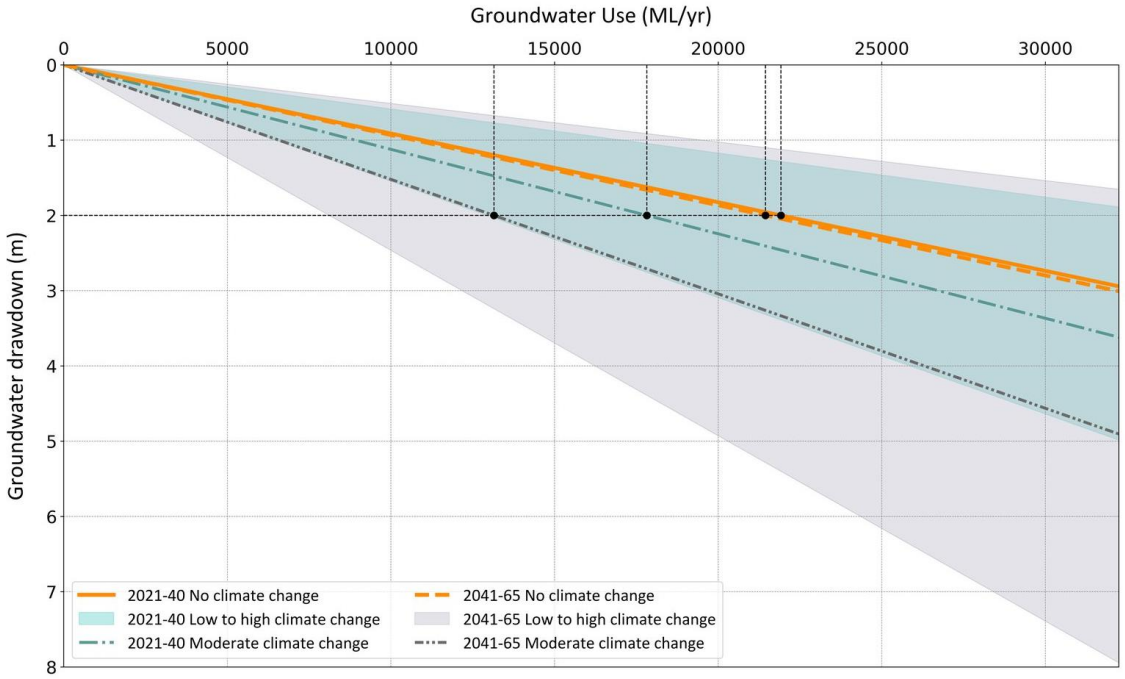

Figure A5-105. Plot for Lower Ovens GMA Consumptive Users modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-126. Statewide drawdown use synthesis Table A5-for Lower Ovens GMA

GMU					LOWER OVENS GMA
Consumptive users (bores)	Avg Use 4,933 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.4
				MCC (LCC to HCC)	2.8 (0.57 to 4.1)
		2041-2065	Drawdown from baseline (m)	No CC	2.7
				MCC (LCC to HCC)	2.7 (1.2 to 6.2)
	PCV use 16,120 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.1
				MCC (LCC to HCC)	3.8 (2.2 to 5.3)
		2041-2065	Drawdown from baseline (m)	No CC	2.7
				MCC (LCC to HCC)	5.1 (1.6 to 8.1)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	7,759
				MCC (HCC to LCC)	6,441 (4,698 to 11,428)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.45% (0.41% to 0.61%)
		2041-2065	Volume (ML/yr)	No CC	9,515
				MCC (HCC to LCC)	4,834 (3,027 to 13,563)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.42% (0.42% to 0.84%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	15,518
				MCC (HCC to LCC)	12,881 (9,396 to 22,857)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.90% (0.83% to 1.21%)
		2041-2065	Volume (ML/yr)	No CC	19,029
				MCC (HCC to LCC)	9,667 (6,054 to 27,126)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.84% (0.83% to 1.68%)

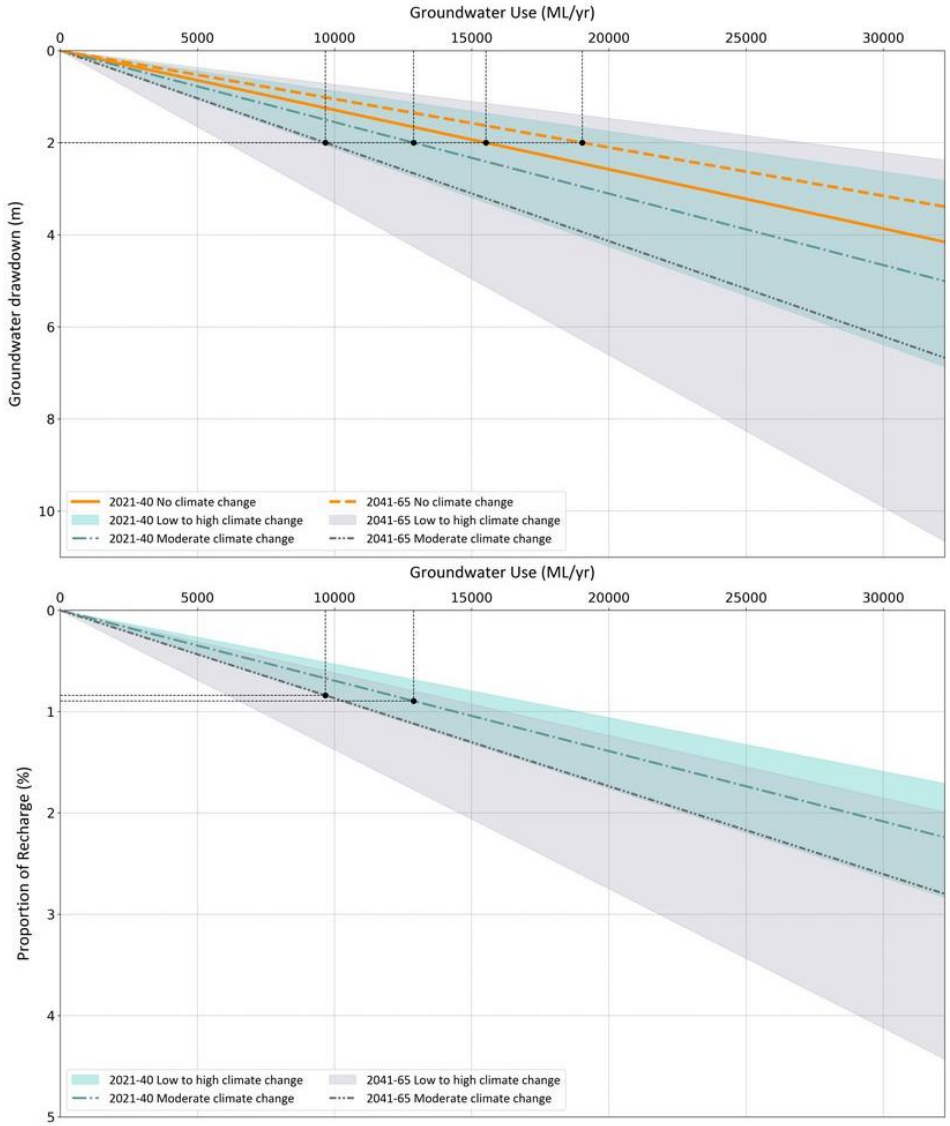

Figure A5-106. Upper Plot: Lower Ovens GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Lower Ovens GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-127. Terrestrial GDE synthesis Table A5-for Lower Ovens GMA

GMU					LOWER OVENS GMA
Terrestrial GDEs	Avg Use 4,933 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	1.6 (-0.15 to 2.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	1.6 (0.00 to 5.1)
	PCV use 16,120 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	1.7 (0.77 to 2.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	2.9 (0.54 to 5.1)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,533
				MCC (HCC to LCC)	1,268 (821 to 2,739)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.09% (0.07% to 0.15%)
		2041-2065	Volume (ML/yr)	No CC	1,332
				MCC (HCC to LCC)	789 (458 to 2,858)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.07% (0.06% to 0.18%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	15,326
				MCC (HCC to LCC)	12,681 (8,214 to 27,393)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.88% (0.72% to 1.45%)
		2041-2065	Volume (ML/yr)	No CC	13,316
				MCC (HCC to LCC)	7,890 (4,579 to 28,577)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.68% (0.63% to 1.77%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	30,652
				MCC (HCC to LCC)	25,363 (16,429 to 54,787)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.76% (1.44% to 2.90%)
		2041-2065	Volume (ML/yr)	No CC	26,633
				MCC (HCC to LCC)	15,781 (9,158 to 57,155)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.37% (1.26% to 3.53%)

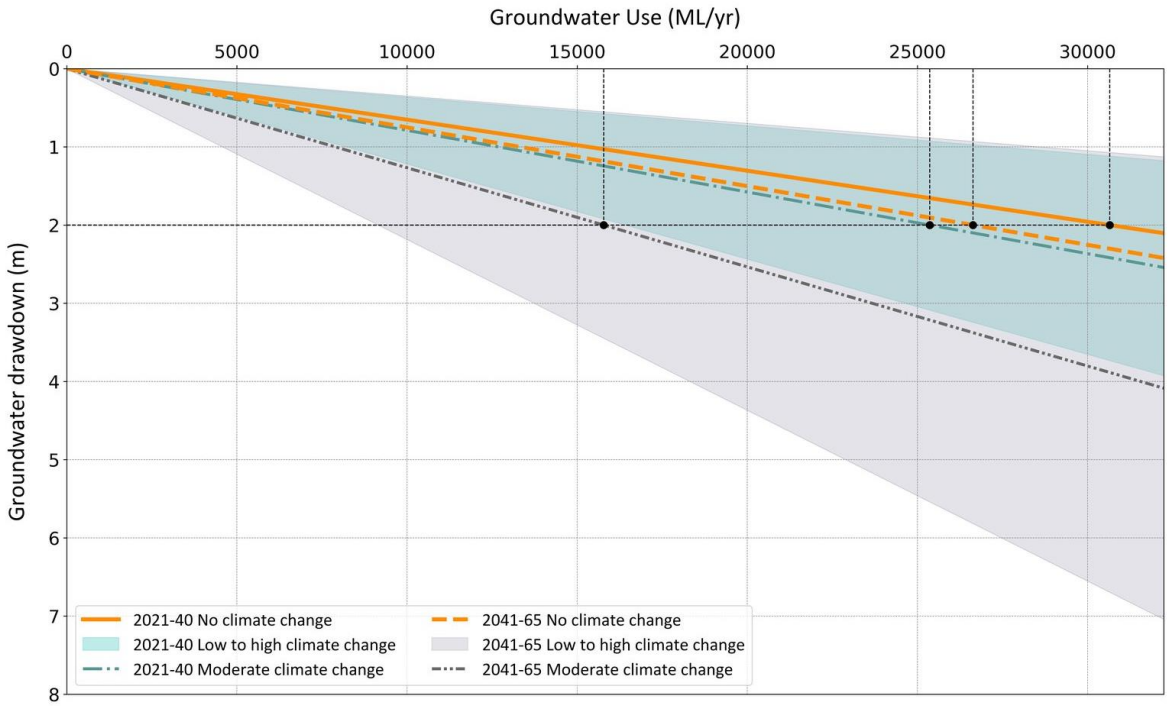

Figure A5-107. Plot for Lower Ovens GMA Terrestrial GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-128. Waterways GDE synthesis Table A5-for Lower Ovens GMA

GMU					LOWER OVENS GMA
Waterway GDEs	Avg Use 4,933 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.75
				MCC (LCC to HCC)	-0.33 (-2.45 to 0.80)
		2041-2065	Drawdown from baseline (m)	No CC	-0.35
				MCC (LCC to HCC)	-0.35 (-1.79 to 2.8)
	PCV use 16,120 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.60
				MCC (LCC to HCC)	-0.21 (-1.25 to 0.76)
		2041-2065	Drawdown from baseline (m)	No CC	-0.35
				MCC (LCC to HCC)	1.00 (-1.09 to 2.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-7830.37
				MCC (HCC to LCC)	26,293 (-2361.12 to 2,332)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.83% (-0.13% to 0.21%)
		2041-2065	Volume (ML/yr)	No CC	656
				MCC (HCC to LCC)	1,714 (-4203.33 to 738)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.15% (-0.26% to 0.10%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-78303.72
				MCC (HCC to LCC)	262,928 (-23611.25 to 23,324)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	18.27% (-1.25% to 2.05%)
		2041-2065	Volume (ML/yr)	No CC	6,559
				MCC (HCC to LCC)	17,142 (-42033.32 to 7,384)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.49% (-2.60% to 1.01%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-156607.44
				MCC (HCC to LCC)	525,855 (-47222.50 to 46,647)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	36.54% (-2.50% to 4.10%)
		2041-2065	Volume (ML/yr)	No CC	13,117
				MCC (HCC to LCC)	34,284 (-84066.64 to 14,768)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.98% (-5.19% to 2.03%)

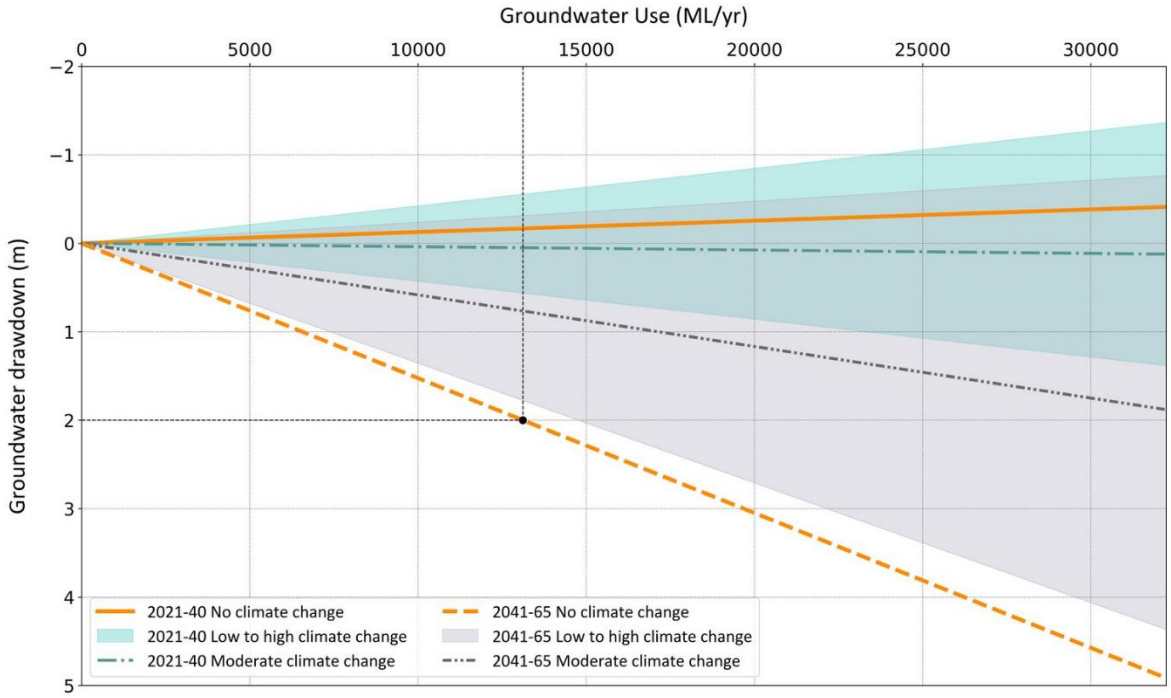

Figure A5-108. Plot for Lower Ovens GMA Waterways GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-129. Stream gauge results for Lower Ovens GMA

GMU				**LOWER OVENS GMA**
Stream gauge/Catchment:				**403241 - Ovens River @ Peechelba (Regulated)**
Base flow index (1975-2020)				**0.59**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	1,024,472 (880,908 to 1,282,887)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-124,039 (-267,603 to 134,376)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	968,195 (644,315 to 1,162,293)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-180,316 (-504,196 to 13,782)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.43% (0.50% to 0.34%)
		PCV use (ML/yr)	MCC (LCC to HCC)	1.5% (1.8% to 1.2%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.453% (0.680% to 0.377%)
		PCV use (ML/yr)	MCC (LCC to HCC)	1.6% (2.4% to 1.4%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	203 (175 to 255)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-25 (-53 to 27)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	192 (128 to 231)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-36 (-100 to 3)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	5.91% (6.87% to 4.72%)
		PCV use (ML/yr)	MCC (LCC to HCC)	21% (25% to 17%)

	2065	Current use (ML/yr)	MCC (LCC to HCC)	6.3% (9.4% to 5.2%)
		PCV use (ML/yr)	MCC (LCC to HCC)	23% (34% to 19%)

Table A5-130. Wetlands GDE synthesis Table A5-for Lower Ovens GMA

GMU					LOWER OVENS GMA
Wetlands GDEs	Avg Use 4,933 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.83
				MCC (LCC to HCC)	0.99 (-0.28 to 2.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.2 (-0.64 to 4.6)
	PCV use 16,120 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.94
				MCC (LCC to HCC)	1.1 (0.21 to 2.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	2.2 (-0.25 to 4.7)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,393
				MCC (HCC to LCC)	2,042 (1,031 to 9,294)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.14% (0.09% to 0.49%)
		2041-2065	Volume (ML/yr)	No CC	2,230
				MCC (HCC to LCC)	1,038 (-37832.50 to 508)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.09% (-2.34% to 0.07%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	23,931
				MCC (HCC to LCC)	20,422 (10,308 to 92,942)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.42% (0.91% to 4.92%)
		2041-2065	Volume (ML/yr)	No CC	22,296
				MCC (HCC to LCC)	10,382 (-378325.03 to 5,082)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.90% (-23.37% to 0.70%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	47,862
				MCC (HCC to LCC)	40,844 (20,616 to 185,885)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.84% (1.81% to 9.85%)
		2041-2065	Volume (ML/yr)	No CC	44,591
				MCC (HCC to LCC)	20,764 (-756650.06 to 10,163)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.80% (-46.74% to 1.40%)

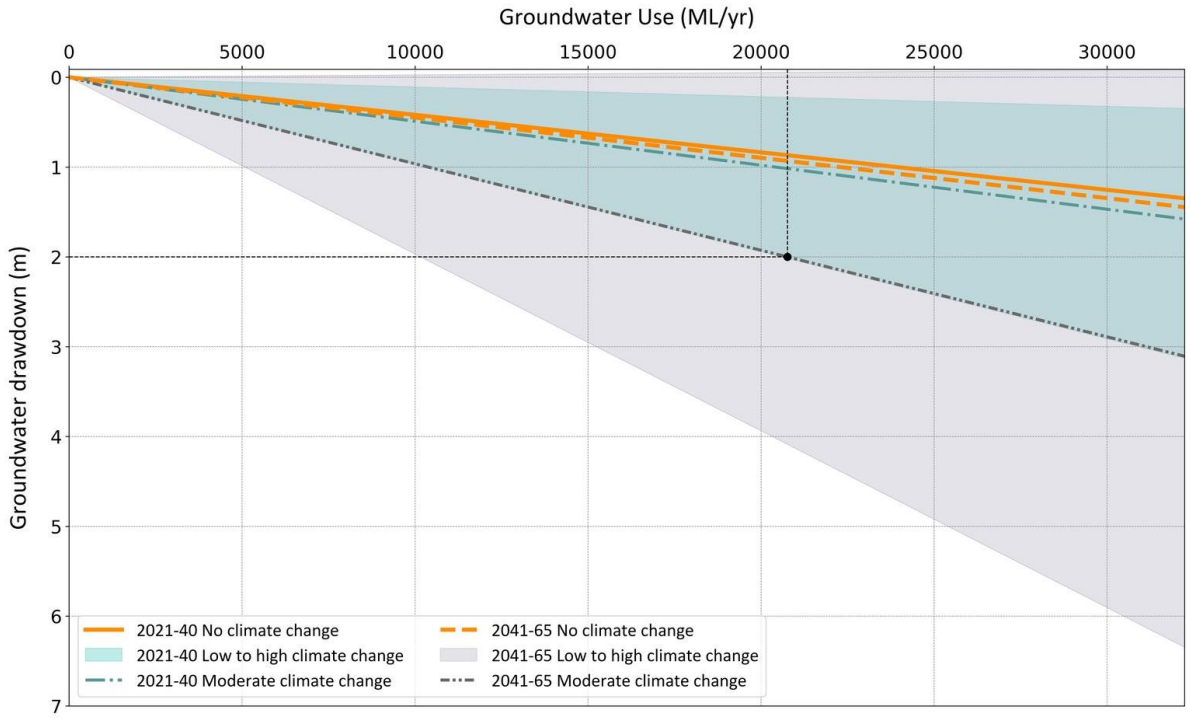

Figure A5-109. Plot for Lower Ovens GMA Wetlands GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

MERRIMU GMA

Table A5-131. Consumptive users synthesis Table A5-for Merrimu GMA

Assessment area	**GMU**					**MERRIMU GMA**
	Representative Bore					144973
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations from the surface to 30 metres below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					451
	Licensed Entitlement (ML/yr)					6
	Licensed avg use (ML/yr)					16
Consumptive use metric	Consumptive users (bores)	Avg Use 74 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.57
					MCC (LCC to HCC)	0.89 (0.11 to 1.4)
			2041-2065	Drawdown from baseline (m)	No CC	0.83
					MCC (LCC to HCC)	0.83 (0.35 to 2.4)
		PCV use 203 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.8
					MCC (LCC to HCC)	3.6 (2.0 to 4.9)
			2041-2065	Drawdown from baseline (m)	No CC	0.83
					MCC (LCC to HCC)	5.4 (2.0 to 8.4)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	102
					MCC (HCC to LCC)	81 (62 to 132)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	7.62% (7.35% to 10.10%)
			2041-2065	Volume (ML/yr)	No CC	84
					MCC (HCC to LCC)	52 (35 to 107)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	6.64% (6.82% to 9.86%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	203
					MCC (HCC to LCC)	163 (124 to 263)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	15.23% (14.69% to 20.20%)
			2041-2065	Volume (ML/yr)	No CC	167
					MCC (HCC to LCC)	103 (70 to 214)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	13.28% (13.64% to 19.73%)

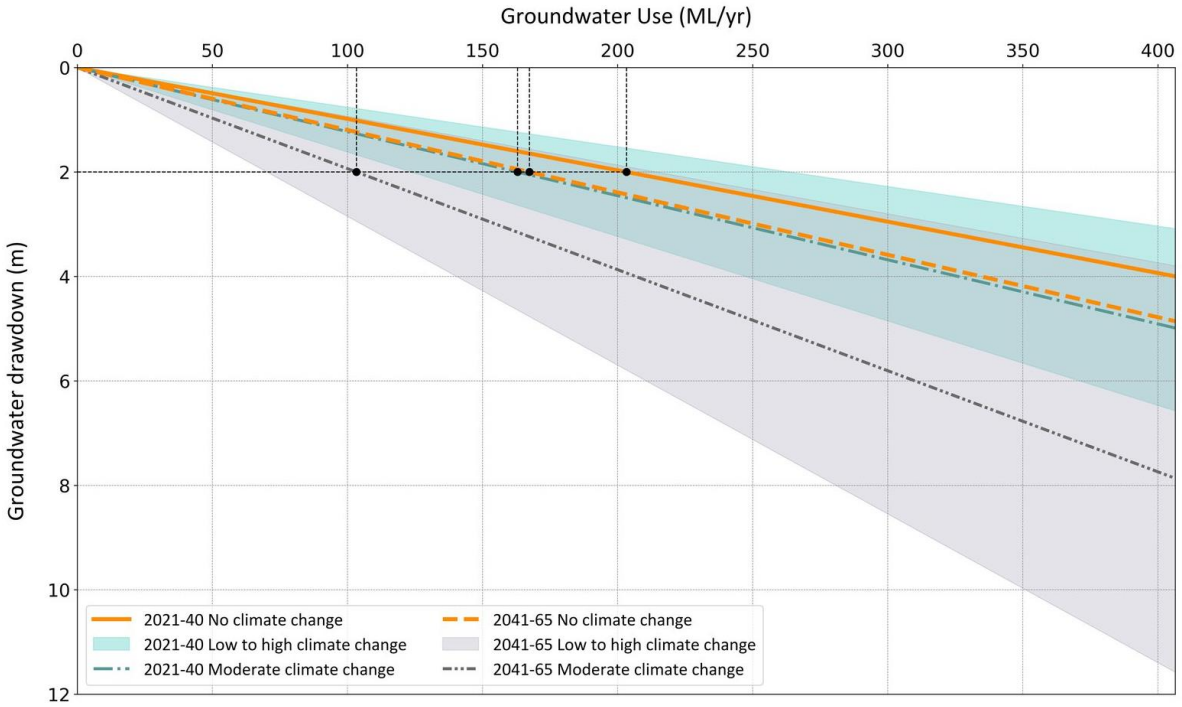

Figure A5-110. Plot for Merrimu GMA Consumptive Users modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-132. Statewide drawdown use synthesis Table A5-for Merrimu GMA

GMU					MERRIMU GMA
Consumptive users (bores)	Avg Use 74 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.54
				MCC (LCC to HCC)	0.84 (0.08 to 1.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.79
				MCC (LCC to HCC)	0.79 (0.31 to 2.3)
	PCV use 203 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.8
				MCC (LCC to HCC)	3.5 (2.1 to 4.8)
		2041-2065	Drawdown from baseline (m)	No CC	0.79
				MCC (LCC to HCC)	5.4 (2.1 to 8.4)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	101
				MCC (HCC to LCC)	82 (62 to 130)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.64% (7.40% to 9.99%)
		2041-2065	Volume (ML/yr)	No CC	87
				MCC (HCC to LCC)	51 (35 to 103)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.57% (6.81% to 9.47%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	202
				MCC (HCC to LCC)	163 (125 to 260)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	15.27% (14.80% to 19.97%)
		2041-2065	Volume (ML/yr)	No CC	175
				MCC (HCC to LCC)	102 (70 to 206)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.15% (13.62% to 18.94%)

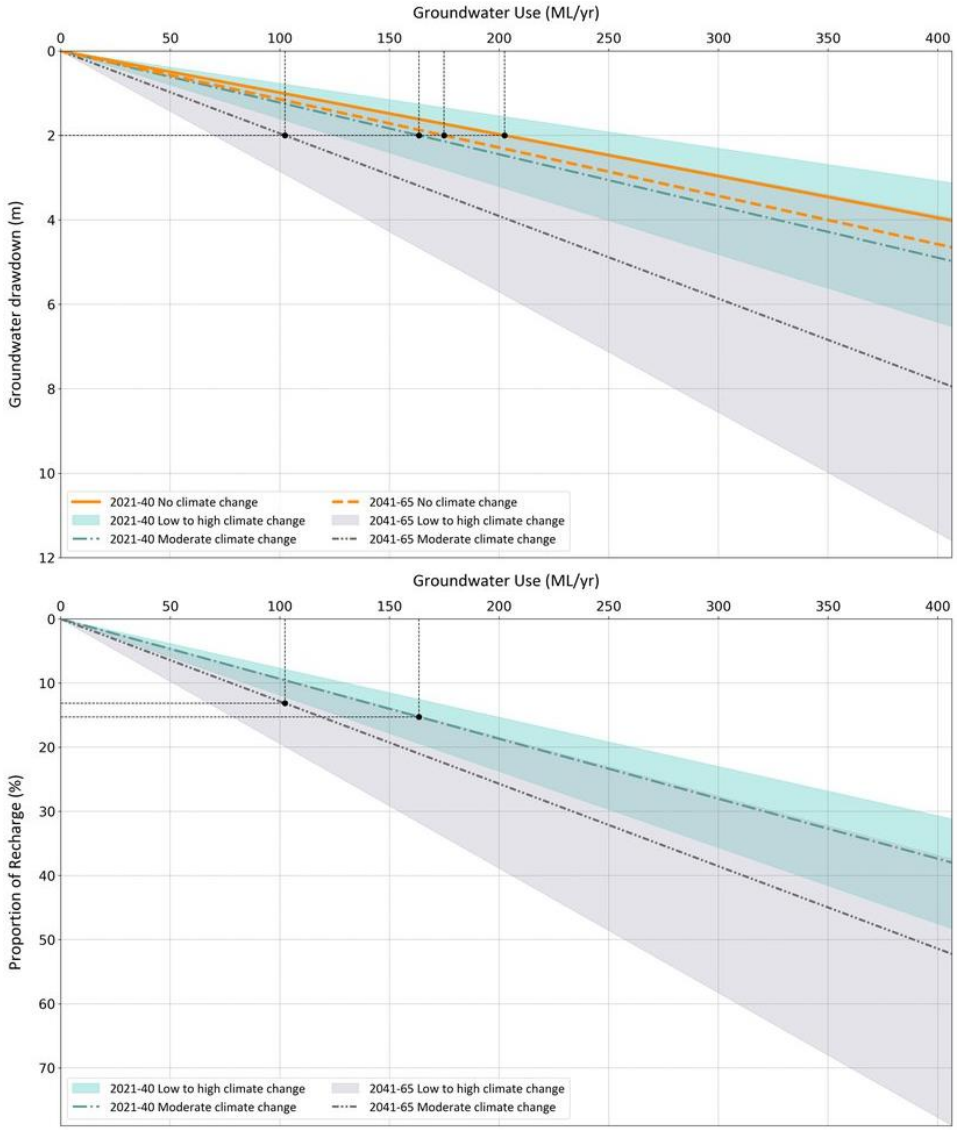

Figure A5-111. Upper Plot: Merrimu GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Merrimu GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-133. Terrestrial GDE synthesis Table A5-for Merrimu GMA

GMU					MERRIMU GMA
Terrestrial GDEs	Avg Use 74 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.28
				MCC (LCC to HCC)	0.57 (-0.17 to 1.1)
		2041-2065	Drawdown from baseline (m)	No CC	0.56
				MCC (LCC to HCC)	0.56 (0.08 to 2.1)
	PCV use 203 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.5
				MCC (LCC to HCC)	3.2 (1.8 to 4.5)
		2041-2065	Drawdown from baseline (m)	No CC	0.56
				MCC (LCC to HCC)	5.2 (1.9 to 8.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	11
				MCC (HCC to LCC)	8.8 (6.6 to 15)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.83% (0.79% to 1.13%)
		2041-2065	Volume (ML/yr)	No CC	8.2
				MCC (HCC to LCC)	5.3 (3.6 to 11)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.68% (0.70% to 1.00%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	111
				MCC (HCC to LCC)	88 (66 to 147)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.25% (7.85% to 11.26%)
		2041-2065	Volume (ML/yr)	No CC	82
				MCC (HCC to LCC)	53 (36 to 109)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.82% (7.04% to 10.00%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	222
				MCC (HCC to LCC)	177 (132 to 294)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	16.50% (15.71% to 22.53%)
		2041-2065	Volume (ML/yr)	No CC	164
				MCC (HCC to LCC)	106 (72 to 217)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.64% (14.07% to 20.00%)

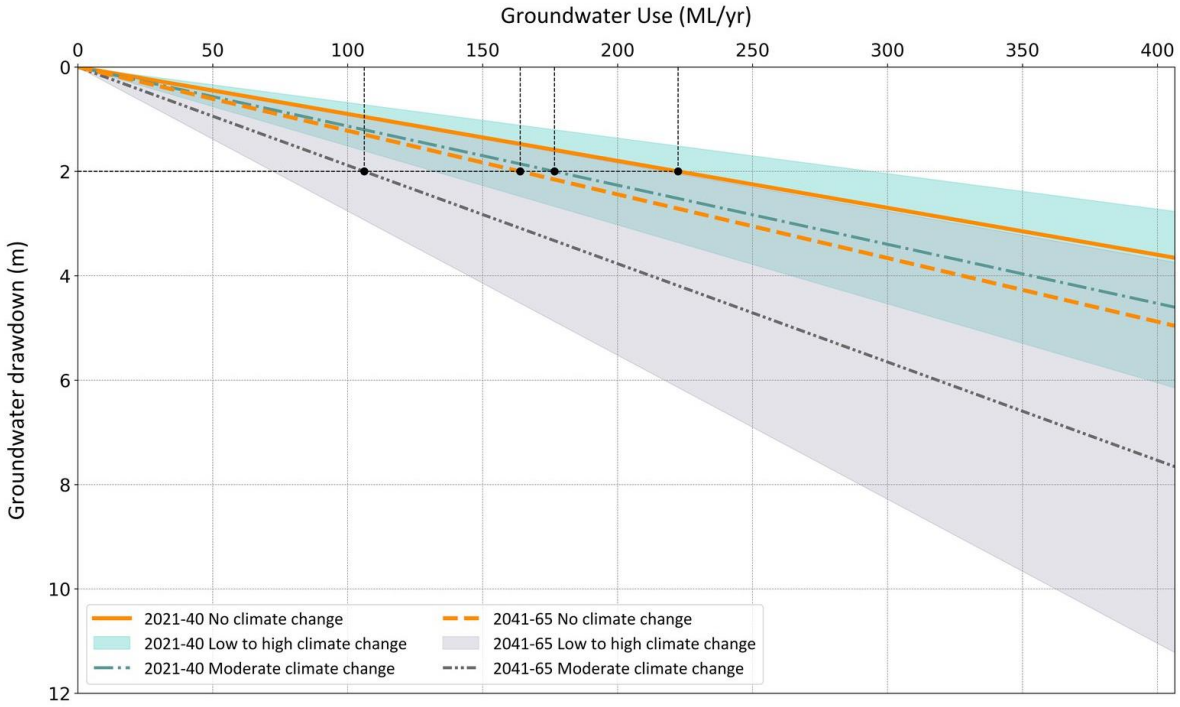

Figure A5-112. Plot for Merrimu GMA Terrestrial modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

MID GOULBURN GMA

Table A5-134. Consumptive users synthesis Table A5-for Mid Goulburn GMA

	GMU	MID GOULBURN GMA
Assessment area	Representative Bore	58264
	Aquifer	Semi-Confined
	Water system depth boundary (m below natural surface)	Zone 1070 Kialla – All formations below 25 metres below ground surface to 50 metres into bedrock or 200 metres from the surface (whichever is the greater depth). Zone 1071 Nagambie – All formations from ground surface to 50 metres into bedrock or 200 metres from the surface

						(whichever is the greater depth).
Catchment	Permissible Consumptive Volume (ML/yr)					12,470
	Licensed Entitlement (ML/yr)					12,432
	Licensed avg use (ML/yr)					3,535
Consumptive use metric	**Consumptive users (bores)**	Avg Use 3,633 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.0
					MCC (LCC to HCC)	3.6 (1.3 to 4.8)
			2041-2065	Drawdown from baseline (m)	No CC	3.3
					MCC (LCC to HCC)	3.3 (1.5 to 7.6)
		PCV use 26,966 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.3
					MCC (LCC to HCC)	3.9 (2.7 to 4.9)
			2041-2065	Drawdown from baseline (m)	No CC	3.3
					MCC (LCC to HCC)	5.0 (2.3 to 7.6)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	11,435
					MCC (HCC to LCC)	9,798 (7,931 to 13,546)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	5.94% (5.70% to 6.56%)
			2041-2065	Volume (ML/yr)	No CC	10,464
					MCC (HCC to LCC)	7,650 (5,230 to 14,346)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	5.75% (5.53% to 8.07%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	22,870
					MCC (HCC to LCC)	19,595 (15,862 to 27,092)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	11.87% (11.40% to 13.11%)
			2041-2065	Volume (ML/yr)	No CC	20,927
					MCC (HCC to LCC)	15,299 (10,461 to 28,693)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	11.50% (11.05% to 16.15%)

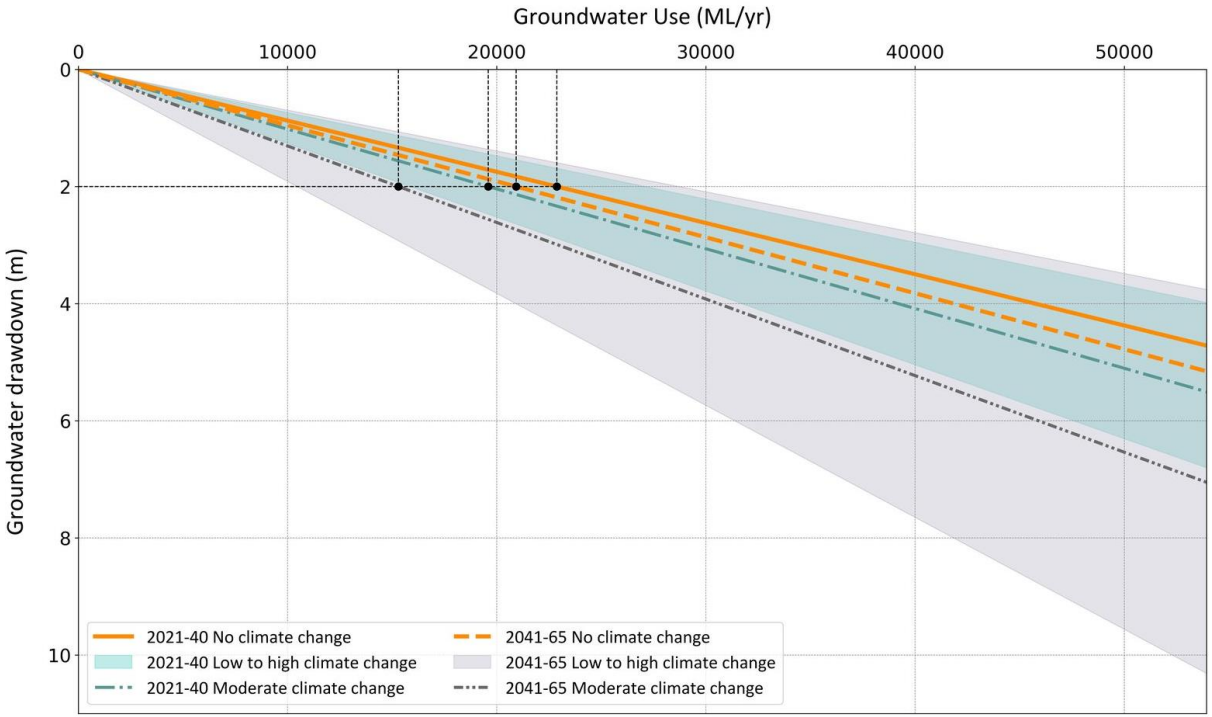

Figure A5-113. Plot for Mid Goulburn GMA Consumptive Users modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-135. Statewide drawdown use synthesis Table A5-for Mid Goulburn GMA

GMU					MID GOULBURN GMA
Consumptive users (bores)	Avg Use 3,633 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.8
				MCC (LCC to HCC)	3.5 (1.1 to 4.6)
		2041-2065	Drawdown from baseline (m)	No CC	3.2
				MCC (LCC to HCC)	3.2 (1.4 to 7.4)
	PCV use 26,966 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.1
				MCC (LCC to HCC)	3.8 (2.5 to 4.7)
		2041-2065	Drawdown from baseline (m)	No CC	3.2
				MCC (LCC to HCC)	4.9 (2.2 to 7.2)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	12,097
				MCC (HCC to LCC)	10,173 (8,341 to 14,535)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.16% (6.00% to 7.04%)

		2041-2065	Volume (ML/yr)	No CC	11,403
				MCC (HCC to LCC)	7,885 (5,479 to 15,174)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.93% (5.79% to 8.54%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	24,195
				MCC (HCC to LCC)	20,345 (16,682 to 29,070)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.33% (11.99% to 14.07%)
		2041-2065	Volume (ML/yr)	No CC	22,806
				MCC (HCC to LCC)	15,770 (10,959 to 30,348)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.85% (11.58% to 17.08%)

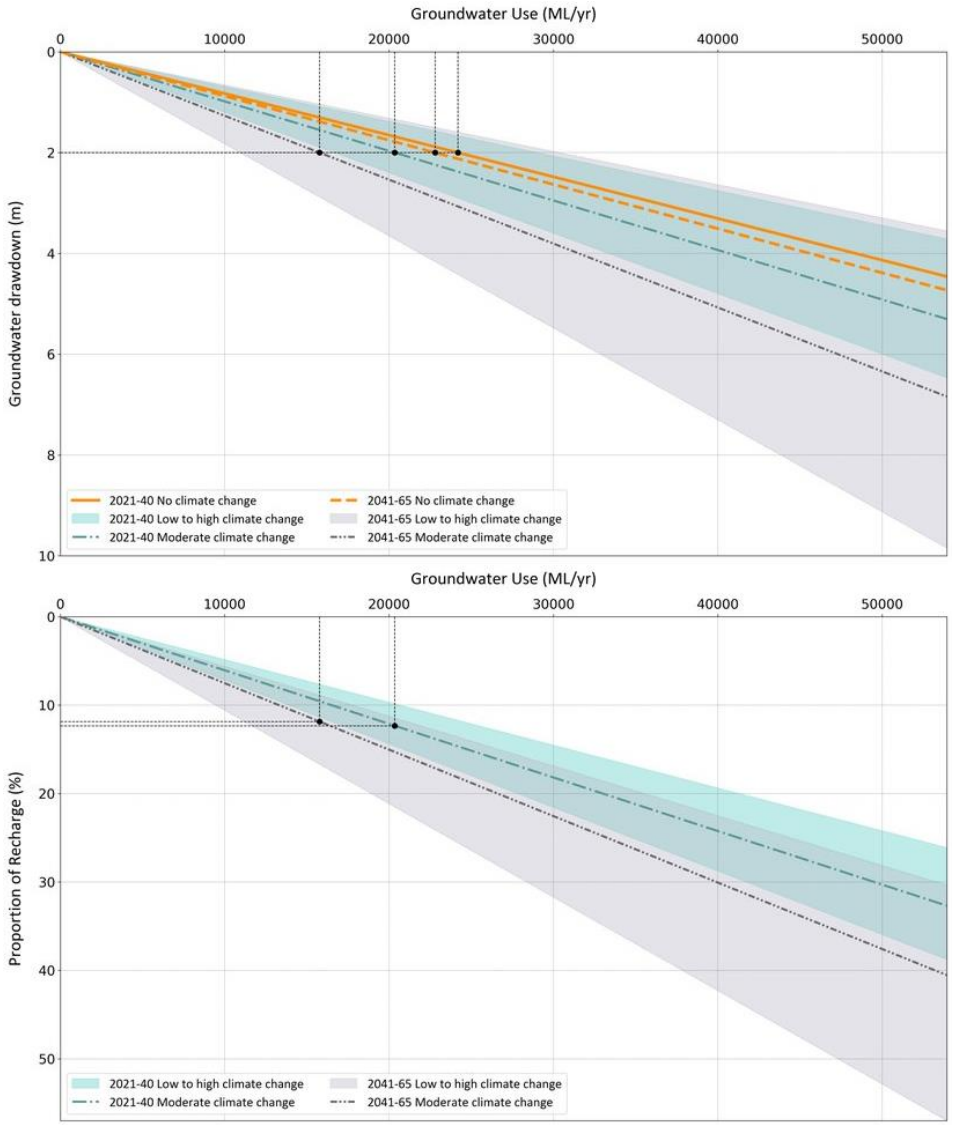

Figure A5-114. Upper Plot: Mid Goulburn GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Mid Goulburn GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-136. Terrestrial GDE synthesis Table A5-for Mid Goulburn GMA

GMU					MID GOULBURN GMA
Terrestrial GDEs	Avg Use 3,633 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.7
				MCC (LCC to HCC)	3.4 (0.97 to 4.4)
		2041-2065	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	3.0 (1.3 to 7.2)
	PCV use 26,966 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	3.7 (2.5 to 4.5)
		2041-2065	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	4.9 (2.3 to 7.1)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,206
				MCC (HCC to LCC)	1,023 (853 to 1,442)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.62% (0.61% to 0.70%)
		2041-2065	Volume (ML/yr)	No CC	1,229
				MCC (HCC to LCC)	761 (546 to 1,371)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.57% (0.58% to 0.77%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	12,060
				MCC (HCC to LCC)	10,227 (8,534 to 14,422)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.20% (6.13% to 6.98%)
		2041-2065	Volume (ML/yr)	No CC	12,293
				MCC (HCC to LCC)	7,608 (5,459 to 13,706)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.72% (5.77% to 7.71%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	24,120
				MCC (HCC to LCC)	20,454 (17,068 to 28,845)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.39% (12.27% to 13.96%)
		2041-2065	Volume (ML/yr)	No CC	24,586
				MCC (HCC to LCC)	15,216 (10,918 to 27,411)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.44% (11.54% to 15.42%)

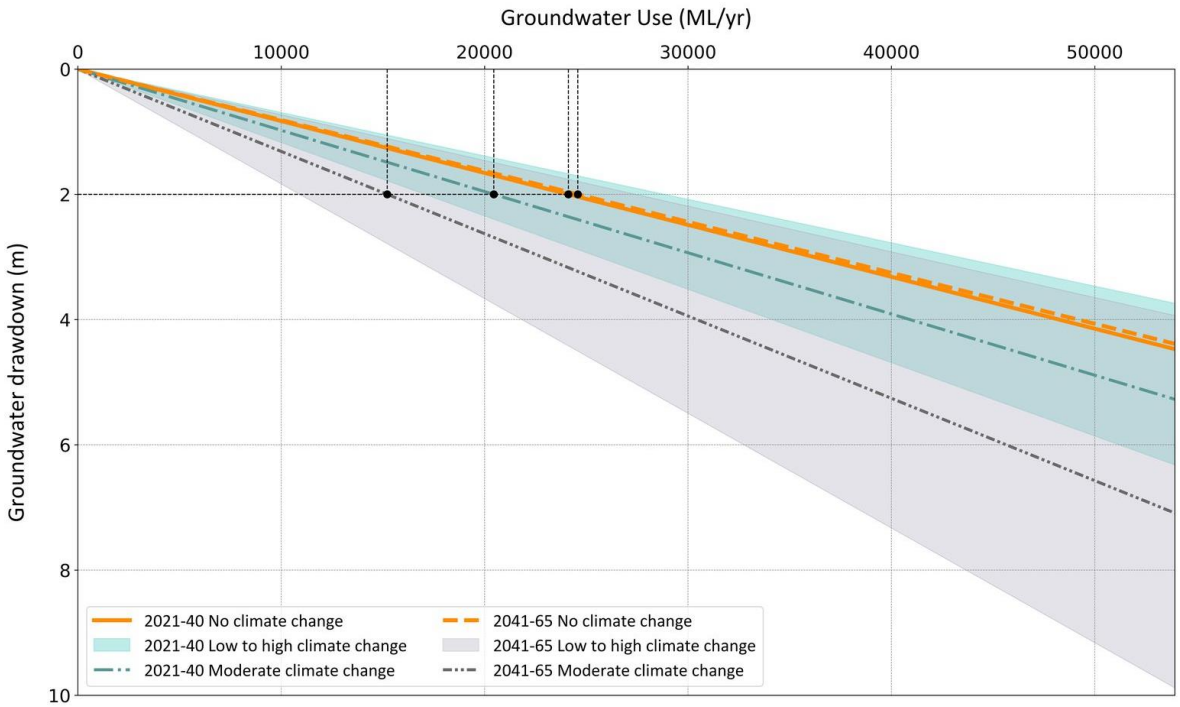

Figure A5-115. Plot for Mid Goulburn GMA Terrestrial GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-137. Waterways GDE synthesis Table A5-for Mid Goulburn GMA

GMU					MID GOULBURN GMA
Waterway GDEs	Avg Use 3,633 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.6
				MCC (LCC to HCC)	3.3 (0.82 to 4.3)
		2041-2065	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	3.0 (1.1 to 7.1)
	PCV use 26,966 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.9
				MCC (LCC to HCC)	3.5 (2.4 to 4.4)
		2041-2065	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	4.8 (2.3 to 7.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,238
				MCC (HCC to LCC)	1,046 (869 to 1,485)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.63% (0.62% to 0.72%)
		2041-2065	Volume (ML/yr)	No CC	1,157
				MCC (HCC to LCC)	765 (550 to 1,370)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.58% (0.58% to 0.77%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	12,383
				MCC (HCC to LCC)	10,460 (8,694 to 14,848)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.34% (6.25% to 7.19%)
		2041-2065	Volume (ML/yr)	No CC	11,573
				MCC (HCC to LCC)	7,654 (5,499 to 13,696)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.75% (5.81% to 7.71%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	24,767
				MCC (HCC to LCC)	20,920 (17,388 to 29,696)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.68% (12.50% to 14.38%)
		2041-2065	Volume (ML/yr)	No CC	23,146
				MCC (HCC to LCC)	15,309 (10,998 to 27,392)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.51% (11.62% to 15.41%)

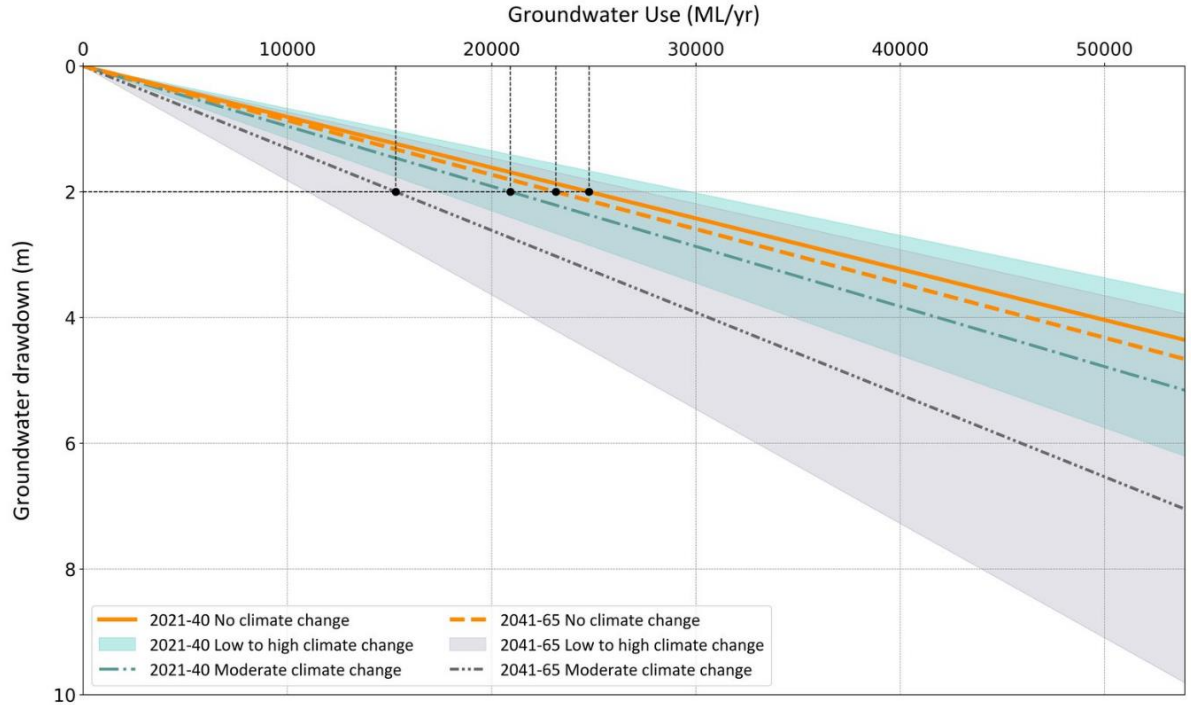

Figure A5-116. Plot for Mid Goulburn GMA Waterways GDEs modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-138. Stream gauge results for Mid Goulburn GMA

GMU				**MID GOULBURN GMA**
Stream gauge/Catchment:				**405200 - Goulburn River @ Murchison (Regulated)**
Base flow index (1975-2020)				**0.54**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	287,238 (225,030 to 348,812)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-1,344,249 (-1,406,458 to -1,282,675)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	273,908 (184,404 to 321,517)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-1,357,579 (-1,447,084 to -1,309,971)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	1.0% (1.3% to 0.864%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.9% (4.9% to 3.2%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	1.1% (1.6% to 0.937%)
		PCV use (ML/yr)	MCC (LCC to HCC)	4.1% (6.0% to 3.5%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	204.83 (160.47 to 248.74)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	17 (-28 to 60)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	195.32 (131.50 to 229.27)

		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	7 (-57 to 41)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	4.03% (5.14% to 3.32%)
		PCV use (ML/yr)	MCC (LCC to HCC)	14.88% (18.99% to 12.25%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	4.23% (6.28% to 3.60%)
		PCV use (ML/yr)	MCC (LCC to HCC)	15.60% (23.17% to 13.29%)
Stream gauge/Catchment:		**405232 - GOULBURN RIVER @ Mccoys BRIDGE (Regulated)**		
Base flow index (1975-2020)		**0.53**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	1,026,335 (804,057 to 1,246,345)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-107,737 (-330,015 to 112,273)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	978,704 (658,896 to 1,148,815)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-155,368 (-475,176 to 14,743)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.62% (0.79% to 0.51%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.0% (3.9% to 2.5%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.65% (0.96% to 0.55%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.2% (4.7% to 2.7%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	362.17 (283.73 to 439.81)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-38 (-116 to 40)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	345.36 (232.51 to 405.39)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-55 (-168 to 5)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	4.8% (6.1% to 4.0%)
		PCV use (ML/yr)	MCC (LCC to HCC)	23.54% (30.05% to 19.38%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	5.0% (7.5% to 4.3%)
		PCV use (ML/yr)	MCC (LCC to HCC)	25% (37% to 21%)

Table A5-139. Wetlands GDE synthesis Table A5-for Mid Goulburn GMA

GMU					MID GOULBURN GMA
Wetlands GDEs	Avg Use 3,633 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.9
				MCC (LCC to HCC)	3.5 (1.1 to 4.7)
		2041-2065	Drawdown from baseline (m)	No CC	3.3
				MCC (LCC to HCC)	3.3 (1.4 to 7.5)
	PCV use 26,966 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.2
				MCC (LCC to HCC)	3.8 (2.6 to 4.8)
		2041-2065	Drawdown from baseline (m)	No CC	3.3
				MCC (LCC to HCC)	5.0 (2.4 to 7.4)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,139
				MCC (HCC to LCC)	985 (808 to 1,342)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.60% (0.58% to 0.65%)
		2041-2065	Volume (ML/yr)	No CC	1,102
				MCC (HCC to LCC)	743 (522 to 1,311)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.56% (0.55% to 0.74%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	11,394
				MCC (HCC to LCC)	9,854 (8,076 to 13,417)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.97% (5.81% to 6.50%)
		2041-2065	Volume (ML/yr)	No CC	11,025
				MCC (HCC to LCC)	7,435 (5,221 to 13,114)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.59% (5.52% to 7.38%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	22,788
				MCC (HCC to LCC)	19,709 (16,153 to 26,835)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.94% (11.61% to 12.99%)
		2041-2065	Volume (ML/yr)	No CC	22,049
				MCC (HCC to LCC)	14,869 (10,443 to 26,229)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.18% (11.04% to 14.76%)

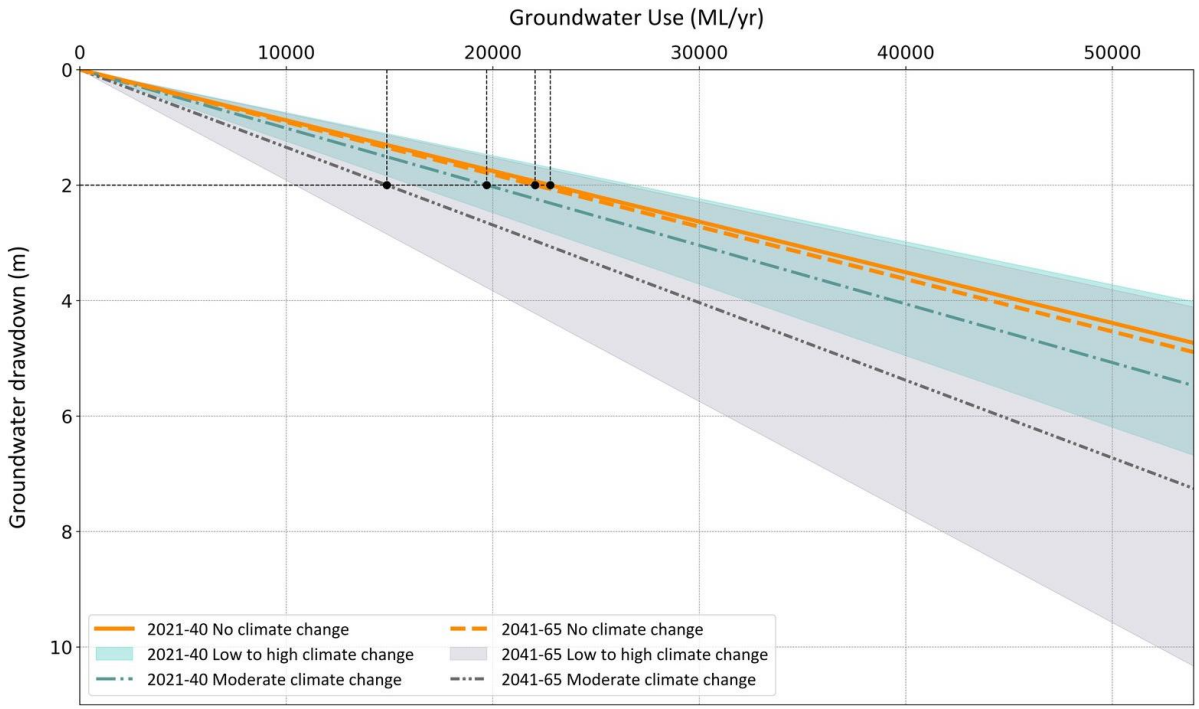

Figure A5-117. Plot for Mid Goulburn GMA Wetlands modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

MID LODDON GMA

Table A5-140. Consumptive users synthesis Table A5-for Mid Loddon GMA

	GMU					MID LODDON GMA
Assessment area	Representative Bore					88,214
	Aquifer					Semi-Confined
	Water system depth boundary (m below natural surface)					All formations below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					34,037
	Licensed Entitlement (ML/yr)					33,917
	Licensed avg use (ML/yr)					21,451
Consumptive use metric	Consumptive users (bores)	Avg Use 17,771 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.3
					MCC (LCC to HCC)	4.4 (1.0 to 6.0)
			2041-2065	Drawdown from baseline (m)	No CC	3.7
					MCC (LCC to HCC)	3.7 (1.4 to 11)
		PCV use 28,238 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.9
					MCC (LCC to HCC)	5.1 (3.1 to 6.7)
					No CC	3.7

			2041-2065	Drawdown from baseline (m)	MCC (LCC to HCC)	7.5 (2.0 to 12)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	9,789
					MCC (HCC to LCC)	7,669 (5,940 to 12,658)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	4.20% (4.25% to 5.51%)
			2041-2065	Volume (ML/yr)	No CC	8,573
					MCC (HCC to LCC)	5,497 (3,229 to 15,825)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.95% (3.66% to 8.03%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	19,578
					MCC (HCC to LCC)	15,339 (11,880 to 25,316)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	8.39% (8.49% to 11.01%)
			2041-2065	Volume (ML/yr)	No CC	17,147
					MCC (HCC to LCC)	10,994 (6,458 to 31,651)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	7.91% (7.33% to 16.06%)

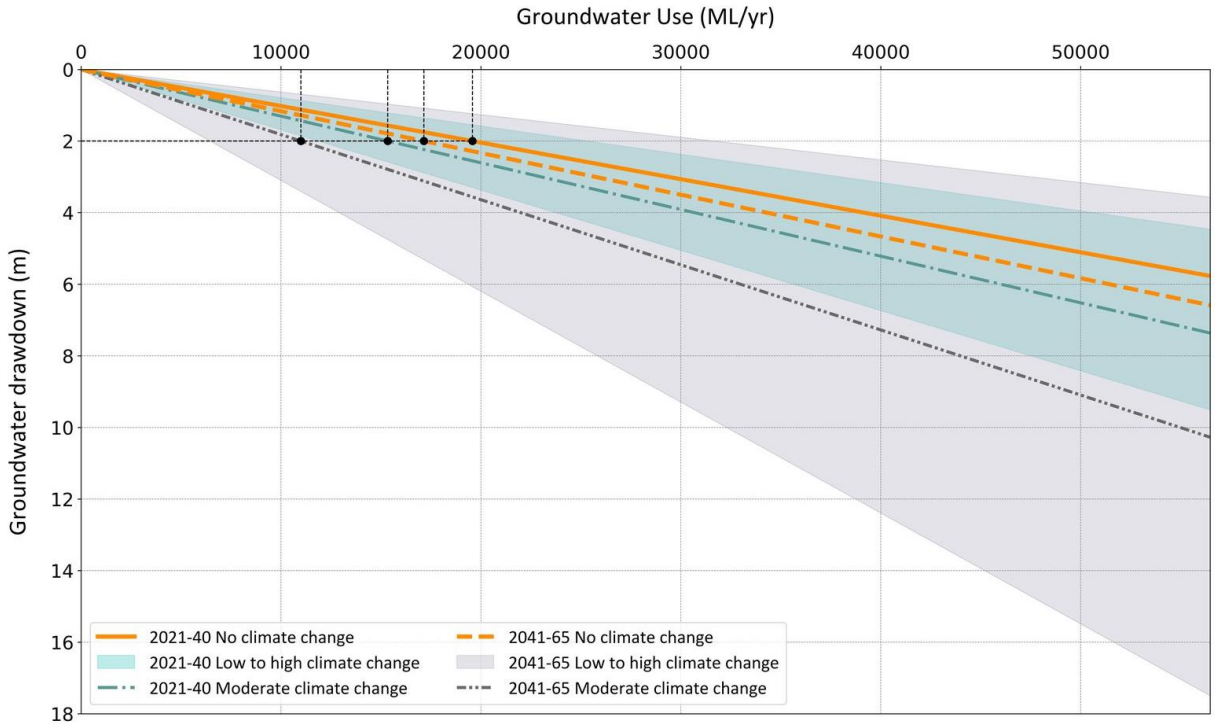

Figure A5-118. Plot for Mid Loddon GMA Consumptive Users modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-141. Statewide drawdown use synthesis Table A5-for Mid Loddon GMA

GMU					MID LODDON GMA
Consumptive users (bores)	Avg Use 17,771 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.4
				MCC (LCC to HCC)	4.4 (1.0 to 6.0)
		2041-2065	Drawdown from baseline (m)	No CC	3.7
				MCC (LCC to HCC)	3.7 (1.4 to 11)
	PCV use 28,238 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.8
				MCC (LCC to HCC)	5.0 (3.1 to 6.6)
		2041-2065	Drawdown from baseline (m)	No CC	3.7
				MCC (LCC to HCC)	7.4 (2.0 to 12)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	9,940
				MCC (HCC to LCC)	7,801 (6,030 to 12,861)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.27% (4.31% to 5.59%)
		2041-2065	Volume (ML/yr)	No CC	8,563

				MCC (HCC to LCC)	5,575 (3,270 to 15,914)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.01% (3.71% to 8.08%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	19,880
				MCC (HCC to LCC)	15,603 (12,061 to 25,722)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.54% (8.62% to 11.19%)
		2041-2065	Volume (ML/yr)	No CC	17,127
				MCC (HCC to LCC)	11,151 (6,539 to 31,828)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.02% (7.42% to 16.15%)

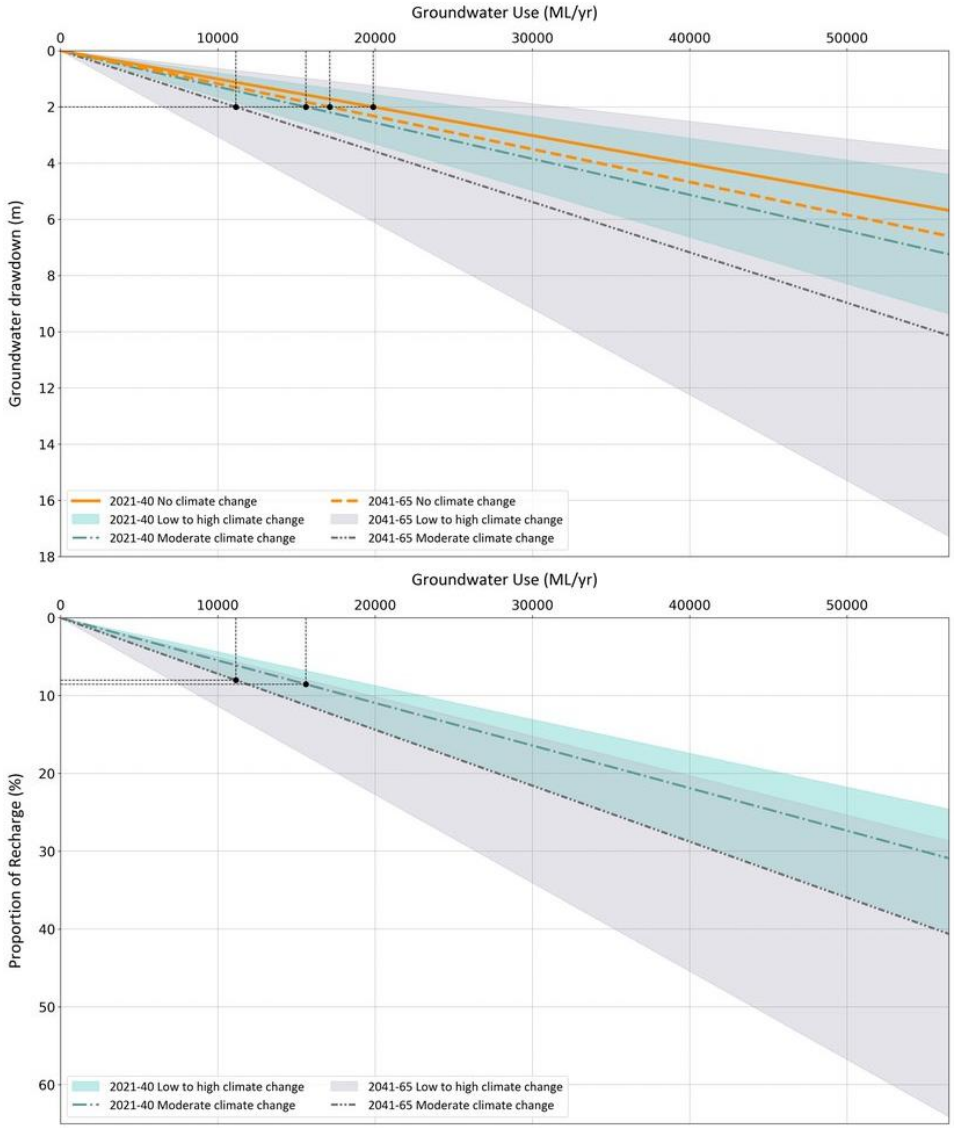

Figure A5-119. Upper Plot: Mid Loddon GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Mid Loddon GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-142. Terrestrial GDE synthesis Table A5-for Mid Loddon GMA

GMU					MID LODDON GMA
Terrestrial GDEs	Avg Use 17,771 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.1
				MCC (LCC to HCC)	4.1 (0.82 to 5.7)
		2041-2065	Drawdown from baseline (m)	No CC	3.4
				MCC (LCC to HCC)	3.4 (1.2 to 11)
	PCV use 28,238 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.5
				MCC (LCC to HCC)	4.6 (2.8 to 6.2)
		2041-2065	Drawdown from baseline (m)	No CC	3.4
				MCC (LCC to HCC)	7.0 (1.8 to 12)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,071
				MCC (HCC to LCC)	836 (639 to 1,399)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.46% (0.46% to 0.61%)
		2041-2065	Volume (ML/yr)	No CC	877
				MCC (HCC to LCC)	584 (341 to 1,687)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.42% (0.39% to 0.86%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	10,706
				MCC (HCC to LCC)	8,362 (6,393 to 13,989)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.57% (4.57% to 6.09%)
		2041-2065	Volume (ML/yr)	No CC	8,772
				MCC (HCC to LCC)	5,845 (3,407 to 16,868)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.20% (3.87% to 8.56%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	21,411
				MCC (HCC to LCC)	16,725 (12,786 to 27,978)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.15% (9.14% to 12.17%)
		2041-2065	Volume (ML/yr)	No CC	17,544
				MCC (HCC to LCC)	11,689 (6,814 to 33,736)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.41% (7.73% to 17.12%)

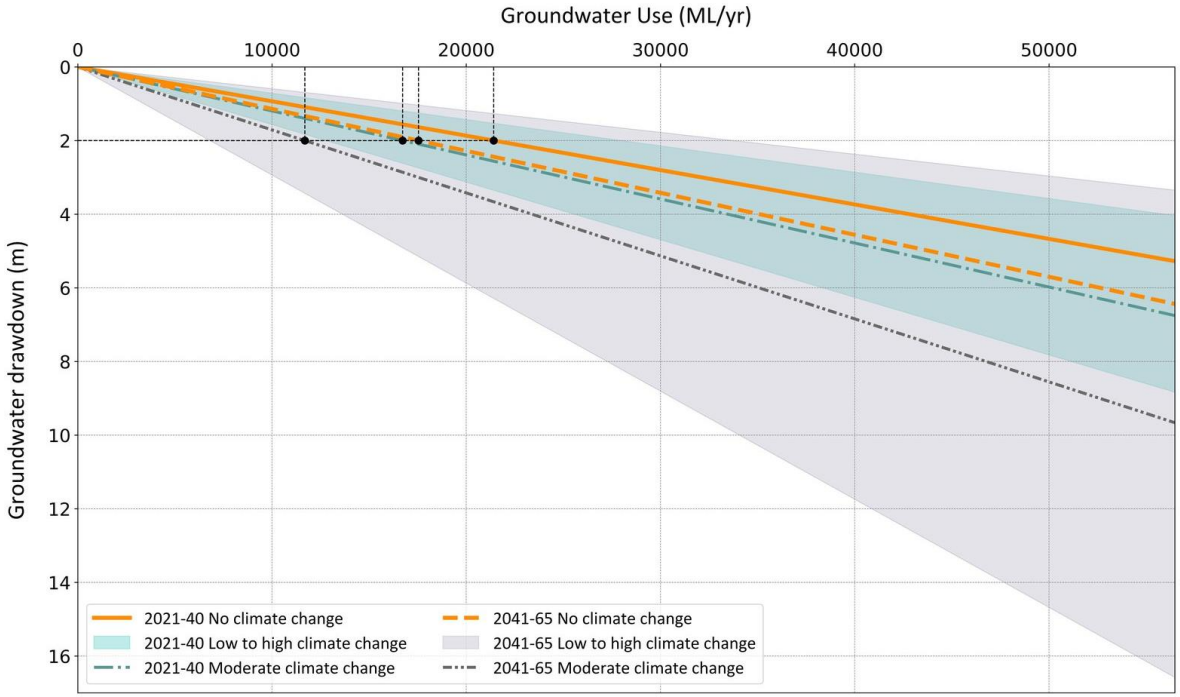

Figure A5-120. Plot for Mid Loddon GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-143. Waterways GDE synthesis Table A5-for Mid Loddon GMA

GMU					MID LODDON GMA
Waterway GDEs	Avg Use 17,771 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.2
				MCC (LCC to HCC)	4.2 (0.78 to 5.9)
		2041-2065	Drawdown from baseline (m)	No CC	3.5
				MCC (LCC to HCC)	3.5 (1.1 to 12)
	PCV use 28,238 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.6
				MCC (LCC to HCC)	4.7 (2.8 to 6.3)
		2041-2065	Drawdown from baseline (m)	No CC	3.5
				MCC (LCC to HCC)	7.4 (1.8 to 12)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,059
				MCC (HCC to LCC)	812 (623 to 1,397)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.44% (0.45% to 0.61%)
		2041-2065	Volume (ML/yr)	No CC	859
				MCC (HCC to LCC)	562 (326 to 1,728)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.40% (0.37% to 0.88%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	10,592
				MCC (HCC to LCC)	8,121 (6,231 to 13,969)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.44% (4.45% to 6.08%)
		2041-2065	Volume (ML/yr)	No CC	8,590
				MCC (HCC to LCC)	5,622 (3,256 to 17,282)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.04% (3.70% to 8.77%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	21,184
				MCC (HCC to LCC)	16,243 (12,461 to 27,937)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.89% (8.91% to 12.15%)
		2041-2065	Volume (ML/yr)	No CC	17,180
				MCC (HCC to LCC)	11,244 (6,513 to 34,564)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.09% (7.39% to 17.54%)

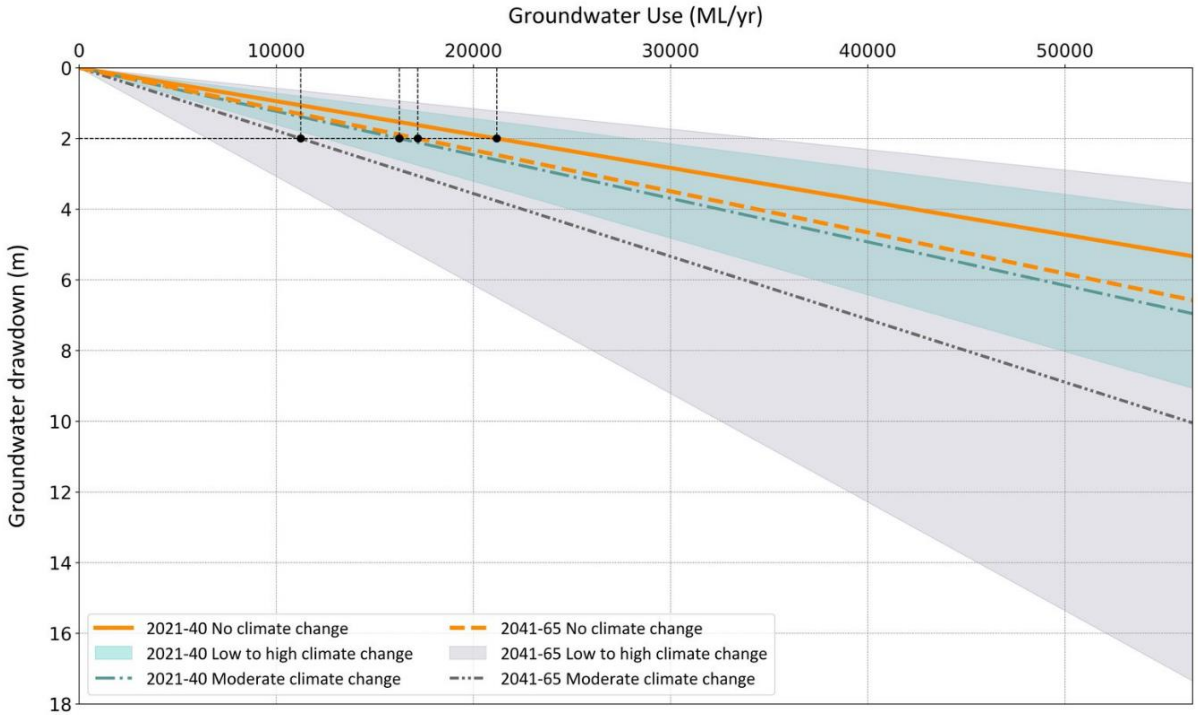

Figure A5-121. Plot for Mid Loddon GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-144. Stream gauge results for Mid Loddon GMA

Mid Loddon GMA				
Stream gauge/Catchment:		**407203 - Loddon River @ Laanecoorie (Regulated)**		
Base flow index (1975-2020)				**0.46**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	138,216 (94,632 to 167,770)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-26,275 (-69,859 to 3,279)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	122,992 (63,287 to 159,561)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-41,500 (-101,204 to -4,930)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	6.1% (8.9% to 5.0%)
		PCV use (ML/yr)	MCC (LCC to HCC)	14% (21% to 12%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	6.9% (13% to 5.3%)
		PCV use (ML/yr)	MCC (LCC to HCC)	16% (32% to 12%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	16.19 (11.08 to 19.65)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-3 (-8 to 1)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	14.41 (7.41 to 18.69)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-4 (-11 to 0)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	143% (209% to 118%)
		PCV use (ML/yr)	MCC (LCC to HCC)	338% (493% to 278%)

