



Environmental Protection Authority

annual report
2012—13



Acknowledgements

This report was prepared by the Strategic Policy and Planning Division,
Office of the Environmental Protection Authority.

For more information contact:

Office of the Environmental Protection Authority

Level 8 The Atrium
168 St Georges Terrace
Perth WA 6000

Locked Bag 10, East Perth, Western Australia 6892

Telephone 08 6145 0800

Facsimile 08 6145 0895

Email info@epa.wa.gov.au

Website www.epa.wa.gov.au

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9 October 2013

Letter to the Minister

Hon Albert Jacob

Minister for Environment

In accordance with s21 of the *Environmental Protection Act 1986* I submit for presentation to Parliament the Annual Report of the Environmental Protection Authority for the year ended 30 June 2013.



Dr Paul Vogel

CHAIRMAN, EPA

9 October 2013



Message from the Chairman



I am pleased to present to the Minister for Environment and the Parliament this Annual Report by the Environmental Protection Authority (EPA) on their activities in 2012–13, and environment matters generally.

The EPA has noted on many occasions that Western Australia enjoys twin endowments: vast mineral, gas and petroleum resources, as well as extraordinary biodiversity of global importance. Often, these values coincide in the same location.

Our unique biodiversity – distinct from the rest of Australia and the rest of the planet – is partly a function of our geographic isolation and our arid climate where species, in their fight for survival, have developed ingenious ways to cope with harsh conditions. Large areas of our State were not covered by ocean or glaciers for more than 250 million years, resulting in the persistence of plants and animals of ancient origins that are often highly specialised for the environments in which they live.

This is not a legacy to be treated lightly and that is why in 1971, the Parliament passed legislation to establish the EPA to provide independent advice to Government to assist it to balance the competing aspirations of economic development and protection of the environment. For more than 40 years, the EPA has performed this challenging task in the face of significant knowledge gaps about our environment, and the pressure for timely approvals.

The EPA must, necessarily, look to the long term – beyond the life cycle of individual Ministers and Governments – and provide fearless, rigorous

and transparent advice about the environmental acceptability of developments, as well as strategic advice on important issues.

Every year, the EPA provides many public reports to the Minister for Environment with its recommendations on individual development proposals. But the strategic question must be: how is the environment going, overall? The answer is not straightforward – some parts of the State, and some aspects of the environment, are under greater pressure than others.

In its Annual Report, the EPA aims to provide a general overview of some of the issues it confronts in the assessment of development proposals and planning schemes, and offer some insights into how the Western Australian environment is faring in the face of a range of human-induced and other pressures. The report also draws attention to some of the success stories in environmental management in Western Australia.

The report is not intended to cover every aspect of the environment, or every region, every year. It is our intention that it will, over time, build a better understanding of the cumulative impacts on our environment and ways of managing these issues into the future.

This year, the key focus is on the highly biodiverse banded iron formation ranges of the Yilgarn Craton which are under increasing pressure from new or expanded development proposals.

There are many extremely dedicated and knowledgeable people across the scientific, academic, environmental and government sectors who provide advice to the EPA to allow more informed decision making.

This year, Western Australia lost one of these people with the untimely death of Keiran McNamara, Director General of the Department of Environment and Conservation. Mr McNamara was a fearless advocate for the environment who made an outstanding contribution to the cause of biodiversity conservation in WA.

The EPA would like to acknowledge the departure of the Deputy Chairman Dr Chris Whitaker and member Mr Denis Glennon AO who served with distinction over many years.

The EPA would also like to acknowledge its positive working relationship with the former Minister, the Hon Bill Marmion MLA, welcome its new Minister, Hon Albert Jacob MLA, and recognise the efforts of staff of the Office of the EPA and the many stakeholders of the EPA for their contributions over the last year.

Dr Paul Vogel
CHAIRMAN, EPA



Cochlospermum macnamarae - named in honour of the late Keiran McNamara.

Photo: Daniel Brassington, courtesy of the WA Herbarium



*Stromatolites at Hamelin Pool Marine Nature Reserve, Shark Bay. Hamelin Pool contains the most abundant and diverse stromatolites in the world and are a key reason for the World Heritage listing of Shark Bay, representing a major stage of the Earth's evolutionary history.
Photo: Kevin Crane, Office of the EPA*

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*The Beagle Islands off Leeman are the largest breeding site for the Australian sea lion, Neophoca cinerea, in Western Australia. The Australian sea lion is endemic to Australia and is one of the rarest sea lions in the world.
Photo: Kevin Crane, Office of the EPA*



About the EPA

Legislative framework

The Environmental Protection Authority (EPA) was originally established in 1971. It has five members appointed by the Governor on the recommendation of the Minister for Environment.

EPA operations are governed by the *Environmental Protection Act 1986* (EP Act) which stipulates that the objective of the EPA is to:

'use its best endeavours –

a) to protect the environment; and

b) to prevent, control and abate pollution and environmental harm.'

The EP Act defines the environment as 'living things, their physical, biological and social surroundings, and interactions between all of these'.

Section 8 of the EP Act outlines the independent role of the EPA, that neither the Authority nor the Chairman shall be subject to the direction of the Minister.

The EP Act also provides authorisation for the EPA to make an annual report to the Minister by the end of October next following that financial year on 'a) the activities of the Authority during that financial year; and b) environmental matters generally'.

The Minister is required to provide the report to each House of Parliament within nine sitting days of that House after the receipt of the report by the Minister.

Minister for Environment

For most of the 2012–13 financial year, the EPA provided advice to the Hon Bill Marmion MLA. In March 2013, following the State election, the Hon Albert Jacob MLA was appointed Minister for Environment.

The EPA's relationship with the Minister for Environment is a crucial one.

Section 17A of the EP Act obliges the Minister to *'ensure that the Authority is provided with such services and facilities as are reasonably necessary to enable it to perform its functions'*.

The EP Act also provides opportunity for the Minister to seek the EPA's advice on any matter related to the environment, or to remit proposals to the EPA for assessment.

The EPA's statutory independence can be a challenge for any Minister. However, the system is built on the capacity of the EPA to provide frank and fearless advice about the environment, consistent with the objectives of the EP Act, without the constraint of short term considerations or social and economic imperatives.

Equally, it is an important tenet of our system that the Minister for Environment, in considering the EPA's recommendations, can weigh that advice against the social and economic objectives of Government before making decisions.

The EPA acknowledges the good working relationship it has enjoyed with its former Minister and the current Minister.

Reports on development proposals

In 2012–13, the EPA provided the Minister for Environment with reports on 26 development proposals. All but one of the proposals were considered environmentally acceptable subject to strict conditions.

The EPA also reviewed 261 planning schemes and scheme amendments and provided advice on 71 of them. None required formal assessment.

Changes to proposals

Section 45c of the EP Act allows for changes to approved proposals as long as there are no significant new or additional impacts on the environment. The EPA makes decisions on these matters under delegation from the Minister for Environment.

In 2012–13, the EPA approved 42 changes to proposals. These are published on the EPA's website.

Changes to conditions

The EPA may inquire into requests for changes to Ministerial conditions on approved proposals and report to the Minister for Environment. In 2012–13, the EPA reported to the Minister on 13 requests for changes to conditions.

Strategic advice

The EPA may provide strategic advice on environmental issues at the request of the Minister for Environment, or of its own volition.

In 2012–13, the EPA provided the Minister with strategic advice on two matters: waste-to-energy technologies; and the environmental and water assessments in the vicinity of Fortescue Marsh in the Pilbara.

Functions of the Authority

The functions of the Authority are —

- (a) to conduct environmental impact assessments; and
- (aa) to facilitate the implementation of bilateral agreements; and
- b) to consider and initiate the means of protecting the environment and the means of preventing, controlling and abating pollution and environmental harm; and
- (c) to encourage and carry out studies, investigations and research into the problems of environmental protection and the prevention, control and abatement of pollution and environmental harm; and
- d) to obtain the advice of persons having special knowledge, experience or responsibility in regard to environmental protection and the prevention, control and abatement of pollution and environmental harm; and
- (da) to advise the Minister on the making or amendment of regulations when requested by the Minister to do so or on its own initiative; and
- (e) to advise the Minister on environmental matters generally and on any matter which he may refer to it for advice, including the environmental protection aspects of any proposal or scheme, and on the evaluation of information relating thereto; and
- (f) to prepare, and seek approval for, environmental protection policies; and
- (g) to promote environmental awareness within the community and to encourage understanding by the community of the environment; and
- (h) to receive representations on environmental matters from members of the public; and
- (i) to provide advice on environmental matters to members of the public; and
- (j) to publish reports on environmental matters generally; and
- (k) to publish for the benefit of planners, builders, engineers or other persons guidelines to assist them in undertaking their activities in such a manner as to minimise the effect on the environment of those activities or the results thereof; and
- (l) to keep under review the progress made in the attainment of the objects and purpose of this Act; and
- (m) to coordinate all such activities, whether governmental or otherwise, as are necessary to protect, restore or improve the environment in the State; and
- (n) to establish and develop criteria for the assessment of the extent of environmental change, pollution and environmental harm; and
- (o) to specify standards and criteria, and the methods of sampling and testing to be used for any purpose; and
- (p) to promote, encourage, coordinate or carry out planning and projects in environmental management; and
- (q) generally, to perform such other functions as are prescribed.

Office of the Environmental Protection Authority

The EPA could not perform its important functions without the support and assistance of public servants in the Office of the Environmental Protection Authority (OEPA).

In March 2009, when it published its Review of the Environmental Impact Assessment process in Western Australia, the EPA recommended that Government should consider providing the EPA with direct management control of its resources and business.

In July 2009, the Minister for Environment, the Hon Donna Faragher MLC, wrote to the Chair of the Environmental Stakeholder Advisory Group, Bernard Bowen, requesting that body to provide her with advice, by August 2009, on the role and structure of the EPA.

In October 2009, the Premier of Western Australia announced the EPA would be given greater autonomy and management of its own resources through the establishment of the OEPA, which would have its own staff, budget, management and administrative capability.

The OEPA has the additional responsibility of monitoring compliance with approved Ministerial conditions throughout the life of a project, providing the opportunity for continuous improvement in the development and setting of conditions.

On 27 November 2009, the OEPA was formally established.

In the EPA's view, this change has greatly enhanced the capacity of the EPA to efficiently meet community and government expectations of robust environmental scrutiny, assessment and conditions.

In 2012–13, the OEPA continued to provide a high level of service to the EPA.

Other departments and agencies

The EPA draws on advice and expertise from a range of sources, including several Government departments who have important statutory responsibilities in relation to aspects of the environment.

Close working relationships with these departments, and a good understanding of their respective roles and responsibilities, ensures the most efficient and effective management of potential environmental impacts and risks.

The EPA would like to acknowledge the important contribution of:

- the Department of Parks and Wildlife
- the Department of Environment Regulation
- the Department of Mines and Petroleum
- the Department of Water
- the Department of Aboriginal Affairs
- the Swan River Trust
- the Botanic Gardens and Parks Authority
- the WA Museum
- the Department of Planning
- WA Planning Commission
- the Department of State Development
- the Department of Health.

Bilateral agreement with the Commonwealth

The Agreement between the Commonwealth of Australia and the State of Western Australia under section 45 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) relating to Environmental Impact Assessment (the Bilateral Agreement) is designed to reduce duplication of environmental assessment.

Under this provision, the Commonwealth accredits Western Australia’s assessment process for proposals that affect matters of national environmental significance (MNES).

The current bilateral agreement was signed by the former Minister for Environment, the Hon Bill Marmion MLA, on 21 March 2012.

Where a proposed action is assessed pursuant to a process specified in the Bilateral Agreement, separate assessment by the Commonwealth Department of Sustainability, Environment, Water, Populations and Communities (SEWPaC)¹ is not required under the EPBC Act. However, the proposed action still requires approval from the Commonwealth Minister under the EPBC Act.

In 2012 the EPA conducted a minor review of its 2010 Environmental Impact Assessment Administrative Procedures resulting in the gazettal of the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative*

Procedures 2012. On 16 July 2013, the bilateral agreement was amended to reflect these changed EPA procedures.

In considering the impact of any proposal or controlled action, the EPA is required to ensure that it does not ‘have unacceptable or unsustainable impacts on any of the matters protected’ by the EPBC Act.

Currently the Public Environmental Review (PER) level of assessment process is the only EPA process accredited. The Commonwealth has declined to accredit the EPA’s Assessment on Proponent Information (API) level of assessment.

The EPA notes with interest the negotiations that occurred between the Commonwealth and State and Territory governments for the accreditation of State and Territory processes to both assess, and approve, proposals. This is intended to eliminate the double handling of proposals through both State and Federal assessment and approvals.

The EPA considers that the Western Australian environmental impact assessment (EIA) system has unique features that mean it is well positioned to be accredited should negotiations between the Commonwealth and State Government be successful.

This includes an independent statutory authority reviewing proposals, a high degree of transparency (including public reports to the Minister), opportunities for public participation, and appeal rights.

In 2012 – 13, the EPA finalised the following reports under the Bilateral Agreement or through case by case Commonwealth accreditation:

REPORT	DATE
1459 - Armstrong Reserve, Dunsborough – urban and commercial development (EPBC 2006/2834)	10/12/12
1471 - Mangles Bay Marina-Based Tourist Precinct (EPBC 2010/5659)	29/4/13
1478 - Dongara Titanium Minerals Project (EPBC 2009/5032)	4/6/13
1479 - Turee Syncline Iron Ore Project (EPBC 2012/6391)	14/6/13

¹ On 18 September 2013, the Commonwealth Department of the Environment was formed. It replaces SEWPaC for the purposes of this bilateral agreement.

Reform

Environmental impact assessment (EIA) is a predictive tool that is systematically applied at the early planning and design stages of development proposals so that Government and the community can form a view about a proposal's environmental acceptability and what conditions, if any, should be applied to control potential risks and impacts.

Because EIA is a predictive tool it deals in uncertainty and risk. The environmental effects of development can be difficult to predict. Predictions must often be made when there is still uncertainty about outcomes, be they negative or positive. EIA is therefore information and knowledge dependent - knowledge about environmental values that may be at risk from proposed development, knowledge about the nature, extent and duration of risks to which those environmental values may be exposed, knowledge about what can be done to prevent, avoid or mitigate those risks and identify opportunities, and knowledge about whether those identified risks were indeed controlled.

The EPA must have sufficient confidence in the information available to make sensible judgements and provide high quality advice to Government on the environmental acceptability of development.

It is this tension about how much information and knowledge is necessary to have confidence in predictions about impacts that is at the heart of EIA. The EPA must have sufficient confidence in the information available to make sensible judgements and provide high quality advice to Government on the environmental acceptability of development.

In February 2008, recognising new and complex challenges in providing this advice, the EPA began a review of the EIA process.

The review was in recognition of the increasing scrutiny on the EPA's capacity to deliver timely, high quality advice to Government and the expanding range of environmental issues and risks (including cumulative impacts) to community health and important ecosystems and biodiversity values.

In the EPA's view, it was essential that it responded to concerns expressed about delays, process information requirements and the adequacy of its policies and practices so that it continued to remain relevant to Government and the community.

The EPA completed its review in March 2009 and made 47 recommendations to deliver better environmental protection and to improve the efficiency and transparency of the EIA process, including:

- greater use of outcome based conditions
- application of risk based decision making to focus on the significant matters
- improved case management and a greater focus on timelines
- greater use of strategic environmental assessments
- development of clear, certain and consistent policies and guidelines, and
- greater administrative independence for the EPA.

