



## Natural Features Development Permit Checklist Low Impact Development Guidelines for NFDG

This is an expanded document based on Schedule G of the Development Procedures Bylaw 5879-1999 with additional information added for clarity on the required low impact development guidelines.

A Natural Features Development Permit (NFDG) is established for the preservation, protection, restoration and enhancement of the natural environment around parks and hillside areas. It is also established for the protection of development from hazardous conditions. It applies to any site with slopes 15% or greater along with any sites within 50 metres of a park boundary or floodplain boundary

### Mandatory Information

A NFDG application will require all applicants and their environmental consultants to read the attached documents and submit the necessary information listed below to the City's Planning Department.

- **A completed application** form with the prescribed fee;
  - **A Certificate of Title and a Consent Form** (if the applicant is different from the owner shown on the certificate of title) plus copies of any restrictive covenant documents registered against title;
  - **A Site Contamination Profile;**
1. **Initial Environmental Layout Plans.** Two hard copies and one digital copy of environmental layout plans prepared by QEP at a scale no less than 1:500 illustrating the location of the following:
    - i) Watercourses, ponds, ditches, drainage channels, or wetland areas on site with Streamside Protection Regulation setback locations on a map and flagged on the ground;
    - ii) Existing topography with features such as rock bluffs and contours with 1 metre intervals; Along with existing or proposed structures, infrastructure, encumbrances, and roads
    - iii) ESA areas and features including SARA habitat, wildlife trees, & significant wildlife corridors as well as tree protection areas with critical root zones and replacement tree areas, municipal trail corridors, and park boundaries;
    - v) Colour coded slope assessment of slopes greater than 15% to determine NFDG status and assessment of non developable slopes 25% or greater, including slopes over 30% on site. Non developable slopes are defined by the City as **any** reach on site where there is a rise of 15-feet or 5 metres, and the average slope is 25% or greater using 1 metre contour intervals. In some cases the City is willing to work with approved interpretation of municipal 2014 Lidar data for accurate slope assessment info;
    - vi) Location of geotechnical setback lines determined by qualified geotechnical professional and any other protection areas, setbacks, or encumbrances that apply to the site.
  2. **An Environmental Impact Assessment is required** by the City once the proposed development layout has been identified. An EIA report, map layout, and habitat balance assessment must be prepared by a qualified environmental professional to address potential impacts on protected areas along with recommendations for impact avoidance, mitigation, and restoration resulting in clear net habitat gains.
  3. **Coordinated layout plan** that shows location of all of the relevant environmental protection areas, mitigation & compensation areas, relevant setbacks & landscape zones, and how this has been integrated with proposed developable areas along with servicing and infrastructure on site

## Environmental Assessment Report Requirements

An Environmental Assessment will most often include a report with a bio-physical inventory and plan(s) showing the location of the following:

- a. Any watercourses, streams, ditches, or wetlands identified on site or immediately off site along with a slope assessment as described above. Geotechnical report recommendations must consider OCP hillside development objectives, policies, and Natural Features DP Low Impact Development Guidelines.
  - b. A description of the type, size, and condition of trees & vegetation on site. Refer to Tree Protection Bylaw for inventory and survey requirements. The initial inventory plan prepared by the QEP or arborist should include the following:
    - i. For sites that are larger than one (1) hectare, a site plan showing the location of significant sized trees where the average tree diameters are greater than 50cm (dbh) or significant tree stands on site that are being proposed for retention outside the watercourse or geotechnical setback areas.
    - ii. For sites less than one (1) hectare in size, a site plan that identifies significant sized individual trees over 50cm (dbh) that are located outside of the watercourse or geotechnical setback area is required.
    - iii. A site map that illustrates where there are unique, endangered or threatened vegetative species on site, as well as invasive/noxious plant species.
  - c. Enhancement or restoration opportunities within the NFDP area especially for slopes over 25% which requires enhancement of sparsely vegetated or disturbed areas including the presence of invasive vegetative species;
  - d. Protection of significant wildlife habitat areas or features found on the site such as raptor nests, wildlife trees, high probability habitat areas for species at risk, potential wildlife corridors that provide important links to neighbouring properties or adjacent habitat areas;
  - e. Preliminary assessment & inventory of potential natural hazards on the site including findings related to potential unstable slopes, erosion areas, wildfire interface DP areas, potential blowdown or windfall areas, and floodplain areas;
  - f. Identification of topographic or hydrological features such as rock outcroppings, ridgelines, bluffs, cliffs, watercourses, ditches, or wetlands or drainage concerns should be clearly identified on the initial layout plans;
4. A Tree Cutting Permit and Tree Management Plan is required in accordance with Tree Permit requirements. The arborist report and environmental consultant of record must coordinate efforts and information on the following:
- (i) Tree Protection, Mitigation and Replacement Plans. Recommendations must include protection of root zones/drip lines and mitigation for blow down or windfall concerns.
  - (ii) Construction Mitigation Plan including temporary protection measures and removal or mitigation of potential hazard trees located within adjacent or proposed park lands; and
  - (iii) Wildfire DP Guidelines.
5. An Environmental Impact Assessment (EIA) prepared by Qualified Environmental Professional(s) may be required by the City. This requirement will depend on the complexity of the site, the size of the proposed development, and/or the proximity of the site to protected or environmental sensitivity areas.