	2065	Current use (ML/yr)	MCC (LCC to HCC)	161% (313% to 124%)
		PCV use (ML/yr)	MCC (LCC to HCC)	379% (737% to 292%)

Table A5-145. Wetlands GDE synthesis Table A5-for Mid Loddon GMA

GMU					MID LODDON GMA
Wetlands GDEs	Avg Use 17,771 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	4.0 (0.98 to 5.5)
		2041-2065	Drawdown from baseline (m)	No CC	3.3
				MCC (LCC to HCC)	3.3 (1.3 to 10)
	PCV use 28,238 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.3
				MCC (LCC to HCC)	5.5 (3.4 to 7.3)
		2041-2065	Drawdown from baseline (m)	No CC	3.3
				MCC (LCC to HCC)	7.9 (2.0 to 13)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	916
				MCC (HCC to LCC)	718 (559 to 1,189)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.39% (0.40% to 0.52%)
		2041-2065	Volume (ML/yr)	No CC	815
				MCC (HCC to LCC)	531 (317 to 1,552)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.38% (0.36% to 0.79%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	9,165
				MCC (HCC to LCC)	7,175 (5,590 to 11,887)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.93% (4.00% to 5.17%)
		2041-2065	Volume (ML/yr)	No CC	8,150
				MCC (HCC to LCC)	5,314 (3,172 to 15,520)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.82% (3.60% to 7.88%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	18,329
				MCC (HCC to LCC)	14,351 (11,179 to 23,775)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.85% (7.99% to 10.34%)
		2041-2065	Volume (ML/yr)	No CC	16,300
				MCC (HCC to LCC)	10,628 (6,343 to 31,040)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.64% (7.20% to 15.75%)

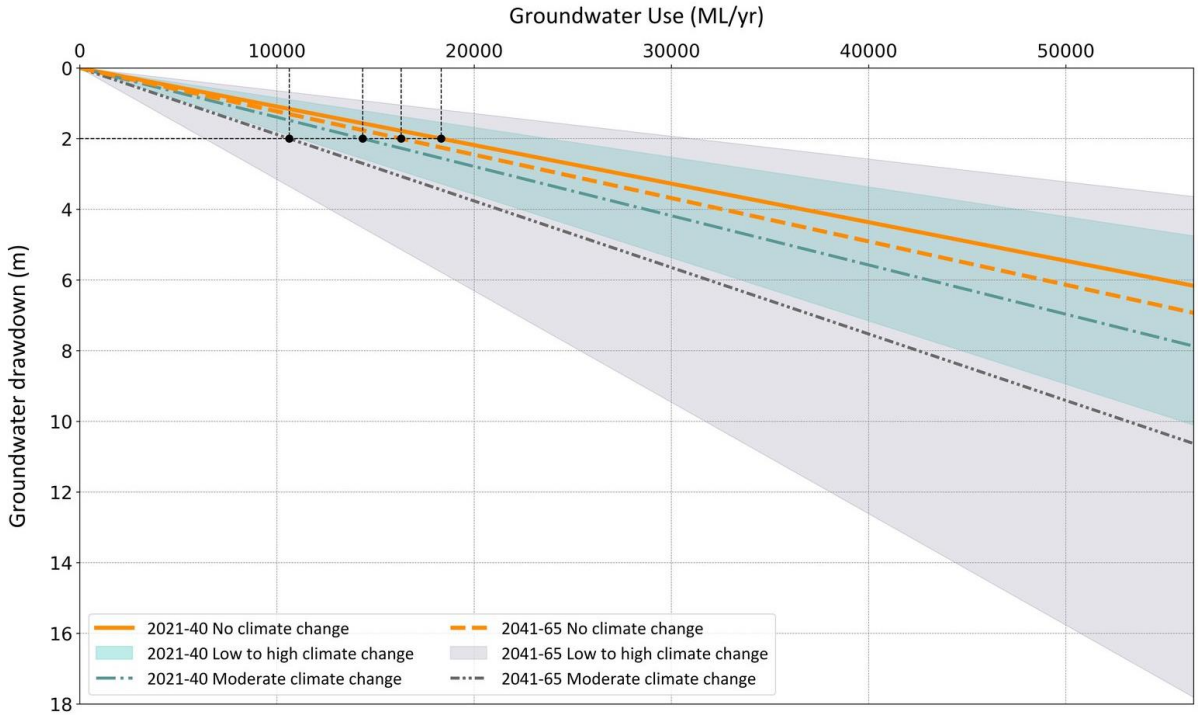

Figure A5-122. Plot for Mid Loddon GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

MOE GMA

Table A5-146. Consumptive users synthesis Table A5-for Moe GMA

Assessment area	**GMU**					**MOE GMA**
	Representative Bore					WRK990063
	Aquifer					Both
	Water system depth boundary (m below natural surface)					All formations below 25 metres from the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					8,200
	Licensed Entitlement (ML/yr)					3,861
	Licensed avg use (ML/yr)					858
Consumptive use metric	Consumptive users (bores)	Avg Use 782 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	1.6 (0.56 to 2.1)
			2041-2065	Drawdown from baseline (m)	No CC	1.6
					MCC (LCC to HCC)	1.6 (1.1 to 3.3)
		PCV use 2,973 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.9
					MCC (LCC to HCC)	3.7 (2.1 to 5.0)
			2041-2065	Drawdown from baseline (m)	No CC	1.6
					MCC (LCC to HCC)	5.8 (3.2 to 8.0)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,243
					MCC (HCC to LCC)	1,025 (813 to 1,590)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.02% (0.97% to 1.28%)
			2041-2065	Volume (ML/yr)	No CC	827
					MCC (HCC to LCC)	660 (506 to 1,006)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.81% (0.86% to 0.93%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,485
					MCC (HCC to LCC)	2,050 (1,626 to 3,179)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.04% (1.95% to 2.56%)
			2041-2065	Volume (ML/yr)	No CC	1,653
					MCC (HCC to LCC)	1,321 (1,012 to 2,013)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.61% (1.73% to 1.86%)

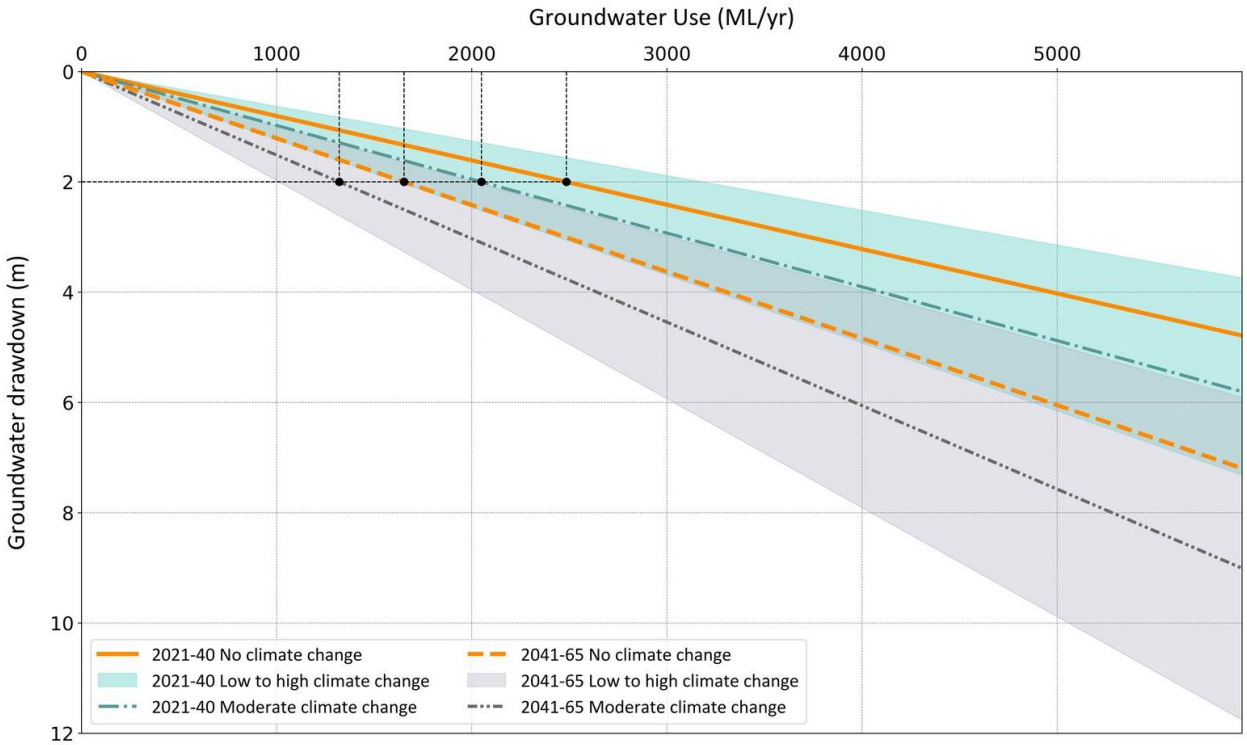

Figure A5-123. Plot for Moe GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-147. Statewide drawdown use synthesis Table A5-for Moe GMA

GMU					MOE GMA
Statewide drawdown	Avg Use 782 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	1.7 (0.65 to 2.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	1.8 (1.2 to 3.5)
	PCV use 2,973 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.1
				MCC (LCC to HCC)	3.9 (2.2 to 5.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	6.1 (3.4 to 8.4)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,184
				MCC (HCC to LCC)	980 (775 to 1,514)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.97% (0.93% to 1.22%)

		2041-2065	Volume (ML/yr)	No CC	801
				MCC (HCC to LCC)	634 (483 to 977)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.77% (0.83% to 0.90%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,368
				MCC (HCC to LCC)	1,959 (1,551 to 3,027)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.95% (1.86% to 2.44%)
		2041-2065	Volume (ML/yr)	No CC	1,602
				MCC (HCC to LCC)	1,268 (967 to 1,954)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.55% (1.65% to 1.80%)

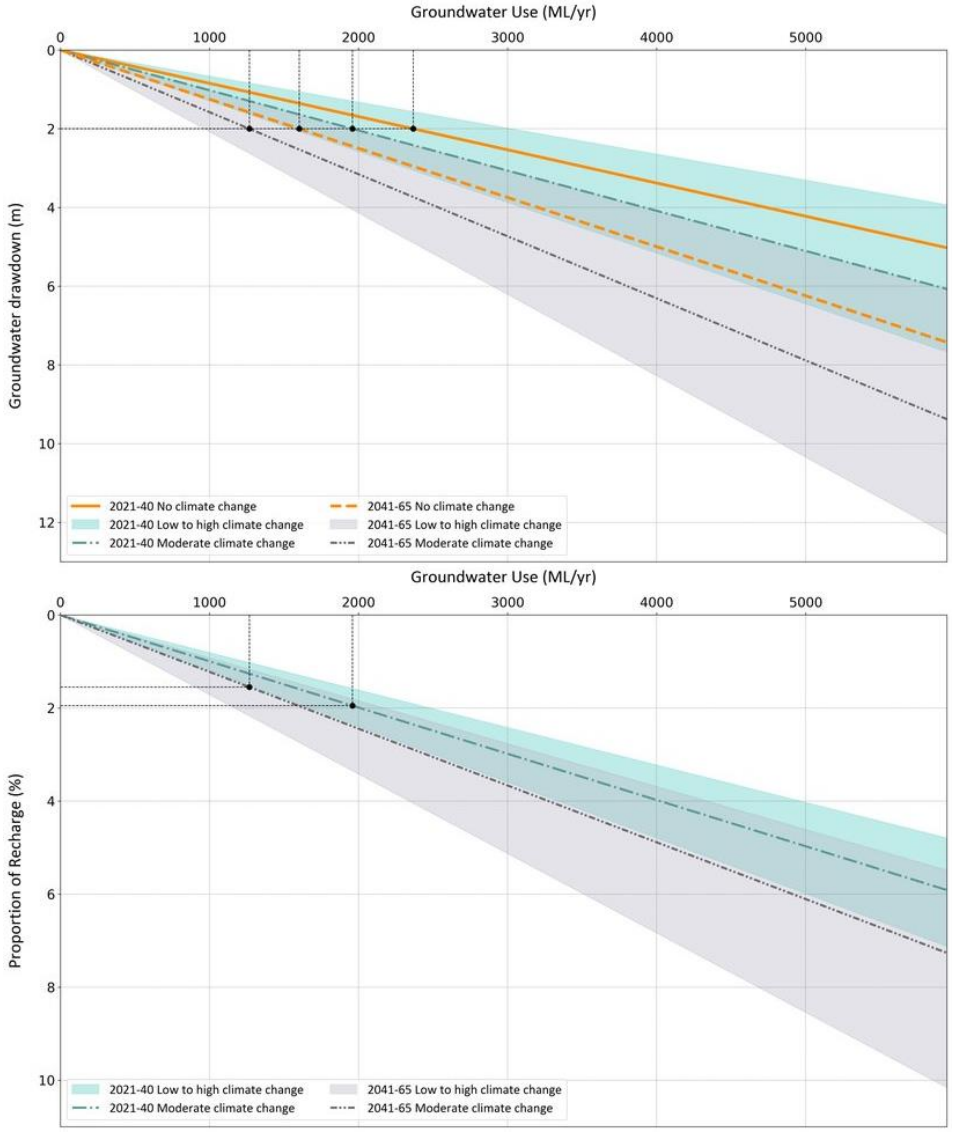

Figure A5-124. Upper Plot: Moe GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Glenormiston GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-148. Terrestrial GDE synthesis Table A5-for Moe GMA

GMU					MOE GMA
Terrestrial GDEs	Avg Use 782 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.44
				MCC (LCC to HCC)	0.69 (-0.24 to 1.2)
		2041-2065	Drawdown from baseline (m)	No CC	0.82
				MCC (LCC to HCC)	0.82 (0.30 to 2.3)
	PCV use 2,973 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	2.8 (1.4 to 3.9)
		2041-2065	Drawdown from baseline (m)	No CC	0.82
				MCC (LCC to HCC)	5.1 (3.1 to 6.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	147
				MCC (HCC to LCC)	123 (97 to 191)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.12% (0.12% to 0.15%)
		2041-2065	Volume (ML/yr)	No CC	80
				MCC (HCC to LCC)	69 (55 to 97)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.08% (0.09% to 0.09%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,474
				MCC (HCC to LCC)	1,228 (972 to 1,910)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.22% (1.16% to 1.54%)
		2041-2065	Volume (ML/yr)	No CC	805
				MCC (HCC to LCC)	690 (551 to 970)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.84% (0.90% to 0.94%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,949
				MCC (HCC to LCC)	2,456 (1,944 to 3,819)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.44% (2.33% to 3.08%)
		2041-2065	Volume (ML/yr)	No CC	1,609
				MCC (HCC to LCC)	1,380 (1,102 to 1,941)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.69% (1.79% to 1.88%)

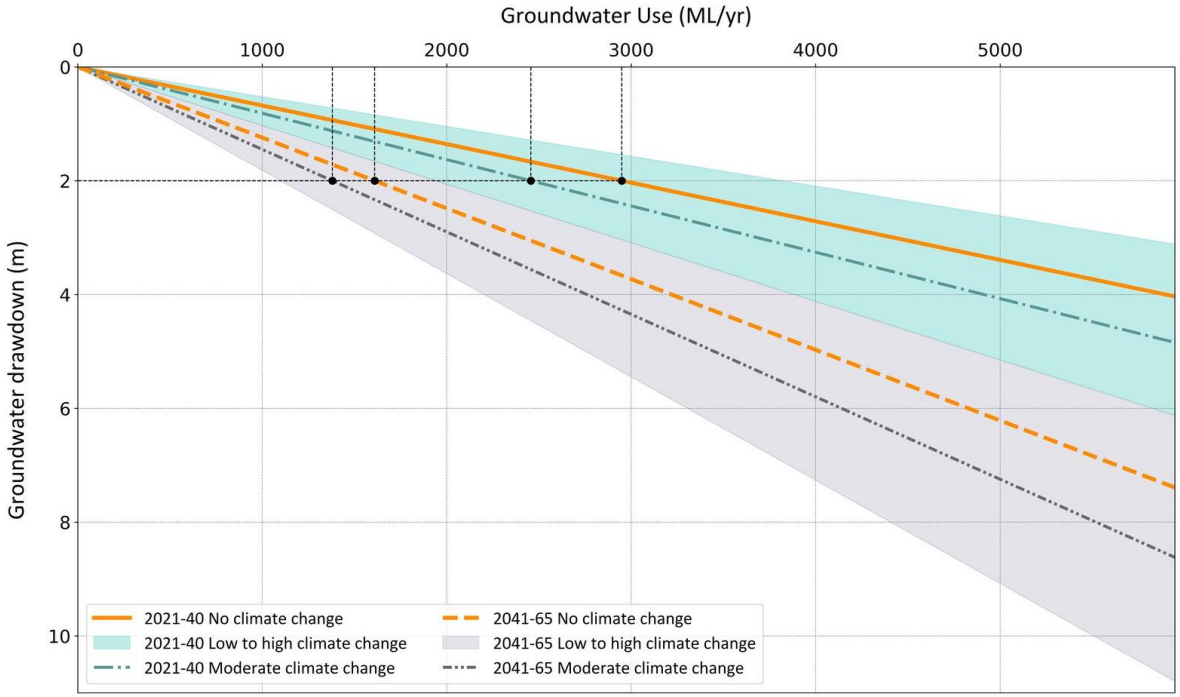

Figure A5-125. Plot for Moe GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-149. Waterways GDE synthesis Table A5-for Moe GMA

GMU					MOE GMA
Waterway GDEs	Avg Use 782 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.59
				MCC (LCC to HCC)	0.88 (-0.08 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.97
				MCC (LCC to HCC)	0.97 (0.46 to 2.5)
	PCV use 2,973 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.3
				MCC (LCC to HCC)	3.0 (1.5 to 4.1)
		2041-2065	Drawdown from baseline (m)	No CC	0.97
				MCC (LCC to HCC)	5.2 (3.1 to 7.1)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	143
				MCC (HCC to LCC)	118 (94 to 185)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.12% (0.11% to 0.15%)
		2041-2065	Volume (ML/yr)	No CC	83
				MCC (HCC to LCC)	69 (54 to 99)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.08% (0.09% to 0.09%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,432
				MCC (HCC to LCC)	1,184 (936 to 1,855)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.18% (1.12% to 1.49%)
		2041-2065	Volume (ML/yr)	No CC	826
				MCC (HCC to LCC)	689 (542 to 990)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.84% (0.91% to 0.93%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,863
				MCC (HCC to LCC)	2,368 (1,872 to 3,710)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.35% (2.24% to 2.99%)
		2041-2065	Volume (ML/yr)	No CC	1,651
				MCC (HCC to LCC)	1,378 (1,085 to 1,981)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.68% (1.83% to 1.85%)

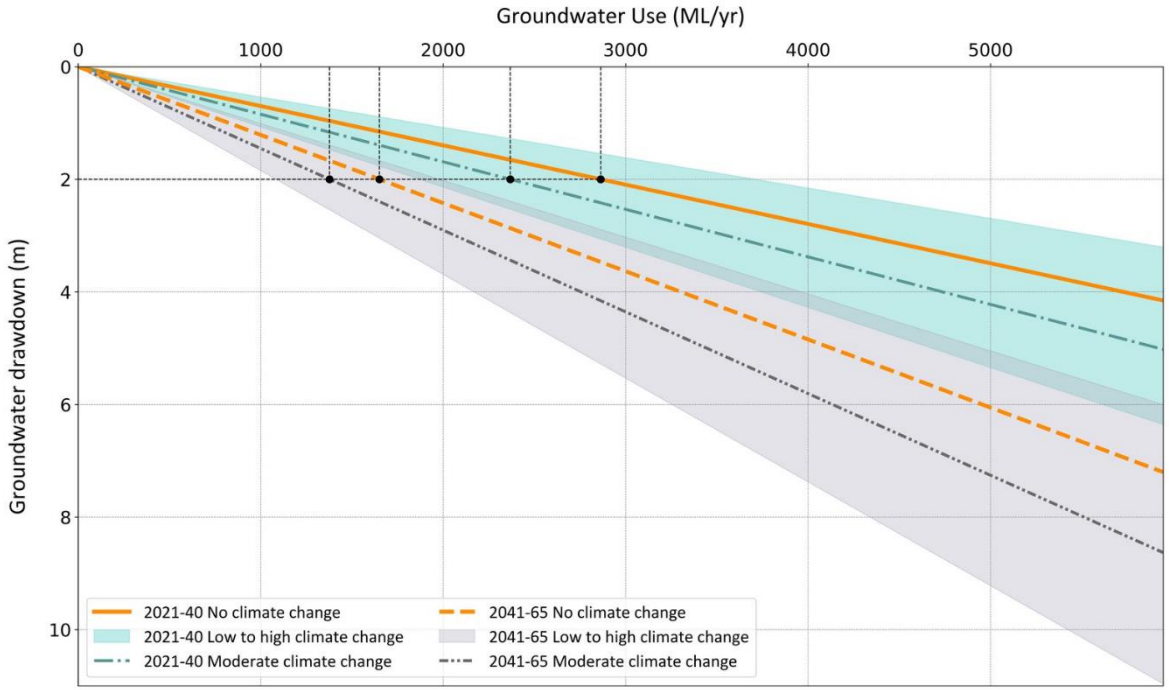

Figure A5-126. Plot for Moe GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-150. Stream gauge results for Moe GMA

GMU				MOE GMA
Stream gauge/Catchment:				**226204 - Latrobe River @ Willow Grove (Unregulated)**
Base flow index (1975-2020)				**0.74**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC - LCC)	133,025 (102,338 to 161,924)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-52,809 (-83,495 to -23,910)
	2065	Flow (ML/yr)	MCC (HCC - LCC)	124,683 (87,144 to 149,113)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-61,151 (-98,690 to -36,721)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.001% (0.001% to 0.001%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.035% (0.045% to 0.029%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	0.001% (0.001% to 0.001%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.037% (0.053% to 0.031%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC - LCC)	142.00 (109.25 to 172.85)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC - LCC)	133.10 (93.03 to 159.18)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.002% (0.003% to 0.002%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.089% (0.116% to 0.073%)

	2065	Current use (ML/yr)	MCC (HCC - LCC)	0.002% (0.003% to 0.002%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.095% (0.136% to 0.080%)

MOORABBIN GMA

Table A5-151. Consumptive users synthesis Table A5-for Moorabbin GMA

Assessment area	**GMU**					**MOORABBIN GMA**
	Representative Bore					81,425
	Aquifer					Both
	Water system depth boundary (m below natural surface)					All formations below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					2,700
	Licensed Entitlement (ML/yr)					2,607
	Licensed avg use (ML/yr)					1,238
Consumptive use metric	**Consumptive users (bores)**	Avg Use 91 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.97
					MCC (LCC to HCC)	1.5 (0.16 to 2.1)
			2041-2065	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	1.2 (0.51 to 3.4)
		PCV use 257 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.9
					MCC (LCC to HCC)	2.7 (1.1 to 3.9)
			2041-2065	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	3.5 (0.40 to 6.2)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	209
					MCC (HCC to LCC)	150 (104 to 348)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.63% (0.58% to 1.10%)
			2041-2065	Volume (ML/yr)	No CC	184
					MCC (HCC to LCC)	120 (66 to 815)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.66% (0.65% to 2.96%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	418
					MCC (HCC to LCC)	300 (208 to 696)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.26% (1.17% to 2.20%)
			2041-2065	Volume (ML/yr)	No CC	367
					MCC (HCC to LCC)	239 (132 to 1,629)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.31% (1.30% to 5.91%)

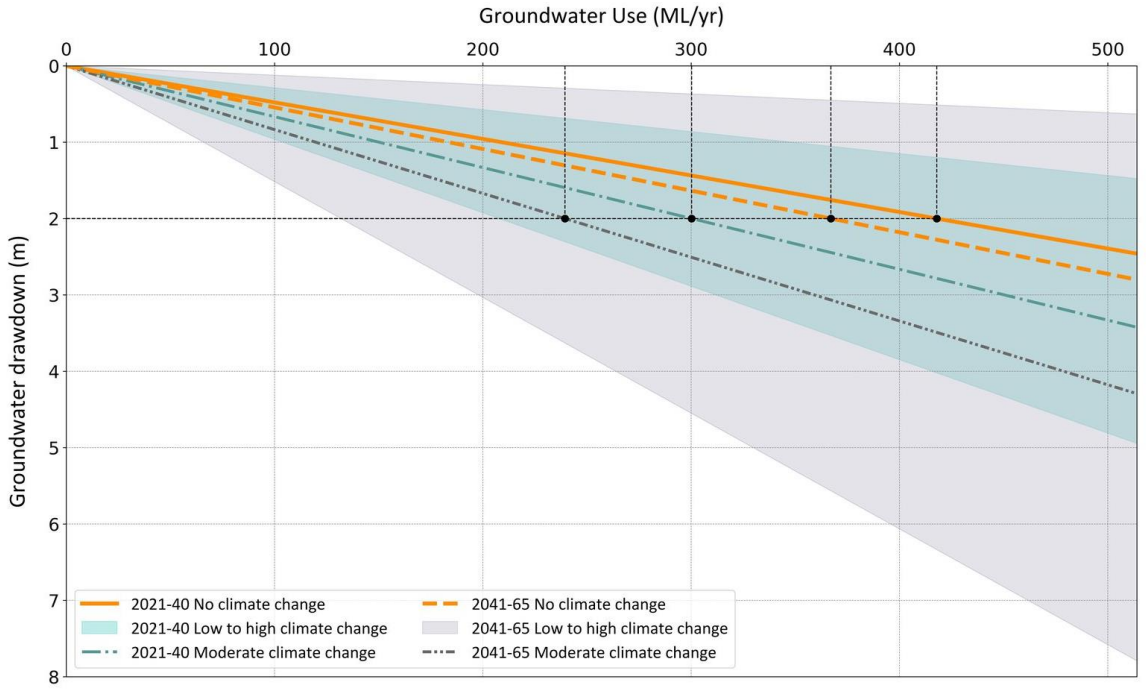

Figure A5-127. Plot for Moorabbin GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-152. Statewide drawdown use synthesis Table A5-for Moorabbin GMA

GMU					MOORABBIN GMA
Consumptive users (bores)	Avg Use 91 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.87
				MCC (LCC to HCC)	1.4 (0.07 to 2.0)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.2 (0.43 to 3.4)
	PCV use 257 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	2.6 (1.0 to 3.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	3.4 (0.39 to 6.1)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	220
				MCC (HCC to LCC)	155 (107 to 378)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.65% (0.60% to 1.19%)
		2041-2065	Volume (ML/yr)	No CC	180
				MCC (HCC to LCC)	120 (67 to 766)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.66% (0.66% to 2.78%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	439

				MCC (HCC to LCC)	311 (213 to 756)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.30% (1.20% to 2.39%)
		2041-2065	Volume (ML/yr)	No CC	360
				MCC (HCC to LCC)	240 (133 to 1,532)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.32% (1.31% to 5.56%)

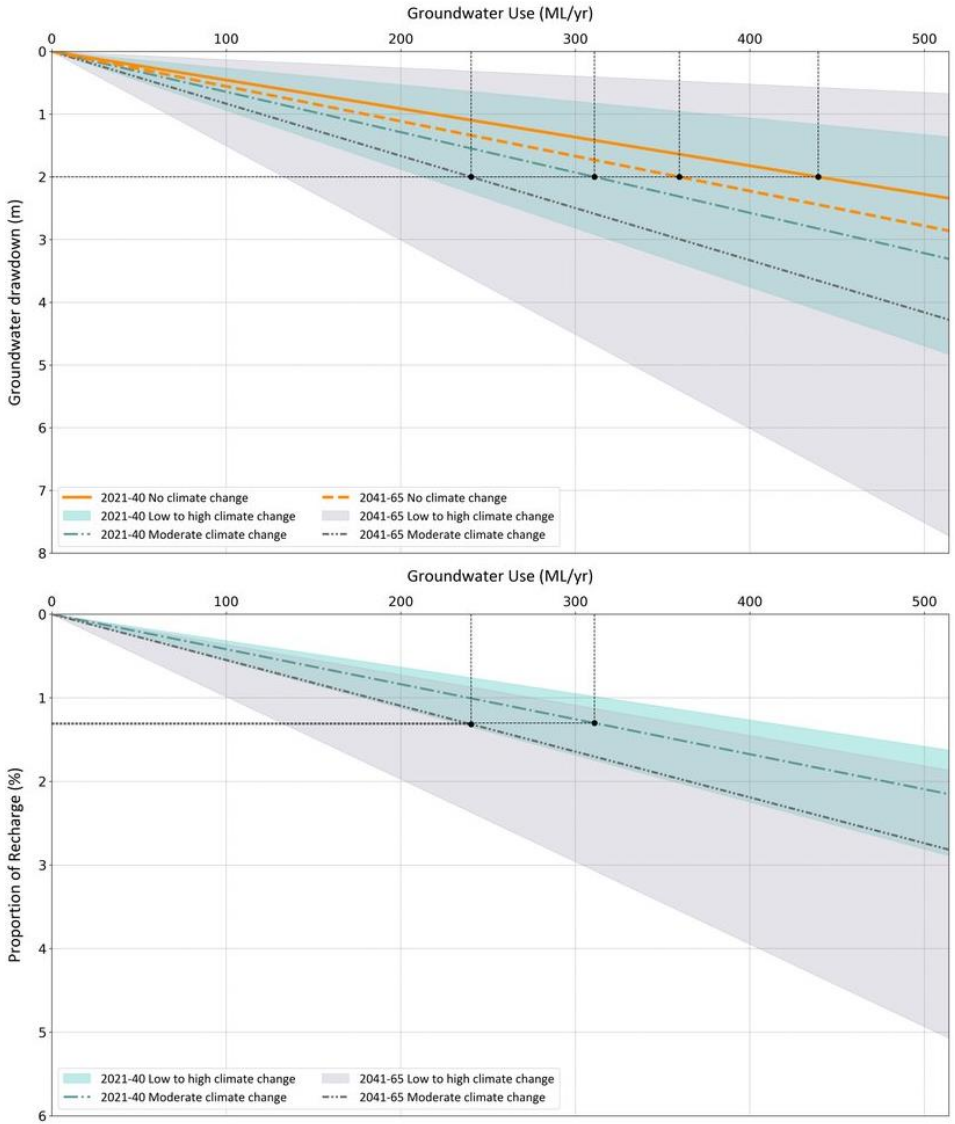

Figure A5-128. Upper Plot: Moorabbin GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Moorabbin GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-153. Seawater intrusion synthesis Table A5-for Moorabbin GMA

GMU					MOORABBIN GMA
Seawater intrusion	Avg Use 91 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.68
				MCC (LCC to HCC)	1.9 (1.1 to 2.6)
			Area elev. <1.5 mAHD (%)	No CC	13%
				MCC (LCC to HCC)	17% (12% to 21%)
		2041-2065	Drawdown from baseline (m)	No CC	0.91
				MCC (LCC to HCC)	1.5 (0.35 to 3.0)
			Area elev. <1.5 mAHD (%)	No CC	14%
				MCC (LCC to HCC)	15% (11% to 23%)
	PCV use 257 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	2.7 (2.0 to 3.7)
			Area elev. <1.5 mAHD (%)	No CC	20%
				MCC (LCC to HCC)	23% (18% to 27%)
		2041-2065	Drawdown from baseline (m)	No CC	2.9
				MCC (LCC to HCC)	4.1 (2.1 to 6.1)
			Area elev. <1.5 mAHD (%)	No CC	24%
				MCC (LCC to HCC)	29% (18% to 38%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	1,316
				MCC (HCC to LCC)	1,217 (1,141 to 1,543)
			Proportion of recharge (%)	No CC	NA
				MCC (LCC to HCC)	5.1% (4.9% to 6.4%)
		2041-2065	Volume (ML/yr)	No CC	808
				MCC (HCC to LCC)	647 (467 to 948)
			Proportion of recharge (%)	No CC	NA
				MCC (LCC to HCC)	3.5% (3.4% to 4.6%)

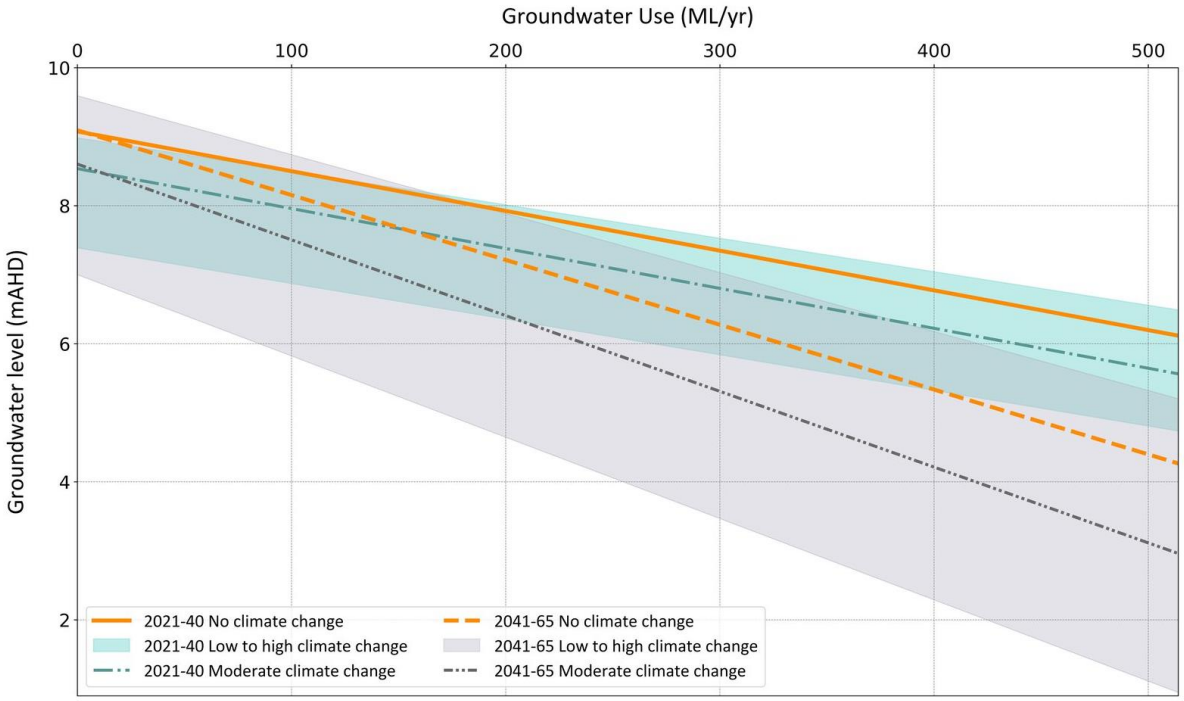

Figure A5-129. Plot for Moorabbin GMA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-154. Terrestrial GDE synthesis Table A5-for Moorabbin GMA

GMU					MOORABBIN GMA
Terrestrial GDEs	Avg Use 91 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.77
				MCC (LCC to HCC)	1.3 (-0.04 to 2.0)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.1 (0.35 to 3.5)
	PCV use 257 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	2.5 (0.92 to 3.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	3.5 (0.39 to 6.2)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	23
				MCC (HCC to LCC)	16 (11 to 41)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.07% (0.06% to 0.13%)
		2041-2065	Volume (ML/yr)	No CC	17
				MCC (HCC to LCC)	12 (6.5 to 72)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.06% (0.06% to 0.26%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	227
				MCC (HCC to LCC)	157 (106 to 413)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.66% (0.60% to 1.30%)
		2041-2065	Volume (ML/yr)	No CC	171
				MCC (HCC to LCC)	117 (65 to 723)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.64% (0.64% to 2.62%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	454
				MCC (HCC to LCC)	314 (212 to 825)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.32% (1.19% to 2.61%)
		2041-2065	Volume (ML/yr)	No CC	342
				MCC (HCC to LCC)	233 (130 to 1,446)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.28% (1.28% to 5.25%)

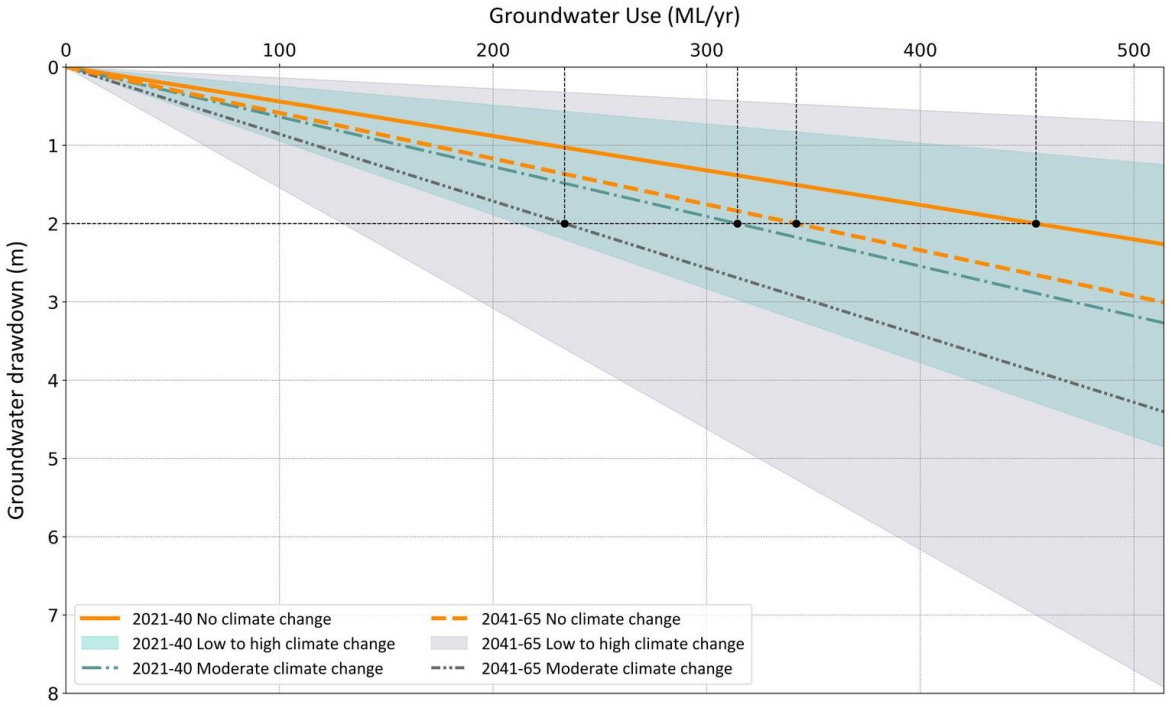

Figure A5-130. Plot for Moorabbin GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

NEPEAN GMA

Table A5-155. Consumptive users synthesis Table A5-for Nepean GMA

	GMU	NEPEAN GMA
Assessment area	Representative Bore	84,884
	Aquifer	Unconfined
	Water system depth boundary (m below natural surface)	Upper aquifer being all aquifers from: (A) the natural surface to 200 metres below the natural surface; or (B) the natural surface to 50 metres below the base of the Quaternary Aquifer (QA), Upper Tertiary Fluvial

						Aquifer (UTAF) or the Lower Tertiary Basalt (LTB); whichever is the deeper.
Catchment	Permissible Consumptive Volume (ML/yr)					6,110
	Licensed Entitlement (ML/yr)					6,110
	Licensed avg use (ML/yr)					4,534
Consumptive use metric	**Consumptive users (bores)**	Avg Use 2,103 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.74
					MCC (LCC to HCC)	1.4 (-0.09 to 2.5)
			2041-2065	Drawdown from baseline (m)	No CC	1.7
					MCC (LCC to HCC)	1.7 (0.75 to 4.6)
		PCV use 4,306 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.8
					MCC (LCC to HCC)	3.4 (2.1 to 4.5)
			2041-2065	Drawdown from baseline (m)	No CC	1.7
					MCC (LCC to HCC)	7.5 (5.7 to 8.8)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,562
					MCC (HCC to LCC)	1,352 (1,119 to 1,904)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	6.05% (6.00% to 7.18%)
			2041-2065	Volume (ML/yr)	No CC	718
					MCC (HCC to LCC)	653 (565 to 788)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.62% (3.40% to 4.15%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,125
					MCC (HCC to LCC)	2,704 (2,237 to 3,809)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	12.09% (12.00% to 14.37%)
			2041-2065	Volume (ML/yr)	No CC	1,436
					MCC (HCC to LCC)	1,307 (1,130 to 1,575)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	7.25% (6.81% to 8.29%)

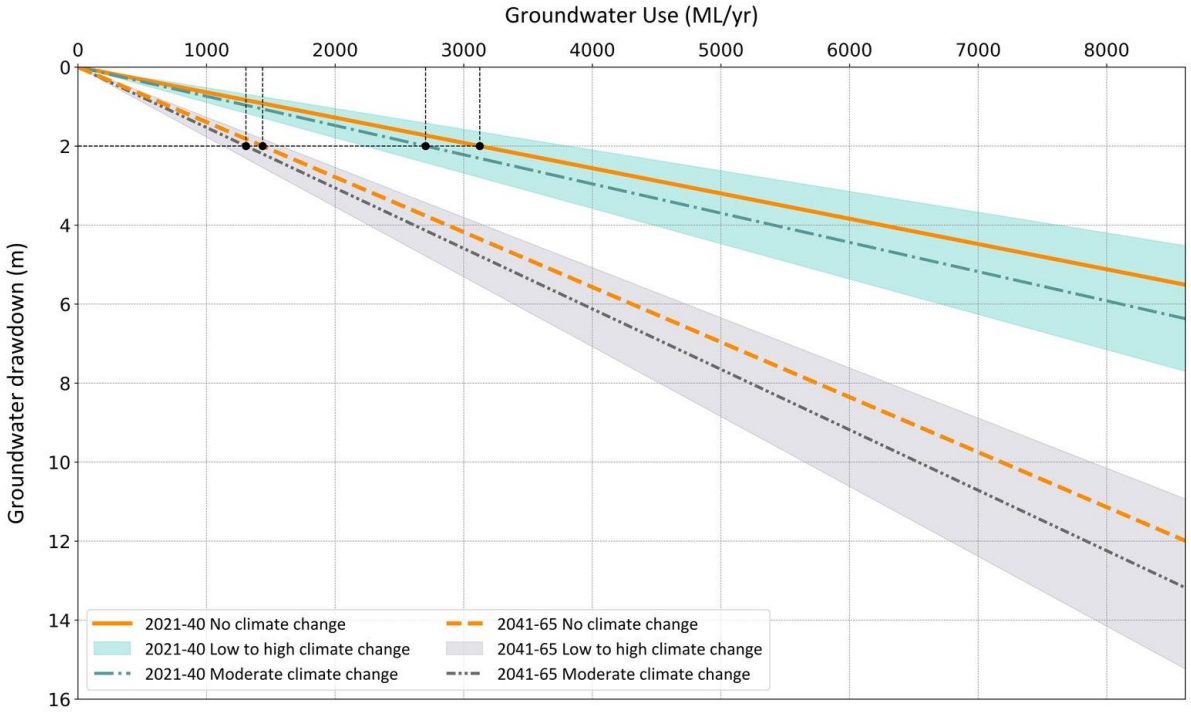

Figure A5-131. Plot for Nepean GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-156. Statewide drawdown use synthesis Table A5-for Nepean GMA

GMU					NEPEAN GMA
Consumptive users (bores)	Avg Use 2,103 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.88
				MCC (LCC to HCC)	1.5 (0.06 to 2.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	1.8 (0.88 to 4.7)
	PCV use 4,306 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	3.7 (2.3 to 4.7)
		2041-2065	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	7.7 (6.0 to 9.1)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,474
				MCC (HCC to LCC)	1,290 (1,077 to 1,770)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.77% (5.78% to 6.68%)
		2041-2065	Volume (ML/yr)	No CC	707
				MCC (HCC to LCC)	634 (550 to 757)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.51% (3.27% to 4.04%)

	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,948
				MCC (HCC to LCC)	2,580 (2,154 to 3,540)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.54% (11.56% to 13.35%)
		2041-2065	Volume (ML/yr)	No CC	1,413
				MCC (HCC to LCC)	1,267 (1,100 to 1,514)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.02% (6.55% to 8.07%)

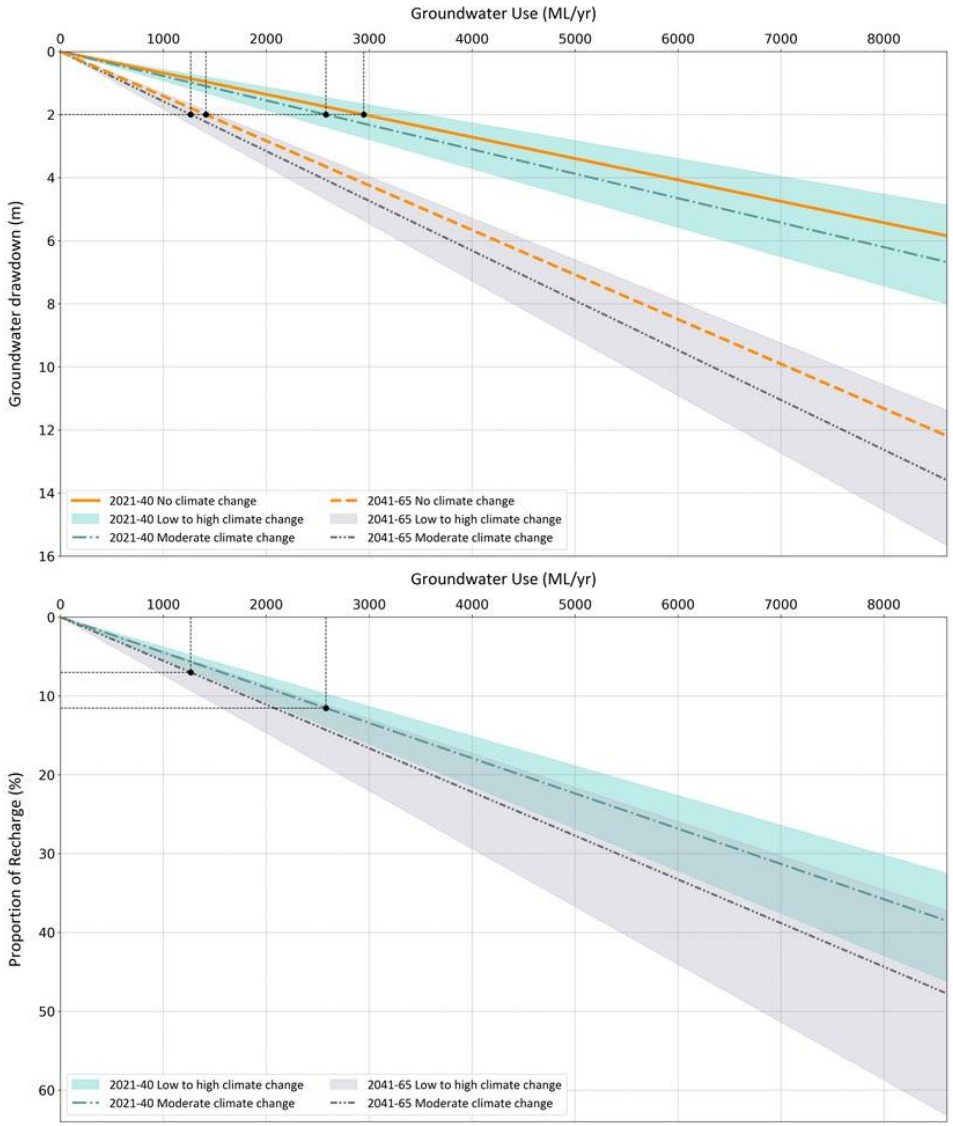

Figure A5-132. Upper Plot: Nepean GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Nepean GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-157. seawater synthesis Table A5-for Nepean GMA

GMU					NEPEAN GMA
Seawater intrusion	Avg Use 2,103 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.90
				MCC (LCC to HCC)	1.6 (0.44 to 2.7)
			Area elev. <1.5 mAHD (%)	No CC	49%
				MCC (LCC to HCC)	55% (41% to 65%)
		2041-2065	Drawdown from baseline (m)	No CC	0.67
				MCC (LCC to HCC)	2.6 (0.95 to 4.5)
			Area elev. <1.5 mAHD (%)	No CC	45%
				MCC (LCC to HCC)	65% (49% to 75%)
	PCV use 4,306 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	2.2 (1.3 to 3.1)
			Area elev. <1.5 mAHD (%)	No CC	59%
				MCC (LCC to HCC)	61% (53% to 67%)
		2041-2065	Drawdown from baseline (m)	No CC	4.7
				MCC (LCC to HCC)	5.5 (4.0 to 6.8)
			Area elev. <1.5 mAHD (%)	No CC	73%
				MCC (LCC to HCC)	76% (70% to 78%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	7,304
				MCC (HCC to LCC)	6,034 (4,004 to 8,461)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	27% (21% to 32%)
		2041-2065	Volume (ML/yr)	No CC	3,016
				MCC (HCC to LCC)	2,080 (674 to 3,531)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12% (4.9% to 15%)

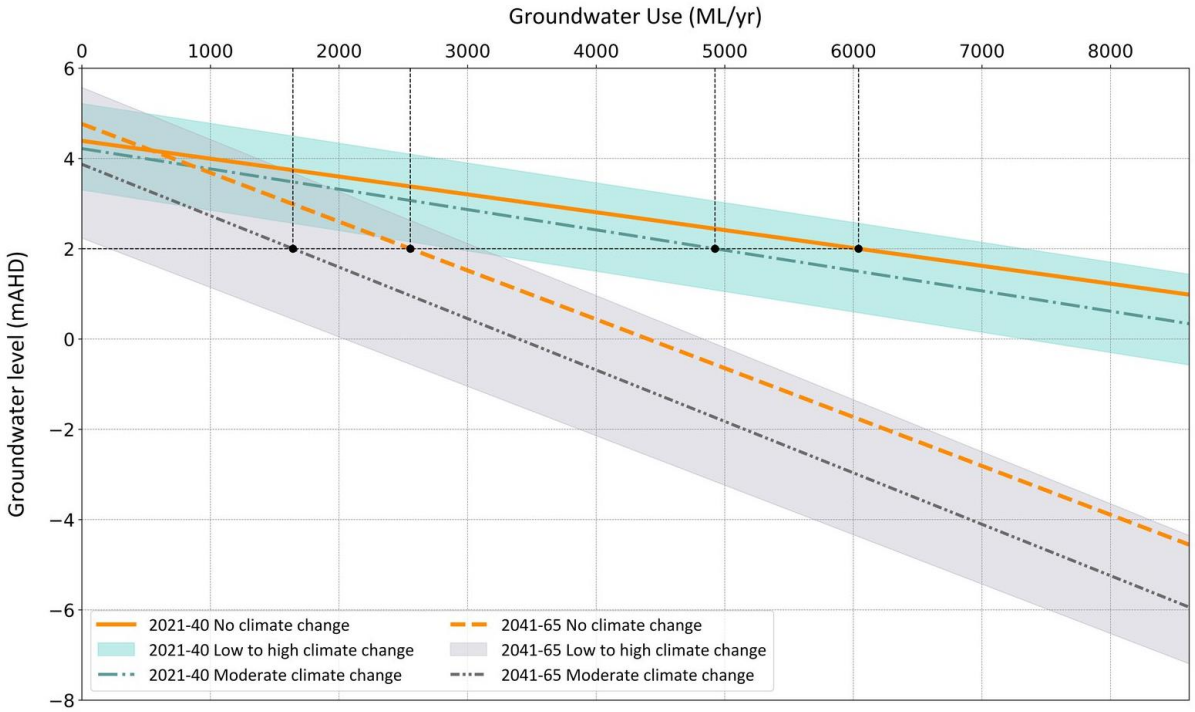

Figure A5-133. Plot for Nepean GMA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-158. Terrestrial GDE synthesis Table A5-for Nepean GMA

GMU					NEPEAN GMA
Terrestrial GDEs	Avg Use 2,103 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.66
				MCC (LCC to HCC)	1.3 (-0.16 to 2.4)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	1.6 (0.65 to 4.5)
	PCV use 4,306 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.5
				MCC (LCC to HCC)	3.1 (1.8 to 4.0)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	6.8 (5.1 to 8.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	174
				MCC (HCC to LCC)	149 (123 to 215)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.67% (0.66% to 0.81%)
		2041-2065	Volume (ML/yr)	No CC	80
				MCC (HCC to LCC)	72 (62 to 87)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.40% (0.38% to 0.45%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,744
				MCC (HCC to LCC)	1,492 (1,229 to 2,150)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.67% (6.59% to 8.11%)
		2041-2065	Volume (ML/yr)	No CC	800
				MCC (HCC to LCC)	718 (619 to 868)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.98% (3.75% to 4.54%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,489
				MCC (HCC to LCC)	2,984 (2,457 to 4,300)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.35% (13.18% to 16.22%)
		2041-2065	Volume (ML/yr)	No CC	1,600
				MCC (HCC to LCC)	1,436 (1,239 to 1,735)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.96% (7.50% to 9.09%)

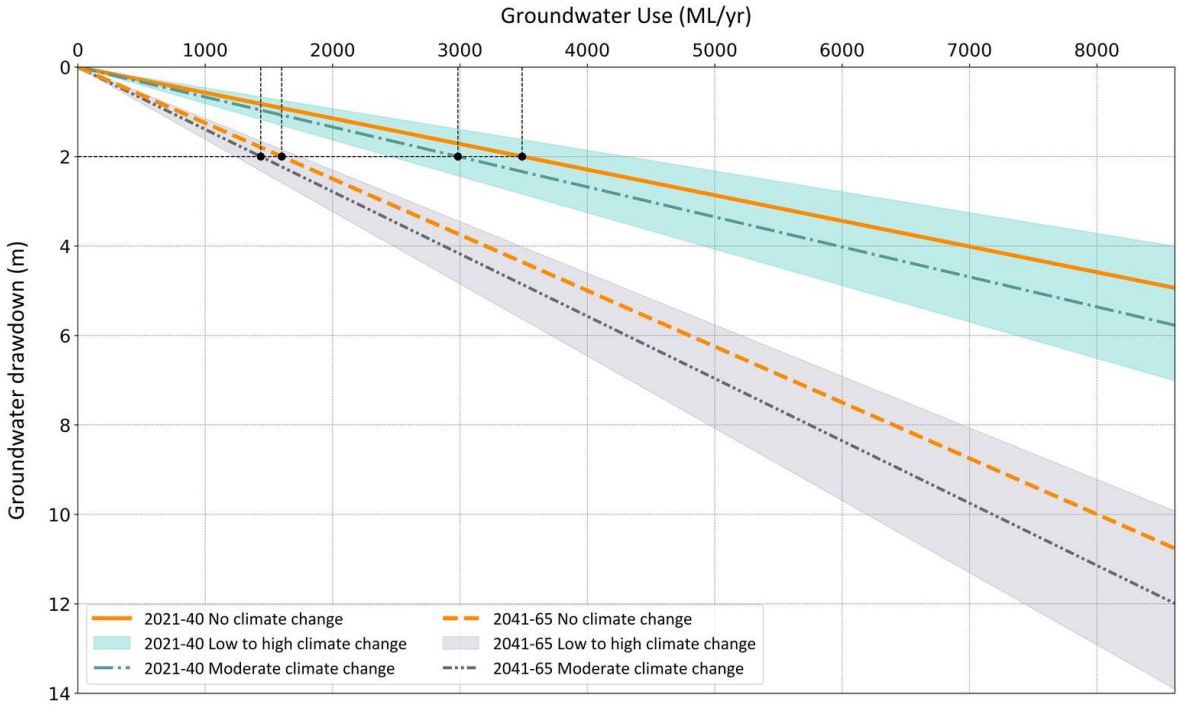

Figure A5-134. Plot for Nepean GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-159. Wetlands GDE synthesis Table A5-for Nepean GMA

GMU					NEPEAN GMA
Wetlands GDEs	Avg Use 2,103 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.64
				MCC (LCC to HCC)	1.3 (-0.18 to 2.4)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	1.6 (0.64 to 4.5)
	PCV use 4,306 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.4
				MCC (LCC to HCC)	3.1 (1.7 to 4.0)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	6.7 (5.1 to 8.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	176
				MCC (HCC to LCC)	150 (123 to 218)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.67% (0.66% to 0.82%)
		2041-2065	Volume (ML/yr)	No CC	78
				MCC (HCC to LCC)	72 (62 to 88)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.40% (0.38% to 0.46%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,759
				MCC (HCC to LCC)	1,497 (1,228 to 2,180)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.69% (6.59% to 8.22%)
		2041-2065	Volume (ML/yr)	No CC	780
				MCC (HCC to LCC)	722 (620 to 878)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.00% (3.79% to 4.55%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,518
				MCC (HCC to LCC)	2,993 (2,456 to 4,360)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.39% (13.18% to 16.44%)
		2041-2065	Volume (ML/yr)	No CC	1,559
				MCC (HCC to LCC)	1,444 (1,241 to 1,755)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.00% (7.59% to 9.10%)

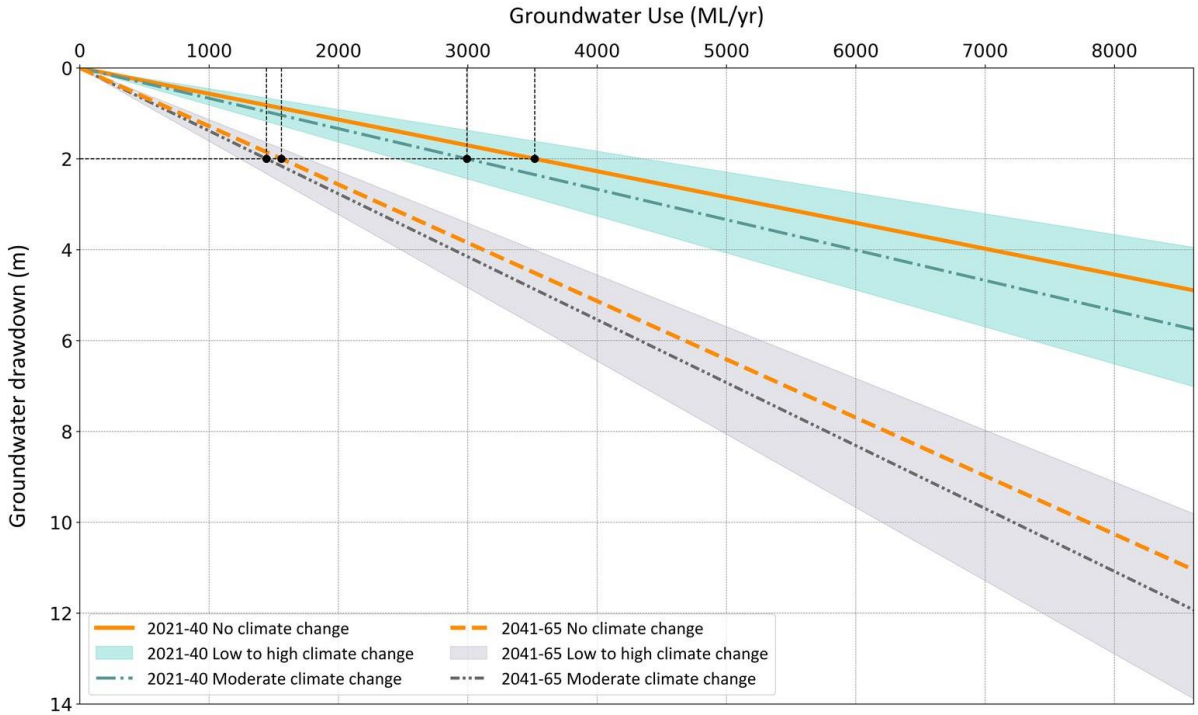

Figure A5-135. Plot for Nepean GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

NEUARPUR ZONE (WEST WIMMERA)

Table A5-160. Consumptive users synthesis Table A5-for Neuarpur Zone (West Wimmera)

Assessment area	**GMU**					**NEUARPUR ZONE (WEST WIMMERA)**
	Representative Bore					129,751
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					Aquifer dependent to Aquifer dependent
Catchment	Permissible Consumptive Volume (ML/yr)					24,750
	Licensed Entitlement (ML/yr)					24,107
	Licensed avg use (ML/yr)					13,853
Consumptive use metric	Consumptive users (bores)	Avg Use 25 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.51
					MCC (LCC to HCC)	0.40 (0.38 to 0.59)
			2041-2065	Drawdown from baseline (m)	No CC	0.54
					MCC (LCC to HCC)	0.54 (0.35 to 0.87)
		PCV use 200 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.67
					MCC (LCC to HCC)	0.89 (0.31 to 1.6)
			2041-2065	Drawdown from baseline (m)	No CC	0.54
					MCC (LCC to HCC)	1.6 (0.20 to 3.0)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	393
					MCC (HCC to LCC)	312 (190 to 687)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.47% (0.38% to 0.95%)
			2041-2065	Volume (ML/yr)	No CC	279
					MCC (HCC to LCC)	183 (105 to 833)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.36% (0.28% to 1.33%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	787
					MCC (HCC to LCC)	624 (379 to 1,374)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.93% (0.75% to 1.89%)
			2041-2065	Volume (ML/yr)	No CC	557
					MCC (HCC to LCC)	365 (210 to 1,666)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.72% (0.56% to 2.66%)

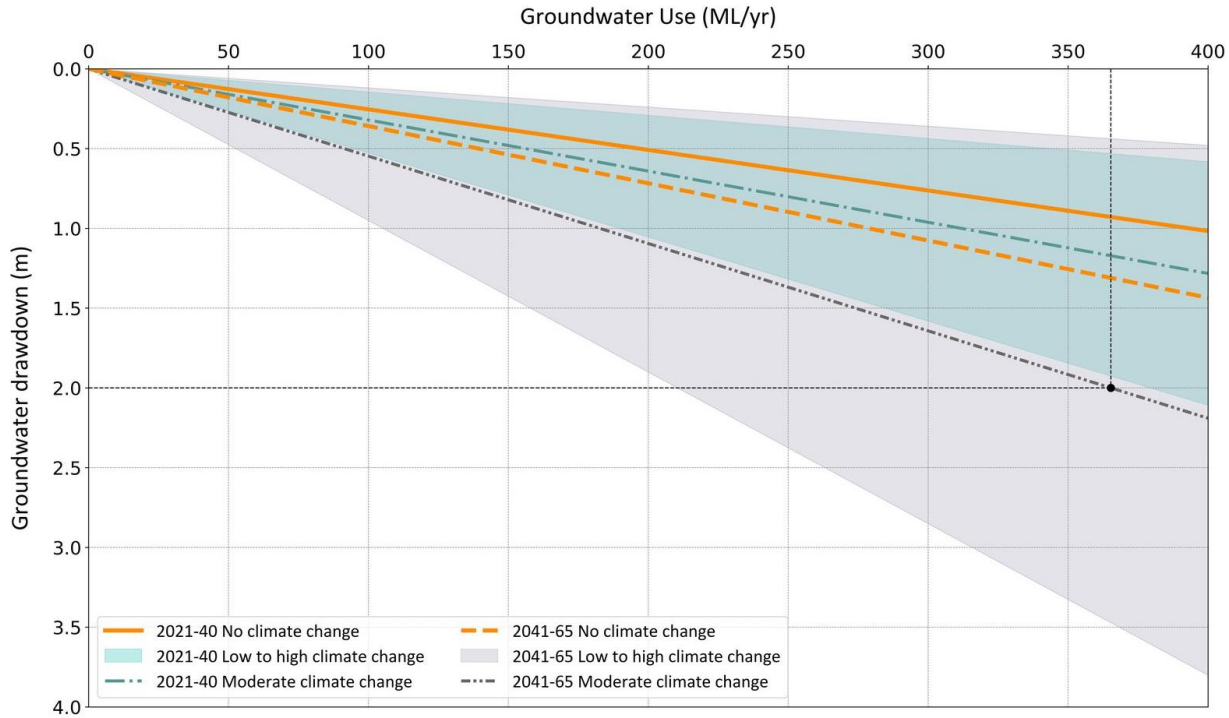

Figure A5-136. Plot for Neuarpur Zone (West Wimmera) Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-161. Statewide drawdown use synthesis Table A5-for Neuarpur Zone (West Wimmera)

GMU					NEUARPUR ZONE (WEST WIMMERA)
Consumptive users (bores)	Avg Use 25 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.47
				MCC (LCC to HCC)	0.43 (0.35 to 0.54)
		2041-2065	Drawdown from baseline (m)	No CC	0.51
				MCC (LCC to HCC)	0.51 (0.32 to 0.89)
	PCV use 200 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.62
				MCC (LCC to HCC)	0.94 (0.25 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	0.51
				MCC (LCC to HCC)	1.7 (0.14 to 3.1)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	417
				MCC (HCC to LCC)	297 (191 to 778)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.44% (0.38% to 1.07%)

		2041-2065	Volume (ML/yr)	No CC	268
				MCC (HCC to LCC)	172 (101 to 972)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.34% (0.27% to 1.55%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	835
				MCC (HCC to LCC)	594 (381 to 1,557)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.89% (0.75% to 2.14%)
		2041-2065	Volume (ML/yr)	No CC	537
				MCC (HCC to LCC)	344 (203 to 1,944)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.68% (0.54% to 3.11%)

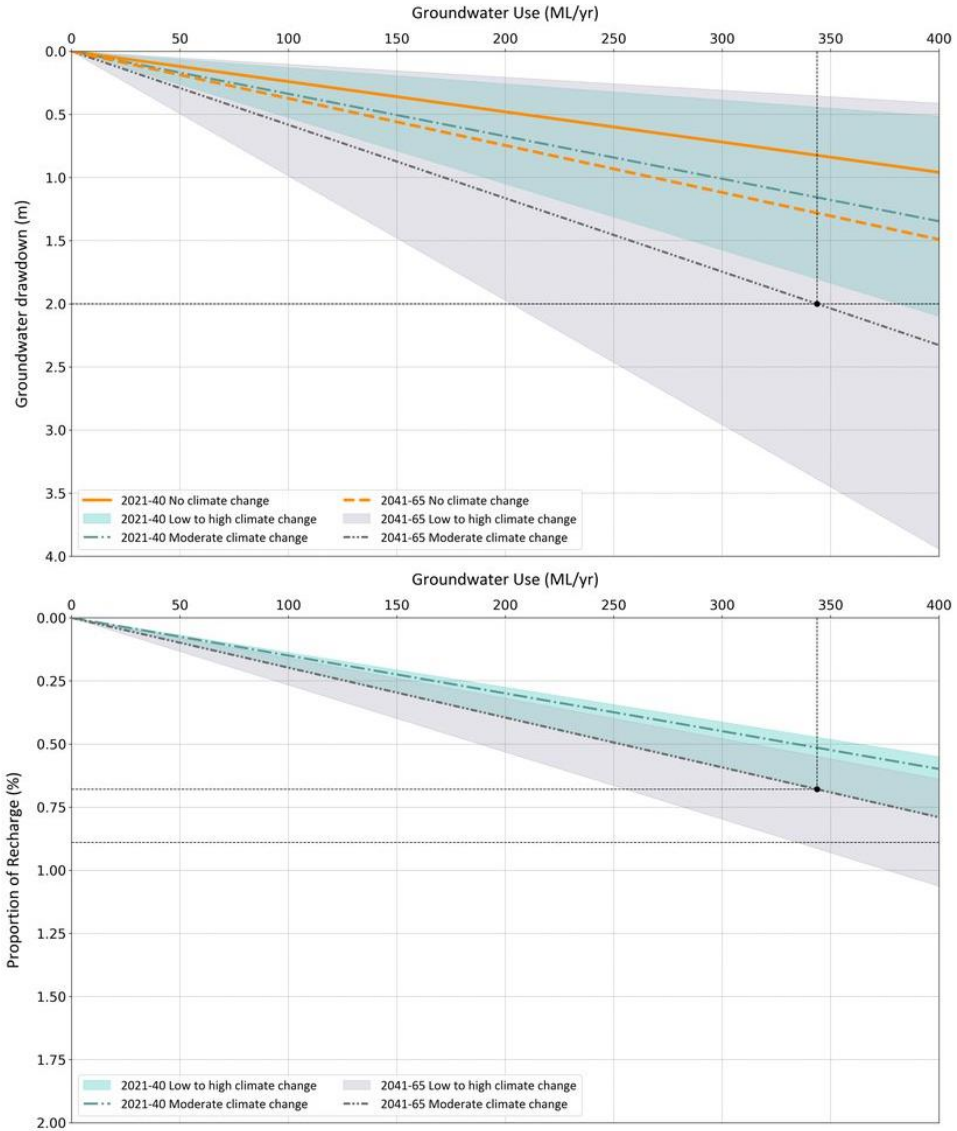

Figure A5-137. Upper Plot: Neuarpur Zone (West Wimmera) statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Neuarpur Zone (West Wimmera) statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-162. Terrestrial GDE synthesis Table A5-for Neuarpur Zone (West Wimmera)

GMU					NEUARPUR ZONE (WEST WIMMERA)
Terrestrial GDEs	Avg Use 25 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.32
				MCC (LCC to HCC)	0.32 (0.19 to 0.40)
		2041-2065	Drawdown from baseline (m)	No CC	0.38
				MCC (LCC to HCC)	0.38 (0.17 to 0.77)
	PCV use 200 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.45
				MCC (LCC to HCC)	0.81 (0.08 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.38
				MCC (LCC to HCC)	1.6 (-0.02 to 2.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	53
				MCC (HCC to LCC)	34 (21 to 130)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (0.04% to 0.18%)
		2041-2065	Volume (ML/yr)	No CC	23
				MCC (HCC to LCC)	18 (11 to 184)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.04% (0.03% to 0.29%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	532
				MCC (HCC to LCC)	338 (211 to 1,303)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.51% (0.42% to 1.79%)
		2041-2065	Volume (ML/yr)	No CC	234
				MCC (HCC to LCC)	184 (106 to 1,838)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.36% (0.28% to 2.94%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,063
				MCC (HCC to LCC)	676 (422 to 2,605)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.01% (0.83% to 3.59%)
		2041-2065	Volume (ML/yr)	No CC	469
				MCC (HCC to LCC)	367 (213 to 3,676)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.73% (0.57% to 5.87%)

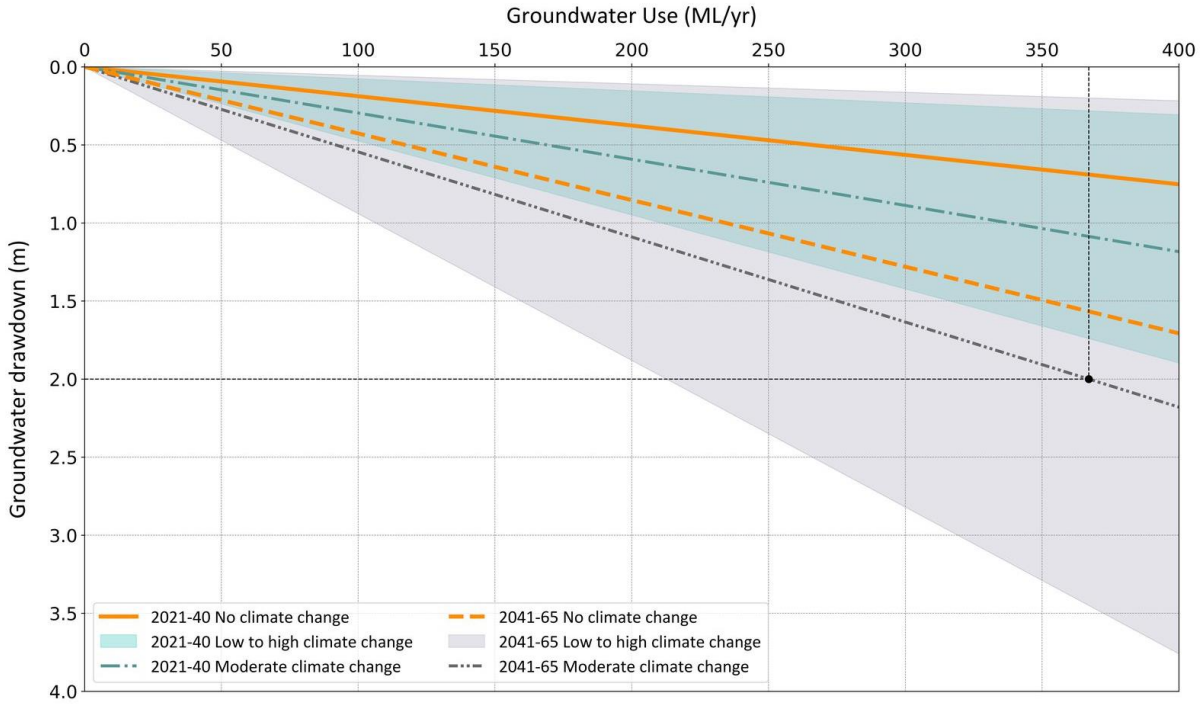

Figure A5-138. Plot for Neuarpur Zone (West Wimmera) Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-163. Wetlands GDE synthesis Table A5-for Neuarpur Zone (West Wimmera)

GMU					NEUARPUR ZONE (WEST WIMMERA)
Wetlands GDEs	Avg Use 25 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.29
				MCC (LCC to HCC)	0.28 (0.15 to 0.38)
		2041-2065	Drawdown from baseline (m)	No CC	0.35
				MCC (LCC to HCC)	0.35 (0.13 to 0.74)
	PCV use 200 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.42
				MCC (LCC to HCC)	0.74 (0.05 to 1.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.35
				MCC (LCC to HCC)	1.5 (-0.05 to 2.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	57
				MCC (HCC to LCC)	36 (22 to 153)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (0.04% to 0.21%)
		2041-2065	Volume (ML/yr)	No CC	22
				MCC (HCC to LCC)	19 (11 to 241)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.04% (0.03% to 0.39%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	568
				MCC (HCC to LCC)	364 (220 to 1,529)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.54% (0.44% to 2.10%)
		2041-2065	Volume (ML/yr)	No CC	222
				MCC (HCC to LCC)	194 (111 to 2,413)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.38% (0.29% to 3.85%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,136
				MCC (HCC to LCC)	727 (441 to 3,057)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.09% (0.87% to 4.21%)
		2041-2065	Volume (ML/yr)	No CC	444
				MCC (HCC to LCC)	389 (221 to 4,825)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.77% (0.59% to 7.71%)

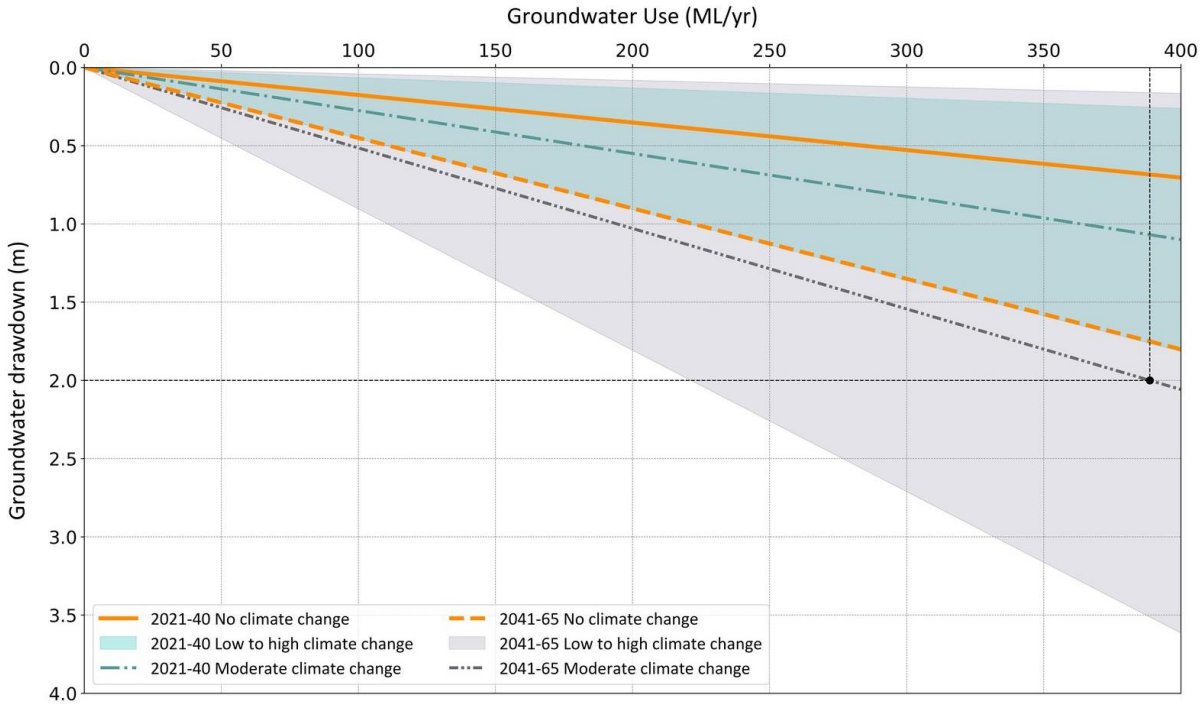

Figure A5-139. Plot for Neuarpur Zone (West Wimmera) Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

