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In this issue of *STEP Matters* we cover:

STEP Events.....	1
Other Local Events .....	1
New Walking Map for Berowra Valley National Park .....	2
New Discovery Centre Opened at the Sydney Institute of Marine Science .....	2
Closure of unauthorised mountain bike track in St Ives.....	3
Possible Lighting of Canoon Road Netball Courts.....	4
St Ives Showground Precinct.....	4
The State Government ignored expert advice on 10/50 Bushfire Clearing Legislation – .....	4
Tour of Biobanking Site in Hornsby .....	5
NSW Offsets Policy: A dubious way to prevent loss of biodiversity .....	6
Can Direct Action meet Australia's greenhouse gas emissions target?.....	8
Concrete coastlines: it's time to tackle our marine 'urban sprawl' .....	10
STEP Information.....	11
Order Form.....	12

## STEP EVENTS

### Walk - Saturday 25 July – St Ives – Cascades Upstream Loop

Late July is near peak flowering time for Sydney boronias and sections of this walk are among the best local viewing spots. And how is your identification of eucalypts? Confused like the rest of us! There are 13 different species along this walk, including two listed as vulnerable.

Time: 9.15 for 9.30 am start  
Grade: Medium, all on service trails  
Meet: Acron Oval car park, Acron Rd, St Ives.  
Car park is sizeable but possibly busy with Saturday sport: plenty of kerb parking nearby.  
Bring: Water and shoes with good grip  
Contact: Phone or text John Martyn 0425 830 260. Or email [johnmartyn@optushome.com.au](mailto:johnmartyn@optushome.com.au).  
Formal booking not essential but please let us know you're coming

The walk is about 5 km, entirely on service trails and will take about 3 hours. Elevation is 110 m down then back up. There are 3 creek fords: not difficult but you may get wet feet depending on stream levels. Recommend shoes that you don't mind wetting; walking poles may help at crossings. There will be one sit-down break at a waterfall – bring light snack, choc or fruit.

### Talk - Tues 21 July – Talk: What is Coal Seam Gas?

Time: 8 pm  
Place: St Andrews Uniting Church, cnr Vernon Street and Chisholm Street, Turramurra

Coal seam gas has polarised the community. It is argued that it is essential for our future gas supplies by some and that it will destroy aquifers essential for food supply by others.

Anita Andrew will talk about the science of coal seam gas from its formation to extraction and environmental issues.

### Walk – Sunday 16 August – North Harbour Reserve to the Spit Loop

One of Sydney's iconic harbour walks with elements of littoral rainforest, sandstone ridge top woodland and heathland. Spectacular harbour views.

Time: 9.15 for 9.30 am start  
Grade: Medium, 9-10 kms, 4-5 hours, all on tracks  
Bring: Water, shoes with good grip  
Meet: Condamine St at the southern end of North Harbour Reserve at 8.45 am for 9 am start  
Contact: Andrew Little 9924 7212 (after 7.30pm), [aalittle@optusnet.com.au](mailto:aalittle@optusnet.com.au)  
Bookings recommended.

## OTHER LOCAL EVENTS

### Fantasea Harbour Hike – 30 August

Take in some of the best views Sydney Harbour has to offer, and raise funds for one of Australia's pre-eminent marine research facilities, the Sydney Institute of Marine Science (SIMS)

Cost is \$35 for adults and \$25 for children

This is an annual community event held on Father's Day. It features a 12km hike from Kirribilli to Clifton Gardens Reserve, Chowder Bay, adjacent to SIMS' headquarters. At the finish line the SIMS Marine Festival offers delicious food and beverages, live entertainment and the opportunity to talk to SIMS scientists and view local creatures from the sea. A free Fantasea ferry ride takes hikers back to Kirribilli. For more information go to [www.harbourhike.com](http://www.harbourhike.com)

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## STEP Inc

Community-based Environmental Conservation since 1978

## Wildthings Talkfest at Turramurra Masonic Hall – Sunday 19 July, midday to 5 pm.

An afternoon of speakers and displays focusing on the protection of urban wildlife and their habitat. There will be a variety of topics covered including native bees, pygmy possums, powerful owl, reptiles, koalas and the habitats they all rely upon.

To register go to <http://tiny.cc/7cuxyx>. Entry by donation.

WildThings is a Ku-ring-gai Council program that exists to create positive relationships between people and wildlife. - See more at: <http://www.wildthings.org.au/#sthash.HiWYOnRg.dpuf>



## NEW WALKING MAP FOR BEROWRA VALLEY NATIONAL PARK

A new high quality walking map of the Berowra Valley has been released by local voluntary service group, Friends of Berowra Valley (FBV). The group evolved from a Special Committee of Hornsby Council created to assist the managers of the Park.

The existing maps of the Park varied in purpose and not all of the features and walks were shown on one map. FBV sought input from NSW National Parks and Wildlife Service, the present managers of the new National Park and many walking authorities.