An EIA will automatically require information outlined previously in Section Four of the "Environmental Assessment". An EIA is intended to address potential impacts and mitigation once the developable area has been established. An EIA will require that the following information is prepared and submitted to the District as outlined below:

## Environmental Impact Assessment

A detailed environmental impact assessment for the proposed development may include an evaluation along with recommendations on the following items:

- a. Low impact development layouts and structural designs are required around slopes over 15%. The City may require a more detailed study or third party review where safety concerns or significant environmental impacts are being proposed;
  - b. Coordination of slope stabilization and OCP Hillside Management policies and DP guidelines for slopes over 15% is required. Steep slopes over 25% & five metres or greater in height are not considered to be developable. Appropriate slope transition areas are required along property boundaries, parks, and protected environmental setback areas;
  - c. Coordination is required with other qualified professionals of record to ensure safe, integrated, and sensitive solutions. Habitat balance or compensation requirements is required where encroachment into protected areas is being proposed;
  - d. The environmental impact assessment must include appropriate recommendations for mitigation, phasing, and timing of works for retention of vegetation and native soils where possible on slopes over 15% along with consideration for bird nesting activity;
  - e. Visual impact assessment and landscape architecture design plans prepared by qualified professional(s) may be required that will meet the objectives of the current municipal OCP hillside management guidelines, applicable local neighbourhood plans, and natural features development permit area guidelines;
  - f. Temporary protective fencing is required to be followed up with permanent post and rail fencing & signage along protection area boundaries, including protected trees and restricted covenant areas. A continuous temporary barrier is required during construction not less than 1.5 metres in height to be replaced by permanent fencing such as post and rail fencing that has been approved by the City.
  - g. Coordination of all environmental information and development layouts must be demonstrated by the QEP of record. A copy of any submission for review or approvals to senior environmental agencies is also required to be sent to the City's Environment Section & the file manager with a copy of the final approval before development works commence in or around an environmentally sensitive area.
6. The City may require more detailed technical assessment and reports prepared by qualified  Professional(s) for addressing additional impacts and recommendations for specific issues. The details of the studies will depend on the complexity of the site, the size of the development, and/or the environmental sensitivity of the site.
7. **On site stormwater management plan** must be submitted early in the process  It must comply with the current Watercourse Protection Bylaw & Engineering Dept. requirements so early consultation is recommended. The initial SMP report and plan should address the following:
- a. Identify potential stormwater related issues & mitigation findings such as:
    - How and where three tier SMP requirements will be met on site with consideration for water quality requirements, pre-development flows, & recharge of existing watercourses;
    - Coordination of drainage & SMP with adjacent sites, proposed conservation or protected areas, development layout, steep slopes & retaining walls, geotechnical setback areas, and any new development plans in the neighbourhood that require integration of resources;
    - Consideration of potential drainage problems in area including local flooding, impacts on vulnerable aquifers & wells, and impact on conservation areas or downslope areas.
    - Integration of drainage with landscaping plans with suitable maintenance requirements
  - b. **An On Site SMP design and rationale** is required for how these on site SMP requirements are going to be incorporated into the layout and environmental plans. Evaluate the opportunities for implementing stormwater source controls to achieve the following:
    - Incorporate federal, provincial, regional & municipal stormwater/rainwater management requirements & standards promoting infiltration, bio-filtration, and exfiltration in designs where appropriate to improve water quality and restore pre-development flows.