NEWLINGROOK GMA

Table A5-164. Consumptive users synthesis Table A5-for Newlingrook GMA

	GMU					NEWLINGROOK GMA
Assessment area	Representative Bore					85,786
	Aquifer					Confined
	Water system depth boundary (m below natural surface)					All formations below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					1,977
	Licensed Entitlement (ML/yr)					1,958
	Licensed avg use (ML/yr)					47
Consumptive use metric	Consumptive users (bores)	Avg Use 29 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.9
					MCC (LCC to HCC)	1.1 (1.4 to 3.0)
			2041-2065	Drawdown from baseline (m)	No CC	2.5
					MCC (LCC to HCC)	2.5 (1.4 to 5.4)
		PCV use 1,922 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.1
					MCC (LCC to HCC)	3.7 (3.1 to 6.1)

			2041-2065	Drawdown from baseline (m)	No CC	2.5
					MCC (LCC to HCC)	8.4 (6.4 to 12)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	570
					MCC (HCC to LCC)	616 (426 to 699)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.53% (0.48% to 0.50%)
			2041-2065	Volume (ML/yr)	No CC	332
					MCC (HCC to LCC)	271 (212 to 332)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.27% (0.24% to 0.31%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,141
					MCC (HCC to LCC)	1,233 (852 to 1,399)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.05% (0.97% to 1.00%)
			2041-2065	Volume (ML/yr)	No CC	665
					MCC (HCC to LCC)	541 (423 to 664)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.54% (0.48% to 0.62%)

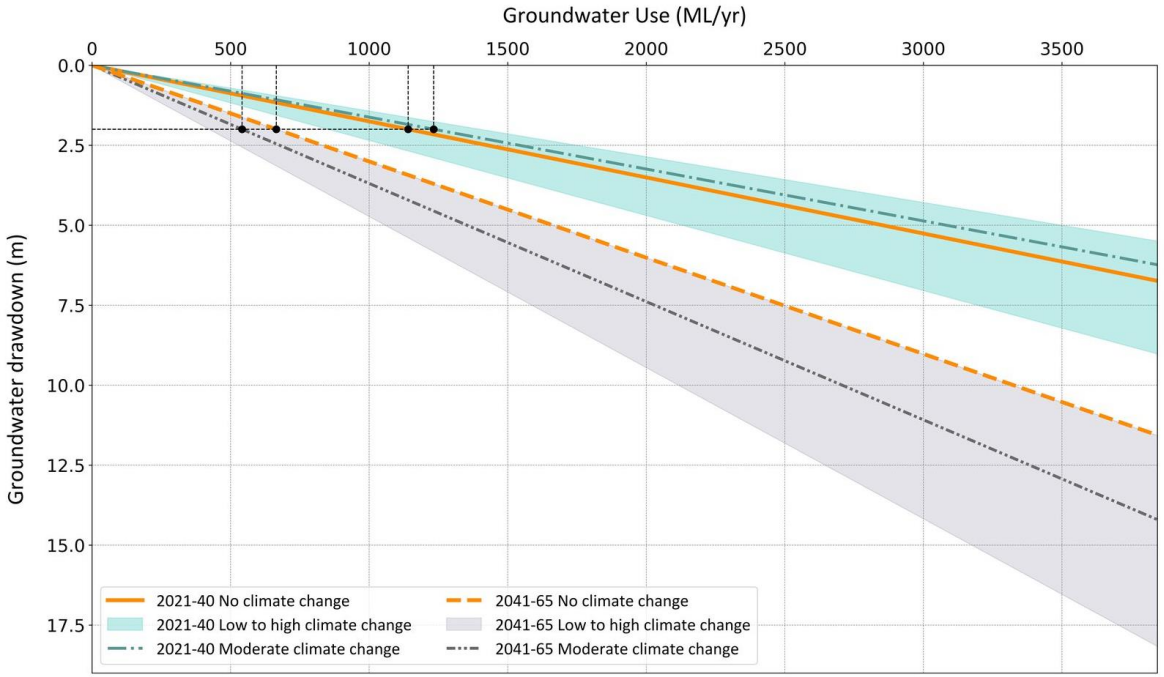

Figure A5-140. Plot for Newlingrook GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-165. Statewide drawdown use synthesis Table A5-for Newlingrook GMA

GMU					NEWLINGROOK GMA
Consumptive users (bores)	Avg Use 29 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	0.61 (1.1 to 2.6)
		2041-2065	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	2.2 (1.1 to 5.0)
	PCV use 1,922 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.9
				MCC (LCC to HCC)	3.2 (2.9 to 5.5)
		2041-2065	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	7.8 (6.0 to 11)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	595
				MCC (HCC to LCC)	675 (458 to 727)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.58% (0.50% to 0.54%)
		2041-2065	Volume (ML/yr)	No CC	322
				MCC (HCC to LCC)	283 (217 to 346)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.28% (0.25% to 0.32%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,191

				MCC (HCC to LCC)	1,351 (916 to 1,455)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.15% (1.01% to 1.07%)
		2041-2065	Volume (ML/yr)	No CC	644
				MCC (HCC to LCC)	565 (434 to 691)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.56% (0.50% to 0.64%)

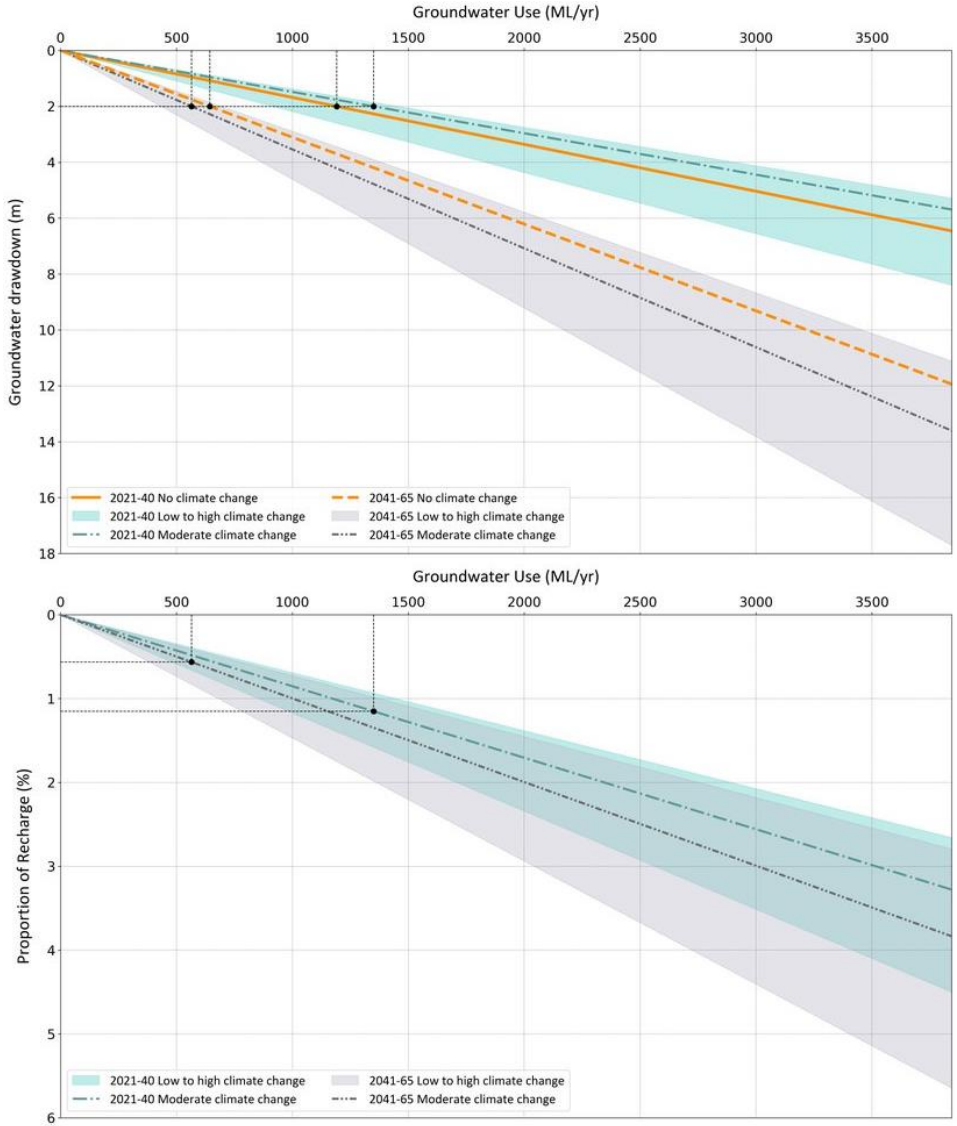

Figure A5-141. Upper Plot: Newlingrook GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Newlingrook GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-166. seawater synthesis Table A5-for Newlingrook GMA

GMU					NEWLINGROOK GMA
Seawater intrusion	Avg Use 29 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.1
				MCC (LCC to HCC)	0.73 (1.7 to 2.8)
			Area elev. <1.5 mAHD (%)	No CC	44%
				MCC (LCC to HCC)	43% (44% to 45%)
		2041-2065	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	2.4 (1.4 to 5.1)
			Area elev. <1.5 mAHD (%)	No CC	43%
				MCC (LCC to HCC)	45% (44% to 49%)
	PCV use 1,922 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.7
				MCC (LCC to HCC)	2.6 (2.9 to 4.8)
			Area elev. <1.5 mAHD (%)	No CC	47%
				MCC (LCC to HCC)	44% (45% to 49%)
		2041-2065	Drawdown from baseline (m)	No CC	6.5
				MCC (LCC to HCC)	6.4 (5.0 to 10)
			Area elev. <1.5 mAHD (%)	No CC	50%
				MCC (LCC to HCC)	50% (48% to 55%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	11,205
				MCC (HCC to LCC)	10,200 (10,293 to 12,958)
			Proportion of recharge (%)	No CC	NA
				MCC (LCC to HCC)	8.7% (9.0% to 12%)
		2041-2065	Volume (ML/yr)	No CC	5,596
				MCC (HCC to LCC)	4,532 (3,175 to 5,567)
			Proportion of recharge (%)	No CC	NA
				MCC (LCC to HCC)	4.5% (4.0% to 4.7%)

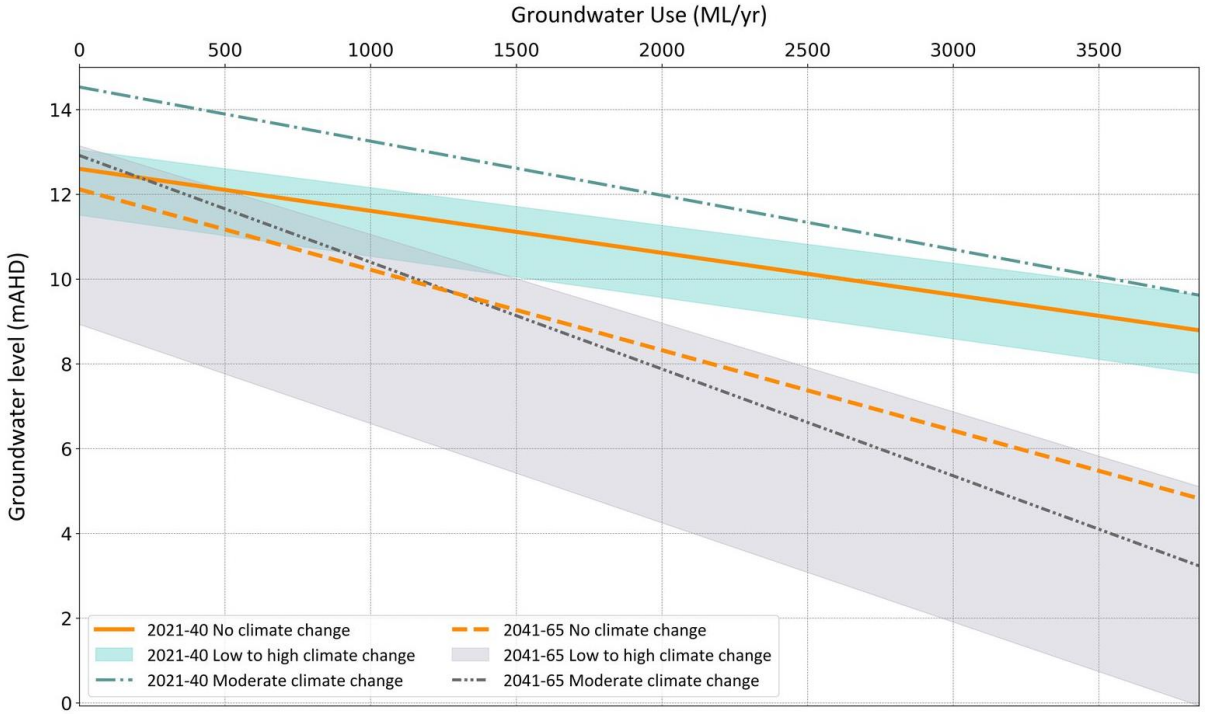

Figure A5-142. Plot for Newlingrook GMA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-167. Terrestrial GDE synthesis Table A5-for Newlingrook GMA

GMU					NEWLINGROOK GMA
Terrestrial GDEs	Avg Use 29 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.52
				MCC (LCC to HCC)	-2.61 (-1.96 to -0.68)
		2041-2065	Drawdown from baseline (m)	No CC	-0.89
				MCC (LCC to HCC)	-0.89 (-1.95 to 1.6)
	PCV use 1,922 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.32
				MCC (LCC to HCC)	-0.61 (-0.41 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	-0.89
				MCC (LCC to HCC)	4.1 (3.3 to 6.7)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	165
				MCC (HCC to LCC)	294 (109 to 268)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.25% (0.13% to 0.19%)
		2041-2065	Volume (ML/yr)	No CC	28
				MCC (HCC to LCC)	41 (31 to 46)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.04% (0.03% to 0.05%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,647
				MCC (HCC to LCC)	2,943 (1,088 to 2,684)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.51% (1.27% to 1.86%)
		2041-2065	Volume (ML/yr)	No CC	280
				MCC (HCC to LCC)	407 (312 to 464)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.41% (0.34% to 0.46%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,294
				MCC (HCC to LCC)	5,886 (2,177 to 5,368)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.02% (2.55% to 3.71%)
		2041-2065	Volume (ML/yr)	No CC	561
				MCC (HCC to LCC)	813 (623 to 928)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.81% (0.67% to 0.92%)

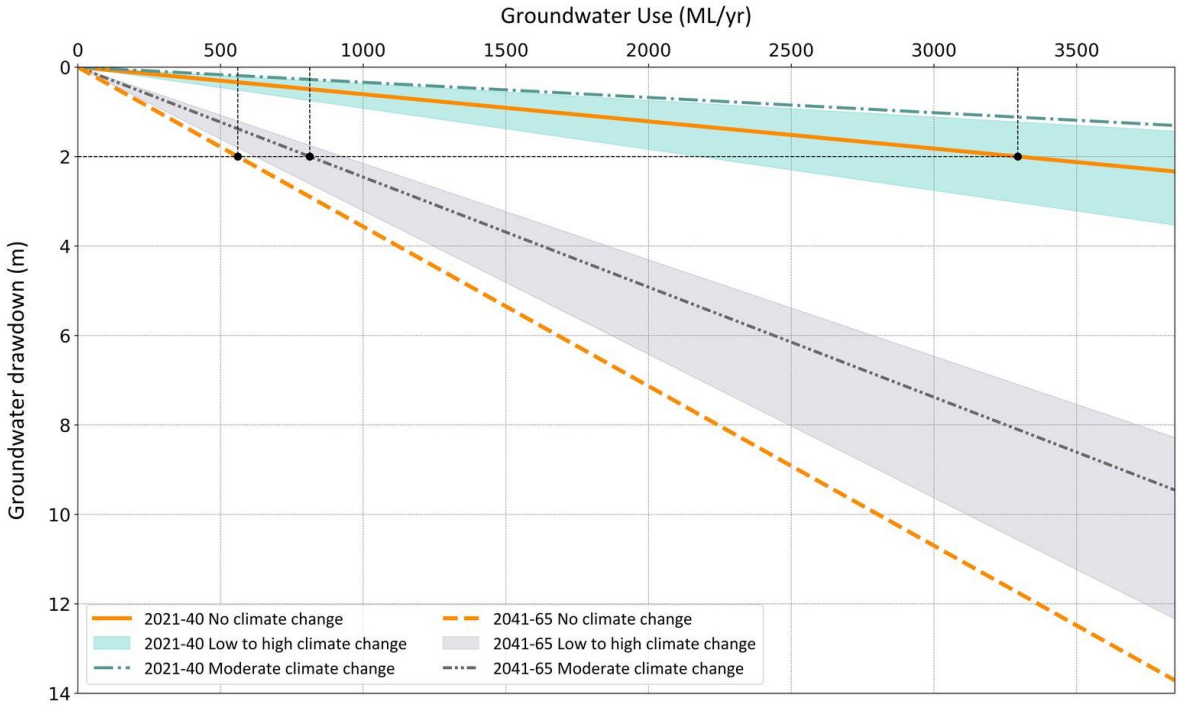

Figure A5-143. Plot for Newlingrook GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-168. Waterways GDE synthesis Table A5-for Newlingrook GMA

GMU					NEWLINGROOK GMA
Waterway GDEs	Avg Use 29 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-3.04
				MCC (LCC to HCC)	-4.12 (-3.49 to -2.16)
		2041-2065	Drawdown from baseline (m)	No CC	-2.31
				MCC (LCC to HCC)	-2.31 (-3.37 to 0.11)
	PCV use 1,922 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.25
				MCC (LCC to HCC)	-2.20 (-1.97 to -0.27)
		2041-2065	Drawdown from baseline (m)	No CC	-2.31
				MCC (LCC to HCC)	2.7 (2.2 to 5.1)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	697
				MCC (HCC to LCC)	-768.33 (-1154.75 to 229)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-0.66% (-0.80% to 0.27%)
		2041-2065	Volume (ML/yr)	No CC	25
				MCC (HCC to LCC)	48 (36 to 54)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (0.04% to 0.05%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,967
				MCC (HCC to LCC)	-7683.31 (-11547.54 to 2,294)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-6.55% (-7.98% to 2.69%)
		2041-2065	Volume (ML/yr)	No CC	248
				MCC (HCC to LCC)	478 (364 to 536)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.48% (0.39% to 0.53%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	13,934
				MCC (HCC to LCC)	-15366.61 (-23095.09 to 4,587)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-13.11% (-15.97% to 5.37%)
		2041-2065	Volume (ML/yr)	No CC	496
				MCC (HCC to LCC)	956 (727 to 1,073)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.95% (0.78% to 1.07%)

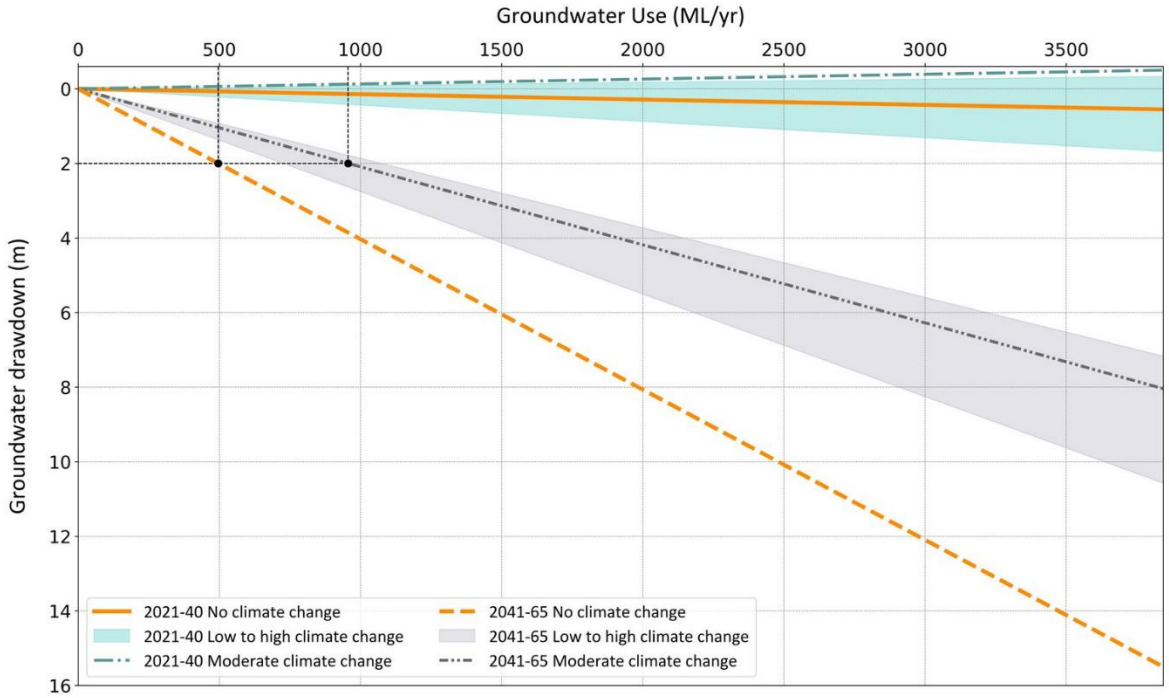

Figure A5-144. Plot for Newlingrook GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-169. Stream gauge results for Newlingrook GMA

Newlingrook GMA				
Stream gauge/Catchment:		**235224 - Gellibrand River @ Burrupa (Unregulated)**		
Base flow index (1975-2020)				**0.56**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	219,214 (176,457 to 251,812)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-27,303 (-70,059 to 5,295)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	198,899 (137,245 to 225,119)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-47,618 (-109,272 to -21,398)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.013% (0.017% to 0.012%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.877% (1.1% to 0.763%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.015% (0.021% to 0.013%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.966% (1.4% to 0.854%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	76.74 (61.77 to 88.15)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	69.62 (48.04 to 78.80)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.105% (0.130% to 0.091%)
		PCV use (ML/yr)	MCC (LCC to HCC)	6.86% (8.52% to 5.97%)

	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.116% (0.168% to 0.102%)
		PCV use (ML/yr)	MCC (LCC to HCC)	7.56% (10.96% to 6.68%)

NORTHERN ZONE (WEST WIMMERA)

Table A5-170. Consumptive users synthesis Table A5-for Northern Zone (West Wimmera)

Assessment area	**GMU**					**NORTHERN ZONE (WEST WIMMERA)**
	Representative Bore					Empty
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					Aquifer dependent to Aquifer dependent
Catchment	Permissible Consumptive Volume (ML/yr)					22,440
	Licensed Entitlement (ML/yr)					15,941
	Licensed avg use (ML/yr)					2,734
Consumptive use metric	**Consumptive users (bores)**	Avg Use 1,369 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.33
					MCC (LCC to HCC)	-0.38 (0.27 to 0.42)
			2041-2065	Drawdown from baseline (m)	No CC	0.32
					MCC (LCC to HCC)	0.32 (0.23 to 0.45)
		PCV use 4,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.56
					MCC (LCC to HCC)	0.15 (0.21 to 1.4)
			2041-2065	Drawdown from baseline (m)	No CC	0.32
					MCC (LCC to HCC)	0.73 (0.19 to 2.4)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	8,911
					MCC (HCC to LCC)	24,083 (4,364 to 16,693)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	9.62% (2.55% to 5.26%)
			2041-2065	Volume (ML/yr)	No CC	8,096
					MCC (HCC to LCC)	7,053 (2,656 to 16,291)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.87% (2.42% to 6.26%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	17,821
					MCC (HCC to LCC)	48,165 (8,728 to 33,387)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	19.24% (5.10% to 10.52%)
			2041-2065	Volume (ML/yr)	No CC	16,191
					MCC (HCC to LCC)	14,105 (5,311 to 32,583)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	7.74% (4.83% to 12.53%)

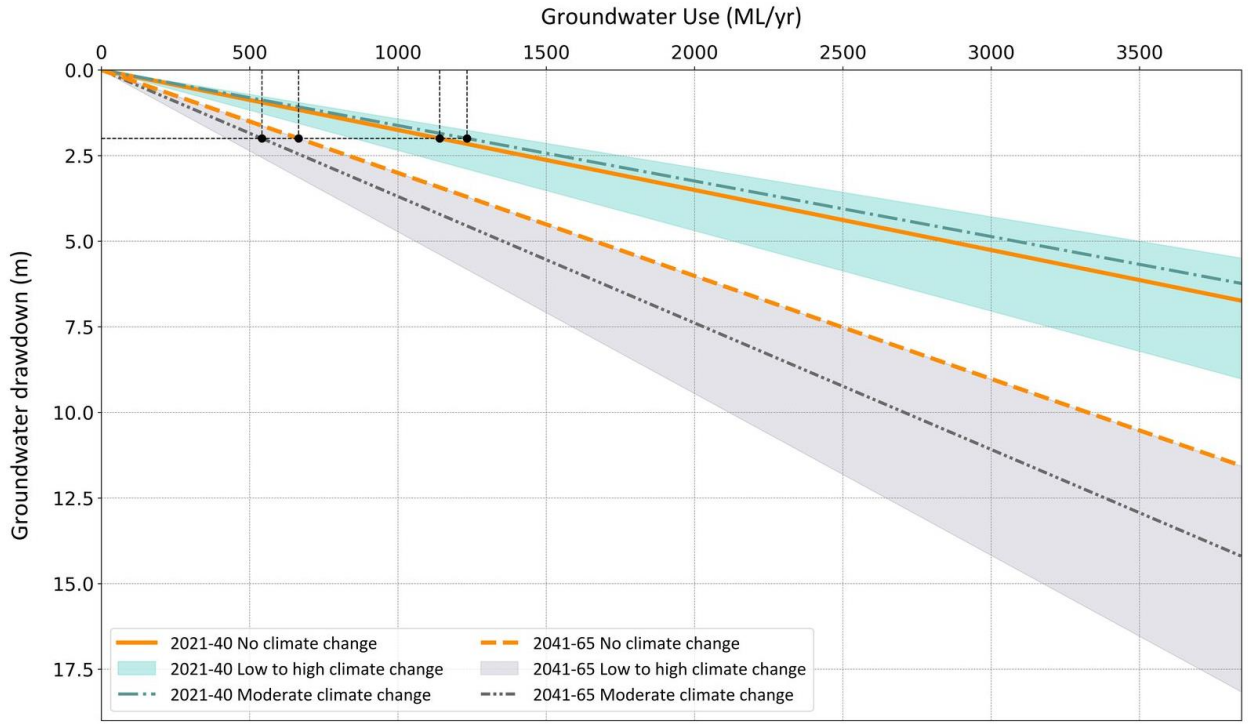

Figure A5-145. Plot for Northern Zone (West Wimmera) Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-171. Statewide drawdown use synthesis Table A5-for Northern Zone (West Wimmera)

GMU					NORTHERN ZONE (WEST WIMMERA)
Consumptive users (bores)	Avg Use 1,369 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.37
				MCC (LCC to HCC)	-0.05 (0.31 to 0.55)
		2041-2065	Drawdown from baseline (m)	No CC	0.41
				MCC (LCC to HCC)	0.41 (0.32 to 0.55)
	PCV use 4,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.58
				MCC (LCC to HCC)	0.37 (0.30 to 1.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.41
				MCC (LCC to HCC)	0.80 (0.27 to 2.1)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	9,300
				MCC (HCC to LCC)	14,310 (4,597 to 15,510)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.72% (2.69% to 4.89%)
		2041-2065	Volume (ML/yr)	No CC	7,364
				MCC (HCC to LCC)	7,071 (3,077 to 15,918)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.88% (2.80% to 6.12%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	18,601
				MCC (HCC to LCC)	28,619 (9,194 to 31,020)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.43% (5.38% to 9.78%)
		2041-2065	Volume (ML/yr)	No CC	14,727
				MCC (HCC to LCC)	14,142 (6,154 to 31,835)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.76% (5.60% to 12.24%)

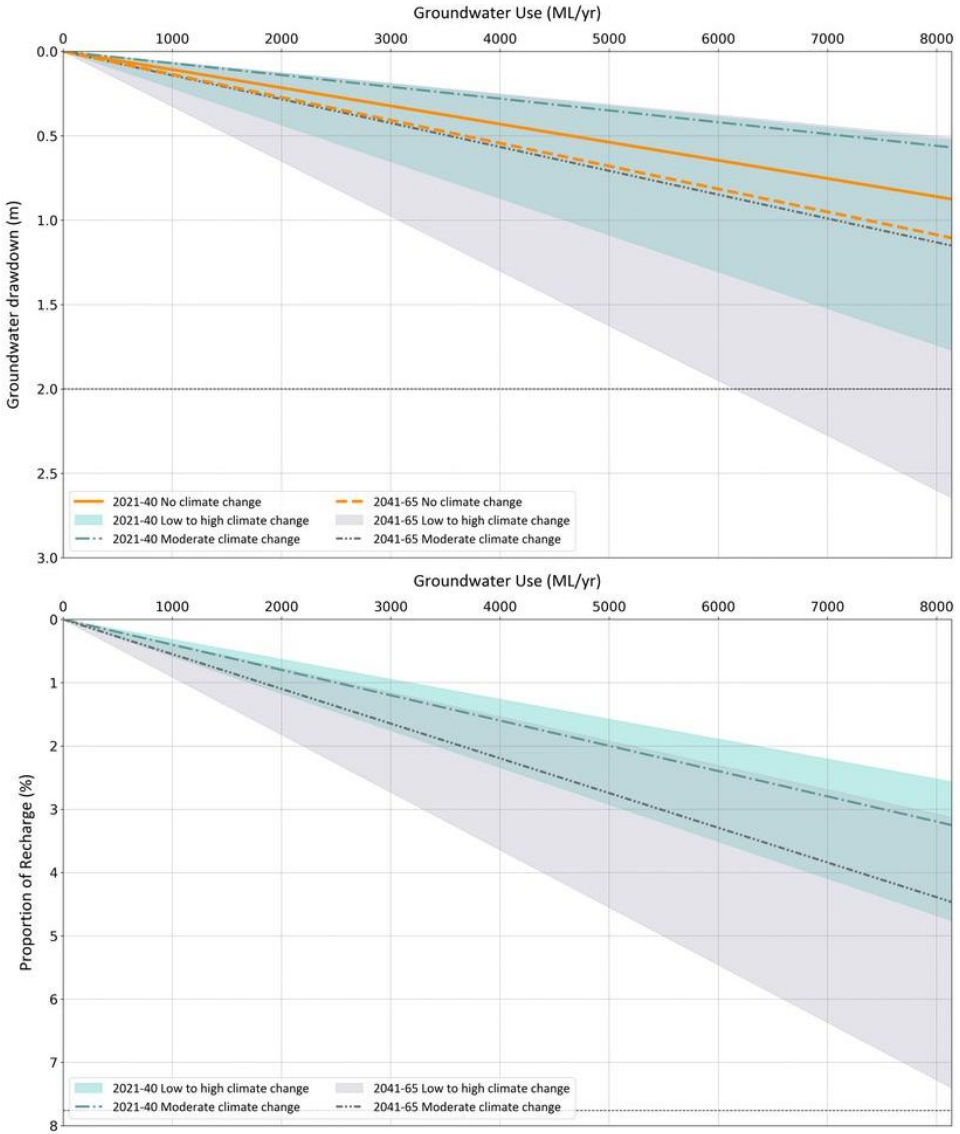

Figure A5-146. Upper Plot: Northern Zone (West Wimmera) statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Northern Zone (West Wimmera) statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-172. Terrestrial GDE synthesis Table A5-for Northern Zone (West Wimmera)

GMU					NORTHERN ZONE (WEST WIMMERA)
Terrestrial GDEs	Avg Use 1,369 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.27
				MCC (LCC to HCC)	0.09 (0.24 to 0.53)
		2041-2065	Drawdown from baseline (m)	No CC	0.38
				MCC (LCC to HCC)	0.38 (0.29 to 0.57)
	PCV use 4,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.42
				MCC (LCC to HCC)	0.41 (0.20 to 1.2)
		2041-2065	Drawdown from baseline (m)	No CC	0.38
				MCC (LCC to HCC)	0.82 (0.23 to 1.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,262
				MCC (HCC to LCC)	1,373 (528 to 2,204)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.55% (0.31% to 0.69%)
		2041-2065	Volume (ML/yr)	No CC	599
				MCC (HCC to LCC)	720 (350 to 1,895)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.40% (0.32% to 0.73%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	12,617
				MCC (HCC to LCC)	13,735 (5,284 to 22,042)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.49% (3.09% to 6.95%)
		2041-2065	Volume (ML/yr)	No CC	5,986
				MCC (HCC to LCC)	7,203 (3,499 to 18,947)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.95% (3.18% to 7.28%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	25,234
				MCC (HCC to LCC)	27,469 (10,569 to 44,085)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.97% (6.18% to 13.90%)
		2041-2065	Volume (ML/yr)	No CC	11,973
				MCC (HCC to LCC)	14,405 (6,998 to 37,894)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.91% (6.37% to 14.57%)

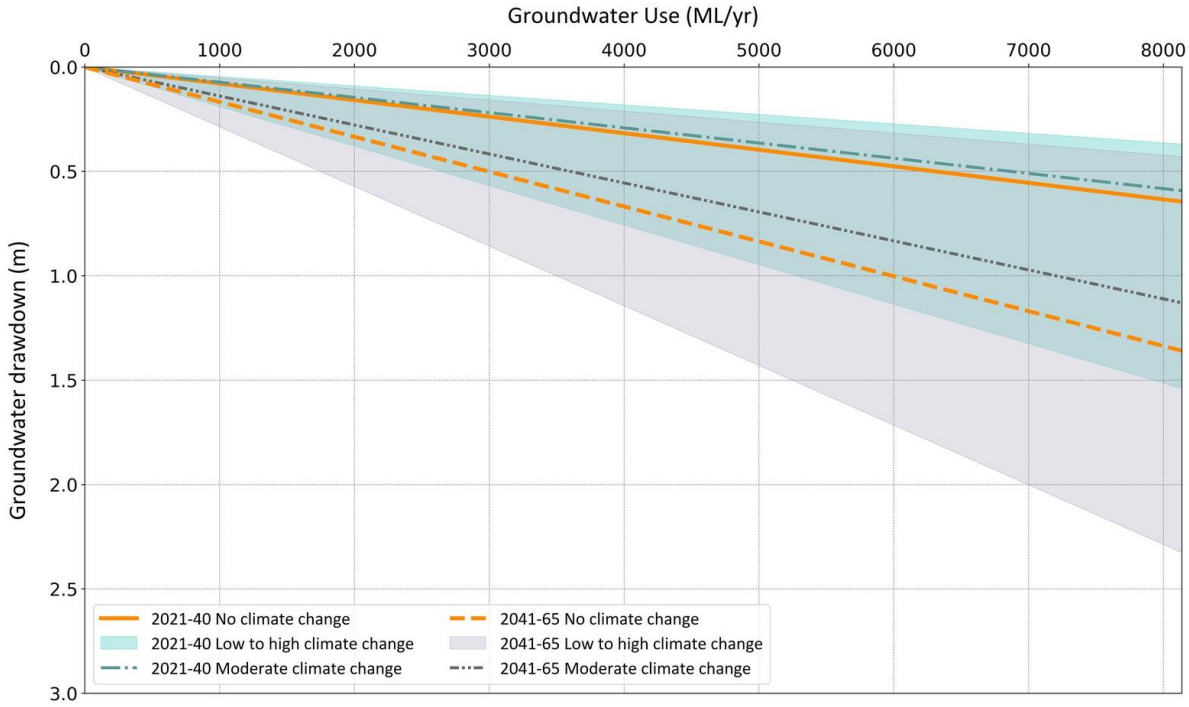

Figure A5-147. Plot for Northern Zone (West Wimmera) Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-173. Waterways GDE synthesis Table A5-for Northern Zone (West Wimmera)

GMU					NORTHERN ZONE (WEST WIMMERA)
Waterway GDEs	Avg Use 1,369 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.30
				MCC (LCC to HCC)	0.51 (0.37 to 0.78)
		2041-2065	Drawdown from baseline (m)	No CC	0.61
				MCC (LCC to HCC)	0.61 (0.56 to 1.0)
	PCV use 4,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.33
				MCC (LCC to HCC)	0.58 (0.27 to 1.0)
		2041-2065	Drawdown from baseline (m)	No CC	0.61
				MCC (LCC to HCC)	1.0 (0.53 to 1.5)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,686
				MCC (HCC to LCC)	1,032 (593 to 1,975)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.41% (0.35% to 0.62%)
		2041-2065	Volume (ML/yr)	No CC	607
				MCC (HCC to LCC)	603 (402 to 1,071)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.33% (0.37% to 0.41%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	16,865
				MCC (HCC to LCC)	10,322 (5,927 to 19,746)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.12% (3.47% to 6.22%)
		2041-2065	Volume (ML/yr)	No CC	6,068
				MCC (HCC to LCC)	6,026 (4,024 to 10,708)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.31% (3.66% to 4.12%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	33,730
				MCC (HCC to LCC)	20,645 (11,854 to 39,492)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.25% (6.93% to 12.45%)
		2041-2065	Volume (ML/yr)	No CC	12,136
				MCC (HCC to LCC)	12,052 (8,048 to 21,415)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.61% (7.32% to 8.23%)

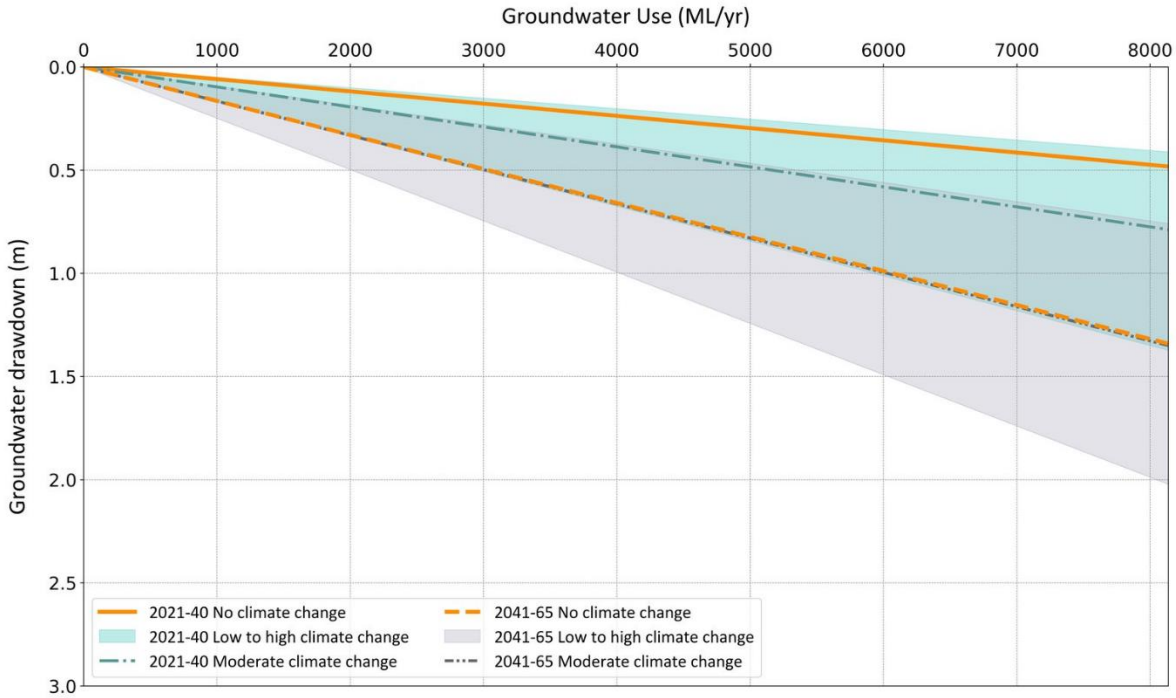

Figure A5-148. Plot for Northern Zone (West Wimmera) Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-174. Wetlands GDE synthesis Table A5-for Northern Zone (West Wimmera)

GMU					NORTHERN ZONE (WEST WIMMERA)
Wetlands GDEs	Avg Use 1,369 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.08
				MCC (LCC to HCC)	0.10 (-0.01 to 0.39)
		2041-2065	Drawdown from baseline (m)	No CC	0.24
				MCC (LCC to HCC)	0.24 (0.19 to 0.57)
	PCV use 4,068 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.07
				MCC (LCC to HCC)	0.16 (-0.14 to 0.64)
		2041-2065	Drawdown from baseline (m)	No CC	0.24
				MCC (LCC to HCC)	0.60 (0.14 to 1.1)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-24205.65
				MCC (HCC to LCC)	3,387 (-6815.24 to 953)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.35% (-2.15% to 0.56%)
		2041-2065	Volume (ML/yr)	No CC	459
				MCC (HCC to LCC)	1,033 (565 to 3,304)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.57% (0.51% to 1.27%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-242056.47
				MCC (HCC to LCC)	33,868 (-68152.39 to 9,525)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.53% (-21.48% to 5.57%)
		2041-2065	Volume (ML/yr)	No CC	4,594
				MCC (HCC to LCC)	10,326 (5,649 to 33,042)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.67% (5.14% to 12.70%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-484112.94
				MCC (HCC to LCC)	67,736 (-136304.78 to 19,051)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	27.06% (-42.97% to 11.14%)
		2041-2065	Volume (ML/yr)	No CC	9,187
				MCC (HCC to LCC)	20,651 (11,299 to 66,083)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.33% (10.28% to 25.41%)

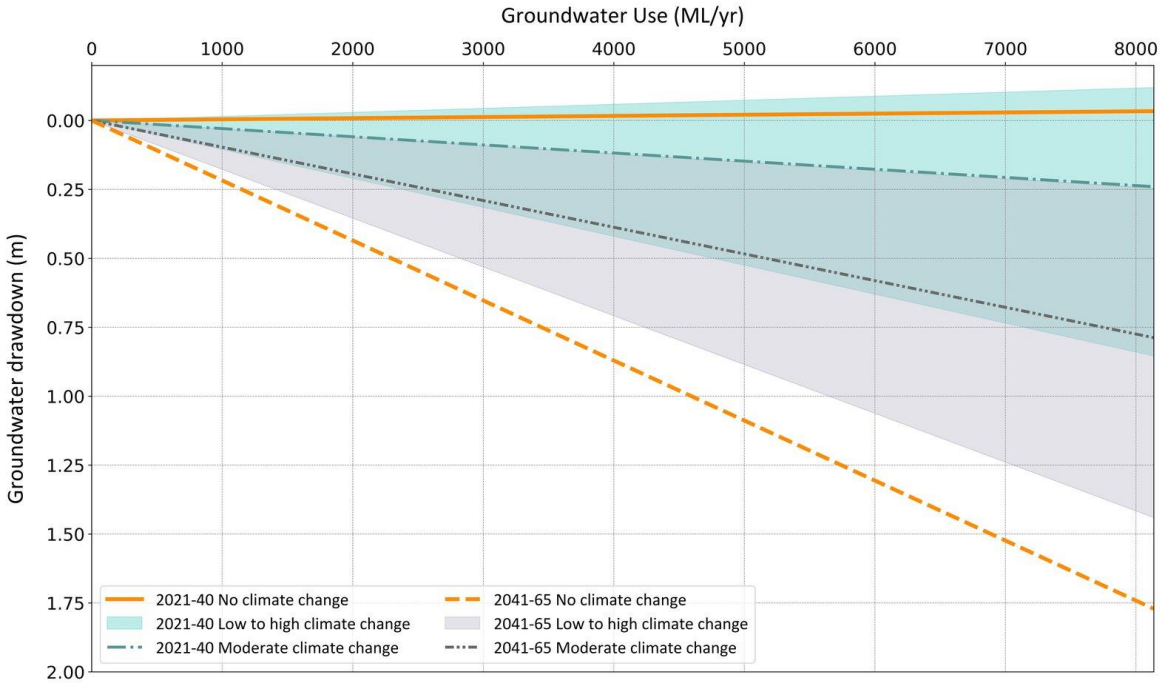

Figure A5-149. Plot for Northern Zone (West Wimmera) Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

NULLAWARRE WSPA

Table A5-175. Consumptive users synthesis Table A5-for Nullawarre WSPA

Assessment area	**GMU**					**NULLAWARRE WSPA**
	Representative Bore					141,238
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations from surface to 250 metres below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					22,741
	Licensed Entitlement (ML/yr)					22,741
	Licensed avg use (ML/yr)					12,040
Consumptive use metric	**Consumptive users (bores)**	Avg Use 11,103 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.76
					MCC (LCC to HCC)	0.96 (0.52 to 2.0)
			2041-2065	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	1.2 (0.73 to 3.4)
		PCV use	2021-2040	Drawdown from baseline (m)	No CC	0.78
					MCC (LCC to HCC)	1.1 (0.13 to 2.7)

		20,194 (ML/yr)	2041-2065	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	2.5 (0.66 to 5.0)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	38,451
					MCC (HCC to LCC)	27,002 (11,469 to 152,447)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	21.93% (11.84% to 103.21%)
			2041-2065	Volume (ML/yr)	No CC	22,974
					MCC (HCC to LCC)	13,035 (6,437 to 47,567)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	13.23% (9.23% to 36.59%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	76,902
					MCC (HCC to LCC)	54,004 (22,939 to 304,894)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	43.85% (23.68% to 206.42%)
			2041-2065	Volume (ML/yr)	No CC	45,948
					MCC (HCC to LCC)	26,071 (12,873 to 95,135)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	26.46% (18.46% to 73.18%)

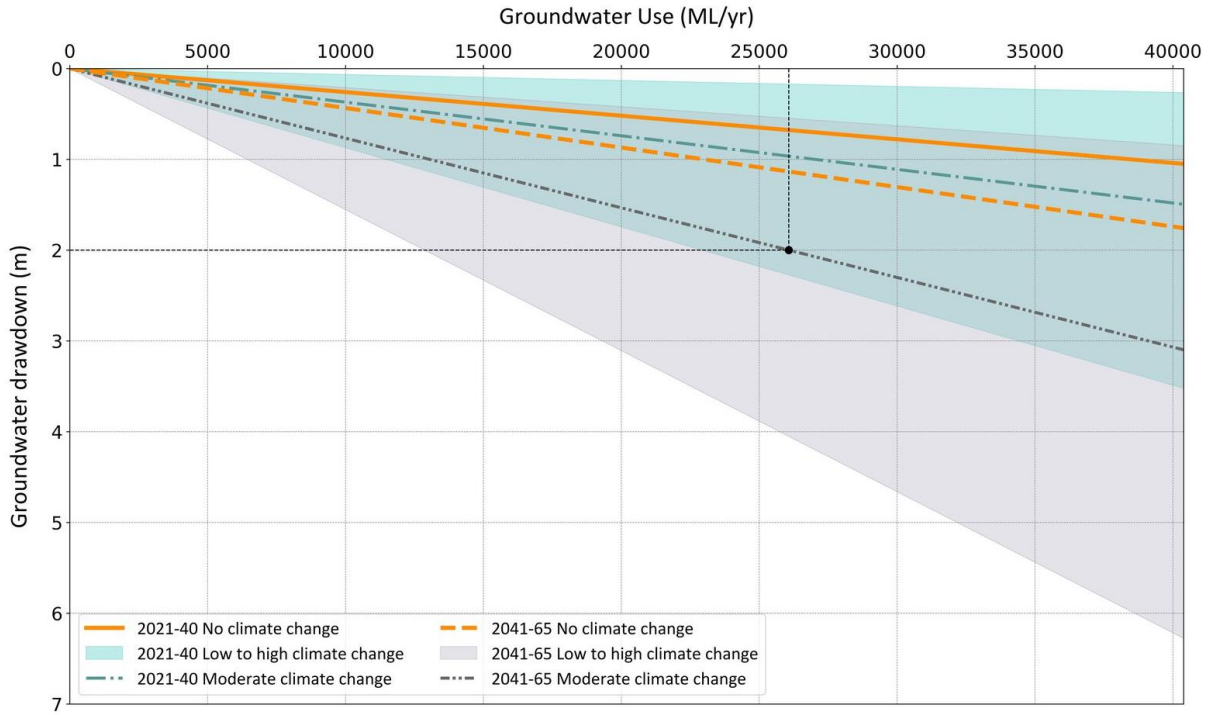

Figure A5-150. Plot for Nullawarre WSPA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-176. Statewide drawdown use synthesis Table A5-for Nullawarre WSPA

GMU					NULLAWARRE WSPA
Consumptive users (bores)	Avg Use 11,103 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.69
				MCC (LCC to HCC)	0.95 (0.45 to 2.0)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.2 (0.69 to 3.4)
	PCV use 20,194 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.73
				MCC (LCC to HCC)	1.2 (0.07 to 2.7)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	2.6 (0.66 to 5.0)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	41,042
				MCC (HCC to LCC)	26,668 (11,428 to 229,678)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	21.66% (11.80% to 155.50%)
		2041-2065	Volume (ML/yr)	No CC	23,019
				MCC (HCC to LCC)	12,697 (6,388 to 47,145)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.89% (9.16% to 36.27%)

	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	82,084
				MCC (HCC to LCC)	53,337 (22,856 to 459,357)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	43.31% (23.59% to 310.99%)
		2041-2065	Volume (ML/yr)	No CC	46,038
				MCC (HCC to LCC)	25,395 (12,776 to 94,290)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	25.78% (18.32% to 72.54%)

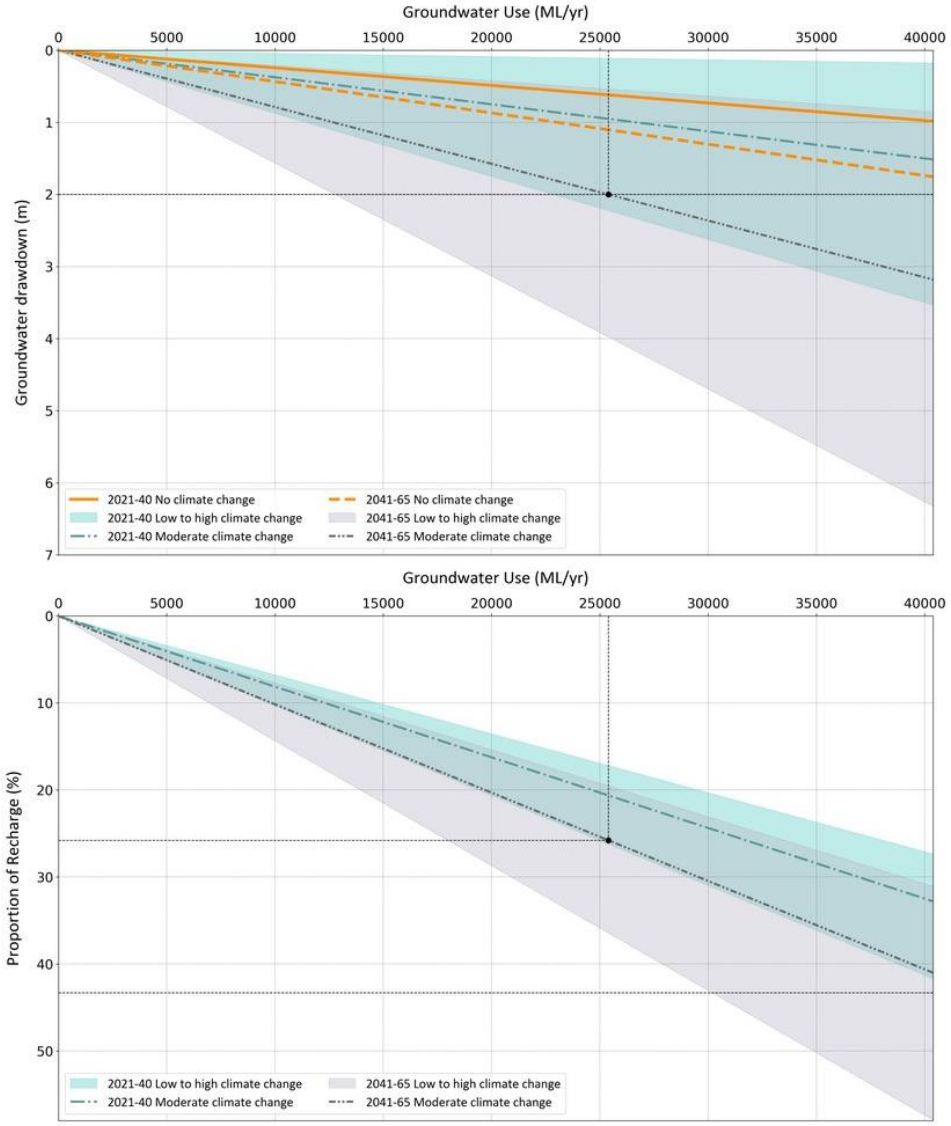

Figure A5-151. Upper Plot: Nullawarre WSPA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Nullawarre WSPA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-177. Seawater intrusion synthesis Table A5-for Nullawarre WSPA

GMU					NULLAWARRE WSPA
Seawater intrusion	Avg Use 11,103 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.97
				MCC (LCC to HCC)	-0.01 (-0.02 to 1.0)
			Area elev. <1.5 mAHD (%)	No CC	6.7%
				MCC (LCC to HCC)	6.7% (6.7% to 9.02%)
		2041-2065	Drawdown from baseline (m)	No CC	0.75
				MCC (LCC to HCC)	1.5 (0.89 to 3.1)
			Area elev. <1.5 mAHD (%)	No CC	7.2%
				MCC (LCC to HCC)	7.84% (6.72% to 13%)
	PCV use 20,194 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.2 (0.68 to 2.6)
			Area elev. <1.5 mAHD (%)	No CC	7.4%
				MCC (LCC to HCC)	7.95% (6.46% to 12%)
		2041-2065	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	2.4 (0.92 to 4.7)
			Area elev. <1.5 mAHD (%)	No CC	9.1%
				MCC (LCC to HCC)	12% (7.38% to 18%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	809,485
				MCC (HCC to LCC)	446,855 (403,977 to 1,430,579)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	363% (417% to 969%)
		2041-2065	Volume (ML/yr)	No CC	557,876
				MCC (HCC to LCC)	347,014 (241,633 to 1,426,436)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	352% (347% to 1097%)

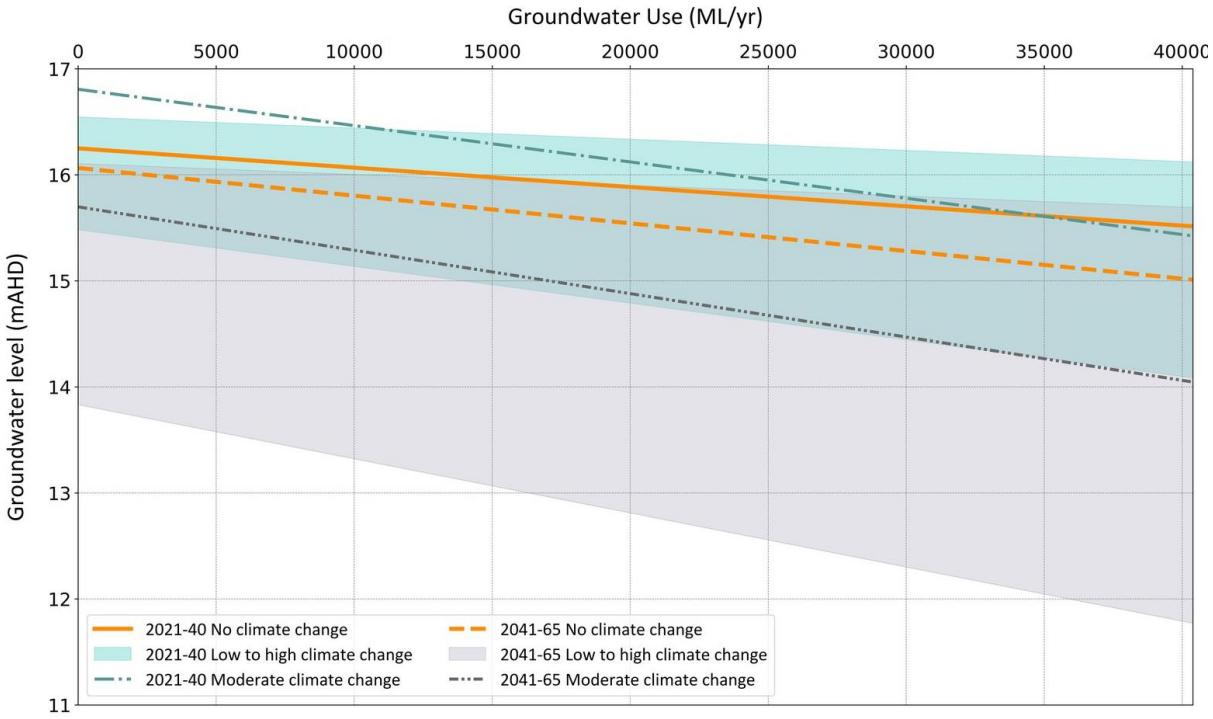

Figure A5-152. Plot for Nullawarre WSPA Sewater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-178. Terrestrial GDE synthesis Table A5-for Nullawarre WSPA

GMU					NULLAWARRE WSPA
Terrestrial GDEs	Avg Use 11,103 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.34
				MCC (LCC to HCC)	-0.02 (-0.60 to 1.0)
		2041-2065	Drawdown from baseline (m)	No CC	0.22
				MCC (LCC to HCC)	0.22 (-0.28 to 2.4)
	PCV use 20,194 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.24
				MCC (LCC to HCC)	0.21 (-0.86 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	0.22
				MCC (LCC to HCC)	2.0 (0.34 to 3.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-23356.69
				MCC (HCC to LCC)	9,505 (-4335.66 to 1,805)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.72% (-2.94% to 1.86%)
		2041-2065	Volume (ML/yr)	No CC	2,441
				MCC (HCC to LCC)	1,491 (768 to 5,717)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.51% (1.10% to 4.40%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-233566.85
				MCC (HCC to LCC)	95,051 (-43356.59 to 18,051)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	77.19% (-29.35% to 18.63%)
		2041-2065	Volume (ML/yr)	No CC	24,405
				MCC (HCC to LCC)	14,905 (7,683 to 57,167)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	15.13% (11.02% to 43.98%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-467133.71
				MCC (HCC to LCC)	190,102 (-86713.17 to 36,103)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	154.37% (-58.71% to 37.27%)
		2041-2065	Volume (ML/yr)	No CC	48,811
				MCC (HCC to LCC)	29,811 (15,365 to 114,334)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	30.26% (22.04% to 87.95%)

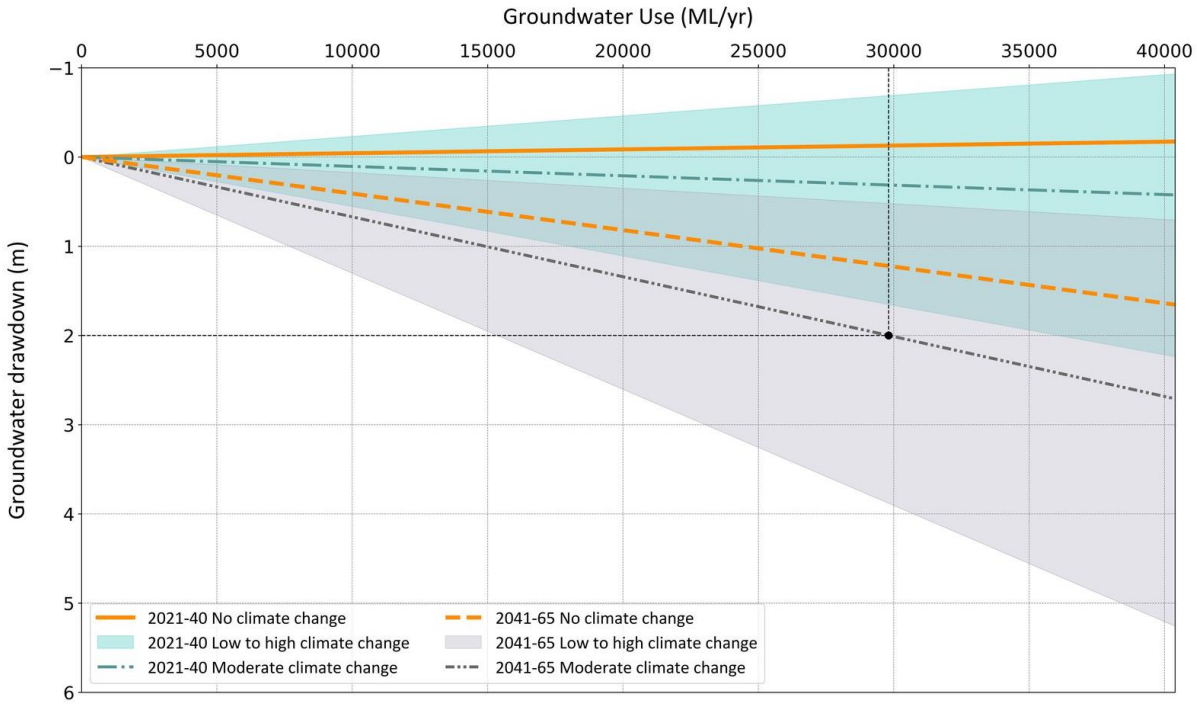

Figure A5-153. Plot for Nullawarre WSPA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-179. Waterways GDE synthesis Table A5-for Nullawarre WSPA

GMU					NULLAWARRE WSPA
Waterway GDEs	Avg Use 11,103 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.32
				MCC (LCC to HCC)	0.07 (-0.60 to 1.2)
		2041-2065	Drawdown from baseline (m)	No CC	0.30
				MCC (LCC to HCC)	0.30 (-0.24 to 2.7)
	PCV use 20,194 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.27
				MCC (LCC to HCC)	0.26 (-0.92 to 1.7)
		2041-2065	Drawdown from baseline (m)	No CC	0.30
				MCC (LCC to HCC)	2.1 (0.38 to 4.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-18588.67
				MCC (HCC to LCC)	8,404 (-4000.91 to 1,735)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.82% (-2.71% to 1.79%)
		2041-2065	Volume (ML/yr)	No CC	2,677
				MCC (HCC to LCC)	1,425 (746 to 5,554)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.45% (1.07% to 4.27%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-185886.75
				MCC (HCC to LCC)	84,039 (-40009.05 to 17,351)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	68.24% (-27.09% to 17.91%)
		2041-2065	Volume (ML/yr)	No CC	26,769
				MCC (HCC to LCC)	14,246 (7,464 to 55,544)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	14.46% (10.70% to 42.73%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-371773.50
				MCC (HCC to LCC)	168,077 (-80018.10 to 34,702)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	136.49% (-54.17% to 35.82%)
		2041-2065	Volume (ML/yr)	No CC	53,537
				MCC (HCC to LCC)	28,491 (14,928 to 111,087)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	28.92% (21.41% to 85.46%)

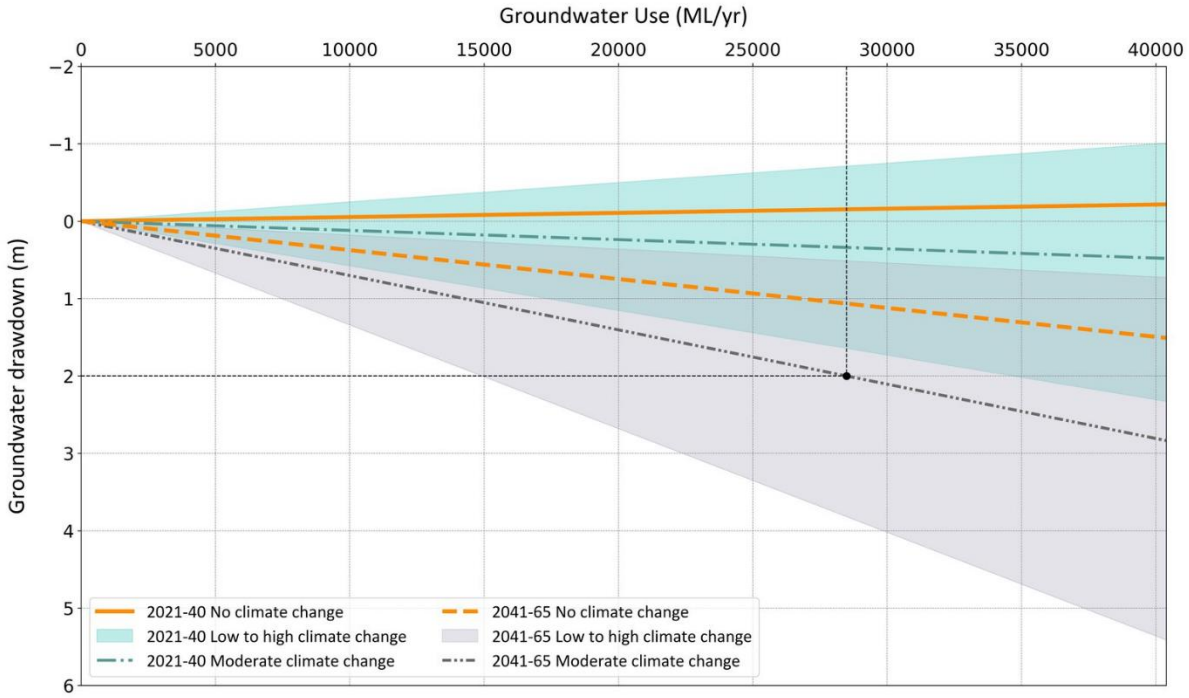

Figure A5-154. Plot for Nullawarre WSPA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-180. Stream gauge results for Nullawarre WSPA

Nullawarre WSPA				
Stream gauge/Catchment:		**236209 - Hopkins River @ Hopkins Falls (Unregulated)**		
Base flow index (1975-2020)				**0.44**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	175,057 (129,381 to 231,196)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-54,678 (-100,354 to 1,460)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	143,869 (80,888 to 190,752)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-85,867 (-148,847 to -38,984)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	1.9% (2.6% to 1.4%)
		PCV use (ML/yr)	MCC (LCC to HCC)	6.3% (8.6% to 4.8%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	2.3% (4.1% to 1.8%)
		PCV use (ML/yr)	MCC (LCC to HCC)	7.7% (14% to 5.8%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	8.57 (6.33 to 11.32)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	7.04 (3.96 to 9.34)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	107% (144% to 80.86%)
		PCV use (ML/yr)	MCC (LCC to HCC)	354% (479% to 268%)

	2065	Current use (ML/yr)	MCC (LCC to HCC)	130% (231% to 98.01%)
		PCV use (ML/yr)	MCC (LCC to HCC)	431% (766% to 325%)
Stream gauge/Catchment:		**236212 - Brucknell Creek @ Cudgee (Unregulated)**		
Base flow index (1975-2020)		**0.44**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	22,522 (16,645 to 29,744)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-3,365 (-9,242 to 3,857)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	18,509 (10,407 to 24,541)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-7,378 (-15,480 to -1,346)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	8.2% (11% to 6.2%)
		PCV use (ML/yr)	MCC (LCC to HCC)	21% (29% to 16%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	10% (18% to 7.6%)
		PCV use (ML/yr)	MCC (LCC to HCC)	26% (46% to 19%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	11.55 (8.54 to 15.26)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	9.50 (5.34 to 12.59)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	44% (59% to 33%)
		PCV use (ML/yr)	MCC (LCC to HCC)	113% (153% to 85.81%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	53% (95% to 40%)
		PCV use (ML/yr)	MCC (LCC to HCC)	138% (245% to 104%)

SHEPPARTON IRRIGATION GMA

Table A5-181. Consumptive users synthesis Table A5-for Shepparton Irrigation GMA

Assessment area	**GMU**					**SHEPPARTON IRRIGATION GMA**
	Representative Bore					48,292
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					0 to 25
Catchment	Permissible Consumptive Volume (ML/yr)					na
	Licensed Entitlement (ML/yr)					187,114
	Licensed avg use (ML/yr)					86,861
Consumptive use metric	**Consumptive users (bores)**	Avg Use 55,314 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.2
					MCC (LCC to HCC)	2.6 (1.0 to 3.7)
			2041-2065	Drawdown from baseline (m)	No CC	2.5
					MCC (LCC to HCC)	2.5 (0.96 to 6.1)
		PCV use 266,555 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.5
					MCC (LCC to HCC)	2.9 (1.9 to 3.9)
			2041-2065	Drawdown from baseline (m)	No CC	2.5
					MCC (LCC to HCC)	3.8 (1.3 to 6.3)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	143,891
					MCC (HCC to LCC)	126,419 (96,605 to 179,676)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	23.66% (23.20% to 26.62%)
			2041-2065	Volume (ML/yr)	No CC	124,740
					MCC (HCC to LCC)	96,632 (60,841 to 216,300)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	22.38% (21.85% to 35.92%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	287,781
					MCC (HCC to LCC)	252,838 (193,211 to 359,353)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	47.31% (46.40% to 53.23%)
			2041-2065	Volume (ML/yr)	No CC	249,481
					MCC (HCC to LCC)	193,263 (121,681 to 432,601)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	44.77% (43.70% to 71.85%)

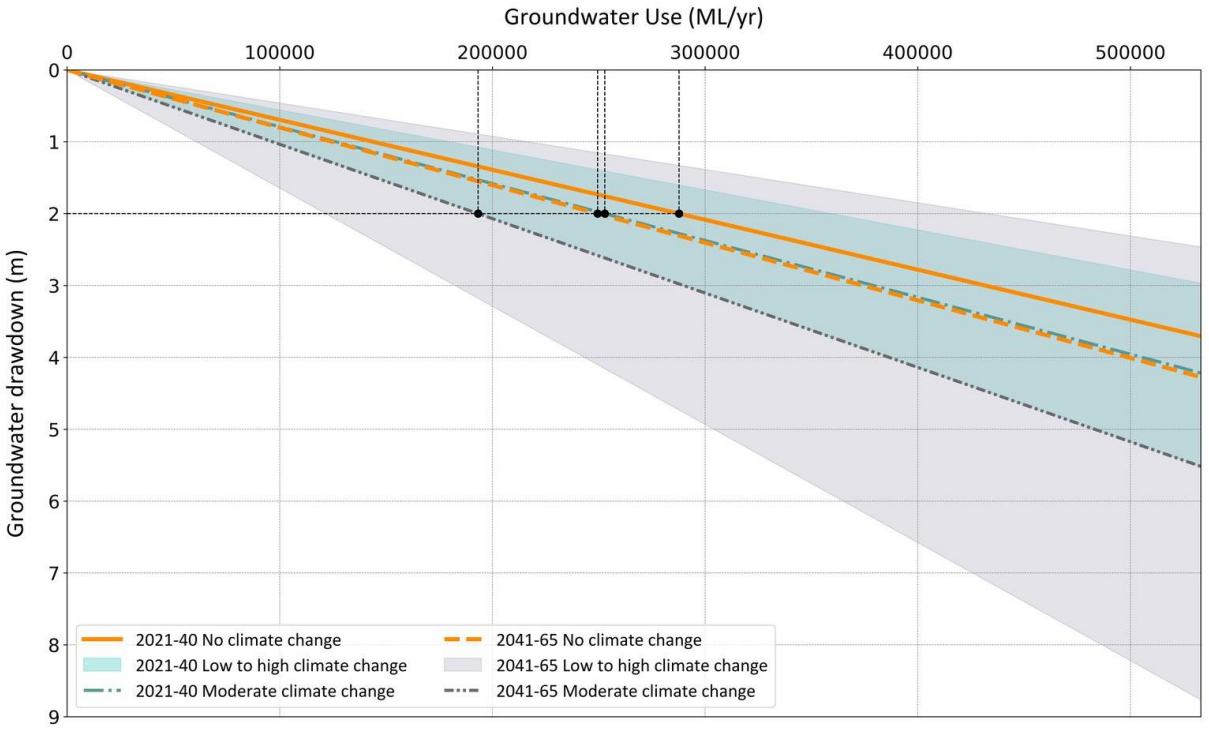

Figure A5-155. Plot for Shepparton Irrigation GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-182. Statewide drawdown use synthesis Table A5-for Shepparton Irrigation GMA

GMU					SHEPPARTON IRRIGATION GMA
Consumptive users (bores)	Avg Use 55,314 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.7
				MCC (LCC to HCC)	3.1 (1.3 to 4.3)
		2041-2065	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	3.0 (1.4 to 6.8)
	PCV use 266,555 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	3.4 (2.4 to 4.5)
		2041-2065	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	4.4 (1.9 to 7.1)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	116,913
				MCC (HCC to LCC)	103,988 (82,123 to 140,675)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	19.46% (19.72% to 20.84%)

		2041-2065	Volume (ML/yr)	No CC	103,758
				MCC (HCC to LCC)	80,800 (53,255 to 154,893)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	18.72% (19.12% to 25.73%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	233,825
				MCC (HCC to LCC)	207,976 (164,246 to 281,350)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	38.92% (39.44% to 41.68%)
		2041-2065	Volume (ML/yr)	No CC	207,515
				MCC (HCC to LCC)	161,599 (106,510 to 309,787)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	37.43% (38.25% to 51.45%)

