



La Grange

groundwater allocation plan

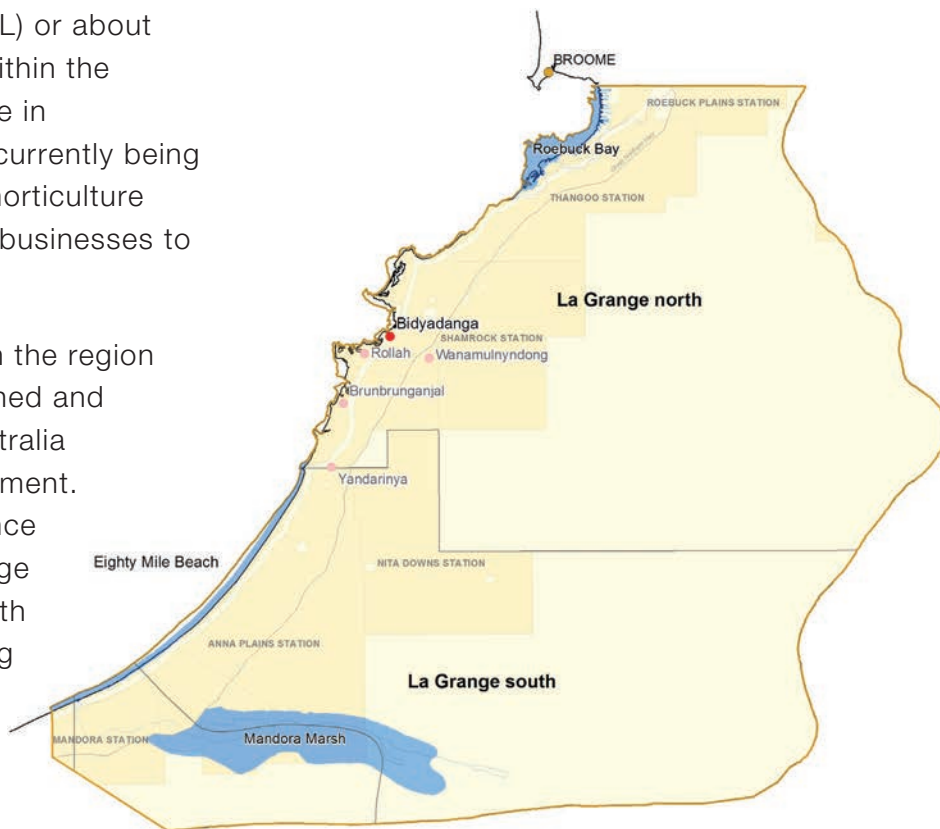
Evaluation statement 2012–2017

This is the third evaluation statement of the 2010 *La Grange groundwater allocation plan* (La Grange plan). It summarises how we implemented resource management outlined in the La Grange plan during the period December 2012 to December 2017, and assesses whether there has been any impact from water use.



Approximately 12.6 gigalitres (GL) or about 27 per cent of water available within the allocation limit is licensed for use in La Grange. Only 6 GL of this is currently being used, as local pastoralists and horticulture ventures gradually expand their businesses to use their full allocations.

Interest in irrigated agriculture in the region increased as markets strengthened and the Government of Western Australia has invested in regional development. There has been an influx of licence applications across the La Grange area over the past two years, with these requests in total exceeding the current allocation limit. This increased demand has triggered a review of the La Grange plan.



La Grange plan area

What is happening in La Grange?

The former Department of Agriculture and Food Western Australia (now the Department of Primary Industries and Regional Development) completed the Royalties for Regions funded La Grange agriculture and water opportunities project (the La Grange project).

The project investigated and articulated a regional vision for land and water development in the La Grange area, generating significant new data and information on soil, land capability and water resources. This data has assisted planning for agricultural development in La Grange and directly informs the review of the La Grange plan.

In 2014, 2015 and 2017 the Karajarri, Nyangumarta Warrarn and Yawuru Traditional Owners declared Indigenous protected areas across a large part of La Grange. Through the development of healthy country management plans they established a modern framework for managing biodiversity and natural resources. This sees local people taking a stronger and more active role in land and water management and in the protection of cultural and environmental values. Traditional owners are also establishing joint management partnerships with the Department of Biodiversity, Conservation and Attractions to manage conservation reserves in the La Grange region.