- Above ground stormwater facilities should mimic natural features and integrate them in with natural landforms or surrounding topography, using safe, functional, and aesthetically pleasing designs. Ensure that facilities and infrastructure does not encroach into parks, conservation areas, geotechnical setbacks, or slopes > 25%.
  - Provide design details for SMP features including landscape maintenance requirements for hardscaping & softscaping (vegetation) being proposed.
8. **Grade changes** over 0.50 metres may require a Soils Permit, Building Permit, or approval through a Subdivision Servicing agreement, or Highway Use permit.
  10. **A Restoration and Maintenance Agreement** along with an environmental security deposit where restoration or enhancement related works are required including maintenance periods. Replanting plans shall be carried out in accordance with City of Maple Ridge Landscape Standards.
  11. **NFDP Schedule "A" agreement** and final checklist signed by the developer/landowner and the environmental consultant and submitted to the City's Planning Department along with a signed and completed checklist of documents submitted to the City.
  12. **ESC Plans** for erosion and sediment control plan along with the appropriate schedules must be submitted and signed by the Engineer of record along with the qualified environmental professional that will be monitoring the site.

Applicants must complete their NFDP application and provide the file manager along with the environmental section with the following for the application to be complete:

- A signed NFDP checklist by the environmental consultant with the information provided to the District as outlined in the most current DP guidelines checklist;
- A preliminary letter of inspection/assurance from the designated environmental monitor **before any clearing, grading, or construction activity begins on site** as per requirements of the Watercourse Protection Bylaw. See attached preliminary letter of inspection.
- A final letter of inspection and approval from the environmental consultant to the District is required in order to get the security deposit back. See attached final inspection letter.



NFDP SCHEDULE "A" ENVIRONMENTAL RESPONSIBILITIES

TO: City of Maple Ridge DATE: \_\_\_\_\_

ATTENTION: Development Permit Application No. \_\_\_\_\_

We/I \_\_\_\_\_ confirm that we/I have been retained (Environmental Monitor's name) by \_\_\_\_\_ for the City Project No. \_\_\_\_\_ (Developer's name printed)

to provide inspection, assessment, and reporting services in accordance with the requirements of the Natural Features Development Permit. This includes the requirement to ensure compliance with the following:

- 1) Prior to any clearing and/or disturbance of the site, it must be inspected by the environmental monitor to ensure all necessary protective controls and mitigation measures are installed/constructed properly and in accordance with municipal requirements and the approved environmental Development Permit.
2) Regular inspections are required to ensure compliance with the approved DP. A preliminary and final inspection and written letter of confirmation by the environmental monitor is required that provides assurance all environmental requirements and cleanup of the site and conservation areas have been adequately addressed and completed. See attached letters of preliminary and final inspection
2) Development and site design must incorporate the best management practices found in the attached form entitled "Low Impact Design Guidelines for NFDP Areas". The environmental professionals of record for the site are responsible for overseeing the implementation of these practices, reporting on a regular basis to the District, and for sharing the responsibilities with the supervisor or foreman of the construction works.
3) To prevent damage or destruction to protected areas and natural features, it is the responsibility of the developer and the qualified environmental professional (QEP) to ensure protective temporary fencing and markers have been placed around protected areas, natural features, or infiltration areas to ensure these areas are protected and are not damaged during the development process. The developer is responsible for restoring or compensating for any damages or disturbance occurring within City of Maple Ridge lands or to their property.
4) The qualified environmental professional/monitor must have unconditional authority from Developer to modify and/or halt any construction activity necessary to ensure compliance with municipal environmental regulations. The QEP is required to contact municipal environmental staff directly within 24 hours of any incident that constitutes an infraction and that has not been remedied.

Environmental Consultant: Name: \_\_\_\_\_

Developer/Project Manager: \_\_\_\_\_

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Emergency Contact Phone Number \_\_\_\_\_

## **Low Impact Design Guidelines For NFD “Schedule A” attachment Detailed Site Design and BMP’s For (NFD) Areas**

The following guidelines and best management practices support and work in conjunction with the OCP Natural Feature policy guidelines. Applicants are encouraged to incorporate the following NFD design guidelines into their development proposals and as part of the Natural Features Development Permit application:

### **1. Hillside Management Guidelines and Best Management Practices:**

#### **Grading and Topography**

- A. Geotechnical review and geotechnical setback lines should be required on all sites with proposed development on slopes > 15% to identify potential hazardous areas using a conservative factor of safety. Development is not supported by the City where average natural slopes are greater than 25 (%) percent. Grading of small areas or reclamation areas with slopes over 25% shall be reviewed by the City for potential development.
- B. New building sites should be graded such that they appear to conform to the natural topography with retention of vegetation and forest areas on the slopes as well as along the natural crest of the hill. Re-grading of upland sites should consider the topographic transition with adjacent lots.
- C. Any grading, soil deposition, or landscaping should be undertaken with consideration for opportunities to achieve a greater degree of pervious area, as a means of achieving overall stormwater management objectives.
- D. Grading plans for development on slopes > 15% should include comprehensive erosion control and innovative stormwater management plans that ensure preservation of natural drainage channels and protection of groundwater systems.
- E. The timing of grading and construction should be seasonally scheduled to avoid slope failure or erosion problems during servicing or construction periods.

#### **Ecological Site Design and Visual Aesthetics**

- A. The scenic qualities of hillside areas should be preserved by addressing the following:
  - Protection of natural landmarks such as watercourses, rock outcrops, significant view corridors, steep slopes >25%, mature trees, unique forest stands, or ridge lines;
  - The proposed development should consider significant adverse visual impacts from site design, modifications, vertical and horizontal size, or landscaping as viewed from all public viewing areas.
- B. Buildings, infrastructure, and accessories should blend with the natural hillside terrain and vegetation through use of building materials, the location of structures, size, colour, and alignment of materials.
- C. Multi story homes or tall building structures are not considered appropriate for ridgeline lots if they are setback less than 30 metres from the hill crest. Restoration and retention of natural vegetation, viewpoints, and natural heritage features is encouraged along hill crests or ridge lines.
- D. Landscaping that enhances natural features is to be encouraged.
- E. Public movement corridors within subdivisions should be encouraged to ensure access to natural amenities, trails, or park areas where possible and green corridor access widths should be a minimum of 30 metres wide where possible to encourage tree retention zones
- F. Water and energy conservation techniques (geo-thermal) is encouraged by the District and shall be utilized where possible, such as special irrigation techniques (e.g. drip irrigation), alluvial rockscaping, aqua-scaping, etc.

## **Vegetation Management and Drainage**

- A. Setbacks along a hillcrest should take into consideration potential impacts from tree blow down, geotechnical concerns, groundwater concerns, stormwater management requirements, and consideration of aesthetic impacts for sites in view corridors.
- B. Mature trees or unique tree stands are considered a significant resource and should be retained and integrated into new development where possible. This guideline is not meant to stop removal of unhealthy or hazard trees where necessary. Mature trees are defined as anything > 25 cm in diameter at breast height or 5 feet about root crown.
- C. For lots larger than one acre in size, where significant trees have been identified, or areas intended for public use, the City may require protection of restoration areas or forested lands using a conservation covenant to ensure retention or restoration of these vegetated areas.
- D. Replanting plans should use irregular plant spacing to achieve a natural appearance on graded slopes and enhancement areas. A variety of vegetative sizes, shapes, and native species needs to be incorporated in the plan. Plant trees along contour lines using undulating groups to create grove effects which blur the distinctive line of the graded slope.
- E. Natural vegetation shall be maintained where possible. If removal is required, re-establishment of a compatible plant material will be required at a ratio of at least 2:1
- F. Plant materials should be selected where possible for their effectiveness of erosion control, fire resistance, and tolerance to local weather conditions.
- G. Hillside plant selection should consider neighbour's views and potential fire hazards.

## **Stormwater and Rainwater Management**

- A. Stormwater should be collected and conveyed to on site and off site systems in a manner which will avoid negative impacts to natural features or adjacent properties, especially in and around sites within designated aquifer areas.
- B. Where infiltration ditches or bio-swales are required, these should be naturalized with plant materials and native rocks.
- C. Natural drainage and infiltration should be protected from grading activity and compaction through the development process and thereafter. Covenants may be required for the protection of stormwater and rainwater mitigation controls on lots.
- D. On site impervious surfaces should be minimized to reduce run-off.
- E. Stormwater from building roofs and impervious structures should be collected and conveyed to a comprehensive site drainage system that anticipates off site drainage impacts.
- F. Stormwater management plans should address the following components:
  - Written assurances from engineer the plan will meet DFO, Provincial, and GVRD standards for 3 Tier on site stormwater management & water quality;
  - Rainwater management standards and mitigation should be designed and implemented for building structures, roads, and impervious surfaces.
  - For all non concealed surface parking areas, streets, and major institutional or commercial structures, functional infiltration and exfiltration areas should be incorporated into the design where possible and planted with a combination of trees and shrubs.
  - An internal area equivalent to 10 - 15% of the total parking and roof top areas should be planted with a combination of infiltration and exfiltration facilities utilizing trees and shrubs where possible.

