

Biodiversity

Biodiversity is the variety of all life forms - the different plants, animals and micro-organisms, the genes they contain, and the ecosystems of which they form a part. All development can play a role in protecting and restoring biodiversity and ecological processes.

This fact sheet should be read in conjunction with the Biodiversity Impacts Off-site fact sheet, which covers the lifecycle impact of your design and material choices.

THREATS TO BIODIVERSITY

Land clearance can pose a threat to biodiversity. Residential development, especially in growth corridors, city fringes and holiday towns often involves the clearing of native vegetation.

Even so-called sensitive development poses risks to the integrity of remaining natural ecosystems. Habitat degradation occurs with the introduction of pest plants and animals.

The construction of buildings and roads alters drainage patterns and soil structure, while altered nutrient levels from run-off and septic tanks can also cause other long term problems.



Secret Hideaway! Selectively cleared, secluded block in a natural setting. Spectacular escarpment views. Off sealed roads, private. Power and phone available. Existing quaint cottage. Flood free. Gold fossicking

The smaller the untouched ecosystems and the greater the intensity of development around the edges, the faster these destructive elements can cause a loss of habitat quality.

In some coastal areas the degrading influence of residential development may also extend to nearby foreshore and marine ecosystems.

Some ecosystems, especially grasslands and heathlands, are changed significantly by inappropriate fire regimes. Conflicts between ecological burning requirements and the need to protect residential development within or adjacent to these areas are difficult to resolve.

STRATEGIC APPROACH

Objectives for conservation of biodiversity include:

- > Retaining native vegetation and increasing its quality and area wherever possible.
- > Recovering threatened communities and species.
- > Preventing rare species from becoming threatened.
- > Repairing ecological processes.

Replanting cleared sites is definitely no substitute for leaving native vegetation intact. Once land is cleared it is almost impossible to recover the full suite of indigenous species, remove introduced species and restore ecological processes.

DESIGN FOR BIODIVERSITY BENEFIT

Build biodiversity conservation objectives into your planning and design approach from the outset. You may be able to find innovative ways to make a positive contribution.

Design to minimise the use of water, land, non-recycled materials, toxic chemicals and energy. These actions can help reduce impacts on biodiversity. [See: Biodiversity Impacts Off-site]

Case study: Termeil Guesthouse on the NSW South Coast required cabins to be built in a remnant rainforest area.

Recognising that any development on the site would have some impact, the designers and the owners set about minimising that impact.

A bridge over an existing creek was required for site access. The bridge site was chosen to avoid the removal of trees and the bridge, designed to clearspan the watercourse, used recycled timbers.

Wildlife corridors between remnant forest and the creek were protected and extended with new plantings grown from seeds from the site.

Roadways were tightly curved to slow traffic for wildlife safety.

AVOID SENSITIVE AREAS

Wherever possible, choose a site that has already been permanently cleared.

Growth corridors and the fringes of cities and towns often support native vegetation. Although some of these grassland, woodland, bushland and heathland communities may be degraded, they could contain a wealth of native plants and animals. Waterways may still be in good enough condition to provide habitat for native species.

Some degraded areas may be important because they have been earmarked for habitat restoration.

Termeil Guesthouse was restricted to an existing clearing which had overgrown with non-native species.



The original clearing

In situations where significant impacts are likely, a flora and fauna survey may be necessary. A nature conservation consultant may be useful at this stage.

For Termeil Guesthouse, an eight part flora and fauna impact study was carried out by a local consultant to identify important species, existing habitat and wildlife corridors.

A detailed site survey was conducted to identify all trees, clearings and contours.

A development plan was prepared on the basis of the flora and fauna impact report.

MINIMISE DAMAGE ON SITE

Retain as much native vegetation as possible. View the uncleared areas as a resource to be conserved.

Avoid unnecessary disturbance to vegetation and soil. Limit clearing outside the building footprint. Vehicle tracks, workers' carparking, rubbish dumps, wash sites etc. should be located away from native vegetation and waterways.

