

14.7 GUIDELINES TO DEVELOP ON LANDS DESIGNATED PARTIALLY OR FULLY AS ENVIRONMENTALLY SENSITIVE AREAS (ESAs)

ESA DP Guidelines apply to developments and other activities such as subdivisions that occur in designated OCP ESAs. ESAs form a component of the City's Ecological Network (EN) along with Riparian Management Areas (RMA) and parklands. ESA designation on various properties and lands is intended to protect and enhance the environmental resources and ecosystem services which may be present or which may have the potential of being restored to a previous ecological state while also providing opportunities for development. There are four categories of ESAs designated within the City (see Section 14.7.2), and two types of ESA DPs (see Section 17.7.1).

14.7.1 ESA DP Guideline Process and Requirements

The table below explain the basic requirements and process to follow when:

- a property is exempt from an ESA DP; or
- an ESA DP is required.

Overview ESA DP Guidelines Process and Requirements	
1.	All property owners, who appear to be affected by an OCP ESA designation within or near their property, are to first consult City staff and to determine if and how their property is affected by an ESA designation, the approval requirements, and the DP process.
2.	City staff will verify: <ul style="list-style-type: none"> • if there is an ESA designation on their lands. This will be based on staff review of the City's map of ESAs shown in Attachment 2 to this OCP (City ESA Map), as well as reviewing any preliminary plans of development or other activity, including subdivision, provided to staff by the property owner of the lands under consideration. • if the proposed activity is exempt as per Section 14.1.6.2 Development Permit Area Exemptions.
3.	If the lands are within an ESA and the proposed activity is not found to be exempt under Section 14.1.6.2, staff will determine if the proposal is a Type A or Type B ESA DP, as further described below.
4.	The level of disturbance in an ESA is to be determined by staff using the scope and/or size of the activity's encroachment into an ESA, municipal held information, information provided by the applicant (e.g., QEP review), and other data determined to be relevant in the sole discretion of the City. Based on the level of disturbance, additional information and analysis may be requested of the owner/applicant to advance the DP review.

The following table explains the ESA DP process for Type A and Type B DPs (ESA DP Types):

Type A ESA DP	Minimal ESA Disturbance ESA DP Requirements	<p>Required when: The proposed activity (for example the construction of a single family house) will encroach into an ESA by less than or equal to 0.1 ha (1,000 square meters; 11,760 sq. ft):</p> <ul style="list-style-type: none"> • City staff will work with the owner to identify the location, condition and type of ecological features on the site. The proponent for the proposed construction may be required, with the assistance of a QEP, to identify existing trees, vegetation, and known wildlife habitat within and adjacent to the portion of the ESA affected by the development proposal. • An environmental assessment of the site may be required to map and confirm existing ecological features and to provide an ecological restoration strategy on-site which would take into account the development potential of the site while also ensuring a higher quality ecological landscape post-development through a combination of landscape planting and/or invasive species removal and management for the site. • For proposed non-farm use development on ALR lands [Farm Home plate containing a single family dwelling] any and all ecological planting and restoration would be concentrated within the farm home plate and Riparian Management Area, if present on the site.
Type B ESA DP	Moderate to Significant ESA Disturbance ESA DP Requirements	<p>Required when: The proposed development, including but not limited to, the construction of or alteration to multi-family, industrial, commercial, and institutional uses on a site where the building(s) will materially encroach into the ESA, or for another activity where the works will materially encroach into the ESA. Material encroachment will be determined based on the OCP ESA Map and the City's Interactive Mapping, means any encroachment of more than 0.1 ha (1,000 square meters; 11,760 sq. ft):</p> <ul style="list-style-type: none"> • Owner would be required to provide an Environmental Impact Assessment prepared by a QEP which includes the following details: <ul style="list-style-type: none"> - a preliminary bio-inventory (site survey); - a detailed inventory and conservation evaluation including an assessment and recommendations regarding mitigation and compensation for lost ESA area*; and - an environmental monitoring program for a period of 3-5 years post-development/post-activity. * Evaluation of the ESA and mitigation for encroachment into the ESA designated lands on the site may include the following approaches and associated compensation approaches: <ol style="list-style-type: none"> a) mapping of all high-quality vegetation and habitats within the ESA designated lands and confirmation of any senior regulatory approval for any habitats and/or Species At Risk as defined under any applicable Provincial and/or Federal legislation; and b) demonstrating whether there would be an area on-site which can be reasonably set aside to be landscaped with appropriate planting to enhance the existing ESA; and/or c) demonstrating whether there are areas of the ESA which have been previously disturbed and have the potential to be ecologically restored to a previous naturalized state; and/or d) demonstrating whether there is an opportunity to restore previously disturbed ESA designated lands or provide planting elsewhere on the site to connect the previously disturbed ESA or the new planting area to ecological network (EN) adjacent to the site through an "ecological corridor" restoration approach, if there is an EN nearby. EN can be in the form of ESA on adjacent lands, parklands on adjacent land, or RMA on adjacent lands.

