Hunter River Salinity Trading Scheme

2016-17 performance

NSW EPA

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More information about the Hunter River Salinity Trading Scheme
More information on the operation of the Hunter River Salinity Trading Scheme (HRSTS) can be obtained online from the EPA at: www.epa.nsw.gov.au/licensing/hrsts/ and from the NSW Department of Primary Industry – Water at: waterinfo.nsw.gov.au/hunter/trading.shtml
Follow the links from these webpages for information on river flow and electrical conductivity conditions in the Hunter River.

For more information on the operations of the HRSTS, telephone (02) 4908 6800 or email hrsts@epa.nsw.gov.au

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What is the Hunter River Salinity Trading Scheme?

The Hunter River Salinity Trading Scheme (the Scheme) involves a system of salt credits which industries can buy and trade. Industries use these credits to discharge their salty water into the Hunter River, but only when the river contains adequate fresh water to dilute the salt and maintain water quality. The Scheme therefore balances the amount of salt that industry can directly discharge with the background level of salt in the river.

River flow is measured at a series of monitoring points along the river. When flows are low no discharges are allowed; however, during periods of high flow, limited discharge can occur but only if the industry has sufficient salt credits. When flood flows occur, discharges are allowed up to an agreed salinity target. The river is divided into three sectors for the purposes of the scheme, with salinity targets set for each sector.

The scheme is operated by WaterNSW under a service agreement with the NSW Environment Protection Authority (EPA) guided by the Hunter River Salinity Trading Scheme Operations Committee. The Committee includes representatives from industry, the community and NSW Government.

What is the purpose of the Hunter River Salinity Trading Scheme?

The Scheme has been designed to balance the water quality needs of users (such as agriculture) with the discharge needs of industry (mining, electricity generators). Overall, salinity is kept to an appropriate level by only allowing discharges during high flow or flood events and balancing the amount of salt that industry can discharge against the background salt levels in the river.

The Hunter River contains high levels of salt as a result of run-off and infiltration, weathering of the geological strata, saline groundwater inflows and a range of anthropogenic sources such as mining, land clearing and agriculture.

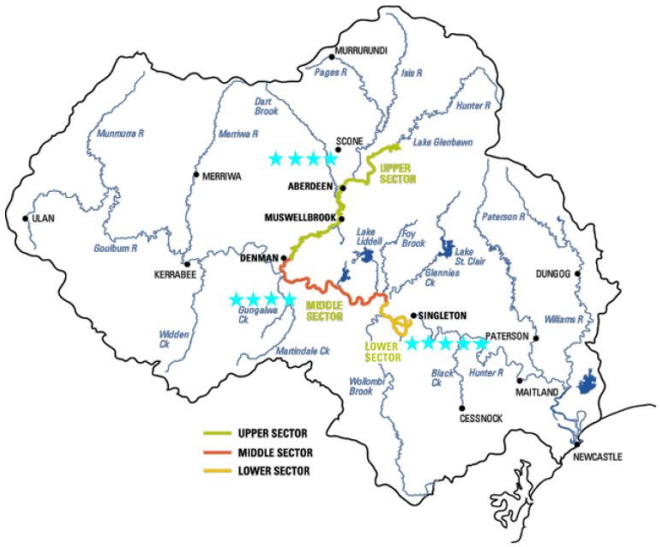
The Scheme monitors salt levels in the river to ensure that mine and power generators discharges only occur when salinity levels are appropriately low. By balancing the amount of salt that can discharge against background salt levels in the river, the Scheme helps to manage the impact of these discharges on the health of the river and ensures that the water is suitable for local primary producers to use for irrigation purposes.

How did the Hunter River Salinity Trading Scheme perform in 2016-17?

Salinity is measured by determining the electrical conductivity (EC) of water. EC estimates the amount of total dissolved salts in the water and is measured in micro Siemens per centimetre (µS/cm). Sea water has an EC of around 55,000 µS/cm. Drinking quality water can range between 600 and 1200 µS/cm.

During periods of low flow, the Hunter River may experience periods of elevated levels of salinity as demonstrated in the graphs below. This is a result of naturally salty surface and groundwater flow and is not related to industry discharges.