The new map is based on data supplied by the National Mapping Authority and delivered via Hornsby Council's GIS Department so as to include any additional tracks or walks added by Council.

The new map is a double sided purpose-designed topographical map for walkers:

- Every approved walking track and fire trail in the Park is shown;
- Printed on quality synthetic "paper" to handle wet conditions, repeated folding and tearing;
- Folded for convenient part-opening to follow a track;
- Easy reference to picnic and camping places, toilets;
- Important, notable and historic locations marked;
- Clearly marked track head access from public transport;

- Clear and specific safety guidelines for some tracks that cross the restricted Hornsby Rifle Range zone.



FBV published the highly regarded "Guide to Berowra Regional Park in 2004. The peer-reviewed 245 page book contained some 400 colour images and authoritative chapters on the biology of the Park. The book is no longer available in print, but can be digitally downloaded from the FBV web site: <http://www.friendsberowravalle.org.au/>

The new map is cross referenced to the FBV site and includes:

- \_The 10 walks fully described and illustrated within the "Guide" and
- \_refers to facilities and features of the Park that are described in detail in the "Guide"
- \_Walkers with the right gear can locate these substantial on-line resources while in the Park.

The maps are available from the NP&WS shops at Bobbin Head and Lane Cove National Park and Camp Hike Climb in George St, Hornsby. Price is \$10.

## NEW DISCOVERY CENTRE OPENED AT THE SYDNEY INSTITUTE OF MARINE SCIENCE

STEP's April visit to the fascinating SIMS Centre at Chowder Bay occurred before the opening of the Discovery Centre. The Centre, which is in a historic sandstone quarry on the Chowder Bay foreshore, has now been completed.

The entry room is a celebration of Port Jackson, i.e. Sydney Harbour, showcasing the wonderful diversity of marine life, habitats and ecosystems we have at our doorstep. Highlights of this exhibit are a 3D model of the harbour, which shows the harbour's complex shape and topography of the seafloor, and a virtual dive using 3-d virtual reality goggles.

The second room leads visitors onto the open coast. The main themes explored here are the East Australian Current, the main boundary current along the east coast of Australia, and the impacts of climate change on this current system and coastal ecosystems.

## CLOSURE OF UNAUTHORISED MOUNTAIN BIKE TRACK IN ST IVES



### *A hazardous jump*

Ku-ring-gai Council has received considerable flak over a decision to close an unauthorised mountain bike track down a steep hill below the tennis courts near Warrimoo Oval, St Ives.

This track can only be ridden in one direction – downhill. In other words it is designed for thrills. Another route, the Harbour to Hawkesbury management trail, is used to get back up to the top of the hill. There is no signage to warn unsuspecting walkers coming from the trail below that they are entering a downhill bike track. There is also little signage to warn riders themselves of hazards.

Speeding riders (as demonstrated by videos on YouTube) would have no opportunity to appreciate the beautiful bushland as they negotiate the track. On the day we looked at the track the wildflowers were magnificent.

The reasons for the closure explained by the Council include:

- The construction and use of the land as a mountain bike track is unauthorised, unlicensed and has never received approval from Council.
- The land contains the Endangered Ecological Community (EEC) Coastal Upland Swamp, which is protected by State and Federal legislation.
- The land where the track has been built contains individually threatened species of flora including *Tetradlea glandulosa* and *Melaleuca deanei* - these populations are the largest in the Ku-ring-gai LGA.
- The land contains three species of threatened fauna - Pygmy Possum, Heath Monitor and Red Crowned Toadlet.
- A number of key threatening processes identified under State and Federal legislation currently exist on site as a direct result of continued mountain bike use and additional trail and jump construction, including bush rock removal, clearing of native vegetation, removal of dead trees

and wood, infection of native plants by *Phytophthora cinnamomi* and changes to landscape hydrology, which is adversely affecting the Coastal Upland Swamp and individually threatened species.

- From a safety risk management perspective the track does not comply with acceptable safety standards.



### *A steep rocky drop*

The Council is discussing possible alternative sites for a track with mountain bike groups.

STEP supports the track closure. This is another example of unauthorised bike track construction that has damaged urban bushland. If the Council lets the local enthusiasts get away with this track, they will be emboldened to build more.

Bike groups seem to think that the popularity of mountain bike riding justifies their creation of new riding tracks. They ignore the bushland preservation rules that have been legislated after much scientific analysis and community consultation. The bushland is preserved for many reasons. It is under considerable pressure from urban development. Illegal bike tracks add a major source of damage.

The National Parks Service has spent close to a million dollars building the new tracks (Gahnna and Serrata) in Garigal National Park and devoted many hours of staff time managing and monitoring the tracks. They are now spending more to close unauthorised tracks in the area that have damaged aboriginal engraving sites and coastal upland swamps. We hope that the mountain bikers will appreciate this facility and the money that has been and is still being spent for their benefit. The time and money spent on walking tracks per walker would be tiny in comparison.