This has significantly improved the capacity of the local community in La Grange to engage in resource management and to identify the water-dependent values. The Department of Water and Environmental Regulation has been involved in these planning initiatives and will incorporate this work in future planning.

The La Grange groundwater system

The La Grange plan area is underlain by the superficial Broome Sandstone aquifer and the deeper Wallal Sandstone aquifer. It is bordered by the Broome and West Canning groundwater areas to the north and east respectively.

The La Grange plan sets out a management framework for the Broome Sandstone aquifer. The plan area is divided into two groundwater management subareas, La Grange North and La Grange South, for which groundwater licences are issued.

The coastal seawater interface is maintained by throughflow within the Broome Sandstone aquifer moving from east to west. This aquifer provides a good quality water resource for Aboriginal communities, pastoral use, irrigation developments, horticulture and tourism. It also supports significant cultural and ecological values, including many groundwater-dependent wetlands, springs, soaks and permanent waterholes, including two Ramsar-listed wetland systems.



Pivot irrigation in the La Grange horticultural area

Improving how we manage water

The main achievements between 2012 and 2017 were:

- Meeting the objectives of the La Grange plan, with water levels and water quality in the Broome Sandstone aquifer remaining relatively stable.
- Establishing a clear process to assess additional demand for water in La Grange, with proponents understanding what information and monitoring are needed and what new information is available to support their licence applications.
- Collecting monitoring data at 24 new sites to support licensing decisions and inform the review of the La Grange plan.
- The Western Australian Government committing \$200 000 to investigate the impacts of groundwater abstraction on water quality, wetlands and other users, to support licensing decisions and the review of the La Grange allocation plan.
- Collaboration across government agencies leading to:
 - better understanding of the hydrogeological connectivity of the Ramsar-listed Mandora Marsh with local aquifers.
 - incorporating land and water capability mapping from the La Grange project into allocation and licensing assessments.
- Engagement with regional stakeholders to develop a regional vision* for La Grange in partnership with the Department of Primary Industries and Regional Development and to update horticultural and pastoral industries and traditional owners on the status of the allocation plan. Support for traditional owners through the Water for Food program was provided through the facilitation of agricultural diversification activities on Indigenous-owned stations – Frazier Downs and Roebuck Plains.

**Available from the Department of Primary Industries and Regional Development.*

We will continue to engage with local stakeholders, traditional owners and water users as we review the plan and refine the groundwater management approach for the La Grange plan area.



Groundwater seepage point along the La Grange coastline

Objective	How the objective was met 2012-2017
To maintain the seawater-freshwater interface and avoid impacts on water users, groundwater-dependent values and community water supplies.	- Implemented licensing rules and policies associated with the coastal and Mandora Marsh management zones. - Developed more precise seawater interface maps based on the aerial electromagnetic survey and seawater interface mapping undertaken by the Department of Primary Industries and Regional Development. - Updated the coastal management zone boundary to inform licensing decisions. - Reviewed our seawater interface monitoring to detect any inland movement as groundwater abstraction increases.
Manage groundwater allocation to avoid impacts on Mandora Marsh and the flow at the Mandora Springs.	Collaborated with the Department of Biodiversity, Conservation and Attractions in researching the groundwater dependency of the Mandora Marsh. This work will clarify the extent to which the Broome and Wallal aquifers support the Mandora Marsh and will inform water licensing decisions.
Minimise the impact of water abstraction on all groundwater-dependent values.	- Implemented licensing rules and policies aimed at minimising the impact of water abstraction on groundwater-dependent values. - Collected additional monitoring information to enable: - early detection of drawdown or changes to water quality - assessment of aquifer response to abstraction - worked with local rangers and traditional owners to identify significant groundwater dependent sites for further ecological investigation.
Manage new licence applications to avoid impacts on reliability of water supply to current users.	- All current groundwater users were able to take water reliably. - New licence requests are being assessed in line with the allocation limits and licensing rules set in the plan.
Conduct the licence assessment process in recognition of native title holder's rights.	All licences were assessed in accordance with native title notification policy.



