



GOVERNMENT OF BERMUDA
Ministry of the Environment, Planning and Infrastructure Strategy

Department of Planning

Conservation Management Plans

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Conservation Management Plans

1. What are they?

Conservation Management Plans (CMPs) are plans that give details for maintaining and managing conservation areas so as to provide for improved biodiversity in endemic and native animal and plant life, reduce invasive species of trees and other vegetation and encourage the appropriate planting of endemic, native and noninvasive ornamental species. Plant diversity protects the Island's ecological, habitat and other natural features; and, enhances the visual amenity and aesthetics of the Bermuda Image. The wellbeing of our Island environment is critical in maintaining the quality of life all Bermuda's residents enjoy.

2. Why are they necessary?

The Development and Planning Act (1974) makes specific provision for the designation of 'Areas of Special Environmental Value' in the Fourth Schedule (Section 28) of the Act. These 'designated area protections' are encompassed in the Bermuda Plan, for the protection of areas that are considered to possess natural features with environmental value, including woodlands, agricultural land, beaches land, caves or other habitats and natural features. CMPs are required in order to ensure that Bermuda's most sensitive physical environments are protected and enhanced. CMPs recognize the fact that environmental resources are particularly limited and declining; and, if compromised, will result in the degradation of the environment as it relates to fauna, flora and the aesthetics of Bermuda's visual quality.

3. When are they required?

When a Conservation Base Zone or a Conservation Area is protected by the Fourth Schedule of the Planning Act, a CMP shall be required for any development proposed within these areas. In addition, a CMP may also be required for lands located within a Development Zone, as a means of enhancing and protecting an adjacent Conservation Base Zone or Conservation Area.

The public is encouraged to submit a CMP for any land which is located within a Conservation Base Zone or a Conservation Area. The provision of this information at the point of submission of the application, will avoid the need for the Department to request additional information, which will delay the processing of the application.

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4. The Submission Process

There are two (2) distinct processes whereby CMPs may be submitted. One scenario occurs at the initiative of the landowner. A landowner may wish to undertake landscape work within a Woodland Reserve with a view to improving its overall amenity, recreational, social, residential and environmental value. This may involve the removal of invasive species as well as the introduction of endemic, native and ornamental plant species.

Whereas this work does not involve a formal planning application, permission from the Department of Planning is still required. Too often landowners' good intentions to upgrade a Conservation Area without the benefit of planning permission end up lacking or causing more harm than good. The landowner or agent, therefore, has to prepare a CMP detailing the work to be done, the methods to be employed in its execution, time frame and any protective measures to be applied.

The CMP process is dealt with by the Forward Planning section of the Department of Planning. Forward Planning often draws on the expertise of the Department of Conservation Services, which undertakes an assessment of the CMP and refers its comments and recommendations back to the Department of Planning. Forward Planning finalizes the CMP and communicates with the property owner or agent. On commencement of the work, the applicant should inform the Department of Planning and Department of Conservation Services: the latter will be available to monitor the work as needed. If any formal or hard surfaced trails are being introduced, or existing permanent trails are being altered, then a formal development application may be required.

The second scenario is a CMP being submitted together with a formal planning application when a proposed development is located within a protected area or is likely to have an impact on a protected area. In such cases, the submission of the CMP becomes a stipulation and should be submitted at the time of the planning application. The planning application is processed, as usual, by the Development Control section, while the Forward Planning section handles the CMP. The two (2) decisions will be coordinated.

5. What does a Conservation Management Plan entail?

A CMP should include the following basic information:

Contact information: Name of Landowner, Address, Telephone, Fax, e-mail

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Location Plan: The provision of a location plan drawn to a scale of 1:2500 clearly outlining in red, the land that is subject to the CMP and the property boundaries. Location/Area plans are available from the Planning Department and on the website www.planning.gov.bm under Mapping.

Site Plan: The provision of a site plan drawn to a scale of 1:250 (1":20') for sites not exceeding 0.2 hectares (0.5 acres) or 1:500 (1":40') for all other sites and showing the boundaries of the site edged in red and the contours of the site at one metre (three feet) intervals, where practical.

Photographs: Photographs should be included as these provide a snapshot of the area to be managed. They can be useful in the assessment of existing state of the site and provide details that plans and descriptions cannot.

Phasing Plan: The preparation of a Phasing Plan sets timelines for the work that is to be undertaken. It is especially recommended for larger sites and allows for the prioritization of problem areas.