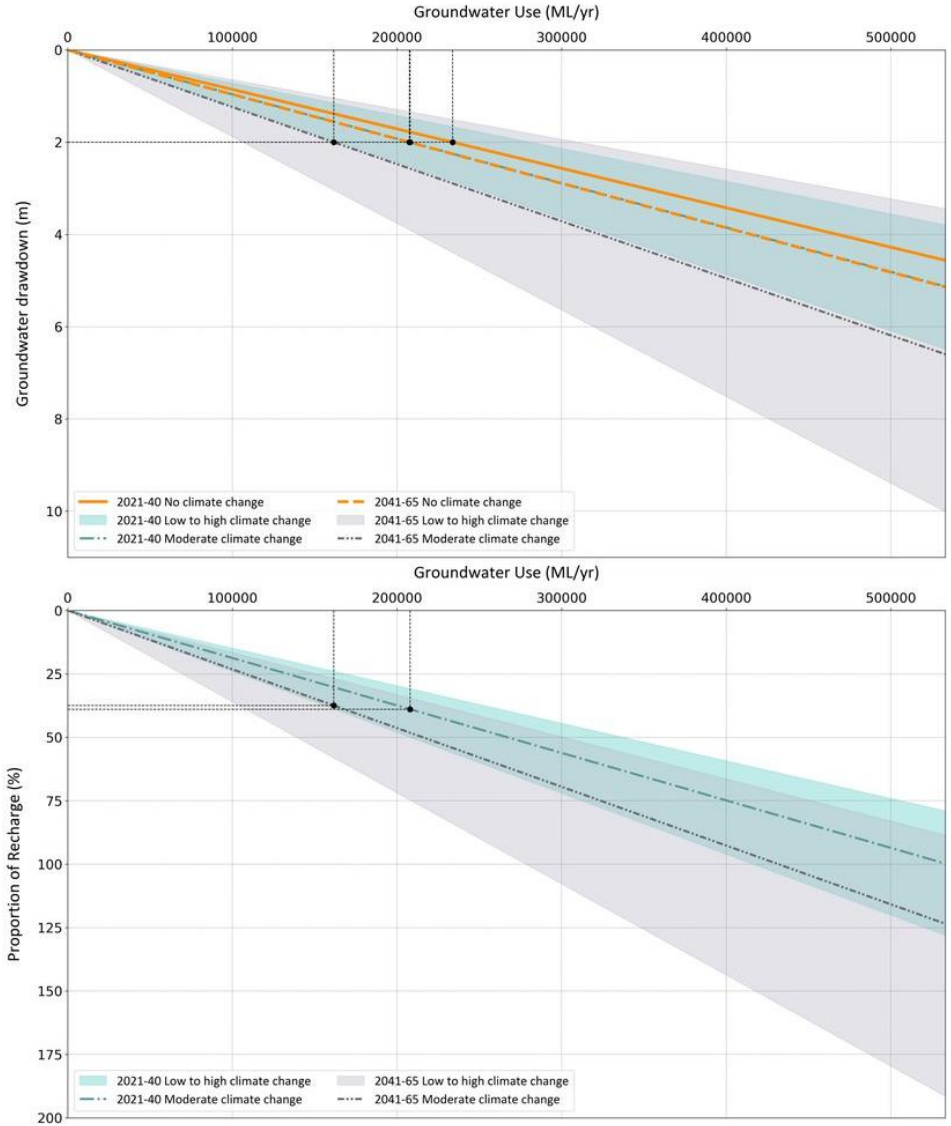

Figure A5-156. Upper Plot: Shepparton Irrigation GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Shepparton Irrigation GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-183. Terrestrial GDE synthesis Table A5-for Shepparton Irrigation GMA

GMU					SHEPPARTON IRRIGATION GMA
Terrestrial GDEs	Avg Use 55,314 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	2.2 (0.91 to 3.2)
		2041-2065	Drawdown from baseline (m)	No CC	2.1
				MCC (LCC to HCC)	2.1 (0.69 to 5.2)
	PCV use 266,555 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.1
				MCC (LCC to HCC)	2.4 (1.6 to 3.4)
		2041-2065	Drawdown from baseline (m)	No CC	2.1
				MCC (LCC to HCC)	3.2 (1.1 to 5.5)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	16,757
				MCC (HCC to LCC)	14,892 (11,136 to 21,646)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.79% (2.67% to 3.21%)
		2041-2065	Volume (ML/yr)	No CC	15,248
				MCC (HCC to LCC)	11,173 (6,951 to 25,824)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.59% (2.50% to 4.29%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	167,569
				MCC (HCC to LCC)	148,915 (111,365 to 216,458)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	27.87% (26.74% to 32.07%)
		2041-2065	Volume (ML/yr)	No CC	152,479
				MCC (HCC to LCC)	111,733 (69,513 to 258,240)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	25.88% (24.96% to 42.89%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	335,137
				MCC (HCC to LCC)	297,831 (222,729 to 432,915)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	55.73% (53.49% to 64.13%)
		2041-2065	Volume (ML/yr)	No CC	304,959
				MCC (HCC to LCC)	223,467 (139,027 to 516,481)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	51.76% (49.92% to 85.78%)

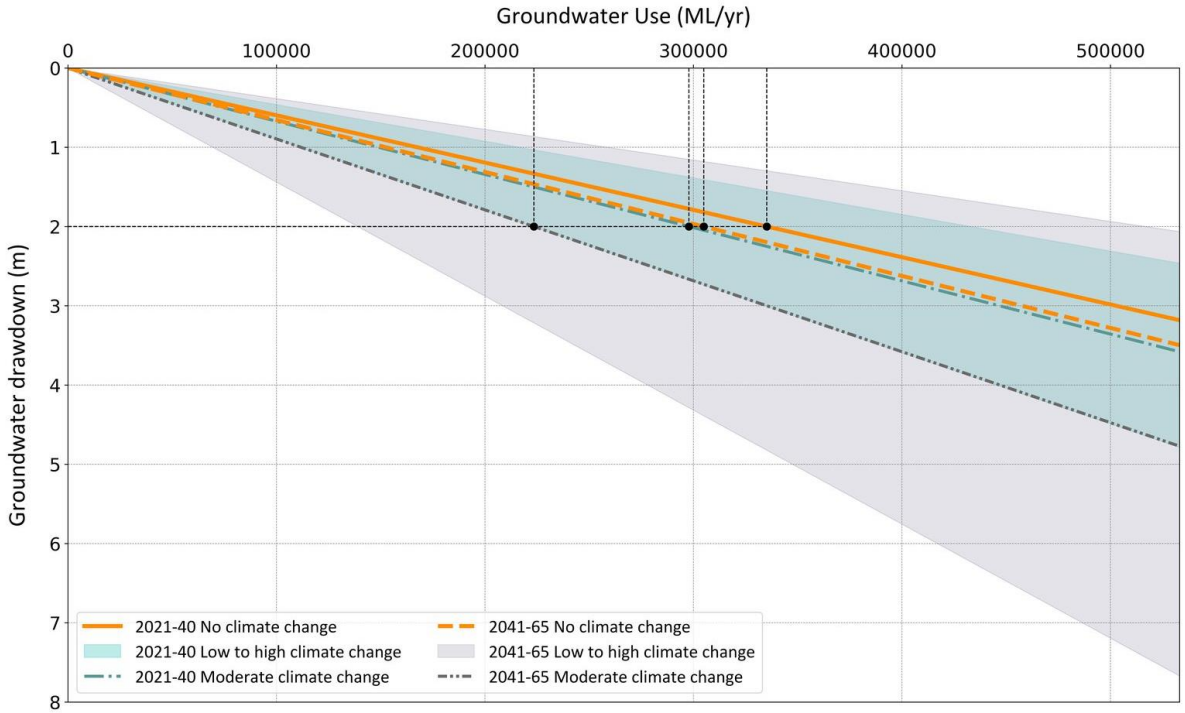

Figure A5-157. Plot for Shepparton Irrigation GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-184. Waterways GDE synthesis Table A5-for Shepparton Irrigation GMA

GMU					SHEPPARTON IRRIGATION GMA
Waterway GDEs	Avg Use 55,314 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.5
				MCC (LCC to HCC)	2.9 (1.0 to 4.1)
		2041-2065	Drawdown from baseline (m)	No CC	2.8
				MCC (LCC to HCC)	2.8 (1.2 to 6.7)
	PCV use 266,555 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.8
				MCC (LCC to HCC)	3.3 (2.3 to 4.3)
		2041-2065	Drawdown from baseline (m)	No CC	2.8
				MCC (LCC to HCC)	4.4 (1.9 to 6.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	12,314
				MCC (HCC to LCC)	10,836 (8,570 to 14,859)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.03% (2.06% to 2.20%)
		2041-2065	Volume (ML/yr)	No CC	10,432
				MCC (HCC to LCC)	8,090 (5,397 to 15,188)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.87% (1.94% to 2.52%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	123,137
				MCC (HCC to LCC)	108,360 (85,702 to 148,593)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	20.28% (20.58% to 22.01%)
		2041-2065	Volume (ML/yr)	No CC	104,324
				MCC (HCC to LCC)	80,897 (53,975 to 151,881)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	18.74% (19.38% to 25.23%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	246,275
				MCC (HCC to LCC)	216,720 (171,405 to 297,185)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	40.55% (41.16% to 44.02%)
		2041-2065	Volume (ML/yr)	No CC	208,649
				MCC (HCC to LCC)	161,794 (107,950 to 303,762)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	37.48% (38.76% to 50.45%)

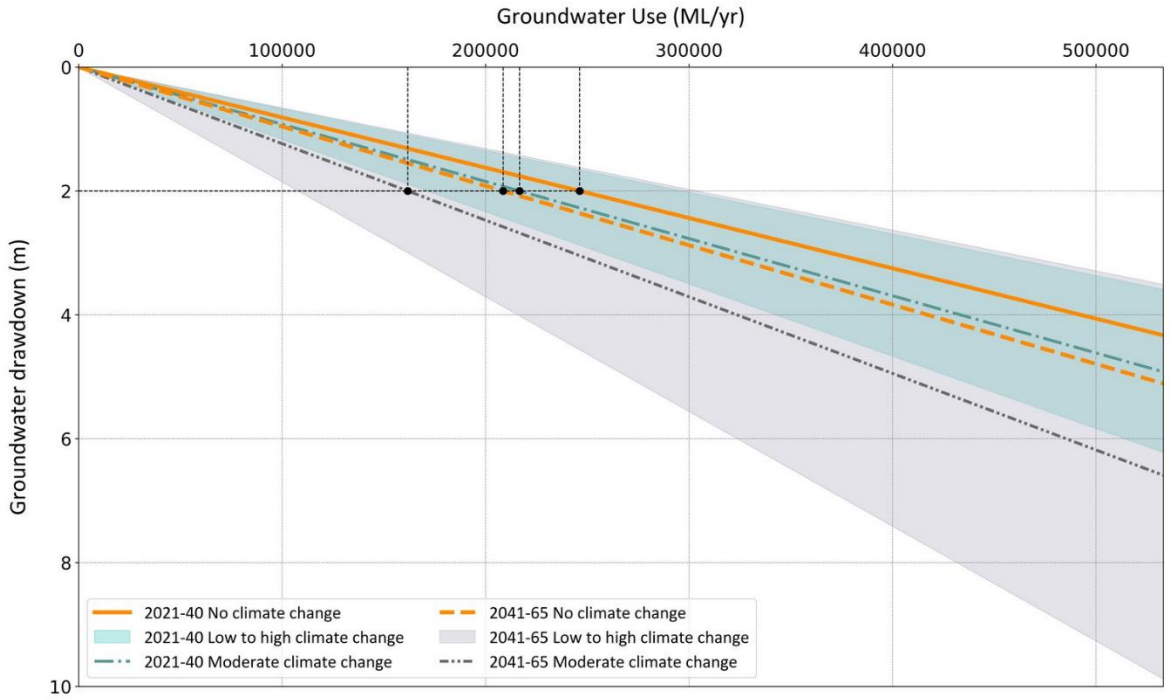

Figure A5-158. Plot for Shepparton Irrigation GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-185. Stream gauge results for Shepparton Irrigation District GMA

Stream gauge/Catchment:		**405232 - GOULBURN RIVER @ Mccoys BRIDGE (Regulated)**		
Base flow index (1975-2020)				**0.53**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	1,026,335 (804,057 to 1,246,345)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-107,737 (-330,015 to 112,273)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	978,704 (658,896 to 1,148,815)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-155,368 (-475,176 to 14,743)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.619% (0.790% to 0.509%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.0% (3.9% to 2.5%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.649% (0.964% to 0.553%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.2% (4.7% to 2.7%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	362.17 (283.73 to 439.81)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-38 (-116 to 40)

	2065	Flow (ML/yr)	MCC (HCC to LCC)	345.36 (232.51 to 405.39)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-55 (-168 to 5)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	4.80% (6.13% to 3.96%)
		PCV use (ML/yr)	MCC (LCC to HCC)	23.54% (30.05% to 19.38%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	5.04% (7.48% to 4.29%)
		PCV use (ML/yr)	MCC (LCC to HCC)	24.69% (36.67% to 21.03%)

Table A5-186. Wetlands GDE synthesis Table A5-for Shepparton Irrigation GMA

GMU					SHEPPARTON IRRIGATION GMA
Wetlands GDEs	Avg Use 55,314 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.4
				MCC (LCC to HCC)	2.7 (1.1 to 3.7)
		2041-2065	Drawdown from baseline (m)	No CC	2.6
				MCC (LCC to HCC)	2.6 (1.1 to 5.8)
	PCV use 266,555 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.6
				MCC (LCC to HCC)	3.0 (2.0 to 4.0)
		2041-2065	Drawdown from baseline (m)	No CC	2.6
				MCC (LCC to HCC)	4.0 (1.6 to 6.2)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	13,144
				MCC (HCC to LCC)	11,631 (9,289 to 16,443)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.18% (2.23% to 2.44%)
		2041-2065	Volume (ML/yr)	No CC	12,037
				MCC (HCC to LCC)	8,938 (6,002 to 17,784)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.07% (2.16% to 2.95%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	131,440
				MCC (HCC to LCC)	116,312 (92,889 to 164,433)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	21.77% (22.31% to 24.36%)
		2041-2065	Volume (ML/yr)	No CC	120,372
				MCC (HCC to LCC)	89,377 (60,018 to 177,839)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	20.70% (21.55% to 29.54%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	262,879
				MCC (HCC to LCC)	232,624 (185,779 to 328,865)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	43.53% (44.61% to 48.72%)
		2041-2065	Volume (ML/yr)	No CC	240,744
				MCC (HCC to LCC)	178,753 (120,035 to 355,677)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	41.41% (43.10% to 59.07%)

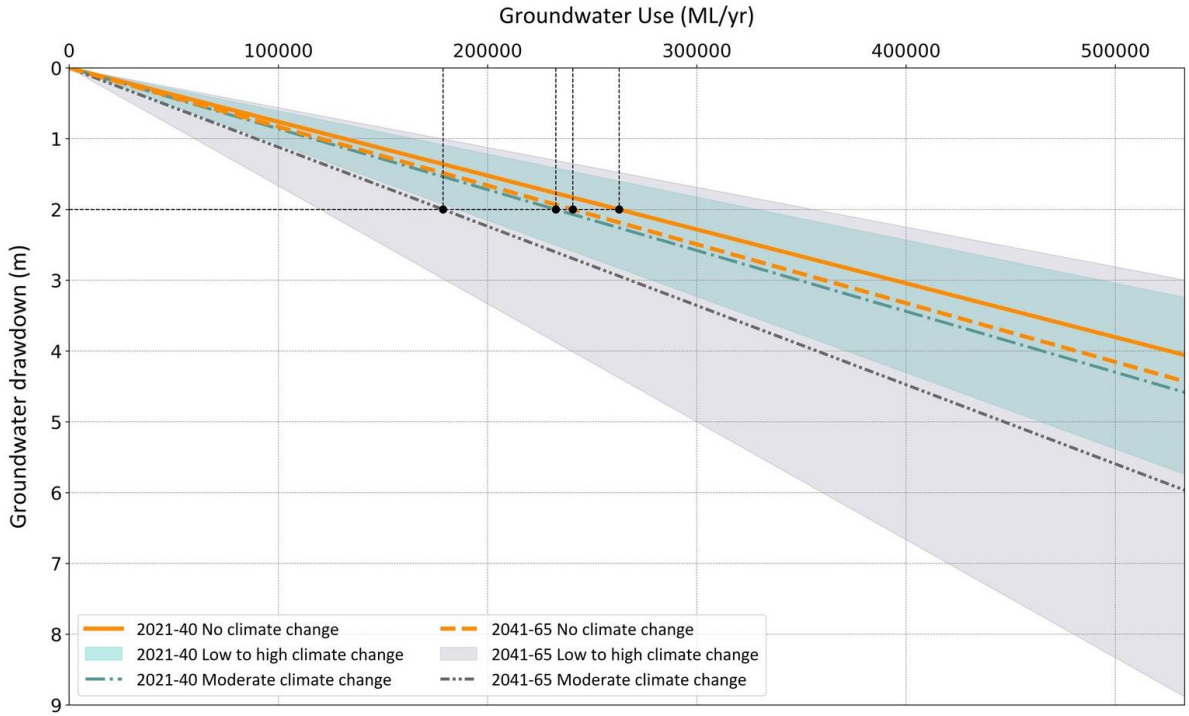

Figure A5-159. Plot for Shepparton Irrigation GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

SOUTH WEST LIMESTONE GMA

Table A5-187. Consumptive users synthesis Table A5-for South West Limestone GMA

Assessment area	**GMU**					**SOUTH WEST LIMESTONE GMA**
	Representative Bore					???
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					0 to 0
Catchment	Permissible Consumptive Volume (ML/yr)					NA
	Licensed Entitlement (ML/yr)					81,281
	Licensed avg use (ML/yr)					34,499
Consumptive use metric	**Consumptive users (bores)**	Avg Use 30,801 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.48
					MCC (LCC to HCC)	0.85 (0.28 to 1.5)
			2041-2065	Drawdown from baseline (m)	No CC	0.83
					MCC (LCC to HCC)	0.83 (0.49 to 2.5)
		PCV use 83,330 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.71
					MCC (LCC to HCC)	1.2 (0.17 to 2.4)
			2041-2065	Drawdown from baseline (m)	No CC	0.83
					MCC (LCC to HCC)	2.4 (0.60 to 4.1)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	171,815
					MCC (HCC to LCC)	102,337 (54,232 to 530,685)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	6.23% (3.96% to 26.98%)
			2041-2065	Volume (ML/yr)	No CC	103,164
					MCC (HCC to LCC)	56,905 (32,055 to 200,309)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	4.28% (3.20% to 11.57%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	343,631
					MCC (HCC to LCC)	204,673 (108,464 to 1,061,371)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	12.46% (7.91% to 53.96%)
			2041-2065	Volume (ML/yr)	No CC	206,327
					MCC (HCC to LCC)	113,809 (64,110 to 400,619)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	8.56% (6.39% to 23.14%)

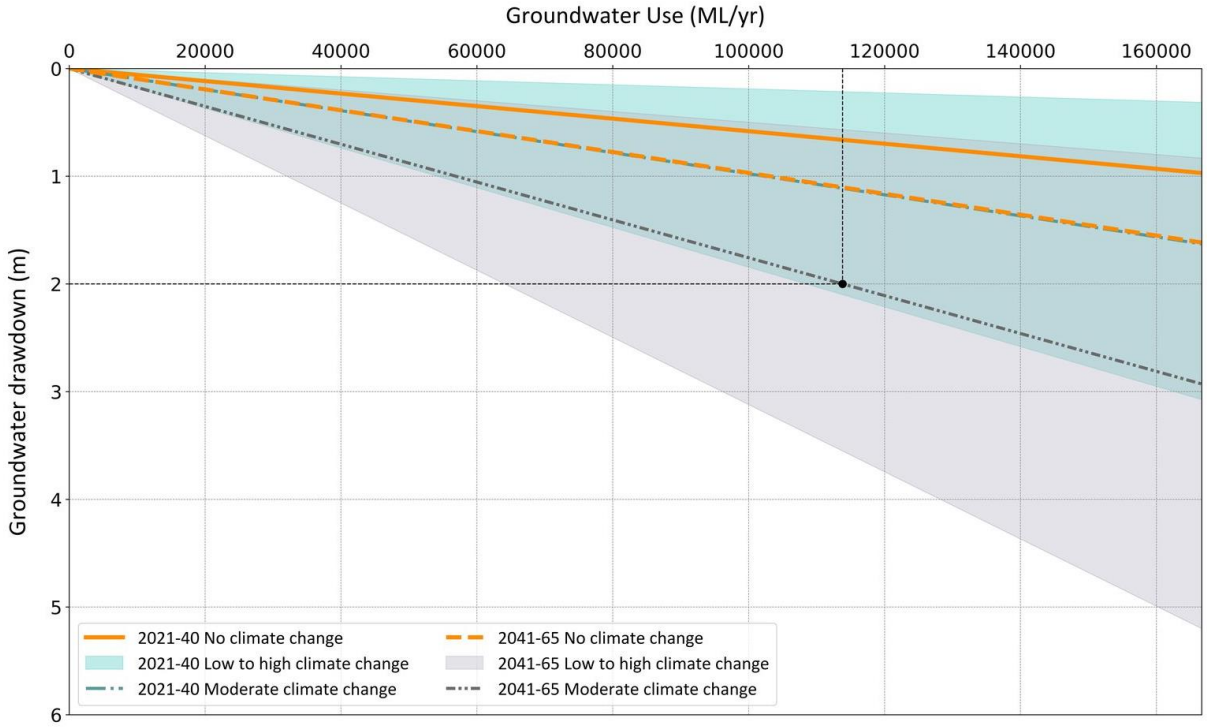

Figure A5-160. Plot for South West Limestone GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-188. Statewide drawdown use synthesis Table A5-for South West Limestone GMA

GMU					SOUTH WEST LIMESTONE GMA
Consumptive users (bores)	Avg Use 30,801 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.44
				MCC (LCC to HCC)	0.89 (0.17 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.78
				MCC (LCC to HCC)	0.78 (0.39 to 2.4)
	PCV use 83,330 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.83
				MCC (LCC to HCC)	1.4 (0.32 to 2.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.78
				MCC (LCC to HCC)	2.6 (0.81 to 4.0)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	138,488
				MCC (HCC to LCC)	84,566 (53,889 to 293,293)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.15% (3.93% to 14.91%)

		2041-2065	Volume (ML/yr)	No CC	81,564
				MCC (HCC to LCC)	48,680 (31,375 to 130,799)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.66% (3.13% to 7.55%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	276,976
				MCC (HCC to LCC)	169,131 (107,777 to 586,586)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.30% (7.86% to 29.82%)
		2041-2065	Volume (ML/yr)	No CC	163,129
				MCC (HCC to LCC)	97,361 (62,750 to 261,598)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.32% (6.26% to 15.11%)

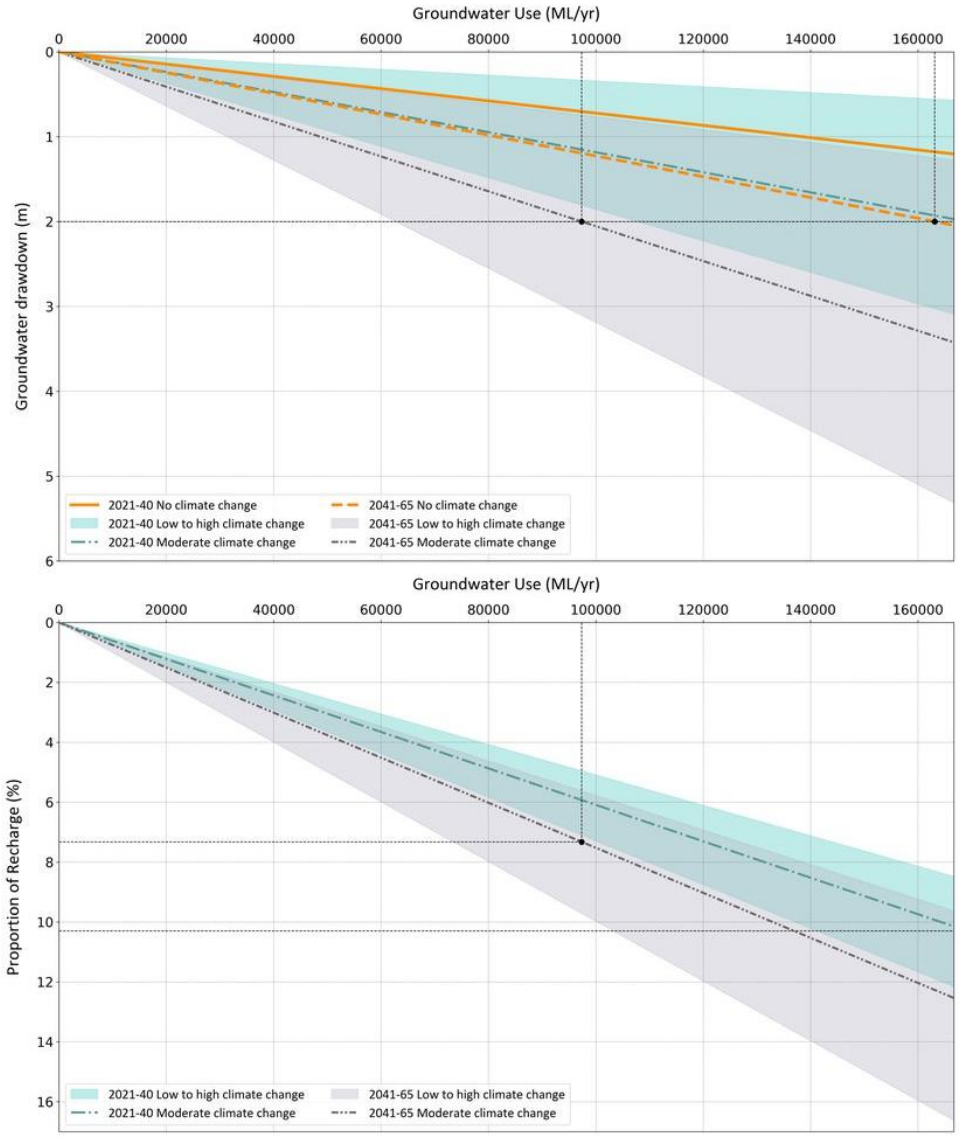

Figure A5-161. Upper Plot: South West Limestone GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: South West Limestone GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-189. Seawater intrusion synthesis Table A5-for South West Limestone GMA

GMU					SOUTH WEST LIMESTONE GMA
Seawater intrusion	Avg Use 30,801 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.41
				MCC (LCC to HCC)	-0.46 (-0.32 to 0.16)
			Area elev. <1.5 mAHD (%)	No CC	50%
				MCC (LCC to HCC)	48% (48% to 50%)
		2041-2065	Drawdown from baseline (m)	No CC	0.24
				MCC (LCC to HCC)	0.57 (0.34 to 1.6)
			Area elev. <1.5 mAHD (%)	No CC	49%
				MCC (LCC to HCC)	51% (50% to 54%)
	PCV use 83,330 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.74
				MCC (LCC to HCC)	0.77 (0.47 to 1.6)
			Area elev. <1.5 mAHD (%)	No CC	51%
				MCC (LCC to HCC)	51% (50% to 54%)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.6 (0.75 to 3.0)
			Area elev. <1.5 mAHD (%)	No CC	52%
				MCC (LCC to HCC)	54% (51% to 57%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	692,933
				MCC (HCC to LCC)	609,178 (586,936 to 1,087,776)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	37% (43% to 55%)
		2041-2065	Volume (ML/yr)	No CC	545,727
				MCC (HCC to LCC)	429,124 (346,839 to 707,373)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	32% (35% to 41%)

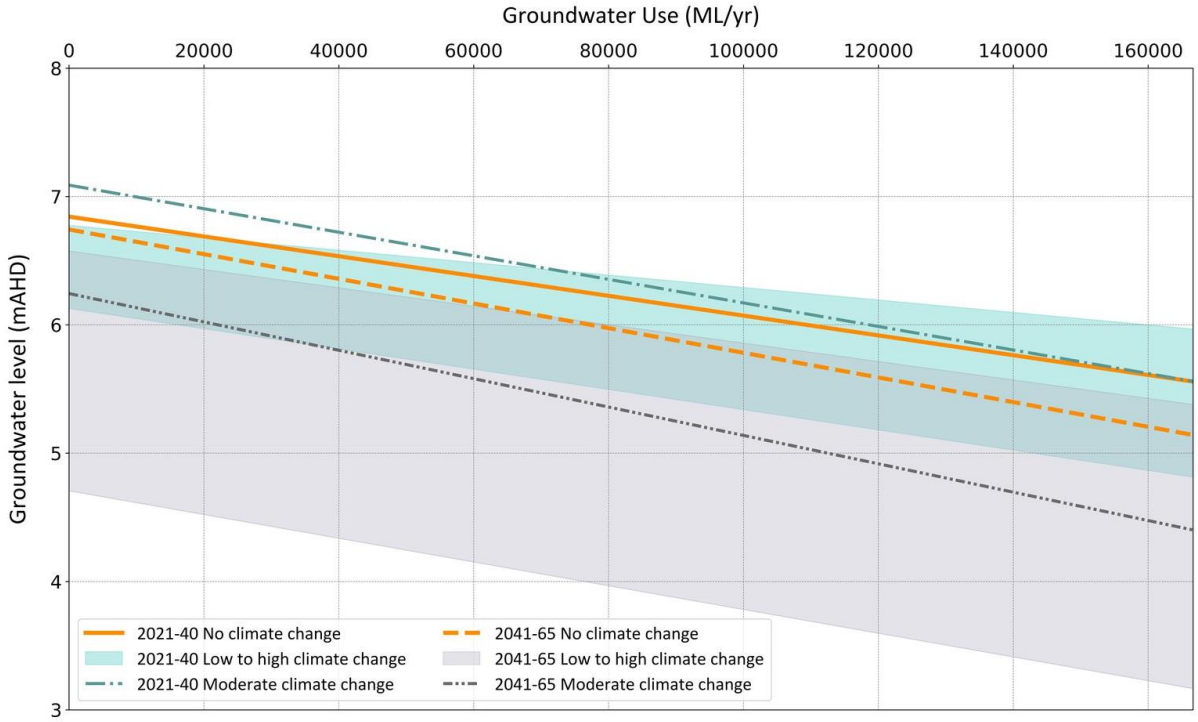

Figure A5-162. Plot for South West Limestone GMA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-190. Terrestrial GDE synthesis Table A5-for South West Limestone GMA

GMU					SOUTH WEST LIMESTONE GMA
Terrestrial GDEs	Avg Use 30,801 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.55
				MCC (LCC to HCC)	-0.36 (-0.77 to 0.26)
		2041-2065	Drawdown from baseline (m)	No CC	-0.22
				MCC (LCC to HCC)	-0.22 (-0.61 to 1.3)
	PCV use 83,330 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.13
				MCC (LCC to HCC)	0.19 (-0.55 to 1.1)
		2041-2065	Drawdown from baseline (m)	No CC	-0.22
				MCC (LCC to HCC)	1.7 (0.43 to 2.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	113,572
				MCC (HCC to LCC)	29,499 (-43499.38 to 10,168)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.80% (-2.21% to 0.74%)
		2041-2065	Volume (ML/yr)	No CC	6,511
				MCC (HCC to LCC)	6,202 (3,927 to 14,336)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.47% (0.39% to 0.83%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,135,717
				MCC (HCC to LCC)	294,988 (-434993.81 to 101,677)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	17.96% (-22.12% to 7.42%)
		2041-2065	Volume (ML/yr)	No CC	65,111
				MCC (HCC to LCC)	62,019 (39,270 to 143,365)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	4.67% (3.92% to 8.28%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,271,434
				MCC (HCC to LCC)	589,977 (-869987.61 to 203,353)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	35.92% (-44.23% to 14.83%)
		2041-2065	Volume (ML/yr)	No CC	130,223
				MCC (HCC to LCC)	124,038 (78,539 to 286,729)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.33% (7.83% to 16.56%)

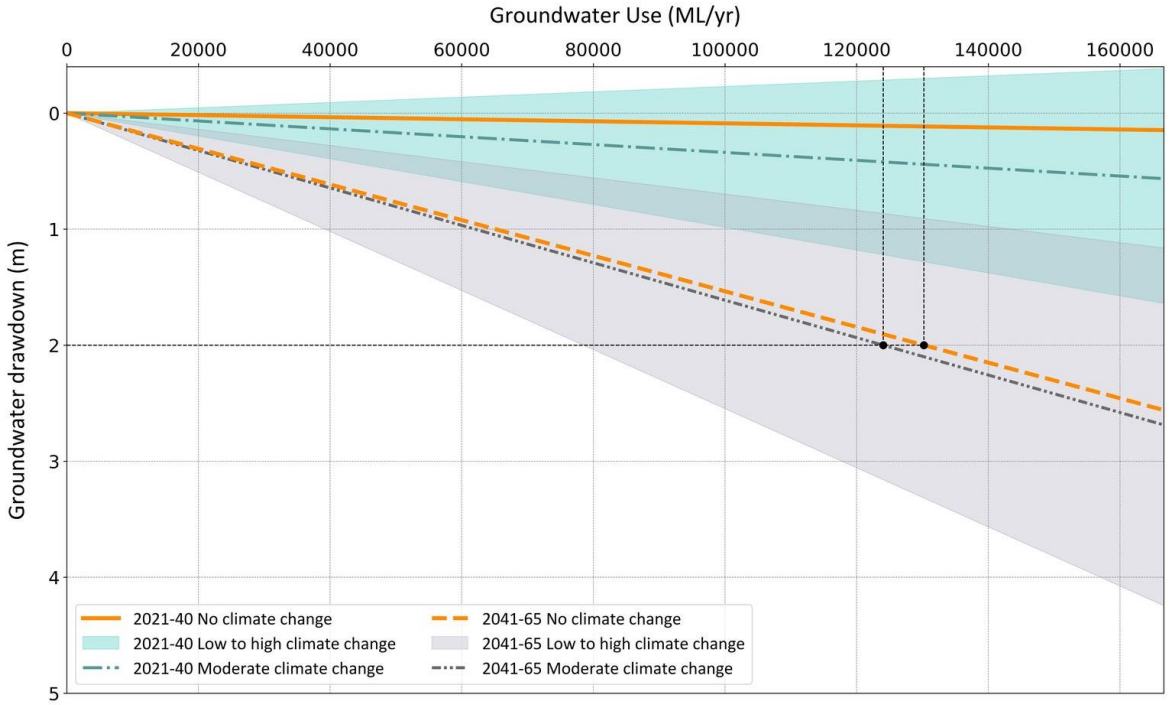

Figure A5-163. Plot for South West Limestone GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-191. Waterways GDE synthesis Table A5-for South West Limestone GMA

GMU					SOUTH WEST LIMESTONE GMA
Waterway GDEs	Avg Use 30,801 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.95
				MCC (LCC to HCC)	-0.65 (-1.25 to 0.00)
		2041-2065	Drawdown from baseline (m)	No CC	-0.53
				MCC (LCC to HCC)	-0.53 (-0.97 to 1.1)
	PCV use 83,330 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.59
				MCC (LCC to HCC)	-0.17 (-1.08 to 0.72)
		2041-2065	Drawdown from baseline (m)	No CC	-0.53
				MCC (LCC to HCC)	1.4 (0.08 to 2.5)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-35207.62
				MCC (HCC to LCC)	220,431 (-15356.74 to 13,971)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.42% (-0.78% to 1.02%)
		2041-2065	Volume (ML/yr)	No CC	5,647
				MCC (HCC to LCC)	7,248 (4,376 to 24,595)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.55% (0.44% to 1.42%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-352076.25
				MCC (HCC to LCC)	2,204,307 (-153,567 to 139,712)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	134.19% (-7.81% to 10.19%)
		2041-2065	Volume (ML/yr)	No CC	56,469
				MCC (HCC to LCC)	72,480 (43,760 to 245,954)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.45% (4.36% to 14.20%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-704152.49
				MCC (HCC to LCC)	4,408,614 (-307135 to 279,423)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	268% (-15.62% to 20.38%)
		2041-2065	Volume (ML/yr)	No CC	112,939
				MCC (HCC to LCC)	144,959 (87,520 to 491,908)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.90% (8.73% to 28.41%)

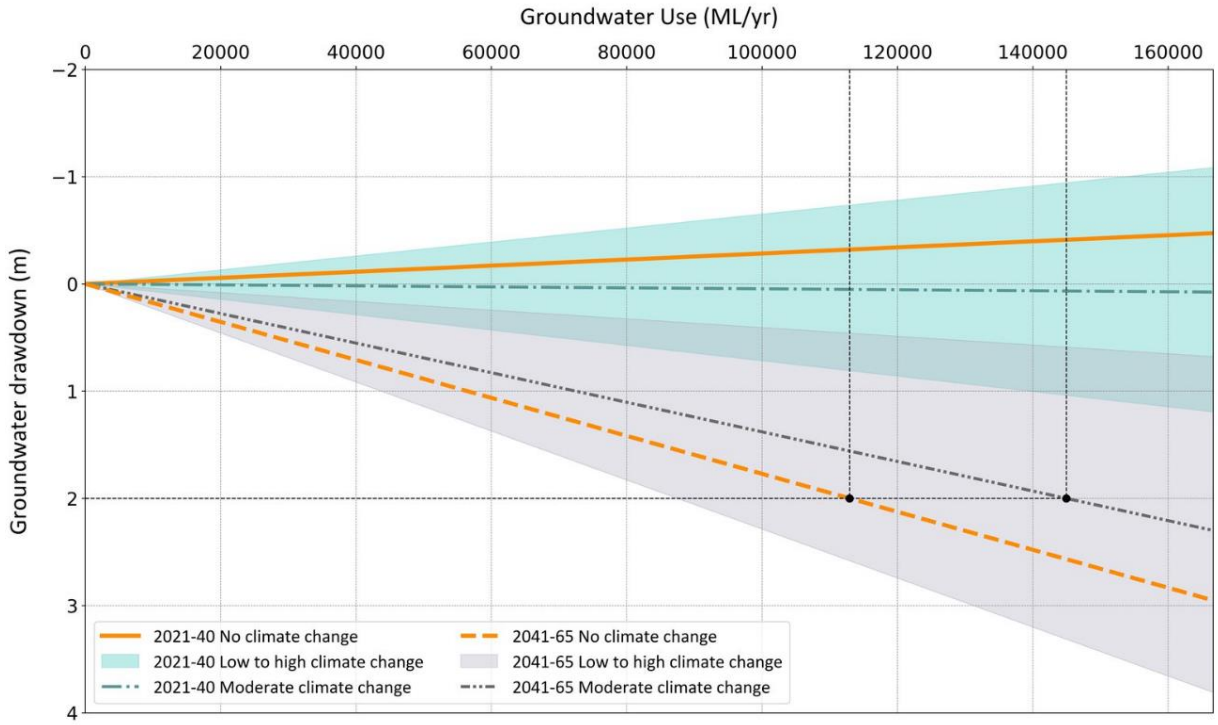

Figure A5-164. Plot for South West Limestone GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-192. Stream gauge results for South West Limestone GMA

GMU		SOUTH WEST LIMESTONE GMA		
Stream gauge/Catchment:		**235237 - Scotts Creek @ Curdie (Digneys Bridge) (Unregulated)**		
Base flow index (1975-2020)		**0.29**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC - LCC)	43,984 (35,405 to 50,525)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-3,413 (-11,991 to 3,128)
	2065	Flow (ML/yr)	MCC (HCC - LCC)	39,908 (27,537 to 45,169)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-7,489 (-19,859 to -2,228)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	No PCV use
		PCV use (ML/yr)	MCC (HCC - LCC)	0.002% (0.003% to 0.002%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	No PCV use
		PCV use (ML/yr)	MCC (HCC - LCC)	0.003% (0.004% to 0.002%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC - LCC)	0.35 (0.28 to 0.41)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC - LCC)	0.32 (0.22 to 0.36)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	No Current use
		PCV use (ML/yr)	MCC (HCC - LCC)	0.777% (0.965% to 0.676%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	No Current use
		PCV use (ML/yr)	MCC (HCC - LCC)	0.856% (1.24% to 0.757%)
Stream gauge/Catchment:		**237205 - Darlot Creek @ Homerton Bridge (Unregulated)**		
Base flow index (1975-2020)		**0.7**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC - LCC)	47,866 (34,344 to 61,979)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-7,937 (-21,460 to 6,176)
	2065	Flow (ML/yr)	MCC (HCC - LCC)	37,349 (24,255 to 52,213)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-18,455 (-31,548 to -3,591)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.18% (0.25% to 0.14%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.62% (0.87% to 0.48%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	0.23% (0.36% to 0.17%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.80% (1.2% to 0.57%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC - LCC)	29.65 (21.27 to 38.39)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC - LCC)	23.13 (15.02 to 32.34)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.81% (1.1% to 0.62%)
		PCV use (ML/yr)	MCC (HCC - LCC)	2.75% (3.83% to 2.12%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	1.0% (1.6% to 0.74%)
		PCV use (ML/yr)	MCC (HCC - LCC)	3.5% (5.4% to 2.5%)

Stream gauge/Catchment:		**237209 - Darlot Creek @ Myamyn (Unregulated)**		
Base flow index (1975-2020)				**0.75**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC - LCC)	27,092 (19,438 to 35,080)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-3,280 (-10,934 to 4,708)
	2065	Flow (ML/yr)	MCC (HCC - LCC)	21,139 (13,728 to 29,552)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-9,233 (-16,644 to -820)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.09% (0.13% to 0.07%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.75% (1.0% to 0.58%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	0.12% (0.18% to 0.08%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.96% (1.5% to 0.69%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC - LCC)	17.27 (12.39 to 22.36)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC - LCC)	13.48 (8.75 to 18.84)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.40% (0.55% to 0.31%)
		PCV use (ML/yr)	MCC (HCC - LCC)	3.2% (4.5% to 2.5%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	0.51% (0.79% to 0.36%)
		PCV use (ML/yr)	MCC (HCC - LCC)	4.1% (6.4% to 3.0%)

Table A5-193. Wetlands GDE synthesis Table A5-for South West Limestone GMA

GMU					SOUTH WEST LIMESTONE GMA
Wetlands GDEs	Avg Use 30,801 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.35
				MCC (LCC to HCC)	0.11 (-0.39 to 0.73)
		2041-2065	Drawdown from baseline (m)	No CC	0.01
				MCC (LCC to HCC)	0.01 (-0.25 to 1.8)
	PCV use 83,330 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.10
				MCC (LCC to HCC)	0.52 (-0.53 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	0.01
				MCC (LCC to HCC)	1.7 (0.03 to 3.3)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-439773.42
				MCC (HCC to LCC)	22,156 (-30661.02 to 8,089)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.35% (-1.56% to 0.59%)
		2041-2065	Volume (ML/yr)	No CC	10,899
				MCC (HCC to LCC)	7,521 (3,940 to 103,801)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.57% (0.39% to 5.99%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-4397734.21
				MCC (HCC to LCC)	221,563 (-306610.23 to 80,888)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.49% (-15.59% to 5.90%)
		2041-2065	Volume (ML/yr)	No CC	108,991
				MCC (HCC to LCC)	75,211 (39,404 to 1,038,011)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.66% (3.93% to 59.95%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-8795468.41
				MCC (HCC to LCC)	443,126 (-613220.45 to 161,776)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	26.98% (-31.18% to 11.80%)
		2041-2065	Volume (ML/yr)	No CC	217,982
				MCC (HCC to LCC)	150,421 (78,808 to 2,076,021)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	11.31% (7.86% to 119.90%)

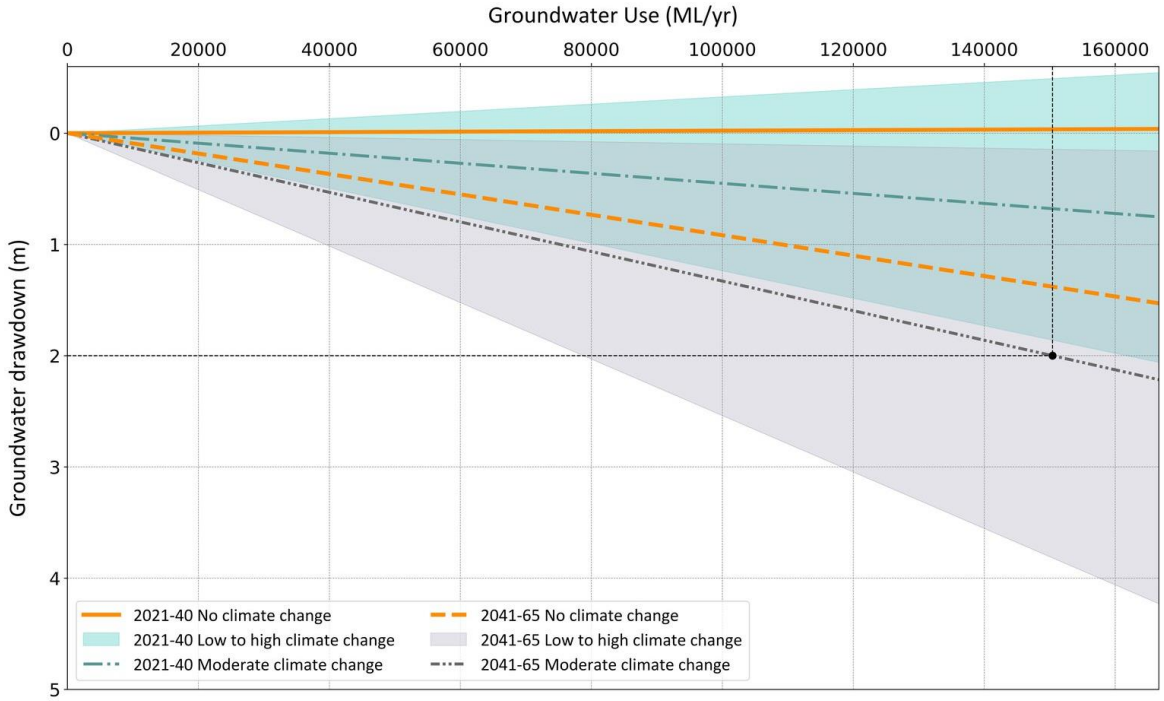

Figure A5-165. Plot for South West Limestone GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

SOUTHERN ZONE (WEST WIMMERA)

Table A5-194. Consumptive users synthesis Table A5-for Southern Zone (West Wimmera)

Assessment area	**GMU**					**SOUTHERN ZONE (WEST WIMMERA)**
	Representative Bore					Empty
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					Aquifer dependent to Aquifer dependent
Catchment	Permissible Consumptive Volume (ML/yr)					6,569
	Licensed Entitlement (ML/yr)					0
	Licensed avg use (ML/yr)					0
Consumptive use metric	Consumptive users	Avg Use 561 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.39
					MCC (LCC to HCC)	0.53 (0.29 to 0.49)
			2041-2065	Drawdown from baseline (m)	No CC	0.44
					MCC (LCC to HCC)	0.44 (0.24 to 0.96)
		PCV use			No CC	0.55

		2,687 (ML/yr)	2021-2040	Drawdown from baseline (m)	MCC (LCC to HCC)	1.1 (0.16 to 1.6)
			2041-2065	Drawdown from baseline (m)	No CC	0.44
					MCC (LCC to HCC)	2.0 (0.02 to 3.4)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,997
					MCC (HCC to LCC)	3,480 (2,493 to 12,623)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.58% (1.66% to 4.93%)
			2041-2065	Volume (ML/yr)	No CC	3,436
					MCC (HCC to LCC)	2,045 (1,251 to 19,832)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	1.34% (1.32% to 9.62%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	11,993
					MCC (HCC to LCC)	6,961 (4,986 to 25,246)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.16% (3.32% to 9.86%)
			2041-2065	Volume (ML/yr)	No CC	6,872
					MCC (HCC to LCC)	4,089 (2,501 to 39,664)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	2.69% (2.63% to 19.25%)

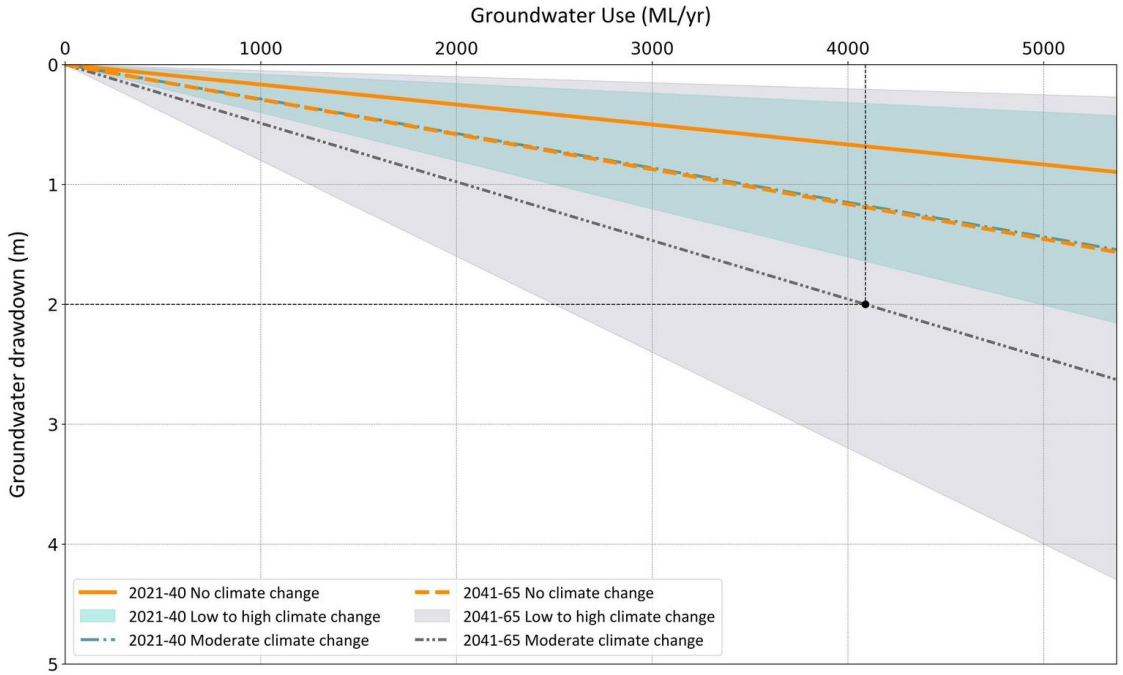

Figure A5-166. Plot for Southern Zone (West Wimmera) Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-195. Statewide drawdown use synthesis Table A5-for Southern Zone (West Wimmera)

GMU					SOUTHERN ZONE (WEST WIMMERA)
Consumptive users (bores)	Avg Use 561 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.75
				MCC (LCC to HCC)	0.95 (0.43 to 0.95)
		2041-2065	Drawdown from baseline (m)	No CC	0.88
				MCC (LCC to HCC)	0.88 (0.47 to 1.7)
	PCV use 2,687 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.90
				MCC (LCC to HCC)	1.3 (0.54 to 1.7)
		2041-2065	Drawdown from baseline (m)	No CC	0.88
				MCC (LCC to HCC)	2.2 (0.39 to 3.4)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,113
				MCC (HCC to LCC)	2,889 (2,320 to 6,265)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.31% (1.54% to 2.45%)
		2041-2065	Volume (ML/yr)	No CC	2,908
				MCC (HCC to LCC)	1,879 (1,228 to 7,447)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.24% (1.29% to 3.61%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	8,226
				MCC (HCC to LCC)	5,778 (4,639 to 12,531)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.62% (3.09% to 4.89%)
		2041-2065	Volume (ML/yr)	No CC	5,816
				MCC (HCC to LCC)	3,759 (2,457 to 14,894)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.47% (2.59% to 7.23%)

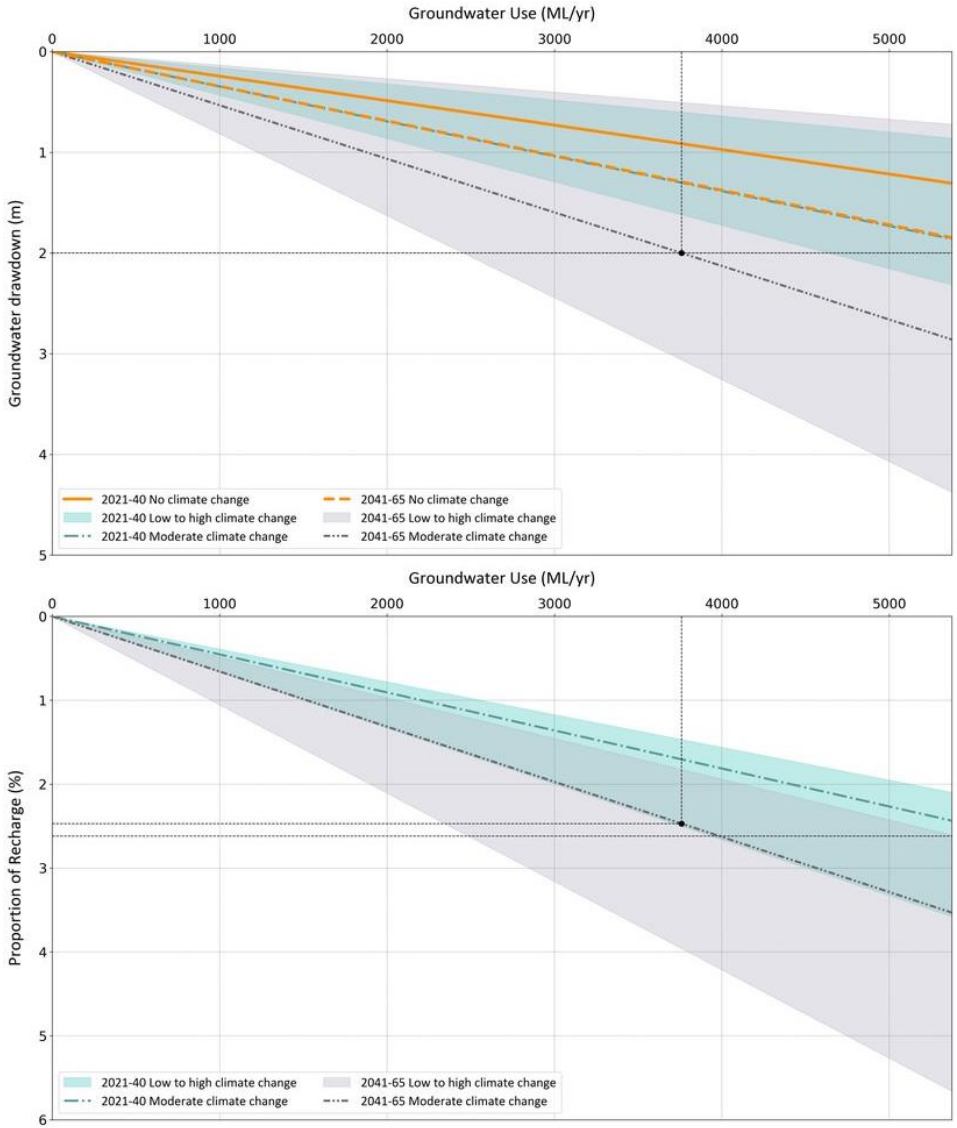

Figure A5-167. Upper Plot: Southern Zone (West Wimmera)statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Southern Zone (West Wimmera) statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-196. Terrestrial GDE synthesis Table A5-for Southern Zone (West Wimmera)

GMU					SOUTHERN ZONE (WEST WIMMERA)
Terrestrial GDEs	Avg Use 561 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.35
				MCC (LCC to HCC)	0.56 (0.02 to 0.56)
		2041-2065	Drawdown from baseline (m)	No CC	0.52
				MCC (LCC to HCC)	0.52 (0.08 to 1.4)
	PCV use 2,687 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.47
				MCC (LCC to HCC)	0.91 (0.11 to 1.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.52
				MCC (LCC to HCC)	1.8 (0.05 to 2.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	691
				MCC (HCC to LCC)	403 (306 to 1,595)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.18% (0.20% to 0.62%)
		2041-2065	Volume (ML/yr)	No CC	234
				MCC (HCC to LCC)	223 (140 to 1,617)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.15% (0.15% to 0.78%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,905
				MCC (HCC to LCC)	4,025 (3,057 to 15,946)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.82% (2.04% to 6.22%)
		2041-2065	Volume (ML/yr)	No CC	2,337
				MCC (HCC to LCC)	2,230 (1,403 to 16,174)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.47% (1.48% to 7.85%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	13,811
				MCC (HCC to LCC)	8,051 (6,114 to 31,891)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.65% (4.07% to 12.45%)
		2041-2065	Volume (ML/yr)	No CC	4,674
				MCC (HCC to LCC)	4,460 (2,806 to 32,348)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.93% (2.95% to 15.70%)

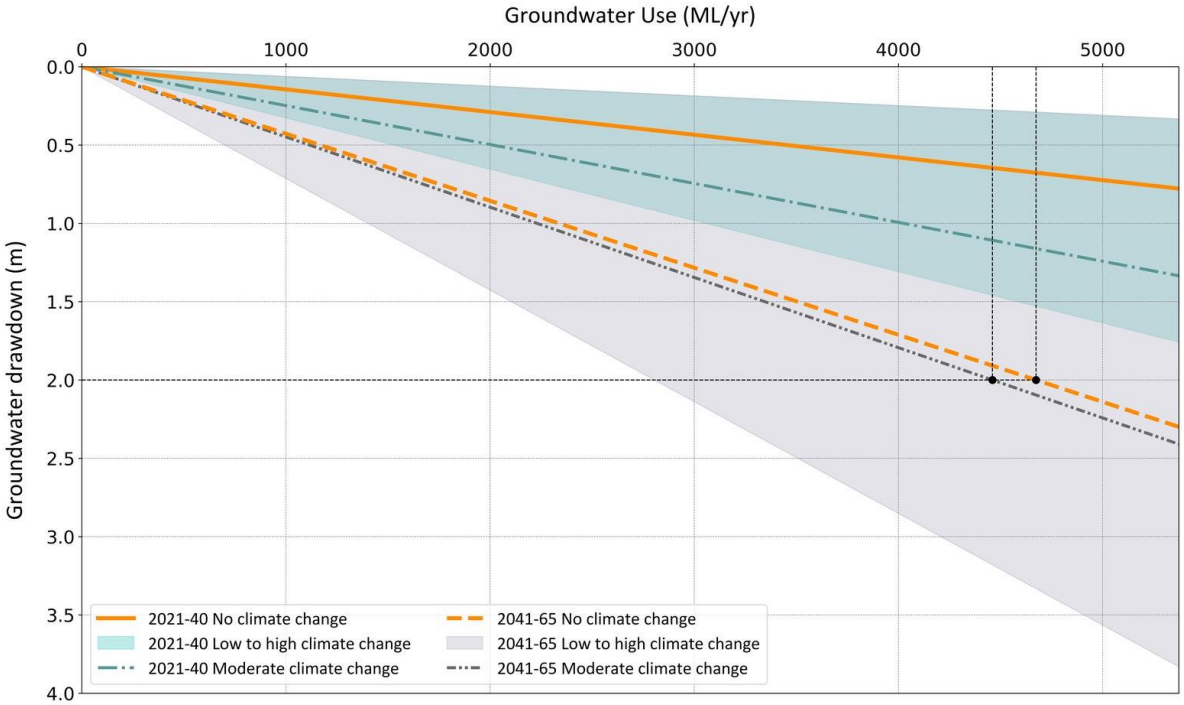

Figure A5-168. Plot for Southern Zone (West Wimmera) Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-197. Waterways GDE synthesis Table A5-for Southern Zone (West Wimmera)

GMU					SOUTHERN ZONE (WEST WIMMERA)
Waterway GDEs	Avg Use 561 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.20
				MCC (LCC to HCC)	-0.05 (-0.38 to -0.04)
		2041-2065	Drawdown from baseline (m)	No CC	-0.06
				MCC (LCC to HCC)	-0.06 (-0.35 to 0.55)
	PCV use 2,687 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.09
				MCC (LCC to HCC)	0.39 (-0.47 to 0.88)
		2041-2065	Drawdown from baseline (m)	No CC	-0.06
				MCC (LCC to HCC)	1.3 (-0.49 to 2.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,965
				MCC (HCC to LCC)	783 (-1411.75 to 429)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.35% (-0.55% to 0.29%)
		2041-2065	Volume (ML/yr)	No CC	208
				MCC (HCC to LCC)	292 (-1538.78 to 160)
			Proportion of recharge (%)	No CC	NA

				MCC (HCC to LCC)	0.19% (-0.75% to 0.17%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	59,647
				MCC (HCC to LCC)	7,828 (-14117.47 to 4,288)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.55% (-5.51% to 2.85%)
		2041-2065	Volume (ML/yr)	No CC	2,084
				MCC (HCC to LCC)	2,919 (-15387.77 to 1,602)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.92% (-7.47% to 1.69%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	119,294
				MCC (HCC to LCC)	15,655 (-28234.95 to 8,575)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.10% (-11.02% to 5.71%)
		2041-2065	Volume (ML/yr)	No CC	4,168
				MCC (HCC to LCC)	5,839 (-30775.54 to 3,204)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.84% (-14.93% to 3.37%)

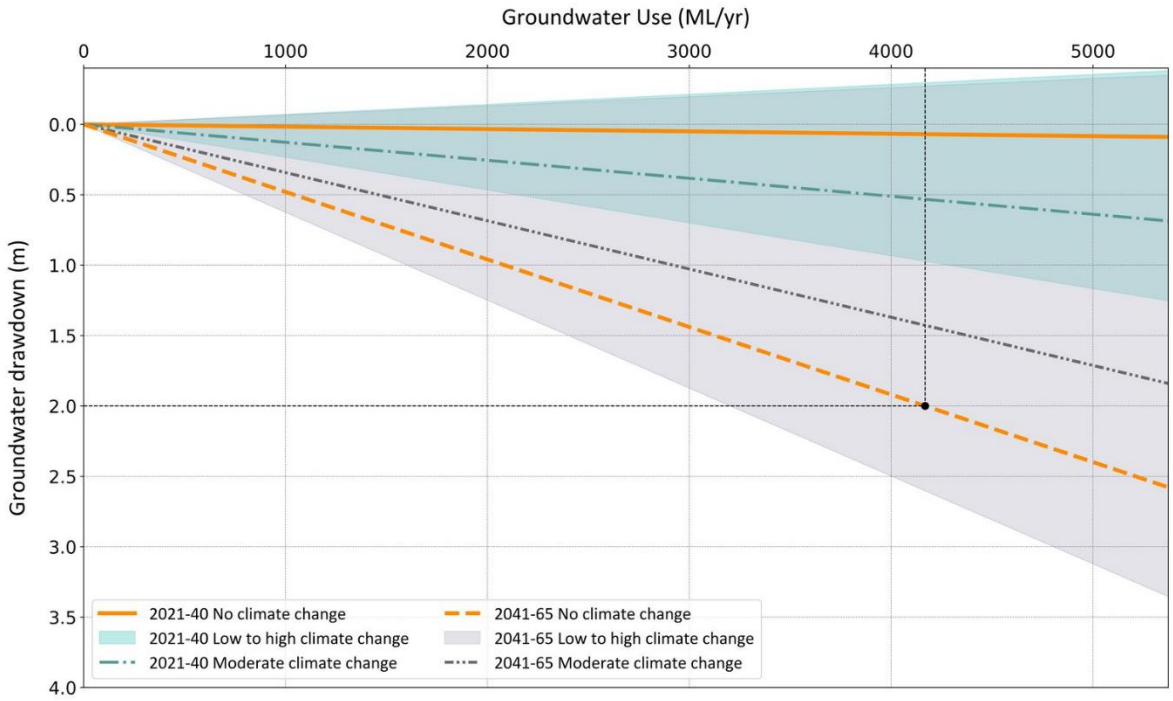

Figure A5-169. Plot for Southern Zone (West Wimmera) Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-198. Stream gauge results for Southern Zone (West Wimmera)

		Southern Zone (West Wimmera)		
Stream gauge/Catchment:		**238206 - Glenelg River @ Dartmoor (Unregulated)**		
Base flow index (1975-2020)		**0.46**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	355,715 (258,140 to 442,997)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-55,992 (-153,567 to 31,290)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	282,431 (161,389 to 397,709)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-129,276 (-250,318 to -13,998)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	1.2% (1.6% to 0.950%)
		PCV use (ML/yr)	MCC (LCC to HCC)	5.5% (7.6% to 4.4%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	1.5% (2.6% to 1.1%)
		PCV use (ML/yr)	MCC (LCC to HCC)	7.0% (12% to 4.9%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	35.95 (26.09 to 44.77)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	28.54 (16.31 to 40.20)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	32.08% (44.20% to 25.76%)

		PCV use (ML/yr)	MCC (LCC to HCC)	150% (207% to 120%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	40.40% (70.70% to 28.69%)
		PCV use (ML/yr)	MCC (LCC to HCC)	189% (331% to 134%)

Table A5-199. Wetlands GDE synthesis Table A5-for Southern Zone (West Wimmera)

GMU					SOUTHERN ZONE (WEST WIMMERA)
Wetlands GDEs	Avg Use 561 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.43
				MCC (LCC to HCC)	0.63 (0.18 to 0.62)
		2041-2065	Drawdown from baseline (m)	No CC	0.57
				MCC (LCC to HCC)	0.57 (0.21 to 1.3)
	PCV use 2,687 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.54
				MCC (LCC to HCC)	0.99 (0.19 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.57
				MCC (LCC to HCC)	1.8 (0.08 to 3.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	627
				MCC (HCC to LCC)	380 (284 to 1,268)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.17% (0.19% to 0.49%)
		2041-2065	Volume (ML/yr)	No CC	262
				MCC (HCC to LCC)	224 (139 to 1,699)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.15% (0.15% to 0.82%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,265
				MCC (HCC to LCC)	3,796 (2,837 to 12,679)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.72% (1.89% to 4.95%)
		2041-2065	Volume (ML/yr)	No CC	2,618
				MCC (HCC to LCC)	2,242 (1,392 to 16,986)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.47% (1.47% to 8.24%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	12,531
				MCC (HCC to LCC)	7,593 (5,674 to 25,357)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.44% (3.78% to 9.90%)
		2041-2065	Volume (ML/yr)	No CC	5,236
				MCC (HCC to LCC)	4,484 (2,784 to 33,973)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.95% (2.93% to 16.49%)

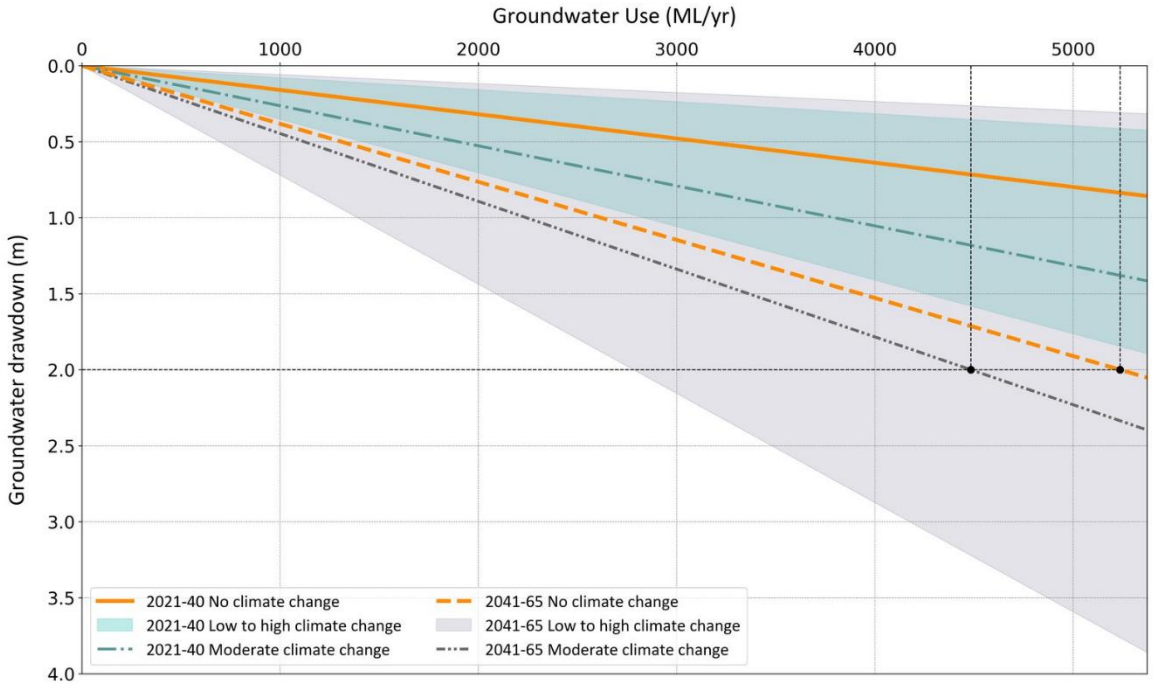

Figure A5-170. Plot for Southern Zone (West Wimmera) Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

STRATHBOGIE GMA

Table A5-200. Consumptive users synthesis Table A5-for Strathbogie GMA

Assessment area	**GMU**					**STRATHBOGIE GMA**
	Representative Bore					79,270
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations to 200 metres below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					1,660
	Licensed Entitlement (ML/yr)					1,417
	Licensed avg use (ML/yr)					974
Consumptive use metric	Consumptive users	Avg Use 412 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.4
					MCC (LCC to HCC)	3.1 (0.59 to 4.1)
			2041-2065	Drawdown from baseline (m)	No CC	2.7
					MCC (LCC to HCC)	2.7 (1.2 to 6.4)
		PCV use			No CC	2.8

		1,109 (ML/yr)	2021-2040	Drawdown from baseline (m)	MCC (LCC to HCC)	3.6 (2.1 to 4.8)
			2041-2065	Drawdown from baseline (m)	No CC	2.7
					MCC (LCC to HCC)	4.5 (1.4 to 7.1)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	587
					MCC (HCC to LCC)	460 (349 to 822)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.09% (0.08% to 0.13%)
			2041-2065	Volume (ML/yr)	No CC	504
					MCC (HCC to LCC)	380 (236 to 1,088)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.10% (0.08% to 0.21%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,175
					MCC (HCC to LCC)	921 (698 to 1,644)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.18% (0.16% to 0.27%)
			2041-2065	Volume (ML/yr)	No CC	1,009
					MCC (HCC to LCC)	760 (472 to 2,176)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.20% (0.16% to 0.43%)

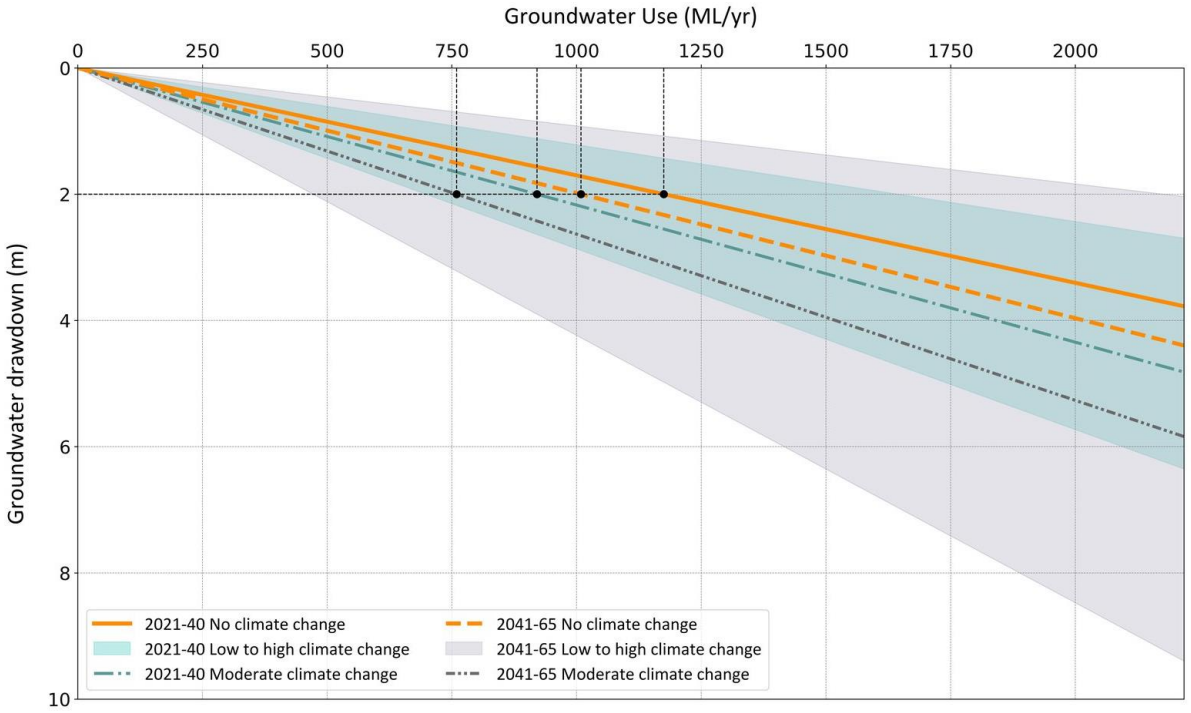

Figure A5-171. Plot for Strathbogie GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-201. Statewide drawdown use synthesis Table A5-for Strathbogie GMA

GMU					STRATHBOGIE GMA
Consumptive users (bores)	Avg Use 412 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.7
				MCC (LCC to HCC)	3.4 (0.99 to 4.5)
		2041-2065	Drawdown from baseline (m)	No CC	3.1
				MCC (LCC to HCC)	3.1 (1.5 to 7.0)
	PCV use 1,109 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.1
				MCC (LCC to HCC)	3.9 (2.5 to 5.1)
		2041-2065	Drawdown from baseline (m)	No CC	3.1
				MCC (LCC to HCC)	5.1 (2.1 to 7.6)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	515
				MCC (HCC to LCC)	411 (323 to 673)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.08% (0.07% to 0.11%)
		2041-2065	Volume (ML/yr)	No CC	503
				MCC (HCC to LCC)	326 (215 to 737)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.08% (0.08% to 0.15%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,030
				MCC (HCC to LCC)	823 (647 to 1,346)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.16% (0.15% to 0.22%)
		2041-2065	Volume (ML/yr)	No CC	1,007
				MCC (HCC to LCC)	651 (431 to 1,473)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.17% (0.15% to 0.29%)

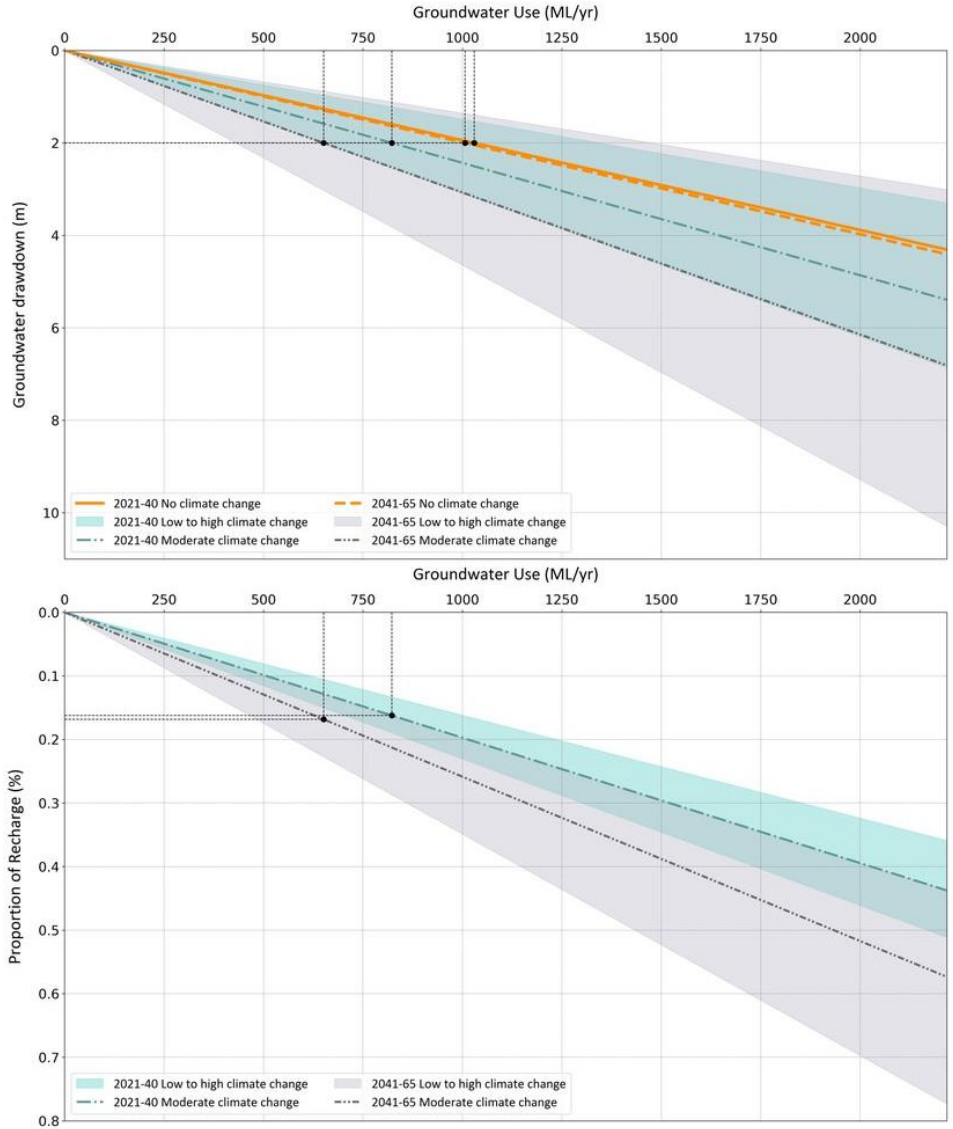

Figure A5-172. Upper Plot: Strathbogie GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Strathbogie GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-202. Terrestrial GDE synthesis Table A5-for Strathbogie GMA