Scheme performance during industry discharge events



Map of HRSTS catchment

★★★★★ Salinity goal not exceeded

★★★★ Salinity goal exceeded for 1 discharge period

★★★ Salinity goal exceeded for 2 – 4 discharge periods

★★ Salinity goal exceeded for 5 – 9 discharge periods

★ Salinity goal exceeded for 10 or more discharge periods

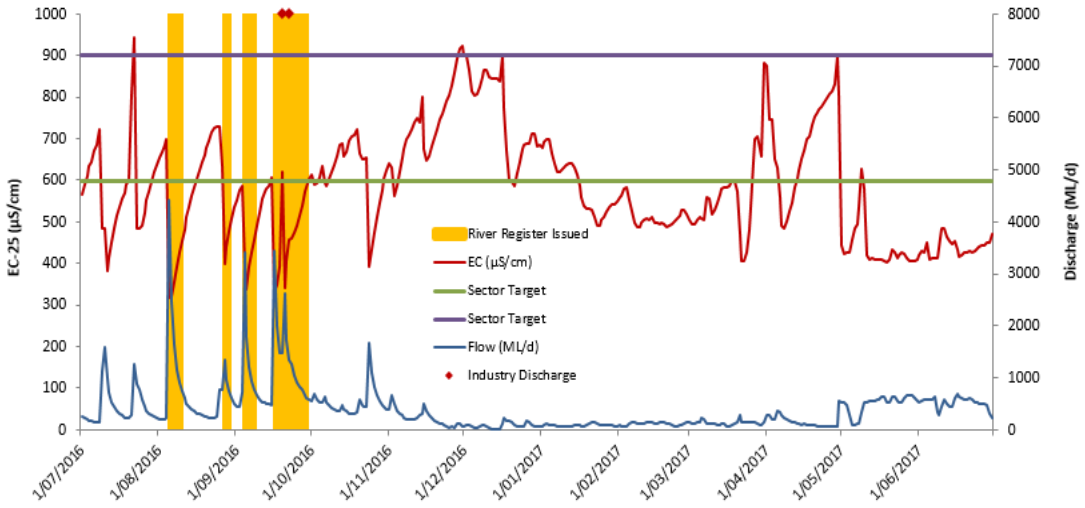
During 2016-17, Scheme participants had seven opportunities to discharge saline water. Flood flows also occurred in all Sectors in August 2016 and in the Middle and Lower Sectors in September 2016.

The information below provides a summary of salinity and flow information in the Upper, Middle and Lower sectors of the Hunter River over the year. Salinity results are compared to the established salinity targets which have been set for the three sectors of the Hunter River.

During 2016-17 there were two exceedances of salinity targets. The first was in the Upper Sector at Denman where the target of 600 uS/cm was exceeded by 19uS/cm for approximately 1.5 hours on 19 September 2016. The second was in the Middle Sector upstream of Glennies Creek where the 900 uS/cm target was exceeded by up to 826 uS/cm for approximately 9.5 hours over 31 March and 1 April 2017. The causes of these exceedances are discussed below.

Upper Sector: Hunter River upstream of Denman

The salinity target for the Upper Sector is 600 µS/cm during high flows (shown in Graph A, below, as a green line) and 900 µS/cm during flood flows (shown below as a purple line). There were four opportunities for the mines to discharge in the Upper Sector during this period. Authorised discharges occurred during September 2016.



Graph A: Maximum Salinity and Minimum Flow – Hunter River at Denman

On 19 September 2016 the target of 600 uS/cm was exceeded by 19uS/cm for approximately 1.5 hours within the discharge Block. This minor increase in EC has been attributed to slower than predicted movement of the initial pulse of salty water down the river system. The Scheme model will be reviewed by WaterNSW to better manage similar events in the future.

Middle Sector: from Denman to the junction of the Hunter River and Glennies Creek