Four years on, there has been a major transformation.

The State Government established the OEPA to provide the EPA with greater autonomy and management of its own resources so that it could better meet the growing complexity, size and demands of development assessment in the State.

In the EPA's view, this has been a critical ingredient in the successful implementation of its reforms.

The EPA's reforms were accompanied by the Government's decision to introduce the Approvals and Related Reforms (No1) (Environment) Bill, which came into effect in November 2010, to remove duplication in environmental appeals.

At the same time, and at the request of the Government, the EPA introduced an up-front seven-day public comment period to inform its decision on the level of assessment that should apply to proposals. The EPA now conducts this – and other consultation – through an online consultation hub to broaden community access.

The EPA, through a revamp of its Administrative Procedures, also simplified its five options for the level of assessment of significant proposals to two, making the process more straightforward and transparent for the public and proponents.

In 2010, the EPA also introduced the practice of consulting with proponents and other decision-making authorities on proposed conditions that would apply to a project or development. This practice has contributed to a dramatic reduction in the number of unnecessary appeals on proposals, speeding up final approvals.

In 2011, in anticipation of the State Offsets Policy, the EPA introduced new practices to improve the governance, transparency and enforceability of environmental offsets. The EPA now evaluates all offsets to ensure they are reasonable and proportionate to the significant residual impacts, documented in the EPA reports so they can be subject to public appeal, and conditioned so they can be enforced.

Providing policies and guidelines is important so that proponents and others understand the EPA's expectations and minimise environmental impacts.

The EPA has released environmental assessment guidelines or bulletins on key issues such as:

- marine dredging
- subterranean fauna
- light impacts on marine turtles
- the protection of benthic primary producer habitat
- sea level rise
- regionally significant natural areas in Albany, Geraldton and the Peel regions, and
- hydraulic fracturing.

The EPA has also released guidelines on aspects of the EIA process to provide greater clarity, consistency and certainty to proponents. This includes guidance on:

- timelines
- defining a proposal
- consultation on draft conditions
- the use of strategic and derived proposals
- mine closure plans
- minor or preliminary works
- changing a proposal after assessment
- EPA factors and objectives, and
- the application of the EIA significance framework

Strategic advice has been released on the environmentally sensitive Fortescue Marsh in the Pilbara which is under development pressure, on waste-to-energy technologies and on the environmental values of the Dawesville-Binningup region.

At the request of the Minister for Environment, the EPA chaired the Shared Environmental Assessment Knowledge (SEAK) Taskforce, which reported to Government in 2012 on opportunities to better use and reuse information gleaned in environmental assessments to streamline decision making.

On the EPA's behalf, the OEPA is well advanced on the development of a new electronic case management system to improve project tracking and timeliness and provide robust management information. This has also been accompanied by a change program designed to improve the service culture of the department.

The EPA recognises that the appetite for environmental approval reform remains strong at both the State and Commonwealth level.

For its part, the EPA will continue to respond to expectations for more efficient and effective environmental assessments while maintaining good environmental outcomes and a transparent process with opportunities for public participation.

The EPA will also periodically review its practices and processes, particularly in light of judicial decisions, policy developments and scientific advances.

Western Australia's environmental challenge

Western Australia is home to a rich and diverse natural environment within a large geographical area.


By virtue of the State's size, geology, varied climate and relative isolation, there is a vast array of fauna and flora, some of which is found nowhere else in the world.

A growing population and the demand for our natural resources mean that pressure is mounting on our environment. Many of the developments in WA are on a massive scale and in areas that are unpopulated, therefore often out of sight to the general community.

As new resource markets are opening up, 'unconventional' gas and uranium are joining our more traditional mining sectors, such as iron ore. In addition to localised issues, global pressures such as the increasing demand for water, climate change and sea level rises, are also impacting on the Western Australia environment.

There is a growing need for increased focus on the cumulative impacts of human activities across the State. Whilst proposals referred to the EPA are assessed at an individual level, they are not seen in isolation.

The EPA applies a 'significance framework' to make decisions through the environmental impact assessment process, looking at key environmental factors which, together, comprise the Western Australian environment and set out the objectives to be achieved for each factor. Assessments are always undertaken with these objectives in mind.



Tetratheca aphylla subsp. aphylla is a Declared Rare Flora in Western Australia. It occurs in the banded iron formations of the Helena Aurora Range.
Photo: Office of the EPA



*Banded iron formations of the Helena Aurora Range in the Yilgarn.
Photo: Office of the EPA*



Banksia menziesii
Photo: Office of the EPA



Land



Land

Western Australia spans over 21° of latitude from the rugged Kimberley gorges in the tropical north, to the towering karri forests in the temperate south west. The vast State occupies a third of the Australian continent, and includes eight of Australia's fifteen biodiversity hotspots.

Western Australia is home to more than 16,000 plant and animal species that are found nowhere else in the world. Many of these species occur in small, localised populations, and the high level of rarity and reduced distribution of these species makes them vulnerable to extinction through human disturbance of the environment.

The productive mining and agriculture industry that generates economic prosperity in Western Australia inevitably causes increased stress on the State's natural environments. In particular, these industries impact arid rangelands that contain Banded Iron formations, such as the Midwest, Goldfields and the Pilbara region, which is also a biodiversity hotspot. In the south of the State increased urbanisation, as a result of a boom in population and subsequent residential development, puts pressure on the fragile Swan Coastal Plain, surrounding Perth, which supports more plant species than the whole of the British Isles.

The added threat of climate change will increase the vulnerability of the species in these regions. It is the responsibility of the EPA to consider these large and complex issues in the context of social and economic growth while also ensuring the environment is protected for the benefit of current and future generations of Western Australians.

EPA objectives

Flora and vegetation – to maintain representation, diversity, viability and ecological function at the species, population and community level.

Landforms – to maintain the variety, integrity, ecological functions and environmental values of landforms and soils.

Subterranean fauna – to maintain representation, diversity, viability and ecological function at the species, population and assemblage level.

Terrestrial environmental quality – to maintain the quality of land and soils so that the environment values, both ecological and social, are protected.

Terrestrial fauna – to maintain representation, diversity, viability and ecological function at the species, population and assemblage level.



Pressure point Banded Iron Formation Ranges, Yilgarn Craton

The EPA remains deeply concerned about the cumulative impacts of development on the Banded Iron Formation Ranges of the Goldfields and Midwest Regions (BIFs), and the need to achieve a balance between conservation and development.

While many mining proposals in the region have been approved or expanded, the EPA believes there needs to be an acceleration of the implementation of existing conservation commitments and further protection from mining and exploration of parts of the ranges of highest biodiversity value.

The BIF Ranges of the Yilgarn Craton are places of extraordinary natural heritage and scientific value. They are ancient ranges; laid down at the bottom of the sea over two billion years ago. The ranges were formed through uplifting, and have been undisturbed by seas or glaciers for more than 250 million years. They are amongst the oldest landforms on earth. One range, Jack Hills, contains crystals of zircon that are older than any other material identified on earth, representing the earliest evidence for continental crust and oceans.

The hard, iron-rich rock is erosion resistant, leaving craggy hills and ridges isolated in a predominantly flat landscape. In this landscape they have acted like islands of cooler, wetter conditions through many climatic cycles, providing habitat during ice ages for plants and

animals not found in the flat dry plains below, and as a source of species spreading across the landscape in wetter cycles. At least 46 plants are either restricted to, or have their distribution centred upon, these landforms. Of these plants, 22 are restricted to the single range on which they occur, and six more only occur on a handful of ranges, and nowhere else in the world.

The number of unique plants on each of the BIF ranges varies. The ranges closest to the boundary between the arid zone (<300 mm rainfall) and the transitional rainfall zone (300-600 mm rainfall) have the highest concentration of specialist plant species. The Mount Manning group of ranges (including Helena-Aurora Range and Koolyanobbing Range), and the Mungada/Karara/Koolanooka group of ranges support the largest numbers of banded iron formation-specialist plants. The Mt Manning group of ranges is only 0.1 per cent of Western Australia's land mass but supports 6.1 per cent of its native plants.

By an unfortunate coincidence, the ranges with the highest conservation values are those initially being targeted for iron ore development for a combination of reasons, primarily availability of access and proximity to key infrastructure. This means that those ranges with the highest conservation values are also those under the greatest threat. All BIF ranges are covered by mining tenements, with at least 14 of approximately 32 ranges currently being mined and most others subject to exploration.

In the EPA's view, despite well-recognised conservation values, an appropriate balance

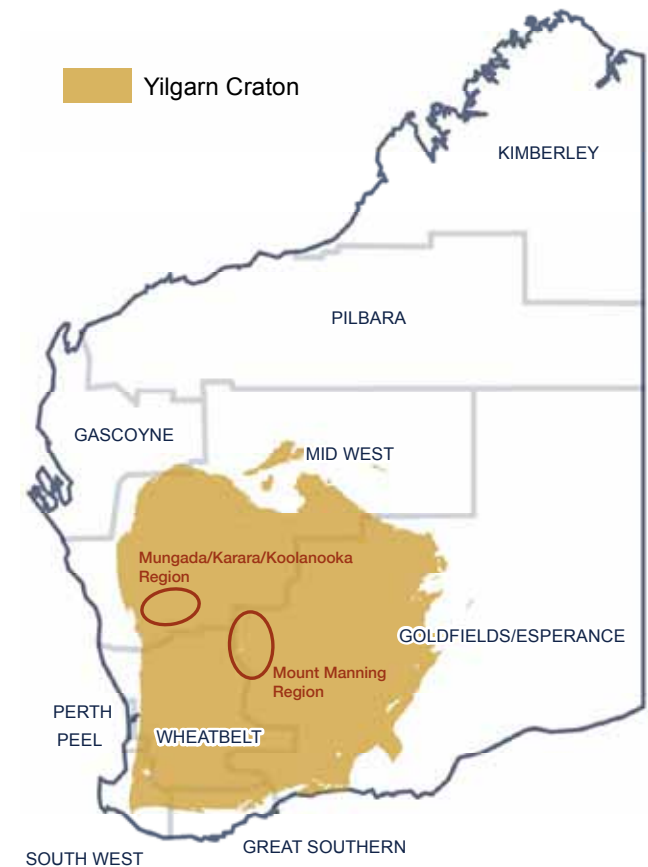


Figure 1: Location of the Mungada/Karara/Koolanooka and Mt Manning regions of the Yilgarn Craton.

between development and conservation of the BIF ranges has not been achieved to date. Since 2002 the EPA has formally assessed 16 iron ore mine and infrastructure proposals on the ranges, and will soon consider others. In addition to formal assessments, the EPA has informally assessed proposed mining, infrastructure and exploration programs on BIF ranges and development activities have also been approved through other regulatory processes, such as changes to approved proposals under s45C of the EP Act and Clearing Regulations managed by the Department of Environment Regulation under Part V of the EP Act, and the provisions of the *Mining Act 1978*.

Regrettably, the progress of conservation outcomes has not matched the pace of development - there are currently no BIF ranges protected from mining development through secure (Class A or National Park) conservation tenure.

At least four of the development proposals recommended by the EPA for approval in the last seven years were recommended on the basis that an area of equivalent or greater conservation value would be conserved within a National Park or Class A Nature Reserve. None of these reserves have been established.

Further, there have been commitments by Governments to create Class A Nature Reserves or National Parks in the Helena-Aurora, Mount Manning and Die Hardy ranges, and on Mungada Ridge. However, none of these conservation outcomes has eventuated to date.

The EPA acknowledges that the creation of any

Class A conservation reserve or a National Park is a complex process that requires significant investment and commitment. However, the absence of secure conservation reserves – protected from exploration and mining proposals – puts the EPA in a difficult position when considering new or expanded proposals.

The EPA has been providing advice and recommendations on the most valuable ranges for conservation for almost 40 years. Since the EPA's initial recommendation to reserve a number of ranges in 1975, substantial research into the biodiversity and geology of the ranges has further highlighted their significance.

In 2010 the Government announced a broad framework for nature conservation and mining over 862,000 hectares of the Mt Manning Region. This policy clarification did not extend to the banded iron formations of the Mungada/Karara/Koolanooka Region. The arrangements for the Mount Manning Region included:

- a Class A nature reserve over the Die Hardy Range, and
- conservation parks (not Class A) and reserves for conservation and mining over the former Mt Elvire and Jaurdi pastoral leases and parts of the former Diemals and Mt Jackson pastoral leases.

At the time, the Government stated that any development proposals in the area will continue to be subject to the requirements of the EP Act and the *Mining Act 1978* which includes assessment and advice from the EPA.

As yet, the conservation arrangements for the Mt

There are currently no Banded Iron Formation Ranges protected from mining development through secure (Class A) conservation tenure.

Manning area have not been implemented. The EPA believes there needs to be an acceleration of the implementation of these and other existing conservation commitments.

The EPA is concerned that, after almost 40 years of recommending conservation of the highest value ranges, there remains a significant imbalance between development and conservation of these unique landscapes and the species they support. Given the significant biodiversity values of the Helena Aurora Range, which has been confirmed in contemporary published research, the EPA is adopting a presumption against any further development for those parts of the range that are within the conservation park identified in the government's framework for the Mt Manning region. The EPA is reviewing information in relation to the values of the Mungada/Karara/Koolanooka region, which is also under development pressure.

Further reading and references

(Banded iron formations)

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Key issue

Rehabilitation of disturbed landscapes

Many development proposals considered by the EPA require the clearing of native vegetation. In many instances, approval – such as for a mine – is granted subject to conditions requiring rehabilitation.

The challenge of rehabilitation in Western Australia is to recreate the conditions and reintroduce the species which have evolved to cope with specialised conditions, such as arid environments with skeletal soils. WA is unique and biodiverse, therefore rehabilitation involves considerable planning, effort and expense.

Adaptation is the foundation of rehabilitation. The variety of climates and soils in WA means that the same rehabilitation methods are not successful in all regions.

The increasing number of large-scale proposals in environmentally sensitive areas has led the EPA to review its current approach to assessing and conditioning rehabilitation in EIA. Rehabilitation is an important consideration for the EPA as it relates to a range of key environmental factors. The EPA's objective in recommending rehabilitation conditions is to return ecological function to a disturbed area however the lack of implementation of rehabilitation conditions and documented successful rehabilitation outcomes to-date are of major concern to the EPA.

In recent years, the EPA has consulted with experts to build a picture of rehabilitation

It has been estimated that perceived best-practice rehabilitation in the Pilbara often achieves a return of less than 15 per cent of the pre-mined biodiversity values.

success and failure using the Pilbara as a case study. Rehabilitation conditions have been recommended for approximately 76 per cent of all mining proposals in the Pilbara. In the past 20 years, this equals over 120,000 hectares (1,200 km²) which will need to be rehabilitated in the future. However, it is estimated that perceived best-practice rehabilitation in the Pilbara often achieves a return of less than 15 per cent of the pre-mined biodiversity values (diversity and cover) and only 10 per cent of the seed required for rehabilitation programs is harvested annually. Currently, there is a lack of confidence that even the most common plant species can be restored in the Pilbara, potentially raising the prospect of significant residual impacts.

Of particular concern to the EPA is the lack of successful rehabilitation of the common mulga and spinifex communities.

Continued investment in research and the development of technology with collaboration across industry, government and research organisations is necessary to improve rehabilitation outcomes across Western Australia. Landscape scale rehabilitation is an

emerging science, less than four decades old, which requires the creation of information and technology for a number of key areas which limit rehabilitation performance, including understanding attributes and limitations of the natural environment and man-made landforms, the best use of topsoil as a limited resource and seed viability, storage and use.