Management Plan: This represents the major part of the information provided in a CMP. The Management Plan should show the following minimum information:

- a. the appropriate topographical contours and zoning boundaries of the site taken from a current and accurate topographical survey and zoning map including access routes;
- b. existing vegetation should be highlighted, with particular mention made of endemic, native or specimen ornamental species including height, spread, condition and whether the vegetation is to be retained, relocated or removed;
- c. other physical features such as rock cuts, walls, existing and proposed buildings, trails and roads;
- d. the extent of the proposed development including areas of hard surfacing;
- e. the location of any natural or other features of conservation or management planning interest (example: caves, items stored on the property, boreholes, utilities, wells, etc)
- f. the location and number of all proposed planting noting species and size;
- g. the location of other conservation improvements including artificial Long Tailed Tropic Bird nesting sites; and
- h. the location of all proposed protective fencing.

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6. Priorities in the preparation of CMPs

6.1 *Retention of existing vegetation*

Every effort should be made to ensure that as much of the existing vegetation as possible, especially native and endemic species, is retained. Even invasive species should not be arbitrarily removed in the absence of a plan for their suitable replacement. Groups of trees tend to be reliant on each other for natural shelter and physical support and breaking up or making changes to this clustering, may compromise the integrity of the entire group by making the remaining trees unstable and even unsafe. A good starting point is the undertaking of an accurate and detailed mature tree, shrub and fern survey. No CMP can be prepared without comprehensive knowledge of what mature vegetation exists on site. The plant survey should contain the following information:

- a. An inventory of all the existing vegetation indicating species, height, spread, age and condition. The nature of some sites is not conducive to the identification of every individual tree and in such cases, the main or mature trees within the group should first be identified. In this particular case, the approximate spread of species groups should be indicated within the outer perimeter of the tree group.
- b. Any other features such as rock outcrops, stone walls and existing buildings.
- c. A topographical survey showing the slope of the site.
- d. Soil conditions and characteristics.
- e. Normal wind direction and any other climatic factors as certain trees may be suitable for reducing the worst effects of climate conditions, such as providing windbreaks from hurricanes or being resistant to salt blast from the sea.

Once the tree survey has been carried out, a determination can then be made as to the most appropriate location of any proposed buildings. This essentially entails, minimizing the loss of existing trees and making sure that buildings are located sufficiently away from the roots of mature trees, both in the interest of the trees themselves as well as the buildings. Water tanks, cesspits, hard surfaced areas (paths, decks, roads) and underground utility services can also be damaged by tree roots. In terms of mature trees, a rule of thumb is to position the building at a distance away from the tree that is similar to the height of the tree. However, there are some exceptions to this standard, for instance, buildings may be located much closer to palm trees given their rooting system which tends to create a dense 'root ball' under the canopy of the palm and

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extends only a few feet from the principle trunk. Other trees, such as the Indian Rubber, can have root systems that extend hundreds of meters.

6.1 *Protection during and after site work*

6.1.1 Relocation of vegetation

In the event that it is not possible to retain vegetation, consideration should be given to relocating it to another part of the site. This applies not only to trees but also to shrubs. Of course, the success of such a venture is highly dependent on the particular species, the stage of its development, and effort made to provide optimum survival potential; especially adequate water. The services of a landscape professional can be highly beneficial in this regard.

Existing plants usually have considerable value and can be in such high demand that landscape contractors may be willing to negotiate terms to purchase existing plants for use on other sites. The key to safeguarding this value is early planning and sound, professional advice, resulting in win-win situation for all parties since landowners get to retain the value of existing plants and buyers obtain mature vegetation that may otherwise be hard to procure.

6.1.2 Fencing of vegetation

Local construction practice and modern construction equipment can have a negative impact upon the onsite vegetation if due care and vigilance are not exercised. Once trees have been identified for retention, they should be clearly marked and fenced in accordance with best practice standards – generally fencing at or beyond the tree canopy boundary. In particular, plant rooting systems must be protected from heavy compaction created by vehicles or stockpiled material. Protection fencing should be positioned away from the tree at a distance that is $1 - 1^{1/2}$ times the dripline* of the affected plant.

** The dripline is a protected circle traced from the outside diameter of the tree canopy onto the ground. For example, if the sun were directly overhead of a plant, the dripline would be represented by the resultant shadow outline on the ground. Some trees need far more spacing due to environmental conditions (limited soil) or natural root structure.*

6.1.3 Fencing of restriction lines

In circumstances where development is to be sited within a Development Base Zone, but still within impact of a Conservation Base Zone, Conservation Area, or Protected Area, protective fencing of at least 4 feet in height should be erected

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prior to the commencement of building operations, and along the building restriction and setback lines. A notice sign should be installed to indicate the area as a protected environmental area.