Retain significant habitat trees including dead trees with hollow limbs or trunks which provide essential shelter and breeding sites for many animals.

Consider your effects on waterways. Ensure that silt, lime, cement, paint, chemicals etc. do not wash into drains or nearby watercourses.

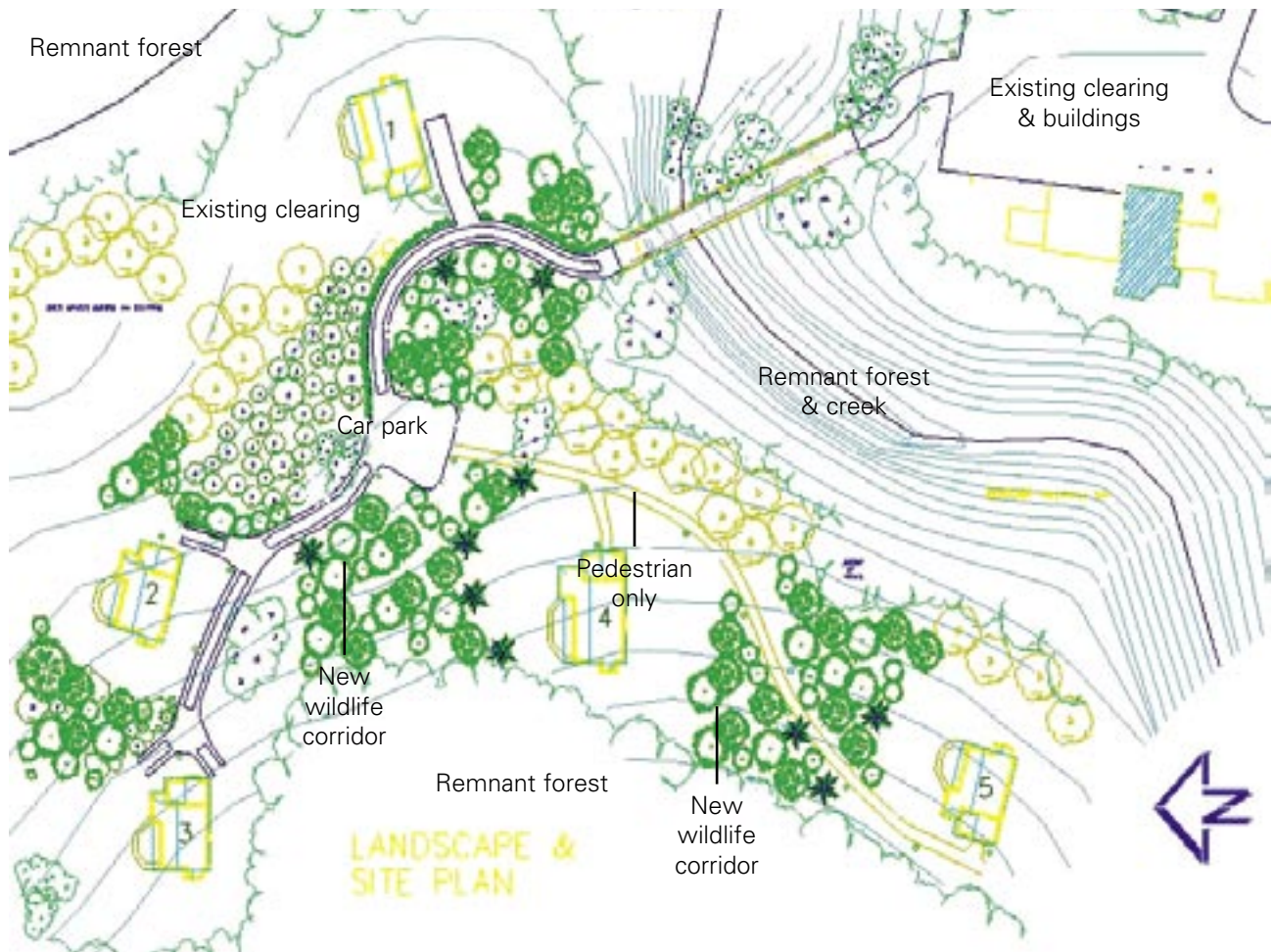
IDENTIFY SITE VALUES AND THREATS

Identify flora and fauna, potential threats and ways of avoiding or minimising impacts as early as possible in the project. The extent of the development and the sensitivity of the environment will dictate the amount of information needed.

ADOPT CONSERVATION POLICIES

Find out if aspects of federal and state legislation apply and if the planning scheme contains policies that affect your site. There may also be biodiversity plans at the state, bioregional or catchment level. The planning department of the municipal council should be able to advise you.

TERMEIL GUESTHOUSE SITE & LANDSCAPE PLAN



Cabins 4 and 5 have pedestrian access only to ensure that new wildlife corridors are not compromised by vehicles.

The development plan for Termeil Guesthouse included:

Retaining all native trees, although some undergrowth was cleared for bridge construction.

Restricting clearing to a three metre radius around the building footprint.

Restricting incidental activities (parking cars, piling materials and rubbish, washing equipment etc. were restricted to parking areas and surrounded by well designed sediment control barriers.

Engaging a builder who was sensitive to the aims and objectives of the project.

Paying bonuses for best practice by contractors and imposing penalties for breaches.

Reducing footings in number to minimise impact and hand excavating to avoid sedimentation and damage by machinery.

SYMPATHETIC LANDSCAPING

Rehabilitate disturbed areas with saved topsoil and salvaged plants.

Consider using indigenous species in the garden. There are usually nurseries that specialise in native species that belong to the area. It is best to use plants grown from local-provenance seed, as they will not mix genes from other areas into the local gene pool of the species. An indigenous garden requires much less watering and provides a link between your home and the ecosystem in which you live.