Without confidence that rehabilitation can successfully restore comparable ecological function post-disturbance at a large scale, rehabilitation alone has limited value as a mitigation option for reducing proposal impact.

Until there is greater confidence, alternative steps within the mitigation hierarchy (avoid, minimise, reduce, offset) in addition to rehabilitation may be more relevant to reduce proposal impact during EIA.

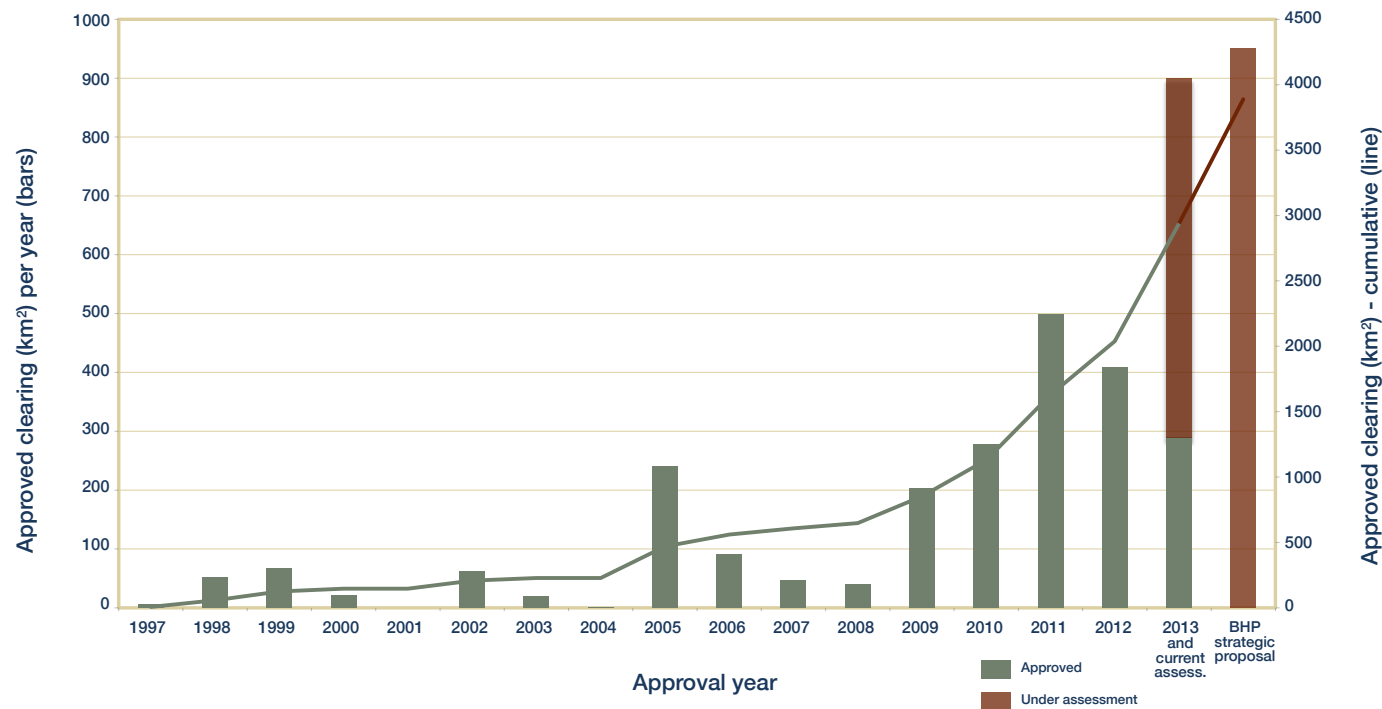


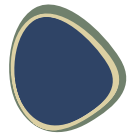
Figure 2: Approved clearing in the Pilbara under Parts IV and V of the EP Act since 1997 (km²)
Source: Office of the EPA

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Key issue

Cumulative impacts on the Swan Coastal Plain, Perth - Peel Regions

Perth and its surrounds are rich in animal and plant life, with bushland and wetland areas that greatly contribute to the aesthetic and recreational value of the city. The South West Botanical Province of Western Australia is internationally recognised as a biodiversity hotspot. The Greater Perth Floristic District is a major contributor to the highly diverse hotspot with 2,135 recorded native species and the reptile diversity found in the Perth region represents one of the richest recorded in Australia. The Perth-Peel region includes parts of the Swan Coastal Plain and Darling Range.

Since the EPA was established it has been actively promoting the identification and protection of regionally significant natural areas. The EPA undertook significant work through the Conservation Reserves Committee study that identified key areas for conservation in the System 6 Red Book. The updates to the System 6 work culminated in the whole-of-government Bush Forever report, which identified 51,200 hectares of regionally significant bushland for protection and provided a strategy for implementation within the WA planning framework. The EPA has expanded the identification of regionally significant natural areas to the Peel Region through its Swan Bioplan work to provide up-front advice for consideration during strategic planning.

Vegetation clearing is one of the main causes of biodiversity loss, particularly for urban development in the coastal and peri-urban areas. The Swan Coastal Plain has experienced significant loss of native vegetation with 75 per cent of all native vegetation cleared. The eastern side of the Swan Coastal Plain is highly cleared with seven of the 10 vegetation complexes having 10 per cent or less of their pre-clearing extent remaining. The other three vegetation complexes have 16 per cent or less remaining. Only two of the 10 major landforms (estuarine wetlands and the coastline) have 60 per cent of their original vegetated area remaining and the remaining landforms are at 33 per cent or less. The Perth region has a high diversity of small native bush birds, however with clearing of native habitat and fragmentation they are only found in isolated pockets of bushland.

Ongoing demand for new housing and infrastructure in urban and peri-urban areas of Western Australian cities and towns will have a potentially significant impact on remaining natural areas. These areas may be subject to both direct clearing from urban expansion and redevelopment and indirect impacts from fragmentation and disturbance from adjacent development. The Swan Coastal Plain is under increasing pressure from development, particularly from the urban expansion within the Perth-Peel regions to support the increasing population growth.

Populations of mammals on the Swan Coastal Plain have retracted to bushland areas in the outer parts of the region due to a loss of habitat in urban areas. If urban expansion continues to sprawl in the outer metropolitan region, further fragmentation and loss of habitat will threaten fauna.

Clearly, the cumulative impacts on the biodiversity of the Swan Coastal Plain after more than 180 years of development have been significant. It has become increasingly challenging for the EPA and for regulators, including the Commonwealth, to assess individual development proposals in the absence of a strategic context.

The Western Australian Government is to be commended for entering into an agreement with the Commonwealth Government to undertake a strategic assessment (under the EPBC Act) of the impact of long term development of the Perth and Peel regions on Matters of National Environmental Significance (MNES). Many of these matters are also listed under State legislation.

This strategic approach offers the best opportunity to streamline approvals but, more importantly, deliver an effective long term and strategic response to key environmental issues in the Perth and Peel region.

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The eastern side of the Swan Coastal Plain is highly cleared with seven of the 10 vegetation complexes having 10 per cent or less of their pre-clearing extent remaining.





Key issue

South West forest health

Western Australia's native forests are one of our State's most important environmental assets and they face a range of pressures from commercial timber harvesting through to climate change and the effects of dieback.

Forest management is a highly contentious subject with contested views on many issues, including among the scientific community.

Successive governments have determined that the public interest is served by the continued harvesting of part of the forest, but within the limits of what is ecologically sustainable. The challenging task of developing the next Forest Management Plan (for 2014–2023) – and reconciling the competing values and uses of the south-west forests – was undertaken by the Conservation Commission of Western Australia.

In 2012–13, the EPA undertook an assessment of the Conservation Commission's proposed plan and made recommendations to the Minister for Environment.

The EPA does not propose to revisit the full detail of its assessment in this report, noting that the matter is currently the subject of appeal to the Minister for Environment.

However, the EPA does hold the view that the current approach to reporting on the overall health of the forest and any evident trends needs to be improved.

This would provide important context for communities as they build an understanding of forest management and provide a basis on which to assess the utility and effectiveness of the Forest Management Plan.

The main finding of the former Department of Environment and Conservation's (DEC's) report on forest health is that the vegetation cover index (as a surrogate for forest health) has remained stable for most areas during the period of the current forest management plan. Episodic events (pest, drought and frost events) have had impacts on the health of the forest in particular areas, but mostly the forest has recovered.

With climate change likely to affect forests to a greater degree into the future, it will be even more important to provide public information about overall forest health. The EPA believes that this can be facilitated by the recommended expansion and extension of forest monitoring and species specific research to detect any trends due to climate change and other threatening processes.

In order to further build trust and confidence in the implementation of the forest management plan, the EPA recommended that the Conservation Commission and the DEC extend their public reporting to include publication of all relevant compliance matters, such as incident reports.

Further, the EPA recommended that the Conservation Commission considers the merit of establishing a stakeholder reference group to assist in providing opportunities for the community, and relevant non-government

organisations and government agencies to participate in the implementation of the Forest Management Plan 2014–2023.

It is noteworthy that in June 2013 the Western Australian Auditor General tabled a report into the management of State forest products that found 'a lack of transparency and accountability' that has 'caused much confusion, mistrust and speculation among Members of Parliament, conservation groups, and people currently or previously involved in the timber industry'. The report also found that there are 'instances of waste and breaches of environmental standards in the forests that are not adequately followed up'.

Similar observations were made in the EPA's 2010 report on the mid-term review of the Forest Management Plan, which stated that governance over forest planning, management and operations, compliance and enforcement were critical issues that needed to be addressed.

The EPA is of the view that introduction of the recommended transparency measures and the expansion of forest monitoring and research is the best way for the community and decision makers to make informed judgements about the ecological health of these important forests.

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Key issue Whicher Scarp

The proposed Forest Management Plan 2014-2023 recognises the flora and vegetation associated with the Whicher Scarp as a separate forest ecosystem and recommends that 4,010 hectares is added to Whicher National Park, of which 2,370 hectares is part of the Whicher Scarp ecosystem.

The EPA strongly supports this recommendation and has a long history of identifying Whicher Scarp as a place of outstanding environmental value that should be protected.

Whicher Scarp is a sickle shaped landform unit of around 23,000 hectares that extends from near Burekup in the north where it meets the Darling Scarp, to the south-west of Dunsborough where it meets the granites of the Leeuwin-Naturaliste Ridge.

A series of studies and reports describing aspects of the flora and vegetation of the Whicher Scarp since the 1970s have noted the striking and unusual features of the area. The EPA recognised the particular flora values of the Whicher Range (Scarp) area in the

Only 1.9 per cent of the Whicher Scarp ecosystem is protected in formal conservation reserves

recommendations of the Conservation Through Reserves Committee (CTRC) System 1 and System 6 reports (DCE 1976 and DCE 1983). It recommended a complete survey of the Whicher Range and proposed conservation reservation of parts of the Whicher Scarp. In 2009, the EPA published *Environmental Protection Bulletin No. 6 - The Natural Values of the Whicher Scarp*.

More than 900 native species have been identified in the Whicher Scarp, reflecting flora of the Jarrah Forest, south coast sands and wetlands and Swan Coastal Plain sands as well as a large number of Whicher Scarp-centred species. The Whicher Scarp is a local centre of species richness in the south-west. Based on vegetation and flora values, including species richness, endemism and geographically distinct species, the Whicher Scarp is recognised as a local 'biodiversity hotspot'.

Full-scale mineral sand mining commenced in the south-west in 1956. Today, this industry is considered to be at its maturity. The area including the Whicher Scarp and its interface with the Swan Coastal Plain has been significantly impacted by historical mineral sands mining and much of the Whicher Scarp is subject to exploration licences or mining leases.

Over this period the industry has developed minerals sands mines in the face of increasing environmental constraint.

In 2005 the EPA recommended approval of the proposed Gwindinup Minerals sands mine, subject to strict conditions, after the proposal was decoupled from the Happy Valley deposit.

In 2011 the EPA recommended to the Minister for Environment that the Happy Valley Minerals Titanium proposal be found environmentally unacceptable on the basis that it would cause the loss of regionally significant flora, vegetation and fauna values. The EPA noted at the time that, in view of the highly significant environmental values of the Whicher Scarp, it was unlikely to support any further development as it would adversely impact and seriously fragment the remaining vegetation. The Minister supported the EPA's recommendations and decided that the proposal may not be implemented.

There is approximately 42 per cent of the original (pre-European) native vegetation remaining on the Whicher Scarp. However, at this stage only 1.9 per cent of the Whicher Scarp ecosystem is protected in formal conservation reserves. The implementation of the proposed Forest Management Plan 2014–2023 would extend the protected area to 13.8 per cent, some of which would be in the extension of the Whicher National Park. The EPA views this as a very positive step for conservation of this important biodiversity asset.

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Environmental Protection Authority 2009, *Environmental Protection Bulletin No. 6 - The Natural Values of the Whicher Scarp*, EPA, Perth, WA.

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*Vegetation of the Whicher Scarp,
Photo: Kelly Freeman, Office of the EPA*



*Coral Trout at Coronation Atoll, Pelsaert Group, Houtman Abrolhos
Photo: John Totterdell, Marine Information & Research Group*



Sea



*Tropical Indo-Pacific humpback dolphin, *Sousa chinensis*, at Ningaloo Reef. Recent assessments have highlighted some fundamental information gaps, such as the lack of basic knowledge about the population dynamics and the relative importance of different near-shore habitats for this species. The EPA is strongly supportive of initiatives to consolidate our existing knowledge of *S. chinensis* and to undertake targeted research to address critical gaps in understanding*

Photo: John Totterdell, Marine Information & Research Group

Sea

The coastline of Western Australia is 20,781 kilometres long, and over a third of that (7,892 km) is associated with the state's 3,747 islands. The adjacent coastal waters cover an area of over 117,000 km², spanning a range of climatic regimes from wet tropical along the Kimberley coast to temperate along the south coast.

The biological communities are shaped by the climatic regime, underlying geological structures and the intensity of, and exposure to, wave and tidal energy. The range of environmental settings, coupled with the relative isolation of Western Australia, has resulted in a diversity of marine life, much of which is found nowhere else in the world.

Our coastal waters are considered nutrient poor by world standards, and productivity is dominated by benthic communities (e.g. algae, seagrass, coral and mangroves) compared to other parts of the world where pelagic communities (e.g. phytoplankton) provide the primary energy source to support fisheries and other marine life. Nonetheless these ecosystems support a diverse range of specially protected and culturally and commercially important biota that have adapted to these conditions, including prawns, fish, seabirds and marine turtles, and marine mammals such as sea lions and dolphins. The region between Shark Bay and the Kimberley supports perhaps the largest dugong population in the world. Over 30,000 humpback whales migrate annually along the coast from their summer feeding grounds in Antarctic waters to their calving grounds in the warm tropical waters off the north-western coast.

The cumulative loss of coastal marine habitats

and pollution are recognised globally as two of the key threats to marine ecological integrity. With respect to these indicators the marine environment of the state is generally in good condition, however there are historical impacts such as significant losses of seagrass in localised areas due to nutrient pollution, such as Cockburn Sound and Albany harbours. Coral cover on a number of reefs in the west Pilbara (off Onslow) has declined by 85 per cent since 2009, and this is largely attributed to a combination of higher than normal seawater temperatures and cyclone damage. There have been significant losses of mangroves and corals from both historical and recent solar salt works and port developments.

