MK Delta Lands Group Design Guidelines
7969 Highway 91 Connector, Delta

Submitted to:
The Corporation of Delta

Prepared by:
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1. Introduction

1.1 Purpose
The purpose of these guidelines is to provide an overall direction, guidance, and context to the planning and design of the Industrial Park at 7969 Highway 91 Connector in North Delta. The guidelines are to promote a sustainable, cohesive, and high quality industrial development, while assisting future landowners and building professionals in preparing development plans that will contribute to the overall functioning and environmental protection responsibilities of the industrial park. The guidelines promote a development that is a regional economic asset and ecologically benefits the adjacent Burns Bog Ecological Conservancy Area (BBECA) lands.

This document is to be used in conjunction with other relevant documents, including but not limited to:

- “MK Delta Lands Group - 7969 Highway 91 Connector (Lot 4) Stormwater Management Concept” (Apr. 14, 2016), GMV Engineering
- “Bog Water Quality Considerations Related to MK Delta Lands Group, 7969 Highway 91 Connector (Lot 4)” (Dec. 17, 2015), Richard Sims (RA Sims Environmental Scientist)
- “MK Delta Lands Project: Environmental Effects Assessment of Lot 4 (Revision 3)” (April 2016), EDI Environmental Dynamics Inc.
1.2 Background

The Industrial Park Lands at 7969 Highway 91 Connector are located in North Delta, BC. The industrial park is ideally located for supporting goods movement and modern logistics distribution in Delta, due to its proximity to the US border, Roberts Bank Container Terminal, Deltaport, industrial docks, and facilities along the Fraser River.

The Industrial Park is 155 acres (62.7 ha) of land, and is bounded by the South Fraser Perimeter Road (SFPR/ Hwy 17) to the North, vacant lands to the East, and the BBECA to the South and West (Figure 1). The objective of the industrial park is to create a competitively positioned and marketed development that contributes to significant goods movement, logistics area, well paying jobs, and the tax base of Delta.

![Figure 1. Site Context](image1)

![Figure 2. Site Location](image2)
1.3 Vision

To create a high quality, sustainable industrial park that:

- Provides employment and business investment opportunities in Delta;
- Results in only beneficial impacts to the Burns Bog Ecological Conservancy Area;
- Fully contains storm water on site and directs waters to the Fraser River;
- Is aesthetically pleasing, through quality design, architecture, landscape and protective perimeter buffers;
- Is a catalyst for transportation improvements at the Sunbury Interchange (South Fraser Perimeter Road/ Hwy 17) to improve safety and free flow movement;
- Contributes to a balanced resident-to-business property tax base in the Corporation of Delta.

To optimize flexibility and accommodate a range of uses and building types, the plan for the industrial park may be consolidated or reconfigured by the developer(s) in partnership with the Corporation of Delta, to accommodate specific site requirements that are appropriate to the zoning and needs of businesses.

1.4 Design Objectives

The design objectives for the Industrial Park at 7969 Highway 91 Connector are to:

- Promote business investment for port-related goods movement and light industrial uses.
- Maintain high quality standards for landscape and buildings.
- Contain development site waters and ensure that mineralized waters are directed toward the Fraser River.
- Ensure that the development only positively impacts Burns Bog Ecological Conservancy Area’s (BBECA) water quality and quantity.
- Provide management tools for the protection and enhancement of the BBECA.
- Maintain buffers and landscape to ensure appropriate interfaces and protection of neighboring lands.
- Promote a cohesive character for the overall development.
- Ensure the ecological and design integrity of the public and private domains.
2. Public Realm Guidelines

This section of the guidelines applies to perimeter buffers, street rights of way, and the site entry point / highway access.