Collaborative groundwater investigation work with the Karajarri Rangers, La Grange 2017

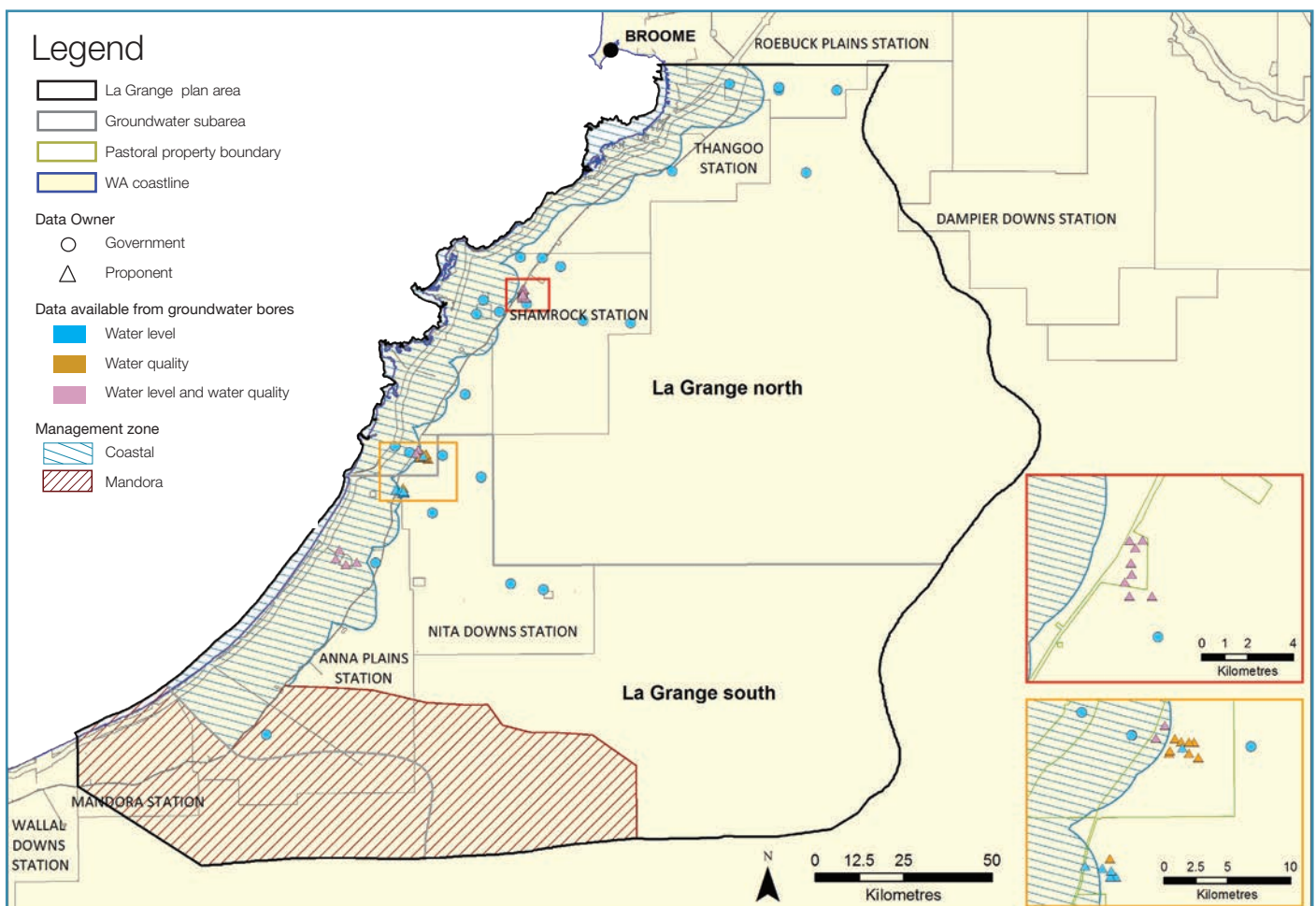
Status of water resources

Regional groundwater levels have remained relatively stable over the last five years. On-ground irrigation projects are now beginning to increase their water use and we have identified some localised drawdown. No changes to salinity were detected, indicating that the seawater interface is most likely stable.

The Department of Primary Industries and Regional Development drilled and constructed 49 bores at 28 new sites as part of the La Grange agriculture opportunities project between 2012 and 2016. In October 2016 we deployed loggers to monitor groundwater levels at one-hourly intervals in bores at 15 sites, and we measured water levels twice-yearly at a further nine sites.

We will use the improved monitoring network data, as well as data from rainfall stations and information from eight licensees, to assess how groundwater is responding to abstraction and rainfall. The new information will assist in setting conditions and monitoring requirements for new licences and will inform the review of the allocation plan.

