MILNER HEIGHTS

INTRODUCING GREEN STREETS – ANOTHER VESTA INNOVATION

MILNER HEIGHTS' GREEN STREETS are on the forefront of current environmentally friendly development standards and are designed to *control stormwater volume*, the *rate of water discharge to downstream creeks* and *water quality*. Designed by Vesta in conjunction with the Township of Langley and in accordance with Fisheries and Oceans Canada current standards for managing storm water, the goal was to significantly exceed stormwater management practices currently followed in the industry and reduce the environmental impact that conventional developments cause. The defining element to Milner Heights is its unique road and water management design – termed "Green Streets".

1 Landscaped Swale – major component of Green Street system; helps to control stormwater discharge and water quality.

2 Man Bridges – provide access to rowhome units in a manner that minimizes swale disruption. Swale effectiveness increases simply due to providing a higher portion of pervious areas.

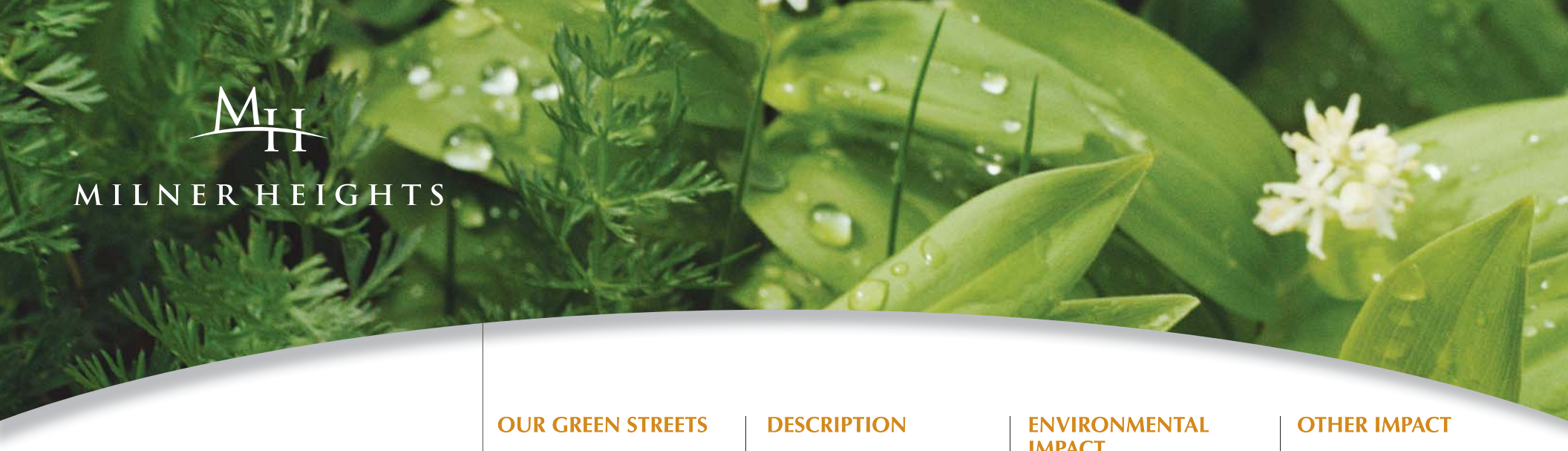
3 River Rock – filters and slows water flow as water meanders through the swale and eventually into the ground for cooling and nutrient absorption.

4 Indigenous, water absorbing plants significantly reduce the rate of ground water flow simply by consuming water for growth.

5 Boulders – enhance water sediment filtration and remove debris and pollutants.

6 Swale Drain Basin – provides back-up system through conventional storm pipes connected to Milner Heights' pond to prevent swale flooding during extreme storm events.

7 Sidewalk – installed on one side of street only, to allow for more areas capable of absorbing water.



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STORM WATER VOLUME CONTROL mechanisms capture as large a volume of rain water as practical. Techniques such as landscaped swales, reduced impervious areas through reduced road widths and specific parking and sidewalk standards, along with the construction of a permanent pond, reduces the volume of water that would otherwise put pressure on downstream creeks.

WATER DISCHARGE CONTROL (i.e. the rate of water discharge to downstream creeks) is achieved in part, by the Milner Heights pond which reduces the risk of downstream flooding and erosion by regulating the release of water from the pond into Worrell Creek through a valve control system. In addition, the pond through the natural settlement process, enhances water quality by the removal of sediment and pollutants before the water is released downstream. In addition, topsoil blankets used throughout the project, whereby up to 450mm of topsoil is added to native soils, also help control water discharge downstream by increasing the absorption of ground water. Finally, the landscaped swales absorb water and further reduce the rate of discharge to the creeks. These elements are designed to match as closely as possible the pre and post development water discharge rates and are more environmentally friendly compared to hard piped conventional storm systems.