2.1 Site Organization

The site is proposed for development with 9 serviced and subdivided lots, each 8 to 23 acres (3 to 10 ha) in size, contained within a network of perimeter buffers. These lots will support high value industrial uses, and their configuration may adjust in the future. Figure 3 illustrates the current proposed layout.
This document applies to both public and private realms (Figure 4). Some of the guidelines are prescriptive while others are non-prescriptive. It is MK Delta Lands Group's desire to foster creative, innovative, and sustainable practices in the proposed development. MK Delta Lands Group strives for an 'eco-industrial' development on the Lands that not only provides much needed industrial land to the region but also respects and supports the environmental context of the site. To this end it is important that all of the site improvements also comply with the Environmental Principles and Guidelines shown in Table 1.
<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>GENERAL</th>
<th>BURNS BOG ECOLOGICAL CONSERVANCY AREA</th>
<th>SPECIES AND COMMUNITIES AT RISK</th>
<th>VEGETATION AND PLANT ASSOCIATIONS</th>
<th>WILDLIFE</th>
<th>AQUATICS AND FISHERIES</th>
<th>HABITAT PROTECTION AND ENHANCEMENT</th>
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</thead>
<tbody>
<tr>
<td><strong>PRINCIPLES</strong></td>
<td>- Protect VRs</td>
<td>Protect the Burns Bog Ecological Conservancy Area (BBECA)</td>
<td>Protect at risk and regionally significant species and communities</td>
<td>- Protect vegetation and plant associations with high ecological value</td>
<td>- Protect wildlife values</td>
<td>- Protect watercourses and wetlands to preserve and maintain ecosystem function and health</td>
<td>- Identify opportunities for habitat protection and enhancement and conserve these areas</td>
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<td><strong>GUIDELINES</strong></td>
<td>- Conduct Bio-inventory</td>
<td>- Donation of three parcels totalling 133 ha for addition into Burns bog (pending project approval)</td>
<td>- Develop and implement species at risk management plans (e.g., salvage plans)</td>
<td>- Develop and implement a wildlife management plan (e.g., invasive species, restoration)</td>
<td>- Develop and implement a fisheries and aquatic resources management plan</td>
<td>- Develop with Care 2014</td>
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<td></td>
<td>- Complete Environmental Assessment, including the identification of VRs, to evaluate potential effects and identify avoidance and mitigation measures</td>
<td>- Liaise with government agencies, Scientific Advisory Panel (SAP) and stakeholders</td>
<td>- Obtain necessary agency permits/authorizations if required (e.g., salvages, collection permits)</td>
<td>- Follow species-specific timing windows and avoid high risk periods where possible to minimize impacts on local wildlife</td>
<td>- Obtain necessary agency modifications / authorizations for all work in and around a watercourse</td>
<td>- Riparian Area Regulation for riparian re-vegetation guidelines / criteria</td>
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<td></td>
<td>- Develop and implement a Construction Environmental Management Plan (CEMP)</td>
<td>- Develop and implement site design, stormwater management, mitigation and enhancement to consider layout function (e.g., mitigation berms)</td>
<td>- Provide effective protection of species at risk critical habitat</td>
<td>- Conduct pre-construction rare plant surveys</td>
<td>- Follow OCP policies relating to streams and riparian habitat and zoning bylaw setback requirements</td>
<td>- Develop with Care 2014</td>
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<td>- Develop and implement site-specific mitigation and monitoring plans</td>
<td>- Leave adequate natural vegetation buffers between the BBECA and development footprint where possible</td>
<td>- Identify plant associations and potential occurrences of conservation importance or local management concern</td>
<td>- Conduct thorough literature reviews and contact species at risk specialists / recovery team members</td>
<td>- Plan, design and implement development activities in a manner that will not adversely affect aquatic habitats</td>
<td>- Riparian Area Regulation for riparian re-vegetation guidelines / criteria</td>
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<td>- Design site to retain and enhance ecosystem features (e.g., tree retention)</td>
<td>- Design utility services (e.g., gas, hydro) to avoid or mitigate protected / enhanced areas</td>
<td>- Conduct pre-construction inventories and evaluations of plant and animal species at risk and those of regional concern</td>
<td>- Delineate and protect sensitive environmental features to be retained and their buffers with permanent or temporary fencing prior to clearing</td>
<td>- Design site to mimic the natural water balance and maintain natural hydrological cycles during and after development where possible</td>
<td>- Develop with Care 2014</td>
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<td>- Maintain and protect natural ecological processes that support the maintenance of adjacent ecosystems</td>
<td>- Landscaping using native species</td>
<td>- Provide inventory data relating to species and ecosystems at risk to the BC Conservation Data Centre</td>
<td>- Reduce soil compaction by avoiding the use of machinery near protected / retained vegetation where possible</td>
<td>- Design water management or other engineering structures that may affect wildlife habitats</td>
<td>- Metro Vancouver Regional Growth Strategy</td>
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<td>- Where possible maintain large intact natural areas rather than small fragmented areas</td>
<td>- Support efforts to establish wildlife corridors outwards from the bog lands to natural areas</td>
<td>- Work with authorities to protect and enhance habitat, breeding sites, colonies, plant communities or related ecosystem attributes that support species at risk where possible</td>
<td>- Identify areas with potential for wildlife conflicts and avoid conflicts as appropriate</td>
<td>- Use a multi-species approach for habitat enhancement / conservation initiatives</td>
<td>- Do not proceed with minimal intervention or enhancement</td>
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<td>- Establish buffer areas around sensitive environmental features to be retained</td>
<td>- Maintain the natural hydrological cycle of the site where possible so that the natural water balance of the adjacent protected area is maintained</td>
<td>- Design trails and other accesses to avoid sensitive features, buffer areas and wildlife corridors</td>
<td>- Implement an animal-proof waste management system</td>
<td>- Design enhancement areas to maximize habitat values</td>
<td>- Metro Vancouver Regional Growth Strategy</td>
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<td></td>
<td>- Encourage stakeholders to provide feedback on development proposals</td>
<td>- Maintain outdoor lighting adjacent to the BBECA and enhancement areas</td>
<td>- Use qualified environmental professionals during all phases</td>
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<td>- Design enhancement areas to maximize habitat values</td>
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<td></td>
<td>- Consideration and integration of other disciplines (e.g., traditional use, hydrology)</td>
<td>- Environmental Management Act</td>
<td>- Environmental Management Plan</td>
<td>- BBECA Management Plan</td>
<td>- BBECA Conservation Covenant</td>
<td>- Emerging Practices Act</td>
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<td></td>
<td>- Use qualified environmental professionals during all phases</td>
<td>- Riparian Areas Regulation</td>
<td>- Species at Risk Act</td>
<td>- Wildlife Act</td>
<td>- Migratory Bird Convention Act</td>
<td>- Migratory Bird Regulation</td>
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<td></td>
<td>- Environmental Management Act</td>
<td>- Riparian Areas Regulation</td>
<td>- Weed Control Act</td>
<td>- Tree Cutting Regulation</td>
<td>- Noxious Weeds Destruction</td>
<td>- Development Permit Area for Streamside Protection and Enhancement Bylaw No. 63-60</td>
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<td></td>
<td>- Metro Vancouver Regional Growth Strategy</td>
<td>- Riparian Areas Regulation</td>
<td>- Fisheries Act</td>
<td>- Fish Protection Act</td>
<td>- Water Act</td>
<td>- Riparian Areas Regulation</td>
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<td></td>
<td>- Develop with Care 2014</td>
<td>- Riparian Areas Regulation</td>
<td>- Standards and Best Practices for Instream works</td>
<td>- Development Permit Area for Streamside Protection and Enhancement Bylaw No. 63-60</td>
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Table 1. Environmental Principles and Guidelines (Environmental Effects Assessment, EDI, April 2016)
2.2 Perimeter Buffers

Cross section drawings represent typical layouts at each habitat enhancement/mitigation buffer. Due to environmental/hydrological sensitivity in these buffers, developers must refer to the reports prepared by EDI Environmental Dynamics Inc., GMV Engineering, Richard Sims, and R.F. Binnie & Associates for more detailed layout and requirements (see Section 1.1 for the list of the relevant reports).

**North Perimeter Buffer**

A buffer of over 100m is provided along the North border of the site; Figure 3 illustrates the area in this buffer from the existing East/West perimeter ditch South to the development. The existing condition, including the perimeter ditch, is to be maintained. However, habitat enhancements such as native plantings, invasive species removal, and installation of nest boxes, rock pilings, and coarse wood are encouraged to support the ecological values in this area, as noted in the report by EDI Environmental Dynamics Inc.

**West Perimeter Buffer**

The site shares its Western boundary with the BBECA. The existing perimeter ditch along the Western boundary will be filled and post-development site drainage directed off-site without interfering with the BBECA water regime. A 30m wide habitat enhancement / mitigation buffer will separate the development from the BBECA. Within the buffer, there will be a peat berm and engineered weir system for relieving high water levels. Internal to the berm, there will be a wetted perimeter ditch draining West then North, and a 5m access road for maintenance. The existing ditch will be in-filled with native mesic/humic peat materials as part of peat berm construction. Peat infill is required to establish stability for buffer construction. Infilling will result in decommissioning of the ditch, which will deflect bog waters to the west. Shrubs and live tree stakes will be planted around the riparian area, and along the channel edges, emergent species (e.g. native cattails, sedges, rushes) will be planted.
South Perimeter Buffer

MKDLG owns the 46 acre property, Lot A, that is located between the site and the BBECA to the South. Lot A remains undisturbed, so the Southern buffer (Figure 7) aims to contain the development site from both Lot A and the BBECA. Similar to the Western buffer, the Southern one will contain a peat berm, perimeter ditch, and access road, with the existing ditch on the Lot A side of the property line to remain. Water flow in the buffer will be to the West where it will join the Western buffer, to eventually flow Northward to the existing ditch at the Northern end of the site. As with the other buffers, there will be a fill slope adjacent to the development site, and a perimeter fence located at the top of the slope. It should be noted that all plant material grown on the Lot A or BBECA side of the peat berms is to be specialty stock grown in non mineralized soils.