As STEP's Position Paper of Bushland Tracks and Trails argues, bike riding should be confined to bushland management and other authorised trails where damage from the introduction of pathogens and weeds and soil erosion can be controlled.

There was an interesting program on ABC Radio National last month highlighting the damage caused by unauthorised trail construction plus the general issues of encouraging bushland appreciation without causing degradation. Here is the link to the site.

<http://www.abc.net.au/radionational/programs/oftrack/loving-your-environment-to-death/6555274>

### **POSSIBLE LIGHTING OF CANOON ROAD NETBALL COURTS**

The November 2014 issue of STEP Matters outlined the content of a preliminary draft plan of management for the Canoon Road netball complex in South Turramurra.

Ku-ring-gai Council has undertaken some consultation with the local community and Netball Association both before and after the November publication.. Taking this into account the Council decided at a meeting on 23 June to include the possibility of introducing night lighting on 9 of the 21 courts including 5 courts that are also used as tennis courts. This will reduce traffic on Saturday mornings by enabling some games to be played on Thursday and Friday nights (5.30 to 7pm). The lit courts will also be available for team training and tennis on other evenings. The lit courts would be near the amenities block and car park.

The draft plan also provides for the extension of the main carpark along its southern edge and upgrading the existing bitumen carpark within the firetrail.

Members of the public are invited to comment on the plans by 7 August. The draft plan of management is available here

[http://www.kmc.nsw.gov.au/I\\_want\\_to/Ask\\_discuss\\_or\\_comment/Have\\_my\\_say\\_public\\_exhibitions/Canoon\\_Road\\_Recreation\\_Area\\_Draft\\_Plan\\_of\\_Management](http://www.kmc.nsw.gov.au/I_want_to/Ask_discuss_or_comment/Have_my_say_public_exhibitions/Canoon_Road_Recreation_Area_Draft_Plan_of_Management)

### **ST IVES SHOWGROUND PRECINCT**

Earlier this year Ku-ring-gai Council Invited submissions on a draft plan of management for St Ives Showground and Precinct Lands. At the meeting on 26 May the plan was adopted.

One area of concern to STEP was the Mini Wheels Training Club's use of a site containing an endangered Duffy's Forest ecological community. A consultant's report concluded that the Club's use of the site could not be managed sustainably and was also damaging the coastal upland swamp down the slope below the site. The Council resolved to not renew their lease that is due to expire in March 2016 and that a report be prepared on biodiversity offset funding options to rehabilitate the site.

### **THE STATE GOVERNMENT IGNORED EXPERT ADVICE ON 10/50 BUSHFIRE CLEARING LEGISLATION –**

Freedom of Information (FOI) requests made by the Stop the Chop alliance have revealed that the State Government ignored expert advice when deciding to enact the 10/50 bushfire clearing code. What were they thinking? Their attempt to make easy political capital out of the Blue Mountains bushfires in September 2013 has backfired. This misguided legislation is causing irreparable damage from the cutting down of thousands of trees for reasons other than bushfire protection.

The first FOI request revealed that, even before the legislation was enacted, an assessment by the NSW RFS of the similar Victorian 10/30 legislation allowing people living in fire prone areas to cut down trees within 10m of their homes would not help with bushfire safety and may add to risks. One key problem identified is the breaking of the relationship between fire experts and property owners. The document also revealed issues with clearing on steep slopes, damage to riparian zones, heritage areas and significant vegetation.

The second FOI request revealed that, in November 2014, at the early stages of the enquiry into the code, the RFS received Office of Environment and Heritage (OEH) advice that the code could cause land slippage and soil erosion, ignored environmental impacts to flora and fauna, operated "inconsistently with current planning guidelines". OEH recommended a return to the pre-10/50 bushfire management system in "some or all of NSW". Despite this advice demands from local environmental groups to suspend the code have been ignored.

There were 3454 public submissions to the Rural Fire Service review of the 10/50 code, with 97 per cent of them opposed to the law

The relaxing of land-clearing laws was prompted by the 2013 bushfires, which destroyed close to 200 homes in the Blue Mountains. But the Blue Mountains City Council has voiced its concerns. Council members unanimously passing a "mayoral minute" that noted the impacts of the code were cumulative but "not readily measurable" since residents aren't required to give notice of their clearing. "This was meant to be about bushfire protection," mayor Mark Greenhill said. "It was not meant to be a new way of land-clearing with no regulation around it."

The outcome from the enquiry into the legislation is promised shortly after parliament resumes in August. Surely they will have enough nous to stop the tree destruction that is causing so much angst in the community. One only has to look at the Stop the Chop Facebook to get a sense for the furious opposition.