## **Roads and Infrastructure**

- A. Exploration of narrower street widths should be encouraged when it can be proven that:
  - it will reduce grading impacts;
  - where there are a small number of lots served; and
  - the probable future traffic development is such that it justifies narrow widths and safety will not be compromised.
- B. Street layout should strive to conform to the natural grades and topography. Where possible, streets should flank open space areas that will provide future trail systems.
- C. Long stretches of straight road should be avoided by utilizing gentle horizontal and vertical curves where possible.

## **Retaining Walls and Fences**

- A. Retaining walls should be designed with smooth, continuous lines that conform to the natural topography. Retaining walls and pony walls visible from off site should be of minimum height where possible.
  - B. Fences, walls, and accessory structures should be designed to be compatible with surrounding natural topography and buildings in terms of color, materials, and alignment.
  - C. Open fence design is encouraged on public streets to encourage opportunity for views.
- 2. Applicants for sites located within a floodplain area, on steep slopes, or within wildfire interface areas should refer to the Building Department for appropriate permits and requirements:**
- A. The Building Department has requirements for approval of plans on lands subject to flooding or geotechnical concerns. See Building Permit Requirements For Covenants.
  - B. Property owners and developers must identify development limits as defined by but not limited to steep slopes, geotechnical hazards, wildfire interface areas, and flood plains prior to commencing design. Development activity, site design, and building forms must not have a negative impact or create additional risk to neighbouring properties and protected areas.
- 3. Applicants with sites located within 50 metres from a municipal, regional, or provincial park area or within 50 metres of designated conservation or forest area.**
- A. Incorporate an appropriate mitigation zone or re-planted forest edge and root protection zone back from these protected park and forest boundaries to these areas from encroachment, blow down impacts, pollution, noise, help support wildlife habitat, and provide stormwater management infiltration and exfiltration opportunities.



## NFDP Development Standards For Maple Ridge

The City of Maple Ridge requires the use of low impact development practices which includes the following requirements and best management practices:

- **Timing of development activity and inventories during suitable periods.** Encourage land disturbance activity between June and September. Inventories or assessments also need to be carried out at an appropriate time of year which should be considerate of bird nesting periods, fisheries windows, etc
- **Leave existing vegetation in place during the planning and approvals stages.** Pre-clearing vegetation results in increased costs for temporary re-vegetation and erosion control, at the same time it increases runoff and sedimentation unnecessarily.
- **Clear the site in stages as development proceeds.** For instance, for larger developments, clear only road and utility corridors during each phase of subdivision, leaving the future development parcels vegetated for as long as possible.
- **Identify areas where vegetation can permanently remain in the development or building area.** These may be areas of steep slope, stream riparian or wetland areas, wildlife trees, significant greenway corridors, groves of mature trees, or site areas with topographical constraints.
- **Protect the soils under vegetation to be retained during construction.** It is critical to the performance of stormwater management that designated areas of infiltration not be disturbed or compacted by equipment or storage during construction. Temporary protective fencing is likely required for these areas.
- **A phased construction schedule and plan** will be prepared for each of the following development phases that demonstrates maximum retention of vegetation and minimal disruption to soils especially during rain periods:
  - Clearing and grubbing
  - Servicing works
  - Construction of buildings
- **Slopes and soils must be stabilized and re-planting is required for all bare or sparsely vegetated areas within a watercourse protection or natural features development permit area.** The slope stabilization and re-vegetation plan must be prepared by a qualified environmental consultant. Soil stabilization and re-planting is also immediately required for the following:
  - Interim periods where development is not active for longer than 30 days
  - Where construction activity has destroyed vegetation on slopes > 15%
  - Encroachment into conservation or riparian protected areas
- **Coordination of professional consultants and their recommendations.** This includes coordination of assessments and recommendations from the following:
  - Environmental consultants and professional engineers
  - Developers, architects, and landscape architects
  - Specialized professionals that are required i.e.geotechnical professionals, hydrologists, arborists, etc.