Importantly, there are no areas within the state's coastal waters that are 'polluted' to the point where harvesting of seafood for human consumption is prohibited. The only places where water quality is such that it is not advisable to swim, or to take seafood, is near treated domestic wastewater (i.e. treated sewage) outlets due to the possibility of human pathogens.

In Western Australia losses of benthic habitats are generally associated with dredging and filling for ports and coastal infrastructure developments such as those associated with bulk commodities (such as iron ore) and petroleum (such as LNG

EPA objectives

Benthic communities and habitat – to maintain the structure, function, diversity, distribution and viability of benthic communities and habitats at local and regional scales.

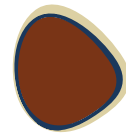
Coastal processes – to maintain the morphology of the subtidal, intertidal and supratidal zones and the local geophysical processes that shape them.

Marine environmental quality – to maintain the quality of water, sediment and biota so that the environmental values, both ecological and social, are protected.

Marine fauna – to maintain the diversity, geographic distribution and viability of fauna at the species and population levels.

export facilities). Reductions in environmental quality are mainly related to discharges of domestic and industrial wastewater (treated sewage, desalination brine), contaminated stormwater and groundwater, and shipping and port operations (product spillages, antifouling paints). The main sources of acute pressure on marine fauna are associated with construction activities such as pile driving and blasting.

Coastal structures such as solid breakwaters, can alter the natural processes that shape the coast and cause localised erosion/ deposition. Left unmanaged, this can threaten the integrity of man-made structures and natural uses such as seabird and turtle nesting. Contamination issues can be exacerbated by breakwaters, canals and other structures that reduce natural flushing.



Pressure point

Dredging

The EPA has assessed a number of iron ore and LNG production and export facilities in recent years. The scale of these facilities and the volume of dredging and ocean disposal of dredged material is large by world standards. In 2011–12 the EPA assessed four proposals with a combined dredged volume of about 130 million cubic metres in the Pilbara alone. The predicted impacts included the permanent loss of about 2,375 hectares of sponge garden communities, 74 hectares of mangroves and 65 hectares of coral.

These projects share a number of challenges. Firstly, the EPA recognises that the ability to predict the extent, severity and duration of dredging-related impacts is very poor world-wide, and probably more so in Western Australia because of the sensitive and poorly understood marine environment. Although a substantial amount of dredging has occurred here, the EPA notes that there has been little improvement in confidence over time because of a focus on monitoring for compliance rather than for management, and a reluctance of proponents to share information on actual versus predicted impacts. In response, proponents tend to over-predict rather than under-predict impacts to reduce the risk of non-compliance if the project is approved.

The EPA has put in place an integrated policy and science response to address this issue.

Firstly, the EPA has revised its policy framework, the Environmental Assessment Guideline for Marine Dredging Proposals (EAG 7), to require proponents to set management targets as well as impact limits. By focussing on monitoring against the management targets, proponents will gain a better understanding of the sediment pressures and biological responses closer to the site of dredging, which will be both more cost effective and provide more useful information. Furthermore, to facilitate the sharing of knowledge obtained, the EPA also recommends a standard condition requiring proponents to make all relevant data publicly available.

Secondly, in light of the significant residual impact and risk associated with dredging the EPA has been recommending environmental offsets be applied. The EPA has encouraged a strategic approach to utilisation of those offset funds and a Dredging Science Node has been established within the Western Australian Marine Science Institution (WAMSI) to address some of the critical science gaps. With funding of about \$8 million from environmental offsets, and equivalent co-investment from research providers, the \$16 million program involves more than 50 scientists working to implement a science plan designed to enhance the capacity within both government and the private sector to predict and manage the impacts of dredging.

The initial focus is on the tropical regions of WA, but the findings from this important initiative will have broader relevance around Australia and beyond.

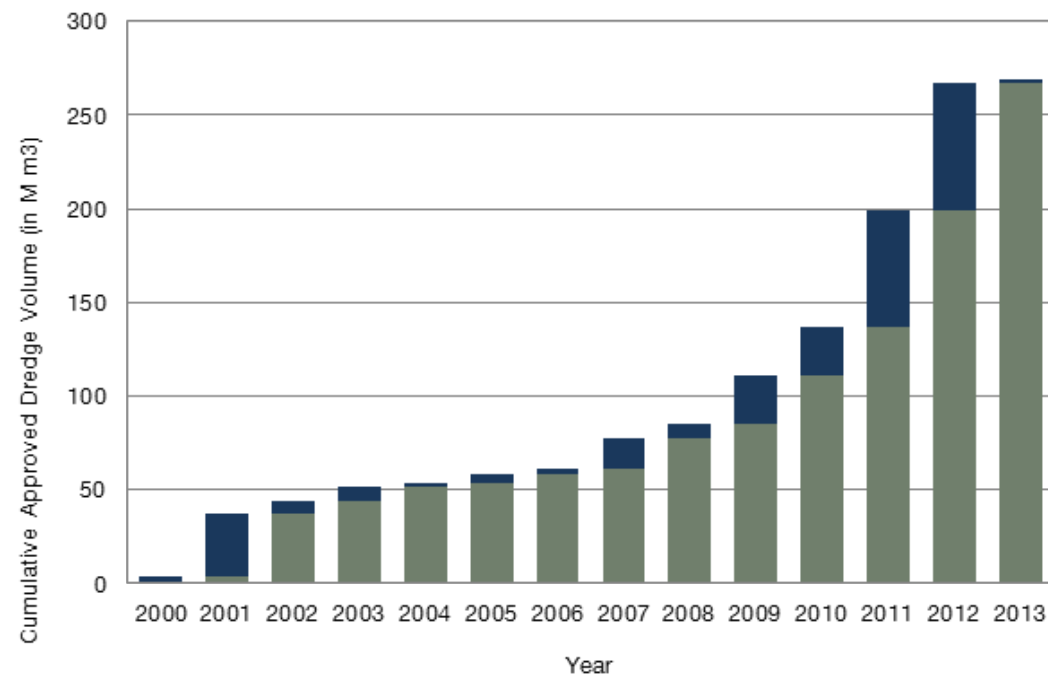


Figure 3: Cumulative and Annual Approved Dredge Volumes for Western Australia (2000–13)
[Excluding Browse LNG precinct – invalidated by the Supreme Court]

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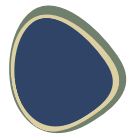
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Key issue

Ports and marine environmental quality

There is continued development and expansion of industrial developments and marine export facilities on the coast. A large proportion of the liquid waste streams such as desalination brine, produced formation water, treated sewage, cooling water and reclamation dewater are discharged directly or indirectly to the marine environment. In considering development proposals on the coast, the EPA is mindful about the potential for cumulative impacts on the quality of near-shore marine ecosystems, and hence on the ecological and social values they support.

Through its policies, guidelines and the assessment of individual development proposals, the EPA has encouraged the consistent application and use of an environmental quality management framework (EQMF) to guide the assessment and management of activities that could affect marine environmental quality. This approach relies on spatial maps of agreed environmental values and objectives, based on community and stakeholder input, and a risk-based approach to monitoring and management.

The EPA notes the recent announcement by Government that all State port authorities and non-port authority ports will be amalgamated into five large regional ports (Kimberley, Pilbara, Mid-West, Fremantle and Southern). This provides an opportunity for the EQMF to be formally incorporated into port management structures. This will assist the new port

authorities to protect the environment within port waters, including mechanisms for managing environmental performance of tenants and port service providers, and importantly provide a basis to support the planning and streamlined assessment of future development proposals.

The EPA looks forward to building a working relationship with the new port authorities and facilitating the incorporation of the EQMF into their port management plans and environmental management systems and strategies. The EQMF addresses cumulative impacts from multiple developments by focussing on the quality of the receiving environment and therefore provides a basis for assessing and approving longer-term port development plans.

Examples of where the framework has been successfully applied include Cockburn Sound through the State Environmental (Cockburn Sound) Policy 2005 (SEP) and, more broadly, the Pilbara coastal waters (Pilbara Coastal Water Quality Consultation Outcomes: Environmental Values and Environmental Quality Objectives).

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Key issue Marine fauna

The EPA has identified marine fauna as a key factor during its assessment of most of the recent proposals for large scale coastal developments in Western Australia. Humpback whales and other large migratory cetaceans are commonly considered in assessments, although the main migratory routes and feeding areas are in deeper waters outside of State jurisdiction. The more coastal species such as bottlenose dolphins and little penguins are commonly associated with developments in the south and west coast. Further north marine turtles and dugong are often considered. More recently the nearshore dolphins (Humpback and Snubfin) have been identified as potentially impacted by proposals.

These assessments have highlighted some fundamental information gaps, such as the lack of basic knowledge about the population dynamics and the relative importance of different habitats for a range of species, including inshore coastal dolphins. The EPA is aware that in 2010, submissions were made to the Commonwealth Threatened Species Scientific Committee to have the Snubfin and Humpback dolphins listed as Vulnerable in Commonwealth waters under the EPBC Act. However, both were rejected on the grounds that insufficient information was available to justify changing their status.

Similarly, both Snubfin and Humpback dolphins are protected under the Western Australian *Wildlife Conservation Act 1950* and this legislation also has provisions to list species

facing identified threats or impacts as Threatened or Specially Protected. However, given the lack of information on the population status and distribution of these two species in WA waters, the Department of Parks and Wildlife (DPAW) is currently unable to assess their status or list these species under WA State legislation.

A collaborative multi-disciplinary effort, directed through a strategic and coordinated research program, is needed to address the key information gaps identified through the impact assessment process, and to support the management and conservation of these important species.

The EPA notes that the Board of the Western Australian Marine Science Institution (WAMSI) has endorsed the development of a Marine Wildlife Node within WAMSI in consultation with relevant government departments. The Marine Wildlife Node is designed to provide a focal point to consolidate our existing knowledge of these species and to undertake targeted research to address critical gaps in understanding.

The outcomes of this research will address the needs of the EPA, Government and industry, as well as provide benefits to other marine stakeholders and the general community. The EPA strongly supports this strategic and cooperative approach to addressing this important issue.

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Photo: Cockburn Sound Management Council

Seafood caught in Cockburn Sound is considered safe for eating, beach sites have greatly improved and the waters are generally safe for swimming and boating

A success story: Cockburn Sound State Environmental Policy

Cockburn Sound is located 20 kilometres south of Perth and is the most intensively used marine embayment in Western Australia. It is highly valued by the community for its ecological and recreational attributes and supports a vital component of the State's economy.

The eastern foreshore of Cockburn Sound has been a heavy industrial area since the 1960s. Comprehensive environmental studies conducted over the years identified a large variety of contaminants and industrial discharges in the Sound, resulting in the deterioration of water quality and widespread death and loss of seagrass beds, which are a vital part of the Sound's ecosystem.

In response to increasing and sometimes competing pressures on the Sound, the State Government in 2000 established the independent, stakeholder-based Cockburn Sound Management Council (CSMC) in order to coordinate environmental planning and management for Cockburn Sound and its catchment. The CSMC is a multi-stakeholder body comprising representatives from government departments, industry, environmental groups and the local community. It is a forum that represents different interests within and around the Sound and facilitates decision making.

In 2005 the State Environmental (Cockburn Sound) Policy (Cockburn Sound SEP) was released to provide the policy framework for the

environmental management of Cockburn Sound and its catchment. A SEP is a non-statutory instrument developed by the EPA under the EP Act. It is a flexible policy instrument which is developed through public consultation and considered by Cabinet for adoption on a whole-of-government basis.

The primary purpose of the Cockburn Sound SEP is to identify the environmental values that are important to the community and set out a monitoring and management regime that users of the Sound and relevant authorities can implement collaboratively to protect those values.

The Cockburn Sound SEP is supported by two technical documents setting out an environmental monitoring and management framework and the Environmental Management Plan for Cockburn Sound and its catchment.

In response to increasing environmental pressures, the State Government extended the CSMC's management responsibilities to Owen Anchorage and its catchment in 2004. As the SEP was then close to being finalised, it was not feasible to include Owen Anchorage within the policy and formally establish environmental values and a management framework for the area.

The CSMC has been implementing the policy and the Environmental Management Plan for Cockburn Sound and its catchment since 2005. This has included monitoring the health of the Sound and reporting to the Minister for Environment, the Western Australian Parliament and the community by way of annual Report

Cards and the State of Cockburn Sound Report.

In September 2010 the Western Australian Auditor General tabled a report in Parliament on the effectiveness of the Cockburn Sound management framework. The report found that a strong policy and management framework has been established for Cockburn Sound and that the multi-stakeholder CSMC has been 'instrumental in bringing specific attention to pressures on the Sound'. The Auditor General also found that some gaps exist in policy implementation, management oversight and monitoring, which the EPA, the CSMC and the DPaw have been working together to address.

The SEP contains a requirement to review the policy by the end of 2012. The EPA initiated the review in early 2012 and, building on from the Auditor General's report, has further assessed the functioning and implementation of the SEP and its supporting documents in close collaboration with the CSMC. The review is continuing.

As highlighted in the 2012 State of Cockburn Sound Report, tabled in Parliament, the management framework established by the SEP, along with innovations in waste water management and other industrial practices, have addressed the pressures on the Sound and have had a positive effect. Cockburn Sound meets most of the indicators of environmental health set by the SEP and its supporting documents, despite increasing usage and impacts. Seafood caught in Cockburn Sound is considered safe for eating, beach sites have greatly improved and the waters are generally safe for swimming

and boating. While there are issues that require attention, the 2012 Report shows that, overall, the quality of the marine environment of Cockburn Sound has been stable.

The EPA considers that the Cockburn Sound SEP case study illustrates the benefit of establishing policy frameworks based on sound science to ensure that competing uses can be managed without compromising the underlying environmental values.

Further reading and references

Government of Western Australia 2005, *State Environmental (Cockburn Sound) Policy 2005*, Government of WA, Perth, WA.

Auditor General for Western Australia 2010, *Environmental Management of Cockburn Sound*, Report 8, Perth, WA.