## TOUR OF BIOBANKING SITE IN HORNSBY

*This information came from an article written by Margery Street for Blandfordia, the newsletter of the North Shore Group of the Australian Plants Society.*

On 1 April Hornsby Council's Bushland Team led the Bushland Management Advisory Group (BMAC) on a visit to 4 reserves in the newly-established Waitara Creek Upper Catchment BioBanking site. The 4 reserves are Dog Pound Creek Bushland, Florence Cotton Park, part of Ginger Meggs Park and part of Waitara Creek Bushland.

You may have seen the Hornsby Advocate's story on 26 February "Agreement Prices Parks", emphasising the monetary value of nature. However, Australian Plants Society members might be more interested to know that the land will be managed in perpetuity by Hornsby Council primarily for biodiversity conservation, with some passive recreation opportunities.

Through extensive research and mapping Council was able to establish a \$1,135,000 value for maintaining and improving the land. This amount has been pledged for the land's rehabilitation over 20 years with \$1.1 million of this coming from the State Government.

Biobanking is the scheme by which the Office of Environment and Heritage (OEH) manages offsets for development on environmentally sensitive land. The scheme allows landowners in NSW to establish their land as a biobanking site, agreeing to enhance and protect its biodiversity. The site generates credits according to its value, for example, connectivity, condition, species and size; and other criteria such as cost of rehabilitation. The calculation of the price of a credit is complex. It includes the estimated cost to the landholder of managing the land for the life of the agreement as well as establishment costs. The landholder must pay an application fee and provide a field assessment, management plan, land valuation and opportunity costs. The OEH website ([www.environment.nsw.gov.au/](http://www.environment.nsw.gov.au/)) explains the processes.

The main forest types in these reserves are Blackbutt Gully Forest and Peppermint Angophora Forest. There is also an area of Blue Gum Diatreme Forest which is significant because it is critically endangered, is found only in the Hornsby Volcanic Diatreme system. It has lost 95% of its original extent through mining and logging, and half the remaining area will be conserved by this Agreement.

The reserves are home to four threatened plants species including

*Galium australe*, (Tangled Bedstraw) once thought extinct and now found in Dog Pound Creek, listed as endangered in NSW.

*Grammitis stenophylla* (Narrow-leaf Finger Fern), listed as vulnerable in NSW

*Epacris purpurascens* var. *purpurascens*, listed as vulnerable in NSW

*Syzigium paniculatum*, although commonly cultivated it is listed nationally as vulnerable and endangered in NSW (Magenta Lilly Pilly, Magenta Cherry, Pocket-less Brush Cherry, Scrub Cherry, Daguba or Cadigal, Creek Lilly Pilly, or Brush Cherry).



*Blue Gum Diatreme Forest is restricted to gullies on Jurassic diatremes (volcanic necks) along tributaries of Waitara Creek; here shown along Larool Creek, Dog Pound Track, Westleigh*



*Track through Florence Cotton Reserve, a Blackbutt Gully tall open forest found in gullies on Hawkesbury Sandstone with a shale influence from shale lenses in the sandstone or from proximity to Wianamatta Group shales.*

## **NSW OFFSETS POLICY: A DUBIOUS WAY TO PREVENT LOSS OF BIODIVERSITY**

One of the recommendations of the State Government review of the biodiversity legislation released in Dec 2014 was for a system that “encourages the broader and deeper application of offsetting, as approved in the NSW Biodiversity Offsetting Policy for Major Projects and through mechanisms such as biodiversity certification and BioBanking. A statewide biodiversity offsets fund should be operational as soon as possible.”

To date the policy of offsets has been mostly applied to rural areas. Now the idea is increasingly being proposed for urban vegetation. The efficacy of offsets depends on a strict set of rules and long term consistency of application. The second article (B) below provides an overview of the desirable guidelines for the creation and operation of offsets.

Article A written by Dr Oisín Sweeney, Scientific Officer at the National Parks Association highlights some of the issues with offsets. It was first published on the Independent Australia website on 23 May 2015. See

<https://independentaustralia.net/business/business-display/koalas-for-coal-has-it-come-to-this-in-nsw,7745>

### **A. Koalas for coal: Will it come to this in NSW?**

The NSW government announced prior to the election that it would adopt all the recommendations contained in its recent biodiversity review. It is hard to overstate the magnitude of this: NSW is the most populous state in the country so future pressures on the environment will likely be felt most acutely here. The state also contains globally significant species and ecosystems, including a large part of the ‘Forests of Eastern Australia’ biodiversity hotspot.

To ensure that we don’t trade development for nature, the drafting and implementation of new biodiversity laws must be done well. The government’s ability to achieve this will determine the fate of the 970 threatened species and 104 threatened ecological communities in NSW.

While there are some sensible recommendations in the review, others may hasten the demise of species and ecosystems. One such example is the ‘deepening and broadening’ of biodiversity offsetting—a ‘solution’ to development that is increasingly applied across Australia and internationally.

If it sounds too good to be true...