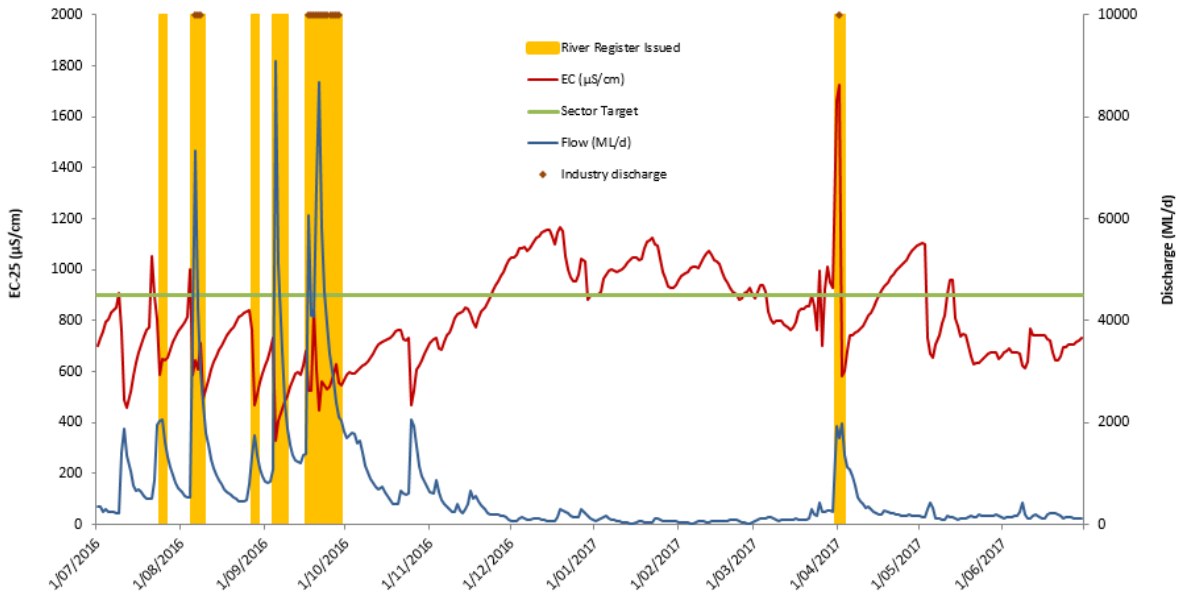
The salinity target for the Middle Sector is 900µS/cm and is shown in Graph B, below, as a green line. The majority of industry participants in the Middle Sector discharged during flood and high flow periods. There were six opportunities for industry to discharge in the Middle Sector during this period. Authorised discharges occurred during August and September 2016 and in April 2017.

Over 31 March and 1 April 2017 a prominent EC spike occurred at the Glennies Creek monitoring station in the Hunter River. The spike continued for 9.5 hours and ranged the between 1665 and 1726 µS/cm. Two factors contributed to this spike:

1) Inflows into the Hunter River from Glennies Creek blocked and backed up water that was flowing down the Hunter River. This caused high river levels that were misinterpreted as high flows moving down the river. This influenced model predictions for the issuing of the River Register and the allocation of the Total Allowable Discharge (TAD) of salt that could be discharged into the River Block.

2) The EC spike was exacerbated by an upstream coal mine that did not spread its saline water discharge evenly over the whole discharge period. This made the spike higher than it would have been otherwise.

To minimise the risk of reoccurrence of this situation, the Services Coordinator (WaterNSW) will review the HRSTS modelling program and HRSTS operating procedures. The EPA will also strengthen conditions on all HRSTS participants' Environment Protection Licences. These conditions will require participants to pro-rata their saline water discharge over the entire discharge block to minimise spikes in EC.

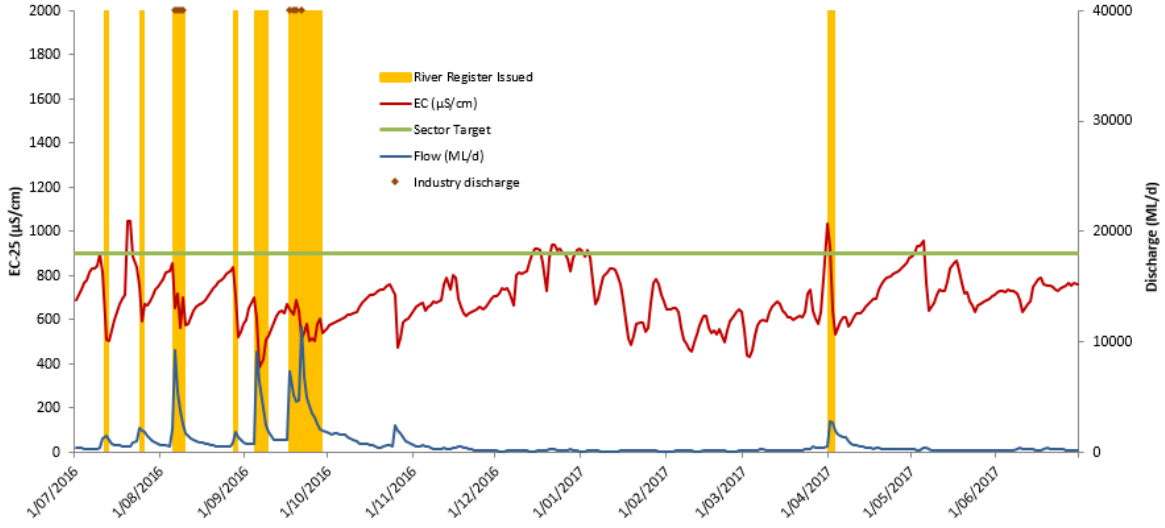


Graph B: Maximum Salinity and Minimum Flow – Hunter River Upstream of Glennies Creek.