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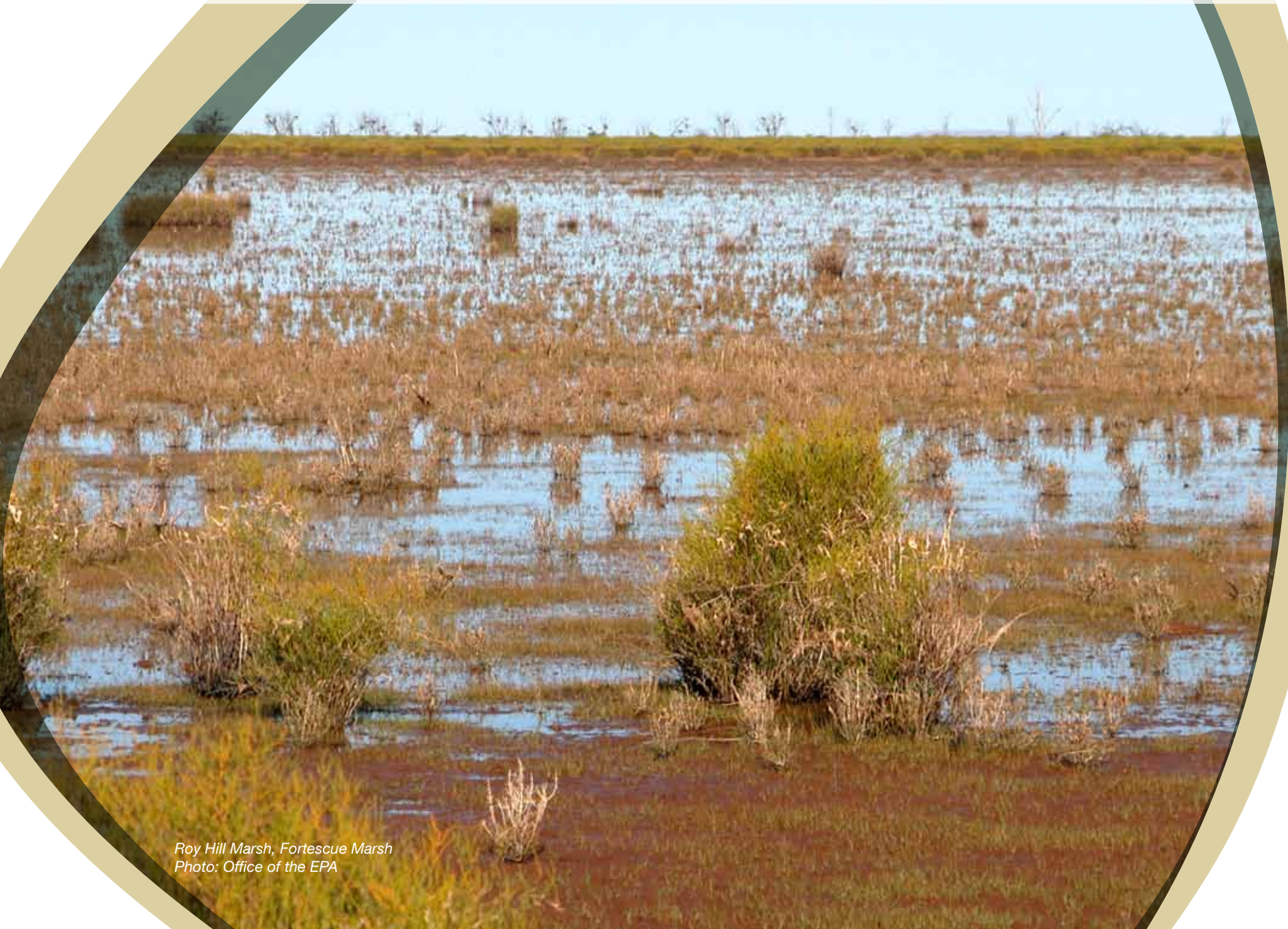
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*A small lake near Manning Gorge, along the Gibb River Road
in the far north of Western Australia.
Photo: Sara Winter*



Water



*Roy Hill Marsh, Fortescue Marsh
Photo: Office of the EPA*

Water

Western Australia is fortunate to have significant surface and groundwater resources located in various parts of the State. These water resources support a range of environmental values as well as being highly significant to the wellbeing of the community and economy of the State. WA also has many waterways, wetlands and estuaries which have high environmental values and provide amenity and recreational value to the community.

The most significant groundwater resources are the sedimentary aquifers of the Perth and Canning Basins. The Perth Basin aquifers support high levels of use for public drinking water supplies, industry and agriculture, as well as maintaining significant groundwater dependent ecosystems. Fractured rock aquifers occur primarily in the Pilbara, Yilgarn and Kimberley areas. While important locally to maintain environmental values and use, they do not provide reliable regional scale water supplies. Protecting the quality and ensuring sustainable use of these groundwater resources is vital to protect dependent ecosystems, but also to support people and the economy in the long term.

Surface water sources are primarily located in the South West and Kimberley regions of the State. However, rainfall reductions in the South West since the mid-1970s have significantly impacted on the availability of surface water and superficial groundwater resources for public water supply and private use.

Water use across the State has more than tripled over the past 20 years, and is forecast to continue to increase rapidly with population growth and economic development. While the focus of recent growth has been the Perth Basin aquifers and Pilbara fractured rock aquifers, there is significant future growth forecast for the Canning Basin and Kimberley surface water systems.

The coastline of WA also supports many estuarine systems, including the Swan Canning River and the Peel Inlet-Harvey Estuary system. Many of these estuaries are nutrient enriched (eutrophic) as a result of discharge of nutrient from catchment land uses. As a result they experience regular algal blooms, fish deaths, and other symptoms of eutrophication. Environmental, social and economic values of many systems have been compromised by the symptoms of eutrophication.

EPA objectives

Hydrological processes – to maintain the hydrological regimes of groundwater and surface water so that existing and potential uses, including ecosystem maintenance, are protected.

Inland waters environmental quality – to maintain the quality of groundwater and surface water, sediment and biota so that the environmental values, both ecological and social, are protected.



Pressure point Unconventional gas extraction

The EPA recognises that there is significant community concern regarding unconventional gas development in WA and the potential impacts of hydraulic fracture stimulation (fracking), which is used to aid extraction of gas. To provide information to the public on its position on fracking proposals, the EPA published an Environmental Protection Bulletin on hydraulic fracturing of gas reserves in September 2011.

The Perth and Canning basins are areas of significant interest for unconventional gas extraction. To date, there have been no production scale unconventional gas developments in WA, but there have been a number of small-scale trials involving fracking.

In contrast to practices in New South Wales and Queensland, each of the small scale proposals developed to date have involved fracking into deep aquifers, below those aquifers used for water supplies. Nevertheless, given the significant importance of the sedimentary aquifers of the Perth basin for drinking water in particular, the EPA is concerned to ensure that there is a precautionary approach to hydraulic fracturing.

Unconventional gas development is an emerging industry in WA. This provides a window of opportunity to learn from experiences in other jurisdictions including the United States, the European Union and the eastern states of Australia. The EPA is keeping a watching brief on the progress of the industry and the findings of

studies being undertaken in these jurisdictions.

The EPA and OEPA are also liaising closely with the Department of Mines and Petroleum (DMP) on the development of the industry in WA and the likely locations and timing of future projects.

A key issue for all regulators in the management of the impacts of fracking is to maintain the confidence of the community. In its 2011 Bulletin, the EPA stated that “community confidence about the effective management of environmental impacts and risks associated with this industry is best achieved through open and transparent regulatory processes.”

This point was noted by the New Zealand Parliamentary Commissioner for the Environment in *Evaluating the environmental impacts of fracking in New Zealand: An interim report* (November 2012).

The DMP is to be commended for implementing a program of regulatory reform to mandate full disclosure of chemicals used in the fracking process, public release of approved Environmental Management Plans and tightening of enforcement provisions. In August 2012, the State Government introduced the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 and the EPA understands that the DMP is developing proposed Petroleum Resource Management Regulations.

The DMP is also leading the development of a whole-of-government approach to regulating and managing the unconventional gas industry in WA.

This approach focuses on:

1. Implementing effective, transparent and risk-based regulation to manage impacts on the environment, water users, landholders and the community;
2. Developing a whole-of-government regulatory framework in the context of DMP as the lead agency;
3. Coordinated and effective engagement with stakeholders, particularly local communities; and
4. Ensuring national initiatives support the Western Australian government strategy.

To date, four small scale fracking proposals for tight/shale gas have been referred to the EPA for a decision as to whether environmental assessment under Part IV of the EP Act is warranted. In each case, the EPA decided that

Further reading and references

Environmental Protection Authority 2011, *Hydraulic fracturing of gas reserves*, Environmental Protection Bulletin No.15, EPA, Perth, WA.

Parliamentary Commissioner for the Environment 2012, *Evaluating the environmental impacts of fracking in New Zealand: An interim report*, November 2012, PCE, Wellington, New Zealand.

International Energy Agency 2012, *Golden Rules for a Golden Age of Gas*, World Energy Outlook Special Report on Unconventional Gas, <http://www.worldenergyoutlook.org/goldenrules/#d.en.27023>

the proposal should be treated as 'Not Assessed – Public Advice Given' on the basis that they did not pose a potentially significant impact on the environment. These decisions were appealed and the Minister for Environment dismissed the appeals, noting the limited scale of the proposals.

The EPA considers that it is appropriate for the DMP to regulate small-scale trials of unconventional gas development. The DMP has responsibility for ensuring that mining and petroleum activities taking place in WA meet the relevant health, safety and environmental standards and requirements. This includes the consideration of potential impacts on aquifers, well integrity and chemicals used.

Any gas development proposal is subject to the requirements of the EP Act. The EPA will continue to consider proposals involving fracking and unconventional gas development on their merit, and undertake formal environmental impact assessment where the proposals, if implemented, are likely to have a significant impact on the environment.



Utricularia menziesii at Fynes Road Reserve, Cateby.
Photo: Helena Mills, Office of the EPA



Pressure point Fortescue Marsh, Pilbara

The Fortescue Marsh, approximately 100 km north-west of Newman, is the largest ephemeral wetland in the Pilbara region and is recognised nationally as an important wetland. The marsh itself extends over approximately 1,048 square kilometres within a management area of 5,836 square kilometres, and a broader catchment area of the upper Fortescue River of 29,791 square kilometres.

It is rich in plant and animal species of high conservation value and is part of an ancient and complex array of alluvial aquifers and groundwater systems. The marsh is also at the heart of an important mining province and longstanding pastoral industry, and has high cultural and heritage importance to the Indigenous peoples of the region.

The Fortescue Sub-Region of the Pilbara is arguably the 'hot spot' of iron ore mining in Western Australia. There is extensive existing mining and infrastructure development on parts of the marsh and in its catchment, with significant ongoing expansion proposed.

The intersection of the high environmental values of the marsh and the extent of mining and infrastructure development has highlighted this area as a priority for the EPA. In addition to direct impacts on the marsh, disposal of excess dewatering associated with below water table mining in the catchment has the potential to significantly impact the marsh and its tributaries.

On 1 July 2013, the EPA published advice to the Minister for Environment under section 16(e) of the EP Act on environmental and water assessments relating to mining and mining-related activities in the Fortescue Marsh management area. The advice, developed in cooperation with the Department of Water and the then-DEC, outlines the overarching environmental objectives for the marsh, and the management strategies to meet these objectives. It provides a strategic framework to guide decision making across various agencies on individual proposals which may impact on the marsh, in the context of cumulative impacts.

It is intended that this advice will also assist proponents to avoid impacts on the important values of the Fortescue Marsh. Proponents of new projects, expansions or upgrades should clearly outline their strategies for avoiding impacts and achieving the relevant objectives for each zone where their operations have potential to impact water or environmental values.

The Fortescue Marsh is rich in plant and animal species of high conservation value and is part of an ancient and complex array of alluvial aquifers and groundwater systems.



Key issue

Legacy of pit lakes

Pit lakes form once mining ceases and the mine pit is no longer dewatered, allowing the mine voids to fill with groundwater. WA has approximately 2,000 mine voids of which more than half have the potential for pit lakes. There are currently about 200 mining operations below the water table. The size of mine voids vary from small borrow pits to large mines in the Goldfields and Pilbara. Pits are difficult and costly to backfill and backfilling may sterilise the remaining resource.

The EPA's focus on the potential issues associated with pit lakes has increased in line with the increase in below water table mining operations in WA in the last decade, particularly in the Pilbara. In 2003, the former Water and Rivers Commission (now Department of Water), published *Mine Void Water Resource Issues In Western Australia*, outlining the environmental issues associated with mining below the water table, and the potential impacts that require addressing as part of mine closure during the environmental impact assessment process.

The difficulty with assessing the potential environmental impacts associated with pit lakes is that the impacts will occur after the mine closes. Water levels in the pit may take hundreds of years to recover to a stable water level. Changes in water quality and water chemistry may occur over thousands of years. As few mines in the Pilbara have closed, there is not a lot of information available on actual impacts.

Recognising the importance of mine closure planning, the DMP and the EPA jointly prepared the *Guidelines for Preparing Mine Closure Plans* in 2011. There are a number of issues that continue to challenge effective mine closure and the DMP and the EPA support a risk based approach to manage these issues. An overview of some specific mine closure issues, including pit lakes, is provided in Appendix H of the joint guidelines.

The DMP and the EPA committed to a review of the joint guidelines two years after the release of the guidelines in 2011. The DMP has recently initiated a review of the joint guidelines and as part of the review, the EPA and the OEPA together with the DMP, the DoW and industry will investigate the value in providing more specific guidance on pit lakes.

There are also gaps in our understanding of how these lakes will behave over many hundreds of years and a joint industry-Government science plan will, in all likelihood, be required.

Western Australia has approximately 2,000 mine voids of which more than half have the potential for pit lakes.



*Clouds over a salt lake near Port Hedland.
Photo: CUHRIG*



Air



*Air monitoring sites are located in Perth, Bunbury, Busselton, Collie, Albany and Geraldton.
Photo: Department of Environment Regulation*

Air

With many years of strong economic growth driving urban expansion and major industrial development, maintenance of air quality, particularly in population centres, remains a high priority for the EPA.

Developments in key industrial areas are becoming increasingly constrained by emissions and potential conflicts with adjacent land uses, such as residential areas. In fact, without intervention, emissions in some industrial areas are likely to reach, and exceed, airshed capacity with respect to protecting important environmental values.

Ambient air quality issues in regional areas that are a focus of attention include Port Hedland, Goldfields, Collie and the Burrup Peninsula. Government has focused on industry emissions in these regions and continues to manage these emissions through works approvals and licences under the EP Act. In addition to the ongoing management, the development of an air quality management strategy for the Collie area has commenced.

WA's rapid population growth has continued to spread to the north and south of Perth as well as an expansion of a number of major regional centres such as Bunbury and Geraldton. With increasing population growth and industrial development, there has also been an increasing demand for energy which has, and will continue to have, an impact on regional air quality near coal-fired power stations.

Prescribed burning remains the primary mitigation strategy to manage fuel loads in bushland and forests in Western Australia in order to protect people and property. Smoke from bushfires and prescribed burns has the potential to adversely impact on air quality by increasing the frequency and duration of episodes of poor air quality in populated areas.

Smoke from domestic wood heaters also continues to be an issue in regional areas as well as the older suburbs and hills area of Perth.

Ambient air quality data are made publicly available through hourly updates on the Department of Environment Regulation's website, and in publications such as the annual Western Australia Air Monitoring report.

The annual air monitoring report includes analyses of air quality throughout the State, together with air quality trends. There are air monitoring sites located in Perth (8), Bunbury (1), Busselton (1), Collie (1), Albany (1) and Geraldton (1).

EPA objectives

Air quality – to maintain air quality for the protection of the environment and human health and amenity.



Key issue

Emission of greenhouse gases

The EPA continues to be concerned about the emission of greenhouse gases from electricity generation and industry, and the ongoing consequence of these emissions as a contribution to global climate change. Climate change is expected to have significant impacts in Western Australia in the form of temperature and sea level rises, increased fire frequency, increases in the severity and frequency of storms, and changed rainfall patterns. With a progressive decline in rainfall in the south west since the mid-1970s, Western Australia has arguably experienced the early impact of climate change and its consequence on water supplies and maintenance of wetlands and other water dependent ecosystems.

The EPA has considered greenhouse gas emissions through the environmental impact assessment of proposals for over a decade. The EPA introduced *Guidance Statement 12 Minimising Greenhouse Gas Emissions* in 2002. Through the application of that guidance, the EPA has recommended conditions related to the monitoring and reporting of emissions, best practice technology, benchmarking, continuous improvement and offsets on some 40 greenhouse gas emission-intensive proposals. Greenhouse gas conditions have been applied to projects with projected emissions ranging from 0.15 to 10 Mt CO₂-e per year. The larger projects, in particular, have the potential to substantially increase the State's emissions, which totalled 76.4 Mt CO₂-e in 2010-11.

