

Managing the Environment









Aim

Protect and enhance the natural environmental, social and heritage values during all our activities

Approach

Our staff and others working on our behalf:

- recognise the importance of natural environmental, social and heritage values and the broader benefits for the community
- foster strategic relationships with community and other stakeholders to contribute to the management of environmental values
- have strong environmental governance of our activities to deliver broad community benefit through inclusion of environmental requirements in planning, programming, constructing and maintaining processes
- communicate publicly our environmental policy and our environmental performance.

Key Performance Indicators	Results
 Percentage of state-wide clearing permit audits of compliance completed continues to meet our target	 100%
 Scope 1 and 2 Emissions (t CO ₂) are lower than expected and continue to come in under target	 26,257
 Community satisfaction with our sustainability practices was slightly below target with a decrease from last year	 89%
 Targets of community satisfaction with our performance managing the environmental impacts in our activities was achieved and remains at a consistent level with previous years	 90%

Looking Ahead

Projects and activities planned for the next financial year, some of which have already commenced, include:

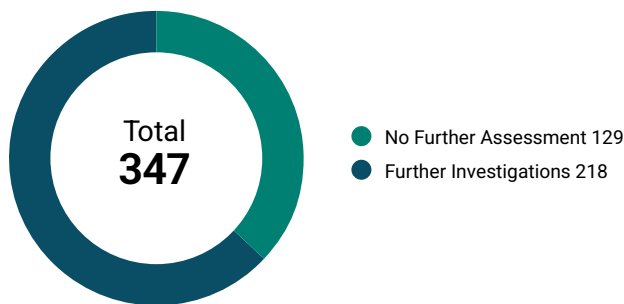
- develop and implement a strategic government process to ensure that we achieve both environmental and road safety objectives in the agricultural region of Western Australia
- develop and implement the Regional Revegetation Initiative
- develop a dashboard for key environment and heritage performance indicators
- deliver high-quality environment and heritage impact assessments that meet regulatory standards and obtain timely approvals
- roll out the Infrastructure Sustainability rating tool Version 2.0 and focus on improving implementation in regional projects
- utilise 200,000 tonnes crushed recycled concrete through encouraging broader uptake of the product across industry and local government and maintain usage of crumbed rubber over 1,200 tonnes in road construction
- support the Memorandum of Understanding for sub-national collaboration on increasing the uptake of electric vehicles through implementing policy to drive electric vehicle uptake in our construction projects
- develop an approach for the road network to contribute to the state governments vision for net zero emissions by 2050.

Environment and Heritage Management

As managers of the State Road Network, we use the precautionary principle in our approach to environment and heritage management and aim to avoid and minimise impacts wherever possible. To achieve this we ensure that all activities, from our largest road projects to smaller maintenance activities, are screened for potential environment and heritage impacts. Those activities that are considered to have a risk of adverse impacts are subject to further investigations. Projects that are not considered to have environmental or heritage risks are managed using our standard environmental and heritage practices.

In 2019, we screened 1,006 activities and projects for environmental or heritage impacts. More than 50 per cent of these activities required further investigations such as field inspections, biological surveys, archaeological or ethnographical investigations and consultation with stakeholders and regulators to ensure sound environmental management.

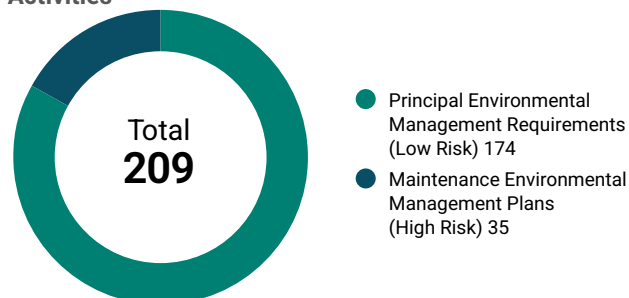
Environmental Screening of Projects



Aboriginal Heritage Screening of Projects



Environment and Heritage Screening of Maintenance Activities



After further investigations were completed, we consulted with our road planners, designers and engineers, to identify opportunities to avoid and then minimise all of our adverse environment and heritage impacts. We achieved this through one or more of the following:

- analysis of scope and design options
- road re-alignment
- re-locating signs, crossovers, parking bays to areas with lower environmental values
- modifications to the road design.

Where the impacts are unavoidable, we complied with State and Commonwealth environment and heritage legislation. We referred activities with potentially significant impacts to the relevant regulatory authorities for assessment and approval. The table below summarises our applications for approvals over the past three years.