GMU					STRATHBOGIE GMA
Terrestrial GDEs	Avg Use 412 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.2 (-0.23 to 3.2)
		2041-2065	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	1.9 (0.25 to 5.7)
	PCV use 1,109 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.7
				MCC (LCC to HCC)	2.4 (1.1 to 3.2)
		2041-2065	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	3.6 (1.2 to 5.5)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	85
				MCC (HCC to LCC)	62 (48 to 127)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.02%)
		2041-2065	Volume (ML/yr)	No CC	47
				MCC (HCC to LCC)	43 (28 to 106)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.02%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	855
				MCC (HCC to LCC)	624 (478 to 1,273)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.12% (0.11% to 0.21%)
		2041-2065	Volume (ML/yr)	No CC	474
				MCC (HCC to LCC)	429 (283 to 1,064)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.11% (0.10% to 0.21%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,709
				MCC (HCC to LCC)	1,247 (956 to 2,547)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.25% (0.22% to 0.41%)
		2041-2065	Volume (ML/yr)	No CC	948
				MCC (HCC to LCC)	859 (566 to 2,129)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.22% (0.20% to 0.42%)

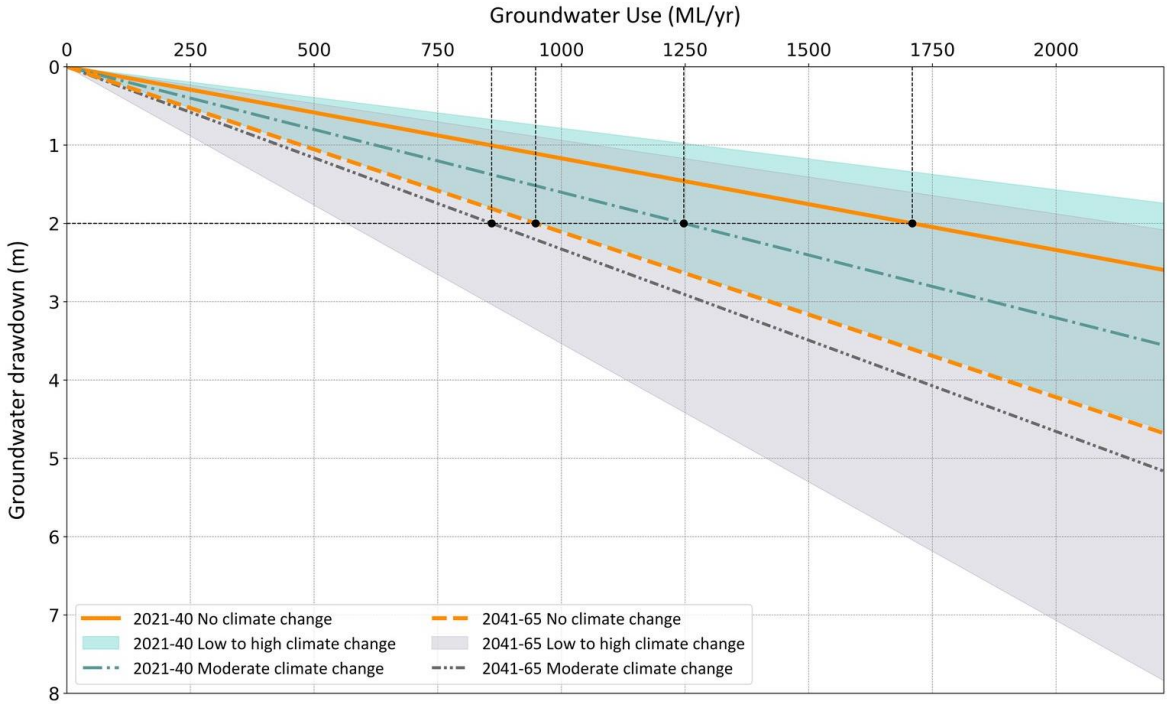

Figure A5-173. Plot for Strathbogie GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-203. Waterways GDE synthesis Table A5-for Strathbogie GMA

GMU					STRATHBOGIE GMA
Waterway GDEs	Avg Use 412 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.3 (-0.03 to 3.3)
		2041-2065	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	2.0 (0.41 to 5.9)
	PCV use 1,109 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.6
				MCC (LCC to HCC)	2.3 (1.2 to 3.3)
		2041-2065	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	3.4 (1.0 to 5.5)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	90
				MCC (HCC to LCC)	65 (48 to 129)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.02%)
		2041-2065	Volume (ML/yr)	No CC	45
				MCC (HCC to LCC)	46 (29 to 126)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.02%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	897
				MCC (HCC to LCC)	652 (478 to 1,288)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.13% (0.11% to 0.21%)
		2041-2065	Volume (ML/yr)	No CC	453
				MCC (HCC to LCC)	464 (287 to 1,258)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.12% (0.10% to 0.25%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,794
				MCC (HCC to LCC)	1,303 (957 to 2,576)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.26% (0.22% to 0.42%)
		2041-2065	Volume (ML/yr)	No CC	905
				MCC (HCC to LCC)	928 (575 to 2,516)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.24% (0.20% to 0.50%)

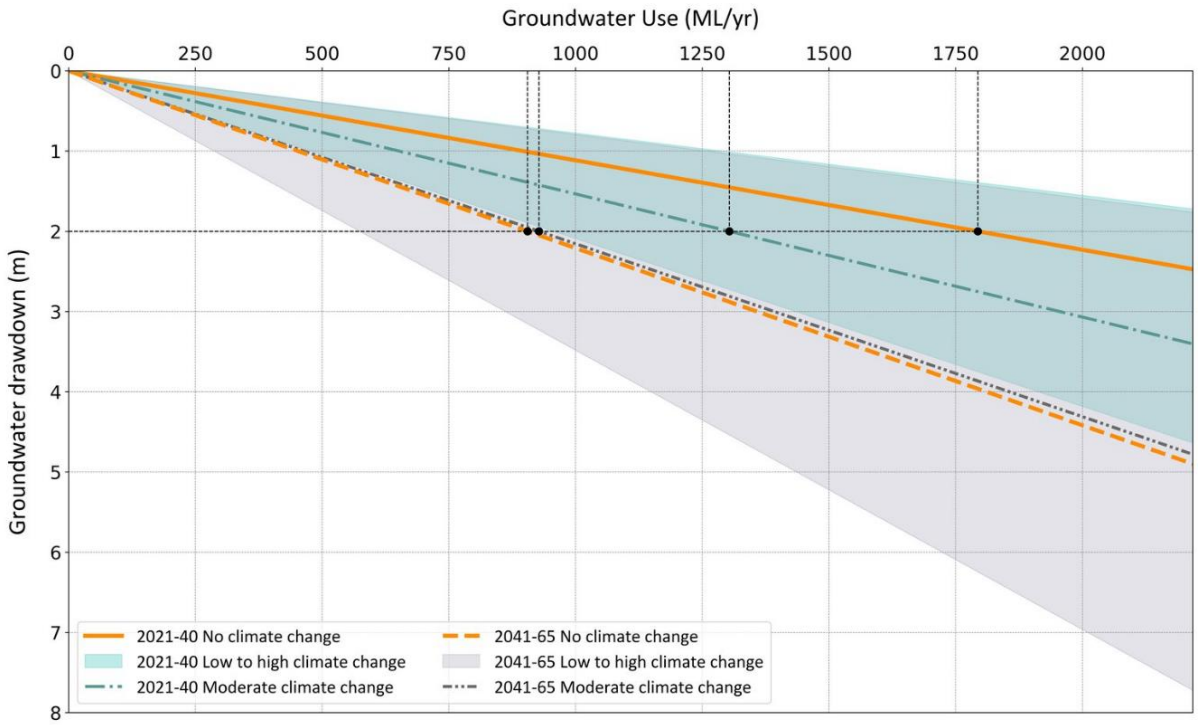

Figure A5-174. Plot for Strathbogie GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-204. Stream gauge results for Strathbogie GMA

				Strathbogie GMA
Stream gauge/Catchment:				**405228 - Hughes Creek @ Tarcombe Road (Unregulated)**
Base flow index (1975-2020)				**0.50**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC - LCC)	55,391 (43,395 to 67,265)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-5,815 (-17,811 to 6,059)
	2065	Flow (ML/yr)	MCC (HCC - LCC)	52,821 (35,561 to 62,001)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-8,385 (-25,645 to 796)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.155% (0.198% to 0.128%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.351% (0.448% to 0.289%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	0.162% (0.241% to 0.138%)
		PCV use (ML/yr)	MCC (HCC - LCC)	0.368% (0.547% to 0.314%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC - LCC)	11.51 (9.01 to 13.97)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC - LCC)	10.97 (7.39 to 12.88)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	2.04% (2.61% to 1.68%)
		PCV use (ML/yr)	MCC (HCC - LCC)	4.63% (5.91% to 3.81%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	2.14% (3.18% to 1.83%)
		PCV use (ML/yr)	MCC (HCC - LCC)	4.86% (7.21% to 4.14%)
Stream gauge/Catchment:				**405232 - GOULBURN RIVER @ Mccoys BRIDGE (Regulated)**
Base flow index (1975-2020)				**0.53**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	1,026,335 (804,057 to 1,246,345)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-107,737 (-330,015 to 112,273)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	978,704 (658,896 to 1,148,815)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-155,368 (-475,176 to 14,743)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.62% (0.79% to 0.51%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.0% (3.9% to 2.5%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.65% (0.96% to 0.55%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.2% (4.7% to 2.7%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	362.17 (283.73 to 439.81)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-38 (-116 to 40)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	345.36 (232.51 to 405.39)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-55 (-168 to 5)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	4.8% (6.1% to 4.0%)
		PCV use (ML/yr)	MCC (LCC to HCC)	23.54% (30.05% to 19.38%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	5.0% (7.5% to 4.3%)
		PCV use (ML/yr)	MCC (LCC to HCC)	25% (37% to 21%)

TARWIN GMA

Table A5-205. Consumptive users synthesis Table A5-for Tarwin GMA

	GMU					TARWIN GMA
Assessment area	Representative Bore					114157
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations from surface to 25 metres below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					1,300
	Licensed Entitlement (ML/yr)					54
	Licensed avg use (ML/yr)					586
Consumptive use metric	Consumptive users (bores)	Avg Use 11 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.76
					MCC (LCC to HCC)	1.4 (0.23 to 1.9)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	1.4 (0.81 to 3.3)
		PCV use 49 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	1.9 (0.73 to 2.3)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	3.3 (2.1 to 3.9)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	39
					MCC (HCC to LCC)	29 (25 to 53)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.32% (0.33% to 0.48%)
			2041-2065	Volume (ML/yr)	No CC	25
					MCC (HCC to LCC)	18 (16 to 25)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.23% (0.25% to 0.27%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	79
					MCC (HCC to LCC)	59 (51 to 105)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.63% (0.65% to 0.96%)
			2041-2065	Volume (ML/yr)	No CC	50
					MCC (HCC to LCC)	36 (31 to 50)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.46% (0.51% to 0.55%)

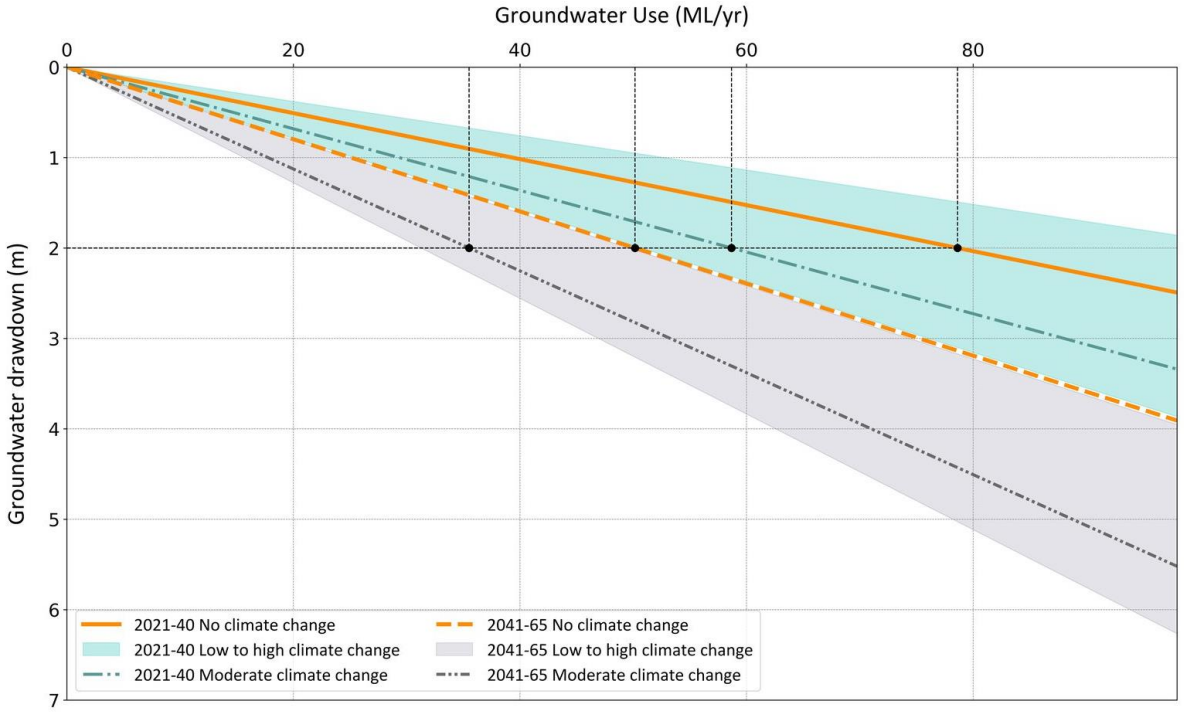

Figure A5-175. Plot for Tarwin GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-206. Statewide drawdown use synthesis Table A5-for Tarwin GMA

GMU					TARWIN GMA
Consumptive users (bores)	Avg Use 11 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.72
				MCC (LCC to HCC)	1.3 (0.18 to 1.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	1.4 (0.76 to 3.3)
	PCV use 49 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.8 (0.71 to 2.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	3.4 (2.2 to 3.9)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	39
				MCC (HCC to LCC)	29 (25 to 52)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.32% (0.33% to 0.48%)
		2041-2065	Volume (ML/yr)	No CC	26
				MCC (HCC to LCC)	17 (15 to 24)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.22% (0.24% to 0.27%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	78
				MCC (HCC to LCC)	59 (51 to 105)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.64% (0.65% to 0.96%)
		2041-2065	Volume (ML/yr)	No CC	51
				MCC (HCC to LCC)	35 (31 to 47)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.44% (0.48% to 0.54%)

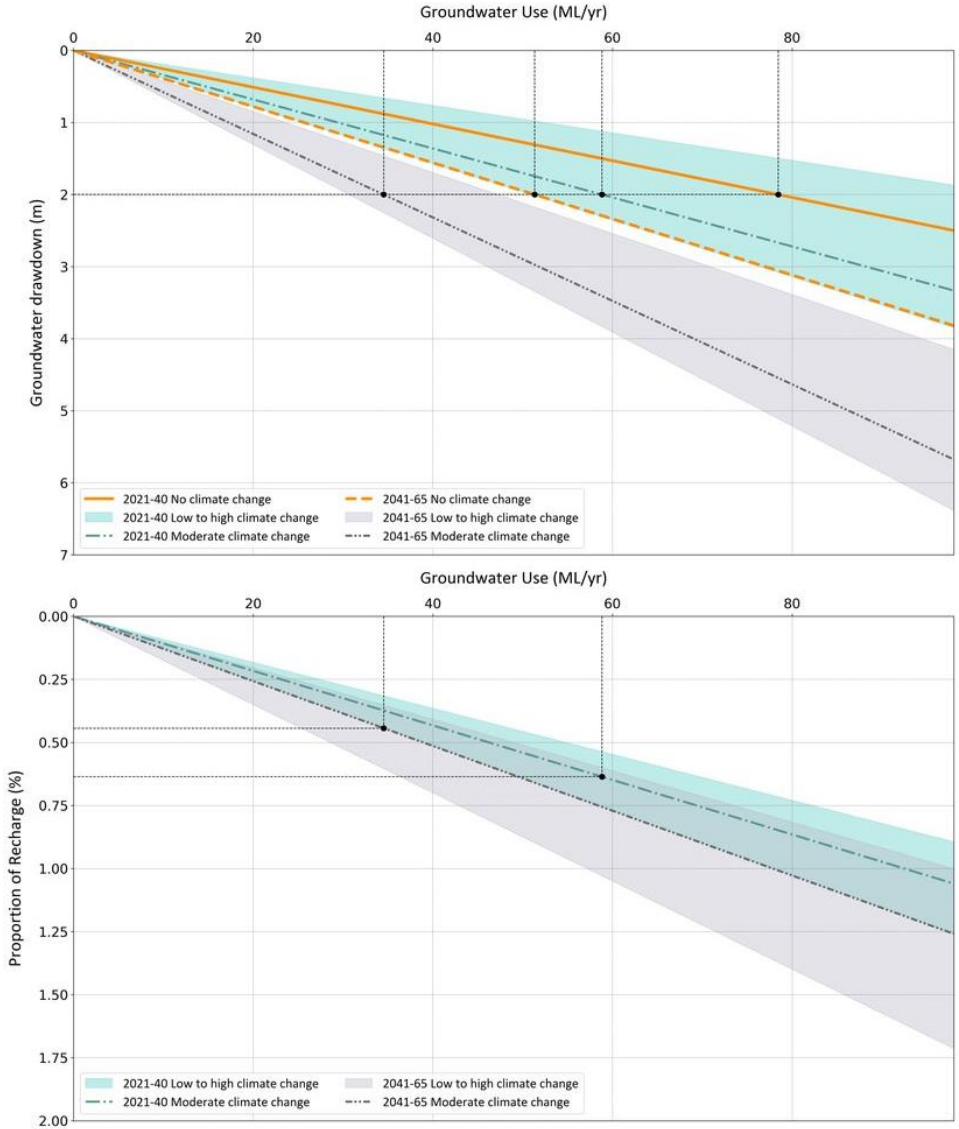

Figure A5-176. Upper Plot: Tarwin GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Tarwin GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-207. seawater synthesis Table A5-for Tarwin GMA

GMU					TARWIN GMA
Seawater intrusion	Avg Use 11 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.74
				MCC (LCC to HCC)	-1.24 (-3.99 to -2.45)
			Area elev. <1.5 mAHD (%)	No CC	51%
				MCC (LCC to HCC)	37% (17% to 29%)
		2041-2065	Drawdown from baseline (m)	No CC	-3.32
				MCC (LCC to HCC)	2.1 (-1.64 to 0.38)
			Area elev. <1.5 mAHD (%)	No CC	24%
				MCC (LCC to HCC)	61% (33% to 48%)
	PCV use 49 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.96
				MCC (LCC to HCC)	1.3 (-1.10 to -1.00)
			Area elev. <1.5 mAHD (%)	No CC	53%
				MCC (LCC to HCC)	56% (38% to 38%)
		2041-2065	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	2.1 (-0.91 to -0.05)
			Area elev. <1.5 mAHD (%)	No CC	59%
				MCC (LCC to HCC)	60% (39% to 44%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	27
				MCC (HCC to LCC)	41 (109 to 121)
			Proportion of recharge (%)	No CC	NA
				MCC (LCC to HCC)	0.45% (1.1% to 1.4%)
		2041-2065	Volume (ML/yr)	No CC	45
				MCC (HCC to LCC)	-15 (69 to 97)
			Proportion of recharge (%)	No CC	NA
				MCC (LCC to HCC)	-0.19% (0.99% to 1.2%)

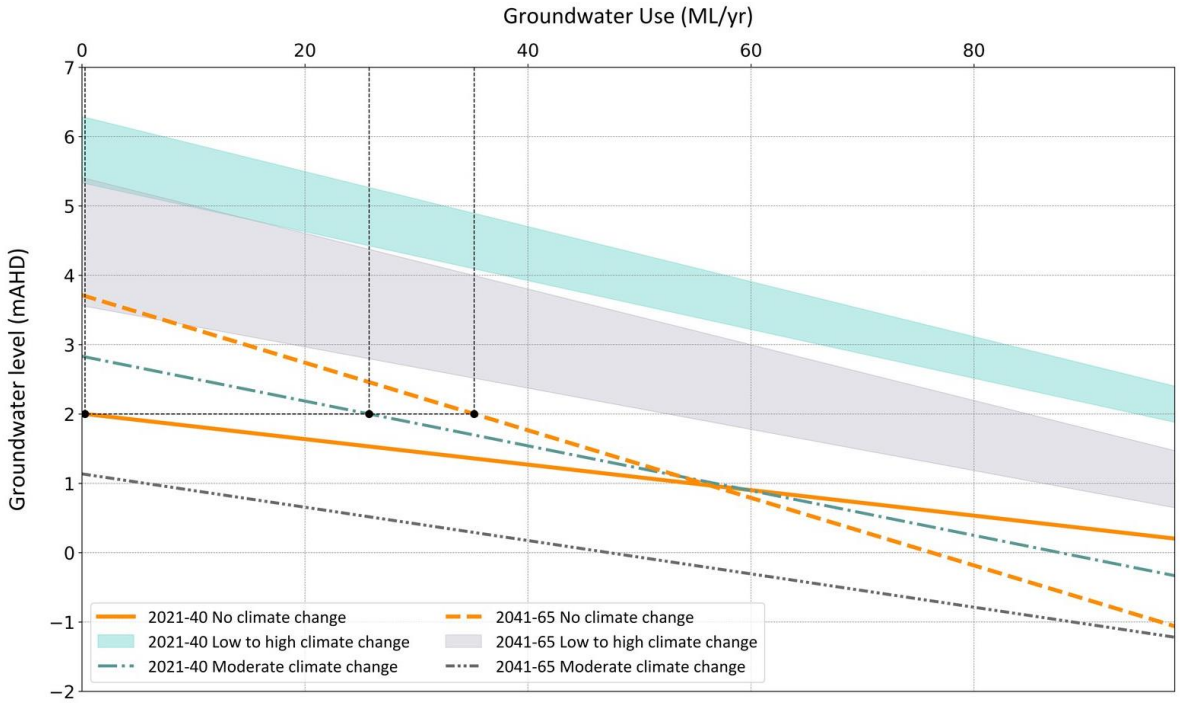

Figure A5-177. Plot for Tarwin GMA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-208. Terrestrial GDE synthesis Table A5-for Tarwin GMA

GMU					TARWIN GMA
Terrestrial GDEs	Avg Use 11 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.47
				MCC (LCC to HCC)	1.0 (-0.06 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.2 (0.53 to 3.0)
	PCV use 49 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.94
				MCC (LCC to HCC)	1.6 (0.46 to 2.0)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	3.2 (2.0 to 3.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4.4
				MCC (HCC to LCC)	3.2 (2.8 to 6.2)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.03% (0.04% to 0.06%)
		2041-2065	Volume (ML/yr)	No CC	2.5
				MCC (HCC to LCC)	1.8 (1.6 to 2.4)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.02% to 0.03%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	44
				MCC (HCC to LCC)	32 (28 to 62)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.35% (0.35% to 0.56%)
		2041-2065	Volume (ML/yr)	No CC	25
				MCC (HCC to LCC)	18 (16 to 24)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.23% (0.25% to 0.28%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	89
				MCC (HCC to LCC)	65 (55 to 124)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.70% (0.71% to 1.13%)
		2041-2065	Volume (ML/yr)	No CC	50
				MCC (HCC to LCC)	36 (32 to 48)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.46% (0.49% to 0.56%)

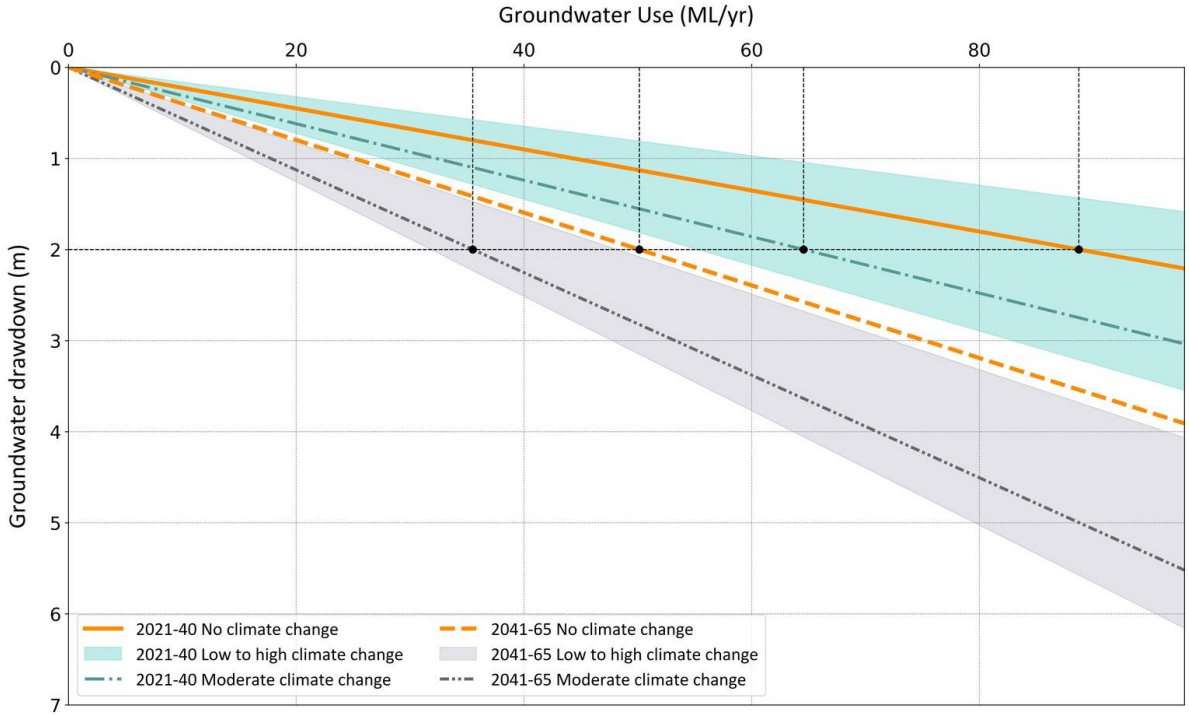

Figure A5-178. Plot for Tarwin GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-209. Waterways GDE synthesis Table A5-for Tarwin GMA

GMU					TARWIN GMA
Waterway GDEs	Avg Use 11 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.59
				MCC (LCC to HCC)	1.1 (0.09 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.2 (0.60 to 2.9)
	PCV use 49 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.7 (0.76 to 2.0)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	3.3 (2.5 to 3.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3.8
				MCC (HCC to LCC)	3.0 (2.7 to 4.8)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.03% (0.04% to 0.04%)
		2041-2065	Volume (ML/yr)	No CC	3.3
				MCC (HCC to LCC)	1.6 (1.6 to 2.0)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.02% to 0.03%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	38
				MCC (HCC to LCC)	30 (27 to 48)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.32% (0.35% to 0.44%)
		2041-2065	Volume (ML/yr)	No CC	33
				MCC (HCC to LCC)	16 (16 to 20)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.21% (0.21% to 0.27%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	76
				MCC (HCC to LCC)	60 (55 to 96)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.65% (0.70% to 0.87%)
		2041-2065	Volume (ML/yr)	No CC	65
				MCC (HCC to LCC)	33 (31 to 40)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.42% (0.41% to 0.54%)

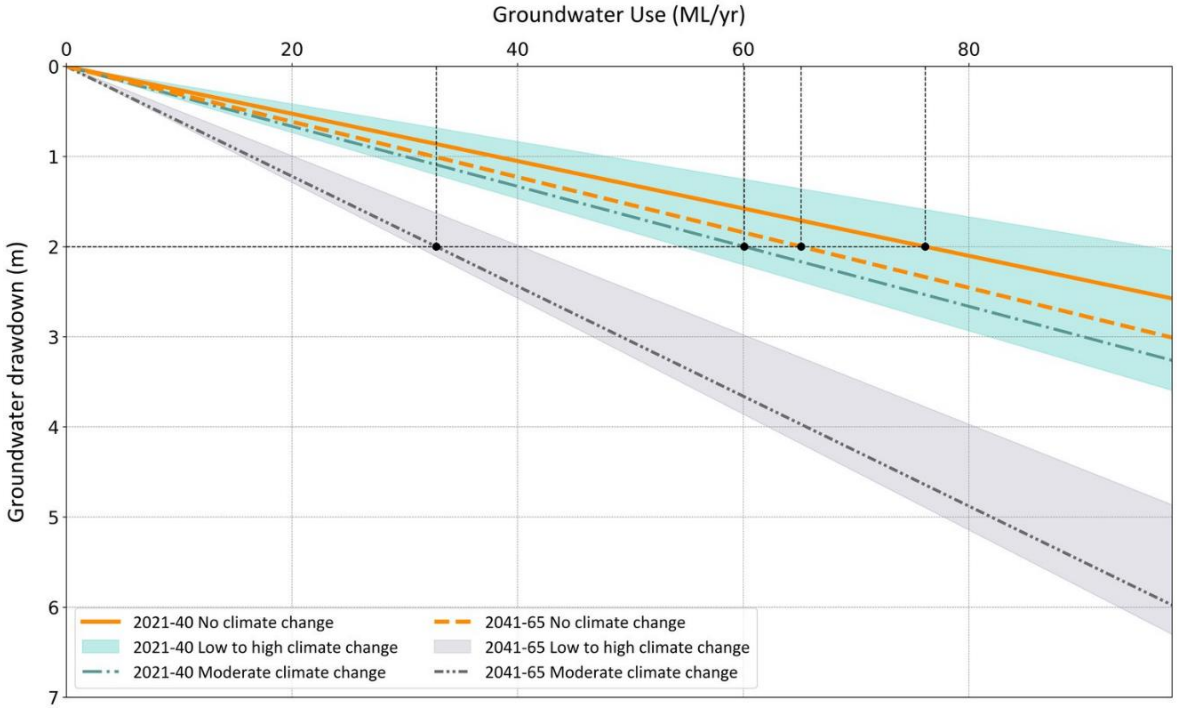

Figure A5-179. Plot for Tarwin GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-210. Wetlands GDE synthesis Table A5-for Tarwin GMA

GMU					TARWIN GMA
Wetlands GDEs	Avg Use 11 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.33
				MCC (LCC to HCC)	0.84 (-0.21 to 1.5)
		2041-2065	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	1.0 (0.36 to 3.0)
	PCV use 49 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.89
				MCC (LCC to HCC)	1.5 (0.45 to 1.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	3.3 (2.4 to 3.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4.3
				MCC (HCC to LCC)	3.2 (2.8 to 5.7)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.03% (0.04% to 0.05%)
		2041-2065	Volume (ML/yr)	No CC	3.0
				MCC (HCC to LCC)	1.6 (1.5 to 2.0)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.02% to 0.03%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	43
				MCC (HCC to LCC)	32 (28 to 57)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.35% (0.36% to 0.52%)
		2041-2065	Volume (ML/yr)	No CC	30
				MCC (HCC to LCC)	16 (15 to 20)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.20% (0.20% to 0.26%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	85
				MCC (HCC to LCC)	64 (56 to 114)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.70% (0.72% to 1.04%)
		2041-2065	Volume (ML/yr)	No CC	60
				MCC (HCC to LCC)	32 (30 to 40)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.41% (0.40% to 0.52%)

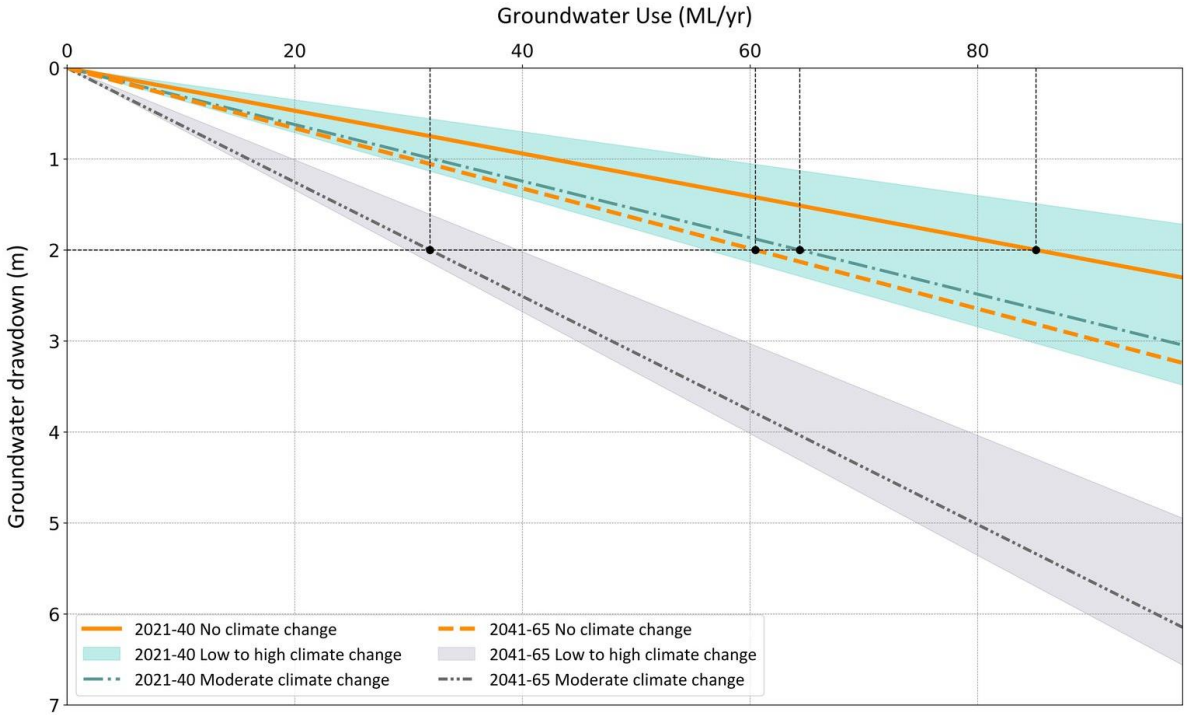

Figure A5-180. Plot for Tarwin GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

UPPER GOULBURN GMA

Table A5-211. Consumptive users synthesis Table A5-for Upper Goulburn GMA

Assessment area	**GMU**					**UPPER GOULBURN GMA**
	Representative Bore					WRK017737
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations to 200 metres below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					8,568
	Licensed Entitlement (ML/yr)					6,086
	Licensed avg use (ML/yr)					1,993
Consumptive use metric	Consumptive users (bores)	Avg Use 715 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.3
					MCC (LCC to HCC)	2.8 (0.42 to 3.7)
			2041-2065	Drawdown from baseline (m)	No CC	2.4
					MCC (LCC to HCC)	2.4 (1.1 to 5.4)
		PCV use	2021-2040	Drawdown from baseline (m)	No CC	3.6
					MCC (LCC to HCC)	4.4 (2.6 to 5.7)

		4,938 (ML/yr)	2041-2065	Drawdown from baseline (m)	No CC	2.4
					MCC (LCC to HCC)	5.5 (1.9 to 8.5)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,080
					MCC (HCC to LCC)	1,716 (1,346 to 2,830)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.16% (0.18% to 0.22%)
			2041-2065	Volume (ML/yr)	No CC	1,914
					MCC (HCC to LCC)	1,329 (886 to 3,296)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.16% (0.22% to 0.30%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,159
					MCC (HCC to LCC)	3,431 (2,692 to 5,659)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.32% (0.35% to 0.44%)
			2041-2065	Volume (ML/yr)	No CC	3,827
					MCC (HCC to LCC)	2,657 (1,773 to 6,591)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.33% (0.44% to 0.60%)

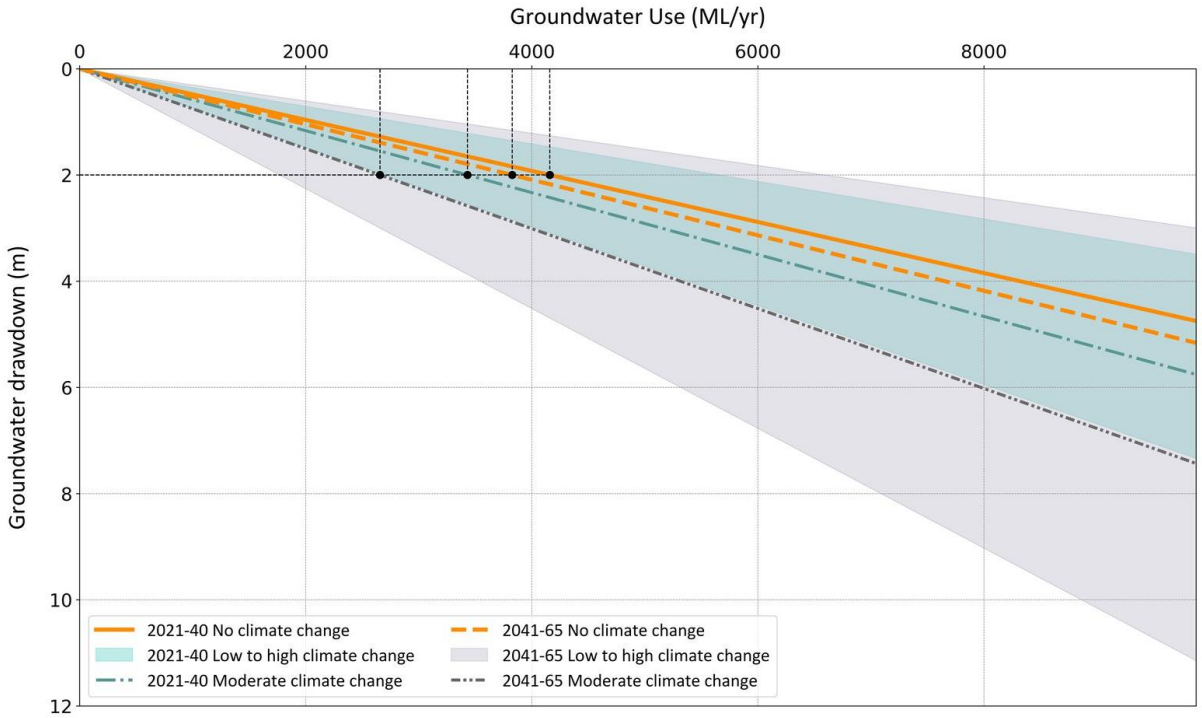

Figure A5-181. Plot for Upper Goulburn GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-212. Statewide drawdown use synthesis Table A5-for Upper Goulburn GMA

GMU					UPPER GOULBURN GMA
Consumptive users (bores)	Avg Use 715 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.8
				MCC (LCC to HCC)	3.3 (0.87 to 4.3)
		2041-2065	Drawdown from baseline (m)	No CC	2.9
				MCC (LCC to HCC)	2.9 (1.6 to 6.1)
	PCV use 4,938 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.5
				MCC (LCC to HCC)	5.4 (3.3 to 7.0)
		2041-2065	Drawdown from baseline (m)	No CC	2.9
				MCC (LCC to HCC)	6.9 (2.6 to 11)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,673
				MCC (HCC to LCC)	1,405 (1,095 to 2,235)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.13% (0.14% to 0.17%)
		2041-2065	Volume (ML/yr)	No CC	1,830
				MCC (HCC to LCC)	1,077 (722 to 2,519)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.13% (0.18% to 0.23%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,346
				MCC (HCC to LCC)	2,811 (2,191 to 4,469)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.26% (0.29% to 0.35%)
		2041-2065	Volume (ML/yr)	No CC	3,661
				MCC (HCC to LCC)	2,154 (1,444 to 5,038)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.26% (0.35% to 0.46%)

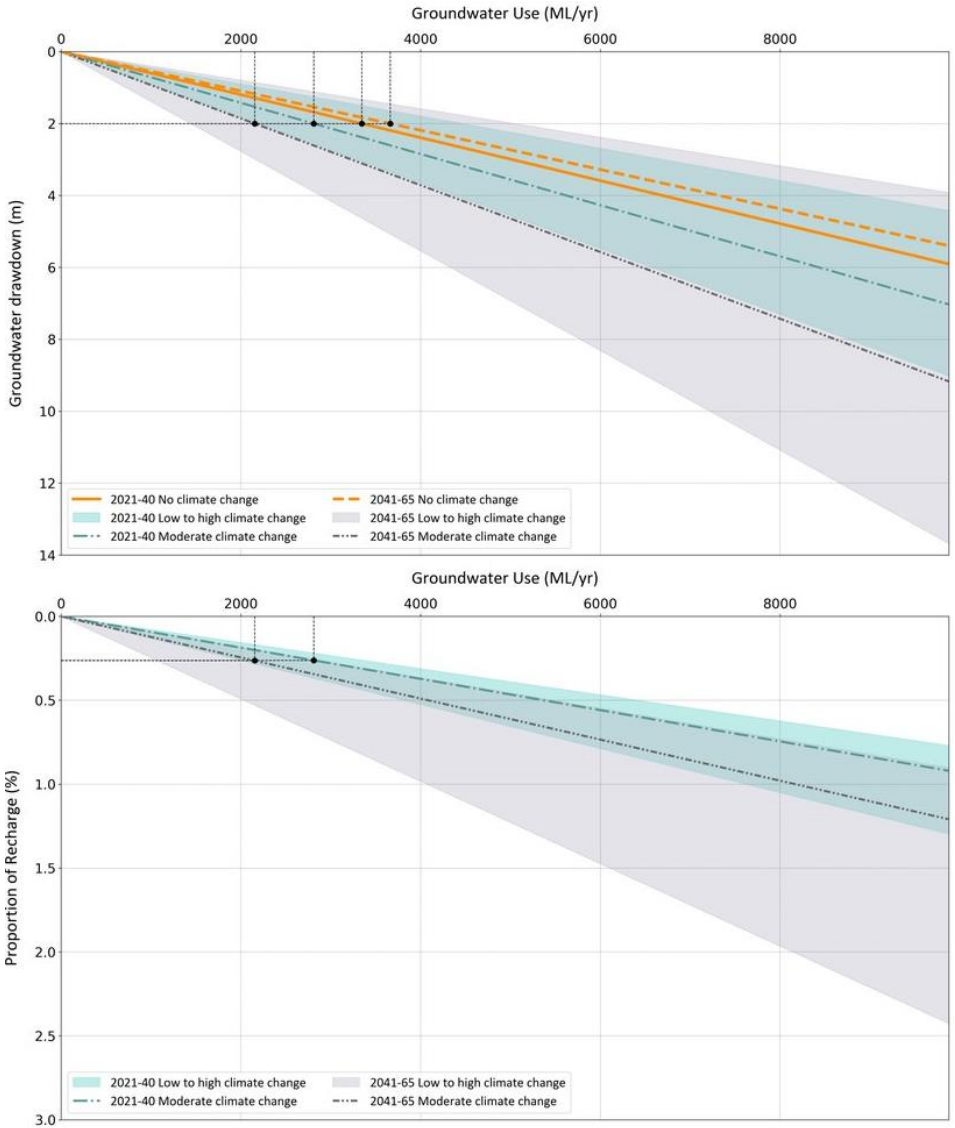

Figure A5-182. Upper Plot: Upper Goulburn GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Upper Goulburn GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-213. Terrestrial GDE synthesis Table A5-for Upper Goulburn GMA

GMU					UPPER GOULBURN GMA
Terrestrial GDEs	Avg Use 715 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.7 (-0.81 to 2.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	1.3 (-0.07 to 4.3)
	PCV use 4,938 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.9
				MCC (LCC to HCC)	2.5 (1.1 to 3.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	3.8 (1.3 to 5.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	348
				MCC (HCC to LCC)	269 (212 to 532)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.03% (0.03% to 0.04%)
		2041-2065	Volume (ML/yr)	No CC	177
				MCC (HCC to LCC)	173 (124 to 385)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.03% to 0.04%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,476
				MCC (HCC to LCC)	2,687 (2,117 to 5,316)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.25% (0.28% to 0.41%)
		2041-2065	Volume (ML/yr)	No CC	1,767
				MCC (HCC to LCC)	1,732 (1,241 to 3,851)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.21% (0.30% to 0.35%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,951
				MCC (HCC to LCC)	5,373 (4,235 to 10,633)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.50% (0.56% to 0.83%)
		2041-2065	Volume (ML/yr)	No CC	3,535
				MCC (HCC to LCC)	3,465 (2,482 to 7,702)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.42% (0.61% to 0.70%)

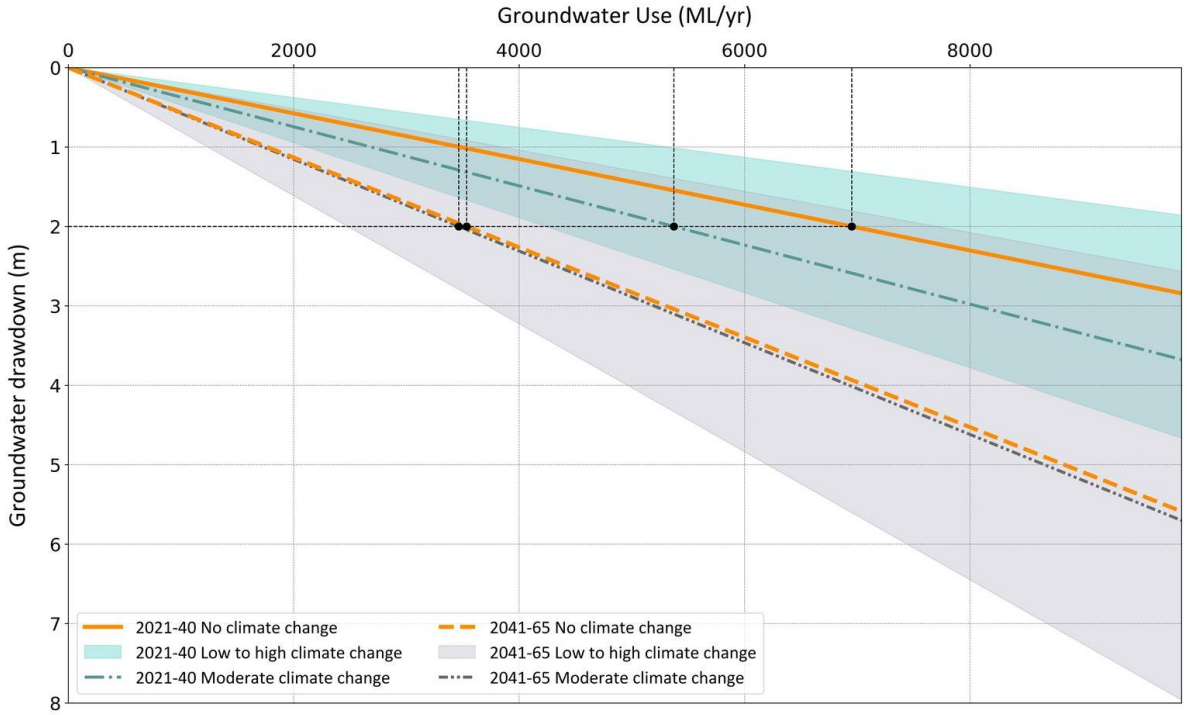

Figure A5-183. Plot for Upper Goulburn GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-214. Waterways GDE synthesis Table A5-for Upper Goulburn GMA

GMU					UPPER GOULBURN GMA
Waterway GDEs	Avg Use 715 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.42
				MCC (LCC to HCC)	0.04 (-2.26 to 0.93)
		2041-2065	Drawdown from baseline (m)	No CC	-0.24
				MCC (LCC to HCC)	-0.24 (-1.50 to 2.6)
	PCV use 4,938 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.67
				MCC (LCC to HCC)	1.3 (-0.15 to 2.4)
		2041-2065	Drawdown from baseline (m)	No CC	-0.24
				MCC (LCC to HCC)	2.8 (-0.02 to 5.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	707
				MCC (HCC to LCC)	447 (282 to 3,091)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.04% (0.04% to 0.24%)
		2041-2065	Volume (ML/yr)	No CC	140
				MCC (HCC to LCC)	216 (134 to 891)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.03% (0.03% to 0.08%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	7,072
				MCC (HCC to LCC)	4,468 (2,825 to 30,911)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.42% (0.37% to 2.41%)
		2041-2065	Volume (ML/yr)	No CC	1,396
				MCC (HCC to LCC)	2,163 (1,340 to 8,910)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.26% (0.33% to 0.81%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	14,144
				MCC (HCC to LCC)	8,937 (5,650 to 61,822)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.83% (0.74% to 4.82%)
		2041-2065	Volume (ML/yr)	No CC	2,792
				MCC (HCC to LCC)	4,326 (2,681 to 17,820)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.53% (0.66% to 1.63%)

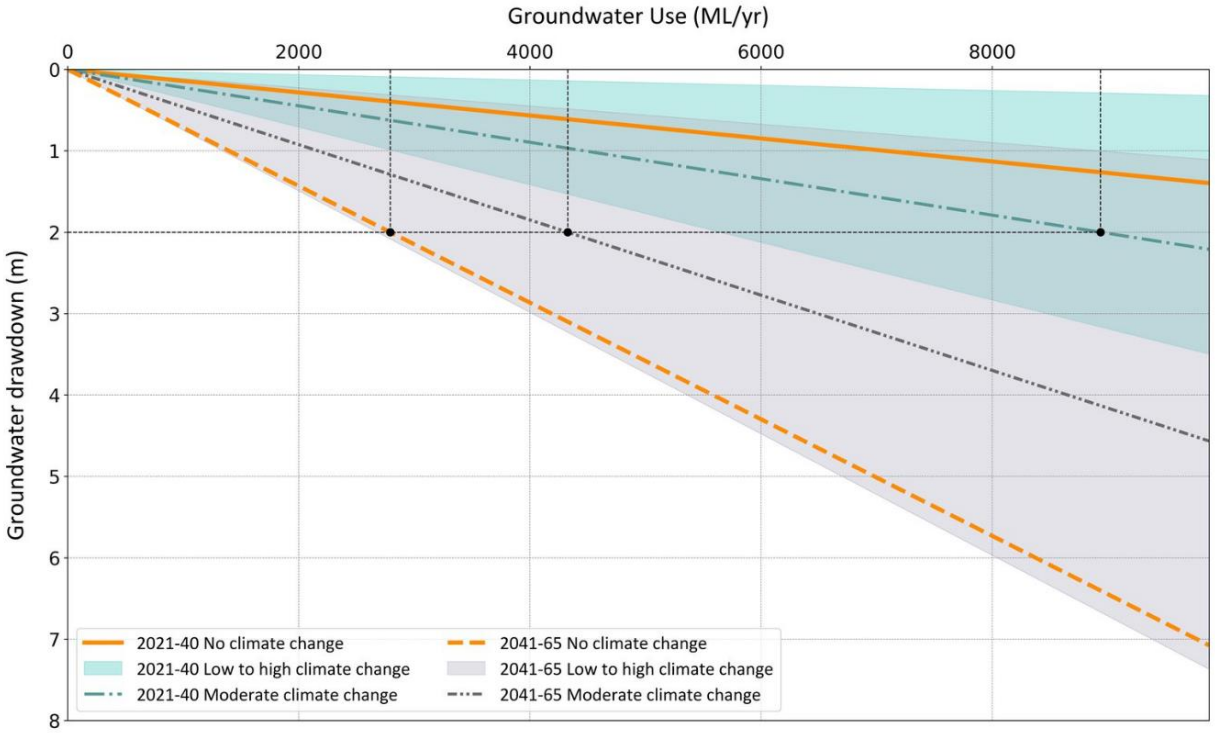

Figure A5-184. Plot for Upper Goulburn GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-215. Stream gauge results for Upper Goulburn GMA

		Upper Goulburn GMA		
Stream gauge/Catchment:		**405231 - King Parrot Creek @ Flowerdale (Unregulated)**		
Base flow index (1975-2020)		**0.62**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC - LCC)	29,267 (22,929 to 35,541)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-3,072 (-9,411 to 3,202)
	2065	Flow (ML/yr)	MCC (HCC - LCC)	27,909 (18,789 to 32,760)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	-4,431 (-13,550 to 420)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	0.447% (0.570% to 0.368%)
		PCV use (ML/yr)	MCC (HCC - LCC)	1.7% (2.1% to 1.4%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	0.469% (0.696% to 0.399%)
		PCV use (ML/yr)	MCC (HCC - LCC)	1.7% (2.6% to 1.5%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC - LCC)	8.32 (6.52 to 10.11)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC - LCC)	7.94 (5.34 to 9.32)
		Change from 1975-2020 (ML/yr)	MCC (HCC - LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC - LCC)	4.30% (5.49% to 3.54%)
		PCV use (ML/yr)	MCC (HCC - LCC)	16.05% (20.48% to 13.22%)
	2065	Current use (ML/yr)	MCC (HCC - LCC)	4.51% (6.70% to 3.84%)
		PCV use (ML/yr)	MCC (HCC - LCC)	16.83% (25.00% to 14.34%)
Stream gauge/Catchment:		**405232 - GOULBURN RIVER @ Mccoys BRIDGE (Regulated)**		
Base flow index (1975-2020)		**0.53**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	1,026,335 (804,057 to 1,246,345)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-107,737 (-330,015 to 112,273)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	978,704 (658,896 to 1,148,815)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-155,368 (-475,176 to 14,743)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.62% (0.79% to 0.51%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.0% (3.9% to 2.5%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.65% (0.96% to 0.55%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.2% (4.7% to 2.7%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	362.17 (283.73 to 439.81)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-38 (-116 to 40)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	345.36 (232.51 to 405.39)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-55 (-168 to 5)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	4.8% (6.1% to 4.0%)
		PCV use (ML/yr)	MCC (LCC to HCC)	23.54% (30.05% to 19.38%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	5.0% (7.5% to 4.3%)
		PCV use (ML/yr)	MCC (LCC to HCC)	25% (37% to 21%)

Table A5-216. Wetlands GDE synthesis Table A5-for Upper Goulburn GMA

GMU					UPPER GOULBURN GMA
Wetlands GDEs	Avg Use 715 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.37
				MCC (LCC to HCC)	0.53 (-1.74 to 1.5)
		2041-2065	Drawdown from baseline (m)	No CC	-0.05
				MCC (LCC to HCC)	-0.05 (-0.80 to 2.3)
	PCV use 4,938 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.4
				MCC (LCC to HCC)	3.1 (1.0 to 5.3)
		2041-2065	Drawdown from baseline (m)	No CC	-0.05
				MCC (LCC to HCC)	3.5 (-1.33 to 8.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	321
				MCC (HCC to LCC)	256 (149 to 746)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.02% to 0.06%)
		2041-2065	Volume (ML/yr)	No CC	143
				MCC (HCC to LCC)	239 (-594.41 to 95)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.03% (-0.05% to 0.02%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,210
				MCC (HCC to LCC)	2,556 (1,494 to 7,456)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.24% (0.20% to 0.58%)
		2041-2065	Volume (ML/yr)	No CC	1,430
				MCC (HCC to LCC)	2,391 (-5944.11 to 946)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.29% (-0.54% to 0.23%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,419
				MCC (HCC to LCC)	5,112 (2,988 to 14,911)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.48% (0.39% to 1.16%)
		2041-2065	Volume (ML/yr)	No CC	2,860
				MCC (HCC to LCC)	4,782 (-11888.22 to 1,892)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.59% (-1.09% to 0.46%)

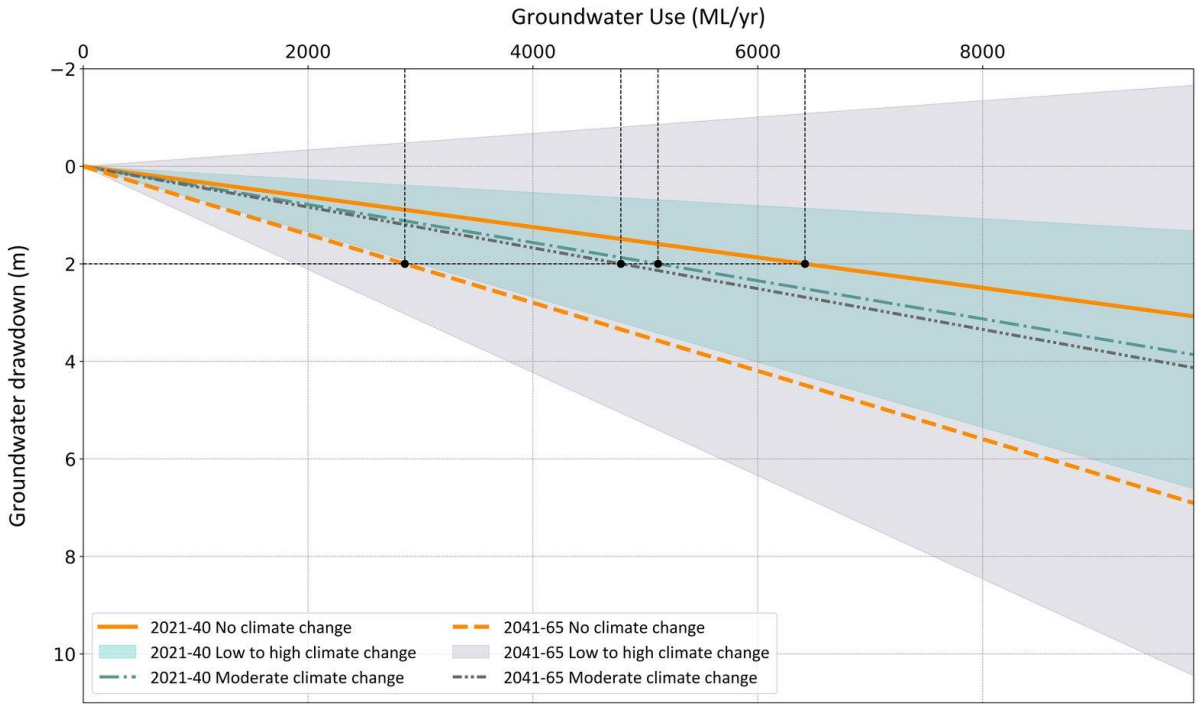

Figure A5-185. Plot for Upper Goulburn GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

UPPER MURRAY GMA

Table A5-217. Consumptive users synthesis Table A5-for Upper Murray GMA

	GMU					UPPER MURRAY GMA
Assessment area	Representative Bore					WRK053550
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations to 200 metres below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					7,674
	Licensed Entitlement (ML/yr)					3,496
	Licensed avg use (ML/yr)					815
Consumptive use metric	Consumptive users (bores)	Avg Use 510 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.1
					MCC (LCC to HCC)	3.0 (-0.39 to 4.1)
			2041-2065	Drawdown from baseline (m)	No CC	2.6
					MCC (LCC to HCC)	2.6 (0.63 to 6.3)
		PCV use	2021-2040	Drawdown from baseline (m)	No CC	2.7
					MCC (LCC to HCC)	3.5 (1.4 to 4.7)

		3,185 (ML/yr)	2041-2065	Drawdown from baseline (m)	No CC	2.6
					MCC (LCC to HCC)	4.8 (1.4 to 7.1)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,626
					MCC (HCC to LCC)	1,280 (984 to 2,880)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.04% (0.04% to 0.07%)
			2041-2065	Volume (ML/yr)	No CC	1,260
					MCC (HCC to LCC)	954 (656 to 2,555)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.03% (0.04% to 0.07%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,253
					MCC (HCC to LCC)	2,559 (1,969 to 5,759)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.07% (0.08% to 0.15%)
			2041-2065	Volume (ML/yr)	No CC	2,520
					MCC (HCC to LCC)	1,908 (1,311 to 5,111)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.06% (0.07% to 0.14%)

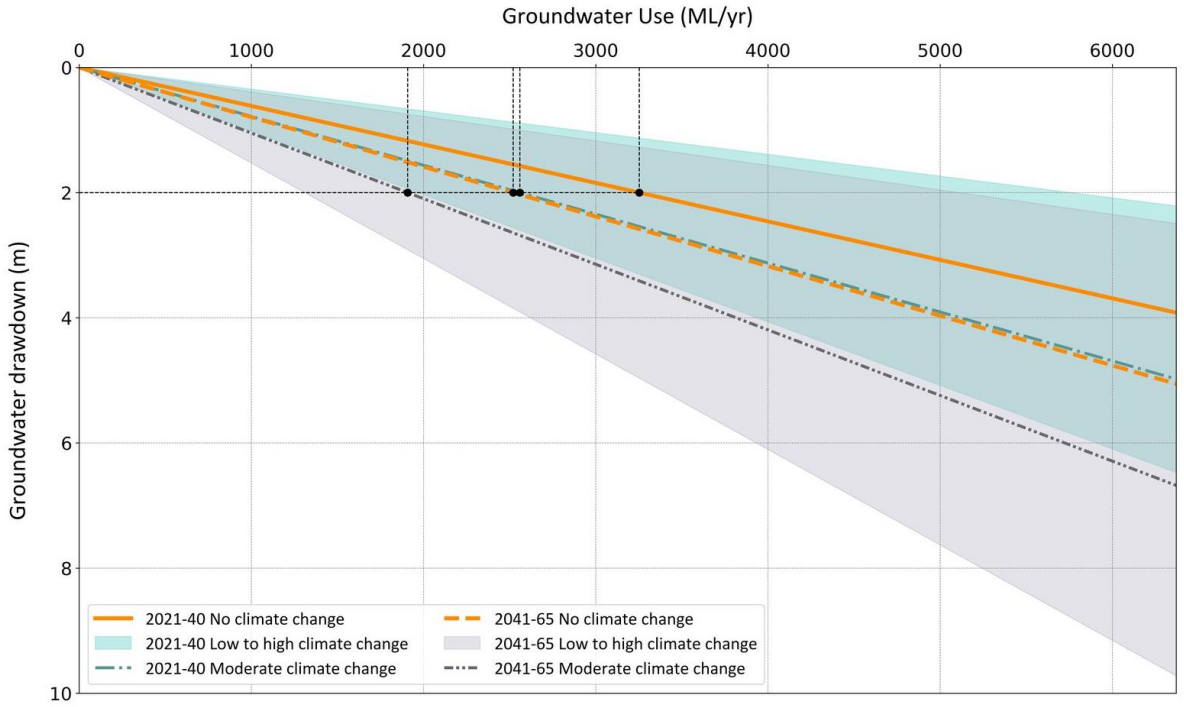

Figure A5-186. Plot for Upper Murray GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-218. Statewide drawdown use synthesis Table A5-for Upper Murray GMA

GMU					UPPER MURRAY GMA
Consumptive users (bores)	Avg Use 510 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.5
				MCC (LCC to HCC)	4.0 (0.88 to 5.4)
		2041-2065	Drawdown from baseline (m)	No CC	3.6
				MCC (LCC to HCC)	3.6 (1.8 to 7.3)
	PCV use 3,185 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	5.0
				MCC (LCC to HCC)	5.9 (3.5 to 7.9)
		2041-2065	Drawdown from baseline (m)	No CC	3.6
				MCC (LCC to HCC)	7.3 (2.4 to 11)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	966
				MCC (HCC to LCC)	824 (626 to 1,402)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.02% to 0.04%)
		2041-2065	Volume (ML/yr)	No CC	1,983
				MCC (HCC to LCC)	676 (435 to 1,855)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.02% to 0.05%)

	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,932
				MCC (HCC to LCC)	1,648 (1,252 to 2,804)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (0.05% to 0.07%)
		2041-2065	Volume (ML/yr)	No CC	3,967
				MCC (HCC to LCC)	1,352 (870 to 3,711)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (0.05% to 0.10%)

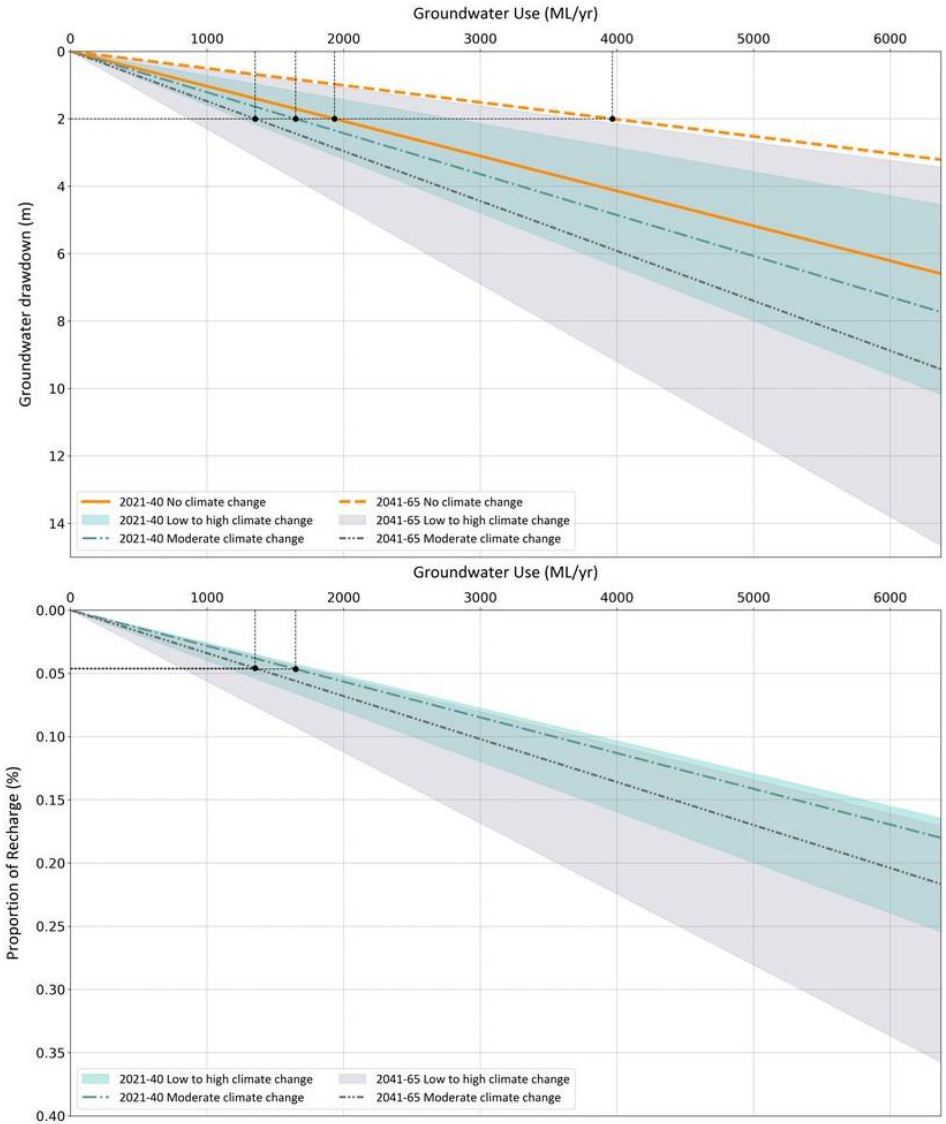

Figure A5-187. Upper Plot: Upper Murray GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Upper Murray GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-219. Terrestrial GDE synthesis Table A5-for Upper Murray GMA

GMU					UPPER MURRAY GMA
Terrestrial GDEs	Avg Use 510 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.89
				MCC (LCC to HCC)	1.6 (-1.64 to 2.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	1.3 (-0.59 to 4.8)
	PCV use 3,185 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.4
				MCC (LCC to HCC)	2.2 (0.16 to 3.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	3.4 (0.31 to 5.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	272
				MCC (HCC to LCC)	193 (135 to 900)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.01% to 0.02%)
		2041-2065	Volume (ML/yr)	No CC	115
				MCC (HCC to LCC)	124 (81 to 499)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.01%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,721
				MCC (HCC to LCC)	1,928 (1,353 to 9,002)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (0.05% to 0.23%)
		2041-2065	Volume (ML/yr)	No CC	1,147
				MCC (HCC to LCC)	1,242 (806 to 4,988)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.04% (0.05% to 0.13%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,442
				MCC (HCC to LCC)	3,857 (2,705 to 18,005)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.11% (0.11% to 0.47%)
		2041-2065	Volume (ML/yr)	No CC	2,293
				MCC (HCC to LCC)	2,484 (1,612 to 9,976)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.08% (0.09% to 0.27%)

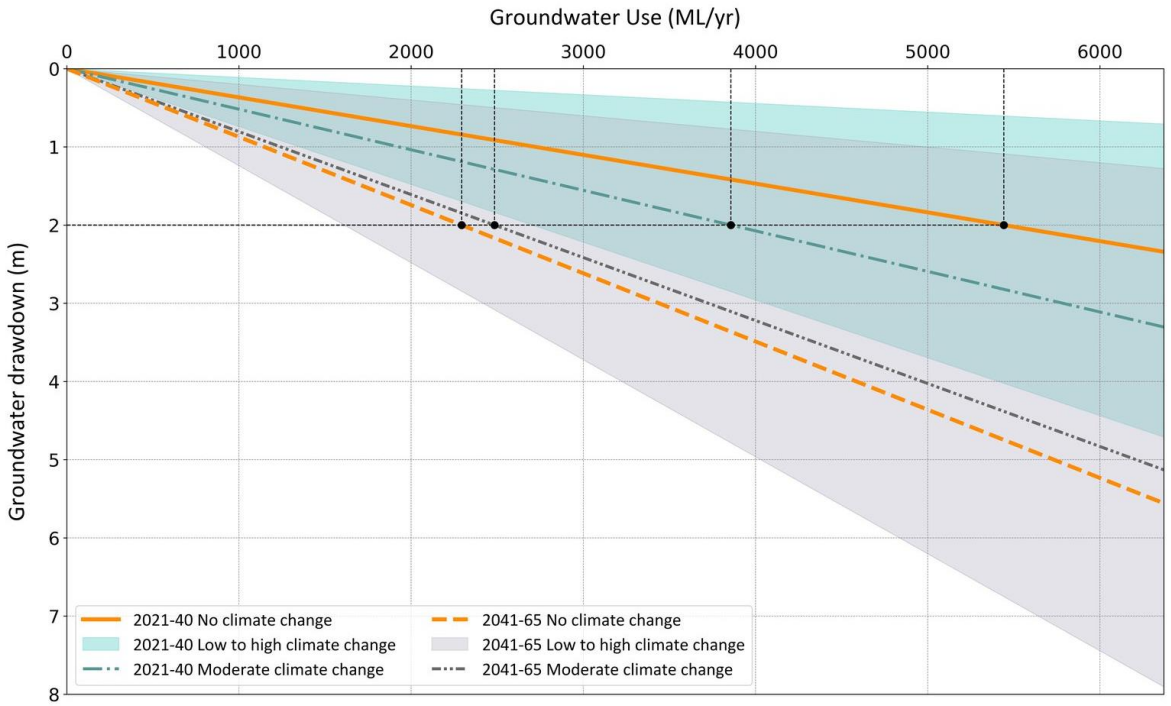

Figure A5-188. Plot for Upper Murray GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-220. Waterways GDE synthesis Table A5-for Upper Murray GMA

GMU					UPPER MURRAY GMA
Waterway GDEs	Avg Use 510 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.67
				MCC (LCC to HCC)	-1.12 (-4.13 to 0.02)
		2041-2065	Drawdown from baseline (m)	No CC	-1.38
				MCC (LCC to HCC)	-1.38 (-3.02 to 1.7)
	PCV use 3,185 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.05
				MCC (LCC to HCC)	-0.45 (-2.22 to 0.73)
		2041-2065	Drawdown from baseline (m)	No CC	-1.38
				MCC (LCC to HCC)	0.65 (-2.23 to 2.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-824.13
				MCC (HCC to LCC)	-32047.56 (-274.08 to 436)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-0.91% (-0.01% to 0.02%)
		2041-2065	Volume (ML/yr)	No CC	98
				MCC (HCC to LCC)	401 (-325.17 to 145)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (-0.01% to 0.01%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-8241.26
				MCC (HCC to LCC)	-320475.59 (-2740.77 to 4,363)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-9.06% (-0.07% to 0.17%)
		2041-2065	Volume (ML/yr)	No CC	982
				MCC (HCC to LCC)	4,011 (-3251.67 to 1,450)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.14% (-0.09% to 0.08%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-16482.53
				MCC (HCC to LCC)	-640951.18 (-5481.55 to 8,727)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-18.11% (-0.14% to 0.35%)
		2041-2065	Volume (ML/yr)	No CC	1,964
				MCC (HCC to LCC)	8,022 (-6503.34 to 2,899)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.27% (-0.17% to 0.16%)

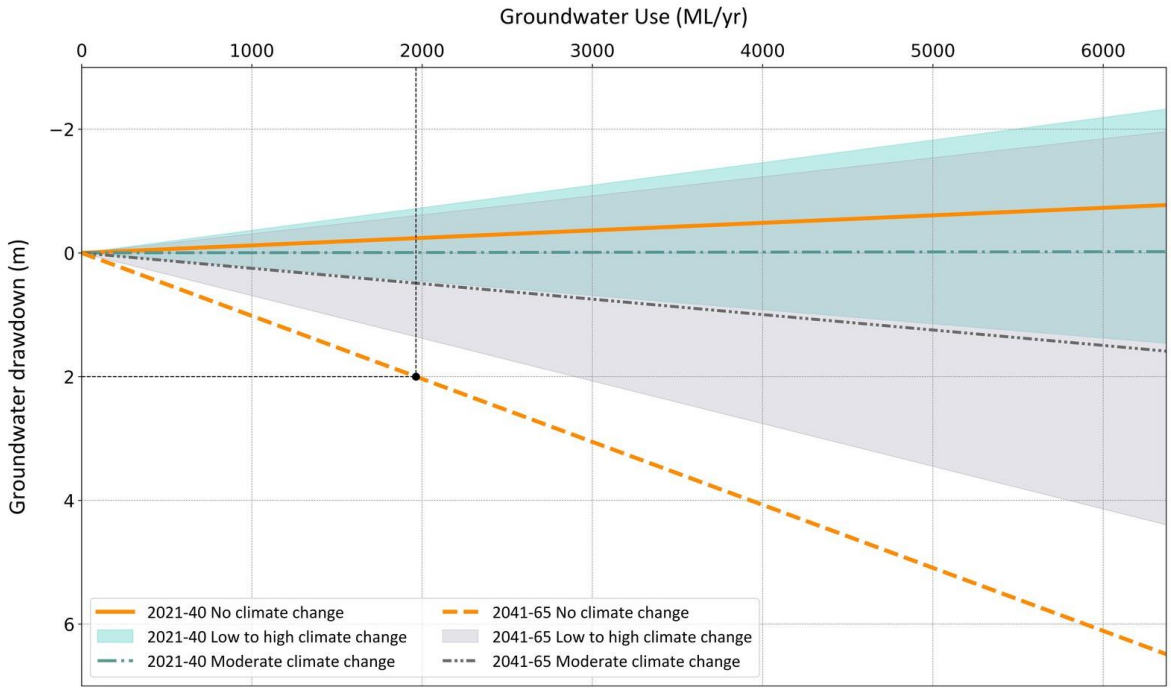

Figure A5-189. Plot for Upper Murray GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-221. Stream gauge results for Upper Murray GMA

				Upper Murray GMA
Stream gauge/Catchment:				**401202 - Mitta Mitta River @ Mitta Mitta (Regulated)**
Base flow index (1975-2020)				**0.6**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	176,045 (147,409 to 225,245)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-16,144 (-44,780 to 33,056)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	160,285 (116,466 to 218,134)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-31,903 (-75,722 to 25,945)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.002% (0.003% to 0.002%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.063% (0.075% to 0.049%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.003% (0.004% to 0.002%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.069% (0.095% to 0.051%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	125.78 (105.32 to 160.93)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-12 (-32 to 24)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	114.52 (83.21 to 155.85)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-23 (-54 to 19)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.009% (0.011% to 0.007%)
		PCV use (ML/yr)	MCC (LCC to HCC)	0.242% (0.289% to 0.189%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.010% (0.014% to 0.007%)