East Perimeter Buffer

Along the Eastern perimeter a ditch will run North-South along the toe of the fill slope. This perimeter ditch is intended to capture runoff from the lands directly to the East. Part of this open area swale will flow North, and part South, connecting to the perimeter ditches that flow through the South and West buffers, eventually emptying into the existing watercourse flowing East/West in the Northern buffer. The fill slope will be planted with a mix of native and naturalized species (refer to EDI’s report for acceptable plant lists). As the water level in this swale may not be continuous, varying from inundated to dry, the channel edges should be planted with water tolerant species such as sedges, rushes, and willows that can also withstand drought.

Planting in the Perimeter Buffers

In general, planting selection in the buffers is limited to native species. As per the report by EDI, planting assemblages will vary according to location (development slope, bench, or on the peat berms), with moisture and other factors determining selection. A vegetation monitoring program will be required to restrict the spread of invasive species, and to improve wildlife habitat a minimum of 50% of trees and shrubs planted on the development slope and bench should be fruit-bearing species. Where possible, shrubs and trees should be salvaged from the development footprint and used to re-vegetate the enhancement areas. In addition, it is imperative that all planting done on the BBECA or Lot A side of the perimeter berms is to be specialty stock grown in non mineralized soils.

For detailed lists of recommended plant species and further information, refer to the report prepared by EDI Environmental Dynamics Inc. (Section 1.1).
### 2.3 Access and Circulation

The site is bordered to the north by the South Fraser Perimeter Road/Highway 17 and the Highway 91 Connector with no existing vehicle access to the property. A new interchange is planned for the area that will upgrade and replace the current traffic light to support free flowing traffic (see Figure 3). This traffic improvement project is expected to be completed by 2018, prior to the opening of the proposed industrial development in 2020. Further interchange improvements and development at this site will capitalize on existing and future investments, to create shorter hauling distances, reduce transportation costs, and locate trade supportive businesses in Delta. The proposed project will ensure that truck traffic has direct access to the highway facility, and as a result the growth of truck traffic on Delta’s local road network should be reduced.

On site, circulation will be designed to provide easy access for all truck traffic to each individual parcel, and to minimize conflicts between vehicles and pedestrians.

### 2.4 Gateways

The main gateway point to the site, as outlined above, is a new interchange linking to Highway 91 Connector. All vehicular, pedestrian, and cyclist traffic will pass through this point, and therefore it will be designed as a focal element to identify the project, provide wayfinding (refer to Section 3.3), and act as a welcoming point.

To aid in these objectives, the following components will be provided at the site entry point / highway access interchange:

- Primary site entry gateway elements, along with project identity signs and wayfinding signs. Their design and materials will reflect the context and setting of the site and its natural features. Feature lighting will be incorporated into the gateway / sign elements (refer to Section 3.3).
- Colourful, low, seasonal planting of native and/or adapted plant materials
- Pedestrian / cyclist exit(s) that connects to the on-site network of a 3.0m wide multi-use path and sidewalks
- Lighting
- Irrigation
- Optional water feature using non-potable water sources (refer to Section 4.2)

Feature entry elements, including signage, should be provided at the main access point to the development.
2.5 Streetscapes

Figure 9 illustrates the typical street layout in the public realm. Variations will be considered at the detailed engineering design stage. Refer to relevant documents prepared by R.F. Binnie & Associates (see Section 1.1) for paving materials, buildup details, and underground service locations.

Pedestrian/Cyclist Network

As illustrated in Figure 9, a 2m wide sidewalk and a 3m wide multi-use path are proposed within the street right of way. Separated from the vehicular lanes with tree-lined boulevards, these facilities will create a safe walking/cycling network that has potential to connect to both on-site locations and local and regional trail networks. The sidewalks and multi-use paths shall be high quality cast in place concrete (refer to Section 3.3).

In order to discourage public access into the buffers and to maintain the ecological integrity of the BBECA, no pedestrian/cycling trails will be located in the habitat enhancement/mitigation buffers.

Sidewalk / Driveway Crossings

Priority should be given to pedestrians and cyclists in the road ROW’s. Upon meeting necessary engineering requirements, returned curbs at driveways are recommended, to reduce grade changes on pedestrian / cycling routes.

Intersection Crossings

At all intersections, dedicated pedestrian/cycling crossings should be provided, and identified with concrete inset into the asphalt (see Section 3.3).

Provide a robust cycling network on site to encourage alternatives to driving

Priority given to sidewalks through the use of a returned curb at all driveways

Figure 9. Typical Street Section
Street Trees

All of the public streets will have deciduous tree planted boulevards on both sides as illustrated in Figure 9. A minimum 4.0m clearance should exist between street trees and light standards, and the trees should be planted at a typical 8 - 10m spacing, with variations allowed to accommodate tree canopy sizes, light standards, traffic signs, and underground utilities. As street trees will only be irrigated until establishment, it is essential hardy, drought tolerant species are chosen (see below); a continuous 0.9m soil trench in the boulevards will help to alleviate water stresses. Trees should be planted on the side slopes of the boulevard rain gardens so they are not immersed in wet conditions in winter in this flat land drainage context.

Entrance Road

The entrance road should be planted with ‘Green Vase’ Japanese zelkova (Zelkova serrata ‘Green Vase’). This street tree has an upright, vase habit, and is very tolerant of urban conditions and drought.

Main East - West Road

The Pacific Sunset Maple (Acer truncatum ‘Pacific Sunset’) is a medium sized tree capable of withstanding drought, and develops an attractive mix of yellows, oranges, and reds in the fall.

Main North - South Road

The North - South road is to be planted with columnar hornbeam (Carpinus betulus ‘Frans Fontaine’). A long lived tree, it retains a columnar form into maturity and is capable of withstanding drought.

Site Entry Node

The site entry node can be planted with a selection of ornamental trees, such as Yoshino cherry (Prunus x yedoensis) or Eddie’s White Wonder dogwood (Cornus ‘Eddie’s White Wonder’). Species chosen for this location should be drought tolerant, but can be more showy, chosen for flowering, leaf characteristics, etc.

Refer to Delta’s “Trees for Tomorrow” document and Section 3.3 for a list of further recommended street tree species for use on each parcel’s individual road networks.
3. Private Realm Guidelines

3.1 General Site Design and Layout

The following general site design guidelines are encouraged for developments on the site:

- Implement sustainable, energy-efficient design standards in building and site design, e.g. utilize natural lighting, recycle greywater and stormwater collected on site, promote renewable energy use, create/enhance habitat values on site. Developers are encouraged to refer to LEED standards (refer to Sections 3.2 and 4.1) where applicable.