Legend

- Agricultural Land Reserve Boundary
- ESA DP Type
 - Disturbed Freshwater Influenced
 - Marine
 - Natural Freshwater Influenced
 - Terrestrial

Map of the City of Richmond showing ESA DP Types. The map includes an inset showing the city's location within the Fraser Valley and a legend on the right side.

14.7.2 ESA Categories and DP Submission Requirements

The ESAs designated as DP areas pursuant to Section 14.1.5 of this OCP are designated under Section 488(1)(a) of the *Local Government Act* to protect the natural environment, its ecosystems and biological diversity. The City's ESAs are grouped into four ESA categories (ESA Categories) based on existing or expected ecological characteristics, geographic locations, previous history of human disturbance and potential for enhancement and connection to a wider EN. Development and other activity proposals within each ESA Category is subject to environmental impact assessment and analysis appropriate for the applicable ESA Category.

14.7.2.1 General Guidelines that apply to All ESA Categories

The following guidelines apply to all ESA Categories:

- a) Safeguard ESAs, given their current and potentially noteworthy ecological and biodiversity values, regardless of its current environmental health and susceptibility to disturbance, as determined by a QEP by keeping ESAs free of development and other works, as much as practical given the uses and densities permitted on-site by the City's Zoning Bylaw and other site activities. Development and other activities taking place outside but adjacent to an ESA should provide an appropriate separation distance or buffer between said development or other activity and the exterior boundary of the ESA.
- b) Give consideration, as appropriate and practical, to varying of dimensional/spatial features of other bylaw requirements including requirements under the City's Zoning Bylaw (e.g. allowing variances to setbacks, lot coverage, building height), as deemed appropriate and commensurate, to facilitate safeguarding the geographic boundaries of an ESA, particularly where the variance can accommodate the uses and densities permitted on-site by the Zoning Bylaw while also preserving, restoring and enhancing the ESA in question.

14.7.2.2 Natural Freshwater-Influenced ESA

The Natural Freshwater-Influenced ESA Category includes all areas with vegetation and exposed soil that are influenced by freshwater (Natural Freshwater-Influenced ESAs). This designation includes all naturally occurring wetlands, swamps, bogs, and seasonally flooded fields, regardless if they are forested, open, or shrubbed. Watercourses and their RMAs are considered ESAs but are managed by existing Provincial regulations and the City's Environmental Services Department. Designating these freshwater features as ESAs will ensure their protection during adjacent land development and other activities and allows the City to require restoration that enhances the ability of freshwater-influenced ecosystems to continue providing ecosystem services. Priority will be given to opportunities to restore previously disturbed Natural Freshwater-Influenced ESAs and investigate all potential to connect restored ESA to nearby ecological components via the establishment of an 'ecological corridor' (connecting the space as a condition of development on-site to off-site ESA/RMA/Parklands designated lands).

What is considered a wetland?