Applications for Approval	Calendar Year		
	2017	2018	2019
Aboriginal Heritage approval sought ¹	33	14	27
Aboriginal Heritage approval granted ¹	29	26	18
Project specific clearing permit applications	15	21	14
Project specific clearing permits granted	13	14	18
Projects referred to the WA Environmental Protection Authority under Part IV of the Environmental Protection Act (EP Act)	1	2	6
Projects approved by the WA Minister for the Environment under Part IV of the EP Act	0	0	1
No. of projects referred to the Commonwealth Department of Agriculture, Water and the Environment under the Environment Protection and Biodiversity Conservation Act (EPBC Act)	10	7	6
No. of projects approved under the EPBC Act	4	5	2

All approvals granted may include applications made in previous years.

¹ This includes Regulation 10 and Section 18 applications under the WA Aboriginal Heritage Regulations 1974 or WA Aboriginal Heritage Act 1972 (respectively) submitted or granted between 1st January to 31st December 2019.

In 2019, we applied for 27 Aboriginal heritage approvals and 14 clearing permits. We referred six projects considered to have potentially significant impacts, to the WA Environmental Protection Authority (EPA) for assessment. Six projects were considered to have potentially significant impacts to Matters of National Environmental Significance (NES) and were referred to the Commonwealth Department of Agriculture, Water and the Environment (DAWE) for assessment under the Commonwealth Environment Protection and Biodiversity Conservation Act.

The EPA concluded that three of the six referred projects did not have potentially significant impacts and did not assess the works. The other three projects referred to the EPA are still under assessment. The project approved by the WA Minister for the Environment in 2019 was for a project referred in a previous year.

DAWE concluded that two of the six projects did not have potentially significant impacts on Matters for NES and did not assess the works.

The other four projects are still under assessment. The two projects approved under the EPBC Act were referred in previous years.

Revegetation and Offsets

We strive to find a balance between achieving road safety objectives and the environment and it is not always possible to avoid the clearing of native vegetation. When this occurs, and after we have reduced the amount of clearing to the minimum area required, we offset the negative impacts of removing this native vegetation. This may be through revegetation (seeding or planting), purchased land for contribution to the conservation estate or monetary contributions to the State Offset Fund for the acquisition of land and addition to the Conservation Estate (<http://epbcnotices.environment.gov.au/publicnoticesreferrals/> and <https://offsetsregister.wa.gov.au/public/home/>).

This table summarises our clearing, revegetation and offset activities over the past three years.

In 2019, we cleared 663 hectares of native vegetation for the delivery of 95 projects. We provided offsets in the form of land acquisition and monetary contributions to the Western Australian Environmental Offsets Fund for the purchase and management of a total of 786 hectares of native vegetation. We also undertook 58 hectares of revegetation works of which 15 hectares was required under a legislative approval and 43 hectares was initiated by us.

Clearing, Revegetating and Offsetting	Calendar Year		
	2017	2018	2019
Clearing (ha)	246	535	663
Total revegetation (ha)	206	139	58
Offset			
Revegetation (ha) (a)	83	6	15
Land acquisition (ha) (b)	None settled	None settled	334
(Value of land acquired (\$))			\$1,636,895
Financial contribution (\$)	1,978,567	557,844	944,800
(Area of land to be acquired using the financial contribution (ha)) (c)	(1,738)	(318)	(437)
Total offset (ha) (a+b+c)	1,822	324	786

Management of Environmental Incidents

While we aim to undertake all our activities in accordance with our procedures, we have systems and processes ready to respond to all incidents. We consider an environmental or heritage incident to be any activity that has the potential to have an adverse environmental impact. The activity may include those undertaken by Main Roads and its contractors or a Third Party (i.e. an organisation or a person not employed by or working on behalf of Main Roads). The table outlines the significant Main Roads and Third Party incidents that have occurred in the past three years. Significant incidents are those classified with a moderate, major or catastrophic consequence.

Significant Incidents (Moderate, Major and Catastrophic)	Calendar Year		
	2017	2018	2019
Incidents caused by Main Roads	19	33	10
Incidents caused by Third Parties	3	9	4

Transport Portfolio risk classification process includes insignificant, minor, moderate, major and catastrophic. Insignificant and minor incidents have not been reported here.

There were no catastrophic Main Roads or Third Party incidents in 2019.

There was one major Main Roads incident relating to a fire at the Nicholson Road Bridge in Gosnells. The fire was ignited by hot works and resulted in seven hectares being burnt. We reported the incident to the WA Department of Biodiversity, Conservation and Attractions (DBCA) and was subject to a formal incident investigation. As a result, we implemented the following corrective and preventative actions:

- Remedial actions to be implemented to the satisfaction of DBCA including the replacement of fencing and signs, and revegetation works
- Safety specifications, including standard contractual requirements, reviewed to ensure fire risks and management adequately addressed
- Further training regarding identification of fire risks and management to be developed and provided via e-learning modules and made mandatory for relevant personnel.