- Orient featured architectural expressions, building main entries, and presentation spaces towards public streets.

- Incorporate green roofs and green walls in the building design where feasible

- Provide weather protection at building main entries.

- Avoid blank walls along public streets. Where blank walls along public streets are inevitable, such walls should be screened with properly designed landscaping

- Servicing/loading zones should be located away from streetfronts, and should be designed with screening.

- Site design should include on-site amenities such as outdoor courts, seating nodes, and landscaping.

- Stormwater features should be seamlessly incorporated into the site layout.

- Site design must conform to CPTED design principles and practices.
**Vehicular Circulation**

On-site vehicular circulation will be safe and efficient, while meeting relevant engineering standards. The following measures are encouraged:

- Ensure roadways are designed to handle large truck requirements
- Minimize the number of driveways that cross sidewalks / multi-use paths.
- Consider utilizing shared driveways.
- Contain truck turning areas within each lot, separate from pedestrian / cycling circulation.
- Utilize traffic calming measures where necessary

**Pedestrian / Cycling Circulation**

Each parcel shall be designed to provide pedestrians and cyclists with safe circulation. The following measures will be appropriate and encouraged:

- All building entry doors will have direct pedestrian routes to sidewalks / multi-use paths, and all pedestrian routes will be separated from vehicular circulation routes with barrier curbs and/or landscaping.
- Direct cycling routes between cyclist site entry points and bicycle parking facilities.
- Marked crossings where pedestrian/cycling routes intersect with on-site vehicular circulation.
- Bicycle parking safely separated from vehicular circulation and with adequate lighting.

**Parking Requirements**

The following components should be provided at surface parking areas within parcels:

- Enough parking spaces to satisfy ‘Part IX - Off-Street Parking Regulations’ of the zoning requirements
- Landscaping to not only break up large paved areas and enhance aesthetics, but also support stormwater management practices. Refer to the relevant report prepared by GMV Engineering’s (see section 1.1) for various methods of stormwater treatment with planting. Also see Section 4.4
- Share parking between developments where possible to reduce overall impermeable areas
- Safe pedestrian route to entry doors.
- Lighting with optional pedestrian-scale fixtures as appropriate.
- Irrigation at planting beds.
- Use light coloured, high albedo materials where possible
- Hide parking from main roadway system using building masses or planting where possible
Off Street Loading

Vehicular access to each development lot for the purposes of loading should be designed to be efficient, safe, and where possible screened from adjacent units and the larger public realm.

- Loading areas should be located in the rear yards of buildings, or in side yards between lots served by a shared driveway.
- All loading areas should be separated from pedestrian and cyclist networks, and from vehicular driveways and parking
- Loading should be entirely on-site and screened from the larger public realm by buildings, fencing, or landscape planting
- In exceptional circumstances when necessitated by building function, front yard loading can be considered, provided the loading area is screened with high quality fencing and enhanced landscaping.

Outside Storage and Staging

All storage and staging yards should be designed for efficient use without compromising the public realm or vehicular/pedestrian/cyclist circulation networks.

- All storage and staging areas to be in side or rear yards, and screened by buildings, fencing, or landscape planting
- No storage or staging areas in front yards
- These areas shall not encroach on setbacks
- All garbage and recycling shall be screened as detailed above, and will not face onto major roads.
- Garbage and recycling can be contained in locked enclosures if required

Crime Prevention through Environmental Design (CPTED)

The Design Centre for CPTED Vancouver defines crime prevention through environmental design as “enhanc[ing] the urban environment through design that reduces opportunities for crime and nuisance activity” (CPTED Vancouver, 2010). Broadley put, this means designing the private and public realms to correspond to a variety of treatments including limiting dead ends and hidden zones, providing adequate nighttime lighting, and generating a sense of ownership in shared spaces, among other approaches.

- Design to encourage varying levels of watching over the public realm. This can include seating nodes that overlook streetscapes, office windows that face onto public green spaces, or routing busier circulation networks to be adjacent to areas of higher concern.
- Design streetscape as a ‘functioning unit’ by including a variety of uses - vehicular, pedestrian, and cyclist networks - where possible
- Encouraging a series of uses at various times throughout the day to eliminate ‘empty times’ when properties are mostly vacant
3.2 Architectural Design

A range of diverse industrial and related uses is proposed for the property. Each type of use requires an optimal property size and dimension, building size, height, orientation, number and locations of vehicle access points, on-site circulation, and amounts of parking. In recognition of this and based on current market research, architectural design guidelines are tailored to three primary building types expected to be constructed on the property. These types are grouped into the following main categories: large scale distribution/warehouse buildings, large scale light manufacturing/value-add industrial buildings, and smaller scale mixed-use office/manufacturing/warehouse buildings.

Building Design and Form

Large Scale Distribution and Warehouse Buildings

These buildings range in size from 9,290 to 46,450 sq. m. (100,000 to 500,000 sq. ft.) and are up to 18 metres (60 feet) high from grade. They are rectangular in shape, with wall surfaces reaching 800 feet or more in length, and are constructed out of precast concrete tilt-up panels. Long rows of multiple loading doors are located along one or two opposing walls. Office portions of the buildings form a small part of the overall massing and are usually located at building corners. The buildings’ scale and functional requirements require a regular, boxy building shape. Significant massing articulation is impractical, however, the following measures to mitigate their visual impact should be considered:

- Enhanced landscape screening, including by large trees and hedging (see Section 3.3)
- Articulation in plan/height, and maximizing use of windows/glazing wall systems of the office component
- Application of reveals, patterns, and/or colours to all wall surfaces, as the buildings’ heights are likely to make them visible from many directions.
- Where functionally appropriate, elements such as personnel access doors and ventilation louvers, etc. can be configured to provide vertical accents to help visually break the long wall expanses.

Large Scale Light Manufacturing and Value-Add Industrial Buildings

Ranging in size between 9,290 to 27,870 sq. m. (100,000 and 300,000 sq. ft.) and up to 18 metres (60 feet) high, these buildings are generally box-shaped and warehouse-like for ease of customization. In certain cases, more specialized building configurations may be required to accommodate specific production processes. Fewer loading doors are needed, and office areas often constitute a greater portion of the buildings’ floor area.