Offsetting sounds great. Development, some argue, is inevitable. So let’s offset the environmental damage by recreating or protecting habitat elsewhere. What’s not to like? It’s easy to see why offsetting is attractive to governments dealing with multiple development pressures. It removes the pesky problem of having to make a choice.

But there are major question marks over whether recreating nature is possible. Even if it was, the time lag between the habitat destruction and the offset maturing means displaced animals will be long gone. And protecting similar habitat elsewhere to offset losses results in net habitat loss. There is a smorgasbord of other problems too. Calculating baselines and conservation benefits is difficult<sup>4</sup>, as is designing effective offsets<sup>5</sup>.

In truth, development is not inevitable and society has a choice as to whether to sacrifice nature for commercial gain. This is why opponents see offsetting as a sweetener to get otherwise unacceptable projects over the line. In essence a political license to destroy forests, wetlands and anything else that stands in the way of development.

### **When is an offset not an offset?**

Some of the complexities in offsetting become clearer when we consider a couple of examples. One hypothetical but certainly possible, and one currently being considered. Let’s start with the hypothetical.

#### **1. Coastal upland swamps**

Coastal Upland Swamps in the Sydney Basin Bioregion are endangered at both state and federal level. 83% of coastal upland swamps lie on the Woronora plateau with an area of occupancy of <4500ha. Only 8.6% of swamps on the plateau are in reserves and all are critical to the communities’ survival. This is because of the highly specific set of variables required for swamp formation, which makes recreating the community nigh on impossible. Unfortunately, the swamps lie on top of a seam of valuable coking coal which Wollongong Coal extracts.

Advice from the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC) indicated that swamps would be impacted by mining via subsidence and cracking of the beds of swamps causing water loss. As yet, Wollongong Coal has not been required to find offsets for their activities. But what if it had? Or has to in future? The biodiversity review recommends that a monetary payment would suffice in the absence of a ‘like for like’ offset.

So it seems that there is now no unacceptable, ‘red flag’, development. Money solves all problems. Even were payments ring-fenced for nature conservation, it is a prime example of a

perverse outcome: the destruction of one ecological community is permitted for the 'benefit' of another.

As a society, we need to ask whether a payment constitutes an acceptable offset to future generations for the loss of an ecological community.

## 2. Koalas in Gunnedah

The Gunnedah district is home to the largest inland population of koalas in NSW. This results from the presence of food and shelter trees, soil type and groundwater availability. The Breeza plains near Gunnedah is the site of the controversial Shenhua Watermark coal mine proposal, approved by the NSW Planning Assessment Commission on 28th January [and by the Federal Government just this month under the water trigger legislation]

The mine is predicted to remove 847ha of preferred koala habitat over its 30 year life. But assessments also predict groundwater drawdown in the adjacent Breeza State Forest. The shallow aquifer is considered important as it is within reach of tree roots, resulting in better food for koalas—essentially groundwater dependency. Impacts to the water table would therefore likely result in a drop in habitat quality for koalas.

Offset proposals include replanting or encouraging regeneration of food trees; using Breeza SF as an 'avoidance measure' and the rehabilitation of 2357ha of koala habitat on the mine. Although the offset sites support similar vegetation communities to the mine, the aquifer is at a lower depth and the trees cannot access groundwater. Hence the offset is highly unlikely to ever reach the same quality for koalas as the mined area.

Plus, although koalas can use young trees for food<sup>6</sup>, there will be a time lag of 10-20 years in the creation of suitable feeding habitat. When we consider that koalas need tall non-feed trees with dense foliage as temperatures rise<sup>7</sup>, the lag may be closer to 100 years. These offsets are likely to be woefully inadequate, and are not truly 'like for like' as groundwater and shelter trees have not been considered. This starkly illustrates the problems in defining suitable offsets.

### What does the future hold?

The NSW government has committed to a draft of the new legislation by November and looks likely to go way beyond the recommended framework for offsetting laid out by a Senate Inquiry in 2014. Leaving aside the fact that the testimony from some of Australia's leading scientists rubbishes offsetting, the Inquiry recommended that offsetting be used only as a last resort, that a list of 'red flag' areas should be developed and that a consistent national

standard be adopted based on the federal model. None of these are on the table in NSW.

All the evidence suggests that the NSW government is accelerating down a road to ruin, scattering out short term Band-Aids as the juggernaut thunders on. As always, we can't have our cake and eat it. Koalas or coal; nature or one-off profits; short-term gain or things of wonder for our grandkids: these are the choices we have to make.

## B. Desirable conditions governing offsets

In 2003 NSW introduced legislation that allowed land clearing only if it improves or maintains environmental outcomes. Broad scale clearing has been banned but clearing is still permitted under limited circumstances. Offsetting has been introduced as a policy instrument used to permit clearing within an overall no net loss objective.

The principle of biodiversity offsets is that habitat loss can be evaluated and 'offset' within an area (usually larger area) of equivalent value. It assumes that sufficient habitat can be protected, enhanced and/or established elsewhere.