A wetland is "land that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, vegetation typically adapted to life in inundated or saturated soil conditions, including swamps, marshes, bogs, fens, estuaries and similar areas that are not part of the active floodplain of a stream."

What is an ecological corridor?

An ecological corridor is a strip of land that may be designated as ESA and can include a variety of ecological health and services including vegetated lands complemented by small and large trees and forested space and providing opportunities for movement of various forms of wildlife that may be present in the ecosystem (Ecological Corridor). An Ecological Corridor may already be present or can be established as a condition of development on a piece of land designated as ESA. Ecological Corridors are not limited to Natural Freshwater-Influenced lands.

Justification: The Natural Freshwater-Influenced ESAs are important for:

1. regulating water flow (hydrology) by storing water during rainfall and promoting groundwater infiltration;
2. influencing water quality through filtration, capture, and transformation of a variety of chemical constituents in plants and soil;
3. providing habitat for a diverse and often unique community of plant and animal species including amphibians, waterfowl, dragonflies, sedges, and peat-mosses; and
4. storing carbon in saturated organic soils, particularly peat soils, that are common and sought after for carbon sequestration and storage, in Richmond.

Related Regulations: Depending on the biological and hydrological conditions and context of the Natural Freshwater-Influenced ESAs, there is the potential that these environmental features may trigger Provincial or Federal legislation that requires permits or approvals from senior levels of government. DP applicants must identify any applicable legislation or regulations and secure all required permits or approvals. The City's *Tree Protection Bylaw No. 8057* regulates tree removal or damage on private and public lands and applies in Natural Freshwater-Influenced ESAs. Its goal is to sustain a healthy, viable urban forest. Additional relevant regulations which influence forest protection in urban areas include the *Wildlife Act* (BC) if there are any listed wildlife (e.g., herons, eagles), the *Migratory Bird Convention Act* (Canada) which protects the nests of most birds during the nesting season, and potentially the *Species at Risk Act* (Canada), which includes protection for a suite of listed species that may these types of environmental features.

Guidelines:

- a) Preserve, restore, enhance and maintain the areal extent, ecological functions and an environmentally healthy condition of a freshwater wetland. Develop an environmental assessment prepared by a QEP that provides a comprehensive overview and analysis of the freshwater wetland that determines a fulsome and appropriate understanding of existing conditions and identifies potential restoration, enhancement and mitigation measures, as well as on-going stewarding and maintenance activities and requirements.
- b) Incorporate restoration and enhancement measures to establish improved connectivity and contiguousness, particularly for nearby or adjacent ecosystem areas or environmental features which have the potential to contribute to the ecological health of the freshwater wetland.
- c) Uphold and maintain ecological processes necessary to the long-term health of freshwater

wetlands including drainage patterns, hydrology, seasonal water table fluctuations, and water quality. Develop an Environmental Protection Plan (EPP), prepared by a QEP, that guides on-going environmental management and stewardship.

- d) Refrain from altering the areal extents of a freshwater wetland, regardless of historical/past disturbances. However, when consideration is being offered to further modify the freshwater wetland from its current condition, given the accommodation of the uses and densities permitted on-site by the Zoning Bylaw, an appropriate environmental assessment and recommended mitigation measures must be prepared by a QEP for the City's review and determination of direction. Other senior levels of government approvals and permits may also be needed. The City may also require preparation of an EPP prepared by a QEP to guide on-going environmental management of said freshwater wetland.
- e) Abstain from constructing and incorporating recreational trails or other amenities/facilities in freshwater wetlands.
- f) Avoid the most sensitive and ecologically valuable portions of the freshwater wetland using careful site design for permitted development and other activities (for example infrastructure works). Focus restoration efforts of freshwater wetlands that result in healthy habitats that have historical fill, structures and/or contaminated sediment removed and contribute to creation of peat soils. Other senior levels of government approvals and permits may also be needed.