- Take advantage of larger office components by articulating building fronts in plan and height. Consider varying roof parapet heights.
- Maximize use of windows and glazing wall systems.
- Mitigate the impact of long side walls visible to the public by applying reveals, patterns, planting, and/or colours. This is particularly important at side and rear walls of buildings located on corner lots.
**Smaller Scale Mixed-Use Office, Manufacturing, and Warehousing Buildings**

This group includes smaller buildings between 2,790 to 4,645 sq. m. (30,000 and 50,000 sq. ft.), up to 9 metres (30 feet) in height from grade. The buildings may serve a larger single occupant or be designed to accommodate smaller multiple occupancies. Typical building configuration consists of a two level office component at the front, with a double height space behind, served by a loading gate.

- Building articulation in plan, roof parapet height, and colour variation is desirable, especially in multi-tenant buildings where it would help enhance individual tenant identity. However, over-articulation should be avoided to eliminate excessive contrast with larger and bulkier buildings on adjacent lots.
- Offices located along building fronts allow for the introduction of large window and glazing system areas.
- In configurations where buildings are placed in rows facing each other in perpendicular orientation to the street, blank side walls should be avoided by extending office components. Visual enhancement, or supplemental landscaping can also be used.

**Guidelines Applicable to All Building Types**

Certain measures that apply to each of the above buildings types include:

- Use awnings, canopies, and roof overhangs at building entries and over loading gates. These will act as weather protection and enhance each buildings’ appearance.
- Use sun shading devices above East, South, and West facing windows.

**Exterior Materials and Finishes**

The exterior materials and finishes of each building will help to provide its character towards the streetscape, and the use of similar materials throughout a project can lend a sense of a unified palette to the development as a whole. Building exteriors should be constructed of high quality materials and finishes.

- Buildings of a semi-temporary character such as pre-fabricated metal structures are not acceptable. Profiled and sheet metal exterior finishes are permitted only in circumstances when justified by design concept and in locations not subject to damage.
- Permitted metal finishes include prefinished and preformed panels or as metal spandrel components of window or curtain wall systems.
- The most common current method of industrial building construction consists of tilt up or poured in place concrete. Careful detailing is required, with reveals used to break up extensive blank wall surfaces. Colours can be used to provide additional visual interest to large wall surfaces.
- Exterior masonry should be limited to brick or architecturally finished, textured, or coloured concrete block. Standard concrete block is not acceptable.
- Standard stucco finishes are discouraged. EIFS stucco may be used on walls requiring thermal insulation, provided it is applied in accordance with industry best practices and incorporates well detailed reveals to help break up large wall surfaces. Multi-coloured EIFS finishes can also be used for similar effect. EIFS should not be used in locations where it could be damaged.
3.3 Landscape and Open Space Design

Overall, individual parcel landscapes will:

- Use native or adapted plant materials where possible. Where no irrigation is provided, drought tolerant species are to be used. No invasive species will be allowed. It is required that developers refer to the relevant environmental reports prepared by EDI for recommended plant species (see Section 1.1), and this guideline's plant list. All plant materials and planting techniques are to follow current best practices and the latest edition of BCSLA/BCLNA Standard.

- Be designed in consideration of adjacent conditions and specific site relationships.

- Incorporate stormwater management strategies in site design. Refer to the relevant report prepared by GMV Engineering (see Sections 1.1 and 4.4).

- Consider building foundation planting to complement building design.

- Provide adequate screening of objectionable views both from the street edge and between lots. Screening with plant material is preferred to fencing, however a combination of both is acceptable.

- Enhance habitat values by providing continuous wildlife corridors (see Section 4.3).

- Be easily maintained. Business owners are responsible for maintenance of landscaping at their own parcels.

- Conform to CPTED design principles and practices (refer to Section 3.1)

- Provide a minimum of 300mm/450mm of topsoil, respectively, at all sod/planting areas

- Be not less than 5% of the development site area as per Corporation of Delta requirements

Front Yards

The following components should be provided at the front yard at individual parcels:

- Pedestrian access to entry doors

- A minimum 4.5m setback of all buildings and a 2.0m wide planted strip along the street edge that includes trees, shrubs, and groundcovers with irrigation.

- Each building can have signage element(s), including business information with company logos. If present, appropriate planting should be included at the base.

- Ornamental planting, trees, and perennials/annuals at key areas to emphasize and aid in wayfinding

- Lighting as appropriate.

- Pedestrian seating at entry lobbies
Side and Rear Yards
The following components should be provided at the side/rear yards at individual parcels:

**Side/Rear Yards along Public Street**
- A minimum 4.5m setback of all buildings and a 2.0m wide planted strip along the street edge that includes trees, shrubs, and groundcovers with irrigation.
- Optional fencing as appropriate. Refer to Fencing section.
- Optional lighting as appropriate.

**Side/Rear Yards between Parcels**
- Shared parking to reduce overall impermeable areas are recommended where possible straddling lot lines
- Appropriate screen planting along the property line that includes shrubs and groundcovers with irrigation.
- Fencing should be provided to denote ownership boundaries, unless shared access or vehicular circulation is present. Refer to Fencing section

**Amenity Areas**
Amenity areas should be provided on each lot for use by employees and visitors. Each node should be furnished, and will provide outdoor spaces for eating, socializing, and gatherings. Additionally, such spaces will provide more ‘eyes on the street’ and aid in CPTED principles (see Section 3.1).
- Provide a mixed selection of seating types for groups of varying sizes
- Provide trees and overhead canopies where appropriate for shading and sheltering
- Highlight these areas with feature plantings
- Set them a comfortable distance from all vehicular circulation routes

Amenity areas with a range of seating types should be provided on each lot to provide comfortable outdoor gathering areas
Paving Materials

A unified paving palette for a project can provide a feeling of overall harmony and act as a base for future buildings. Its appearance and variety of materials can also aid in wayfinding and in highlighting areas of special interest. The paving palette outlined below should be referred to as a guide to a contemporary, cool colour palette look for all future development lots.

**Concrete**

Cast in place concrete can form the background of the project, and be the surface of choice for all public sidewalks and high use pathways (for pedestrian oriented nodes, however, pavers are favoured - see below). Concrete should be of a good quality, have sawcut (not tooled) score lines, and utilize high quality finishes such as sandblasting. In addition, concrete can be used in the roadways at select areas such as crossings and vehicle calming areas to highlight key zones. Where possible, light coloured, high albedo concrete should be incorporated to reduce heat island effects.

**Asphalt**

Asphalt can be used as the primary material in roadways, however its application elsewhere should be limited. Stamped asphalt is not to be used, and at key zones asphalt roadways should be substituted for concrete (see above).

**Standard Unit Pavers**

Concrete unit pavers should be used at all pedestrian nodes and areas of special interest. Their ability to lend texture and a more nuanced feel to circulation systems makes them contrast well with concrete used in more utilitarian areas. Standard, easily obtained pavers can be utilized, and sizes can vary to fit differing situations. Natural and charcoal grey tones are favoured.

**Premium Pavers**

In high profile areas, or to provide variety in design schemes, pavers of special sizes and colours may be used. As above, grey tones are encouraged.