The main questions about the validity of offsets relate to:

1. The amount of habitat gain that can actually be achieved by the offset.

Simply quarantining from clearing an area that already exists has been a traditional model for mitigation but this is not an offset, it does not make up for the area lost. Similarly, a gain cannot be sourced from protection of already well protected high value habitat, as this is part of the existing condition and no further improvement can be achieved. Offsets need to be new areas where there is a real potential of habitat replacement and improvement.

2. The equivalency of the gain

Vegetation communities are complex to reproduce on any equivalent basis. New plantings or regeneration strategies are unlikely to recreate the natural habitat for native mammals and reptiles that would have developed over many years in an area to be cleared. In practice a scoring system is used to try to measure the attributes of the area to be lost and matching scores are applied to the replacement area but operational expediency is unlikely to replace like-for-like. The desired outcome is a balance between the area being removed and the ability to develop offset habitat to support representative communities of species, even if it is 'modified'.

3. Time lag between the loss and the gain

There will be a time lag between the loss of vegetation and establishment of new vegetation so that displaced animals will have to move

elsewhere (if possible). The prime example is the loss of hollow bearing trees that may take more than 100 years to produce hollows from a new plant.

#### 4. Adequacy of compliance

Compliance is an ongoing problem. What authority is going to monitor all the offset sites? An example is where Rio Tinto has to offset the loss of Warkworth Sands Woodland at its Mt Thorley Warkworth mines near Bulga. An area of the woodland has been cleared already but no action has been taken to create a protected area as compensation – more about this below.

Overall if the shortcomings of offsets are acknowledged they can be overcome through regulation that aims to ensure that there is indeed no net loss. And if clearing is likely to lead to a net loss then it should not be approved.

Despite the pitfalls, this did not stop the Wentworth Group in 2003, under "A New Model for Landscape Conservation in NSW", recommending some type of offset mechanism for NSW. Since then, research and development of the current policy for offsets in NSW has shown that it can work but only under a strict set of circumstances, which are:

- The values lost from clearing can be feasibly restored elsewhere. i.e realistically this can only occur if the lost site has a simple vegetation.
- The vegetation proposed for clearing is unlikely to persist in situ e.g. small paddock trees among cultivation or 'postage-stamp' areas of habitat.
- Offsets must be in place for long enough to allow habitat to recover and restore key ecosystem processes (not just species composition).
- Management MUST deal with inherent risk and uncertainty about the actual process of restoration. The focus should be not on the process, but the outcome. To create an outcome in the face of uncertainty, management must be adaptive; offsets must be guaranteed in perpetuity; and there must be adequate compliance.

#### **Mining Offsets, an example of flawed offset policy**

A prime example of lack of compliance is the Warkworth coal mine in the Hunter Valley referred to earlier. In January 2015 a conservation officer from the Office of Environment and Heritage resigned from his position over what he describes as capture of the Department of Planning and the Office of Environment and Heritage by the coal and gas industries, leading to the real possibility of species and habitats being pushed to extinction.

Current OEH offset policy allows the controversial practice where companies can claim biodiversity offset credit for their plans to rehabilitate land currently being open-cut mined. Also, mining activities have been approved that will override protection agreements. For example, the proposed current Warkworth open cut extension will destroy a conservation offset guaranteed by a Deed of Agreement by the Planning Minister in 2003,

For the Warkworth extension, Rio Tinto proposes to set up a biodiversity conservation area on the Goulburn River near Merriwa. This protection will not compensate for the destruction of the specific endangered ecological communities at Warkworth and the threatened species they support. Warkworth Sands Woodland cannot be adequately protected elsewhere to compensate, as there is not sufficient woodland left remaining. The Chair of the NSW Scientific Committee has stated that the ecosystem removal of Warkworth Sands Woodland for open cut coal mining will likely lead to the irreversible extinction of the ecological community.

#### **Now Coastal Upland Swamps may be compromised?**

This month the State Government released some parts of a new "integrated mining policy" and invited submissions. It is hard to believe that one part up for discussion is a proposal for coastal upland swamp offsets. As has been explained in previous issues of STEP Matters No. 168), these swamps are classified as an endangered ecological community and are irreplaceable.

Reference: [Gibbons, P. and Lindenmayer, D.B. \(2007\). Offsets for land clearing: no net loss or the tail wagging the dog? Environmental Management and Restoration, 8, 26-31.](#)

#### **CAN DIRECT ACTION MEET AUSTRALIA'S GREENHOUSE GAS EMISSIONS TARGET?**

The information in this column about Australia's greenhouse gas emissions is from a Department of the Environment Fact Sheet. Australia's current greenhouse gas emissions reduction task under the United Nations climate change agreement is to reduce its emissions by 5% below 2000 levels by 2020. This equates to emissions of no more than 530 Mt CO<sub>2</sub>-e (\*) in the financial year ended 2020. Without taking account of intended reduction measures domestic emissions are projected to be 656 Mt CO<sub>2</sub>-e in 2019–20 and the total reduction required over the period 2013 to 2020 is 236 Mt CO<sub>2</sub>-e .