6.1.4 Trenching

Service trenches and other excavations should avoid existing vegetation. Appropriate effort to achieve an engineering solution should be considered prior to detrimentally impacting specimen tree root structure. If trenches must pass within the rooting zone of a tree within a protection area, they should be dug by hand close to the trunks and any roots encountered be cleanly cut to reduce the potential of disease. Machinery work should not occur within the root zone beneath the canopy of retained trees. Alternatively, tunneling, drilling or other excavation method may be required to preserve important specimen trees. In the event that the removal of some tree roots is unavoidable, then the crown of the tree should also be proportionately reduced by a qualified tree surgeon to compensate and maintain balanced growth and health of the tree.

6.1.5 Disposal of Toxic materials

All toxic materials should be taken off-site and disposed of properly. Toxic residues can accumulate in the soil as a result of bad practices like burning paint tins or plastics, washing out oil or chemical drums and draining vehicular engines or spilling other liquids or materials during construction activities. Landscape failure may ensue as a result of these adverse activities and human health may be compromised.

6.1.6 Top soil

Top soil and subsoil affected by the development should be removed and stored for reuse. It should not be stockpiled in heaps of over 3 feet in height as this can destroy the growing qualities of the soil. When higher mounds cannot be avoided due to the lack of space on site, the soil should be aerated by regular cultivation using a deep ripper or mixed with composted material during reuse. Covering stored soil with tarps will reduce the growth of weeds. Any weeds should be consistently removed from the stockpile before they have time to seed to preclude weed infestation whenever the soil is reused.

6.1.7 Other excavated material

Other excavated material may only be permitted on a lot within conservation areas on a temporary basis and is contingent on the CMP submission review and should be totally removed from the site prior to the issuance of a Certificate of Use and Occupancy Permit. For certain visually or environmentally sensitive site locations, no deposition or storage of excavated material will be permitted on

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site and all excess unused material must be removed from the site during the course of excavation and building operations. Excavated material must not be deposited within Woodland Reserve or Agricultural Reserve Conservation Areas without specific approval; and should never be deposited within a Nature Reserve without approval and supervision of the regulatory authorities.

6.1.8 Screening

Screening is a very important activity as it can negate the worst visual effects of development upon protected areas and it also serves to facilitate what is known as 'building with the landform'. Much of the remaining developable land in Bermuda is not flat. In this regard, rock cuts should be terraced in such a way that each vertical rise is separated horizontally by an area 3 feet or greater in width, capable of sustaining landscaping for screening purposes. The greater the 'step' width, the better the growing potential and the higher the potential land value assessment. New development can also be designed to fit into the hillside and even avoid the need for rock cuts altogether.

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7. Appendix

7.1 Conservation Base Zones

The Development Plan has designated five (5) Conservation Base Zones. These are Coastal Reserve, Nature Reserve, Park, Open Space and Recreation. The submission of CMPs for development proposed within Coastal Reserve and Nature Reserve is mandatory. Proposals within the Open Space Reserve and Recreation Zones, the Board may also require the submission of CMP. The Development Plan does not impose a requirement for CMPs in respect of Parks.

7.1.1 Coastal Reserve

Bermuda consists of many islands of varying sizes. As a location for many of our natural resources, the Coastal Reserve zone focuses on the protection of woodlands, beaches, caves, habitats and other natural features such as rock formations, cliffs and dunes. Coastal Reserve areas and their adjoining inshore waters also contain nesting sites and habitats including Long Tailed Tropic Bird nests, seagrass beds, corals, mangroves and salt marshes. In an effort to guard against the over-development of these areas, only limited coastal development is permitted, such as minor siteworks, accessory structures, additions, conversions or demolition and reconstruction of existing structures. In order to ensure that the integrity of our coastline is not compromised, CMPs are required in coastal locations for the protection and enhancement of these various habitats.

7.1.2 Nature Reserve

Nature Reserves are areas of special environmental significance and ecological, biological, geological and scientific value. They include mangroves, marshlands, bird sanctuaries, cave and rock formations, islands and other wildlife habitats. The focus here is on the protection of woodlands, beaches, caves, habitats and other natural features. Nature Reserves are crucial aspects of Bermuda's natural heritage since they constitute some of the few remaining areas that actually support native flora and fauna. In light of this, all forms of development are precluded except for minor site works and pedestrian access trails that are associated with their maintenance, enjoyment or enhancement. In an effort to conserve and enhance the special qualities of these sites, CMPs are required.