**Premium Paving Materials**

Where desired, surfacing materials such as granite or basalt paving can be used to lend an air of importance or higher quality. Such materials are encouraged at outdoor building lobbies, large plazas, or site entry points.
Furnishings

Similar to paving materials, the use of furnishing consistent in materials and character can aid in a project’s overall feel and unity. The intent of the furnishing below is to act as a guide to the style and materials encouraged, and to reinforce the themes of the site. Wood and metal should be emphasized, and colours should match the cool tones of the paving palette. Site furniture should be durable, easy to maintain, and can include standard catalogue items or custom design elements. As the architecture of each lot is likely to vary, the below should act as a guide only, and should allow for changes to suit each individual area's design style.

**Benches**

Benches should be provided at all gathering and circulation nodes, and can be either free standing or incorporated into other landscape elements such as planter walls. The use of wood should be emphasized.

**Trash/Recycling Receptacle**

Trash/recycling receptacles should be provided where appropriate and each location should provide units for each of the waste streams denoted by the Corporation of Delta’s recycling program - namely garbage, paper, newsprint, and containers. At all amenity areas likely to be used for eating, a food waste unit should also be provided. Refer to Section 4.6 for more information.

**Moveable Seating**

At privately owned amenity areas, and where surveillance/maintenance allows, moveable tables and chairs are encouraged to allow users to shift according to varying group sizes and weather/sun patterns, etc.

**Bike Racks**

Bicycle parking should be provided at all major nodes including building entrances, public plazas, and green amenity spaces. Additionally, each building should be designed to provide covered bicycle parking for employee and visitor use.

**Bollards**

Bollards are useful in defining vehicular versus pedestrian space. Their use can allow for a more uniform paving palette, and in addition lighted varieties can encourage wayfinding and site lighting at amenity areas (see Lighting Section).
Walls and Fencing

Walls can be employed where grade changes occur. Planting can also be in raised beds to allow for greater soil depths, and where development over slab occurs. Concrete walls are to be used where possible for a higher quality architectural finish, especially where adjacent to circulation networks or in other high visibility areas. Textures and score lines can be incorporated into concrete walls to mitigate scale height. Modular concrete block walls are also acceptable, but should be limited to lower visibility areas.

Fencing is used to delineate ownership boundaries, separate differing zones of use, and to provide security where needed. Fencing in the development is to be metal, painted black, and without unnecessary ornamentations. Where screening is desired (such as at garbage facilities, Section 3.1) fencing may also be wood, either natural in colour or painted to match architecture.

**Perimeter Fencing**

Perimeter fencing is required at lots facing the habitat enhancement/mitigation buffers. Such perimeter fencing will be located at the top of development slopes, and discourage public access into the buffers. Perimeter fencing is to be permeable to allow movement of wildlife, and as such should be designed to follow best practices for the spacing of the bottom and interior rails.

**Fencing Between Lots**

Where desired, fencing should be used to denote ownership boundaries. In addition, fencing can be used for security purposes, but should not employ harsh measures such as barbed wire. Fencing and planted screening should be employed between properties, however, it is not required where shared access, parking, or laneways straddle property boundaries.

**Fencing Along Roadways**

In general, fencing should not be employed adjacent to roadways, or along a building’s side yard when adjacent to major vehicular circulation. It can be used in these situation to screen objectionable views if needed.
Site Lighting

Site lighting is employed for a variety of uses including safety, security, and creating a pleasant nighttime environment. Lighting should be provided at all major public and private circulation systems to complement the lighting to be provided by each building. Lighting should also be used to aid in wayfinding and to highlight special zones of interest. Fixtures chosen will be energy efficient, comply with the Corporation of Delta’s dark sky policy, and not cause excessive glare.

Roadway Lighting

Lighting should be provided along all roadways, at all intersections, and at any interfaces between the vehicular and pedestrian/cyclist circulation routes.

Pedestrian Post Lighting

At mixed use pathways and where buildings are unable to provide a reasonable amount of light, post lighting can be employed. Post lighting can also be used to provide added levels of light along all bike routes, and at amenity areas.

Bollard Lighting

Bollard lighting can be used as the primary source of light along pedestrian pathways, and to provide low levels of ambient lighting at more private zones of use.

Signage

A signage plan will be required as part of each Development Permit application. In addition to the following general requirements, developers are required to meet the Corporation of Delta’s Sign Bylaws. Design, material, and colour of the signage are to reflect the building architectural expression and the site context, and to enhance the overall impression of the project. Signs on private parcels include:

- Project identity signs – located at the arrival point of each parcel to identify the project.
- Project wayfinding signs – to assist visitors in orienting themselves and finding destinations.
- Building signs – to identify the tenants in each building. It is especially important that the building signs be planned in concert with the design of each building.
**Trees, Shrubs, and Groundcovers**

The use of tree planting and vegetated areas structures outdoor zones, softens large architectural elements, and mitigates heat island effects, while expressing seasonal change through flowering and fall colour. The primary elements of the planting scheme should be large canopy trees, with ornamental and smaller scale trees used to emphasize special areas. These trees will often act as the primary measure to screen large buildings from the streetscape. Hedging should be used for privacy, and deciduous perennials should be balanced with evergreen materials. Selected plants are to be hardy, disease/drought tolerant, and consideration should be given to shifting planting zones due to climate change. Below is a list of potential species for use on-site, and final choices can be based on availability and other factors at the time of planting. Refer to Section 2.5 for street tree selection.

Planting in the habitat enhancement/mitigation buffers should favour native species, and should follow recommended species lists provided by EDI (refer to Section 1.1). In addition, it is imperative that all planting done on the Burns Bog Ecological Conservancy Area side of the perimeter berms is to be specialty stock grown in non mineralized soils.