The table below gives a history of emissions recorded under the National Greenhouse Gas Inventory.

Financial year ending	Emissions Mt CO <sub>2</sub> -e	Change in emissions Mt CO <sub>2</sub> -e
2005–06	614	
2006–07	597	-17
2007–08	592	-5
2008–09	593	1
2009–10	577	-15
2010–11	552	-25
2011–12	559	7
2012–13	551	-9
2013–14	548	-3

The reduction task has declined significantly compared with the projections made in previous years when it was expected that emissions would increase each year. The following reasons have been given for the reduction:

- lower electricity demand due to uptake of household solar, energy efficiency and higher retail electricity prices;
- worse than expected agricultural conditions due to drought;
- lower manufacturing output due to industrial closures;
- weaker growth expectations for local coal production due to a fall in international coal prices; and

### Direct Action Policy

The main plank of the government's policy to achieve the emissions reduction goal is the Direct Action Plan. This involves companies putting up projects that will reduce emissions relative to a previous baseline level at a competitive cost. There are three inherent problems with this idea:

- Money will be given to projects that would have gone ahead anyway, thus taking funding away from other worthy projects.
- The way reductions are calculated could potentially penalise those who have already made cuts, while others will not be penalised for doing nothing to reduce emissions even if they are below best practice
- It is not clear what will happen to successful bidders who do not meet their commitments.

The outcome of the first auction in April under the government's Direct Action Plan is expected to achieve at reduction of

47 Mt CO<sub>2</sub>-e at an average cost of \$14 per tonne. The cost of the projects is a total of \$660 million out of \$2.55 bill that has been allocated from the budget up to 2020.

About 60% of the projects are carbon sequestration such as farmers fencing off and/or revegetating part of their land. About 38% relates to the capture of methane from land fill and other waste reduction measures. There are small amounts from changes to savannah burning, piggery management and transport.

There are many causes for concern that the reduction target will be not achieved.

There is still a long way to go and the allocated budget looks to be inadequate. For example, if the cost or abatement in future auctions is also \$14 per tonne then the money currently available will buy only 182 Mt, 54 Mt short of the target. The government might be caught short with very little time to make amends.

Many of projects have timeframe of over 7 to 10 years and will take some time to get established but have only 6 years to achieve the contracted carbon reduction.

The farm carbon reduction may not lead to permanent sequestration or weather conditions may lead to less growth than expected.

The main shortcoming of the Plan is that the major polluters are missing. It appears there is no incentive for projects to lock in long term energy efficiency measures and conversion to renewable energy sources.

Australia needs to make a commitment for major reductions in emissions beyond 2020 if we are to make a fair contribution to the goal to limit climate change. The Climate Change Authority has recommended a reduction of 30% on 2000 emission levels by 2025. There is currently no plan beyond 2020 that will go anywhere near making a significant difference.

(\* ) Mt CO<sub>2</sub>-e is total greenhouse gas emissions in millions of tonnes with non carbon dioxide greenhouse gases, such as methane converted to an equivalent CO<sub>2</sub> warming potential

## CONCRETE COASTLINES: IT'S TIME TO TACKLE OUR MARINE 'URBAN SPRAWL'

*By Katherine Dafforn, Senior Research Associate in Marine Ecology at UNSW Australia, Emma Johnson, Professor of Marine Ecology and Ecotoxicology at UNSW Australia, Joanne Banks, Project Coordinator - World Harbour Project and Mariana Mayer-Pinto Research Associate in marine ecology at UNSW Australia. This article was published in The Conversation on 16 March 2015*

How would you feel if half of Sydney's beaches were replaced with concrete walls? Unfortunately, this scenario is already common in urban estuaries around the world.

According to our research, published this month in *Frontiers in Ecology and the Environment*, some estuaries in Australia, the United States and Europe have had more than 50% of their natural coastline modified with artificial structures.

This "marine urbanisation" – including foreshore developments, port facilities, marinas and even offshore energy platforms – is most widespread in Europe where over 9,000 marinas and more than 200 offshore energy installations are operational. Australia and the United States are catching up with the Bass Strait a focus for oil and gas platforms, and the Gulf of Mexico supporting some 2,000 oil and gas installations.

Thankfully, there are lessons we can learn from land-based sustainable architecture that will help us save our seas from the effects of all this concrete.

### The coastal concrete jungle

You have probably noticed the amount of concrete and other building materials that have begun to encroach on many of our shorelines, amid the growing demand for coastal urban development.

Not even the deep ocean, generally considered a haven for marine organisms, is safe, with a steady increase in the construction of offshore energy infrastructure such as platforms for oil and gas exploration.