WATER QUALITY CONTROL is achieved through several Green Street elements. The landscaped swales capture ground water that would normally be diverted into storm pipes, and provide a cleansing process as the water meanders through the planting materials, rocks and boulders before permeating into the ground for further filtering and nutrient absorption. Ultimately, this ground water ends up downstream in Worrell Creek in the as-close-to-the-same manner as pre-development conditions as possible. The topsoil blankets provide additional containment and filtering areas and further improve ground water quality. Finally, the Milner Heights pond improves water quality by providing a natural pond facility that captures large quantities of water and enhance sediment and pollutant removal before the water's release downstream.

OUR GREEN STREETS	DESCRIPTION	ENVIRONMENTAL IMPACT	OTHER IMPACT
1. Landscaped Swales	• vegetated swales planted with indigenous plants favorable to maximizing water absorption	• significant natural absorption of rain water into the ground cleanses and cools ground water similar to pre development conditions and improves quality and mineral content of water entering downstream creeks	• creates aesthetically pleasing streetscapes versus conventional designs • 'Greens' the streets in general
2. Reduced Road Width	• minimizes impervious area of land (i.e. where water cannot be absorbed)	• maximizes water allowed to absorb naturally into ground and greatly reduces the quanity of storm water being piped downstream	• encourages reduced traffic speed and results in safer neighbourhoods; encourages pedestrian traffic and social interaction with houses closer to front property line; allows for ample parking with 2.6m parking lane on all residential roads
3. Topsoil Blanket	• engineered 450mm topsoil blanket overlying impermeable subsurface soils	• significantly increases rainwater capture and moisture holding capacity of natural soils	• improves growing quality for all post development plantation
4. Milner Heights Pond	• engineered permanent pond allows rate of water discharge to Worrell Creek to be controlled to pre development flows for 2, 5 and 100 year storm events through use of natural planting material for maximum water absorption and a flow control valve system at the discharge point • base flow valve in 70th Ave. diverts water to pond from Worrell Creek which reduces pre development flows that caused past erosion	• water flows controlled to pre-development flow levels; significantly reduces, if not eliminates, downstream erosion risk associated with conventional storm design • current problem of Worrell Creek erosion from previous development in the area resolved • design enhances water quality by including plants and materials that enhance sediment and pollutant material removal	• acts as a beautiful natural amenity for the community to enjoy; future integration of trail system into the Township's Arbour Ribbon trail project
5. Disconnected Roof Spouts	• roof spouts discharge into splash pads and into the ground rather than a storm sewer pipe system	• rain water absorbs into the ground naturally versus travelling through storm pipes and discharging into downstream creeks at excessive volumes	
6. Use of Naturescape Landscaping Principles	• maximizes use of waterwise plant materials	• maximizes plant absorption of ground water	
7. Clustering of Housing	• maximizes landscape swale continuity throughout project through careful planning of attached and detached home locations	• conventional single family project designs reduce effectiveness of swales due to driveway installations interrupting swale paths	• significantly increases green space available for trails, parks, and environmental reserves
8. Greenway Trails & Internal Trail Systems	• meandering 3m landscaped greenway trail system along 208th, 72nd and 70th Ave. connects pedestrians with internal trails around pond and through the environmental reserve heading north to 72nd Ave. • trail system will link to future trails north of 72nd Ave.	• creates integrated trail system that is designed to tie into the Township's Arbour Ribbon Trail system along 210th • encourages walking, bike riding and adds significant planting and "greenscaping" over conventional arterial road designs	• greenway beatifies the neighbourhood and provides buffer from traffic noise • internal trails provide a safe trail system in a natural surrounding that will ultimately tie into the Township's future plans for additional trails in the neighbourhood as development occurs
9. Integrated development/ build out	• development and build out activities exclusively under the management of Vesta allows optimized dirt management following "dig once" building practices that are not possible in typical projects with multiple builders	• Removal of excavation material for construction phase is optimized during development phase to ensure dirt moved only once • minimizes pressure and waste accumulation on road and creek system • minimizes resource usage and air pollution from truck traffic	• neighbourhood roads kept cleaner; traffic disruption due to construction activity kept to a minimum

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ALL THE ELEMENTS of Milner Heights Green Streets system combine to provide the community with a cutting edge storm water management system that will no doubt influence development design in the Fraser Valley and other areas for years. Both Vesta and the Township of Langley are proud of this achievement and invite you to enjoy its benefits.

MILNER HEIGHTS

The Vesta Group of Companies has been building homes in British Columbia and Alberta since 1989. With over 1800 homes built, we're proud to be a Langley-based company committed to creating unique, liveable communities that meet the needs of today's homebuyers. All homes are backed by Vesta's full-time service department and the *Travellers Guarantee Company of Canada* 2/5/10-year new home warranty coverage.

GREATER VANCOUVER HOME BUILDERS ASSOCIATION
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Access off 208th Street at 70th Avenue