		PCV use (ML/yr)	MCC (LCC to HCC)	0.266% (0.365% to 0.195%)
Stream gauge/Catchment:		**401210 - Snowy Creek @ Below Granite Flat (Unregulated)**		
Base flow index (1975-2020)		**0.7**		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	161,358 (135,111 to 206,454)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-26,824 (-53,071 to 18,272)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	146,913 (106,750 to 199,936)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-41,268 (-81,432 to 11,754)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (HCC to LCC)	NA
		PCV use (ML/yr)	MCC (HCC to LCC)	NA
	2065	Current use (ML/yr)	MCC (HCC to LCC)	NA
		PCV use (ML/yr)	MCC (HCC to LCC)	NA
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	97.54 (81.67 to 124.80)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	88.81 (64.53 to 120.86)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (HCC to LCC)	NA
		PCV use (ML/yr)	MCC (HCC to LCC)	NA
	2065	Current use (ML/yr)	MCC (HCC to LCC)	NA
		PCV use (ML/yr)	MCC (HCC to LCC)	NA

Table A5-222. Wetlands GDE synthesis Table A5-for Upper Murray GMA

GMU					UPPER MURRAY GMA
Wetlands GDEs	Avg Use 510 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	1.9 (-0.58 to 2.7)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.1 (0.18 to 3.6)
	PCV use 3,185 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.0
				MCC (LCC to HCC)	3.3 (2.1 to 4.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	3.4 (0.15 to 6.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	155
				MCC (HCC to LCC)	144 (102 to 228)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.00% (0.00% to 0.01%)
		2041-2065	Volume (ML/yr)	No CC	3,338
				MCC (HCC to LCC)	149 (74 to 1,475)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.01% (0.00% to 0.04%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,550
				MCC (HCC to LCC)	1,438 (1,025 to 2,281)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.04% (0.04% to 0.06%)
		2041-2065	Volume (ML/yr)	No CC	33,382
				MCC (HCC to LCC)	1,488 (744 to 14,748)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.05% (0.04% to 0.40%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,099
				MCC (HCC to LCC)	2,876 (2,049 to 4,561)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.08% (0.08% to 0.12%)
		2041-2065	Volume (ML/yr)	No CC	66,763
				MCC (HCC to LCC)	2,977 (1,488 to 29,496)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.10% (0.08% to 0.79%)

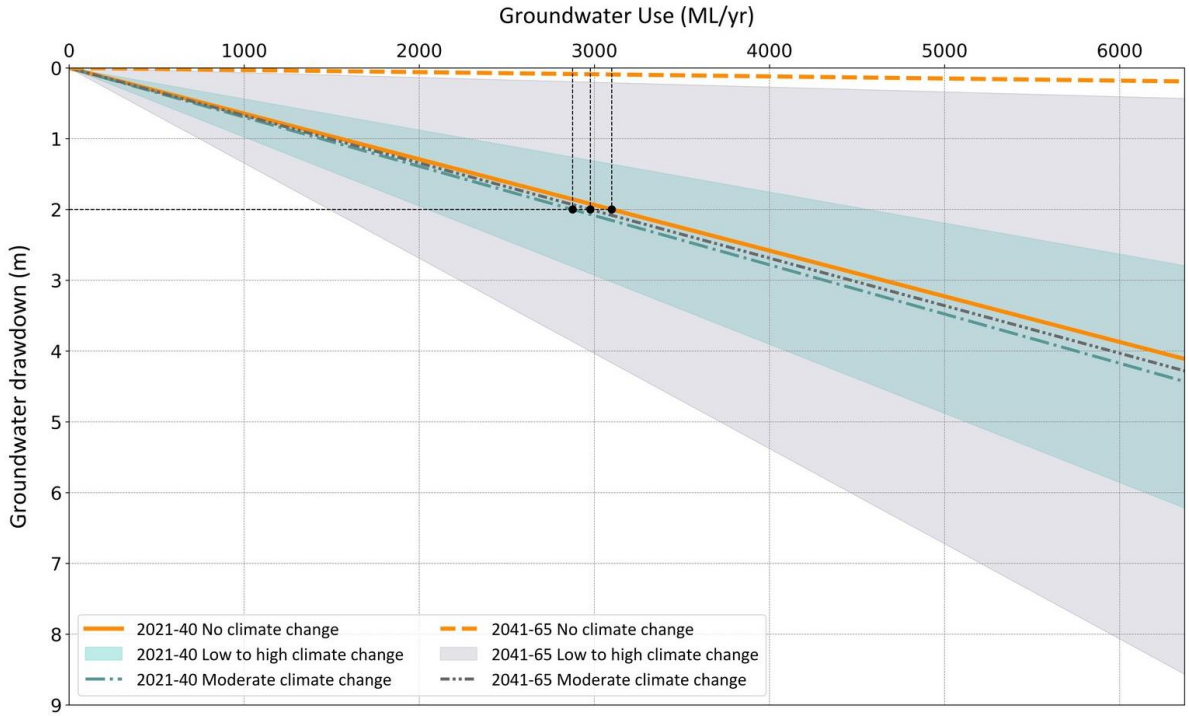

Figure A5-190. Plot for Upper Murray GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

UPPER OVENS WSPA

Table A5-223. Consumptive users synthesis Table A5-for Upper Ovens WSPA

Assessment area	**GMU**					**UPPER OVENS WSPA**
	Representative Bore					83,232
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					TBC to TBC
Catchment	Permissible Consumptive Volume (ML/yr)					NA
	Licensed Entitlement (ML/yr)					3,625
	Licensed avg use (ML/yr)					1,317
Consumptive use metric	**Consumptive users (bores)**	Avg Use 978 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.2
					MCC (LCC to HCC)	1.8 (-1.05 to 2.8)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	1.4 (-0.09 to 4.5)
		PCV use 3,498 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
					MCC (LCC to HCC)	2.1 (0.66 to 3.1)
			2041-2065	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	3.0 (0.41 to 5.0)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,044
					MCC (HCC to LCC)	2,294 (1,648 to 6,824)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.24% (0.21% to 0.59%)
			2041-2065	Volume (ML/yr)	No CC	1,767
					MCC (HCC to LCC)	1,634 (1,008 to 6,753)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.20% (0.18% to 0.64%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,088
					MCC (HCC to LCC)	4,589 (3,296 to 13,648)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.48% (0.43% to 1.17%)
			2041-2065	Volume (ML/yr)	No CC	3,534
					MCC (HCC to LCC)	3,268 (2,015 to 13,505)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	0.39% (0.36% to 1.27%)

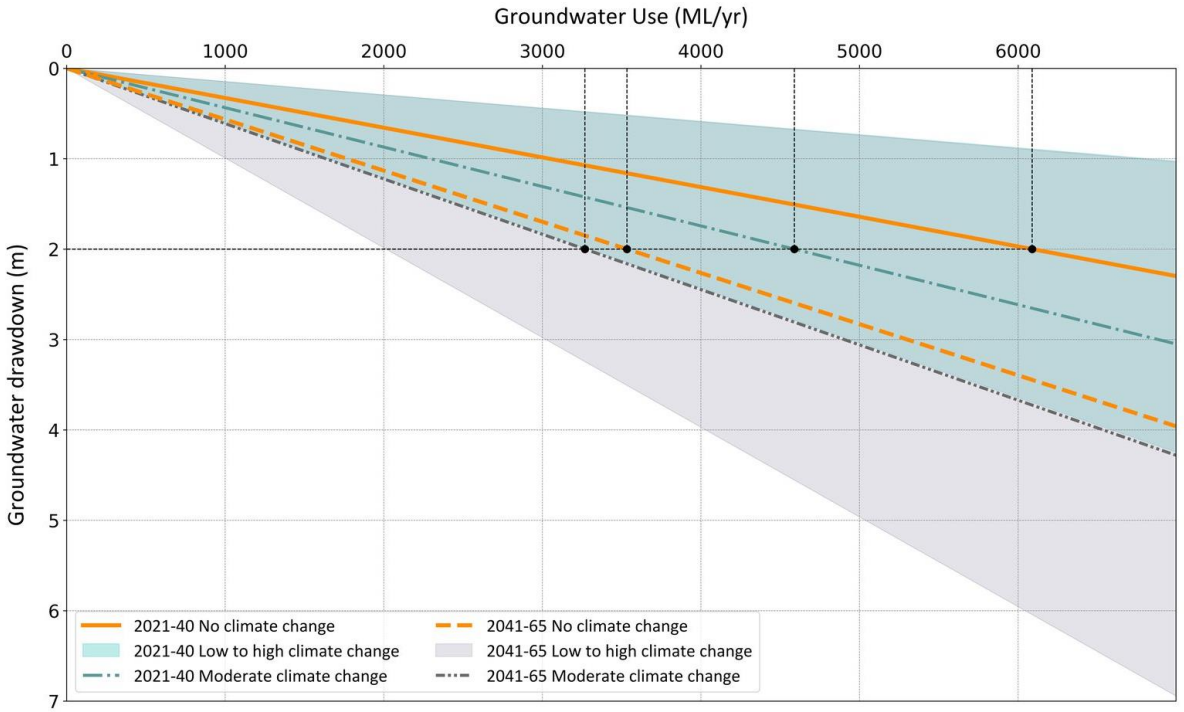

Figure A5-191. Plot for Upper Ovens WSPA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-224. Statewide drawdown use synthesis Table A5-for Upper Ovens WSPA

GMU					UPPER OVENS WSPA
Consumptive users (bores)	Avg Use 978 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.3
				MCC (LCC to HCC)	3.7 (0.84 to 5.1)
		2041-2065	Drawdown from baseline (m)	No CC	3.5
				MCC (LCC to HCC)	3.5 (1.9 to 6.9)
	PCV use 3,498 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.7
				MCC (LCC to HCC)	5.6 (3.4 to 7.5)
		2041-2065	Drawdown from baseline (m)	No CC	3.5
				MCC (LCC to HCC)	7.1 (2.5 to 11)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,131
				MCC (HCC to LCC)	963 (732 to 1,636)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.10% (0.09% to 0.14%)
		2041-2065	Volume (ML/yr)	No CC	2,247
				MCC (HCC to LCC)	754 (492 to 1,925)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.09% (0.09% to 0.18%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,263
				MCC (HCC to LCC)	1,926 (1,463 to 3,272)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.20% (0.19% to 0.28%)
		2041-2065	Volume (ML/yr)	No CC	4,495
				MCC (HCC to LCC)	1,508 (984 to 3,850)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.18% (0.17% to 0.36%)

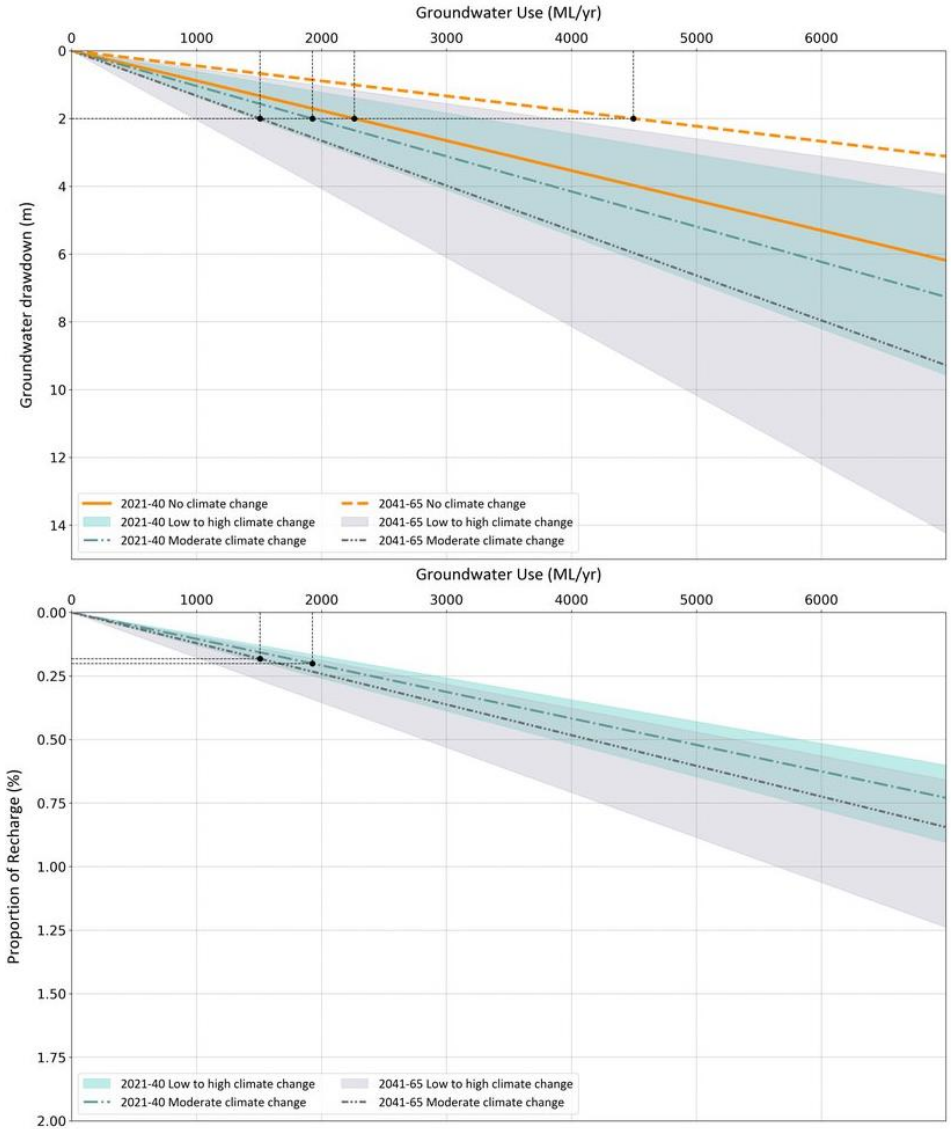

Figure A5-192. Upper Plot: Upper Ovens WSPA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Upper Ovens WSPA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-225. Terrestrial GDE synthesis Table A5-for Upper Ovens WSPA

GMU					UPPER OVENS WSPA
Terrestrial GDEs	Avg Use 978 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	1.9 (-0.91 to 2.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	1.5 (-0.01 to 4.6)
	PCV use 3,498 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.1 (0.73 to 2.9)
		2041-2065	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	3.0 (0.69 to 4.8)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	296
				MCC (HCC to LCC)	229 (171 to 584)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.02% to 0.05%)
		2041-2065	Volume (ML/yr)	No CC	196
				MCC (HCC to LCC)	157 (103 to 456)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.02% (0.02% to 0.04%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,962
				MCC (HCC to LCC)	2,290 (1,707 to 5,844)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.24% (0.22% to 0.50%)
		2041-2065	Volume (ML/yr)	No CC	1,956
				MCC (HCC to LCC)	1,572 (1,028 to 4,561)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.19% (0.18% to 0.43%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,923
				MCC (HCC to LCC)	4,581 (3,414 to 11,689)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.48% (0.44% to 1.00%)
		2041-2065	Volume (ML/yr)	No CC	3,912
				MCC (HCC to LCC)	3,145 (2,056 to 9,122)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.38% (0.36% to 0.86%)

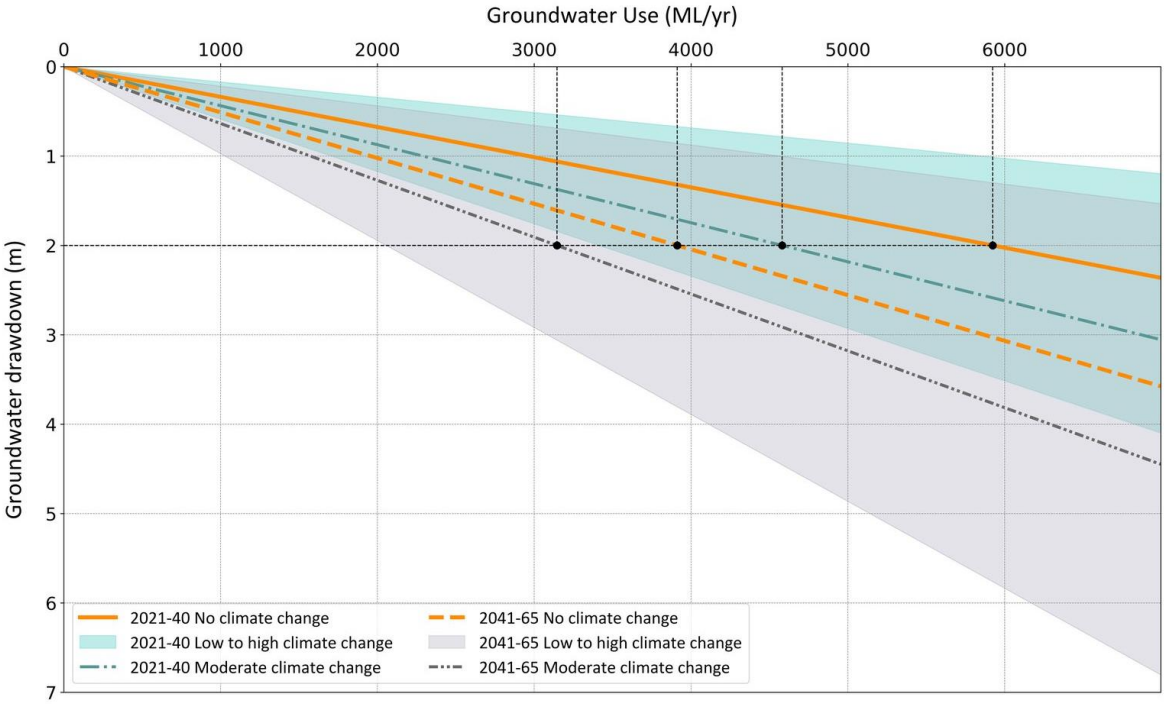

Figure A5-193. Plot for Upper Ovens WSPA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-226. Waterways GDE synthesis Table A5-for Upper Ovens WSPA

GMU					UPPER OVENS WSPA
Waterway GDEs	Avg Use 978 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-2.15
				MCC (LCC to HCC)	-1.66 (-4.45 to -0.68)
		2041-2065	Drawdown from baseline (m)	No CC	-1.87
				MCC (LCC to HCC)	-1.87 (-3.30 to 0.92)
	PCV use 3,498 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.99
				MCC (LCC to HCC)	-1.54 (-2.81 to -0.74)
		2041-2065	Drawdown from baseline (m)	No CC	-1.87
				MCC (LCC to HCC)	-0.45 (-2.49 to 0.99)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-329.67
				MCC (HCC to LCC)	-462.61 (-1459.52 to -211.08)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-0.05% (-0.19% to -0.02%)
		2041-2065	Volume (ML/yr)	No CC	110
				MCC (HCC to LCC)	5,362 (-288.35 to 334)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.65% (-0.03% to 0.06%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-3296.67
				MCC (HCC to LCC)	-4626.06 (-14595.15 to -2110.82)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-0.48% (-1.89% to -0.18%)
		2041-2065	Volume (ML/yr)	No CC	1,096
				MCC (HCC to LCC)	53,617 (-2883.55 to 3,343)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.47% (-0.27% to 0.59%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-6593.34
				MCC (HCC to LCC)	-9252.13 (-29190.31 to -4221.64)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-0.96% (-3.77% to -0.36%)
		2041-2065	Volume (ML/yr)	No CC	2,192
				MCC (HCC to LCC)	107,234 (-5767.10 to 6,687)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.94% (-0.54% to 1.18%)

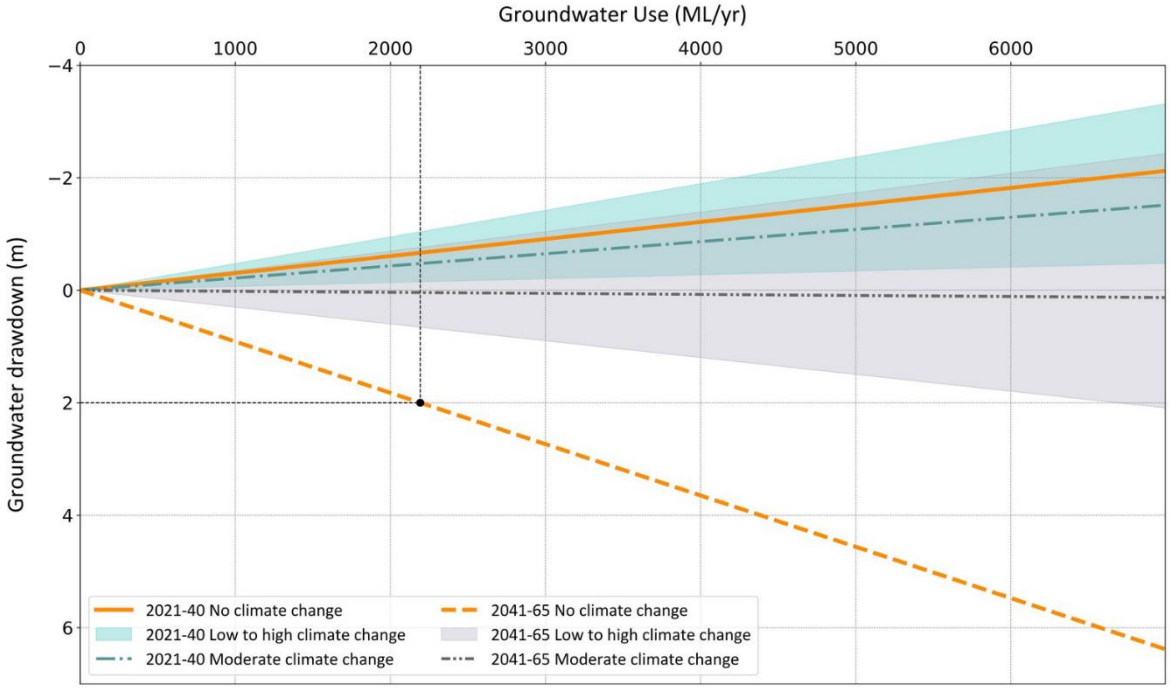

Figure A5-194. Plot for Upper Ovens WSPA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-227. Stream gauge results for Upper Ovens WSPA

		Upper Ovens WSPA		
Stream gauge/Catchment:		403241 - Ovens River @ Peechelba (Regulated)		
Base flow index (1975-2020)		0.59		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	1,024,472 (880,908 to 1,282,887)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-124,039 (-267,603 to 134,376)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	968,195 (644,315 to 1,162,293)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-180,316 (-504,196 to 13,782)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.428% (0.342% to 0.498%)
		PCV use (ML/yr)	MCC (LCC to HCC)	1.54% (1.23% to 1.79%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.453% (0.377% to 0.680%)
		PCV use (ML/yr)	MCC (LCC to HCC)	1.63% (1.36% to 2.45%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	203.32 (174.82 to 254.60)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-25 (-53 to 27)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	192.15 (127.87 to 230.67)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-36 (-100 to 3)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	2,156% (1,721% to 2,507%)
		PCV use (ML/yr)	MCC (LCC to HCC)	7,764% (6,200% to 9,029%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	2,281% (1,900% to 3,427%)
		PCV use (ML/yr)	MCC (LCC to HCC)	8,215% (6,843% to 12,345%)
Stream gauge/Catchment:		403244 - Ovens River @ Harrietville (Unregulated)		
Base flow index (1975-2020)		0.67		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	63,092 (54,250 to 79,006)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-7,639 (-16,480 to 8,276)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	59,626 (39,680 to 71,580)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-11,105 (-31,051 to 849)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	NA	NA
		PCV use (ML/yr)	NA	NA
	2065	Current use (ML/yr)	NA	NA
		PCV use (ML/yr)	NA	NA
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	26.15 (22.49 to 32.75)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	24.72 (16.45 to 29.67)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	NA	NA
		PCV use (ML/yr)	NA	NA
	2065	Current use (ML/yr)	NA	NA
		PCV use (ML/yr)	NA	NA

Table A5-228. Wetlands GDE synthesis Table A5-for Upper Ovens WSPA

GMU					UPPER OVENS WSPA
Wetlands GDEs	Avg Use 978 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.32
				MCC (LCC to HCC)	-0.06 (-2.87 to 0.85)
		2041-2065	Drawdown from baseline (m)	No CC	-0.87
				MCC (LCC to HCC)	-0.87 (-1.75 to 1.6)
	PCV use 3,498 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.69
				MCC (LCC to HCC)	1.3 (-0.60 to 3.1)
		2041-2065	Drawdown from baseline (m)	No CC	-0.87
				MCC (LCC to HCC)	0.83 (-3.50 to 5.3)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,217
				MCC (HCC to LCC)	563 (-555.82 to 195)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.06% (-0.05% to 0.03%)
		2041-2065	Volume (ML/yr)	No CC	316
				MCC (HCC to LCC)	-11443.84 (-133.34 to 126)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-1.38% (-0.01% to 0.02%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	12,173
				MCC (HCC to LCC)	5,629 (-5558.20 to 1,953)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.59% (-0.48% to 0.25%)
		2041-2065	Volume (ML/yr)	No CC	3,161
				MCC (HCC to LCC)	-114438.45 (-1333.44 to 1,259)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-13.81% (-0.13% to 0.22%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	24,345
				MCC (HCC to LCC)	11,259 (-11116.41 to 3,907)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.17% (-0.95% to 0.50%)
		2041-2065	Volume (ML/yr)	No CC	6,323
				MCC (HCC to LCC)	-228876.90 (-2666.89 to 2,517)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-27.63% (-0.25% to 0.45%)

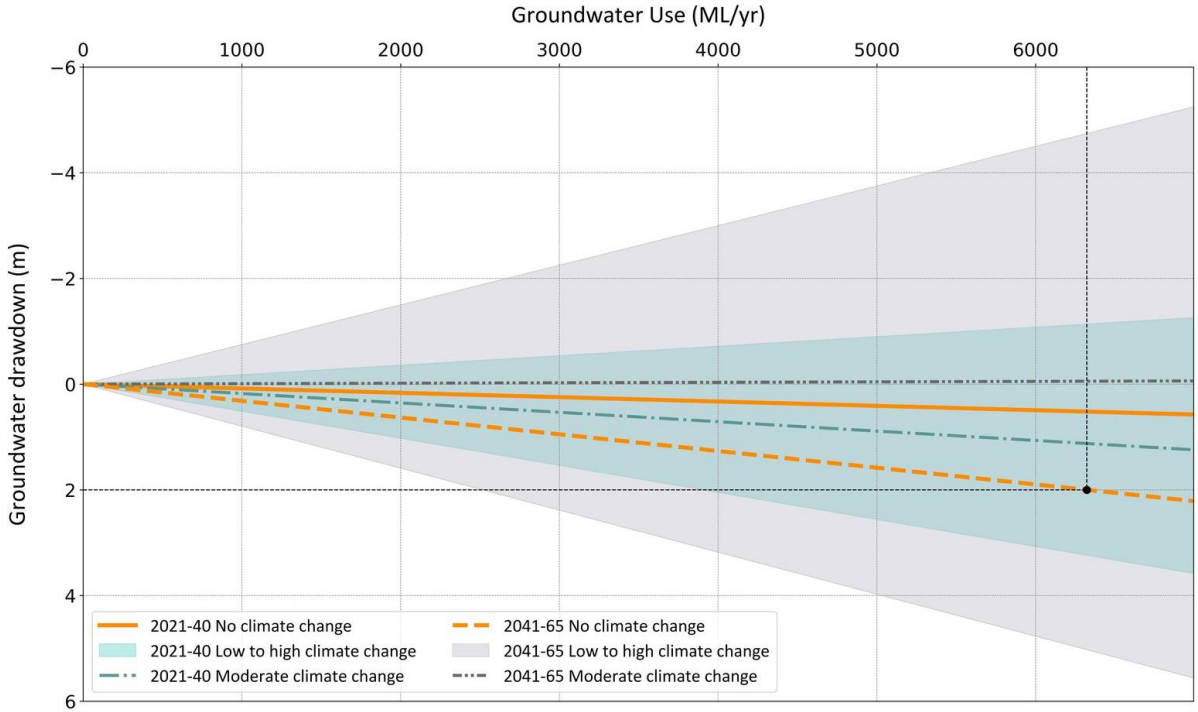

Figure A5-195. Plot for Upper Ovens WSPA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

WA DE LOCK GMA

Table A5-229. Consumptive users synthesis Table A5-for Wa De Lock GMA

	GMU	WA DE LOCK GMA
Assessment area	Representative Bore	86,726
	Aquifer	Unconfined
	Water system depth boundary (m below natural surface)	Zone 1 – All formations from the surface to 25 metres below the surface. Zone 2 – All formations from surface to 25 metres below the surface. Zone 3 – All formations from surface to 25 metres below the surface.

Catchment	Permissible Consumptive Volume (ML/yr)					30,375
	Licensed Entitlement (ML/yr)					29,131
	Licensed avg use (ML/yr)					7,750
Consumptive use metric	**Consumptive users (bores)**	Avg Use 6,818 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
					MCC (LCC to HCC)	1.3 (0.32 to 1.7)
			2041-2065	Drawdown from baseline (m)	No CC	1.3
					MCC (LCC to HCC)	1.3 (0.78 to 2.4)
		PCV use 22,401 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.4
					MCC (LCC to HCC)	1.6 (1.1 to 2.0)
			2041-2065	Drawdown from baseline (m)	No CC	1.3
					MCC (LCC to HCC)	2.1 (1.3 to 2.8)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	20,086
					MCC (HCC to LCC)	18,291 (15,262 to 25,533)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	16% (16% to 19%)
			2041-2065	Volume (ML/yr)	No CC	16,657
					MCC (HCC to LCC)	13,541 (10,522 to 20,078)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	15% (16% to 18%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	40,172
					MCC (HCC to LCC)	36,583 (30,524 to 51,066)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	33% (33% to 38%)
			2041-2065	Volume (ML/yr)	No CC	33,314
					MCC (HCC to LCC)	27,082 (21,044 to 40,156)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	31% (32% to 36%)

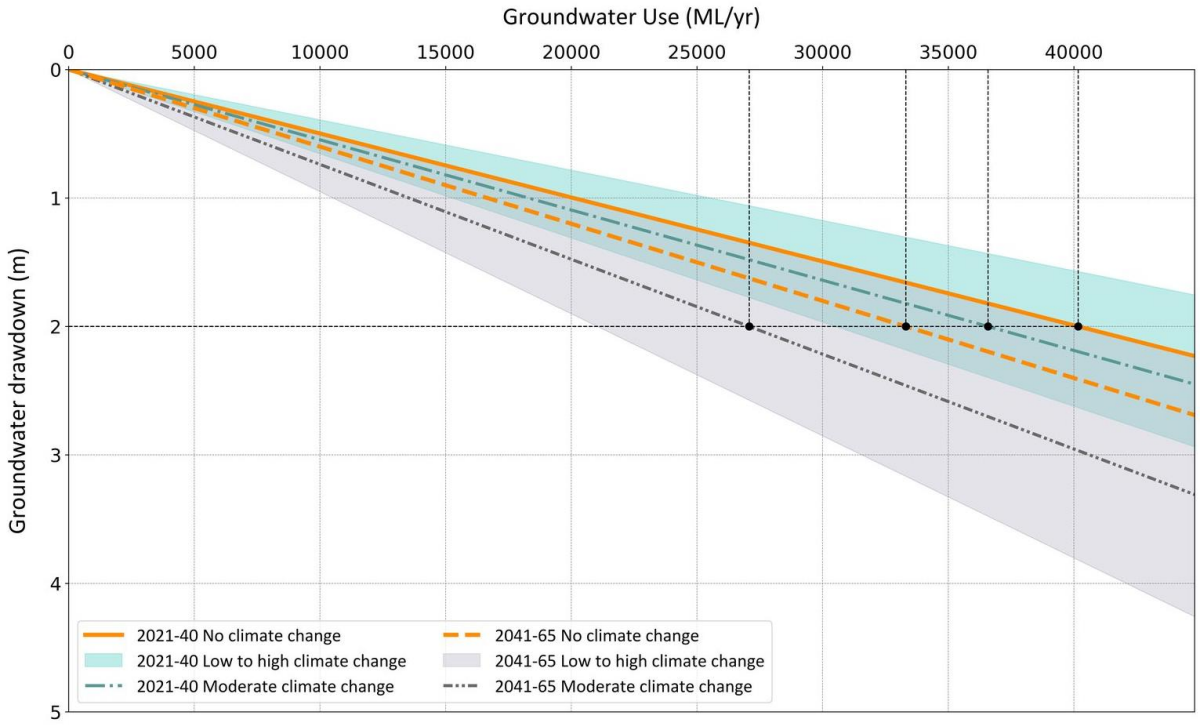

Figure A5-196. Plot for Wa De Lock GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-230. Statewide drawdown use synthesis Table A5-for Wa De Lock GMA

GMU					WA DE LOCK GMA
Consumptive users (bores)	Avg Use 6,818 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.0
				MCC (LCC to HCC)	1.2 (0.25 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.2 (0.70 to 2.3)
	PCV use 22,401 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.3
				MCC (LCC to HCC)	1.5 (0.99 to 1.9)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	2.0 (1.1 to 2.8)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	21,782
				MCC (HCC to LCC)	19,536 (15,916 to 28,590)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	17.60% (17.20% to 21.51%)
		2041-2065	Volume (ML/yr)	No CC	17,317

				MCC (HCC to LCC)	14,471 (10,907 to 23,133)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	16.51% (16.60% to 20.59%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	43,564
				MCC (HCC to LCC)	39,072 (31,832 to 57,180)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	35.20% (34.40% to 43.02%)
		2041-2065	Volume (ML/yr)	No CC	34,635
				MCC (HCC to LCC)	28,943 (21,814 to 46,265)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	33.02% (33.20% to 41.18%)

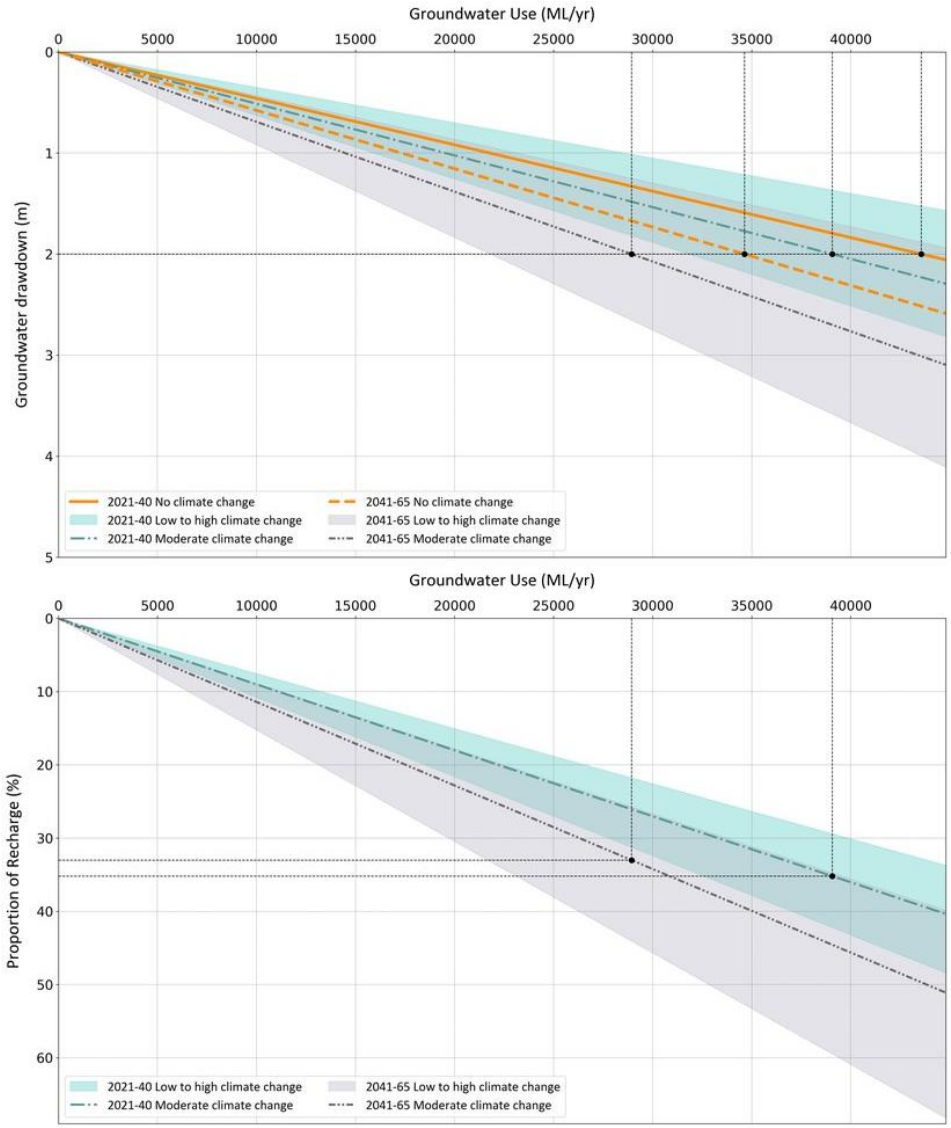

Figure A5-197. Upper Plot: Wa De Lock GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Wa De Lock GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-231. Terrestrial GDE synthesis Table A5-for Wa De Lock GMA

GMU					WA DE LOCK GMA
Terrestrial GDEs	Avg Use 6,818 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.80
				MCC (LCC to HCC)	0.92 (0.08 to 1.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.95
				MCC (LCC to HCC)	0.95 (0.45 to 2.0)
	PCV use 22,401 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.2 (0.81 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.95
				MCC (LCC to HCC)	1.7 (1.0 to 2.2)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,569
				MCC (HCC to LCC)	2,390 (2,004 to 3,300)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.15% (2.17% to 2.48%)
		2041-2065	Volume (ML/yr)	No CC	2,618
				MCC (HCC to LCC)	1,632 (1,302 to 2,307)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.86% (1.98% to 2.05%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	25,694
				MCC (HCC to LCC)	23,902 (20,039 to 32,999)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	21.53% (21.66% to 24.83%)
		2041-2065	Volume (ML/yr)	No CC	26,177
				MCC (HCC to LCC)	16,319 (13,016 to 23,066)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	18.62% (19.81% to 20.53%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	51,389
				MCC (HCC to LCC)	47,803 (40,079 to 65,997)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	43.06% (43.31% to 49.66%)
		2041-2065	Volume (ML/yr)	No CC	52,354
				MCC (HCC to LCC)	32,639 (26,031 to 46,131)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	37.23% (39.62% to 41.07%)

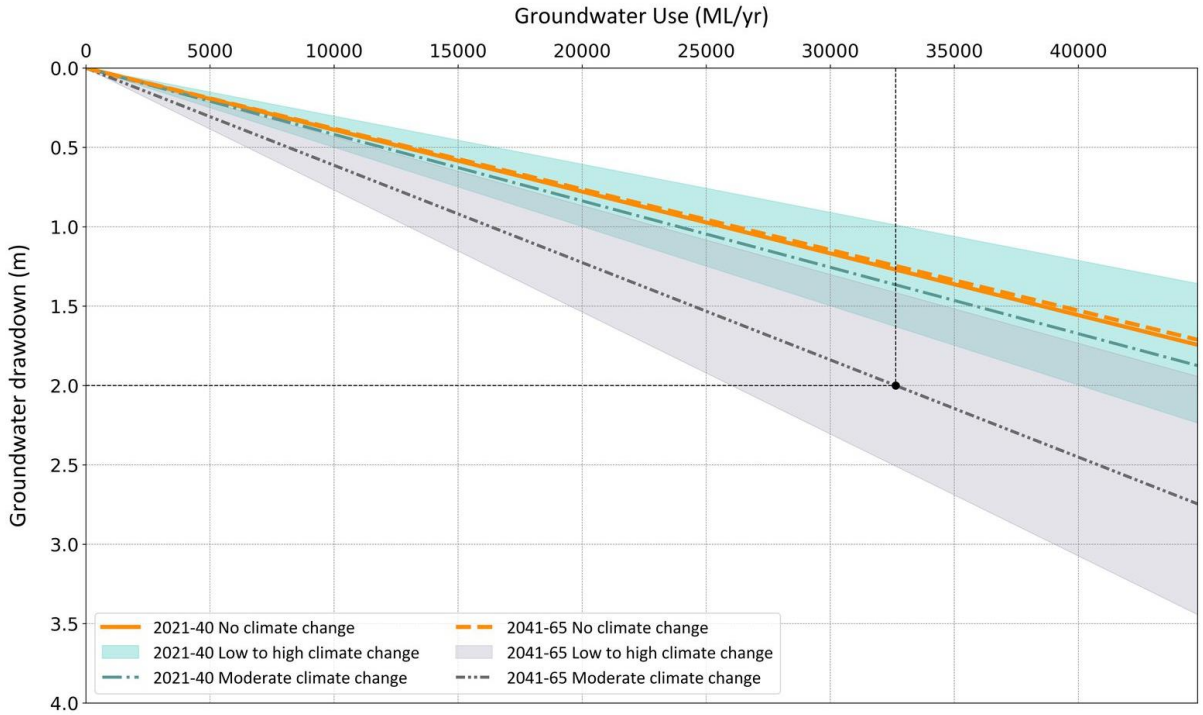

Figure A5-198. Plot for Wa De Lock GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-232. Waterways GDE synthesis Table A5-for Wa De Lock GMA

					WA DE LOCK GMA
Waterway GDEs	Avg Use 6,818 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.26
				MCC (LCC to HCC)	0.35 (-0.61 to 0.87)
		2041-2065	Drawdown from baseline (m)	No CC	0.51
				MCC (LCC to HCC)	0.51 (-0.09 to 1.7)
	PCV use 22,401 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.70
				MCC (LCC to HCC)	0.81 (0.36 to 1.2)
		2041-2065	Drawdown from baseline (m)	No CC	0.51
				MCC (LCC to HCC)	1.8 (1.1 to 2.4)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,064
				MCC (HCC to LCC)	2,753 (2,124 to 4,646)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.48% (2.30% to 3.50%)
		2041-2065	Volume (ML/yr)	No CC	1,384
				MCC (HCC to LCC)	1,323 (1,088 to 1,834)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	1.51% (1.63% to 1.66%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	30,645
				MCC (HCC to LCC)	27,534 (21,244 to 46,464)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	24.80% (22.96% to 34.96%)
		2041-2065	Volume (ML/yr)	No CC	13,841
				MCC (HCC to LCC)	13,228 (10,876 to 18,337)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	15.09% (16.32% to 16.55%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	61,290
				MCC (HCC to LCC)	55,069 (42,487 to 92,927)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	49.61% (45.91% to 69.92%)
		2041-2065	Volume (ML/yr)	No CC	27,683
				MCC (HCC to LCC)	26,456 (21,752 to 36,675)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	30.18% (32.65% to 33.11%)

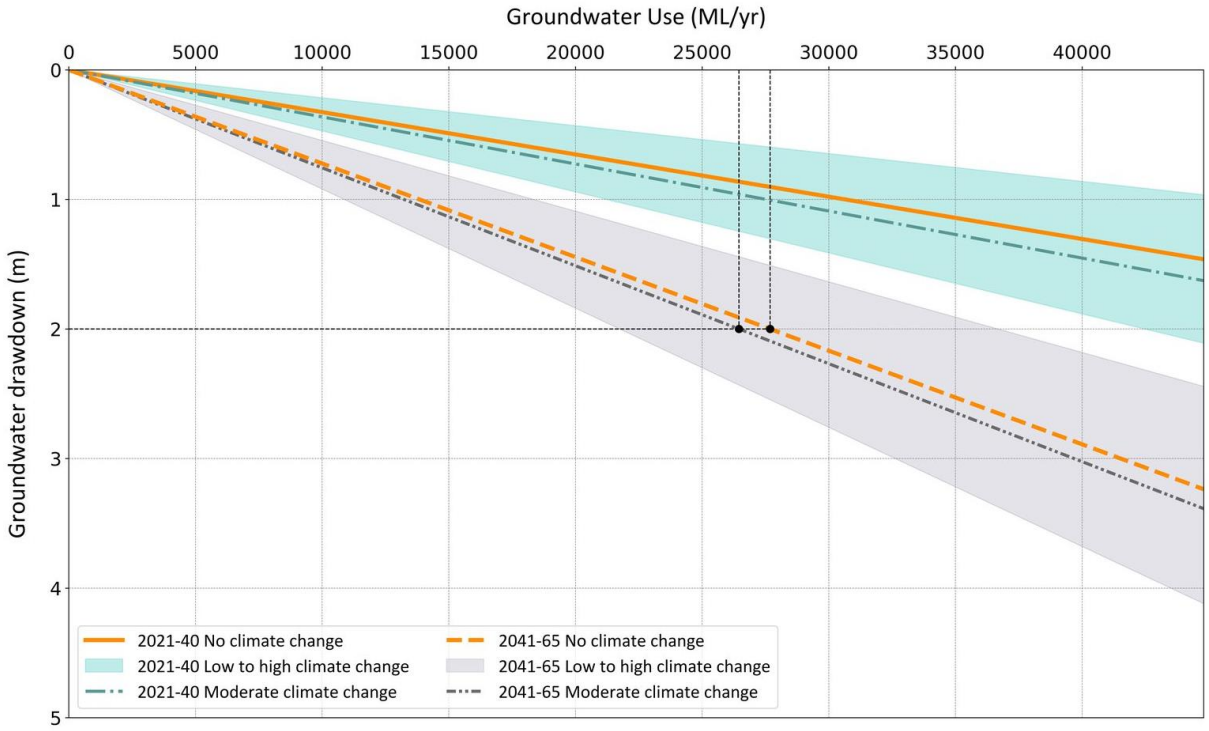

Figure A5-199. Plot for Wa De Lock GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-233. Stream gauge results for Wa De Lock GMA

				Wa De Lock GMA
Stream gauge/Catchment:				**225234 - Avon River @ Clydebank (Chinn's Bridge) (Unregulated)**
Base flow index (1975-2020)				**0.44**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	89,825 (71,544 to 108,996)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-8,993 (-27,274 to 10,178)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	85,082 (57,413 to 100,794)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-13,736 (-41,405 to 1,976)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	2.63% (2.17% to 3.30%)
		PCV use (ML/yr)	MCC (LCC to HCC)	12.16% (10.02% to 15.26%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	2.77% (2.34% to 4.11%)
		PCV use (ML/yr)	MCC (LCC to HCC)	12.83% (10.83% to 19.02%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	16.10 (12.82 to 19.54)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	15.25 (10.29 to 18.07)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	14,664% (12,085% to 18,411%)
		PCV use (ML/yr)	MCC (LCC to HCC)	67,825% (55,896% to 85,156%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	15,481% (13,068% to 22,942%)
		PCV use (ML/yr)	MCC (LCC to HCC)	71,606% (60,444% to 106,115%)
Stream gauge/Catchment:				**225247 - Macalister River @ Riverslea (Regulated)**
Base flow index (1975-2020)				**0.58**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	123,624 (98,464 to 150,008)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-12,376 (-37,536 to 14,008)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	117,096 (79,016 to 138,720)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-18,904 (-56,984 to 2,720)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	1.6% (2.0% to 1.3%)
		PCV use (ML/yr)	MCC (LCC to HCC)	4.9% (6.1% to 4.0%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	1.7% (2.5% to 1.4%)
		PCV use (ML/yr)	MCC (LCC to HCC)	5.2% (7.6% to 4.4%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	45.55 (36.28 to 55.27)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-5 (-14 to 5)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	43.14 (29.11 to 51.11)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-7 (-21 to 1)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	4,305% (5,405% to 3,548%)
		PCV use (ML/yr)	MCC (LCC to HCC)	13,253% (16,639% to 10,922%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	4,545% (6,735% to 3,836%)
		PCV use (ML/yr)	MCC (LCC to HCC)	13,992% (20,734% to 11,810%)

Table A5-234. Wetlands GDE synthesis Table A5-for Wa De Lock GMA

GMU					WA DE LOCK GMA
Wetlands GDEs	Avg Use 6,818 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.56
				MCC (LCC to HCC)	0.66 (-0.01 to 1.00)
		2041-2065	Drawdown from baseline (m)	No CC	0.67
				MCC (LCC to HCC)	0.67 (0.24 to 1.6)
	PCV use 22,401 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.75
				MCC (LCC to HCC)	0.78 (0.58 to 0.94)
		2041-2065	Drawdown from baseline (m)	No CC	0.67
				MCC (LCC to HCC)	1.1 (0.74 to 1.4)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,582
				MCC (HCC to LCC)	3,434 (2,950 to 4,552)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.09% (3.19% to 3.43%)
		2041-2065	Volume (ML/yr)	No CC	7,929
				MCC (HCC to LCC)	2,324 (1,880 to 3,193)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.65% (2.84% to 2.86%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	35,824
				MCC (HCC to LCC)	34,342 (29,496 to 45,519)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	30.94% (31.88% to 34.25%)
		2041-2065	Volume (ML/yr)	No CC	79,293
				MCC (HCC to LCC)	23,238 (18,803 to 31,932)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	26.51% (28.43% to 28.62%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	71,647
				MCC (HCC to LCC)	68,685 (58,993 to 91,038)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	61.87% (63.75% to 68.50%)
		2041-2065	Volume (ML/yr)	No CC	158,585
				MCC (HCC to LCC)	46,476 (37,606 to 63,864)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	53.02% (56.85% to 57.24%)

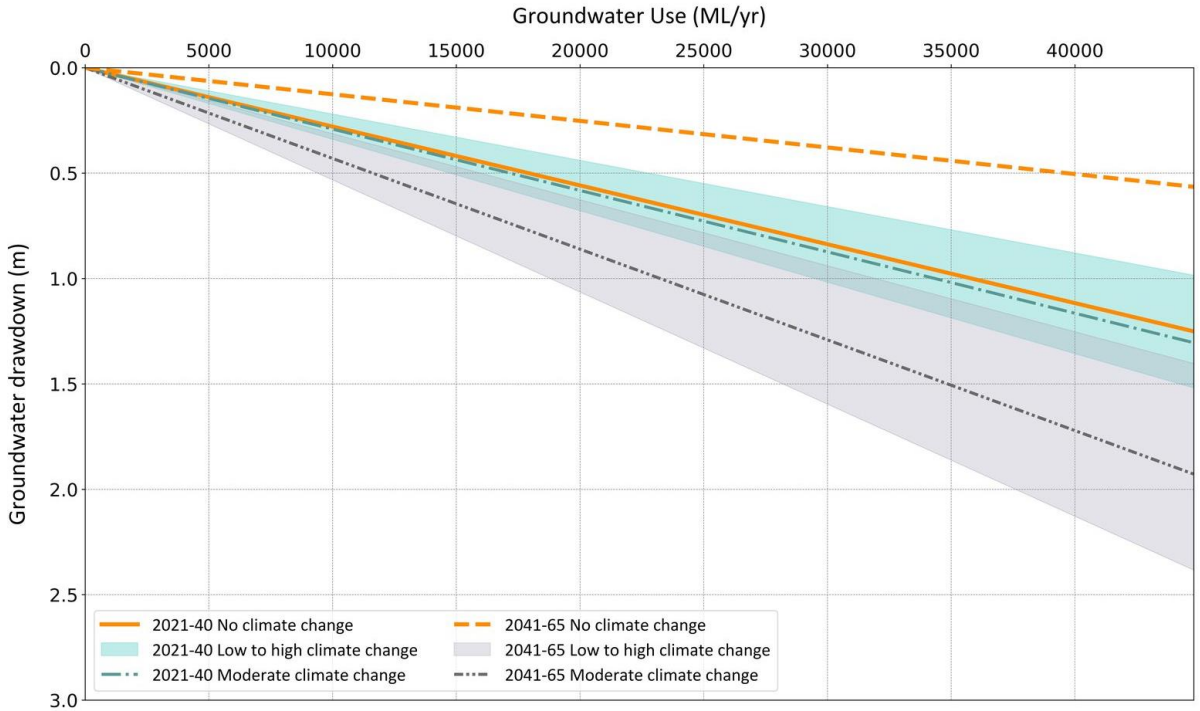

Figure A5-200. Plot for Wa De Lock GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

WANDIN YALLOCK GMA

Table A5-235. Consumptive users synthesis Table A5-for Wandin Yallock GMA

	GMU					WANDIN YALLOCK GMA
Assessment area	Representative Bore					98,397
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					3,027
	Licensed Entitlement (ML/yr)					3,015
	Licensed avg use (ML/yr)					638
Consumptive use metric	Consumptive users (bores)	Avg Use 553 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.5
					MCC (LCC to HCC)	3.0 (1.3 to 4.0)
			2041-2065	Drawdown from baseline (m)	No CC	2.7
					MCC (LCC to HCC)	2.7 (1.7 to 5.7)
		PCV use 2,606 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.8
					MCC (LCC to HCC)	6.0 (3.5 to 8.2)
					No CC	2.7

			2041-2065	Drawdown from baseline (m)	MCC (LCC to HCC)	7.5 (2.2 to 12)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	837
					MCC (HCC to LCC)	680 (506 to 1,141)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.43% (2.99% to 4.66%)
			2041-2065	Volume (ML/yr)	No CC	920
					MCC (HCC to LCC)	541 (332 to 1,642)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	3.36% (2.66% to 7.57%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,674
					MCC (HCC to LCC)	1,361 (1,012 to 2,282)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	6.87% (5.98% to 9.33%)
			2041-2065	Volume (ML/yr)	No CC	1,839
					MCC (HCC to LCC)	1,081 (663 to 3,285)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	6.71% (5.32% to 15.14%)

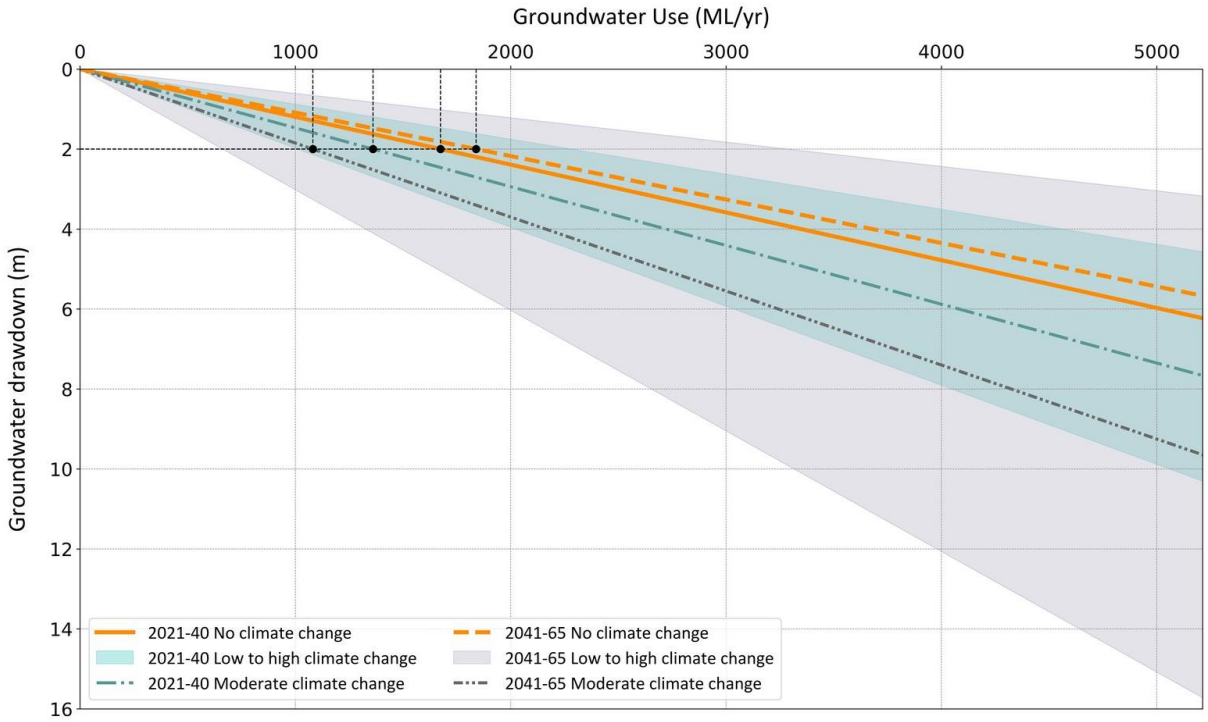

Figure A5-201. Plot for Wandin Yallock GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-236. Statewide drawdown use synthesis Table A5-for Wandin Yallock GMA

GMU					WANDIN YALLOCK GMA
Consumptive users (bores)	Avg Use 553 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	2.3 (0.57 to 3.2)
		2041-2065	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	2.0 (1.0 to 4.8)
	PCV use 2,606 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.0
				MCC (LCC to HCC)	5.1 (2.8 to 7.1)
		2041-2065	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	6.8 (1.7 to 11)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	983
				MCC (HCC to LCC)	784 (571 to 1,398)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.96% (3.37% to 5.71%)
		2041-2065	Volume (ML/yr)	No CC	883
				MCC (HCC to LCC)	587 (358 to 1,841)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.64% (2.87% to 8.48%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,967
				MCC (HCC to LCC)	1,568 (1,142 to 2,796)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.92% (6.75% to 11.43%)
		2041-2065	Volume (ML/yr)	No CC	1,766
				MCC (HCC to LCC)	1,174 (717 to 3,682)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.29% (5.75% to 16.97%)

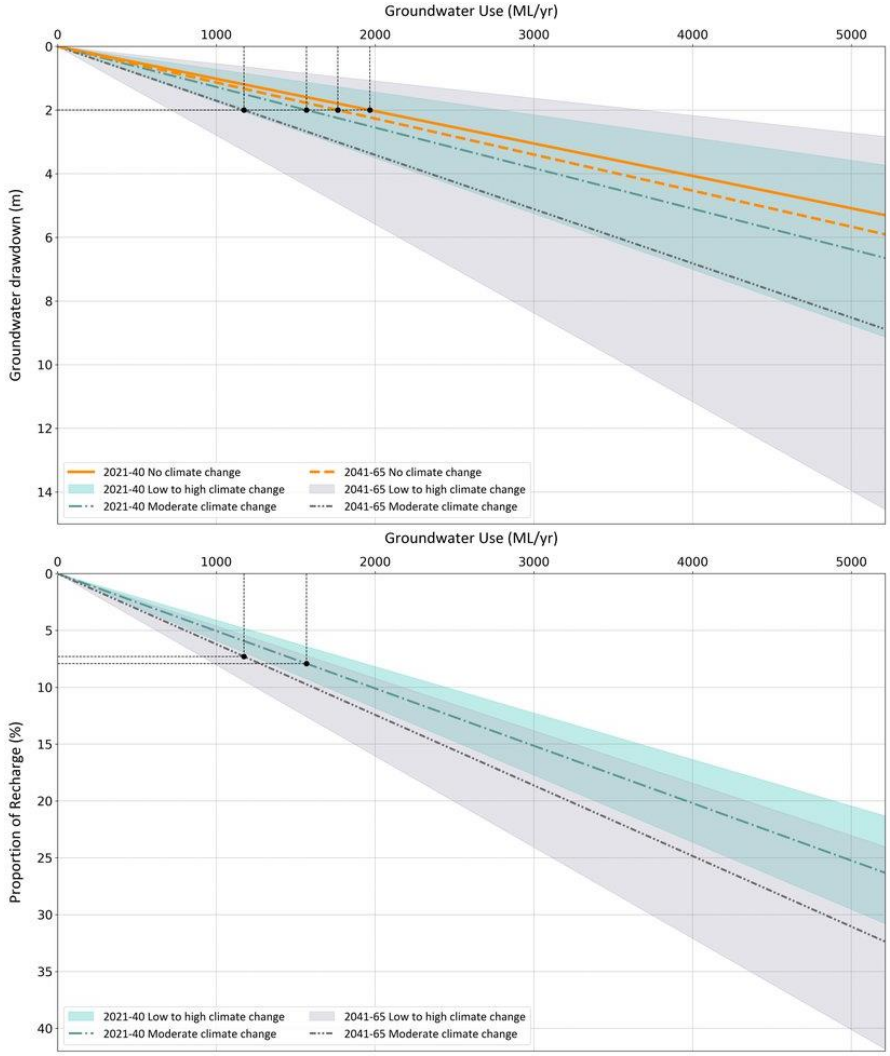

Figure A5-202. Upper Plot: Wandin Yallock GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Wandin Yallock GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-237. Terrestrial GDE synthesis Table A5-for Wandin Yallock GMA

GMU					WANDIN YALLOCK GMA
Terrestrial GDEs	Avg Use 553 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.29
				MCC (LCC to HCC)	0.07 (-1.52 to 0.98)
		2041-2065	Drawdown from baseline (m)	No CC	-0.08
				MCC (LCC to HCC)	-0.08 (-1.05 to 2.5)
	PCV use 2,606 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	2.6 (0.68 to 4.4)
		2041-2065	Drawdown from baseline (m)	No CC	-0.08
				MCC (LCC to HCC)	4.4 (0.26 to 8.3)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	199
				MCC (HCC to LCC)	140 (89 to 418)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.71% (0.53% to 1.71%)
		2041-2065	Volume (ML/yr)	No CC	81
				MCC (HCC to LCC)	81 (47 to 387)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.50% (0.38% to 1.78%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,989
				MCC (HCC to LCC)	1,398 (895 to 4,182)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.06% (5.29% to 17.09%)
		2041-2065	Volume (ML/yr)	No CC	806
				MCC (HCC to LCC)	811 (468 to 3,869)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5% (3.8% to 17.8%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	3,978
				MCC (HCC to LCC)	2,796 (1,790 to 8,363)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	14.1% (10.6% to 34.2%)
		2041-2065	Volume (ML/yr)	No CC	1,612
				MCC (HCC to LCC)	1,621 (935 to 7,738)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.1% (7.5% to 35.7%)

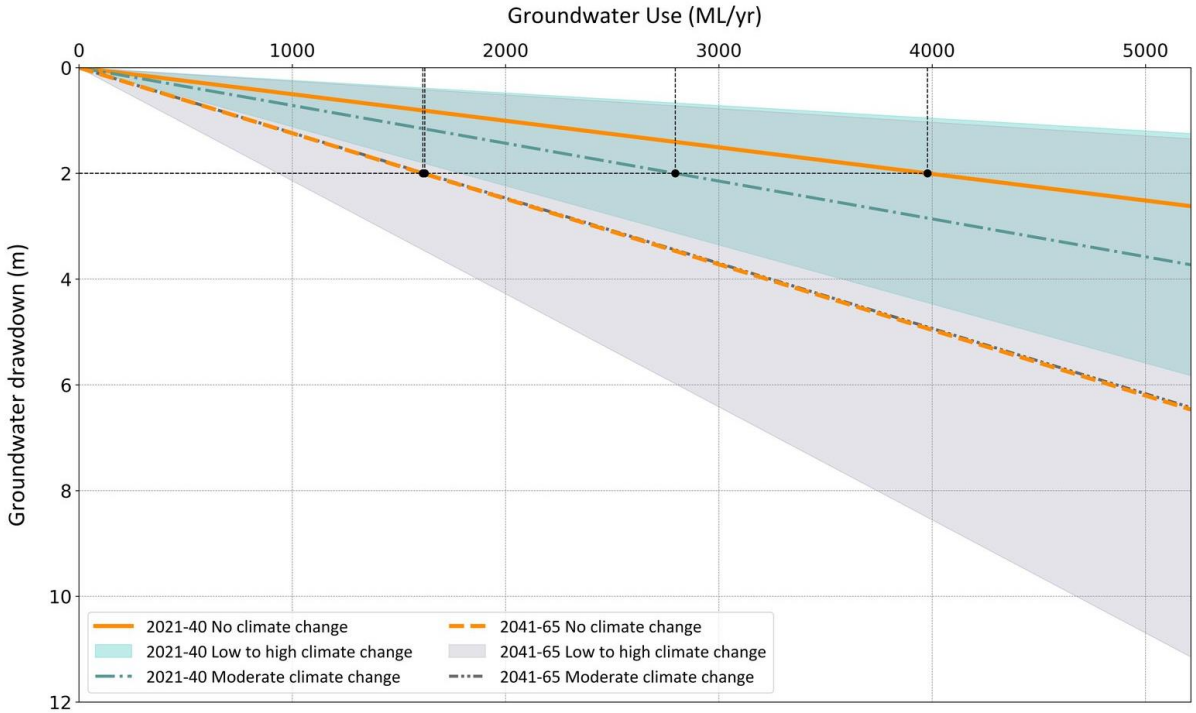

Figure A5-203. Plot for Wandin Yallock GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-238. Wetlands GDE synthesis Table A5-for Wandin Yallock GMA

GMU					WANDIN YALLOCK GMA
Wetlands GDEs	Avg Use 553 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.50
				MCC (LCC to HCC)	-0.12 (-1.67 to 0.73)
		2041-2065	Drawdown from baseline (m)	No CC	-0.28
				MCC (LCC to HCC)	-0.28 (-1.20 to 2.3)
	PCV use 2,606 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.5
				MCC (LCC to HCC)	2.3 (0.46 to 3.9)
		2041-2065	Drawdown from baseline (m)	No CC	-0.28
				MCC (LCC to HCC)	4.1 (0.33 to 7.6)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	219
				MCC (HCC to LCC)	153 (98 to 466)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.77% (0.58% to 1.91%)
		2041-2065	Volume (ML/yr)	No CC	78
				MCC (HCC to LCC)	83 (49 to 315)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.52% (0.40% to 1.45%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	2,188
				MCC (HCC to LCC)	1,525 (976 to 4,661)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.70% (5.77% to 19.05%)
		2041-2065	Volume (ML/yr)	No CC	779
				MCC (HCC to LCC)	835 (494 to 3,152)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.18% (3.96% to 14.52%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,377
				MCC (HCC to LCC)	3,051 (1,952 to 9,322)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	15.40% (11.53% to 38.10%)
		2041-2065	Volume (ML/yr)	No CC	1,558
				MCC (HCC to LCC)	1,669 (988 to 6,303)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.37% (7.92% to 29.04%)

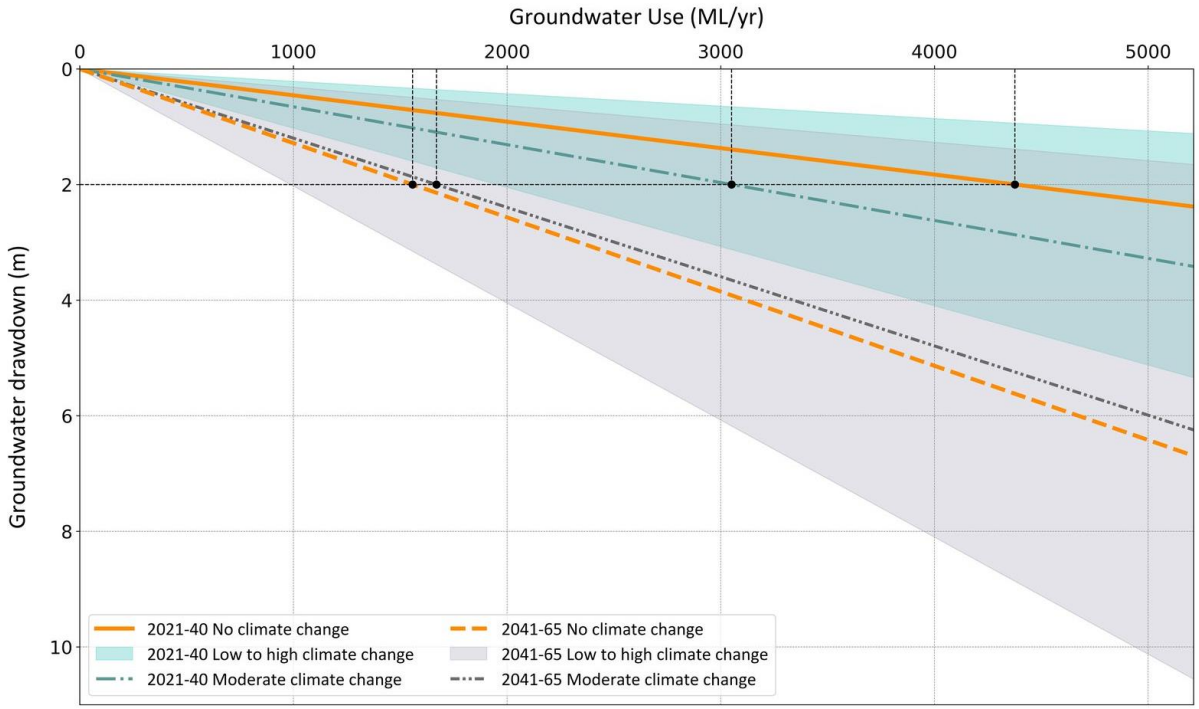

Figure A5-204. Plot for Wandin Yallock GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

WARRION WSPA

Table A5-239. Consumptive users synthesis Table A5-for Warrion WSPA

	GMU					WARRION WSPA
Assessment area	Representative Bore					142,714
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					14,086
	Licensed Entitlement (ML/yr)					14,077
	Licensed avg use (ML/yr)					3,555
Consumptive use metric	Consumptive users (bores)	Avg Use 2,847 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.54
					MCC (LCC to HCC)	0.81 (0.21 to 1.8)
			2041-2065	Drawdown from baseline (m)	No CC	1.1
					MCC (LCC to HCC)	1.1 (0.70 to 3.2)
		PCV use 10,742 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.5
					MCC (LCC to HCC)	3.1 (1.3 to 5.5)
					No CC	1.1

			2041-2065	Drawdown from baseline (m)	MCC (LCC to HCC)	6.7 (3.8 to 9.8)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,376
					MCC (HCC to LCC)	4,468 (2,805 to 8,288)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	9.99% (8.16% to 15.70%)
			2041-2065	Volume (ML/yr)	No CC	2,578
					MCC (HCC to LCC)	2,119 (1,541 to 3,268)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	7.59% (7.75% to 8.38%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	10,753
					MCC (HCC to LCC)	8,936 (5,610 to 16,575)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	19.99% (16.32% to 31.40%)
			2041-2065	Volume (ML/yr)	No CC	5,156
					MCC (HCC to LCC)	4,237 (3,083 to 6,537)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	15.19% (15.50% to 16.77%)

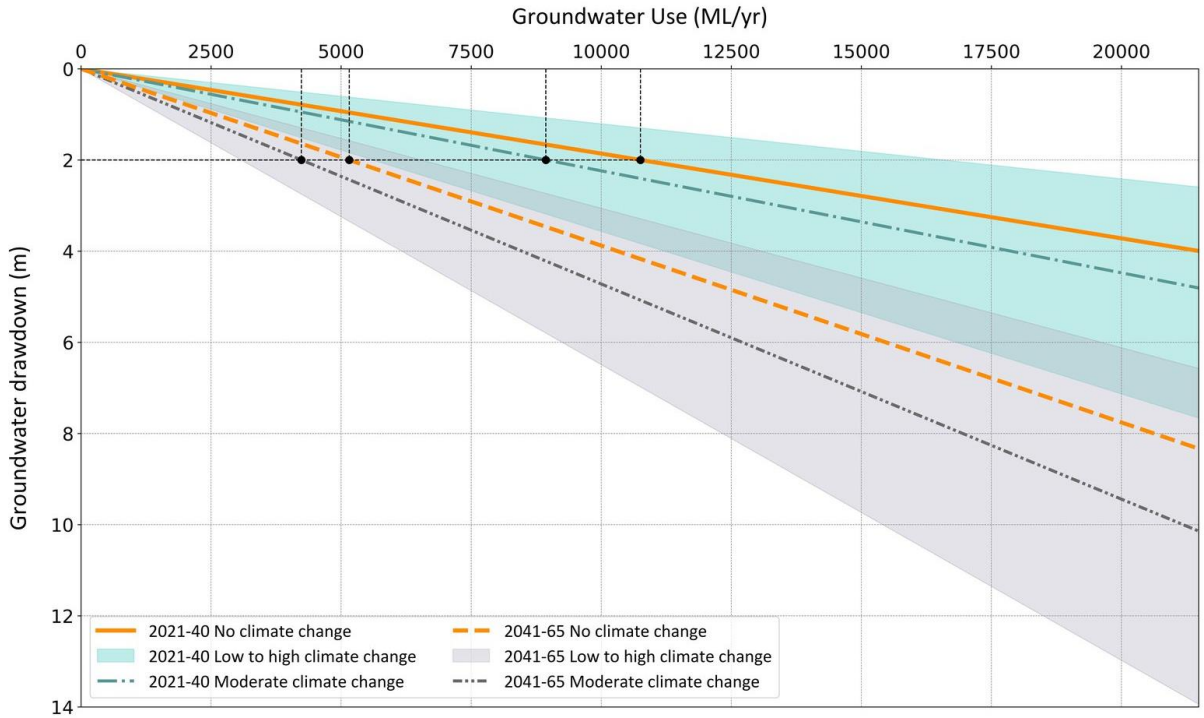

Figure A5-205. Plot for Warrion GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-240. Statewide drawdown use synthesis Table A5-for Warrion WSPA

GMU					WARRION WSPA
Consumptive users (bores)	Avg Use 2,847 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.62
				MCC (LCC to HCC)	0.89 (0.30 to 1.8)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	1.2 (0.78 to 3.2)
	PCV use 10,742 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.6
				MCC (LCC to HCC)	3.3 (1.5 to 5.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.2
				MCC (LCC to HCC)	6.9 (3.9 to 9.9)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,122
				MCC (HCC to LCC)	4,294 (2,751 to 7,648)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.60% (8.00% to 14.49%)
		2041-2065	Volume (ML/yr)	No CC	2,571
				MCC (HCC to LCC)	2,073 (1,520 to 3,152)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.43% (7.64% to 8.08%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	10,245
				MCC (HCC to LCC)	8,589 (5,501 to 15,296)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	19.21% (16.00% to 28.97%)
		2041-2065	Volume (ML/yr)	No CC	5,143
				MCC (HCC to LCC)	4,145 (3,040 to 6,303)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	14.86% (15.28% to 16.17%)

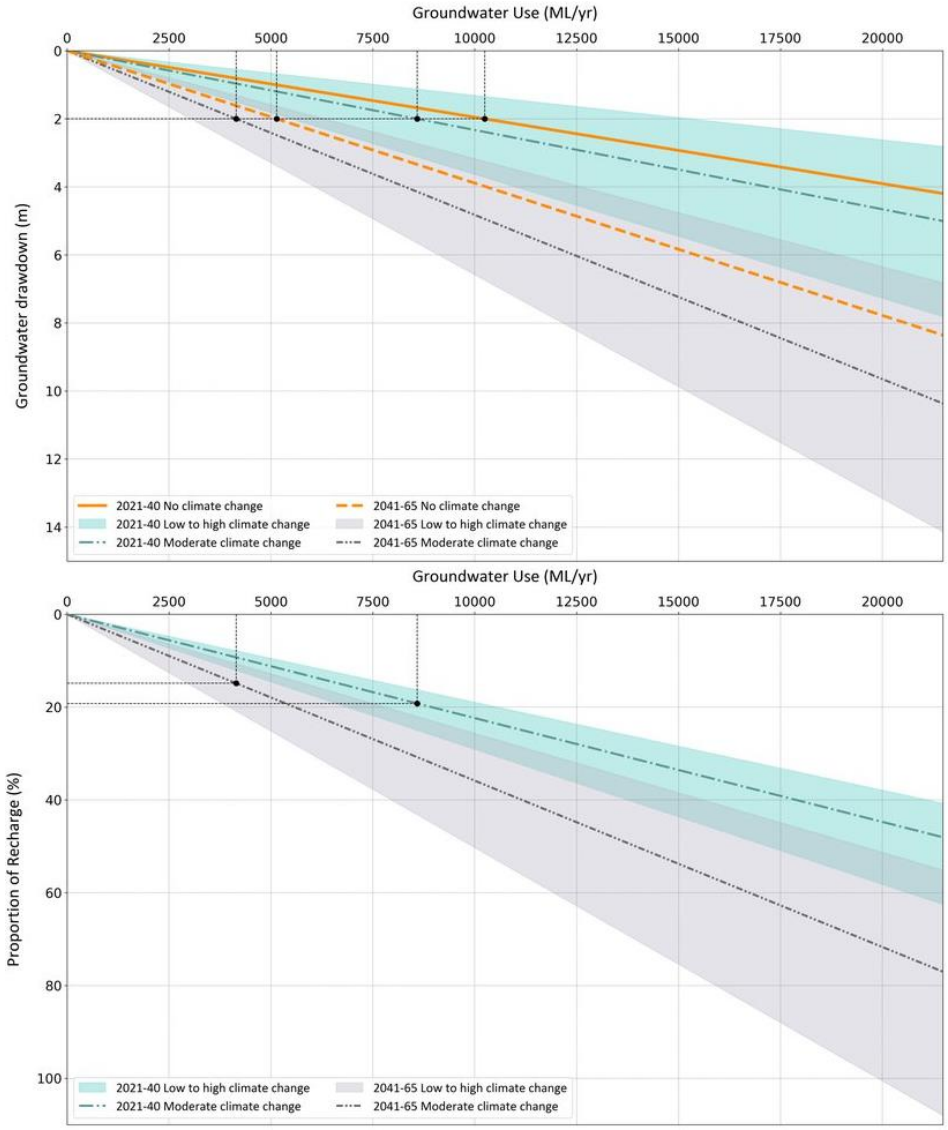

Figure A5-206. Upper Plot: Warrion WSPA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Warrion WSPA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-241. Terrestrial GDE synthesis Table A5-for Warrion WSPA