The reality is that urban sprawl is no longer just a land-based problem. Developments are spreading out into the oceans, creating tangles of structures beneath the water's surface. Seawalls, breakwaters and boating infrastructure such as marinas are becoming increasingly conspicuous in the marine environment.

We build concrete walls to protect our coasts from nature's forces. We add wooden pylons and floating structures to support a burgeoning shipping industry. Mountains of underwater scaffolding support a growing offshore energy

and resource sector. There are more than 7500 offshore rigs worldwide and this number is growing rapidly, but at the same time more than 6500 rigs are expected to require decommissioning by 2025. Hence we are dealing with a double edge sword of how to manage impacts from new installations and how to minimise the disturbance associated with removal of these enormous structures.

And we are finding more novel ways to build into the sea, such as entire artificial islands built in Dubai and the (not so) futuristic underwater hotels proposed for Fiji and the Great Barrier Reef.



*Dubai development*

### Hard problems

These artificial structures present a range of ecological problems, including loss of native species diversity and the spread of introduced species. Furthermore, the defences to coastal shores that these structures, such as groynes and seawalls, are meant to provide could actually be causing more bad than good.

Indiscriminate construction within urban seascapes is, among other things, responsible for the loss and degradation of important habitats such as sediments, seagrasses, mangroves and wetlands. In the UK, proposed offshore wind energy developments will replace an area of soft sediment habitat close to the size of Melbourne. These habitats are not only highly productive, supporting a variety of species, including some economically important, but some provide natural protection for the coastal zone against storms and waves.

### Eco-engineering the ocean

Fortunately, not everything is bad news. The silver lining is that urban seascapes are still a relatively new phenomenon and we can learn from the pitfalls of urban land-based developments.

More alternative methods have been used to armour our coastal zones against climate change. These include soft engineering approaches e.g. managed realignment, which

involves the removal of hard defence structures and restoration of natural coastal vegetation, and beach replenishment where sand is deposited on beaches to build up the surf zone and dune protection. Where these approaches are not possible then increasingly we need to build ecologically sensitive artificial structures.

Combining ecological principles with engineering designs is probably the most promising solution for the current urban sprawl, with terms such as green or eco-engineering being more frequently used (and applied) to urban seascapes. Practices of eco-engineering are driving innovative strategies on how to manage coastal development, and increasingly, things are being built “with nature” instead of “against nature”, with encouraging results.

Artificial structures, where they are needed, can and should be built in a more ecologically friendly way. Currently, most artificial structures in the marine environment are built for a single purpose, such as coastal protection, tourism, energy or food production. We suggest that multipurpose structures should be built instead. Why can't offshore oil and gas platforms serve as aquaculture areas or even diving spots – they tend to attract plenty of fish.

Similarly, we can build seawalls and breakwaters in ways that not only help to protect the local area but are also designed to avoid environmental impacts. Why not transfer the urban concept of “green roofs” to the sea, by seeding artificial structures with key desired and/or threatened species. Breakwaters in the Adriatic Sea have been successfully “seeded” with the seaweed *Cystoseira barbata* and oyster reef restoration efforts can be applied to new foreshore developments. Seeding of key species can also improve water quality through the absorption or removal of contaminants.

### **Natural seascapes**

Thankfully, there are now several global initiatives that try to solve, or at least mitigate, the many problems caused by underwater urbanisation. The Nature Conservancy's Southern Seascapes project aims to restore coastal estuaries that are home to shellfish and seagrass, whereas the Sydney-based World Harbour Project is working to make the world's urban ports and harbours more sustainable. Projects such as these will provide the basic research needed to progress eco-engineering designs on a large scale.

Many of the world's major cities – including Sydney, New York, Rio de Janeiro, Shanghai,

San Francisco, Singapore, Hong Kong, Stockholm, Abu Dhabi, Tokyo, and Qingdao – are on the coast or in large estuaries. However, eco-engineering remains under-utilised in the management of marine urban sprawl.

This is partly due to the lack of policy and incentives driving ecologically sustainable development below the waterline. Europe leads the way in strategies to promote green infrastructure through policy.

The rest of the world needs to catch up before concepts such as underwater cities escape the realms of science fiction.

## **STEP INFORMATION**

### **STEP Matters**

The editor of *STEP Matters* for this edition is Jill Green, who is responsible for all information and articles unless otherwise specifically credited. The STEP committee may not necessarily agree with all opinions carried in this newsletter, but we do welcome feedback and comments from our readers, be they STEP members or not.

All issues (from when we began in 1978) can be viewed online, usually in full-colour.

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Send complaints, praise, comments or letters to [secretary@step.org.au](mailto:secretary@step.org.au). Please feel free to share your copy of the newsletter with friends, neighbours and business colleagues.

### **New Members**

New members are always welcome to join STEP and to make themselves available for the committee should they wish to do so. The effectiveness of STEP is a factor of the numbers of members we have, so please encourage your like-minded friends and neighbours to join.

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