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7.1.3 Open Space Reserve

The Open Space Reserve zone provides environmental, visual and amenity value and links between the Railway Trail, Parks and other conservation lands. These tracts of land can be either grassed green areas or wooded areas. They provide important natural buffers between areas of development, thus serving to soften and enhance the landscape. Forms of development may include horse stables, riding schools, market gardens and horticultural nurseries. CMPs are encouraged and may be required for any development proposed within or that has an impact on an Open Space Reserve, as can be the case with properties with split zoning.

7.1.4 Parks

Parks are protected for their passive and active use and enjoyment in respect of both present and future generations. In addition to protection under the Development and Planning Act, they are also designated under the Bermuda National Parks Act, 1986, and may also comprise any other public amenity open space. CMPs are not normally required within the National Parks System since that Department has a program for the enhancement and protection of natural features and habitats.

7.1.5 Recreation

This zone identifies land for a variety of recreational activities. Protected areas include public and private playing fields, sports facilities and golf courses. Some of these recreational areas benefit from the presence of clusters of trees, shrubbery and other vegetation and CMPs are encouraged and may be required for their protection.

7.2 **Conservation Areas**

There are two (2) Conservation Areas which are overlays to the Base Zones. These are Agricultural Reserve and Woodland Reserve.

7.2.1 Woodland Reserve

The Woodland Reserve Conservation Area is designated specifically for the protection of woodlands. They include extensive belts of mature trees and other blocks of dense vegetation, which are considered to be important features of the landscape. Woodland Reserves may also include smaller areas of trees and shrubs in prominent locations. These areas create natural habitats for wildlife and also serve as windbreaks or protection for agricultural land, visual screens circulation/physical control and noise buffers.

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Woodland areas contain a variety of plant and tree species which change over time and the underlying objective is the protection of these areas, whether they contain endemic, native, introduced or invasive species, to ensure that the land resource and vegetation may be preserved over the course of time. Although Woodland Reserve areas may contain open space areas with dispersed vegetation, cliffs, rocky formations, ditches, ponds and other natural features, these all play an integral role in terms of the overall value and therefore, need to be protected as part of the wider scheme. CMPs are required for any development or management work within a Woodland Reserve Conservation Area.

Woodland Reserve Conservation Areas are susceptible to damage from the effects of naturally occurring events such as hurricanes and flooding. They may also be impacted by fire. In such circumstances, every effort should be made to re-establish these areas. Property owners are encouraged to submit a CMP detailing the restoration works. A minimum setback of 15 feet is required for development abutting a Woodland Reserve Conservation Area.

7.2.2 Agriculture Reserve

The Agriculture Reserve Conservation Area focuses on agricultural uses and the protection of agricultural land. These areas support farming and horticultural uses like the cultivation of vegetables, fruit, flowers, forage, market gardens and nursery grounds. They also provide for dairy farming and the breeding, keeping and grazing of agricultural livestock. Agricultural Reserve Conservation Areas are also conserved for their natural and aesthetic value and for providing visual and amenity buffers between and within development areas. Development is only permitted in exceptional cases and a minimum setback of 15 feet is required from areas of Agricultural Reserve to allow for soil water retention, a pesticide buffer, shading and a turning radius for farm vehicles.

A CMP is required for any management work that will be undertaken within an Agricultural Reserve area. CMPs are encouraged and may also be required for any development that is to be located within a 15 feet setback distance or which impacts upon an Agricultural Reserve.

7.3 ***Development Base Zones***

At the discretion of the Board, CMPs may also be required for lands within any Development Base Zone, once the Board is satisfied that there exist certain environmental or physical aspects of that particular site that merit protection. The case of woodland areas and listed protected species illustrates this point.

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Areas of woodland that have not been designated as Woodland Reserve may still be found in many other zones, including Development Zones. However, they still make an important contribution to the overall amenity and biodiversity of the island. Such areas entail a mixture of trees, shrubs and vegetation that should be protected for their visual and habitat value and their contribution to the setting and amenity of existing developed areas as well as adjacent Conservation Areas. Plants and plant communities can enhance property values, protect landowners against environmental damage, conserve energy and promote site security as well as many other benefits.

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