Under the Commonwealth Government's Clean Energy Future legislation, a carbon pricing scheme was introduced on 1 July 2012. Companies exposed to a carbon price could either reduce their emissions or meet their liability by buying emissions permits.

In 2010, in anticipation of the Commonwealth legislative regime, the EPA recommended a 'complementarity clause' be added to State approval conditions. This signalled an intent by the EPA to test State conditions against any Commonwealth legislation because, with a carbon price in place, State-imposed regulatory measures that are developed for the purpose of reducing greenhouse gas emissions may result in additional regulatory impacts for industry with no corresponding environmental benefit and may thus be considered non-complementary to a carbon price.

In 2012, following the enactment of the Commonwealth legislation, the EPA undertook an assessment of Ministerial conditions addressing greenhouse gas emissions to determine whether they were complementary to a carbon price. The review, which was verified by an independent consultant, concluded that some conditions, such as greenhouse gas offsets requirements and emissions targets, are non-complementary to a carbon pricing scheme. These conclusions were confirmed in a consultant's study and subsequent EPA report on the review of the greenhouse gas conditions on the Wheatstone development under s46 of the EP Act.

Following consideration of the EPA's advice on the review of greenhouse conditions applying to the Wheatstone development, the former Minister for Environment determined that he would only set conditions related to greenhouse gas monitoring and reporting, to ensure that Western Australian approval conditions do not duplicate Commonwealth arrangements. The EPA notes that transparency is a key element of maintaining public confidence in the environmental performance of proponents, and the Minister's conditions provide the opportunity for appropriate public accountability.

However, for its part, the EPA will continue to scrutinise greenhouse gas emission-intensive proposals, especially given the state of flux of Commonwealth policy.

The EPA recognises that Guidance Statement 12 is no longer current or applicable because of these major regulatory and policy changes. In addition to managing greenhouse gas emissions, the EPA may, in some circumstances, consider adaptation to the unavoidable impacts of climate change in its assessment of development projects. Recognising that there is uncertainty as to the exact impacts of a changing climate on a variety of environmental factors, the EPA will, where relevant, expect proponents to use the latest climate change science and projections to consider a proposal's impact on ecosystems likely to be affected by climate change. The EPA's expectations for environmental impact assessment with respect to sea level rise are set out in Environmental Protection Bulletin No 18 of June 2012.

The EPA plans to withdraw Guidance Statement 12 and has commenced developing a replacement EPA guidance for proponents. It is anticipated that this guidance will:

- Define the circumstances under which the EPA will assess greenhouse gas emissions associated with development proposals;
- Describe what principles the EPA will expect proposals to meet, such as the application of best practicable measures and continuous improvement to reduce greenhouse gas emissions; and
- Outline the circumstances under which the EPA will consider the impacts of future climate change in assessing proposals.

Further reading and references

Meta Economics Consulting Group 2012, *Carbon price complementarity of WA EPA GHG requirements, Review of obligations on Chevron's Wheatstone project, and implications for the West Angelas project*, Meta Economics, Canberra, ACT.

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Environmental Protection Authority 2012, *Environmental Protection Bulletin No 18 Sea Level Rise* (EPB 18), EPA, Perth, WA.

Intergovernmental Panel on Climate Change 2007, *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland.



Key issue

Air quality in an expanded metropolitan area

Industrial development, population growth and the associated increase in vehicle traffic are key drivers of air pollution in the Perth airshed. Air emissions have both local and regional impacts as pollutants disperse and react with one another in the airshed. The ozone (O₃) or photochemical smog impacts of pollution from the Perth CBD and Kwinana Industrial Area are experienced some distance away from these sources as are the impacts of smoke from bushfires and prescribed burns. Dust and odour issues are also of increasing concern to the health and amenity of Western Australian communities.

The Department of Environment Regulation (DER) monitors ambient air quality using a fixed network to meet the State's obligations under the *National Environment Protection (Ambient Air Quality) Measure* (Ambient Air Quality NEPM). The DER maintains and operates eight metropolitan and five regional fixed air quality monitoring stations to assess the presence of pollutants, including particles, ozone (O₃), nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) and carbon monoxide (CO).

Key air pollutants of concern in the Perth Metropolitan Region include particles (PM10 and PM2.5), O₃, NO₂ and SO₂. The air quality data from the Perth air monitoring network shows low concentrations for NO₂ and SO₂ and decreasing CO concentrations. Particle concentrations (PM2.5 and PM10) are showing no discernible trend; however there have been

numerous exceedences of the Ambient Air Quality NEPM standard. Similarly, the maximum O₃ concentrations have been approaching and occasionally exceeding the standard.

Since 2006 there has been no discernible trend in the number of days above the background concentration (0.03 ppm) for ozone. A recent study from the Queensland University of Technology examined long-term trends in CO, SO₂, O₃ and particles in four Australian cities, including Perth, from 1996 to 2011. The study found that in Perth, CO, SO₂ and particles levels decreased over this time, while O₃ levels increased.

Over the past 30 years the metropolitan Perth and Peel regions have experienced population growth to around 1.65 million people in 2010. It is expected that the population will grow to 2.2 million by 2031 and 3.5 million by 2056 (DoP and WAPC, 2010).

Western Australia has the highest number of vehicles per capita in Australia with 829 vehicles per 1,000 residents. The majority of Perth residents, 66.6 per cent, travel to places of work and study by private vehicles while only 11 per cent use public transport on a regular basis. Motor vehicle use is a major contributor to Perth's air quality. The Perth Photochemical Smog Study (1996) showed that motor vehicles contribute 51 per cent of nitrogen oxide (NO_x) emissions and 44 per cent of hydrocarbon emissions.

While atmospheric nitrogen dioxide and carbon monoxide levels are not a significant problem at present, as the population of Perth grows and the urban footprint expands to the north and

The majority of Perth residents, 66.6 per cent, travel to places of work and study by private vehicles while only 11 per cent use public transport on a regular basis

south, congestion and number of kilometres travelled will increase. This will increase the volume of emissions produced and, in the absence of any changes to emission reduction technologies on vehicles, increase the pollution load. Given the historic pattern of development in Perth, along the coast both north and south, private vehicles are and will continue to be the main mode of transport for moving people and freight into the future. Households on the urban fringe are highly car-dependent, contributing to increasing greenhouse gas emissions, traffic congestion and travel costs.

The EPA believes that the amenity of Perth and the health and well-being of its residents depends on effective long term land-use planning, including urban and transport planning, that takes account of the air quality in the metropolitan area.

The EPA is encouraged by Government decisions over the last decade to invest in rail, light rail and other public transport options. It also recognises that the State-Commonwealth Strategic Assessment of the Perth-Peel region, in combination with EPA strategic advice, and the current WAPC sub-regional structure planning, offers a rare opportunity to consider the issues in a holistic and integrated way.

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Department of Environment and Conservation 2012, *Perth Air Quality management plan report card 2010–2011*, DEC, Perth, WA.

Department of Planning and the Western Australian Planning Commission 2010, *Directions 2031 and beyond. Metropolitan planning beyond the horizon*. WAPC, Perth, WA.

Newman, P 2011, *The Perth Rail Transformation: Some political lessons learned*. Curtin University Sustainability Policy Institute, Fremantle, WA.

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<http://rac.com.au/About-Us/Community/Environment/Impact-of-cars-on-the-environment.aspx>



*Traffic congestion in Perth
Photo: Department of Transport*



Key issue

The emerging waste-to-energy industry

Waste-to-energy is a process for converting waste products into some form of energy such as heat, steam or synthetic gas. These primary energy sources can either be used directly or converted into electricity. Waste-to-energy technologies transform the calorific energy in waste products into usable energy.

Over the past few years there has been significant interest in the development of waste-to-energy plants in Western Australia, with the EPA having received referral of four separate proposals. Although waste-to-energy plants are used widely in the United States, Europe, Japan, and other jurisdictions, the uptake in Australia has been very slow. There are no waste-to-energy plants in Australia which process residual mixed waste, although there are a number in the eastern states which treat single waste streams such as packaging material.

Modern waste-to-energy plants are designed to produce energy as a primary objective. However, they also provide an opportunity to dispose of wastes which cannot be re-used or recycled, and which would otherwise be disposed to landfill as a last resort.

In recognition of the growing interest in waste-to-energy in WA, the former Minister for Environment requested the EPA and the Waste Authority to provide joint advice on the environmental and health risks associated with waste-to-energy plants. The EPA published the

joint advice under section 16(e) of the EP Act in April 2013.

The EPA considers that the key health and environmental issue for waste-to-energy plants is the quality of air emissions which result from the process and the pollution control equipment that is used. Other concerns include odours from stored wastes and the management of leachate from the site.

Overall, the EPA and the Waste Authority concluded that waste-to-energy plants have the potential to offer an alternative to landfill of residual waste, with the additional benefit of the generation of energy. The EPA is of the view that, if designed and operated using best practice technologies and processes, waste-to-energy plants can meet strict emission standards and be operated with acceptable environmental and health impacts.

Importantly, the EPA recognises that the community must be engaged through the planning, design, environmental approvals and commissioning process to build confidence in the siting of plants and the technology chosen.

The EPA will continue to maintain an active interest in the progress of the industry, and in reviewing the performance of WA facilities as they become operational.

Further reading and references

Environmental Protection Authority 2013, *Environmental and health performance of waste to energy technologies*, Report 1468, EPA, Perth, WA.

WSP Environmental, 2013, *An Investigation into the Performance (Environmental and Health) of Waste to Energy Technologies Internationally. Summary Report – Waste to Energy - A review of legislative and regulatory frameworks, state of the art technologies and research on health and environmental impacts*. WSP, Perth, WA.

A success story: Sulfur dioxide reductions in the Kalgoorlie region

Sulfur dioxide (SO₂) is a colourless gas with a pungent, suffocating odour. It can be a significant air pollutant in WA, particularly around industrial areas such as Kalgoorlie, Kwinana and Collie. SO₂ is produced by the combustion of fuels like coal, oil and diesel fuel, and in smelting of metallic sulfide ores. SO₂ is a dangerous air pollutant because of its toxicity and corrosive properties and is also a strong irritant to the respiratory tract, causing breathing problems in people with sensitive airways. In addition, SO₂ can corrode buildings and other infrastructure, and damage aquatic systems and vegetation, including agricultural crops.

In the 1980s the Kalgoorlie-Boulder area had no regulatory controls developed for air pollution emissions and experienced very high ambient levels of SO₂ resulting in significant health impacts on the surrounding community. At this time the major sources of SO₂ in Kalgoorlie region were the three gold roasters located in Boulder along the Golden Mile and the Kalgoorlie Nickel Smelter to the south of the city.

The EPA led the development of an environmental protection policy (EPP) for the Kalgoorlie-Boulder region setting limits and standards of SO₂ concentration. The Government approved this EPP in 1988 and the EPP led to the three gold roasters being replaced by the Gidji gold roaster north of Kalgoorlie.

The EPP for the Goldfields region has undergone a number of reviews since 1988. These reviews have resulted in approved EPPs in 1992 and

2003. Changes to the EPP have included expanding the residential areas to Kambalda, Coolgardie and the Kurrawang Aboriginal Reserve, implementing a stepped down approach to reduce emissions and the addition of complementary regulations setting out the conditions of a licence. Each new EPP has established more stringent air quality objectives than the last. The stepped down approach has

allowed industry to comply with the EPP ambient SO₂ concentrations over an agreed and specified timeframe through phased investment in pollution control technologies.

The current EPP and regulations, Environmental Protection (Goldfields Residential Areas) (Sulfur Dioxide) Policy 2003 and Environmental Protection (Goldfields Residential Areas) (Sulfur Dioxide) Regulations 2003, are now in line with the national agreed standards.

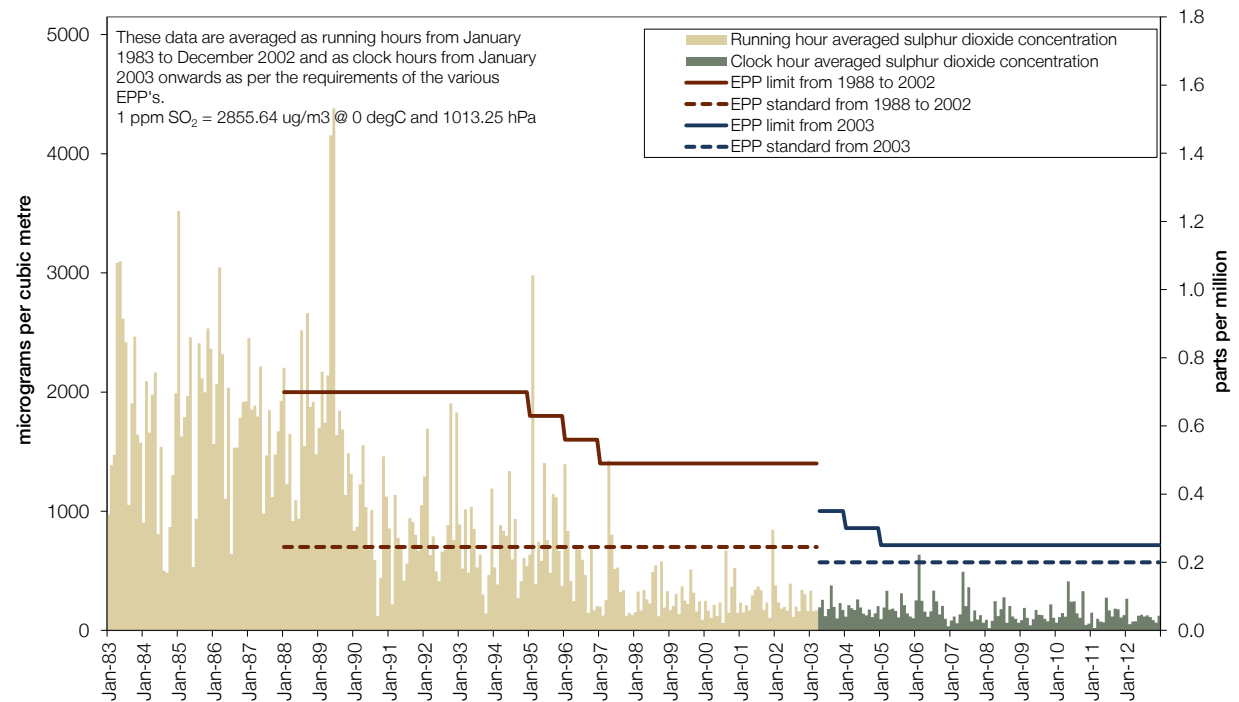


Figure 4: Maximum 1-hour averaged sulfur dioxide concentrations at the Kalgoorlie Regional Hospital. Data and graphs produced by Air Quality Management Branch, Department of Environment Regulation, August 2013.

The air quality objectives are in the form of a maximum SO₂ concentration which is not to be exceeded at any time, and a reportable concentration which it is desirable not to exceed. If the reportable concentration of 0.2ppm is exceeded on more than the allowable days for a particular year, then the EPA must report this to the Minister for Environment. The maximum SO₂ concentration (currently 0.25ppm) is enforced as a condition of licence issued to SO₂ emitting industries. A breach of licence condition is an offence under the EP Act. Breaches have been occasional, with the most recent resulting in a modified penalty notice to Kalgoorlie Consolidated Gold Mine Gidji Roaster due to an exceedance at the Coolgardie Primary School monitoring station in 2005.