### Trees

- Abies grandis
- Acer circinatum
- Acer ginnala
- Acer palmatum varieties
- Acer rubrum varieties
- Amelanchier alnifolia
- Carpinus betulus
- Cercis canadensis
- Cornus varieties
- Fagus sylvatica ‘Dawyckii’
- Liquidambar styraciflua ‘Worplesdon’
- Magnolia soulangeana varieties
- Malus fusca
- Picea omorika
- Picea pungens ‘Iseli fastigiate’
- Pinus contorta ssp. sontorta
- Prunus emarginata
- Pseudotsuga menziesii
- Thuja occidentalis ‘Smaragd’
- Thuja plicata
- Tsuga heterophylla

<table>
<thead>
<tr>
<th>Tree Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abies grandis</td>
<td>Grand Fir</td>
</tr>
<tr>
<td>Acer circinatum</td>
<td>Vine Maple</td>
</tr>
<tr>
<td>Acer ginnala</td>
<td>Amur Maple</td>
</tr>
<tr>
<td>Acer palmatum</td>
<td>Japanese Maple</td>
</tr>
<tr>
<td>Acer rubrum</td>
<td>Red Maple</td>
</tr>
<tr>
<td>Amelanchier alnifolia</td>
<td>Saskatoon</td>
</tr>
<tr>
<td>Cornus canadensis</td>
<td>European hornbeam</td>
</tr>
<tr>
<td>Dogwood varieties</td>
<td>Eastern Redbud</td>
</tr>
<tr>
<td>Fagus sylvatica</td>
<td>Fastigate Beech</td>
</tr>
<tr>
<td>Liquidambar</td>
<td>Sweet Gum</td>
</tr>
<tr>
<td>Magnolia soulangeana</td>
<td>Saucer Magnolia</td>
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<tr>
<td>Malus fusca</td>
<td>Pacific crabapple</td>
</tr>
<tr>
<td>Picea omorika</td>
<td>Serbian spruce</td>
</tr>
<tr>
<td>Picea pungens</td>
<td>‘Iseli’ Blue Spruce</td>
</tr>
<tr>
<td>Pinus contorta</td>
<td>Shore Pine</td>
</tr>
<tr>
<td>Prunus emarginata</td>
<td>Oregon cherry</td>
</tr>
<tr>
<td>Pseudotsuga</td>
<td>Douglas Fir</td>
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<tr>
<td>Thuja occidentalis</td>
<td>Emerald Green Arborvitae</td>
</tr>
<tr>
<td>Thuja plicata</td>
<td>Western Red Cedar</td>
</tr>
<tr>
<td>Tsuga heterophylla</td>
<td>Western Hemlock</td>
</tr>
</tbody>
</table>

Tree plantings in a bioswale

*Images: Cornus ‘Eddie’s White Wonder’, Acer rubrum, Pseudotsuga menziesii, Magnolia soulangeana*
Shrubs, Perennials, Grasses, and Groundcovers

- **Arctostaphylos uva-ursi** Kinnickinnick
- **Berberis thunbergii ‘Rose Glow’** Japanese Barberry
- **Buxus ‘Green Gem’** ‘Green Gem’ Boxwood
- **Coreopsis verticillata** Tickseed
- **Cornus sericea ‘Kelsey’** Kelsey Dwarf Dogwood
- **Echinacea purpurea** Coneflower
- **Erica carnea ‘Springwood Pink’** ‘Springwood Pink’ Heath
- **Euonymus alatus ‘Compactus’** Compact Winged Euonymus
- **Euonymus fortunei ‘Emerald Gaiety’** Japanese euonymus
- **Festuca ‘Elijah Blue’** Blue fescue
- **Helictotrichon sempervirens** Blue oat grass
- **Hemerocallis ‘Stella d’Oro’** Yellow Daylily
- **Holodiscus discolor** Oceanspray
- **Hamamelis x intermedia ‘Arnold Promise’** ‘Arnold Promise’ Witchhazel
- **Hydrangea macrophylla** Big Leaf Hydrangea
- **Juncus effusus** Soft Rush
- **Juniperus horizontalis ‘Blue Chip’** ‘Blue Chip’ Juniper
- **Lavandula angustifolia ‘Hidcote’** English lavender
- **Lonicera pileata** Boxleaf honeysuckle
- **Mahonia aquifolium** Oregon Grape Holly
- **Oemleria cerasiformis** Indian plum
- **Pennisetum alopecuroides ‘Hameln’** ‘Hameln’ fountain grass
- **Philadelphus lewisii** Mock Orange
- **Pinus mugo varieties** Mugo Pine varieties
- **Polystichum munitum** Sword Fern
- **Potentilla fruticosa varieties** Cinquefoil varieties
- **Prunus x cistena** Purpleleaf Sand Cherry
- **Prunus laurocerasus ‘Otto Luyken’** ‘Otto Luyken’ Laurel
- **Rhododendron varieties** Rhododendron varieties
- **Rosa varieties** Rose varieties
- **Rudbeckia fulgida ‘Goldstrum’** ‘Goldstrum’ coneflower
- **Sedum telephium ‘Autumn Joy’** ‘Autumn Joy’ sedum
- **Spiraea varieties** Spirea varieties
- **Symphoricarpos albus** Common snowberry
- **Syringa meyeri ‘Palibin’** Dwarf Korean Lilac
- **Taxus x media ‘Hicksii’** ‘Hicksii’ yew
- **Vaccinium parvifolium** Red huckleberry

Drought tolerant planting is encouraged to minimize on-site landscape water needs.
4. Environmental Sustainability

4.1 Sustainable Buildings
Each of the building types outlined in Section 3.2 should be designed to be as sustainable as their typology allows. Energy-efficient design standards utilizing natural lighting, promoting renewable energy use, and adhering to LEED standards should be implemented wherever applicable. Additional strategies may include:

- Designing buildings to use passive heating/cooling systems or to require no heating to allow for constantly opened loading bays
- The use of low-energy appliances and lighting, and low-flow plumbing
- Utilizing green roofs where feasible
- Incorporating renewable energy systems into the buildings (eg. solar cells or wind turbines on rooftops)

4.2 Energy and Water Efficiency
Both the buildings and landscape should be designed to be as energy and water efficient as possible. Buildings should follow the measures outlined above and in Section 3.2, including opportunities to increase passive heating and cooling as well as the use of on-site energy generation such as solar cells, etc. Energy efficiency in the landscape should include the following measures:

- Design tree and vegetation networks to shield buildings from solar and wind
- All site lighting to be energy efficient LED systems
- Provide tree canopies covering large expanses of paving to reduce heat island effects where possible

Water efficiency in the landscape is also a priority and can be achieved through a variety of strategies including how irrigation systems are designed, what species are planted, and the amount of soil volume available to each vegetated area. As outlined below and in Section 3.3, thought should be given to species that can survive extended summer droughts, and high-water usage species should be limited to a few key areas or to the bottoms of drainage collection points. Increasing soil volumes at trees and vegetated areas can aid in survival during drier periods, and for this reason trees should be provided with a minimum of 15m³ of soil each. This can be achieved through the use of soil trenches, structural soil, or soil cells where space doesn’t allow for larger planting beds. Irrigation systems should be designed to minimize outdoor water use, include solar, temperature, and rain sensors to inform watering schedules, and meet the latest requirements for high-efficiency systems as outlined under the U.S. Green Building Council’s LEED rating system.

Any on-site water features should be connected to the drainage network and provide treatment, habitat, and educational opportunities. The use of decorative water features using municipal potable water sources is discouraged.
4.3 Vegetation and Landscape

The outdoor spaces within the development, and the planting and landscape they contain, provide many benefits for users as mentioned in Section 3.3, including enhancing aesthetics, expressing seasonal change, and softening architectural and hardscape elements. In addition, vegetation can provide numerous environmental benefits including stormwater treatment (see Section 4.4), wildlife habitat, and mitigating heat island effects.