GMU					WARRION WSPA
Terrestrial GDEs	Avg Use 2,847 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.55
				MCC (LCC to HCC)	0.68 (0.21 to 1.7)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.1 (0.68 to 3.1)
	PCV use 10,742 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.9
				MCC (LCC to HCC)	3.4 (1.8 to 5.7)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	7.6 (4.9 to 11)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	436
				MCC (HCC to LCC)	388 (258 to 604)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.87% (0.75% to 1.14%)
		2041-2065	Volume (ML/yr)	No CC	203
				MCC (HCC to LCC)	178 (137 to 245)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.64% (0.63% to 0.69%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,357
				MCC (HCC to LCC)	3,883 (2,578 to 6,036)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.68% (7.50% to 11.43%)
		2041-2065	Volume (ML/yr)	No CC	2,031
				MCC (HCC to LCC)	1,783 (1,368 to 2,452)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.39% (6.29% to 6.87%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	8,713
				MCC (HCC to LCC)	7,765 (5,156 to 12,072)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	17.37% (15.00% to 22.87%)
		2041-2065	Volume (ML/yr)	No CC	4,061
				MCC (HCC to LCC)	3,566 (2,736 to 4,904)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.78% (12.58% to 13.75%)

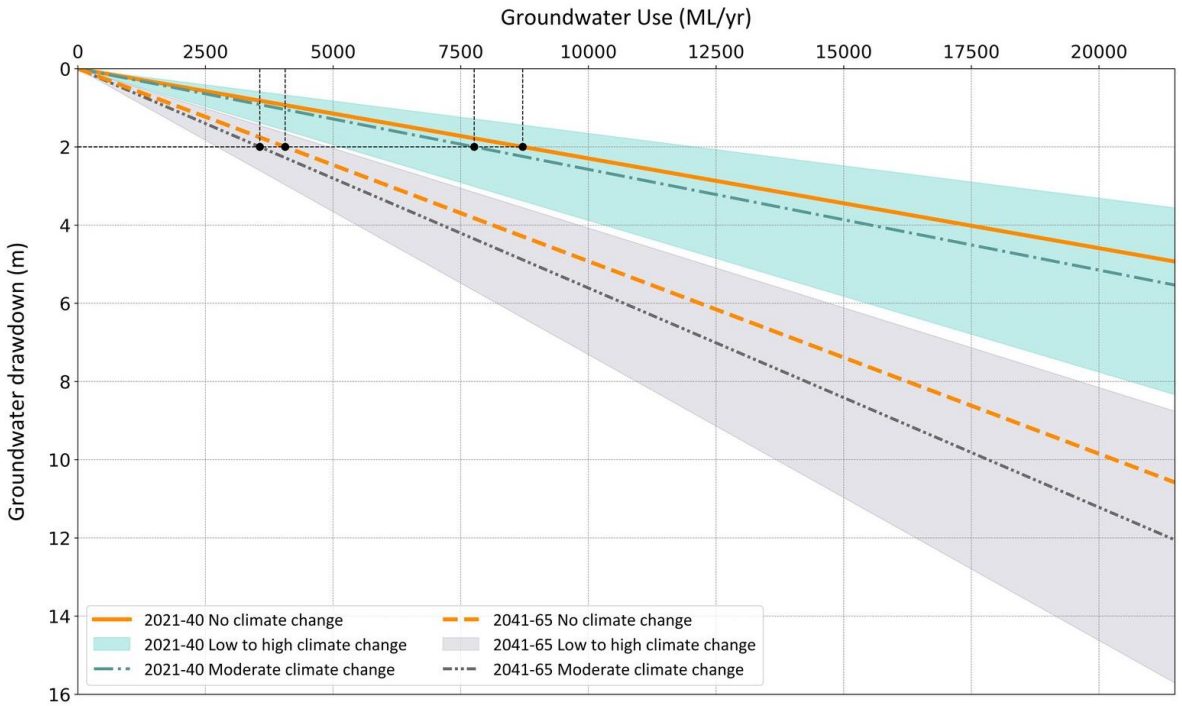

Figure A5-207. Plot for Warrion GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-242. Waterways GDE synthesis Table A5-for Warrion WSPA

GMU					WARRION WSPA
Waterway GDEs	Avg Use 2,847 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.52
				MCC (LCC to HCC)	0.47 (0.10 to 1.7)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.1 (0.52 to 3.3)
	PCV use 10,742 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.7
				MCC (LCC to HCC)	2.9 (1.6 to 5.3)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	7.3 (4.9 to 10)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	455
				MCC (HCC to LCC)	426 (273 to 636)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.95% (0.79% to 1.20%)
		2041-2065	Volume (ML/yr)	No CC	206
				MCC (HCC to LCC)	180 (139 to 239)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.65% (0.61% to 0.70%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,546
				MCC (HCC to LCC)	4,256 (2,730 to 6,357)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.52% (7.94% to 12.04%)
		2041-2065	Volume (ML/yr)	No CC	2,064
				MCC (HCC to LCC)	1,805 (1,390 to 2,391)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.47% (6.13% to 6.99%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	9,092
				MCC (HCC to LCC)	8,513 (5,460 to 12,714)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	19.04% (15.88% to 24.08%)
		2041-2065	Volume (ML/yr)	No CC	4,128
				MCC (HCC to LCC)	3,610 (2,780 to 4,781)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.94% (12.26% to 13.97%)

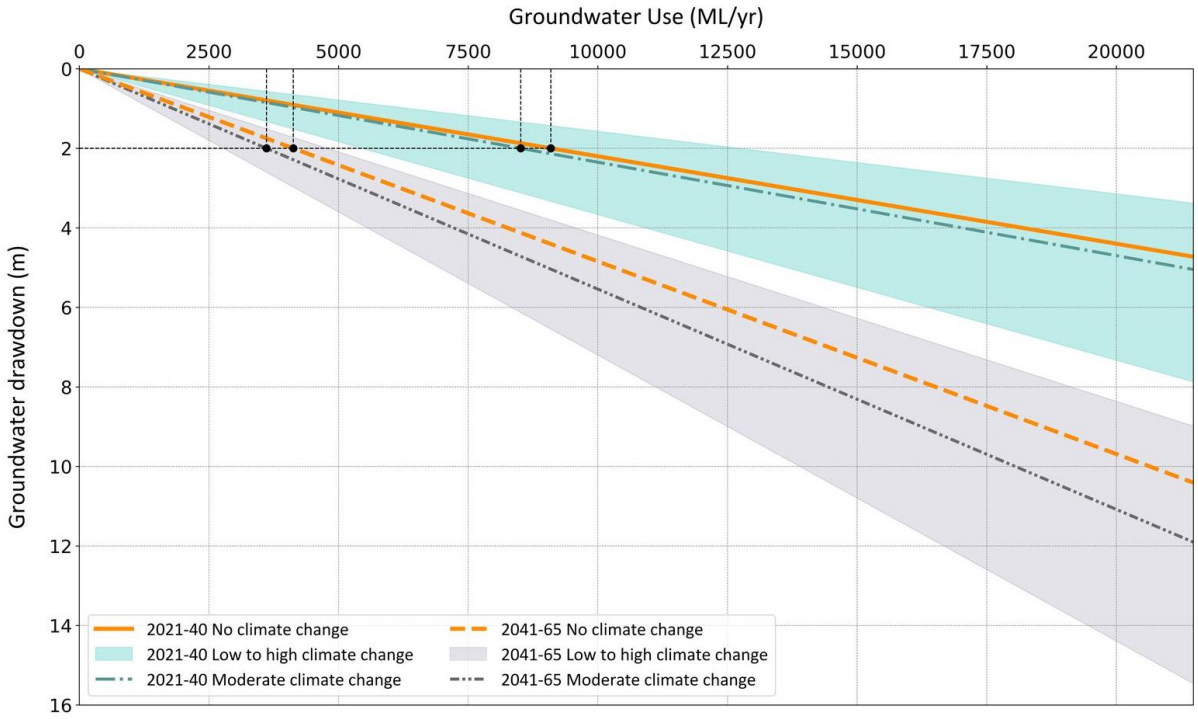

Figure A5-208. Plot for Warrion GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-243. Wetlands GDE synthesis Table A5-for Warrion WSPA

GMU					WARRION WSPA
Wetlands GDEs	Avg Use 2,847 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.52
				MCC (LCC to HCC)	0.65 (0.18 to 1.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.1 (0.65 to 3.1)
	PCV use 10,742 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.9
				MCC (LCC to HCC)	3.4 (1.8 to 5.6)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	7.5 (4.8 to 10)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	440
				MCC (HCC to LCC)	392 (260 to 609)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.88% (0.76% to 1.15%)
		2041-2065	Volume (ML/yr)	No CC	204
				MCC (HCC to LCC)	179 (138 to 247)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.64% (0.63% to 0.69%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,397
				MCC (HCC to LCC)	3,916 (2,600 to 6,093)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.8% (7.6% to 11.5%)
		2041-2065	Volume (ML/yr)	No CC	2,037
				MCC (HCC to LCC)	1,795 (1,378 to 2,467)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.4% (6.3% to 6.9%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	8,794
				MCC (HCC to LCC)	7,832 (5,201 to 12,186)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	17.5% (15.1% to 23.1%)
		2041-2065	Volume (ML/yr)	No CC	4,074
				MCC (HCC to LCC)	3,590 (2,755 to 4,933)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	12.9% (12.7% to 13.9%)

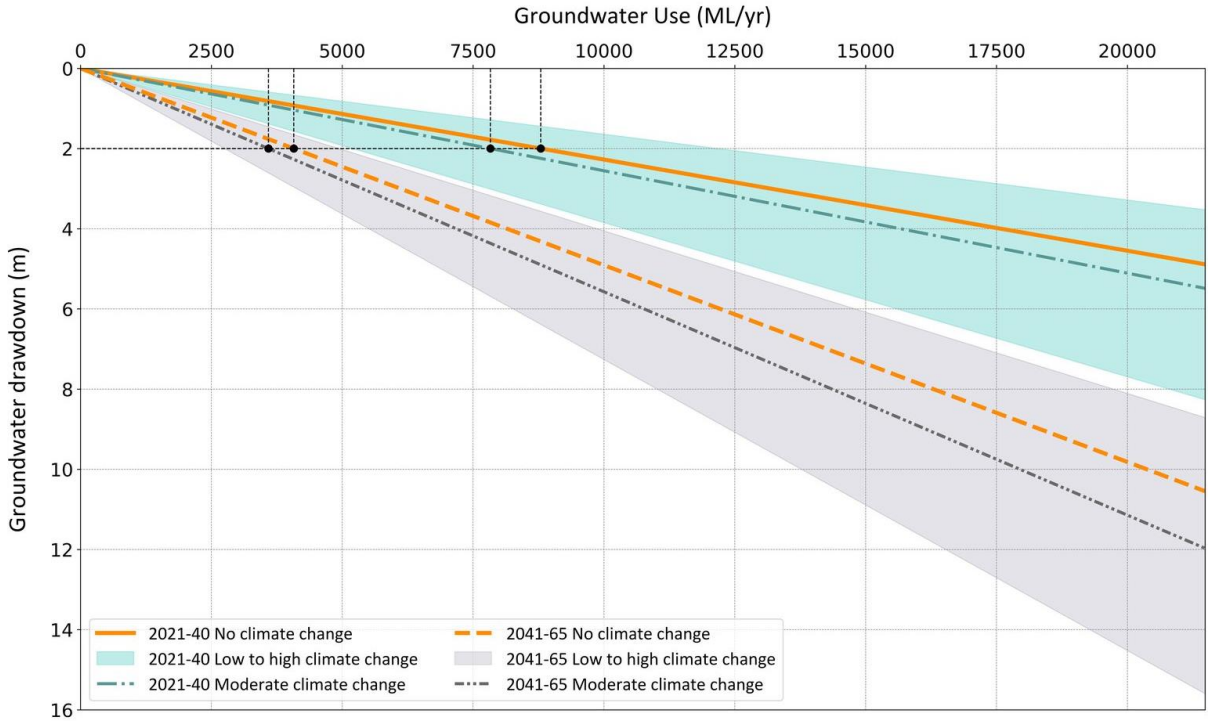

Figure A5-209. Plot for Warrion GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

WEST GOULBURN GMA

Table A5-244. Consumptive users synthesis Table A5-for West Goulburn GMA

Assessment area	**GMU**					**WEST GOULBURN GMA**
	Representative Bore					98371
	Aquifer					Semi-Confined
	Water system depth boundary (m below natural surface)					0 to 2000
Catchment	Permissible Consumptive Volume (ML/yr)					NA
	Licensed Entitlement (ML/yr)					2,997
	Licensed avg use (ML/yr)					1,360
Consumptive use metric	**Consumptive users (bores)**	Avg Use 3,509 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.5
					MCC (LCC to HCC)	4.0 (1.5 to 5.2)
			2041-2065	Drawdown from baseline (m)	No CC	3.8
					MCC (LCC to HCC)	3.8 (2.0 to 8.0)
		PCV use 95,132 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	4.0
					MCC (LCC to HCC)	4.6 (3.3 to 5.7)
			2041-2065	Drawdown from baseline (m)	No CC	3.8
					MCC (LCC to HCC)	5.7 (2.8 to 8.6)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	32,175
					MCC (HCC to LCC)	28,691 (23,777 to 37,144)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	5.15% (5.22% to 5.34%)
			2041-2065	Volume (ML/yr)	No CC	28,936
					MCC (HCC to LCC)	22,577 (16,013 to 38,679)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	5.36% (5.65% to 6.57%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	64,350
					MCC (HCC to LCC)	57,383 (47,555 to 74,289)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	10.30% (10.45% to 10.67%)
			2041-2065	Volume (ML/yr)	No CC	57,872
					MCC (HCC to LCC)	45,153 (32,025 to 77,359)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	10.72% (11.29% to 13.15%)

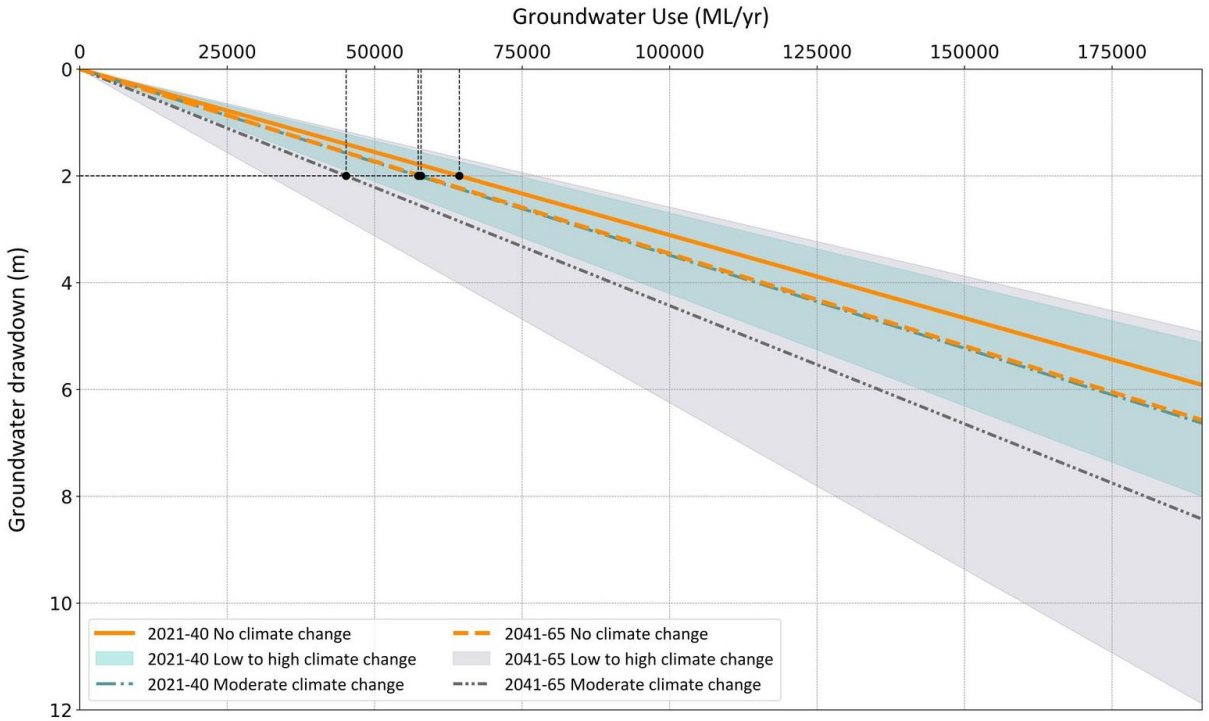

Figure A5-210. Plot for West Goulburn GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-245. Statewide drawdown use synthesis Table A5-for West Goulburn GMA

GMU					WEST GOULBURN GMA
Consumptive users (bores)	Avg Use 3,509 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.2
				MCC (LCC to HCC)	3.9 (1.2 to 4.9)
		2041-2065	Drawdown from baseline (m)	No CC	3.5
				MCC (LCC to HCC)	3.5 (1.7 to 7.6)
	PCV use 95,132 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	3.8
				MCC (LCC to HCC)	4.7 (3.0 to 5.7)
		2041-2065	Drawdown from baseline (m)	No CC	3.5
				MCC (LCC to HCC)	5.9 (2.4 to 8.7)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	35,495
				MCC (HCC to LCC)	29,403 (24,839 to 43,354)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.28% (5.58% to 6.10%)
		2041-2065	Volume (ML/yr)	No CC	32,959
				MCC (HCC to LCC)	22,869 (16,351 to 47,799)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	5.43% (5.77% to 8.12%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	70,990
				MCC (HCC to LCC)	58,806 (49,678 to 86,708)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.55% (11.15% to 12.20%)
		2041-2065	Volume (ML/yr)	No CC	65,919
				MCC (HCC to LCC)	45,737 (32,702 to 95,598)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.86% (11.53% to 16.25%)

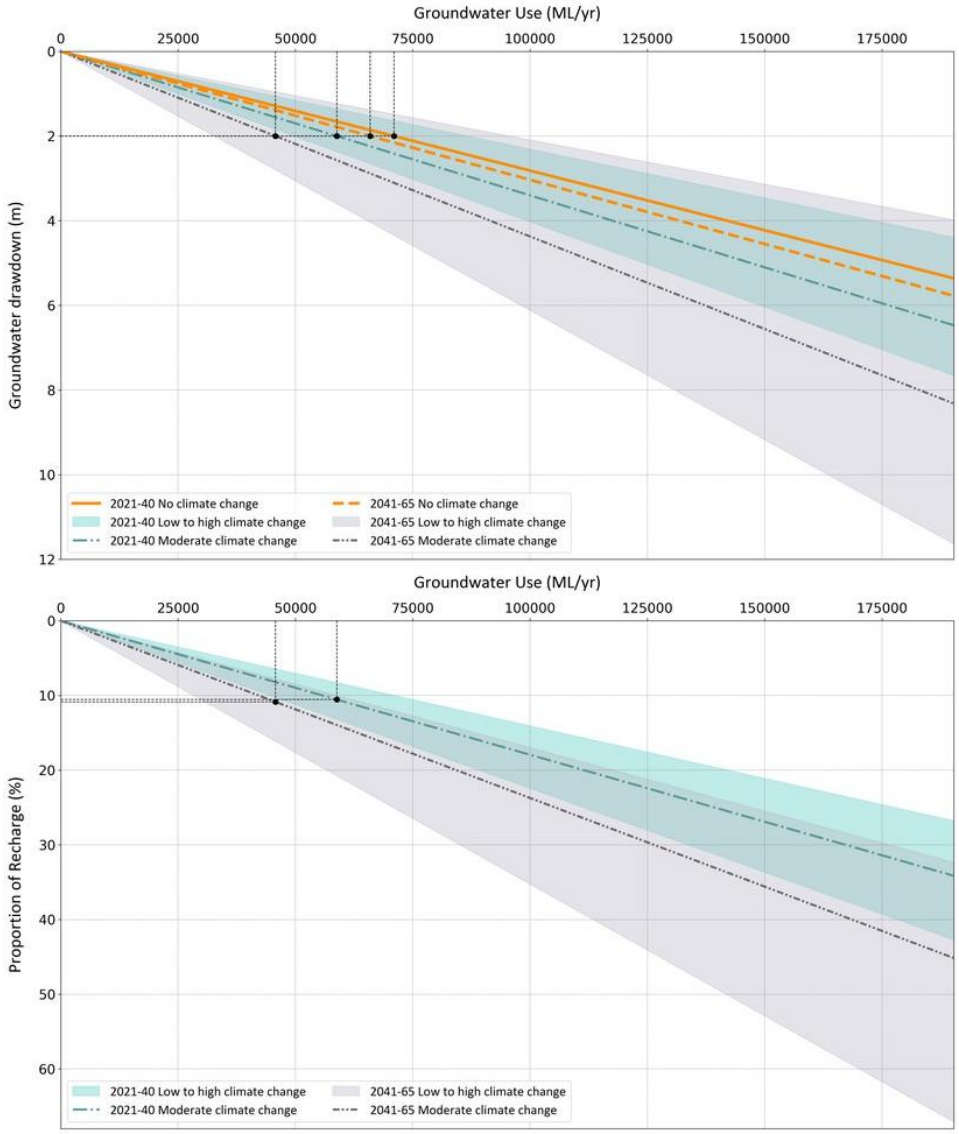

Figure A5-211. Upper Plot: West Goulburn GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: West Goulburn GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-246. Terrestrial GDE synthesis Table A5-for West Goulburn GMA

GMU					WEST GOULBURN GMA
Terrestrial GDEs	Avg Use 3,509 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.2
				MCC (LCC to HCC)	2.9 (0.59 to 3.8)
		2041-2065	Drawdown from baseline (m)	No CC	2.5
				MCC (LCC to HCC)	2.5 (0.86 to 6.1)
	PCV use 95,132 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.6
				MCC (LCC to HCC)	3.3 (2.0 to 4.1)
		2041-2065	Drawdown from baseline (m)	No CC	2.5
				MCC (LCC to HCC)	4.4 (1.6 to 6.5)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,872
				MCC (HCC to LCC)	3,992 (3,370 to 6,182)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.72% (0.76% to 0.87%)
		2041-2065	Volume (ML/yr)	No CC	4,204
				MCC (HCC to LCC)	2,934 (2,119 to 6,224)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.70% (0.75% to 1.06%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	48,723
				MCC (HCC to LCC)	39,918 (33,705 to 61,825)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.16% (7.57% to 8.70%)
		2041-2065	Volume (ML/yr)	No CC	42,037
				MCC (HCC to LCC)	29,335 (21,193 to 62,241)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.96% (7.47% to 10.58%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	97,446
				MCC (HCC to LCC)	79,836 (67,409 to 123,650)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	14.33% (15.13% to 17.39%)
		2041-2065	Volume (ML/yr)	No CC	84,074
				MCC (HCC to LCC)	58,671 (42,386 to 124,482)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.92% (14.95% to 21.16%)

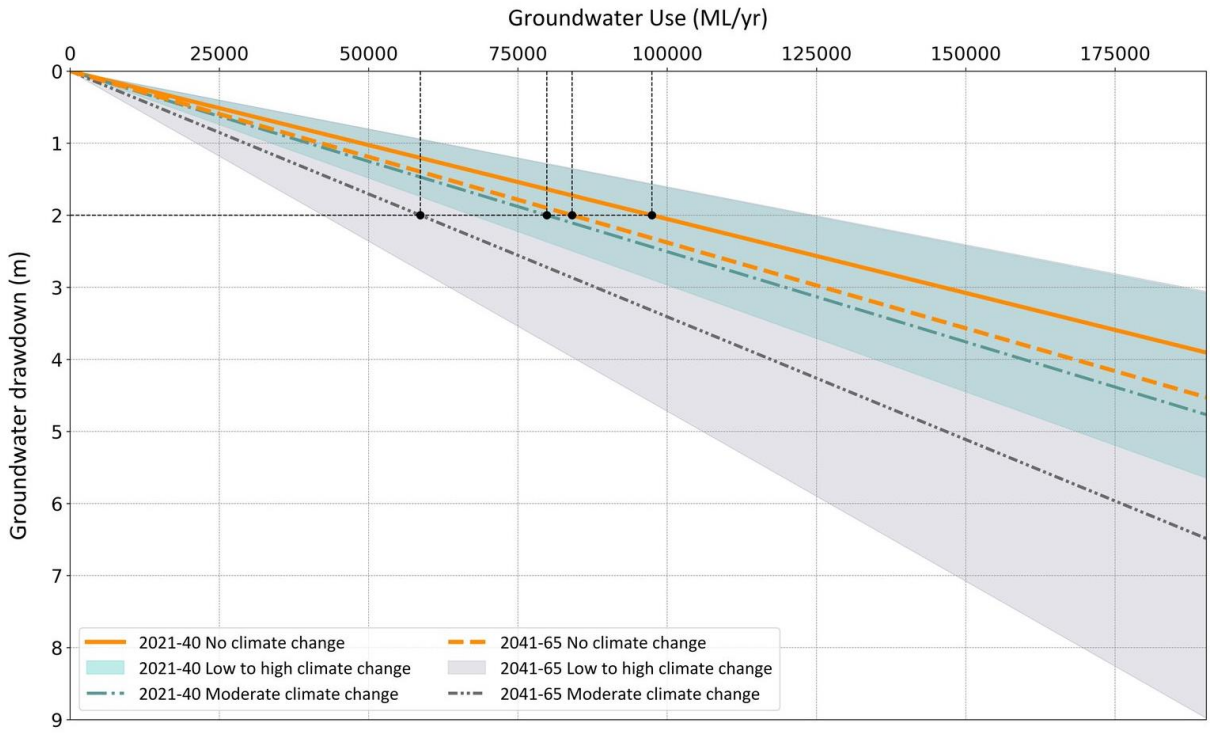

Figure A5-212. Plot for West Goulburn GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-247. Waterways GDE synthesis Table A5-for West Goulburn GMA

GMU					WEST GOULBURN GMA
Waterway GDEs	Avg se 3,509 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	1.8
				MCC (LCC to HCC)	2.5 (-0.07 to 3.3)
		2041-2065	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	2.0 (0.39 to 5.7)
	PCV use 95,132 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.4
				MCC (LCC to HCC)	3.2 (1.7 to 4.0)
		2041-2065	Drawdown from baseline (m)	No CC	2.0
				MCC (LCC to HCC)	4.5 (1.5 to 6.7)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	5,025
				MCC (HCC to LCC)	4,035 (3,390 to 6,517)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.72% (0.76% to 0.92%)
		2041-2065	Volume (ML/yr)	No CC	3,743
				MCC (HCC to LCC)	2,792 (2,016 to 6,050)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.66% (0.71% to 1.03%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	50,249
				MCC (HCC to LCC)	40,348 (33,900 to 65,169)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.24% (7.61% to 9.17%)
		2041-2065	Volume (ML/yr)	No CC	37,429
				MCC (HCC to LCC)	27,920 (20,159 to 60,498)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.63% (7.11% to 10.28%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	100,497
				MCC (HCC to LCC)	80,696 (67,800 to 130,338)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	14.48% (15.22% to 18.33%)
		2041-2065	Volume (ML/yr)	No CC	74,857
				MCC (HCC to LCC)	55,840 (40,318 to 120,995)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.25% (14.22% to 20.57%)

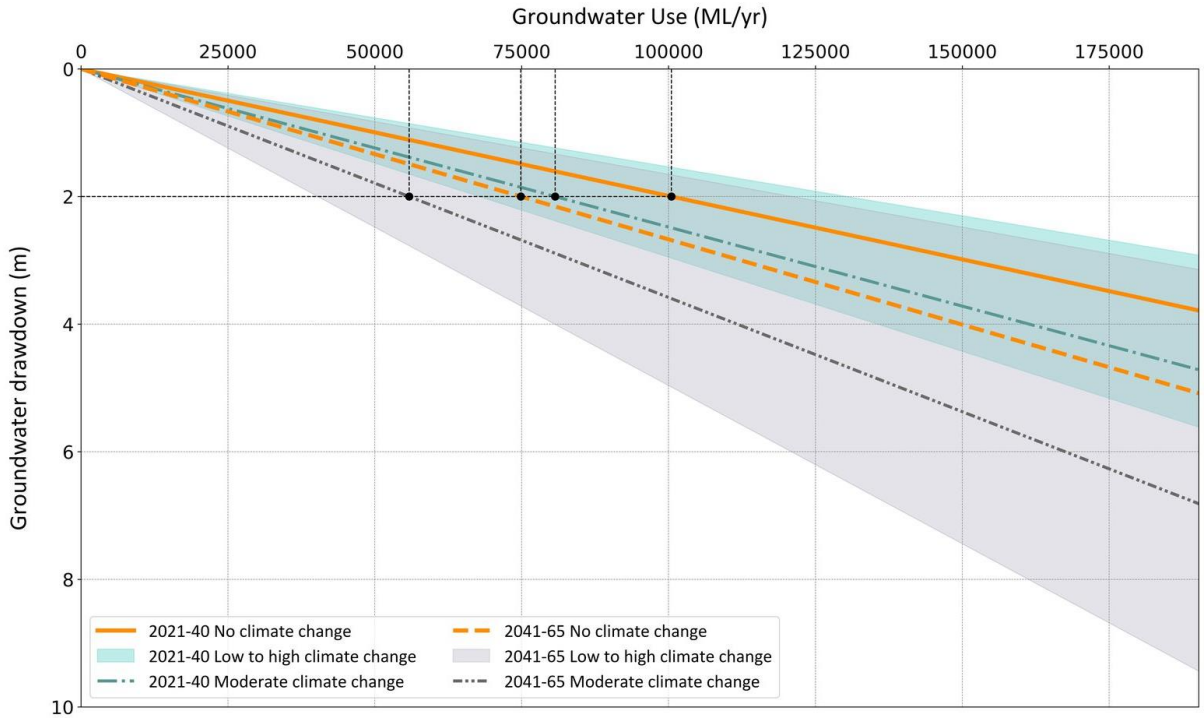

Figure A5-213. Plot for West Goulburn GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-248. Stream gauge results for West Goulburn GMA

Stream gauge/Catchment:		**405232 - GOULBURN RIVER @ Mccoys BRIDGE (Regulated)**		
Base flow index (1975-2020)				**0.53**
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	1,026,335 (804,057 to 1,246,345)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-107,737 (-330,015 to 112,273)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	978,704 (658,896 to 1,148,815)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-155,368 (-475,176 to 14,743)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	0.619% (0.509% to 0.790%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.03% (2.50% to 3.87%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	0.649% (0.553% to 0.964%)
		PCV use (ML/yr)	MCC (LCC to HCC)	3.18% (2.71% to 4.72%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	362.17 (283.73 to 439.81)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-38 (-116 to 40)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	345.36 (232.51 to 405.39)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-55 (-168 to 5)
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	1,753% (1,444% to 2,238%)
		PCV use (ML/yr)	MCC (LCC to HCC)	8,592% (7,075% to 10,967%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	1,838% (1,566% to 2,731%)
		PCV use (ML/yr)	MCC (LCC to HCC)	9,010% (7,676% to 13,383%)

Table A5-249. Wetlands GDE synthesis Table A5-for West Goulburn GMA

GMU					WEST GOULBURN GMA
Wetlands GDEs	Avg Use 3,509 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.3
				MCC (LCC to HCC)	2.7 (1.1 to 3.7)
		2041-2065	Drawdown from baseline (m)	No CC	2.6
				MCC (LCC to HCC)	2.6 (1.1 to 5.7)
	PCV use 95,132 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	2.6
				MCC (LCC to HCC)	3.0 (2.0 to 3.9)
		2041-2065	Drawdown from baseline (m)	No CC	2.6
				MCC (LCC to HCC)	3.9 (1.6 to 6.2)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	4,828
				MCC (HCC to LCC)	4,278 (3,456 to 5,978)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.77% (0.78% to 0.84%)
		2041-2065	Volume (ML/yr)	No CC	4,442
				MCC (HCC to LCC)	3,254 (2,241 to 6,444)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	0.77% (0.79% to 1.10%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	48,283
				MCC (HCC to LCC)	42,781 (34,562 to 59,784)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.68% (7.76% to 8.41%)
		2041-2065	Volume (ML/yr)	No CC	44,420
				MCC (HCC to LCC)	32,537 (22,412 to 64,441)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.72% (7.90% to 10.95%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	96,565
				MCC (HCC to LCC)	85,562 (69,123 to 119,568)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	15.36% (15.52% to 16.82%)
		2041-2065	Volume (ML/yr)	No CC	88,839
				MCC (HCC to LCC)	65,074 (44,824 to 128,881)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	15.44% (15.80% to 21.91%)

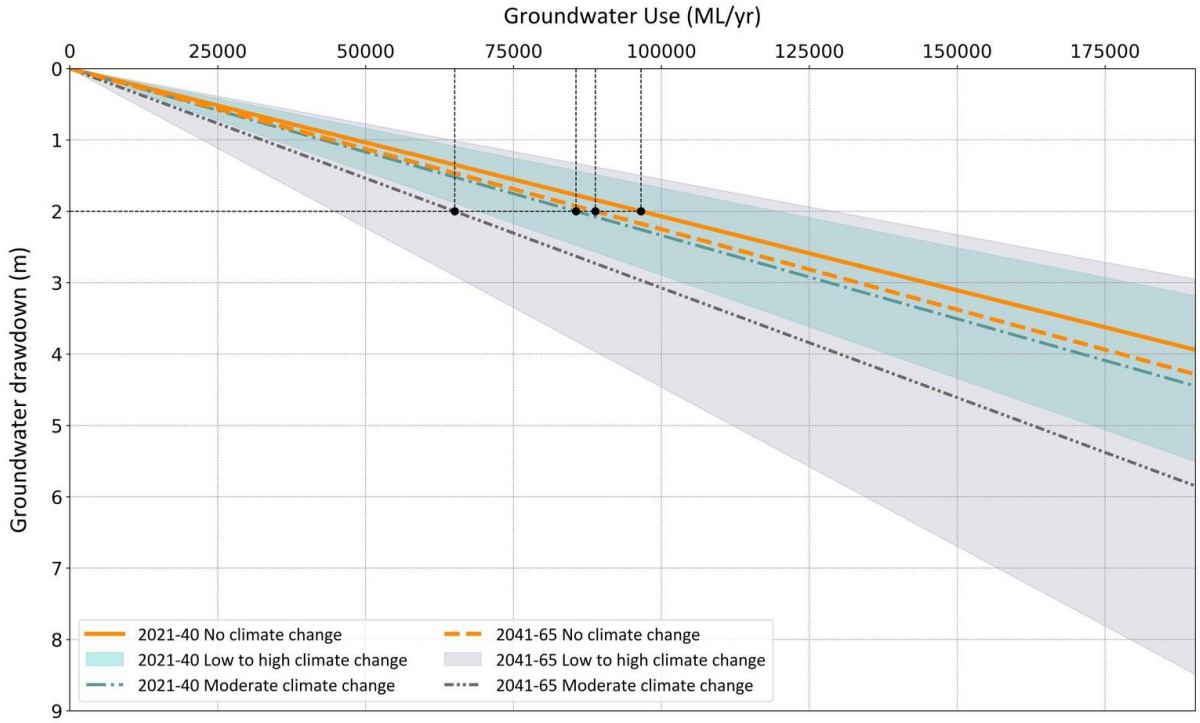

Figure A5-214. Plot for West Goulburn GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

WY YUNG GMA

Table A5-250. Consumptive users synthesis Table A5-for Wy Yung GMA

Assessment area	**GMU**					**WY YUNG GMA**
	Representative Bore					80762
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					Zone 1 – All formations from surface to 25 metres below the surface. Zone 2 – All formations from surface to 25 metres below the surface. Zone 3 – All formations from surface to 25 metres below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					7,463
	Licensed Entitlement (ML/yr)					7,462
	Licensed avg use (ML/yr)					970
Consumptive use metric	**Consumptive users (bores)**	Avg Use 680 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.32
					MCC (LCC to HCC)	0.48 (-0.46 to 0.93)
			2041-2065	Drawdown from baseline (m)	No CC	0.41
					MCC (LCC to HCC)	0.41 (-0.14 to 1.6)
		PCV use 5,748 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.67
					MCC (LCC to HCC)	0.78 (0.39 to 1.1)
			2041-2065	Drawdown from baseline (m)	No CC	0.41
					MCC (LCC to HCC)	1.2 (0.49 to 1.7)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	10,042
					MCC (HCC to LCC)	8,925 (6,795 to 14,891)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	87.95% (92.68% to 112.94%)
			2041-2065	Volume (ML/yr)	No CC	10,247
					MCC (HCC to LCC)	5,908 (4,339 to 10,490)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	74.75% (92.18% to 103.22%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	20,084
					MCC (HCC to LCC)	17,850 (13,591 to 29,781)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	175.89% (185.36% to 225.88%)
			2041-2065	Volume (ML/yr)	No CC	20,494
					MCC (HCC to LCC)	11,816 (8,679 to 20,981)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	149.51% (184.36% to 206.44%)

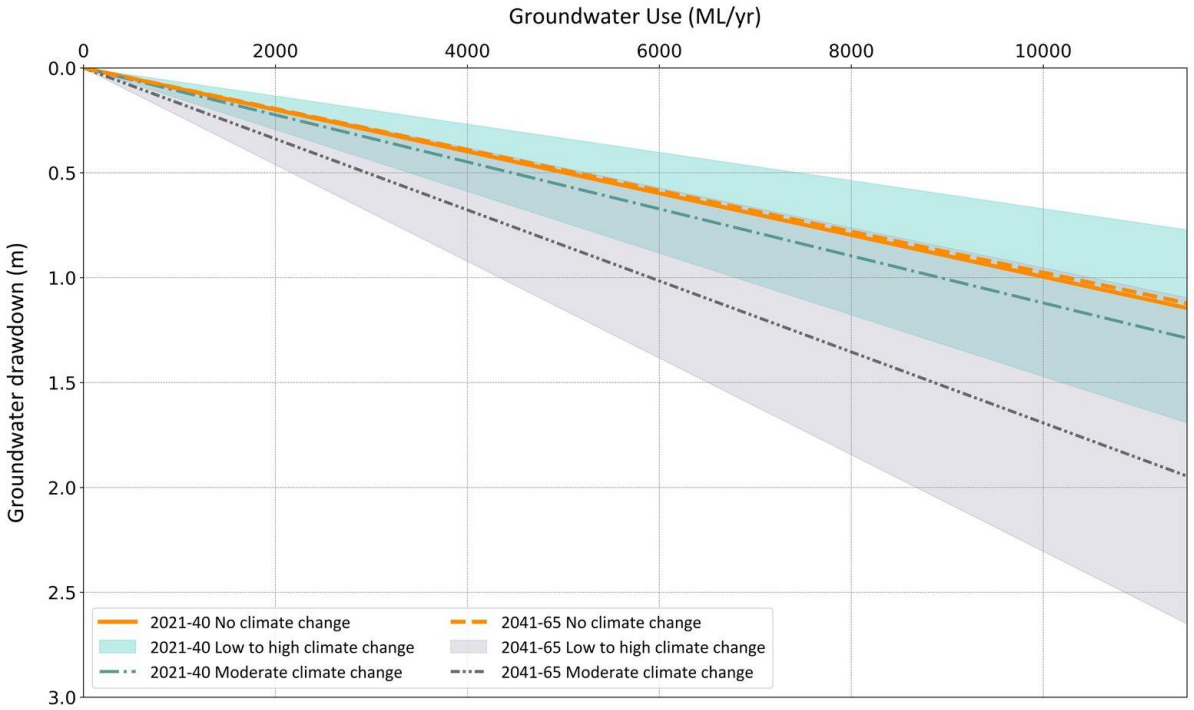

Figure A5-215. Plot for Wy Yung GMA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-251. Statewide drawdown use synthesis Table A5-for Wy Yung GMA

GMU					WY YUNG GMA
Consumptive users (bores)	Avg Use 680 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.20
				MCC (LCC to HCC)	0.35 (-0.58 to 0.82)
		2041-2065	Drawdown from baseline (m)	No CC	0.30
				MCC (LCC to HCC)	0.30 (-0.26 to 1.4)
	PCV use 5,748 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.57
				MCC (LCC to HCC)	0.68 (0.29 to 1.00)
		2041-2065	Drawdown from baseline (m)	No CC	0.30
				MCC (LCC to HCC)	1.1 (0.46 to 1.6)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	11,004
				MCC (HCC to LCC)	9,740 (7,291 to 16,999)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	95.98% (99.43% to 128.93%)
		2041-2065	Volume (ML/yr)	No CC	9,853
				MCC (HCC to LCC)	5,974 (4,427 to 10,428)

			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	75.58% (91.64% to 105.31%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	22,007
				MCC (HCC to LCC)	19,480 (14,581 to 33,999)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	191.96% (198.86% to 257.86%)
		2041-2065	Volume (ML/yr)	No CC	19,705
				MCC (HCC to LCC)	11,947 (8,854 to 20,857)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	151.17% (183.28% to 210.62%)

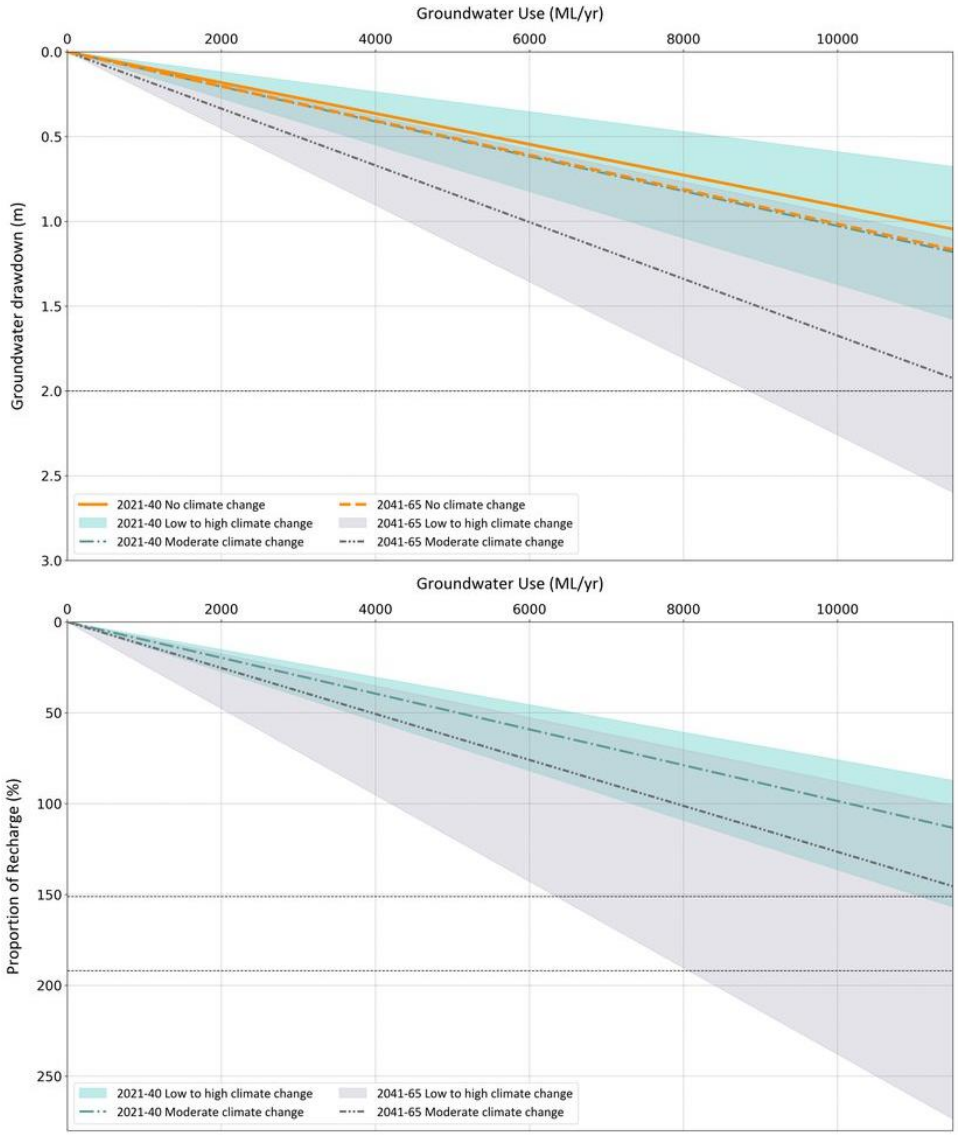

Figure A5-216. Upper Plot: Wy Yung GMA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Wy Yung GMA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-252. Terrestrial GDE synthesis Table A5-for Wy Yung GMA

GMU					WY YUNG GMA
Terrestrial GDEs	Avg Use 680 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.06
				MCC (LCC to HCC)	0.18 (-0.72 to 0.66)
		2041-2065	Drawdown from baseline (m)	No CC	0.16
				MCC (LCC to HCC)	0.16 (-0.41 to 1.3)
	PCV use 5,748 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.47
				MCC (LCC to HCC)	0.54 (0.20 to 0.84)
		2041-2065	Drawdown from baseline (m)	No CC	0.16
				MCC (LCC to HCC)	1.1 (0.51 to 1.5)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,193
				MCC (HCC to LCC)	1,073 (799 to 1,886)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.6% (10.9% to 14.3%)
		2041-2065	Volume (ML/yr)	No CC	1,044
				MCC (HCC to LCC)	567 (441 to 890)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.2% (7.8% to 10.5%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	11,928
				MCC (HCC to LCC)	10,730 (7,995 to 18,858)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	106% (109% to 143%)
		2041-2065	Volume (ML/yr)	No CC	10,439
				MCC (HCC to LCC)	5,668 (4,406 to 8,898)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	72% (78% to 105%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	23,856
				MCC (HCC to LCC)	21,460 (15,989 to 37,716)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	211% (218% to 286%)
		2041-2065	Volume (ML/yr)	No CC	20,879
				MCC (HCC to LCC)	11,337 (8,812 to 17,796)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	143% (156% to 210%)

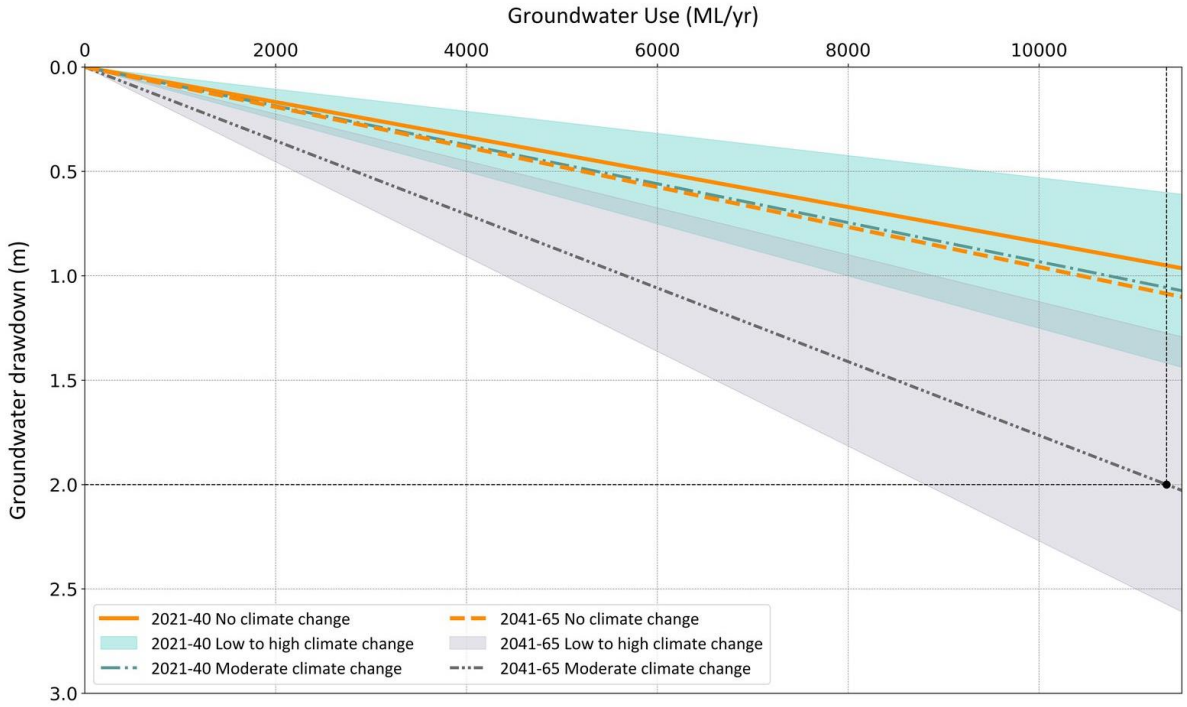

Figure A5-217. Plot for Wy Yung GMA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-253. Waterways GDE synthesis Table A5-for Wy Yung GMA

GMU					WY YUNG GMA
Waterway GDEs	Avg Use 680 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.10
				MCC (LCC to HCC)	0.20 (-0.68 to 0.67)
		2041-2065	Drawdown from baseline (m)	No CC	0.18
				MCC (LCC to HCC)	0.18 (-0.38 to 1.3)
	PCV use 5,748 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.48
				MCC (LCC to HCC)	0.52 (0.25 to 0.76)
		2041-2065	Drawdown from baseline (m)	No CC	0.18
				MCC (LCC to HCC)	1.1 (0.62 to 1.4)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,128
				MCC (HCC to LCC)	1,071 (840 to 1,641)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	10.55% (11.46% to 12.45%)
		2041-2065	Volume (ML/yr)	No CC	1,543
				MCC (HCC to LCC)	555 (457 to 766)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	7.02% (6.73% to 10.86%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	11,281
				MCC (HCC to LCC)	10,711 (8,405 to 16,413)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	106% (115% to 124%)
		2041-2065	Volume (ML/yr)	No CC	15,435
				MCC (HCC to LCC)	5,551 (4,567 to 7,655)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	70% (67% to 109%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	22,563
				MCC (HCC to LCC)	21,422 (16,810 to 32,826)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	211% (229% to 249%)
		2041-2065	Volume (ML/yr)	No CC	30,870
				MCC (HCC to LCC)	11,102 (9,133 to 15,310)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	140% (135% to 217%)

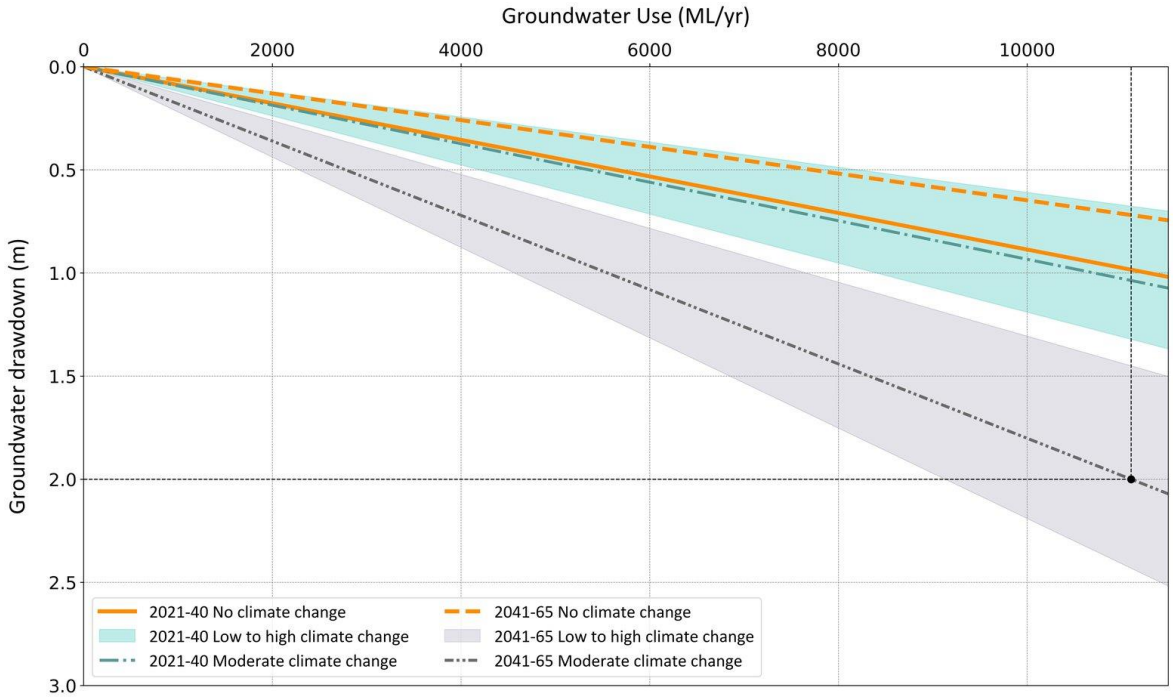

Figure A5-218. Plot for Wy Yung GMA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-254. Wetlands GDE synthesis Table A5-for Wy Yung GMA

GMU					WY YUNG GMA
Wetlands GDEs	Avg Use 680 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.11
				MCC (LCC to HCC)	0.04 (-0.84 to 0.48)
		2041-2065	Drawdown from baseline (m)	No CC	-0.02
				MCC (LCC to HCC)	-0.02 (-0.54 to 1.1)
	PCV use 5,748 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.29
				MCC (LCC to HCC)	0.38 (0.03 to 0.68)
		2041-2065	Drawdown from baseline (m)	No CC	-0.02
				MCC (LCC to HCC)	0.79 (0.19 to 1.3)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	1,657
				MCC (HCC to LCC)	1,403 (969 to 3,196)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	13.83% (13.21% to 24.24%)
		2041-2065	Volume (ML/yr)	No CC	957
				MCC (HCC to LCC)	767 (543 to 1,521)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	9.71% (12.92% to 13.37%)

	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	16,566
				MCC (HCC to LCC)	14,031 (9,687 to 31,964)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	138.27% (132.11% to 242.43%)
		2041-2065	Volume (ML/yr)	No CC	9,571
				MCC (HCC to LCC)	7,672 (5,433 to 15,213)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	97.07% (129.23% to 133.68%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	33,131
				MCC (HCC to LCC)	28,063 (19,373 to 63,928)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	277% (264% to 485%)
		2041-2065	Volume (ML/yr)	No CC	19,143
				MCC (HCC to LCC)	15,343 (10,865 to 30,427)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	194% (258% to 267%)

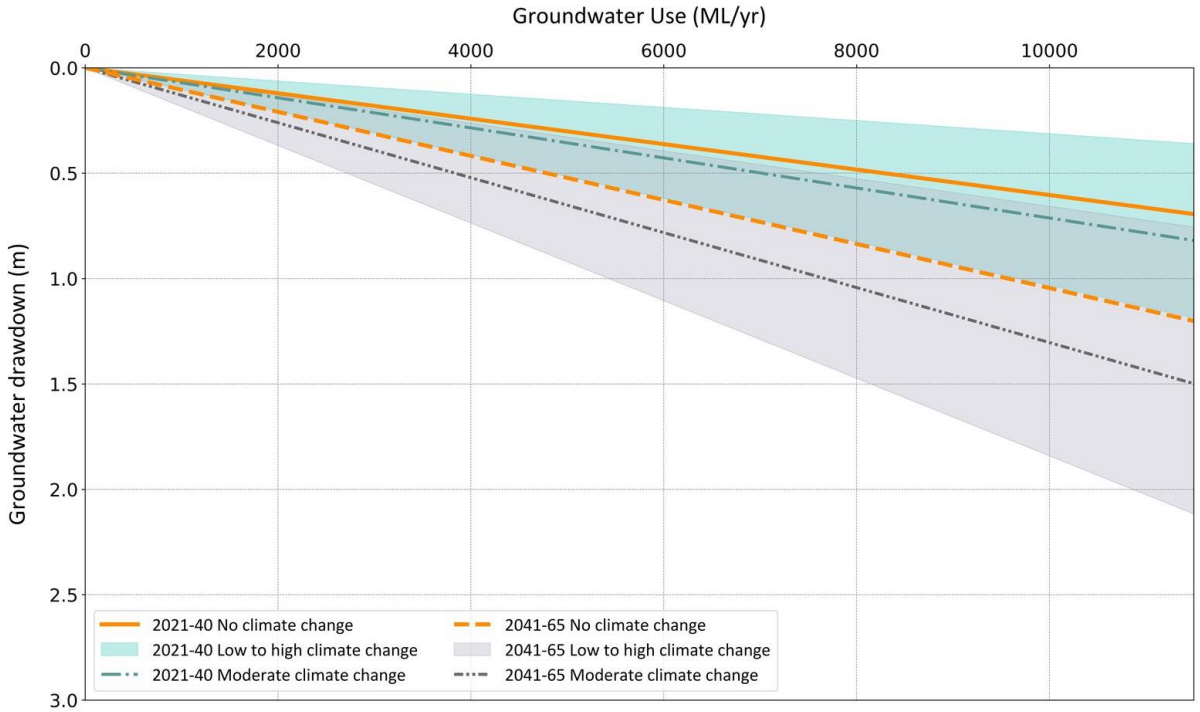

Figure A5-219. Plot for Wy Yung GMA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

YANGERY WSPA

Table A5-255. Consumptive users synthesis Table A5-for Yangery WSPA

Assessment area	**GMU**					**YANGERY WSPA**
	Representative Bore					141308
	Aquifer					Unconfined
	Water system depth boundary (m below natural surface)					All formations from surface to 100 metres below the surface.
Catchment	Permissible Consumptive Volume (ML/yr)					14,352
	Licensed Entitlement (ML/yr)					25,665
	Licensed avg use (ML/yr)					12,512
Consumptive use metric	Consumptive users (bores)	Avg Use 3,425 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.47
					MCC (LCC to HCC)	0.80 (0.22 to 1.4)
			2041-2065	Drawdown from baseline (m)	No CC	0.76
					MCC (LCC to HCC)	0.76 (0.48 to 2.1)
		PCV use 12,123 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.78
					MCC (LCC to HCC)	1.3 (0.25 to 2.4)
			2041-2065	Drawdown from baseline (m)	No CC	0.76
					MCC (LCC to HCC)	2.4 (0.81 to 3.9)
		Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	22,059
					MCC (HCC to LCC)	14,158 (7,862 to 54,532)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	30.9% (21.1% to 101.1%)
			2041-2065	Volume (ML/yr)	No CC	13,738
					MCC (HCC to LCC)	7,943 (4,804 to 20,300)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	20.7% (16.9% to 41.7%)
		Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	44,118
					MCC (HCC to LCC)	28,316 (15,725 to 109,063)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	62% (42% to 202%)
			2041-2065	Volume (ML/yr)	No CC	27,476
					MCC (HCC to LCC)	15,886 (9,608 to 40,600)
				Proportion of recharge (%)	No CC	NA
					MCC (HCC to LCC)	41% (34% to 83%)

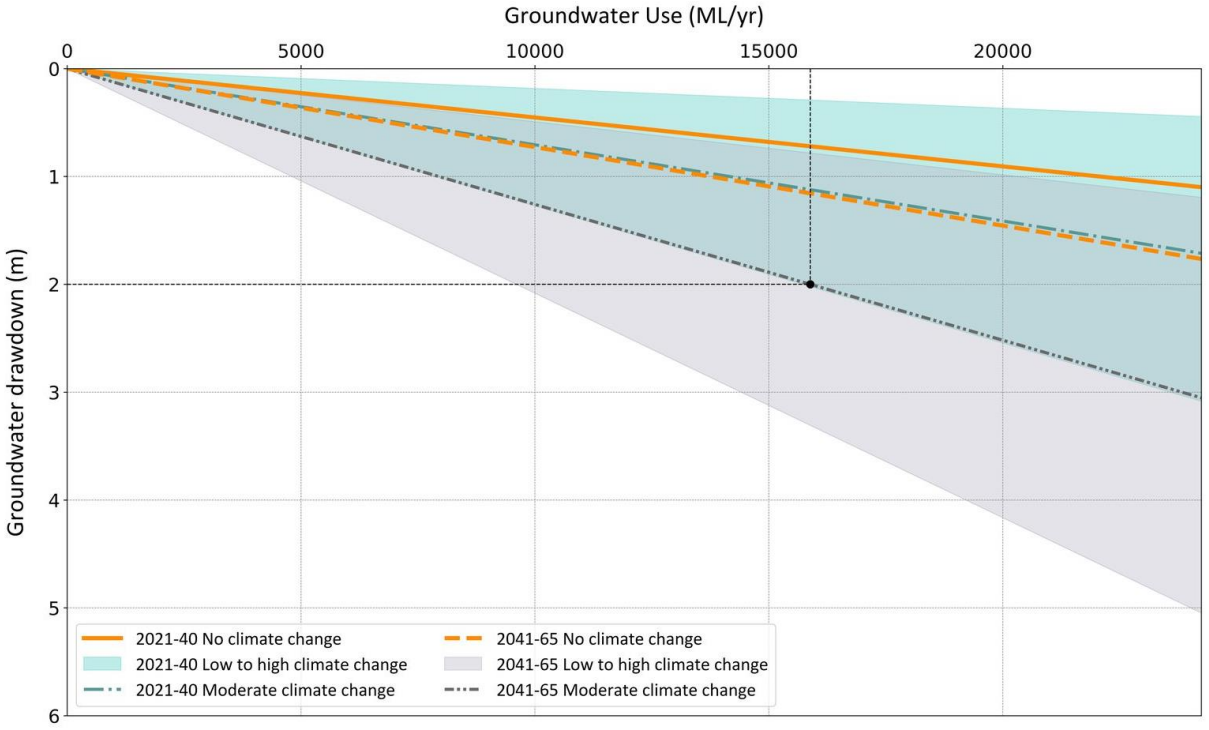

Figure A5-220. Plot for Yangery WSPA Consumptive Users modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-256. Statewide drawdown use synthesis Table A5-for Yangery WSPA

GMU					YANGERY WSPA
Consumptive users (bores)	Avg Use 3,425 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.44
				MCC (LCC to HCC)	0.78 (0.18 to 1.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.72
				MCC (LCC to HCC)	0.72 (0.44 to 2.1)
	PCV use 12,123 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.75
				MCC (LCC to HCC)	1.3 (0.22 to 2.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.72
				MCC (LCC to HCC)	2.4 (0.80 to 3.9)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	22,749
				MCC (HCC to LCC)	14,253 (7,935 to 59,413)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	31.1% (21.2% to 110.1%)
		2041-2065	Volume (ML/yr)	No CC	13,935

				MCC (HCC to LCC)	7,908 (4,821 to 20,256)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	20.6% (16.9% to 41.6%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	45,498
				MCC (HCC to LCC)	28,507 (15,870 to 118,826)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	62% (43% to 220%)
		2041-2065	Volume (ML/yr)	No CC	27,870
				MCC (HCC to LCC)	15,816 (9,642 to 40,512)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	41.2% (33.9% to 83.2%)

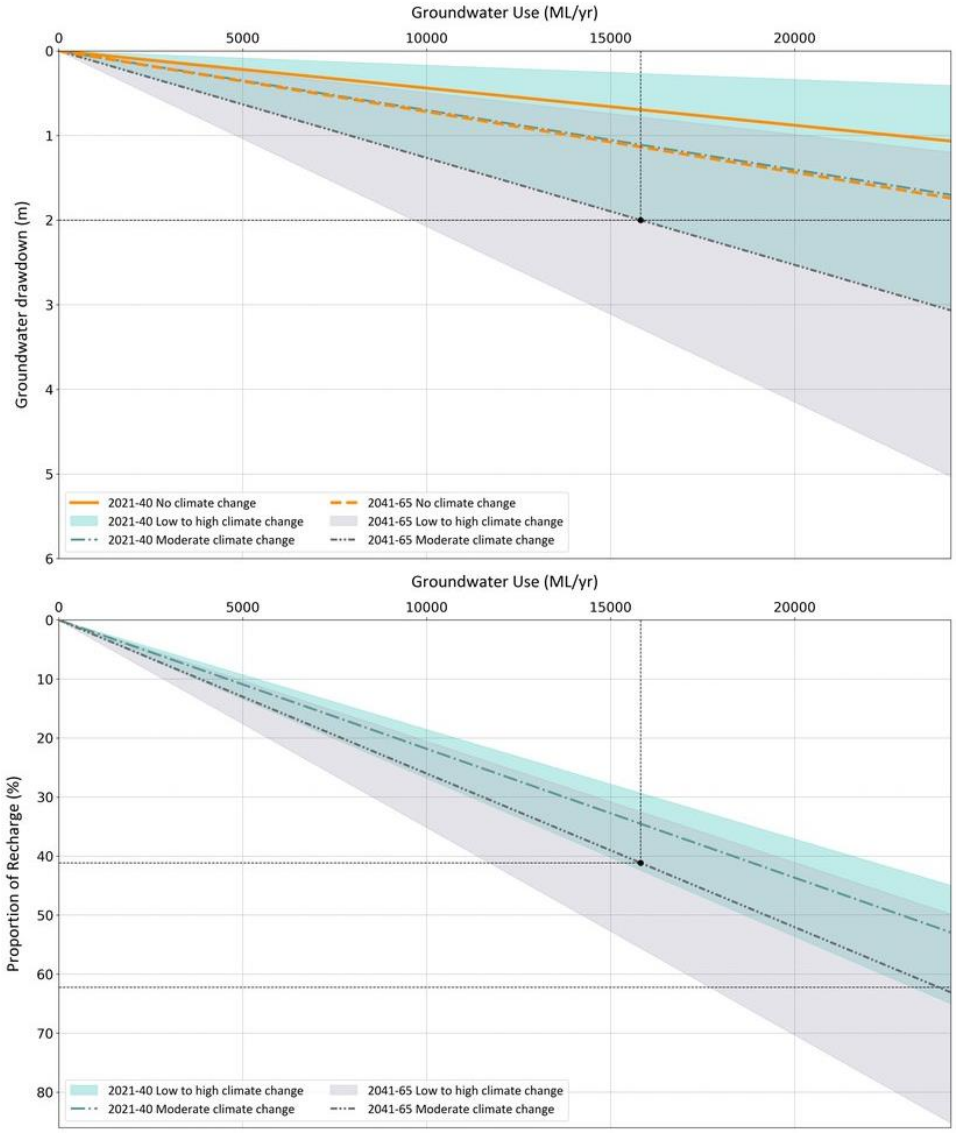

Figure A5-221. Upper Plot: Yangery WSPA statewide modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65. Lower Plot: Yangery WSPA statewide modelled drawdown-use as percentage of recharge relationship for climate change scenarios for 2021-40 and 2041-65.