Additional data loggers were deployed in 2017 to increase our monitoring bore coverage. Our water information will become available from the Water Information Reporting section on our website. This information will inform future water licensing decisions and enable interested stakeholders to track groundwater level trends across the La Grange plan area.

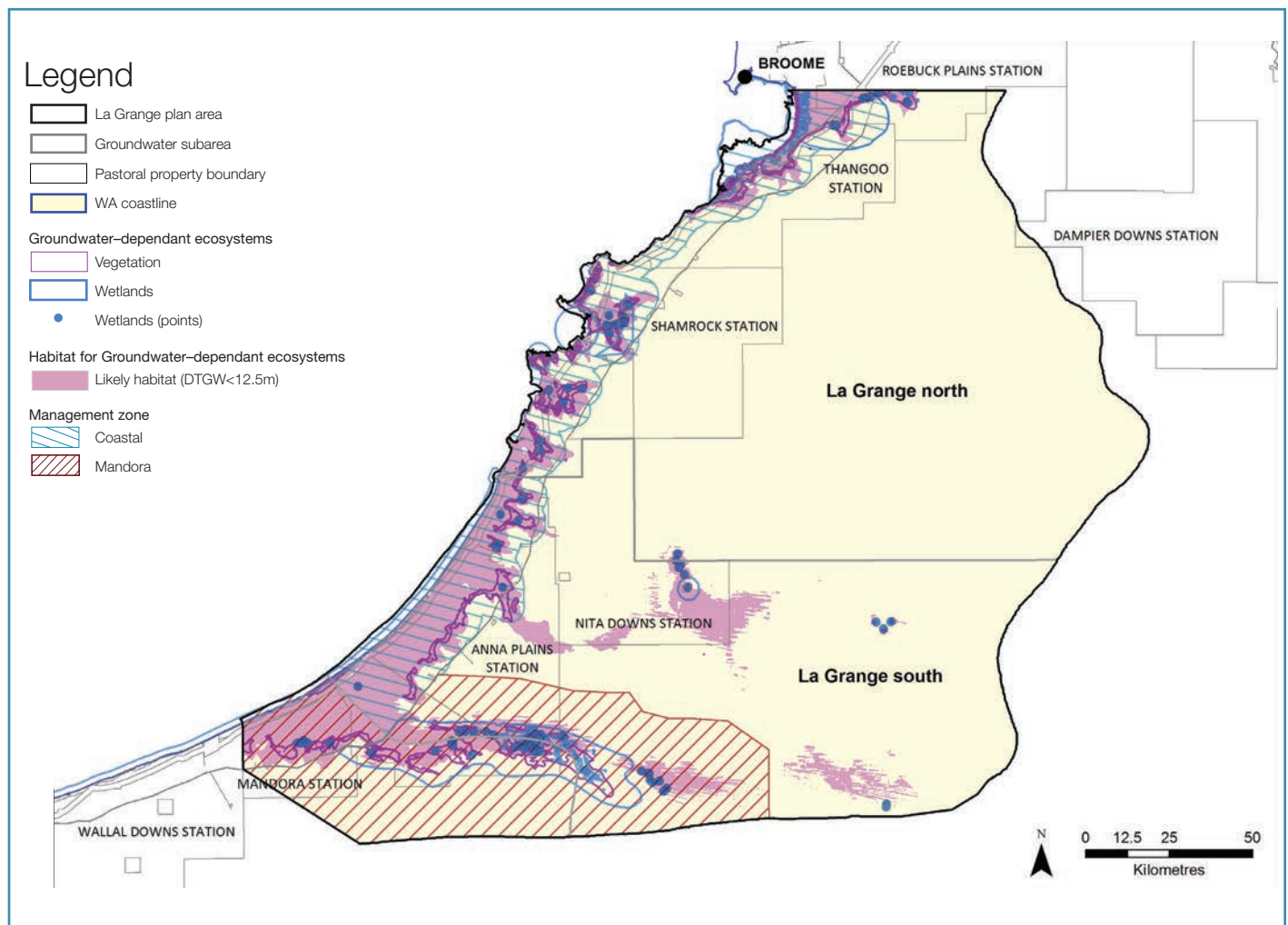


Improved groundwater monitoring network in La Grange

Status of water-dependent values

Groundwater-dependent ecosystems

We have found that most environmental features in the La Grange plan area thought to be using groundwater are located where the depth to groundwater is less than 12.5 metres. With information obtained through the La Grange project, we have mapped groundwater depth and classified areas of likely groundwater habitat based on a depth to groundwater of less than 12.5 metres. We are undertaking fieldwork to confirm the groundwater dependence of targeted environmental features to inform licensing and review of the allocation plan. In the first phase of this work we have collaborated with local rangers and traditional owners to identify ecological and culturally significant sites to focus this work on.