Kalgoorlie–Boulder has had a dramatic improvement in SO₂ levels over the last decade, as shown in Figure 4. This improvement in air quality has occurred as a result of: the commissioning of the Gidji Roaster away from town, the decommissioning of the three in-town gold roasters; the installation of a sulfuric acid plant on the Kalgoorlie Nickel Smelter facility, improvements in air quality control strategies that have been implemented by the major sulfur emitting industries, enforcement of the Goldfields EPP and the national standards in the National Environment Protection (Ambient Air Quality) Measure.

In 2009, the EPA released the *Discussion Paper – Review of the Environmental Protection (Goldfields Residential Areas)(Sulfur Dioxide) Policy 2003*. The discussion paper attracted comment from community members about

heavy metals, such as mercury, emitted in the region and the potential adverse health effects. However, the Department of Health (DoH) has undertaken various studies in relation to community exposure for pollutants in Kalgoorlie. The studies did not indicate a public health issue associated with mercury in Kalgoorlie. Further, the DoH has not received any medical or environmental evidence of adverse health effects in Goldfields residential areas from heavy metal emissions.

The EPA is fully aware that the Kalgoorlie Consolidated Gold Mine Gidji Roaster is one of the world's biggest emitters of mercury and a substantial emitter of SO₂, nickel, arsenic and other metals. Based on the 2011–2012 National Pollutant Inventory reporting period data, Kalgoorlie Consolidated Gold Mines (KCGM) Gidji Roaster emitted 3,300 kilograms of mercury (NPI, 2012). This is well above the point source mercury emissions of any facility across the United States, Canada, Europe and Australia. It is understood KCGM are progressing with a mercury emission reduction project which may see a reduction of up to 90 per cent of mercury emissions at the Gidji Roaster and Fimiston carbon kiln. Commissioning of mercury air emissions controls is planned for 2015. In January 2013 delegations from 140 countries agreed to adopt the world's first legally binding treaty on limiting the use and emission of mercury.

The EPA's view is that there remains a need for continuous improvement in environmental performance in all industries that have the potential to impact air quality and human health.

Kalgoorlie– Boulder has had a dramatic improvement in sulfur dioxide levels over the last decade.

Further reading and references

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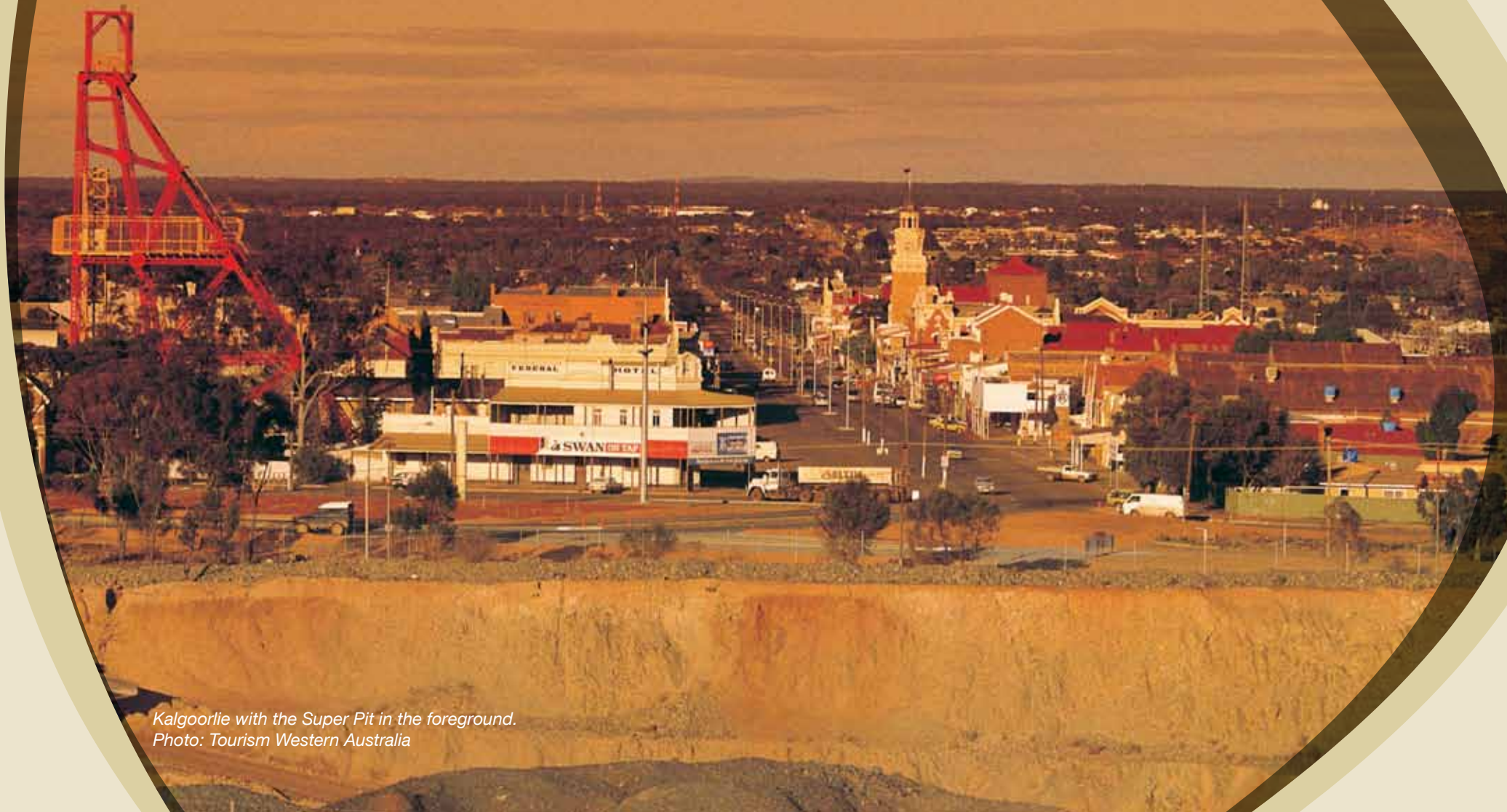
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NPI website

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*Kalgoorlie with the Super Pit in the foreground.
Photo: Tourism Western Australia*



*Hand stencils which are commonly found in many art sites in north-western Australia
Photo: Jo McDonald, Centre for Rock Art Research, University of Western Australia*



People



Port Hedland
Photo: Steve Pavey, Office of the EPA

People

The EPA, in considering impacts on the environment, also considers impacts on people where those impacts arise from potential changes to the biophysical environment.

This is because the definition of environment in the EP Act is “living things, their physical, biological and social surroundings and the interactions between all of these”.

Often, the most contentious proposals considered by the EPA are those that have the capacity to affect human health, amenity or historical and cultural associations. The potential impacts may include noise, dust and odour, harmful emissions or the effects of toxic substances, adverse changes to the visual landscape, or changes to the local environment.

In recent years, the EPA has confronted these issues in relation to the potential impacts on Burrup Peninsula rock art, concerns about the transport of lead carbonate from Wiluna to export through Fremantle, the development of uranium mines and the transport of uranium oxide concentrate, the impact of wind farms, and the close proximity of sensitive land uses, including residences, to industrial and some agricultural developments, wastewater treatment plants and other infrastructure.

These are challenging issues, and the EPA greatly values the submissions of the community in guiding its deliberations so it can provide appropriate advice to the Minister for Environment.

EPA objectives

Amenity – to ensure that impacts to amenity are reduced as low as reasonably practicable.

Heritage – to ensure that historical and cultural associations are not adversely affected.

Human health – to ensure that human health is not adversely affected.



Key issue

Port Hedland dust

Port Hedland provides vital infrastructure for iron ore and other bulk mineral exports that underpin the economy of the region and the State. The port is the largest bulk commodity port in Australia and port users are planning for significant expansions. In the period from 2000-01 to 2011-12, annual export tonnage grew from around 65 million tonnes (Mt) per annum to almost 250 Mt per annum. Industry estimates that annual export tonnage will reach 700 Mt per annum by 2019–20.

Port Hedland is also an important regional centre and community. Approximately 15,000 people live in Port Hedland and the State Government's Pilbara Cities vision is to encourage a resident population of 50,000 people by 2035.

Port operations and iron ore stockpiling generate dust and present particular challenges in terms of health and amenity, particularly for the West End which is closest to these activities. The EPA drew attention to this issue in January 2009, when it published its Report on the Utah Point Berth Project and an associated Environmental Protection Bulletin titled Port Hedland Dust and Noise.

The EPA reported that dust and noise levels in Port Hedland were above state and national standards. The EPA also cited international research that suggested airborne dust comprised of PM10 sized particles, particles that are 10µm or less in aerodynamic diameter, significantly increased the risk of mortality for

exposed populations.

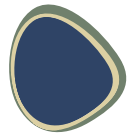
In response, the State Government established the Port Hedland Dust Taskforce, comprising government, industry and community representatives.

In March 2010, the Taskforce released the Port Hedland Air Quality and Noise Management Plan. The Management Plan is designed to manage the impact of dust and noise on people and property, while balancing community development and renewal with the continued growth of export industries. The EPA considers the Management Plan to be a good step forward, but remains concerned that existing and forecast dust levels may have a detrimental impact on public health.

The Management Plan recommended that a formal Health Risk Assessment of Port Hedland dust be undertaken which is being coordinated by the DoH on behalf of the Taskforce. The EPA commends this initiative.

The EPA also considers that updating the air quality modelling using contemporary data and modelling techniques would also be extremely useful. In conjunction with the Health Risk Assessment, this would assist the Town of Port Hedland, the Taskforce and land use planners to make informed decisions with the interests of public health in mind. The EPA understands that the Port Hedland Industry Council has commenced work on this initiative, and encourages these efforts.

Resolution of this complex land use planning issue remains a priority for the EPA.



Key issue

Uranium and human health

The mining, processing and transportation of uranium oxide concentrate is highly contentious in the community because of the real and perceived risks associated with it.

In May 2012, the EPA provided its recommendations to the Minister for Environment on Western Australia's first uranium mining proposal, Toro Energy's proposed uranium mine, centred on the Centipede and Lake Way deposits, about 550 km north of Kalgoorlie. In October 2012, the Minister for Environment issued the final Ministerial approval statement.

The proposal before the EPA attracted some 48 submissions covering around 300 issues, highlighting the degree of concern.

For the EPA, the potential risks of uranium mining, processing and transport include impacts to the biophysical environment including groundwater, surface water, air quality and non-human biota (flora and fauna). Further, some of the impacts on the biophysical environment could impact human health.

While the EPA does not intend to restate all of the assessment issues in its Annual Report, there are important observations with regard to the protection of human health.

In order to understand the risks to human health – and to develop confidence that the mining, processing and transportation of the concentrate could be managed to meet the objective of protecting human health – it was necessary for

the EPA to spend considerable time investigating the regulatory framework.

The Radiological Council, with support from the DoH and the DMP, has primary responsibility for ensuring radiation risks are managed within international and national standards to protect human and environmental health.

These key government agencies are responsible for regulating the mining, processing, packing, handling, storage and transport of uranium oxide concentrate. The DMP has primary responsibility on the mine site and the Radiological Council has primary responsibility off-site. The Commonwealth also has legislation and power in relation to transport.

During its assessment, the EPA consulted extensively with these agencies and formed the view that the existing regulatory framework provided a comprehensive legislative system for regulating uranium mining and transport.

To provide greater public confidence, the EPA recommended that all environmental management plans approved by the agencies should be made publicly available.

Further, the EPA noted that it was important that the regulatory agencies responsible for the regulation of transport and radiation management liaise closely to ensure integrated and consistent application of their powers to make sure the risk of exposure to radiation is managed to meet State and National standards and international codes.



*Red-capped Parrot in bushland near Mandurah.
Photo: GCHaggisImages*



Other issues



*A nudibranch Halgerda sp. on a yellow sponge at the Sponge Gardens, Exmouth Gulf.
Photo: Hans Kemps, Office of the EPA*

Environmental offsets

Environmental offsets are actions to counterbalance the significant residual impacts of a proposal that cannot otherwise be avoided, mitigated, reduced, rectified or rehabilitated. They cannot be used to make an environmentally unacceptable proposal acceptable.

Offsets are the last resort and step of the environmental impact assessment mitigation hierarchy. They are applied internationally in the United States, Canada, Brazil, Switzerland and other jurisdictions, as well as at the Commonwealth level and in all other States and Territories.

For many years the EPA has recommended and the Minister for Environment has set conditions requiring the implementation of an environmental offset in order to counterbalance significant residual impacts of proposals that remain after all other steps have been taken.

The first offset required as a condition of a Ministerial Approval Statements was in 2002 in relation to greenhouse gas emissions, and the first biodiversity offset was conditioned in 2004. Offset conditions now apply to around 45 proposals across the State, comprising approximately 16 per cent of all proposals considered by the EPA since 2002. These offsets apply to a range of proposal types and regions as shown in the table at right.

In 2006, the EPA published *Position Statement 9 – Environmental Offsets* outlining the key considerations with regard to offsets, providing guidance to proponents and Government

departments. This was followed in 2008 by *Environmental Protection Bulletin 1 – Environmental Offsets – Biodiversity* and *Guidance Statement 19 – Environmental Offsets – Biodiversity*.

In 2009, the Industry Working Group was established by the Minister for Mines and Petroleum, Hon. Norman Moore, to provide advice on approvals processes. Its report in April 2009 made a finding (recommendation 8) in relation to offsets as follows:

Having regard to the additional inconvenience, financial costs and uncertainty, it is recommended that all offset arrangements be

transparent, be finalised in the original scoping of the approval process, and be subject to Ministerial approval and Cabinet endorsement.

It is recommended that there should be no ad hoc offset arrangements and that rules and guidelines for such arrangements be prepared together with industry, and forwarded for Ministerial consideration and Cabinet endorsement. Such arrangements, where appropriate, must be factored into the process at the start.

In response to this recommendation, the State Government developed and published the WA Government Environmental Offsets Policy on

SECTOR	NUMBER AND % OF PROPOSALS	
Mining / Basic raw materials	18	(41%)
Infrastructure	10	(23%)
Urban development	10	(23%)
Industrial	6	(14%)
REGION	NUMBER AND % OF PROPOSALS	
Kimberley	1	(2%)
Pilbara	15	(34%)
Mid-West – Goldfields	6	(14%)
Perth – Peel	13	(30%)
South West – Wheatbelt	9	(20%)

27 September 2011. This policy acknowledges the role of offsets and serves as an overarching framework to underpin environmental offset assessment and decision-making in Western Australia. In recognising the State Government's offset policy, the EPA indicated that a review of its existing offset policies and guidance would be necessary. The EPA's policies remain under review.

The Commonwealth Government also released a draft EPBC Act Environmental Offsets Policy for consultation (August 2011).

In September 2011, the Office of the Auditor General released its report on 'Ensuring Compliance with Conditions on Mining'. The report highlighted that there is a lack of monitoring, reporting and general absence of transparency and accountability in offset policy and implementation.

In anticipation of the State policy, the EPA changed its practices to play a more direct role in making recommendations to Government as to whether offset proposals are reasonable and proportionate to the significant residual impacts.

Prior to 2010, the practice of considering and conditioning offsets was inconsistent. Some offsets were identified as proponent commitments and were not explicitly conditioned, and offsets were often not addressed until the end of an assessment or through the appeal process. Generally offset conditions and implementation were not transparent.

Over the past three years and in response to concerns expressed by proponents, stakeholders and the Auditor General about the application of offsets through decision-making, the EPA has been applying a more consistent and transparent approach to considering environmental offsets through the environmental impact assessment process.