The remaining 13 incidents were classified as moderate with nine caused by Main Roads activities and four caused by Third Party activities.

These incidents related to:

- A Main Roads incident of non-compliance with an approval (no environmental impact) related to a missed annual monitoring event in accordance with a ministerial statement.
- A Third Party incident of impact to threatened plants or ecological communities was related to an unknown clearing in the Main Roads road reserve without permission. The clearing occurred within a known Declared Rare (Vulnerable) flora site (*Acacia caesariata*).
- Two Main Roads incidents that related to an impact to an Aboriginal Heritage related to disturbance outside the approved project envelope near a known Aboriginal Heritage site. Investigations identified no breach of the *Aboriginal Heritage Act 1972* in either incident.
- Five incidents of unauthorised clearing related to three Main Roads incidents resulting in a total of 1.5 hectares of unauthorised native vegetation clearing and two Third Party incidents that resulted in a total of five hectares of unauthorised native vegetation clearing.
- The remaining four incidents related to a Third Party spill of contaminated materials, three Main Roads incidents; two regarding sediment plumes in the Swan River and one of intercepting asbestos containing materials during works.

Incidents were reported to the relevant authorities and there were no penalties or financial sanctions related to any. We have addressed these procedural failures through training, changes in processes and increased compliance audits to ensure they are not repeated.

Environmental Management Review Committee

This committee is part of the high-level governance arrangement reflecting the importance we place on environmental management; the committee is chaired by the Executive Director of Planning and Technical Services. It also includes the Manager Environment and Manager Project Management.

Role

- Reviews Main Roads environmental performance in managing
 - Incidents
 - Audits
 - Environmental assessments and approvals
 - Opportunities for improvement
 - Environment risks

Executive Members:

Doug Morgan (Chair)
 Leo Coci
 John Erceg
 Peter Sewell
 Phil D'Souza

Some of the key focus areas of the committee during the past year included:

- Review of suitability of Main Roads Environmental Management System
- Review of environmental performance and opportunities to improve
- Identifying significant environmental issues to be addressed
- Approaches taken to minimise the impact of COVID-19 on environmental and heritage surveys
- Requirement for accelerated environmental and heritage approvals in response to economic stimulus
- Strategic approaches to balance environmental values and road safety requirements in agricultural regions of the state

Sustainability Assessment in Projects and Operations

For our highest value major projects, we have adopted the Infrastructure Sustainability (IS) rating tool, Australia's only comprehensive rating system for evaluating sustainability across planning, design, construction and operation of infrastructure. All infrastructure projects exceeding \$20 million utilise the IS framework as part of project development and evaluation. Nine projects have been registered for an IS Planning, Design and As Built Ratings. The Bunbury Outer Ring Road is the first ever project to achieve an IS Planning Rating nationally and was verified with a Silver rating.

Stand-alone public sustainability reports have been produced for 11 of our projects with IS obligations and these are available on our website.

We have mandated that all projects greater than \$100 million will be formally registered to undergo an IS rating. Currently four projects are in the delivery stage with a further 11 in the design and planning stage.

A complete list is provided in the Additional Environmental and Sustainability Disclosures section.

There are a further eight projects valued between \$20 and \$100 million that are subject to internal self-assessment using the IS rating tool.

Air Quality

Urban air quality is impacted by the use of the road network and increasingly, this is something that we are responding to. Using the Australian Transport Assessment and Planning Guidelines 2016, we have used data captured internally to estimate emissions trends of the six main air pollutants (carbon monoxide, nitrogen dioxide, photochemical oxidants (as ozone), sulphur dioxide, lead and particles) due to operations and congestion on state and significant local roads in the Perth metropolitan area. A complete breakdown of emissions by type is available in the Additional Environmental and Sustainability Disclosures section.

Noise and Vibration

Management of road traffic noise is an important issue as traffic growth continues. There is a complex range of factors that impact noise levels including the topography of the land, the type of road surfaces, buildings, traffic volumes and types of vehicles. Noise impacts from new or significantly upgraded roads are managed under the revised State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning.

As part of preparing information for the environmental referral and assessment process, we undertake noise monitoring to calibrate a noise model, assess noise impacts, and ensure our final projects are compliant with the policy once completed. This includes obtaining base line noise levels from monitoring noise at key points within the project.

This data is input into a modelling system taking into account a range of other variables. Once the noise monitoring and modelling is completed, a peer review of the findings is conducted. The findings are then considered to help determine noise mitigation strategies, which can take a variety of forms, including noise walls, bunds, architectural treatments to nearby homes and utilisation of ‘quiet’ pavement or road surfaces.