On-site planting plans should therefore focus on providing not just hardy, drought tolerant ornamentals as outlined in Section 3.3, but also include native planting where possible. Species should be capable of surviving extended summer droughts without watering, as water restrictions are likely to increase in the future due to climate change. This implies supplementing desired ornamental species with harder native and naturalized ones, and limiting high water use areas to a few key nodes.

Sod areas in full sun should also be minimized as their presence will likely become harder and harder to maintain. Following this, the use of sod in boulevards should also be minimized, and they should be treated as rain gardens throughout the development where possible (refer to Section 2.5). In areas where sod is desired and is to be irrigated, watering systems should be designed to be water efficient and include a soil water sensor in a full sun turf area (see Section 4.2).

To improve wildlife habitat, planting around the edges of the development parcels should feature canopy types of varying heights, mid story shrub plantings to provide refuge areas, and should include fruiting species where possible. Including these strategies at the edges and adjacent to lower use internal areas can provide on-site habitat linkages without leading to conflicts with heavy industrial uses. Additionally, each planted area should provide flowering species for pollinator use. These species should be chosen to provide pollen sources across multiple seasons, and should favour mixing multiple flowering species rather than monoculture plantings.

The habitat enhancement/mitigation buffers will be planted with primarily native species as outlined by EDI’s report (Section 1.1), but these buffers should also connect to on-site landscape linkages as mentioned above, providing movement corridors for wildlife across the site in lower use areas. Refer to EDI’s report for recommended native plant species and further information.
4.4 Stormwater Management

The on-site stormwater system for the proposed development is an area of high importance due to the proximity to the Burns Bog Ecological Conservancy Area. Many of the most essential sustainability initiatives for the site will include how to capture, treat, and isolate the development’s water from that of the surrounding environments. It is recommended that all on site waters be directed to vegetated treatment areas where possible (see below), and that prior to the water’s final discharge from the site (no infiltration) it be directed through structural treatment methods to remove all remaining solids, hydrocarbons, etc. Refer to reports by GMV Engineering for more information (See Section 1.1).

Stormwater at Buildings

As a large percentage of a site’s footprint may be covered by buildings, high amounts of rainfall collect on rooftops. Green roofs can be utilized throughout the development where desired, which would help to reduce overall impervious areas and aid in water collection and filtration before being sent off site. In addition, these rooftops can slow down water volumes during peak rain events and provide habitat through native plantings (refer to GMV Engineering Report, Attachment 3).

Stormwater at Streetscape and Parking

Landscaping throughout the streetscape and parking areas is recommended in order to intercept all precipitation, in addition to reducing heat island effects and enhancing aesthetic components of this portion of the site. The objective of these rain gardens is not infiltration, however, due to the close proximity to the BBEC, but rather on site treatment of water before moving it offsite to the North. As such, water should be collected once it has moved through these features and be directed into the storm collection system.

Further considerations for streetscape and parking lots and their associated rain gardens include:

- Allow water to flow from all hard surfaces into the green areas through curb breaks
- Connect multiple raingardens to one another where possible to allow for longer treatment times
- The use of permeable pavements in parking areas is not advised. Waters should be directed towards planted areas for treatment
- Plant material in the vegetated areas should be chosen according to the degree of soil moisture that will be encountered: drought tolerant species near the top of a bank, and species capable of surviving inundation at the bottom
- Trees are encouraged where space allows, and should likewise be selected for tolerance
to moist conditions

- Where possible, connect point based water sources to rain gardens
- Design all rain gardens to allow water to infiltrate through soils and subsoils before collection for offsite conveyance. Also include overflow systems for safe handling of water during peak events

For further information, consult the excellent ‘Low Impact Development Approaches Handbook’ developed by CleanWater Services for the Tualatin River Basin in Washington County, Oregon.

**Stormwater at High Pollution Producing Areas**

Any on-site areas associated with the proposed industrial developments likely to generate higher levels of pollutants should be isolated from the rest of the site’s stormwater system for specialized treatment. These can include specific operational, treatment, and discharge procedures (e.g., oil/water separators, emergency spill response actions, etc.). Refer to reports prepared by GMV Engineering (see Section 1.1) for additional information.

In addition, any on-site vehicular washing facilities will generate waste water with high pollutant concentrations, and should be connected to sanitary sewers, not storm drainage systems.

**Stormwater at Pedestrian Nodes**

Stormwater, and how it is treated, is a key component of the development’s overall sustainability initiatives. As such, opportunities may present themselves to dispose of stormwater in unique, educational ways. Especially at important pedestrian nodes, or areas of high circulation, stormwater disposal can be highlighted through design interventions providing the public with educational examples of where water is collected from, directed to, and how it can be managed to reduce pollutants.

Opportunities also exist to integrate these measures into the designs of buildings to add to the architectural interest of the development, or to integrate them into habitat systems.
4.5 Alternative Transportation
The site will have a new interchange and provide direct vehicular access to the Highway 91 Connector. While this is one of the primary advantages in terms of logistics connections to the surrounding area, it should not mean that vehicle access is the only encouraged way to visit the site. As discussed in Sections 2.5 and 3.1, pedestrian and cyclist networks will also be prioritized. Each tenant should therefore provide incentives for these methods, including on-site bicycle storage and shower facilities in buildings where appropriate. A bus stop should also be associated with the development, in order to connect to local transit routes.

4.6 Waste Management
Within the Corporation of Delta, waste is divided into multiple streams in order to facilitate recycling and the reduction of materials directed to the landfill. All on-site garbage facilities should provide disposal for each item, both for interior and exterior waste. This includes large garbage pickup areas, as well as trash receptacles located at pedestrian nodes. The waste streams to include are listed below, and for more information consult the Corporation of Delta's waste disposal policy. Note that both personal waste and waste generated by each business (shipping materials, etc.) should be sorted as indicated.

**Garbage**
The standard garbage stream provides a disposal location for all items that don’t fit into the other categories. This can include items such as unrecyclable plastics and food wrappers.

**Food Waste**
All on-site food waste generated by kitchen facilities or employee eating areas should be disposed of in a separate stream to standard garbage. This material can include food scraps and items such as napkins, etc.

**Paper**
Paper, including such uses as product shipping boxes, newsprint, office paperwork, can be recycled.

**Containers**
Any recyclable plastics, glass, or aluminum should be included in this category.

In addition to the standard waste streams described above, certain light industrial uses may generate hazardous waste. Each situation should follow industry and municipally mandated best practices for disposal, and these contaminants should always be separated from the standard waste streams listed above.