14.7.2.3 Disturbed Freshwater-Influenced ESA

This ESA Category covers areas with vegetation and soil that are influenced by freshwater but are actively being disturbed by farming operations and other human influences (Disturbed Freshwater-Influenced ESA). Although these areas are actively managed, they are expected to contain sensitive habitats. These areas include agricultural lands as well as areas that are periodically mowed and fallow agricultural fields. The management of these areas will be similar to those designated as Natural Freshwater-Influenced ESAs, focusing on restoring them to a resilient and healthy ecological state in so far as restoration and enhancement do not conflict with, but work in tandem with, activities that identified by the Province and the City as high priority (i.e Right to Farm).

Justification: Disturbed Freshwater-Influenced ESAs are important for:

1. regulating water flow (hydrology) by storing water during rainfall and promoting groundwater infiltration;
2. influencing water quality through filtration, capture, and transformation of a variety of chemical constituents in plants and soil;
3. providing habitat for a diverse and often unique community of plant and animal species including amphibians, waterfowl, dragonflies, sedges, and peat-mosses; and
4. storing carbon in saturated organic soils, particularly peat soils, that are common and sought after for carbon sequestration and storage, in Richmond.

Related Regulations: Depending on the biological and hydrological conditions and context of the Disturbed Freshwater-Influenced ESAs, environmental features may trigger provincial or federal legislation that requires permits or approvals from senior levels of government. DP applicants must identify any applicable legislation or regulations and secure all required permits or approvals. The City's *Tree Protection Bylaw No. 8057* regulates tree removal or damage on private and public lands and applies in Disturbed Freshwater-Influenced ESAs. Its goal is to

sustain a healthy, viable urban forest. Additionally, relevant regulations which influence forest protection in urban areas include the *Wildlife Act* (BC) if there are any listed wildlife (e.g., herons, eagles), the *Migratory Bird Convention Act* (Canada) which protects the nests of most birds during the nesting season, and potentially the *Species at Risk Act* (Canada), which includes protection for a suite of listed species that may these types of environmental features.

Guidelines:

- a) Preserve, restore, enhance and maintain the areal extent, ecological functions and an environmentally healthy condition of a freshwater wetland. Develop an environmental assessment prepared by a QEP that provides a comprehensive overview and analysis of the freshwater wetland that determines a fulsome and appropriate understanding of existing conditions and identifies potential restoration, enhancement and mitigation measures, as well as on-going stewarding and maintenance activities and requirements.
- b) Incorporate restoration and enhancement measures to establish improved connectivity and contiguousness, particularly for nearby or adjacent ecosystem areas or environmental features which have the potential to contribute to the ecological health of the freshwater wetland.
- c) Uphold and maintain ecological processes necessary to the long-term health of freshwater wetlands including drainage patterns, hydrology, seasonal water table fluctuations, and water quality. Develop an EPP, prepared by a QEP, that guides on-going environmental management and stewardship.
- d) Refrain from altering the areal extents of a freshwater wetland, regardless of historical/past disturbances. However, when consideration is being offered to further modify the freshwater wetland from its current condition, given the accommodation of land use designation policies of this OCP and/or the City's Zoning Bylaw provisions, an appropriate environmental assessment and recommended mitigation measures must be prepared by a QEP for the City's review and determination of direction. Other senior levels of government approvals and permits may also be needed. The City may also require preparation of an EPP prepared by a QEP to guide on-going environmental management of said freshwater wetland.
- e) Abstain from constructing and incorporating recreational trails or other amenities/facilities in freshwater wetlands.
- f) Avoid the most sensitive and ecologically valuable portions of the freshwater wetland using careful site design for permitted development and infrastructure works. Focus restoration efforts of freshwater wetlands that result in healthy habitats that have historical fill, structures and/or contaminated sediment removed and contribute to creation of peat soils. Other senior levels of government approvals and permits may also be needed.