After constructing a new road or carrying out a significant upgrade, we undertake monitoring to ensure our projects abide by State Planning Policy 5.4. If required we will implement further measures if noise levels continue to exceed the limits of the policy.

Approaches to Carbon Reduction

Developing, operating and using a road network consumes energy and generates emissions in numerous forms. Whilst impacts from energy and emissions largely fall outside of our direct control, it does arise from use of the road network. Road transport contributes 15 per cent of Australia’s total emissions and is the highest growing source of emissions since 1990. We estimate that the road network generates carbon emissions at a rate of 288.7 t CO_{2-e} per million vehicle kilometres travelled (MKVT). Last year, MKVT was 27,799 and therefore emissions from the road network are in the order of 8.0 mt CO_{2-e}.

We have a Carbon Reduction Plan and a target to achieve a 5 to 15 per cent reduction on 2010 levels by 2020, focused on Scope One and Two emissions. Our total emissions across our facilities over the past year were 26,257 CO_{2-e}, achieving our target, which was to be below 29,302 CO_{2-e}.

Our current approach has focused on reducing our direct energy use and emissions generation but we are aware of our ability to influence outcomes from our contracts and from the road network use. The States aspiration to be net zero by 2050 and the expected release of a State Climate Change policy will guide the development of further actions and a revised target for carbon reduction.

This chart indicates our Green House Gas Emissions (Scope 1 and 2) over the last three years.

Scope 1 and 2			
	2018	2019	2020
GHG Type (t CO ₂)	25,886	27,925	26,257

Detailed information showing data over the last three years by Scope, Source and Intensity are available in the Additional Environmental and Sustainability Disclosures section.

In December 2017, the State Government signed a Memorandum of Understanding for Sub-National Collaboration on Electric Vehicles (EVs) arising from the Climate Action Roundtable. Together with Western Power, we are joint lead to ‘Take a coordinated approach to the strategic planning and construction of infrastructure for EVs’. In response, we commissioned the University of Western Australia to undertake research into the need for state-wide EV charging infrastructure in WA. The report has been finalised and released. We are working closely with other agencies to develop a state EV strategy and are committed to increasing the uptake of electric vehicles within our construction project fleets.

Climate Change Adaptation

We have identified more than 52 kilometres of State Roads that have been assessed to warrant earlier, more detailed evaluation for the impacts of climate change. The indicative replacement value of this at-risk infrastructure is in the order of \$365 million. A fundamental aspect of our Sustainability Policy is climate change. Our Key Aspect Management Plan for Climate Change includes a progressive approach to embedding adaptation practice into standards and asset management practices. An important activity was embedding resilience into our asset management framework.

Materials for Road Building

Natural materials are crucial in road building. Our philosophy on materials use is to minimise lifecycle impacts, including embodied energy, and to follow the hierarchy of reduce, re-use where possible, and recycle materials to their highest end-use possible. When obtaining road building materials, we endeavour to avoid clearing natural vegetation. On-site materials surplus to requirements for road construction are shared with other projects or used, as appropriate, for rehabilitating areas where road building materials were obtained.

We incorporate recycled content into the significant materials used for road construction. Recycled content includes crumbed rubber, glass, asphalt and concrete. We have intent to contribute to developing the circular economy in WA. Further information on our achievements with recycling is included in the Road Management and Our Stories sections.

Detailed information showing data over the last three years in the following categories is available in the Additional Environmental and Sustainability Disclosures section:

- Imported road construction material by type
- Imported recycled construction material by type
- Waste material to landfill by type
- Materials recycled by type.

Waste Management: Roadsides, Buildings and Facilities

Controlling roadside waste across the State's road network requires ever-increasing attention. We collaborate with key stakeholders, interested parties and community groups for a consistent litter management approach taking into account individual regional requirements. We continue to implement our State-Wide Litter Plan developed with the primary objectives of educating road users to take their litter with them and to reduce littering and illegal dumping. Implementing the plan involves boosting public awareness as well as increasing community buy-in and participation in litter reduction programs and behaviours. To facilitate this objective Main Roads provides funding to Keep Australia Beautiful to support the 'WA naturally thanks you initiative'.

Our commitment to improved waste management practices is evident in the design, construction, operation and ongoing management of the road network, our offices and depots. Waste management principles are incorporated in design and construction, by using the Infrastructure Sustainability rating tool and by achieving five-star Green Star and NABERS ratings for our offices and facilities. We are embedding principles of the WA Waste Strategy 2030 including reducing single-use plastics in our offices and project sites.