Table A5-257. Seawater intrusion synthesis Table A5-for Yangery WSPA

GMU					YANGERY WSPA
Seawater intrusion	Avg Use 3,425 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.49
				MCC (LCC to HCC)	0.25 (0.05 to 0.77)
			Area elev. <1.5 mAHD (%)	No CC	74%
				MCC (LCC to HCC)	73% (70% to 76%)
		2041-2065	Drawdown from baseline (m)	No CC	0.34
				MCC (LCC to HCC)	0.67 (0.40 to 1.5)
			Area elev. <1.5 mAHD (%)	No CC	72%
				MCC (LCC to HCC)	75% (74% to 82%)
	PCV use 12,123 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.72
				MCC (LCC to HCC)	0.84 (0.42 to 1.6)
			Area elev. <1.5 mAHD (%)	No CC	75%
				MCC (LCC to HCC)	77% (73% to 83%)
		2041-2065	Drawdown from baseline (m)	No CC	1.1
				MCC (LCC to HCC)	1.6 (0.81 to 2.7)
			Area elev. <1.5 mAHD (%)	No CC	78%
				MCC (LCC to HCC)	82% (75% to 86%)
	Use at 1.5 mAHD	2021-2040	Volume (ML/yr)	No CC	-31,948
				MCC (LCC to HCC)	-30,703 (-43,444 to -33,623)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-67% (-90% to -81%)
		2041-2065	Volume (ML/yr)	No CC	-29,298
				MCC (HCC to LCC)	-23,819 (-29,631 to -28,183)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-62% (-104% to -58%)

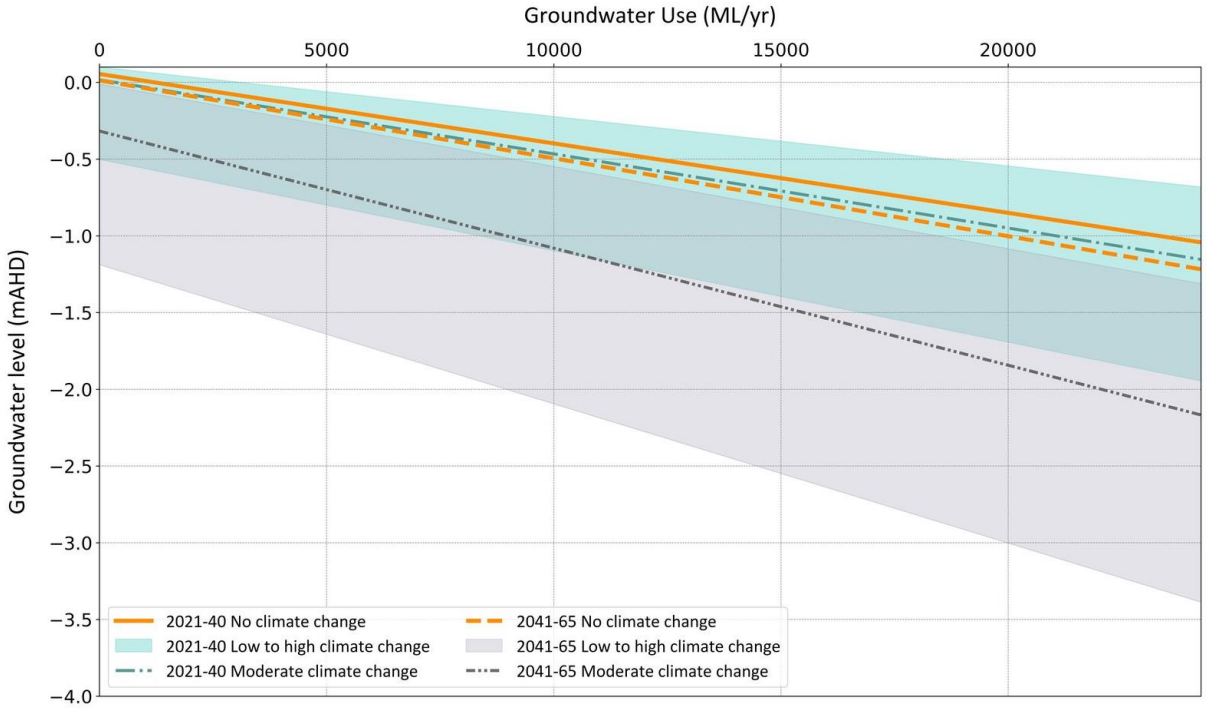

Figure A5-222. Plot for Yangery WSPA Seawater Intrusion modelled water level-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-258. Terrestrial GDE synthesis Table A5-for Yangery WSPA

GMU					YANGERY WSPA
Terrestrial GDEs	Avg Use 3,425 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.23
				MCC (LCC to HCC)	-0.04 (-0.44 to 0.54)
		2041-2065	Drawdown from baseline (m)	No CC	0.03
				MCC (LCC to HCC)	0.03 (-0.24 to 1.3)
	PCV use 12,123 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	0.10
				MCC (LCC to HCC)	0.42 (-0.33 to 1.4)
		2041-2065	Drawdown from baseline (m)	No CC	0.03
				MCC (LCC to HCC)	1.7 (0.63 to 2.9)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	6,258
				MCC (HCC to LCC)	3,064 (-16404.01 to 1,216)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	6.69% (-30.41% to 3.26%)
		2041-2065	Volume (ML/yr)	No CC	1,567
				MCC (HCC to LCC)	927 (580 to 1,845)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.41% (2.04% to 3.79%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	62,575
				MCC (HCC to LCC)	30,640 (-164040.13 to 12,160)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	66.88% (-304.11% to 32.60%)
		2041-2065	Volume (ML/yr)	No CC	15,667
				MCC (HCC to LCC)	9,268 (5,804 to 18,448)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	24.11% (20.40% to 37.90%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	125,151
				MCC (HCC to LCC)	61,280 (-328080.26 to 24,320)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	133.76% (-608.21% to 65.20%)
		2041-2065	Volume (ML/yr)	No CC	31,334
				MCC (HCC to LCC)	18,536 (11,608 to 36,896)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	48.23% (40.80% to 75.80%)

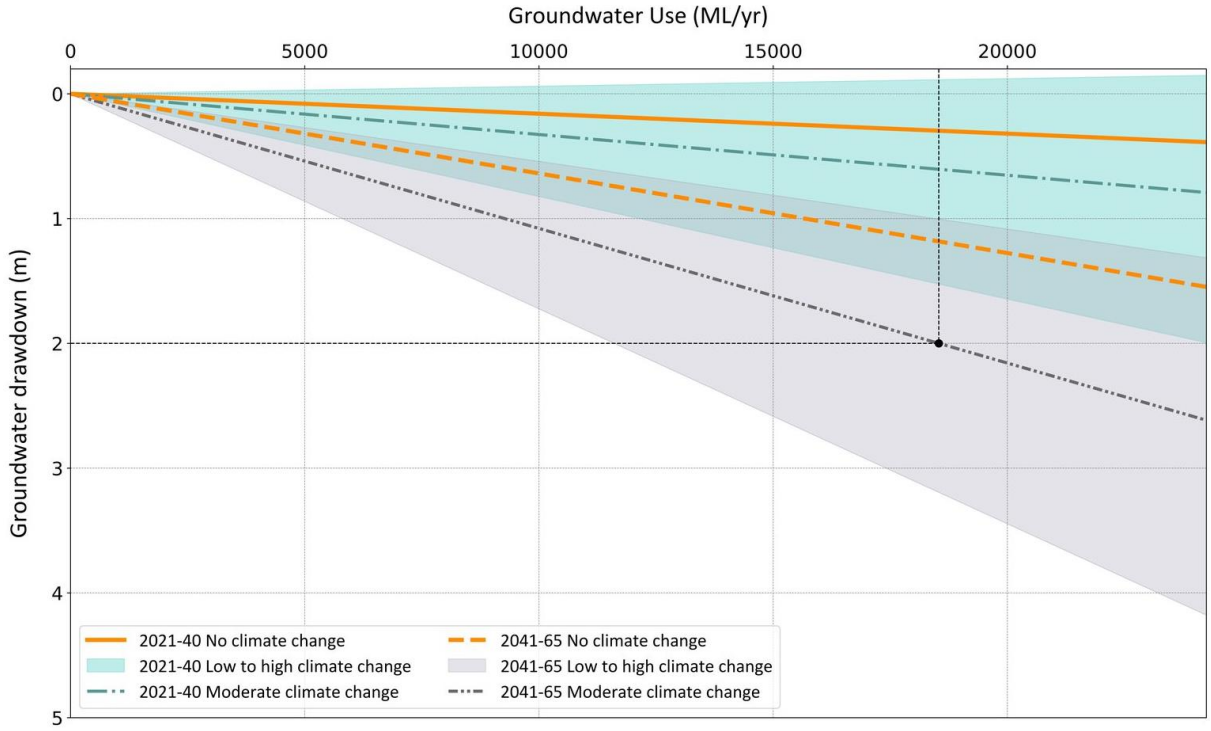

Figure A5-223. Plot for Yangery WSPA Terrestrial GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-259. Waterways GDE synthesis Table A5-for Yangery WSPA

GMU					YANGERY WSPA
Waterway GDEs	Avg Use 3,425 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.31
				MCC (LCC to HCC)	-0.06 (-0.55 to 0.66)
		2041-2065	Drawdown from baseline (m)	No CC	0.04
				MCC (LCC to HCC)	0.04 (-0.31 to 1.6)
	PCV use 12,123 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-0.10
				MCC (LCC to HCC)	0.26 (-0.56 to 1.3)
		2041-2065	Drawdown from baseline (m)	No CC	0.04
				MCC (LCC to HCC)	1.8 (0.66 to 3.0)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	15,897
				MCC (HCC to LCC)	3,915 (-5821.35 to 1,266)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	8.55% (-10.79% to 3.40%)
		2041-2065	Volume (ML/yr)	No CC	2,008
				MCC (HCC to LCC)	873 (548 to 1,732)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	2.27% (1.93% to 3.56%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	158,974
				MCC (HCC to LCC)	39,148 (-58213.51 to 12,664)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	85.45% (-107.92% to 33.95%)
		2041-2065	Volume (ML/yr)	No CC	20,079
				MCC (HCC to LCC)	8,726 (5,480 to 17,319)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	22.70% (19.26% to 35.58%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	317,948
				MCC (HCC to LCC)	78,296 (-116427.02 to 25,329)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	170.91% (-215.84% to 67.90%)
		2041-2065	Volume (ML/yr)	No CC	40,158
				MCC (HCC to LCC)	17,453 (10,960 to 34,637)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	45.41% (38.52% to 71.16%)

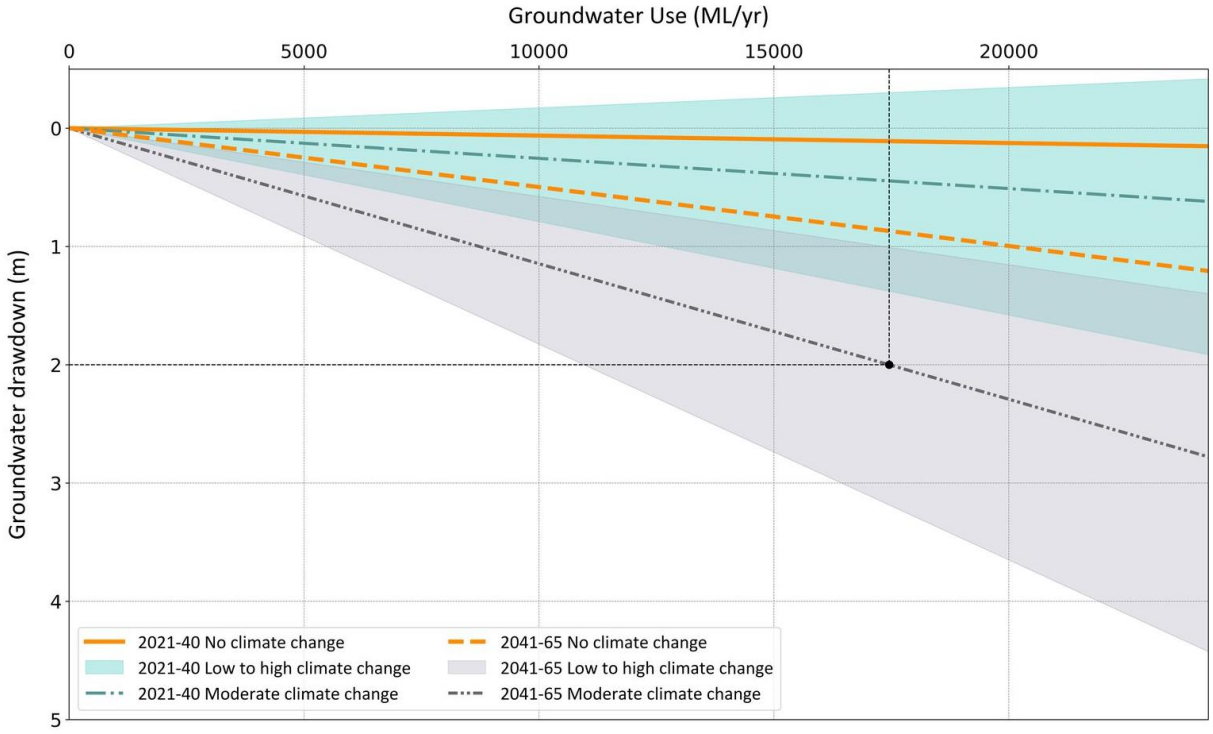

Figure A5-224. Plot for Yangery WSPA Waterways GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Table A5-260. Stream gauge results for Yangery

GMU		YANGERY WSPA		
Stream gauge/Catchment:		236205 - Merri River @ Woodford (Unregulated)		
Base flow index (1975-2020)		0.37		
Mean annual flow (MAF)	2040	Flow (ML/yr)	MCC (HCC to LCC)	44,721 (33,052 to 59,062)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-7,164 (-18,833 to 7,177)
	2065	Flow (ML/yr)	MCC (HCC to LCC)	36,753 (20,664 to 48,730)
		Change from 1975-2020 (ML/yr)	MCC (HCC to LCC)	-15,132 (-31,221 to -3,155)
Groundwater extraction in upgradient catchment as % of MAF flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	1.12% (0.848% to 1.52%)
		PCV use (ML/yr)	MCC (LCC to HCC)	5.65% (4.28% to 7.64%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	1.36% (1.03% to 2.42%)
		PCV use (ML/yr)	MCC (LCC to HCC)	6.87% (5.18% to 12.23%)
Q90 flow	2040	Flow (ML/yr)	MCC (HCC to LCC)	11.29 (8.34 to 14.91)
		Change from 1975-2020 (ML/yr)	NA	NA
	2065	Flow (ML/yr)	MCC (HCC to LCC)	9.28 (5.22 to 12.30)
		Change from 1975-2020 (ML/yr)	NA	NA
Groundwater extraction in upgradient catchment as % of Q90 flow	2040	Current use (ML/yr)	MCC (LCC to HCC)	4,436% (3,359% to 6,002%)
		PCV use (ML/yr)	MCC (LCC to HCC)	22,377% (16,943% to 30,276%)
	2065	Current use (ML/yr)	MCC (LCC to HCC)	5,397% (4,071% to 9,600%)
		PCV use (ML/yr)	MCC (LCC to HCC)	27,227% (20,535% to 48,427%)

Table A5-261. Wetlands GDE synthesis Table A5-for Yangery WSPA

GMU					YANGERY WSPA
Wetlands GDEs	Avg Use 3,425 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.40
				MCC (LCC to HCC)	-1.12 (-1.66 to -0.46)
		2041-2065	Drawdown from baseline (m)	No CC	-0.97
				MCC (LCC to HCC)	-0.97 (-1.30 to 0.37)
	PCV use 12,123 (ML/yr)	2021-2040	Drawdown from baseline (m)	No CC	-1.01
				MCC (LCC to HCC)	-0.55 (-1.52 to 0.48)
		2041-2065	Drawdown from baseline (m)	No CC	-0.97
				MCC (LCC to HCC)	1.0 (-0.20 to 2.2)
	Use at 0.1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-2,388
				MCC (HCC to LCC)	-5,768 (-1,474 to 2,862)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-12.59% (-2.73% to 7.67%)
		2041-2065	Volume (ML/yr)	No CC	753
				MCC (HCC to LCC)	1,287 (723 to 6,968)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	3.35% (2.54% to 14.32%)
	Use at 1 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-23879.61
				MCC (HCC to LCC)	-57679.61 (-14738.66 to 28,619)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-125.90% (-27.32% to 76.73%)
		2041-2065	Volume (ML/yr)	No CC	7,531
				MCC (HCC to LCC)	12,873 (7,225 to 69,677)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	33.5% (25.4% to 143.2%)
	Use at 2 metre drawdown	2021-2040	Volume (ML/yr)	No CC	-47759.21
				MCC (HCC to LCC)	-115,359 (-29,477 to 57,239)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	-251.81% (-54.65% to 153.45%)
		2041-2065	Volume (ML/yr)	No CC	15,061
				MCC (HCC to LCC)	25,746 (14,450 to 139,354)
			Proportion of recharge (%)	No CC	NA
				MCC (HCC to LCC)	68.0% (50.8% to 286.3%)

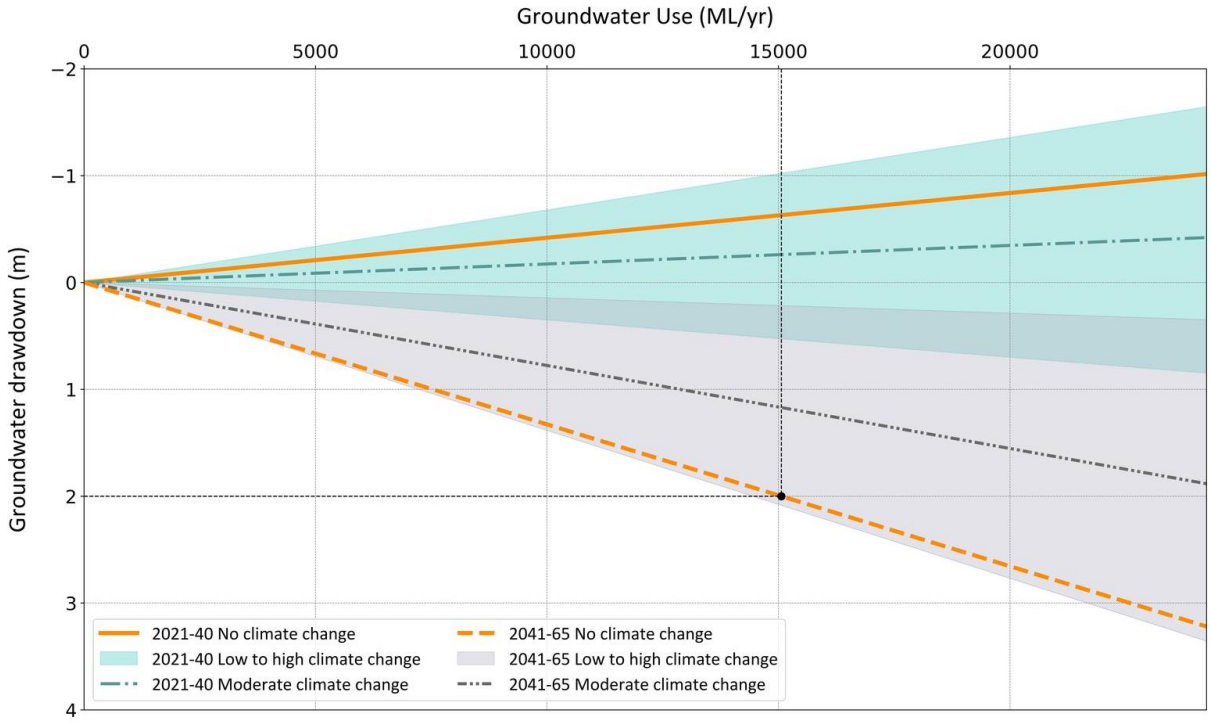

Figure A5-225. Plot for Yangery WSPA Wetlands GDEs modelled drawdown-use relationship for climate change scenarios for 2021-40 and 2041-65

Appendix 6: Unconfined UA Results – reported by Winterfill SDLs

Table A6-1. Unconfined UA sustainable yield volumes based on Low, Medium and High climate scenarios

SDL number	Low Climate Sustainable Yield Volume	Medium Climate Sustainable Yield Volume	High Climate Sustainable Yield Volume
2210001	105	78	50
2210002	97	72	45
2210003	41	28	16
2210004	180	130	80
2210005	110	79	49
2210006	64	45	28
2210007	23	18	13
2210101	144	105	65
2210102	59	42	26
2210103	104	74	48
2210104	122	88	55
2210105	55	37	26
2210106	41	29	21
2210201	154	108	70
2210202	25	17	12
2210301	183	121	73
2210302	10	7	5
2210401	30	18	11
2210402	10	7	4
2210403	8	6	4

2210501	148	106	67
2210502	97	68	42
2210503	100	69	44
2210601	20	17	13
2210602	56	41	26
2210603	25	20	15
2210604	3	3	2
2210605	6	5	4
2210606	79	57	37
2210607	10	7	5
2210608	8	6	4
2210609	18	12	7
2210610	30	23	16
2210611	13	9	6
2210612	5	4	3
2210613	10	7	4
2220001	60	47	32
2220002	82	63	45
2220003	21	16	11
2220004	68	54	40
2220005	45	36	27
2220006	25	19	14
2220007	52	40	30
2220008	24	18	13

2220009	37	28	21
2220010	63	51	41
2220011	212	180	151
2220012	1182	974	811
2220101	151	120	81
2220102	22	18	12
2220201	68	54	40
2220202	43	32	23
2220203	54	39	26
2220204	32	24	16
2220205	90	71	52
2220301	56	44	30
2220302	36	28	18
2220401	202	151	105
2220402	9	8	6
2220501	130	98	59
2220502	164	125	77
2220503	36	26	16
2220504	112	90	68
2220505	113	89	64
2220506	24	20	16
2220507	37	31	25
2220508	16	13	10
2220601	62	45	31

2220602	62	48	34
2220603	115	81	54
2220604	140	104	73
2220605	108	78	53
2220606	42	29	20
2220607	35	26	20
2220608	103	86	71
2220609	138	99	72
2220610	407	318	249
2220701	114	91	74
2220702	492	401	334
2220703	294	251	229
2220704	213	172	142
2220705	421	346	291
2220706	467	381	313
2220801	110	84	59
2220802	24	17	10
2220803	60	44	29
2220804	17	14	10
2220805	55	38	22
2220806	38	24	13
2220807	5	4	2
2220901	2	1	1
2230001	20	16	9

2230002	38	31	21
2230003	111	92	66
2230004	72	65	48
2230005	30	26	18
2230006	72	60	44
2230007	69	58	41
2230008	72	59	43
2230009	78	64	47
2230010	42	34	25
2230011	11	9	6
2230012	37	29	21
2230013	31	22	14
2230014	14	11	9
2230015	57	44	33
2230016	20	14	9
2230017	137	106	78
2230018	656	521	406
2230101	45	33	21
2230102	9	7	5
2230201	102	77	49
2230202	84	66	47
2230203	50	40	29
2230301	92	66	40
2230302	45	32	19

2230303	378	292	215
2230401	60	49	39
2230402	566	456	390
2230403	428	340	280
2230501	44	34	25
2230502	36	27	20
2230503	347	274	209
2230504	267	214	174
2230505	244	186	150
2230506	230	189	159
2230507	13	10	9
2240001	78	63	51
2240002	33	26	22
2240003	12	10	7
2240004	13	10	7
2240005	43	35	27
2240006	46	34	20
2240007	33	25	18
2240008	16	12	8
2240009	20	15	9
2240010	16	12	7
2240011	8	6	4
2240012	33	26	18
2240013	125	104	78

2240014	240	193	142
2240015	208	169	125
2240016	21	14	8
2240017	75	59	43
2240018	576	467	355
2240019	146	115	81
2240020	132	106	80
2240021	613	487	365
2240022	262	205	151
2240101	76	56	40
2240102	224	164	119
2240103	42	32	24
2240104	249	187	138
2240105	297	216	159
2240106	35	29	23
2240201	228	183	140
2240202	310	252	192
2240203	5	4	3
2240204	221	166	118
2240301	72	59	46
2240302	443	369	283
2240303	63	49	37
2240304	16	13	9
2240401	198	159	114

2240402	16	13	9
2240501	487	391	314
2240502	1618	1315	1020
2240503	514	378	290
2240504	367	287	217
2240505	69	53	39
2240506	175	137	103
2250001	24	21	17
2250002	192	161	128
2250003	16	13	11
2250004	151	124	96
2250005	11	9	7
2250006	8	6	4
2250007	50	39	27
2250008	75	61	47
2250009	34	28	23
2250010	297	255	221
2250101	137	112	86
2250201	86	68	50
2250202	64	50	36
2250203	30	23	15
2250204	34	25	17
2250205	10	8	6
2250301	432	318	224

2250302	146	105	75
2250303	203	151	112
2250304	37	28	23
2250305	56	41	33
2250306	25	19	15
2250307	83	67	60
2250308	11	9	8
2250309	18	16	13
2250310	88	70	54
2250311	24	20	17
2250312	110	95	85
2250314	6	6	5
2250315	78	68	61
2250401	51	40	33
2250402	17	14	14
2250403	9	7	7
2250404	61	49	46
2250405	21	18	16
2250406	32	28	26
2250407	47	40	37
2250408	8	7	7
2250409	14	12	12
2250411	70	58	47
2250412	15	12	10

2250413	283	239	194
2250415	19	15	12
2250417	42	35	27
2250418	19	15	12
2250501	44	35	27
2250601	54	42	32
2250602	14	12	11
2250603	32	28	27
2250604	24	21	19
2250701	71	58	45
2250702	15	12	11
2250703	19	17	15
2250704	24	21	18
2250705	20	17	14
2250801	199	169	135
2250802	189	157	117
2250803	323	268	208
2250804	354	296	236
2250805	121	100	75
2250806	278	228	174
2250807	538	444	346
2259999	2035	1665	1352
2260001	85	68	57
2260002	8	6	5

2260003	113	89	71
2260004	141	112	91
2260005	80	65	53
2260006	22	17	13
2260007	13	11	9
2260008	32	23	18
2260009	58	45	36
2260010	11	9	7
2260011	91	66	47
2260012	8	4	2
2260013	338	276	230
2260014	707	590	499
2260015	58	50	44
2260016	47	39	32
2260017	395	314	257
2260018	65	51	39
2260019	295	256	228
2260020	393	331	285
2260021	316	277	240
2260022	338	278	236
2260023	202	170	145
2260024	1674	1395	1176
2260025	303	279	256
2260026	315	272	237

2260027	402	322	271
2260028	379	297	229
2260029	5364	4345	3591
2260101	136	93	60
2260102	148	112	86
2260103	48	36	26
2260104	199	142	98
2260105	29	23	18
2260106	48	37	29
2260107	1	0	0
2260108	145	114	96
2260109	91	72	58
2260201	18	14	12
2260202	12	10	8
2260203	15	12	10
2260204	13	11	9
2260205	8	6	5
2260206	13	10	8
2260207	19	14	11
2260208	66	50	38
2260301	11	9	7
2260302	57	45	36
2260303	181	141	111
2260304	46	35	28

2260305	22	16	11
2260306	41	30	22
2260307	65	47	36
2260308	67	42	32
2260401	8	7	5
2260402	25	19	15
2260403	32	25	20
2260404	19	16	13
2260405	41	32	26
2260406	378	302	244
2260407	72	55	43
2260408	25	19	15
2260409	814	674	555
2260410	28	22	17
2260411	75	58	45
2260412	52	43	36
2260413	884	745	607
2260501	73	58	47
2260502	68	53	41
2260503	17	13	11
2260504	12	9	7
2260505	30	22	17
2269999	443	355	286
2270001	45	38	33

2270002	26	22	19
2270003	118	101	87
2270004	52	43	37
2270005	164	140	123
2270006	16	14	12
2270007	44	38	34
2270008	61	55	51
2270101	53	46	40
2270102	55	47	41
2270103	566	478	412
2270104	252	208	185
2270105	17	15	13
2270106	65	56	50
2270107	24	20	18
2270108	54	47	43
2270109	1630	1375	1217
2270201	53	40	29
2270202	40	31	25
2270203	76	61	50
2270204	35	28	23
2270205	80	63	51
2270206	85	65	51
2270207	199	154	121
2270208	50	41	34

2270209	204	168	142
2270210	34	28	23
2270211	74	61	50
2270212	406	340	285
2270213	78	66	55
2270214	290	252	211
2270215	665	628	521
2270216	410	377	313
2270217	1715	1590	1311
2270301	11	9	8
2270302	60	50	41
2270303	95	79	65
2270304	138	116	99
2270401	42	35	28
2270402	23	19	16
2270403	91	77	67
2270501	29	23	17
2270502	15	12	10
2270503	242	204	173
2270504	27	21	17
2270505	84	70	59
2270506	693	592	508
2270507	768	643	546
2270601	17	13	10

2270602	16	10	7
2270603	18	14	12
2270604	813	708	614
2270605	1083	937	833
2270701	26	21	18
2270702	109	93	80
2270703	201	170	150
2270704	239	205	185
2270705	376	321	284
2270706	156	130	111
2270801	33	26	21
2270802	141	120	107
2270803	186	151	130
2270804	1127	971	842
2270805	432	375	344
2270806	1170	1010	851
2270902	56	49	44
2270903	951	784	689
2270904	465	395	335
2270905	1118	962	809
2270906	418	340	277
2270907	1024	878	765
2270908	422	333	267
2270909	218	180	154

2270910	8	7	6
2270911	25	21	18
2270912	2	2	2
2270913	17	13	11
2270914	28	23	19
2270915	32	26	21
2270916	29	24	19
2270917	86	68	56
2270918	935	812	706
2270919	112	97	83
2270920	241	203	171
2270921	182	156	138
2270922	1108	942	833
2270923	81	70	63
2270924	830	683	572
2270925	1268	1068	921
2270926	1230	1055	913
2270927	980	837	693
2270928	247	212	170
2270929	1219	1030	845
2280001	54	47	40
2280002	62	54	46
2280003	27	22	18
2280004	54	50	45

2280005	35	30	26
2280006	47	46	41
2280007	25	23	20
2280008	1	1	1
2280009	4	3	3
2280010	22	16	12
2280011	65	58	51
2280012	18	14	11
2280101	75	60	49
2280102	19	14	10
2280103	17	12	9
2280104	47	32	21
2280105	21	14	10
2280106	1	0	0
2280201	43	37	31
2280202	542	452	370
2280203	158	132	110
2280204	19	16	14
2280205	198	166	138
2280206	137	112	91
2280207	144	112	89
2280208	207	164	134
2280209	70	58	49
2280210	5	4	3

2280211	5	4	3
2280212	475	388	316
2280213	133	109	89
2280214	97	80	71
2280301	20	17	15
2280302	29	24	20
2280303	41	35	29
2280304	19	16	13
2280305	36	31	27
2280306	3	2	2
2280307	25	21	18
2280308	6	5	4
2280401	62	50	40
2280402	43	32	24
2280403	45	38	32
2280404	15	12	10
2280406	16	13	11
2280407	3	2	2
2280501	202	173	149
2280502	457	395	336
2280503	22	19	16
2280504	136	118	102
2280505	76	67	57
2280506	186	163	136

2280507	226	195	165
2280508	58	47	38
2280509	437	377	316
2280510	594	508	424
2280511	66	57	48
2280512	48	42	35
2280513	104	91	76
2280514	55	48	41
2280515	411	361	310
2280516	468	406	353
2280517	132	116	100
2280518	395	339	290
2280519	222	186	162
2280520	48	40	34
2280521	137	108	93
2280522	4	3	3
2280523	1	0	0
2280524	85	72	57
2289999	982	762	598
2290001	450	381	315
2290002	84	70	58
2290003	79	67	55
2290004	68	58	48
2290005	74	63	52

2290006	85	71	59
2290007	386	334	295
2290008	317	270	231
2290009	78	66	57
2290010	220	184	154
2290011	116	96	79
2290012	292	241	201
2290013	157	132	111
2290014	123	102	84
2290015	56	43	34
2290016	88	62	44
2290017	94	67	50
2290018	164	126	98
2290019	51	41	32
2290020	210	166	128
2290021	34	29	25
2290022	180	144	109
2290023	542	417	318
2290024	140	116	92
2290025	58	45	32
2290026	16	12	9
2290027	11	9	7
2290028	110	84	60
2290029	55	44	33

2290030	25	26	18
2290031	12	11	8
2290032	26	25	17
2290033	186	166	123
2290034	7	6	5
2290035	66	54	39
2290036	27	22	16
2290037	34	28	21
2290038	94	77	56
2290039	2012	1524	1061
2290040	346	274	203
2290041	1766	1252	956
2290042	1510	1045	746
2290043	903	673	465
2290044	1350	1005	706
2290045	77	61	46
2290046	397	275	196
2290047	529	380	267
2290048	1132	827	582
2290049	468	356	259
2290101	54	45	36
2290102	68	57	47
2290103	97	82	67
2290201	89	76	64

2290202	9	8	6
2290203	43	34	27
2290204	246	210	181
2290301	45	39	32
2290302	51	44	38
2290401	118	96	77
2290402	15	11	8
2290403	36	28	22
2290404	83	66	54
2290405	32	24	19
2290501	32	27	23
2290502	9	8	6
2290503	28	26	20
2290504	12	10	8
2290505	579	471	341
2290506	142	118	86
2290507	387	303	210
2300001	857	440	270
2300002	382	214	139
2300003	619	405	290
2300004	206	155	114
2300005	333	248	186
2300006	442	323	221
2300101	319	166	92

2300102	213	129	71
2300103	108	68	45
2300201	823	485	376
2300202	192	137	108
2300203	370	168	123
2300204	1136	486	340
2300205	311	123	69
2300301	1060	502	391
2300302	357	183	134
2300303	597	209	135
2300304	664	376	260
2300401	5	3	2
2300402	3	2	2
2300403	9	5	4
2300404	245	134	101
2300405	312	156	109
2300406	14	9	7
2300407	92	63	45
2300408	1400	774	528
2300409	201	108	70
2300410	175	106	68
2300411	980	660	497
2309999	937	686	479
2310001	21	13	13

2310002	152	99	98
2310003	360	249	179
2310004	81	69	48
2310005	58	48	34
2310006	99	82	60
2310007	354	257	204
2310008	3341	2544	2060
2310009	533	438	367
2310101	8	5	4
2310102	209	163	122
2310103	12	9	7
2310104	16	13	6
2310201	117	103	46
2310202	139	107	53
2310203	41	23	2
2310204	110	85	57
2310205	166	134	101
2310301	192	138	119
2310302	35	26	18
2310303	1	1	1
2310304	45	34	27
2310305	31	22	18
2310306	32	26	20
2310401	238	183	149

2310402	22	15	12
2310403	70	54	44
2310501	97	64	44
2310502	22	16	13
2310601	418	280	206
2310602	550	382	306
2310603	138	101	85
2310701	727	468	345
2310702	2622	1858	1465
2310703	692	533	411
2310801	2240	1857	1541
2310802	1270	1065	889
2319999	1670	1348	1060
2320002	250	202	147
2320003	200	173	133
2320005	153	124	90
2320006	167	129	113
2320007	55	43	32
2320008	44	34	25
2320009	2	1	1
2320010	13	5	7
2320011	455	308	254
2320012	105	66	50
2320013	56	32	21

2320014	221	155	115
2320015	253	201	162
2320016	856	627	433
2320017	55	45	35
2320018	70	53	32
2320019	187	142	99
2320020	205	141	76
2320021	339	279	219
2320022	205	158	114
2320023	351	282	213
2320024	299	248	181
2320101	262	197	111
2320102	18	13	9
2320103	1339	996	769
2320104	1239	876	702
2320105	1221	833	685
2320201	288	232	165
2320202	129	105	77
2320203	1562	1215	940
2320204	1618	1266	1053
2320205	1621	1106	909
2320206	1010	639	537
2330001	25	21	14
2330002	14	11	6

2330003	26	20	12
2330006	110	97	80
2330007	11	8	5
2330008	1920	1640	1349
2330009	535	440	341
2330010	67	55	45
2330011	1000	804	616
2330012	291	245	192
2330013	5987	4982	3877
2330014	289	248	187
2330015	153	134	103
2330016	1027	898	687
2330101	383	267	183
2330102	551	396	238
2330103	567	433	257
2330104	951	743	487
2330201	472	411	319
2330202	128	108	83
2330203	158	134	104
2330204	123	106	81
2330205	182	160	132
2330206	194	154	118
2330207	791	598	440
2330208	176	153	129

2330301	149	138	116
2330302	211	193	159
2330303	1040	930	760
2340001	241	197	141
2340002	563	475	339
2340003	118	100	72
2340004	2668	2271	1897
2340005	4444	3710	2996
2340006	868	732	586
2340007	774	671	538
2340008	2423	2108	1744
2340101	1453	1181	957
2340102	1011	656	419
2340103	580	466	371
2340104	230	181	149
2340201	420	318	232
2340202	252	212	169
2340301	25	21	18
2340302	460	364	289
2340303	488	300	206
2340304	12	8	7
2340305	346	220	168
2340306	732	505	363
2340307	705	473	350

2340308	862	679	510
2340309	1348	1038	717
2340401	262	222	172
2340402	86	77	66
2340403	994	848	687
2350002	2	2	2
2350003	312	275	210
2350004	276	243	202
2350005	1153	1049	889
2350006	163	145	122
2350007	1559	1397	1174
2350008	197	170	141
2350009	670	581	489
2350010	231	203	170
2350011	29	23	19
2350012	17	15	12
2350013	53	47	39
2350014	145	130	110
2350015	390	345	288
2350016	346	305	252
2350017	625	555	470
2350101	307	247	198
2350102	269	235	209
2350103	263	229	194

2350104	479	406	335
2350105	204	183	169
2350106	209	188	173
2350107	759	685	604
2350201	10	8	6
2350202	27	23	17
2350203	15	13	9
2350204	33	27	19
2350205	57	49	39
2350206	39	33	25
2350207	99	71	55
2350208	334	272	207
2350209	465	348	249
2350210	108	87	64
2350211	140	110	70
2350212	480	359	227
2350213	30	23	16
2350214	26	19	10
2350215	92	77	56
2350216	392	331	253
2350217	20	13	10
2350218	311	261	190
2350219	10	8	5
2350220	128	111	89

2350221	648	555	445
2350222	322	271	206
2350302	38	24	18
2350303	25	22	18
2350304	45	36	26
2350401	21	18	14
2350402	4	3	2
2350403	9	7	4
2350404	101	84	64
2350501	755	520	372
2350502	71	49	34
2350503	198	166	138
2350504	671	515	400
2350505	208	167	121
2350601	34	28	21
2350602	14	12	10
2350603	83	74	60
2350604	32	28	21
2350605	14	12	9
2350606	53	48	39
2350607	78	68	55
2350608	48	42	32
2350609	120	115	101
2350701	37	33	26

2350702	16	13	10
2350703	13	12	9
2350801	145	129	105
2350802	107	98	84
2350803	840	751	651
2350804	91	79	67
2350805	238	213	175
2350806	19	17	14
2350807	34	27	20
2350808	9	9	6
2350809	46	39	29
2350810	23	19	13
2350901	3	3	2
2350902	15	14	12
2350903	4	4	3
2350904	14	11	10
2350905	7	6	6
2350906	24	20	15
2350907	41	37	30
2350908	19	17	14
2350909	3	2	2
2350910	20	17	12
2350911	11	9	6
2350912	7	5	4

2350913	25	20	14
2350914	1	1	0
2350915	9	7	5
2350916	8	6	4
2350917	10	8	6
2350918	16	13	9
2350919	2	1	1
2350920	6	4	2
2350921	1	0	0
2350922	1	0	0
2350929	80	71	57
2350930	758	662	530
2350931	226	198	158
2350932	86	76	59
2350933	117	104	83
2350934	675	579	440
2359999	224	204	172
2360001	205	164	140
2360002	357	296	248
2360003	1395	1119	905
2360004	1761	1403	1168
2360005	151	93	85
2360006	1250	1279	637
2360007	2027	1726	1236

2360008	2223	1838	1565
2360009	30	25	22
2360010	22	19	16
2360011	536	452	355
2360012	8	7	5
2360013	295	258	199
2360014	420	329	237
2360015	815	627	470
2360016	1242	1030	826
2360017	5194	4384	3573
2360018	3146	2757	2250
2360019	1889	1641	1169
2360021	259	212	138
2360101	1442	876	898
2360102	631	440	344
2360103	1990	1614	1295
2360201	326	277	208
2360202	161	143	117
2360203	267	219	164
2360204	87	73	57
2360205	267	213	154
2360206	1455	1065	929
2360207	533	296	346
2360208	940	722	589

2360209	1131	653	688
2360210	1046	466	695
2360211	7276	4801	4575
2360212	2971	2379	1918
2360301	31	29	26
2360302	252	212	183
2360303	24	21	19
2360304	349	280	242
2360305	1561	1186	1070
2360307	64	54	44
2360308	19	15	13
2360310	559	412	341
2360311	91	59	51
2360312	1404	1083	851
2360313	482	318	237
2360314	1353	911	580
2360315	1882	1261	891
2360316	9566	6737	5640
2360317	2411	2007	1626
2360318	2168	1870	1539
2360319	2698	2393	2035
2360320	1104	1034	882
2360321	1016	982	780
2360322	3383	3374	2758

2360401	1348	1269	1055
2360501	1369	792	936
2360502	1414	874	993
2360503	1365	1051	892
2360504	491	389	284
2360505	628	518	400
2360506	856	668	451
2360507	555	447	310
2360508	236	189	130
2360509	895	727	505
2360510	1224	1015	720
2360511	58	41	27
2360512	143	113	80
2360513	491	411	310
2370001	70	19	5
2370002	420	252	142
2370003	305	174	61
2370004	72	42	21
2370101	6	8	5
2370102	453	352	186
2370103	340	499	430
2370104	1834	1386	1256
2370105	5206	3792	3595
2370106	555	487	417

2370107	1751	1632	1398
2370108	373	463	392
2370109	123	114	93
2370112	8	15	14
2370201	2482	1371	1775
2370202	1709	1272	1169
2370204	407	350	307
2370205	333	242	235
2370301	2217	1534	1596
2370302	879	651	623
2370303	684	570	466
2370304	3	3	2
2370305	283	215	200
2370401	243	152	96
2370402	371	239	126
2380001	139	124	107
2380002	161	141	169
2380003	183	161	144
2380004	4	3	3
2380005	42	37	37
2380006	29	24	23
2380007	86	74	67
2380008	498	425	359
2380009	83	67	48

2380010	52	44	31
2380011	91	75	56
2380012	242	211	173
2380013	56	47	40
2380014	64	55	44
2380015	829	736	613
2380016	68	55	38
2380017	39	34	26
2380018	21	18	14
2380019	9	8	7
2380020	11	9	7
2380021	20	19	15
2380022	284	232	151
2380023	11	12	9
2380024	11	12	8
2380025	9	10	7
2380026	108	137	88
2380027	79	98	60
2380028	240	330	225
2380029	530	869	556
2380030	579	654	499
2380031	2	123	33
2380032	77	230	72
2380033	18	56	28

2380034	33	78	61
2380036	79	103	92
2380038	725	579	340
2380039	117	87	60
2380040	59	42	23
2380101	11	11	9
2380102	13	12	10
2380103	23	21	17
2380104	5	5	4
2380105	19	19	15
2380201	32	36	25
2380202	18	22	15
2380301	26	31	23
2380302	4	7	5
2380303	50	120	70
2380401	27	32	25
2380402	16	26	18
2380403	6	10	8
2380404	12	17	13
2380405	6	12	8
2380501	2	2	2
2380502	4	2	7
2380503	4	3	4
2380504	22	21	24

2380505	2886	2431	2013
2380506	2593	2187	1723
2380507	176	159	161
2380508	48	41	34
2380509	29	26	24
2380510	348	314	289
2380511	1213	1058	905
2380512	3535	2950	2319
2380513	357	303	263
2380514	6	4	4
2380515	49	36	32
2380516	79	63	55
2380517	12	10	9
2380518	794	675	557
2380519	23	19	17
2380520	1116	952	811
2380521	2090	1762	1480
2380522	38	33	29
2380523	884	529	636
2380524	868	413	605
2380525	2654	1639	1859
2380526	1660	1215	1175
2380527	6264	5247	4521
2380528	644	548	474

2380529	2310	1809	1623
2380530	3683	3060	2658
2380531	15	13	12
2380532	10	10	8
2380533	12	10	9
2380534	40	32	27
2380535	55	47	39
2380536	26	26	22
2380537	22	24	20
2380538	38	36	32
2380539	688	575	501
2380540	19	21	16
2380541	2	3	3
2380542	1089	873	742
2380543	8	8	7
2380544	2	2	2
2380545	7	9	12
2380546	1	2	2
2380547	37	43	46
2380548	1	3	2
2380549	7	12	11
2380601	34	41	50
2380602	1	1	1
2380701	1253	993	831

2380702	336	317	288
2380703	620	616	392
2380704	1293	1641	1347
2380705	223	188	117
2380801	221	224	176
2399999	2084	1747	1264
4010104	4	4	3
4010105	1	1	1
4010913	1	0	0
4010922	1	0	0
4010923	1	1	0
4020701	250	167	106
4030201	1	1	1
4030507	1	0	0
4030703	30	22	17
4031001	42	19	19
4031002	75	52	43
4031003	335	227	187
4031004	94	66	45
4031101	425	293	235
4031102	27	17	15
4031103	13	9	4
4031201	162	109	59
4040406	172	149	112

4049999	478	413	307
4050001	2	1	1
4050004	483	408	258
4050007	399	385	184
4050009	0	1	0
4050010	9	9	6
4050011	13	11	5
4050101	2	1	1
4050102	110	78	44
4050301	1301	1098	806
4050303	1451	1158	722
4050304	2026	1653	1155
4050502	204	186	150
4050601	393	314	244
4050602	370	373	282
4050701	883	606	530
4050702	479	394	317
4050902	1	1	1
4051001	57	55	37
4051102	10	9	7
4051206	1	0	0
4052003	18	15	12
4052101	48	34	28
4059999	39	39	30

4060002	26	18	13
4060005	4	3	2
4060008	1	1	1
4060009	17	12	11
4060010	5	3	3
4060012	28	22	16
4060013	5	4	3
4060101	14	11	10
4060112	2	2	1
4060207	1	1	1
4060301	8	7	5
4060302	20	15	13
4060303	5	4	3
4060304	77	63	53
4060305	81	64	47
4060401	9	19	16
4060402	65	52	41
4069999	166	70	44
4070003	21	18	11
4070004	1	0	0
4070008	8	7	6
4070010	1	0	0
4070011	55	49	44
4070013	27	23	18

4070014	17	16	7
4070015	69	86	45
4070016	11	12	8
4070101	38	26	25
4070316	10	9	6
4070317	4	4	3
4070401	19	17	12
4070402	1	0	1
4070405	3	2	2
4070407	46	35	19
4070409	2	3	2
4070501	27	24	20
4070502	10	9	6
4070503	99	84	67
4070504	58	51	39
4070505	222	196	160
4070506	130	130	109
4070507	65	68	55
4070508	16	18	16
4070509	25	26	18
4079999	18848	15117	11520
4080001	82	91	52
4080002	90	84	48
4080003	135	140	74

4080004	63	50	41
4080005	83	64	41
4080006	87	73	65
4080007	200	152	90
4080008	357	279	171
4080009	251	203	160
4080010	395	326	253
4080011	171	153	87
4080012	96	79	66
4080013	431	335	232
4080014	55	37	22
4080015	266	131	78
4080016	85	44	26
4080017	61	42	23
4080018	553	378	275
4080101	89	62	66
4080102	76	50	64
4080103	49	43	29
4080104	64	54	35
4089999	18299	8930	5957
4149999	27835	17015	11326
4150001	102	94	70
4150002	140	125	86
4150003	301	257	181

4150004	117	103	78
4150005	320	275	236
4150006	114	82	53
4150007	175	146	91
4150008	110	74	43
4150009	72	48	27
4150010	77	56	37
4150011	119	68	39
4150012	840	604	464
4150013	945	704	735
4150101	103	86	65
4150102	220	197	170
4150103	199	173	167
4150201	69	70	53
4150202	192	171	123
4150203	156	161	97
4150204	255	199	134
4150301	211	128	157
4150302	97	46	64
4150303	91	50	58
4150304	316	200	149
4150401	7	5	6
4150402	35	25	26
4150403	72	73	48

4150404	687	853	531
4150405	152	122	138
4150406	584	402	422
4150407	247	131	181
4150408	589	444	460
4150409	1204	928	964
4150410	361	299	303
4150501	117	88	99
4150502	161	132	129
4150503	23	16	20
4150504	191	164	156
4150505	465	458	280
4150506	267	229	163
4150507	1021	800	595
4150508	367	348	237
4150509	311	222	185
4150510	132	155	107
4150601	523	458	402
4150602	387	347	257
4150701	443	290	370
4150801	379	308	245
4150802	92	82	57
4150803	548	418	231
4150804	116	88	55

4150805	252	198	164
4150806	139	105	71
4150807	726	590	419
4150808	4	3	0
4150809	28	35	16
4150810	721	675	449
4150811	205	192	175
4150812	21	18	33
4150813	142	69	151
4159999	13490	11247	7508

Appendix 7: Recharge Maps

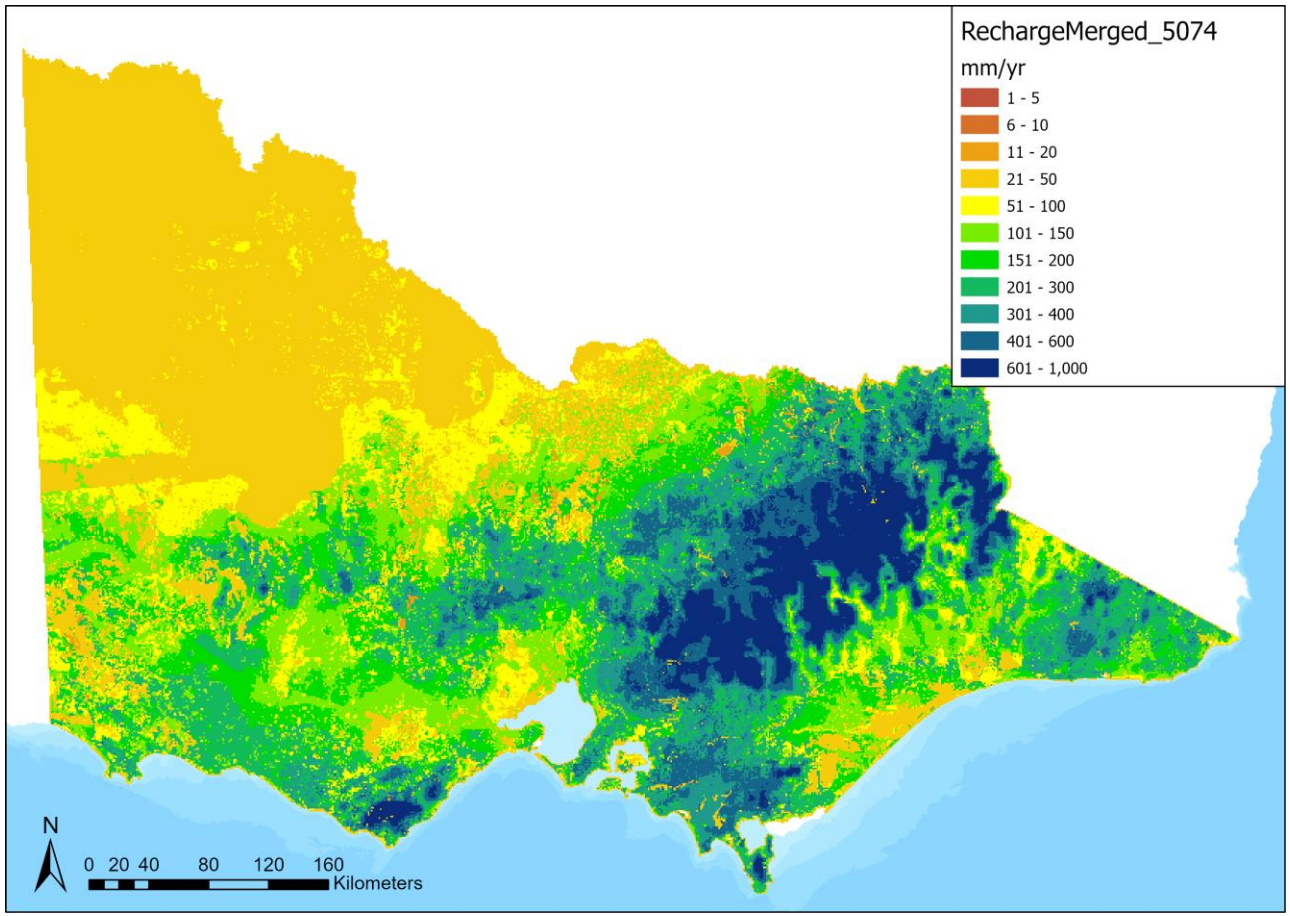

Figure A7-1. 1950-1974 baseline period recharge map

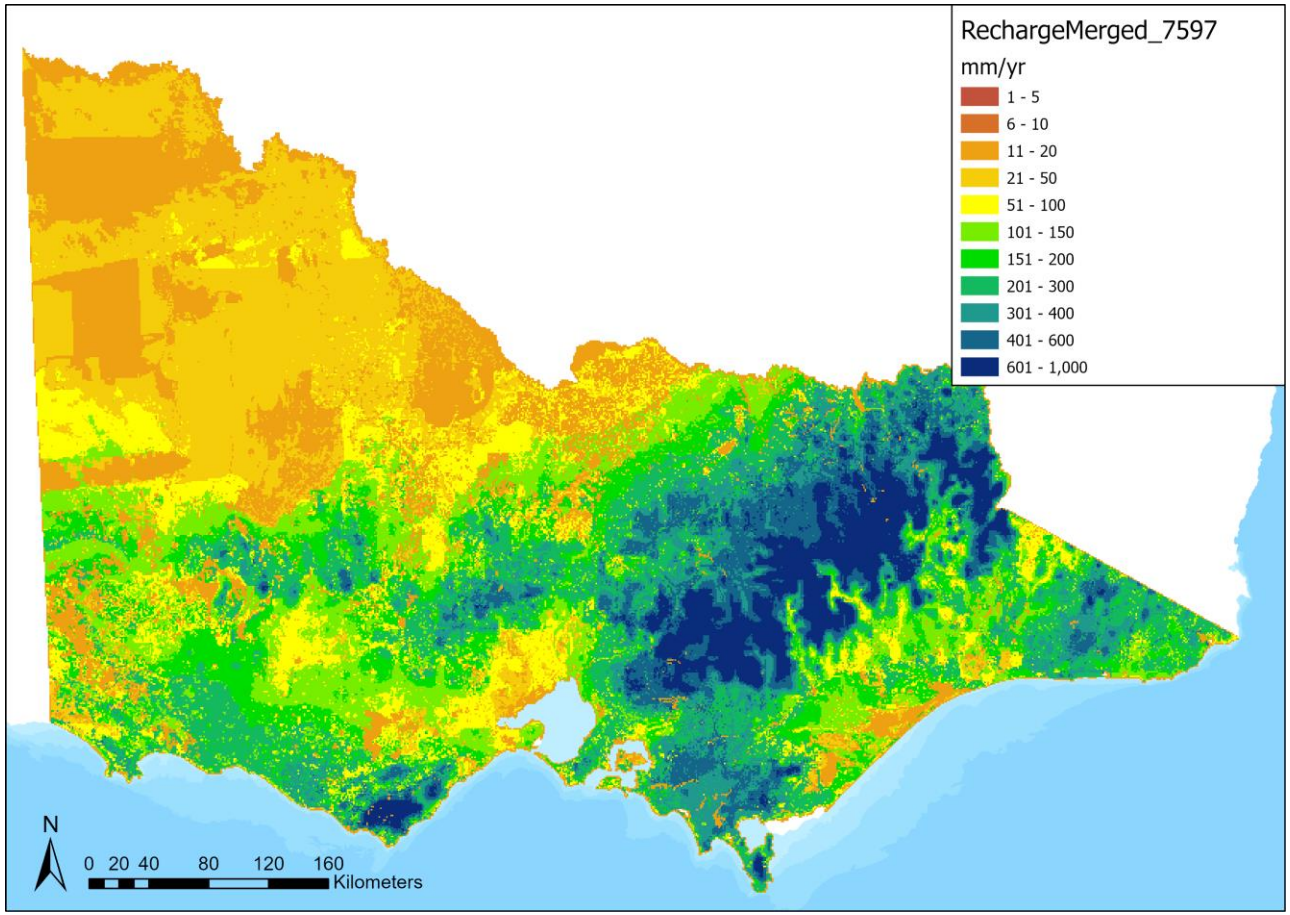

Figure A7-2. 1975-1997 development period recharge map

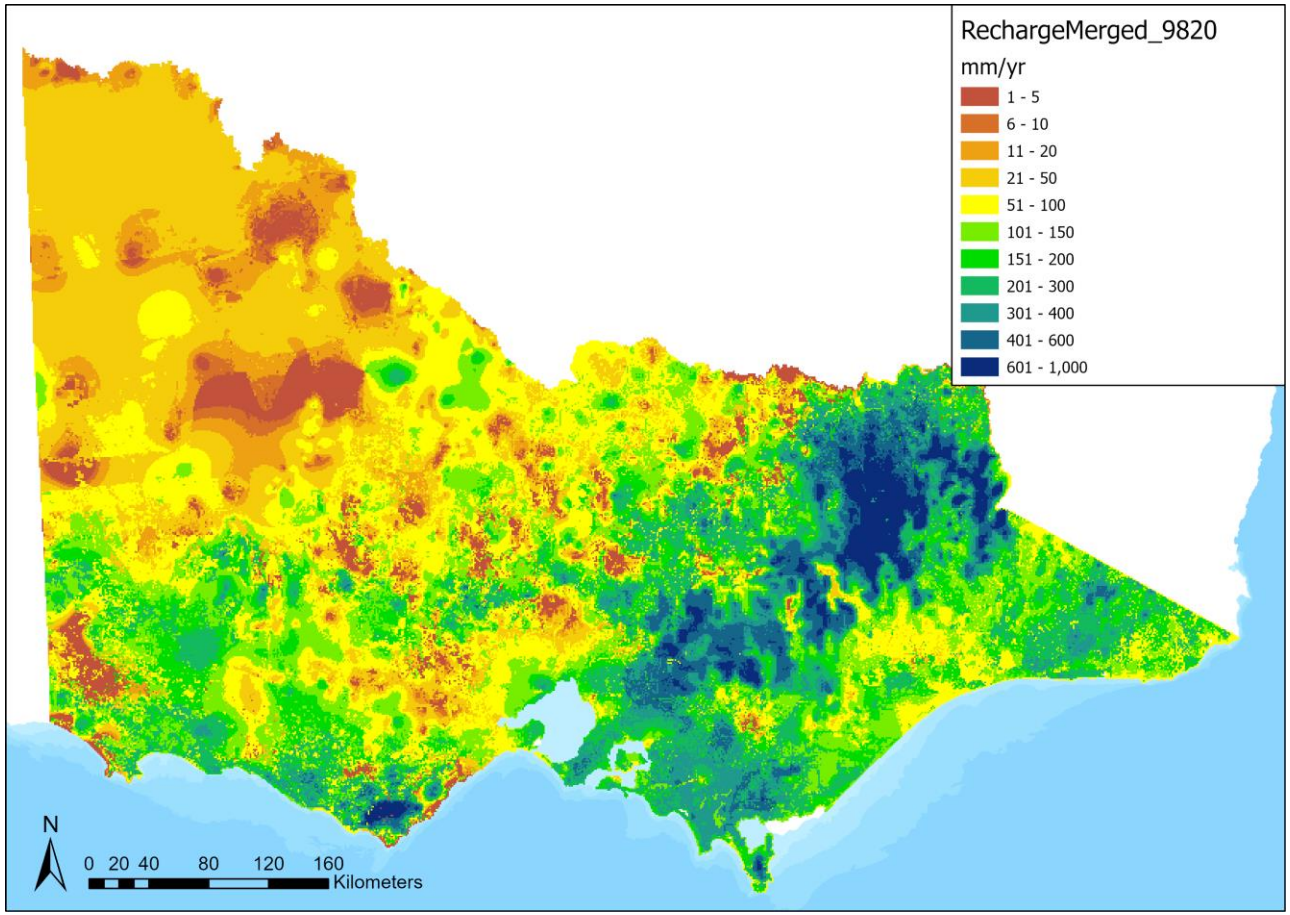

Figure A7-3. 1998-2020 current period recharge map

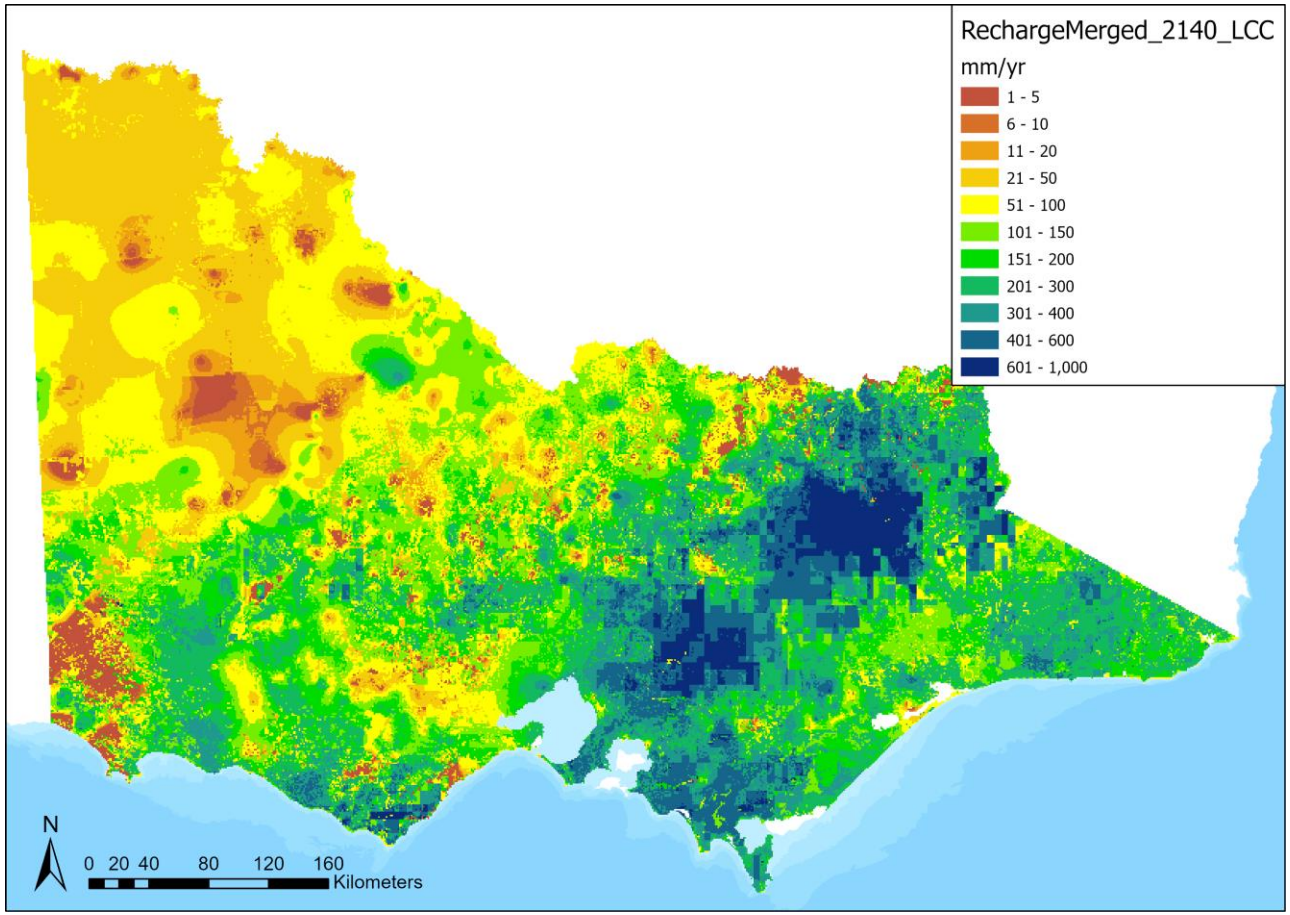

Figure A7-4. 2021-2040 low climate change recharge map

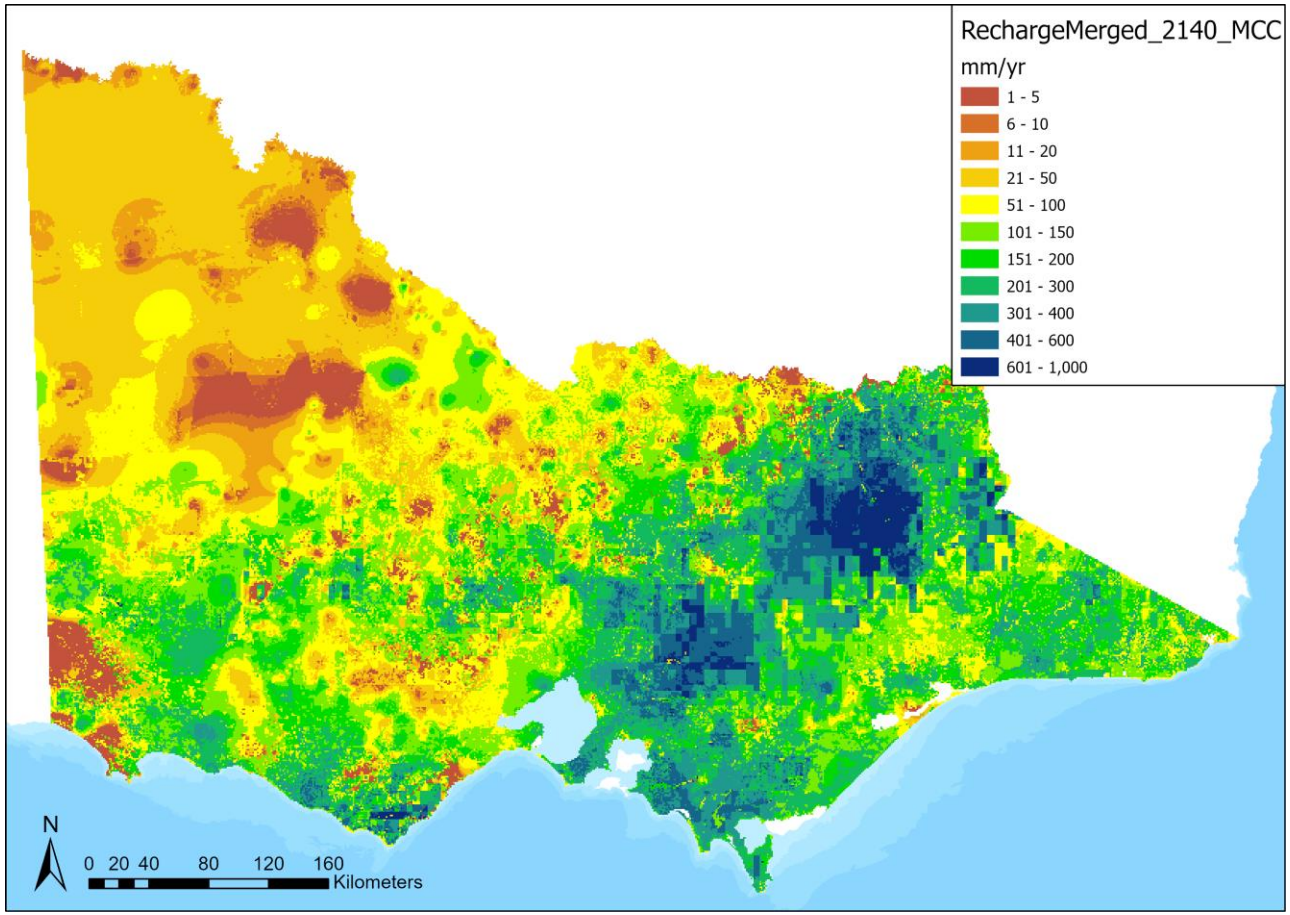

Figure A7-5. 2021-2040 medium climate change recharge map

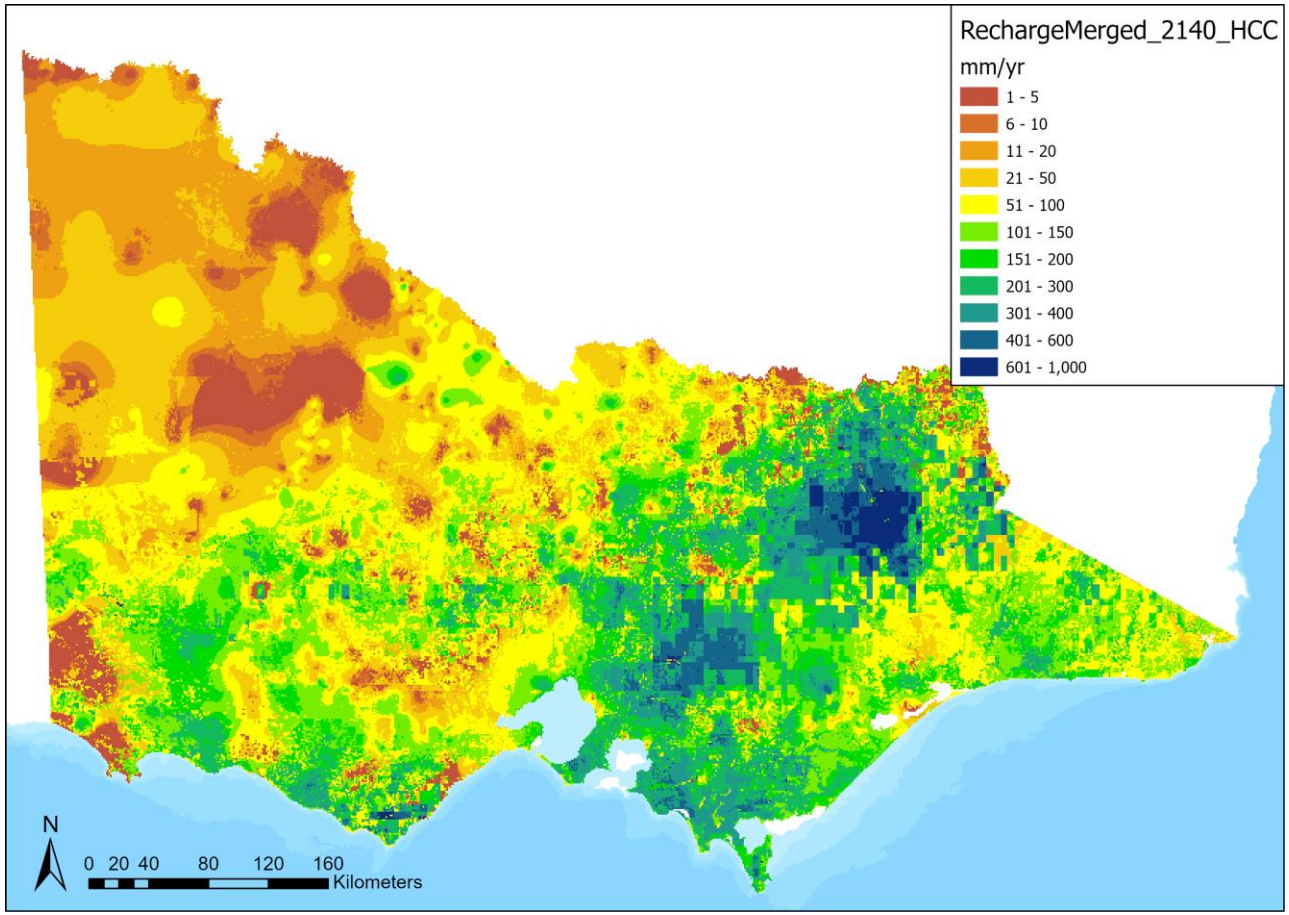

Figure A7-6. 2021-2040 high climate change recharge map

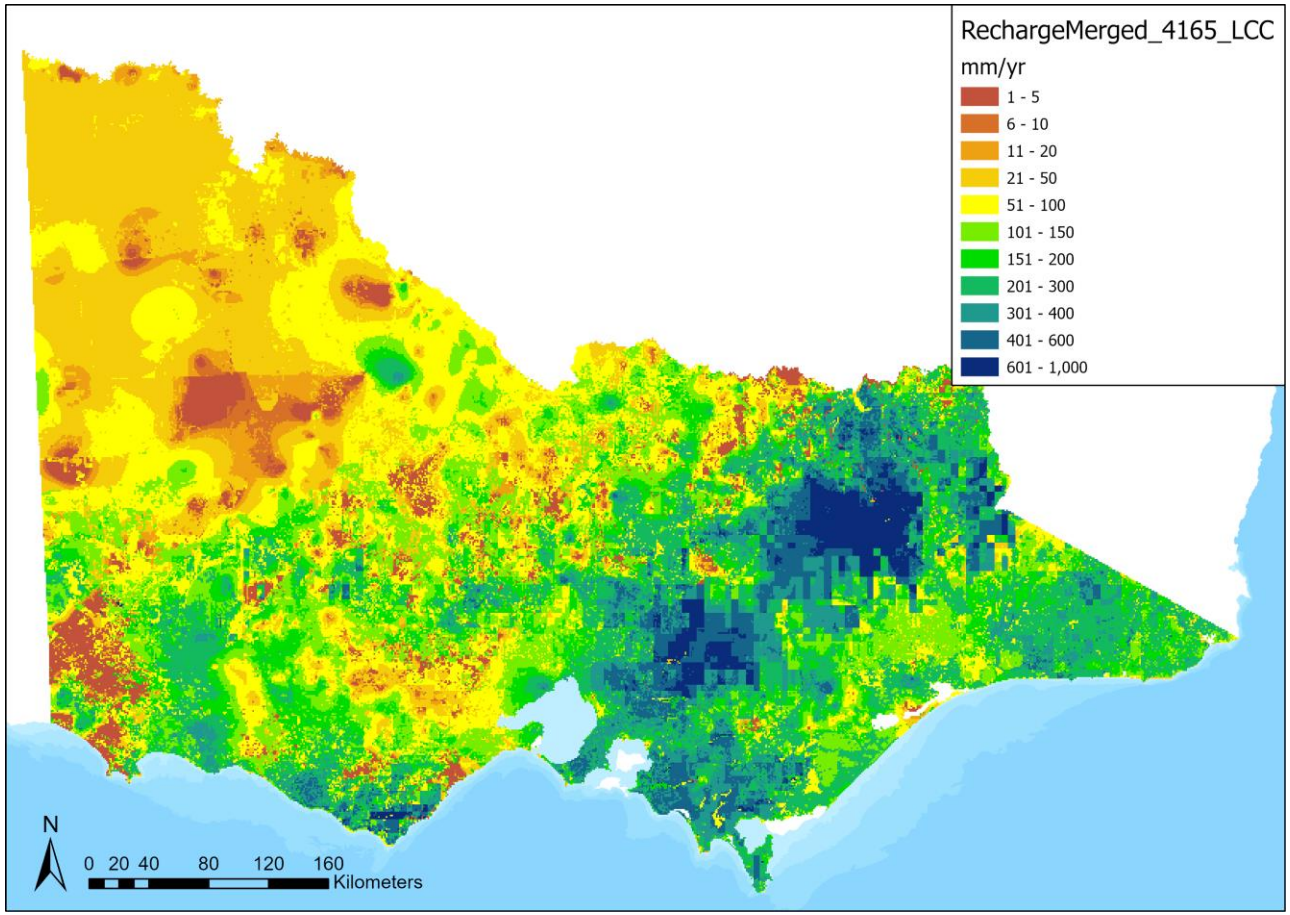

Figure A7-7. 2041-2065 low climate change recharge map

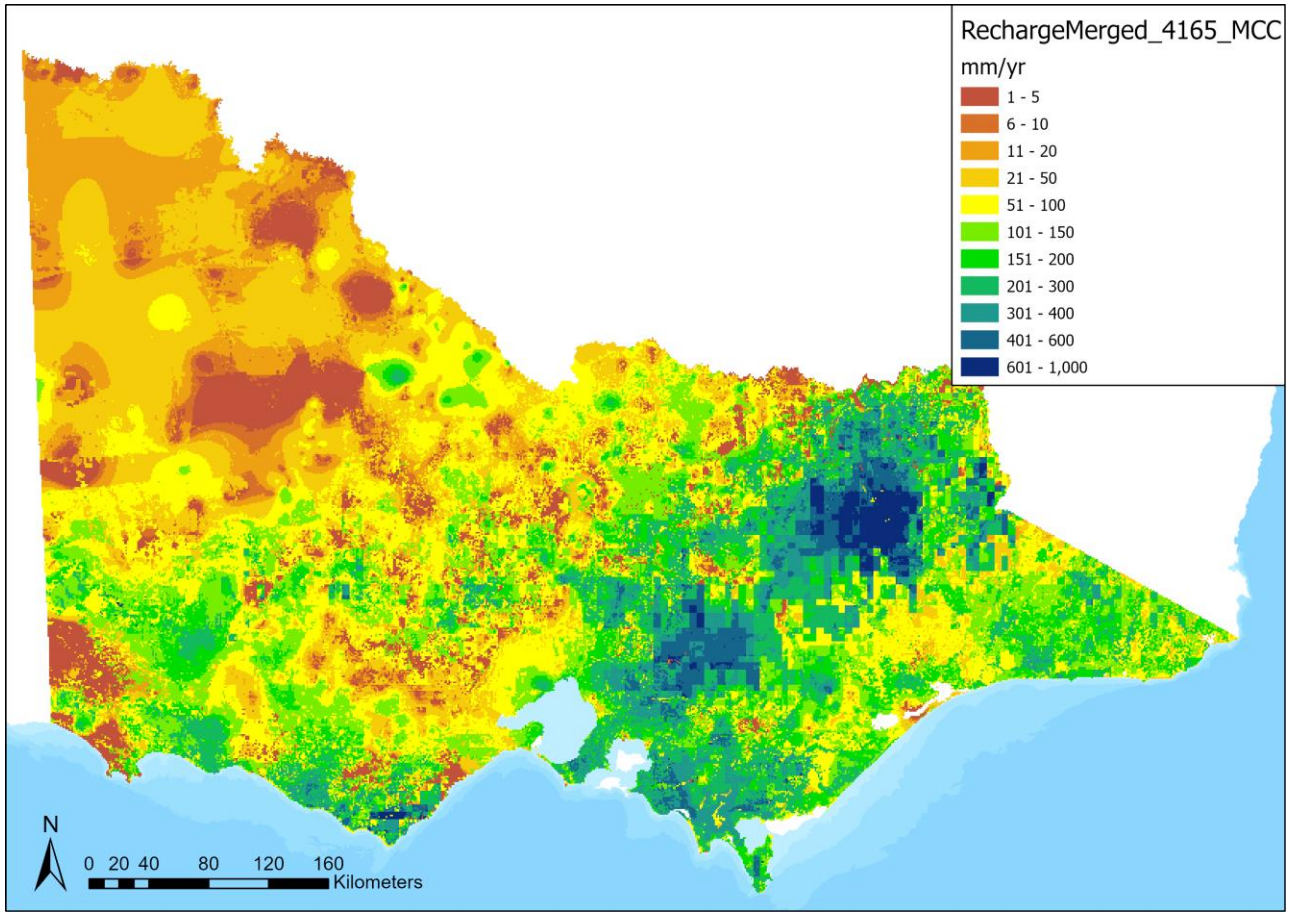

Figure A7-8. 2041-2065 medium climate change recharge map

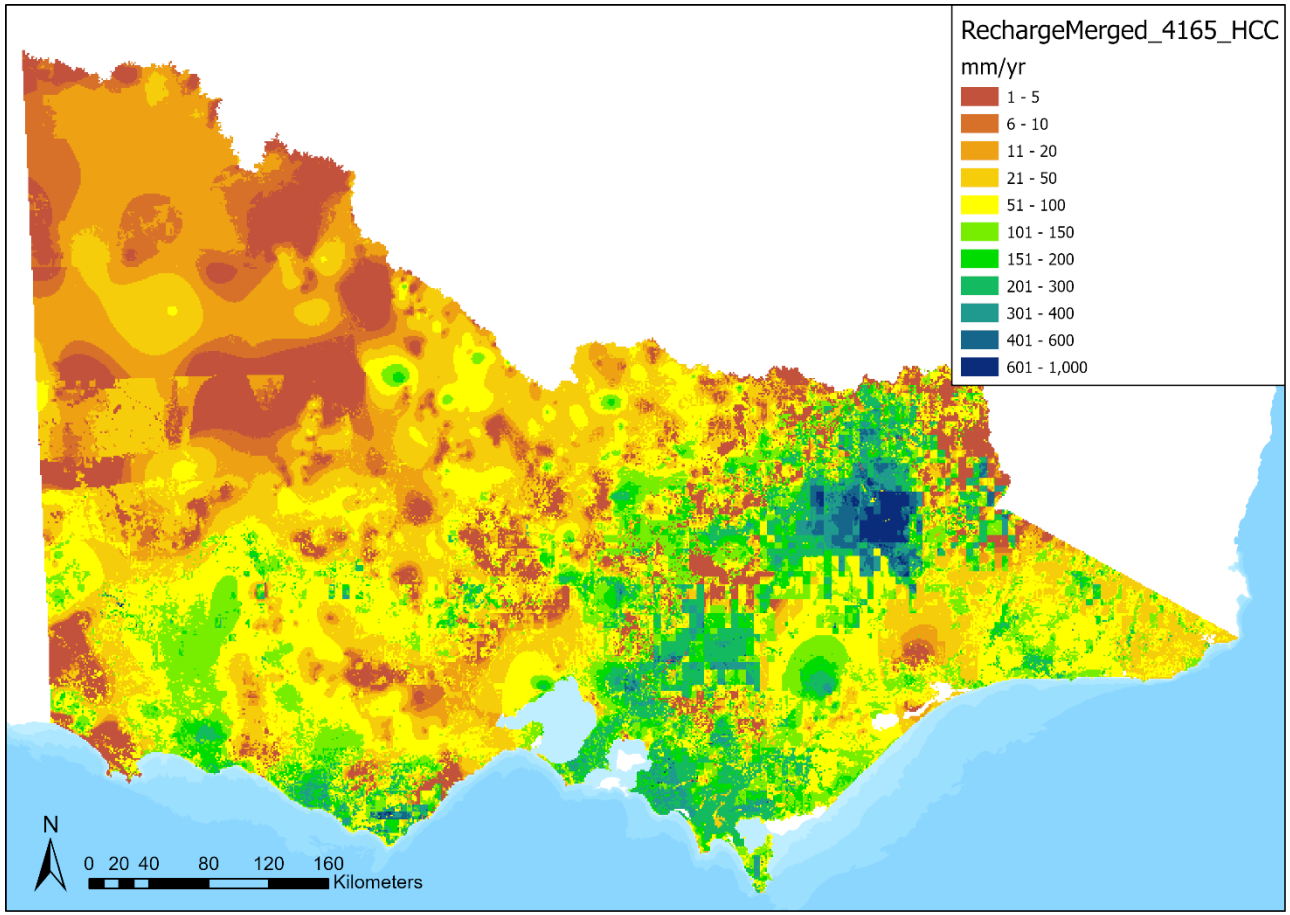

Figure A7-9. 2041-2065 high climate change recharge map