14.7.2.4 Marine Shoreline ESA

This ESA Category includes all coastal and backshore areas, 30 m landward and seaward of the high-water mark (high tide line) along the Fraser River and Strait of Georgia (Marine Shoreline ESA). This designation includes all mudflats, estuarine habitats, salt marshes, and shallow subtidal zones. It also includes all shoreline areas that have been modified by the dyke, whether developed or undeveloped. While much of the Marine Shoreline ESA has been altered for flood control or developed for industry purposes, opportunities remain along foreshore parks, dikes, and wildlife refuges to enhance and naturalize the shoreline. Development and other activities on sites designated as Marine Shoreline ESA are likely subject to review and input with regard to

diking upgrades and requirements in the City's Dike Master Plan. A proposal to develop near or within Marine Shoreline ESA would involve some degree of consideration to appropriate riparian planting and modifications in so far as diking upgrades are concerned and would likely require regulatory approval from various agencies at Provincial and Federal levels of government prior to any approval by the City.

Justification: The Marine Foreshore (intertidal zone) portion and Marine Backshore (riparian zone) portion of the Marine Shoreline ESA associated with the Fraser River and Strait of Georgia (Salish Sea) is important for:

1. aquatic habitat – the intertidal zone along the perimeter of Richmond's Islands – is recognized for its importance for fish such as juvenile salmon from throughout the Fraser River watershed, but also for spawning eulachon and starry flounder which are an important part of the foodweb;
2. terrestrial habitat – the riparian zone along the perimeter of Richmond's Islands – is recognized for its crucial role of maintaining healthy ecosystems and supporting various forms of terrestrial-based, flora and fauna adjacent to the intertidal zone and between it and inland areas;
3. protection of Richmond's dikes, other infrastructure and upland areas from wave and current water erosion by dissipating energy;
4. eelgrass, other seagrasses and sea flora contribute to filtering contaminants and sediment before it reaches the marine backshore (riparian zone) and contributes to carbon sequestration; and
5. aesthetic and cultural values that make both intertidal and riparian zones important parts of Richmond's parks, waterfront trails and spatial identity (place attachment).

Related Regulations: All Marine Shoreline ESAs are considered fish habitat under the Federal *Fisheries Act*. Fisheries and Oceans Canada (DFO) regulates activities affecting fish habitat. Many intertidal/foreshore and riparian/backshore zones also have important values for migratory wildlife such as shorebirds and waterfowl; migratory birds and their nests are protected under the *Migratory Birds Convention Act* and intertidal zones designated as part of Provincial Wildlife Management Areas (including Sturgeon Bank WMA) are also managed for conservation values. Other relevant legislation and regulations that affect the intertidal zone include the *Dike Maintenance Act* (BC), the *Wildlife Act* (BC) (for listed wildlife as well as Wildlife Management Areas), the *Species at Risk Act* (Canada), and the *Navigable Waters Protection Act* (Canada). The City's *Tree Protection Bylaw No. 8057* regulates tree removal or damage on private and public lands and applies in riparian or backshore zones for Marine Shoreline ESAs. Its goal is to sustain a healthy, viable urban forest. Additional relevant regulations which influence forest protection in urban areas include the *Wildlife Act* (BC) if there are any listed wildlife (e.g., herons, eagles), the *Migratory Bird Convention Act* (Canada) which protects the nests of most birds during the nesting season, and potentially the *Species at Risk Act* (Canada), which includes protection for a suite of listed species that may have these types of environmental features.

Guidelines:

- a) Develop an Environmental Assessment Report prepared by a QEP for development and infrastructure projects that occur within the vicinity of the Marine Shoreline ESA.
- b) Prepare a development plan/proposal layout and design, in consideration of rising sea levels,

that:

- i. minimizes erosion, retains habitat, and maintains water quality, marine shore stability and natural, native and climate-responsive vegetation (excludes invasive species) along the marine shore;
 - ii. avoids areas with poor slope stability and locates marine shore accesses/structures sensitively;
 - iii. maintains, restores and enhances existing marine shore habitat (e.g. eelgrass beds) in and to their natural state to protect marine shore natural assets;
 - iv. establishes marine water views selectively by pruning branches of shore area trees instead of topping or removing healthy trees; and
 - v. maintains or establishes public access.
- c) Safeguard native plant species or plant communities that are identified as sensitive, rare, threatened or endangered, or have been identified by a QEP as worthy of protection. If disturbance cannot be entirely avoided, development and mitigation / compensation measures must be undertaken under the supervision of the QEP and may require additional advice from applicable senior governmental agencies.
 - d) Maintain ecological processes important to the long-term health of the foreshore and backshore zones including drainage and hydrology, natural sediment or detritus movement (accretion and erosion).
 - e) Consider contiguous or nearby ESAs and RMAs which have the potential to influence the Marine Shoreline ESA.
 - f) Avoid, as part of development and infrastructure, disrupting the movement of detritus and sediment materials. Where water access is necessary for transportation or recreation facilities, the filling of the Marine Shoreline ESA shall also be avoided. The preferred method of development and infrastructure is over the riparian and intertidal zones (plus the subtidal zone if applicable) is on pilings or floating structures.
 - g) No alterations should be made to the Marine Shoreline ESA without an appropriate environmental assessment and implementation of mitigation measures. Other senior levels of government approvals and permits may also be needed. The City may require preparation of an EPP prepared by a QEP, with a specialization in coastal processes and ecology, to guide environmental management on sensitive, complex, or large sites.
 - h) Prohibit the construction of recreational trails or other facilities in the Marine Shoreline ESA without written approvals and confirmations from senior regulatory bodies.
 - i) Apply careful site design for permitted works to avoid the most sensitive portions of the foreshore (intertidal) and backshore (riparian) zones.
 - j) Preserve water quality and natural systems by leaving marine and riverbanks intact and by not altering natural slopes, and existing and restored vegetation within the foreshore (intertidal) and backshore (riparian) zones.
 - k) Preserve, restore and enhance foreshore (intertidal) and backshore (riparian) values, for all constructed works, where permitted, by:
 - i. providing safe, durable access such that people are afforded an unobstructed view of the waterfront wherever possible;
 - ii. retaining mature vegetation, including existing large trees, shrubs, and aquatic vegetation;
 - iii. replanting disturbed areas with native/climate-responsive vegetation, including trees.
 - l) Restore, where practical, degraded foreshore (intertidal) and backshore (riparian) zones, as part of development and other activities (including infrastructure works), by removing

historical fill, structures, or contaminated sediment, and restoring native/climate-responsive habitats such as mudflats, marsh, eelgrass and other marine grasses, and riparian forests.

14.7.2.4 Terrestrial ESA

This ESA Category includes all upland areas with native vegetation that is not influenced by water, including tree stands, old-field and shrub habitat (Terrestrial ESA). Tree stands in Richmond include generally young stands that are dominated by deciduous trees. Terrestrial ESAs may include bogs and wetlands that have slowly become more terrestrial due to changes in hydrology. Tree stands in Terrestrial ESAs provide valuable habitat for a range of wildlife species. Old-field habitat and shrub habitat are temporary or permanently abandoned agricultural fields and cleared lands that support a mix of low-lying grass, herbaceous species, and shrub species. These areas were historically used for agriculture which have been left fallow and have since regenerated. Proposal to develop on agricultural fields in this ESA Category will be supported for legitimate farming activities under the *Farm Practices Protection (Right to Farm) Act* (BC).

Justification: The forests, as well as old fields and shrublands are a critical part of Richmond's ecological network. Its environmental values and importance include:

1. habitat for wildlife and plants;
2. carbon storage in above- and below-ground plant material, as well as wet soils (above-ground biomass is minor);
3. hydrologic cycle importance through rainfall interception and evapotranspiration, as well as areas with seasonal flooding;
4. improvements to air quality by capture or modification of particulates and gasses such as ozone;
5. aesthetic values in urban parks and greenways.
6. biodiversity including small mammals and the owls and hawks that hunt in them, and invertebrate pollinators (bees and flies); and
7. the cultural history of Richmond for areas that were important farms.