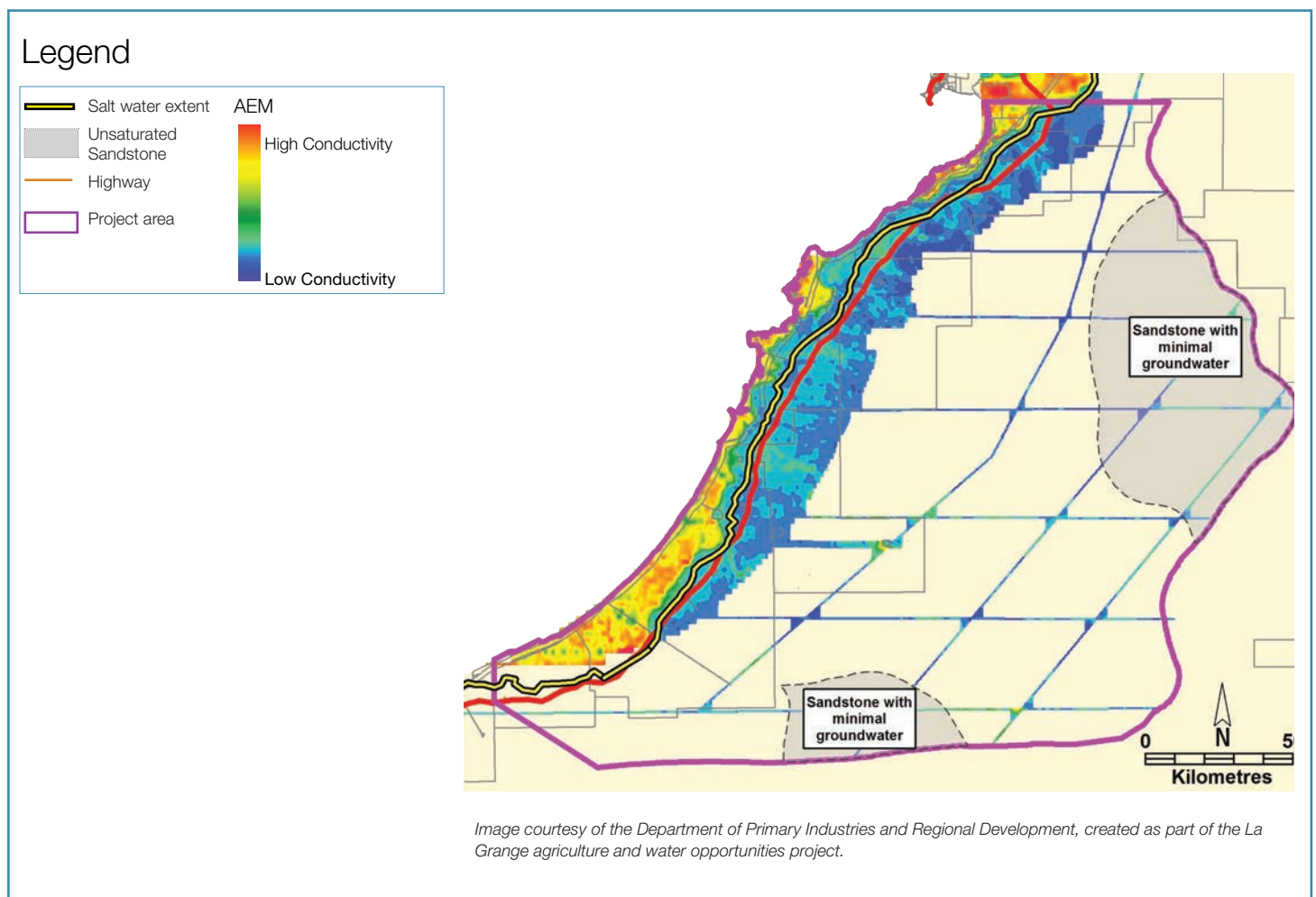


The likelihood of groundwater-dependent habitat (depth to groundwater of 12.5 m or less)

Seawater interface

The seawater interface has been more precisely mapped using aerial electromagnetic data, collected as part of the La Grange agriculture and water opportunities project. This mapping is important for deciding where bores can be drilled to access fresh, usable groundwater and for monitoring any inland migration of the seawater interface.