The EPA's practice now ensures that:

- the need for offsets are explicitly considered by proponents as a part of the mitigation hierarchy through their studies and documentation for the environmental impact assessment process;
- in deciding on a proposal, the EPA fully considers the need for offsets on the basis of the significance of any residual impacts, in line with its significance framework. Where offsets are considered necessary, the rationale is fully documented in the public report and recommendations to the Minister for Environment; and
- that all proposed offsets are recommended as conditions to the Minister for Environment to ensure that they can be appealed, audited and enforced.

The EPA commends the State Government on the introduction of the WA Environmental Offsets Register which further enhances transparency and accountability.

Offsets are an established part of environmental impact assessment, although the EPA acknowledges there continues to be debate around the relationship of offsets to the values

impacted, the quantum of offsets and the governance arrangements.

The EPA also recognises there is significant concern about the application of offsets on proposals by separate State and Commonwealth approval processes and, where possible, recommends conditions that explicitly take account of Commonwealth offsets to avoid duplication. It is anticipated that this issue will be addressed in any Commonwealth-State negotiations regarding a possible bilateral agreement for assessments and approvals.

Environmental knowledge

Western Australia is one of the few places in the world where large areas have not been covered by ocean or glaciers during the last 250 million years. This has resulted in the persistence of plants and animals of ancient origins that are often highly adapted to their environment.

The mining boom has opened up access to areas within the State that have been previously unsurveyed by scientists. As such, biological surveys conducted as part of the EIA process often uncover species that are new to science. The development of new techniques, such as DNA barcoding, has improved the ability for scientists to identify new species, however describing new species is still an ongoing and time-consuming task. It is estimated that there are more than 4,000 species of subterranean fauna (animals that live in the soil and water underground) in Western Australia, however only 10% of these species have been scientifically described. Plant groups pose similar problems with an estimated 1,500 plants that have yet to be described in Western Australia.

Environmental information, including biological survey work, is necessary for the EPA to have confidence that the likely extent of impacts are known and that they can be avoided, mitigated or managed to meet the EPA's environmental objectives. Absence of this information can increase risk and uncertainty for the EPA when making recommendations to the Minister for Environment.

Additional problems arise when specimens of new fauna species, such as subterranean fauna, are stored in private and corporate collections, rather than State research facilities such as the WA Museum. In 2012, the EPA wrote to proponents and consultants encouraging them to offer subterranean fauna specimens to the WA Museum. This was to ensure that one of the State's key scientific research agencies has the widest possible knowledge of the species, their population and distribution – which in turn informs assessment and other decision making processes.

It has long been a concern of the EPA that a range of data accumulated through environmental impact assessment and post approval monitoring and reporting is rarely reused or value-added to build a better understanding of the State's environment and to inform decision making.

The information collected takes many forms and can include vegetation maps, flora and fauna survey data, groundwater model outputs, marine habitat maps, and air quality data. Further important information about our State's environment remains in the hands of private companies or consultants and is not available to other companies, Government or the research community.

For some years now, the EPA has applied a standard condition to all recommended approvals requiring that assessment data is

publicly available. However, the key challenge remains how to store, standardise, spatially reference and make the information readily available to all.

Aggregation of assessment information – and making it publicly available - would improve the efficiency of the approvals process but also help to deepen our understanding of whether the environment is coping with the cumulative effects of development and threatening processes.

In March 2009, the EPA drew attention to this issue when it released the report of its Review of Environment Impact Assessment Processes in Western Australia. The report recommended further investigation of the acquisition of environmental data, in spatial form.

On 30 March 2009, the then Minister for Environment, Hon. Donna Faragher MLC, took the initiative to establish the Shared Environmental Assessment Knowledge (SEAK) Taskforce, led by the Chairman of the EPA, to investigate the development of a shared environmental data system for collecting, reporting and accessing environmental data.

The SEAK Taskforce reported to the subsequent Minister for Environment, Hon. Bill Marmion MLA, in July 2012. The report observed that the Shared Environmental Assessment Knowledge (SEAK) model should, if implemented, increase the efficiency and effectiveness of the environmental assessment and approvals process. It recommended a conservative and

phased approach to the implementation of the SEAK model, starting with a detailed study of the costs and benefits of an initial phase of implementation.

Since then, the Commonwealth Government has released the Independent review of Australian Government environmental information activity (November 2012) which reported on processes for the investment in, and the management and use of, environmental information. The report noted the WA SEAK Taskforce report and recommended a joint pilot project be commenced between Western Australia and the Commonwealth.

The EPA commends the State Government for its \$8 million policy commitment, announced in 2013, to establish an environmental data library. If carefully planned and implemented, that commitment represents a rare opportunity to dramatically improve our organisation of environmental knowledge, understanding of the environment, and the efficiency of the approvals process.

The EPA has no opinion on the question of who should host or lead such a project, but it does believe that any virtual library of environmental information should be available to all, be maintained over the long term and avoid the replication of existing effective electronic information repositories.

Further reading and references

Shared Environmental Assessment Knowledge Taskforce 2011, *Shared Environmental Assessment Knowledge Taskforce (SEAK) report*, Office of the EPA, Perth, WA.

Morton S and Tinney A 2012, *Independent review of Australian Government environmental information activity: Final report*, Department of Sustainability, Environment, Water, Population and Communities, Canberra, ACT.

Environmental Protection Authority 2002, *Position Statement No. 3 - Terrestrial Biological Surveys as an element of biodiversity protection*, EPA, Perth, WA.



Spider orchid
Photo: JDPphotography



Purnululu National Park was added to the World Heritage List in 2003 for its outstanding universal natural heritage values.

Photo: Office of the EPA



The Authority



*Members of the EPA on a site visit (L-R) Deputy Chairman Professor Robert Harvey, Dr Rod Lukatelich, Ms Elizabeth Carr, Chairman Dr Paul Vogel
Photo: Office of the EPA*

The EPA Board

Chairman - Dr Paul Vogel

Dr Vogel has a PhD in chemistry from the University of Western Australia. Prior to his appointment, he was the Chief Executive and Chairman of the South Australian Environmental Protection Authority from November 2002, with responsibilities for environmental regulation, development assessment and radiation protection.

From 2001–2002, Dr Vogel was Director of Environmental Policy with the WA Department of the Premier and Cabinet and Director of Environmental Systems with the then WA Department of Environmental Protection from 1995–2001.

Dr Vogel has worked across the three tiers of government, business and community and has extensive experience and knowledge in organisational and regulatory reform and strategic and collaborative approaches to sustainability, natural resources management, waste management, air and marine quality, site contamination and radiation protection.

He is a Board Director of the Cooperative Research Centre for Contamination and Remediation of the Environment (CRC CARE), Chair of the Advisory Panel to the Environmental Bankers' Association of Australasia, a director of the ATN Research Impact Advisory Board and a member of the Australian Institute of Company Directors.

Dr Vogel's term began in November 2007.

Deputy Chairman - Professor Robert Harvey

Professor Robert Harvey has degrees in engineering and a Masters in Business Administration from The University of Western Australia (UWA).

Professor Harvey began his career as an engineer in the then Water Authority, specialising in resource management, planning and policy. His last position in the Authority was as Director Water Resources Planning. He was Executive Director of the Department of Justice from 1999 to 2003. In the Department he was responsible for community corrections, juvenile justice and correctional policy. He oversaw the introduction of the State's first privately operated prison and made significant improvements to an important part of the State's criminal justice system.

From 2003 to 2009 Professor Harvey was Pro Vice-Chancellor and Dean of Business and Law at Edith Cowan University. He was a member of the Water Corporation Board from 2007 to 2012. On behalf of the Board of the Water Corporation, he convened a scientific panel to review the State's 50 year water plan – *Water Forever*. He also volunteers on projects that help in the management of the Swan Estuary Marine Park.

In 2010 Professor Harvey was appointed as a member of the Western Australian Planning Commission. Professor Harvey's term began in November 2012.

Dr Rod Lukatelich

Dr Lukatelich has a Bachelor of Science (Hons) in Botany and a PhD in phytoplankton ecology from UWA.

Dr Lukatelich is the Environment and Dangerous Goods Manager at BP Refinery Kwinana Pty Ltd. His career has spanned academia, environmental consulting and industrial environmental management. As a Lecturer / Research Officer (1982–1989) at the Centre for Water Research at UWA his research included studies on the impacts of eutrophication on algae and seagrasses in lakes and estuaries; development of ecological models; and the relationships between hydrodynamics and water quality in reservoirs, rivers and estuaries.

In 1989 Dr Lukatelich joined Kinhill Engineers as Senior Aquatic Ecologist and in 1990 joined BP Refinery Kwinana as Environmental Manager. During his time at BP Rod has had two international assignments as a Senior Environmental Technologist at the BP Oil Technology Development Unit (1995–1997) and as Water Technology Advisor in the Refining Technology Group (2004–2006).

Dr Lukatelich has extensive experience in emissions monitoring, waste management, wastewater treatment, environmental impact assessment, soil and groundwater remediation, cleaner production and dangerous goods management. He has broad experience of international environmental regulatory systems

having worked in Asia, Europe, Americas, Middle East and Russia.

He is a Board Director of the CRC CARE; Board Director of the Australian Land and Groundwater Association; member of Australian Institute of Biology; Australian Marine Sciences Association; Clean Air Society of Australia and New Zealand; Waste Management Association of Australia and Australian Society of Limnology. Dr Lukatelich is chair of the Community Health Committee of the Kwinana Industries Council and a member of the Cockburn Sound Management Council, and Department of Environment and Conservation Stakeholder Reference Group. Dr Lukatelich's term began in November 2009.

Ms Elizabeth Carr

Ms Elizabeth Carr is a non-executive director with senior management experience in the private, public and not-for-profit sectors. She is currently chair of the Macular Disease Foundation Australia, chair of St Catherine's Aged Care Services Ltd, director of the Kokoda Track Foundation, director of St Mary's Anglican Girls School in Karrinyup, a member of the NSW Health and Medical Research Advisory Council and a director of the Safety, Return to Work and Support Board (NSW) with oversight of its \$17 billion fund.

Ms Carr has a Bachelor of Arts (Hons) from UWA, a Masters in Public Administration from Harvard University and a Diploma (and Fellow) from the Australian Institute of Company Directors. She is currently undertaking professional development with Harvard University focusing on corporate social responsibility.

Ms Carr was the 2002 recipient of Rotary's prestigious Paul Harris Fellow Award for services to the community. Ms Carr's term began in October 2011.

Mr Denis Glennon

Mr Glennon has been a long-standing member of the EPA Board, serving from January 1998 until 30 June 2012. He is the recipient of an Order of Australia (AO) for his "service to environmental protection through the management, control and treatment of industrial and hazardous wastes, and to the community".

Dr Christopher Whitaker

Dr Whitaker served as a member of the Board since 2007 and was Deputy Chairman between November 2009 and November 2012.

We acknowledge the significant contribution both Mr Glennon and Dr Whitaker have made to the Board during their tenures.

EPA meetings and site visits

The EPA has moved to a new meeting schedule in the last year, with in-depth monthly meetings replacing the previous fortnightly schedule. This new arrangement allows the OEPA to brief the EPA with more fully-developed and well-considered assessment strategies and options analyses.

In addition to the meeting schedule, EPA members may undertake site visits to meet with stakeholders and see first-hand the local environment in which we are assessing proposals.

In August 2012, the EPA visited Port Hedland and toured BHP Billiton's Outer Harbour project, the North West Infrastructure multi-user port and the Roy Hill iron ore port. Members also met with more than 50 local stakeholders to discuss local projects and issues.

In December 2012, the EPA joined with the Cockburn Sound Management Council to visit the Mangles Bay Marina proposal and see sea grass rehabilitation in the Sound.

During the last year the EPA Chairman and members also met with local environmental groups and undertook a site visit with the proponent for the EPA's assessment of the Roe Highway Extension. Meeting with the local environmental groups provided the EPA Chairman with a clear understanding of their submissions on the PER and the issues associated with the proposal.

DATE	PAUL VOGEL	DENIS GLENNON	ROD LUKATELICH	ELIZABETH CARR	CHRIS WHITAKER	ROBERT HARVEY
5/7/12					-	
2/8/12		-				
16/8/12						
30/8/12						
13/9/12		-				
11/10/12		-				
25/10/12						
8/11/12						
22/11/12						
6/12/12						
24/1/13	-					
21/2/13						
21/3/13		-				
18/4/13						
16/5/13						
20/6/13						
Meeting participation	15	12	16	16	7	8

These visits allow the EPA to better appreciate the environmental setting and constraints of proposals, leading to more informed environmental advice being provided to the Minister for Environment.

Stakeholder relations

The EPA has worked to strengthen its public communications, with support from the OEPA. Through increased awareness of environmental issues, the role of the EPA and its responsibilities, the EPA hopes to enhance the value placed on the environment by the Western Australian community.

Stakeholder Reference Group

The EPA has established a Stakeholder Reference Group (SRG) as an effective means of consultation with key stakeholders and peak industry bodies. The SRG currently meets quarterly to provide input to the EPA on matters of policy, process and performance, including implementation of the review of EIA process.

The core membership of the SRG is:

Association of Mining and Exploration Companies

Australian Petroleum Production and Exploration Association

Chamber of Commerce and Industry

Chamber of Minerals and Energy

Conservation Council of WA

Department of Environment Regulation

Department of Health

Department of Mines and Petroleum

Department of Planning

Department of State Development

Department of Water

Environmental Consultants Association

Environmental Defenders Office

Urban Development Institute of Australia

WA Local Government Association

World Wildlife Fund

The membership may also include individuals invited at the request of the EPA Chairman who have relevant experience in environmental protection and related matters.

External communications

Providing opportunities for public participation and consultation is an integral part of environmental impact assessment and developing sound environmental protection policies in WA.

As a means of communicating widely, the OEPA has added avenues of communication to keep stakeholders and the general community informed on information relating to the EPA's role in environmental impact assessment, policy development and advice on environmental matters.

A new 'consultation hub' at <https://consultation.epa.wa.gov.au/> houses all proposals open for public comment as well as past public comment periods and their outcomes in one place. Through this service, it should now be simpler for people to add their voice to the important environmental decisions being made across WA.

The EPA Twitter account at www.twitter.com/EPA_WA was launched in September 2012 and tweet links to new reports, guidelines, bulletins and policies, opportunities for public comment/submissions as well as media releases and other announcements.

RSS feeds (Really Simple Syndication or Rich Site Summary) has been added for much of the content on the EPA website so that summaries of new information can be automatically sent to subscribers as it is published.

The website www.epa.wa.gov.au remains a major vehicle for disseminating information and a regular newsletter is issued to keep stakeholders and the wider community up to date on EPA and OEPA activities.

Student support

Each year a graduating Murdoch University student is presented with the EPA Prize in Conservation Biology, awarded for the best average score in core units of Conservation and Wildlife Biology.

The joint winners of the prize for 2012, Robyn Pryor and Cally Coster, were presented with their awards at a ceremony on 16 April 2013.

The EPA has also been a long-term supporter of post-graduate research that falls within the scope of EPA activities.



Cover image

The distribution of Grevillea georgeana is centred on the Banded Iron Formation ranges of the Yilgarn region, including the Helena-Aurora and Die Hardy ranges. The Department of Parks and Wildlife lists it as a Priority Three species.

The formations on which it is found are one of the more significant biodiversity assets in WA and were the subject of a site visit by the EPA in August 2013.

Photo: Office of the EPA