Maintain links between adjacent bush and your garden. Many animals, especially birds, invertebrates and small lizards, may be able to use your garden for habitat resources.

Do not use environmental weeds in the garden. There are many garden plants that spread into native vegetation and contribute to the decline of biodiversity. They are still sold in most nurseries, so you need to check with a reliable source.

Topsoil was stockpiled at Termeil Guesthouse, and used for landscaping the disturbed areas. Native understorey plants were salvaged.

Weeds and other non-native plants were removed from the cleared area where they had flourished under the broken canopy.

Termeil guesthouse collected seed stock from the best specimens on site and grew seedlings in their nursery during construction, ready for planting on completion.

The three metre building zone was turfed to stabilise soil until fire retardant native (to the site) groundcovers became established.

No other landscaping was required around the building site.

The result was an instant, low water, self maintaining garden and significant savings in landscaping bills.

Finished cabin one week after builder left the site.

COMPENSATING THE ENVIRONMENT

You may like to compensate for impacts on biodiversity by contributing to a recovery program or habitat restoration project. Find out what the biodiversity priorities are from your state or local government, so that your contribution will be as well targeted as possible.

ADDITIONAL KEY REFERENCES

See other fact sheets: Choosing a Site; and Lifecycle Biodiversity Impact;

BDP Environment Design Guide "Biodiversity" by Richard Lamb: GEN 3 (Feb 1995)

Environmental Weeds. For an introduction to environmental weeds of national significance, visit: www.anbg.gov.au/weeds/weeds.html or www.environment.gov.au/bg/wildlife/invasive/index.html

For details on biodiversity and environmental weeds in your area, contact the flora and fauna section of the nearest office of your state environment department, or the conservation planner at your local government office.

For more details on Termeil Guesthouse visit: www.goulburn.net.au/~suntech/



Completed bridge



Footings and sediment controls



Principal author:
Kathy Preece, Green Innovations
Case Study provided by Suntech Design