Related Regulations: The City's *Tree Protection Bylaw No. 8057* regulates tree removal or damage on private and public lands and applies in Terrestrial Ecosystems Areas. Its goal is to sustain a healthy, viable urban forest. Forests, old fields and shrublands are not explicitly protected or managed through provincial or federal legislation. Relevant regulations which influence forest protection in urban areas include the *Wildlife Act* (BC) if there are any listed wildlife (e.g., herons, eagles), the *Migratory Bird Convention Act* (Canada) which protects the nests of most birds during the nesting season, and potentially the *Species at Risk Act* (Canada).

Guidelines:

- a) Preserve forests, as well as large patches of old field and shrubland, except in accordance with the conditions of the DP and other necessary permits or approvals (e.g., *BC Wildlife Act*).
- b) Incorporate thoughtful site planning and design to avoid the most sensitive portions of forests as well as old field and shrubland units in relation to permitted development and other activities including infrastructure works (e.g., largest or healthiest trees, key wildlife habitat features, and robust natural understory, most diverse range of grasses, seasonally flooded

- areas, areas with perching sites for raptors, best contributors to biodiversity and ecological functions and services).
- c) Identify on-going maintenance and stewardship measures, that will remain in perpetuity with the existence of the approved development and infrastructure works, for areas retained as Terrestrial ESAs, including roles and responsibilities, should be incorporated in a conservation covenant that is registered on a property's title, pursuant to Section 219 of the *Land Title Act* (BC) (Conservation Covenant), with the City being a signatory to said covenant. Maintain ecological processes important to the long-term health of the forests, tree stands and patches, old fields and shrublands, including hydrologic processes and soil, including peatlands, quality.
 - d) Restore and enhance the ecological functions of old fields and shrublands by providing perching and roosting sites, planting hedgerows, and a variety of grasses and/or shrubs. Prepare a restoration and enhancement plan.
 - e) Restore and enhance the ecological functions and biodiversity of forests, tree stands and patches by:
 - i. preserving existing snags and downed logs, as well as adding new snags and downed logs, where they are not a risk to safety;
 - ii. planting trees and understory shrubs at the margins or parameters of the forests, tree stands and patches, to increase habitat in the ecotone;
 - iii. incorporating new understory vegetation that is consistent to and complementary with the existing plant communities, provides high food source and habitat values; and
 - iv. applying pruning, thinning, supplemental planting, or other methods to reduce the risk of wind throw on newly exposed forest edges, as determined by a registered professional forester.
 - f) Adhere to the relevant tree replacement compensation ratio as outlined in the City's *Tree Protection Bylaw No. 8057*, as amended from time to time, including replacement tree requirements for every tree that is permitted to be removed in a Terrestrial ESA. In circumstances where high value ecological habitat ESA is reconfigured and/or relocated, the area replacement compensation ratio is 1.5 m² (16.15 ft²) for every 1.0 m² (10.76 ft²) of Terrestrial ESA reconfigured and/or relocated. Replacement trees should be native species or climate response and resilient species and are to be planted in other areas of the Terrestrial ESA on-site unless permission is granted to plant trees on other parts of the site, City property, or other compensation areas.
 - g) Avoid excavation, filling or soil compaction in a zone around trees as outlined in the *Tree Protection Bylaw No. 8057*, as amended from time to time. Use tree protection fencing and signs during construction as recommended in said bylaw. Works that may affect the roots of retained trees should be designed to avoid direct damage or be raised above the soil level (e.g., decks or pilings).
 - h) Improve the conditions of the forests and other natural areas, including old fields and shrublands, by removing noxious weeds and invasive plant species as defined by the Invasive Species Council of British Columbia's Field Guide to Noxious Weeds and Other Selected Invasive Plants of British Columbia, as updated from time to time. Incorporate invasive plant species management as part of the Conservation Covenant for site that receives an approval for an ESA DP.