In 2016, Geoscience Australia used geophysical logging tools at 16 bore sites to gain a better understanding of the seawater interface and how it should be managed. Geophysical logging can provide information about conductivity, which gives an indication of salinity. The image below shows the interpretation of electromagnetic data collected along flight lines flown at close intervals (allowing interpretation between flightlines), and inland transects flown at wider intervals (no interpretation available between flightlines).



Interpretation of aerial electromagnetic survey data shown at a depth of approximately 50 m below ground level.

The importance of licensee monitoring

Our officers met with proponents in March 2017 to:

- explain how we are managing new applications
- get a greater understanding of irrigation development plans and water needs
- explain the groundwater investigations, monitoring, operating strategy and other requirements needed to support a licence
- provide an update on allocation planning work
- answer direct questions.

All licences issued in La Grange have conditions that define their individual monitoring requirements. For example, large licences located near groundwater-dependent features have more comprehensive monitoring and reporting requirements as they pose a greater risk to the resource and its dependent values. Licensees in La Grange are required to install appropriately located saltwater interface monitoring (SWIM) bores to monitor water levels and water quality.

Additional monitoring bores may be required depending on the scale and location of the operation, and production bores also need to be monitored. This monitoring may be necessary before, during and after development to confirm that any impacts from their water use remain acceptable.

Monitoring information is used to manage localised impacts and to understand how the Broome Sandstone aquifer is performing across the La Grange area. Through this work we can identify where we need to focus our management or adjust licences to minimise the impacts of water abstraction.



Groundwater investigation bores within the groundwater monitoring network

Status of water use

The Broome Sandstone aquifer in the La Grange plan area is currently 27 per cent allocated and we have received significant new requests for water.

The greatest volume of water used in the La Grange area is for horticulture or irrigated pasture production. In addition, the aquifer provides domestic water supplies for remote communities and tourist accommodation, and water for pastoral and mining operations. It also supports important groundwater-dependent ecological and cultural values.

Water use increased over the evaluation period, with water users developing their operations in line with existing licences. We have received several new applications requesting large volumes, which together with existing licences exceed the existing 50 GL allocation limit. All of these requests are subject to the licence assessment process and proponents need to demonstrate their water use is appropriate for the water potential of their property, without unreasonably impacting the water potential of neighbours or water-dependent values. Staging projects will help to understand any localised impacts and clarify the volume of water that can be sustainably used. Information gleaned through the new groundwater monitoring program will assist us in understanding resource availability and response to water use.

La Grange allocation and licensing statistics, as at December 2017

La Grange subareas	Allocation limit kL/yr	Exempt component kL/yr	Licensed and committed use kL/yr	% of allocation limit	Additional requested kL/yr
La Grange North	35 000 000	1 500 000	7 907 275	24%	48 000 000
La Grange South	15 000 000	1 500 000	4 699 000	35%	9 100 000
Total	50 000 000	3 000 000	12 606 275	27%	57 100 000



Salt Creek, Mandora Marsh



Munro Springs dampland

Our response and future planning

We are committed to ensuring the Broome Sandstone aquifer is managed to support sustainable development in La Grange, as local landholders and Aboriginal communities build their capacity and help to expand the regional economy.

Work is underway to review the La Grange plan in light of the increased demand for water. Water resource management in an area like La Grange needs to focus on local impact management regimes that protect the seawater interface and groundwater-dependent values. The review is incorporating new resource information and data to refine the allocation limits, the monitoring regime and local management rules.

We value the long history of engagement and collaboration with local stakeholders and traditional owners in the La Grange area. We will continue to actively engage and collaborate with local stakeholders, traditional owners and water users in communicating our progress on the allocation plan and will involve them throughout the planning process.

Further information

For licensing information, please contact our North West regional office on (08) 9166 4100 or kununurra@dwer.wa.gov.au.

You can also view the latest water allocation and availability information through the water register on our website water.wa.gov.au/maps-and-data/maps/water-register

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