Lower Sector: from the junction of the Hunter River and Glennies Creek to Singleton

The salinity target for the Lower Sector is 900 µS/cm, shown as a green line in Graph C, below.

There were seven opportunities for participants in the Lower Sector to discharge during either flood or high flow conditions in August and September 2016 and in April 2017. Only one participant discharged in August and September 2016. There was no discharge in the lower sector during the event in April 2017.

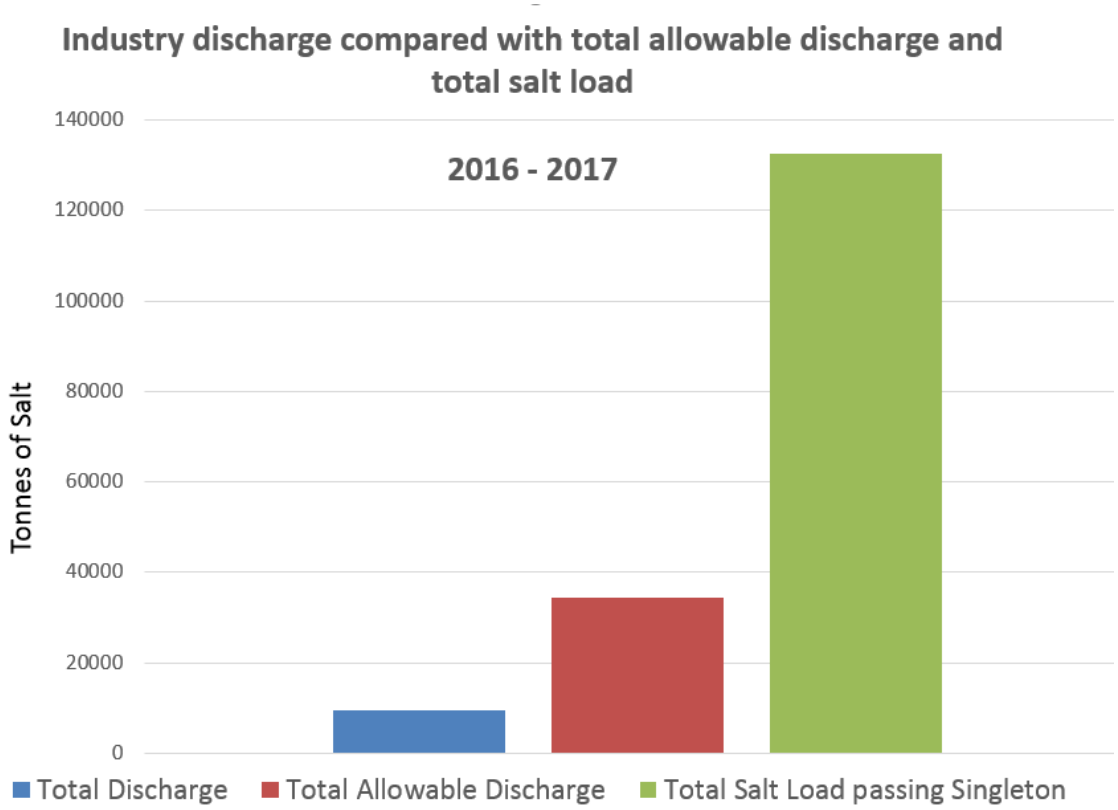


Graph C: Maximum Salinity and Minimum Flow – Hunter River at Singleton

Discharge of the Scheme as a proportion of the Total Allowable Discharge and Salt Load passing through Singleton

A TAD of 34564 tonnes was permitted by the Scheme during 2016-2017. The actual salt load discharged during the period by the participants of the Scheme was 9387 tonnes. Actual discharges represented 29% of the total allowable discharge.

Salt discharges under the Scheme represented 7% of the overall salt load in the Hunter River that passed through Singleton.



Further information

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