LVRRS Implementation Action 1: Climate change guidelines

Mine Land Rehabilitation Authority Forum 2 February 2021

Geoff Steendam, DELWP



Presentation structure

- 1. Climate science and water resource information past observations and future projections
 - Temperature
 - Rainfall
 - Streamflow
- 2. Guidance developed by DELWP for assessing water availability
- 3. Status of LVRRS Implementation action 1: Climate Change guidance

History of water sector climate research

South East Australia Climate Initiative SEACI (2006 – 2012)



www.seaci.org

Victorian Climate Initiative VicCl (2013-2017)



Australian Government Bureau of Meteorology

www.water.vic.gov.au/climate-change

Victorian Water and Climate Initiative VicWaCI (2018-2020)



www.water.vic.gov.au/climate-change

VICTORIA State State

Antivation Concernment

Observed temperature changes



Victorian annual mean temperature



Observed rainfall changes Cool season (April-October)

1997-2009

1997-2019



Warm season (November-March)

2010-2019

1997-2019





Rainfall decile ranges

Observed rainfall changes



Observed rainfall changes



Observed rainfall changes – extremes

4

0.5

-0.5

-1

-2

-3 4

-5

Annual max daily rainfall increasing

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Hourly extremes increasing (1 in 100 year)



Source: DELWP et al., 2020 (Victoria's Water in a Changing Climate)

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Observed rainfall changes – extremes

Annual max daily rainfall increasing

Hourly extremes increasing (1 in 100 year)



Observed streamflow changes

Latrobe Basin Latrobe River at Willow Grove



Observed streamflow changes







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Source: DELWP et al., 2020

(Victoria's Water in a Changing Climate)





Summary

Observed

- Higher temperatures
- Reductions in rainfall in cooler time of year
- Streamflow reductions, and in many catchments, a shift in the streamflow response to rainfall particularly during the Millennium Drought

Over the longer term future expect

- the rainfall reductions in cooler time of year to remain, or become drier still
- possible increases in summer rainfall
- increases in potential evapotranspiration due to higher temperature
- reductions in streamflow across all catchments because of less rainfall and higher potential evapotranspiration
- the streamflow response to rainfall to no longer remain the same, and generally decline

DELWP Climate Change guidelines



 The guidelines set out climate change scenarios for temperature, potential evapotranspiration, rainfall, runoff and groundwater recharge for assessing the impact of climate change on water availability, supply and demand across Victoria.

The guidelines can be adapted to suit a range of climate change impact assessment for water supply, demand and availability.

DELWP Climate Change guidelines



Status of LVRRS Implementation Action 1 – DELWP Climate Change guidelines

- 1. Provided **updated** *Guidelines for Assessing the Impact of Climate Change* on Water Availability in Victoria to mine licensees
- 2. Hosted an information session with mine licensees, DJPR and MLRA:
 - Understanding the science behind the Guidelines
 - How the Guidelines are used for long-term planning across the water industry
 - Applying the Guidelines in the context of mine rehabilitation

Further resources

CONTACT DETAILS

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Team address: HCS.Team@ delwp.vic.gov.au Victoria's Water in a Changing Climate report <u>https://www.water.vic.gov.au/vicwaci</u> (Link at top of webpage to webinar at 1pm, 3rd Feb)

Past VicWaCI Climate Science Webinars
<u>https://www.water.vic.gov.au/climate-</u>
<u>change/research/vicwaci/video</u>

 Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria <u>https://www.water.vic.gov.au/climate-</u> <u>change/adaptation/guidelines</u>

Climate Change Projections for LVRRS, Jacobs 2017
<u>https://www.water.vic.gov.au/planning/LVRRS/support</u>