



STORMWATER BEST PRACTICE MANAGEMENT & INFORMATION PACK

Dear Silverwood Purchaser,

Congratulations on securing a section in Silverwood Residential Estate. Please take your time to read this information carefully. Silverwood subdivision has protective covenants in place making you - the owner and resident - responsible for adequate drainage and controlling the quality of stormwater that is discharged from your property so that the environmental impacts of stormwater discharging into Silverwood's stormwater network are kept as low as possible. Silverwood's protective covenants are attached to the title to your property, but we draw your attention to one of the clauses within those covenants which is the particular covenant to stormwater drainage. Please be familiar with this clause:

To ensure due allowance is made for adequate current and future drainage of all stormwater from the lot, such stormwater drainage not to be detrimental to the water quality of the stormwater network. The purchaser shall also ensure that no discharge from the lot whether of a soluble or insoluble nature shall occur. The purchaser is responsible for all costs, claims or demands for any remedial action undertaken for any breach thereof.

Below is vital information on how to mitigate the impact of harmful contaminants from your property infiltrating the Pauatahanui Inlet and stream via the stormwater run-off from your property.

Stormwater is contaminated by:

- Sediment discharging from bare earth surfaces where controls are not implemented
- Motor vehicles through metals such as lead, copper, zinc and oil washing off roadways (it is estimated that 70% of stormwater pollution is caused by cars) – keep your car in the garage not on the driveway;
- Rubbish such as plastic bags, bottles and other street litter – please use wheelie and recycling bins and do not allow your rubbish to fall out into the street;
- Herbicides, garden fertilisers, rotting lawn clippings – stormwater overflow can pick up harmful poisons from the fertilisers you use, so please use sparingly. Vegetation is a good way of absorbing some stormwater overland flow;
- detergent from car washing – washing your car on the grass rather than your driveway can help;
- domestic animal faeces – be a responsible pet owner and dispose of your pet droppings appropriately;

- illegal and accidental spills/dumping into stormwater drains – it is an offence to pour petrol/oil straight into stormwater sumps, just as it is an offence to dump rubbish into public reserves – contact Porirua City Council on the best way to dispose of your unwanted chemicals;
- air pollution – gas fires and car pooling are good ways to minimise carbon monoxide fumes into the atmosphere

The Department of Conservation and Silverwood Joint Venture seek your co-operation in reducing stormwater-borne contaminants such as lead, zinc and copper from entering Pauatahanui inlet and stream via Silverwood's retention ponds.

The retention ponds and surrounding plant life are designed to process sediment and filter some contaminants from Silverwood subdivision, but the real responsibility must start further upstream with you, the purchaser. Measures must be taken by you, and any agents, contractors or representatives operating on your property, to ensure stormwater contamination from your property is minimised.

Protect the Pauatahanui inlet and streams by mitigating the impact of stormwater contamination:

Pauatahanui Inlet is an east-west running arm of Porirua Harbour, 30 kilometres north of Wellington, New Zealand. Green hills and low cliffs encircle the sheltered waters and mud flats. It is 3.5 kilometres long, 2 kilometres at it's widest and the shoreline is 13 kilometres. The valley of the Inlet has been in-filled by sands and silts eroded from the surrounding hills. Stream mouths at the east and north are flanked by salt marsh.

It has been identified by Greater Wellington Regional Council as an outstanding landscape based on it's characteristics and values, and in their Regional Coastal Plan as an area of significant conservation value.



View of Pauatahanui Inlet from Silverwood, Whitby March 2008.

Maori have lived on it's shores for at least 500 years. In the past it has been a favourite site for shell fish gathering, hand line fishing and netting, but since the early 1970s, Whitby has progressively seen an increase in residential subdivisions adjacent to the southern side of the Pauatahanui Inlet. Gradually over time, contaminants from each of these developments sites have leached into the stormwater systems that run directly into the Pauatahanui streams and subsequently then into the inlet which have had a damaging effect on the aquatic life in the inlet. Currently shellfish collectors are advised to not collect shellfish because of enterococcal pollution, which is a genus of lactic acid bacteria. Heavy metals also build up in shellfish, making them highly vulnerable to the quality of the stormwater that enters the inlet via Silverwood's retention ponds.

All stormwater runoff eventually enters Pauatahanui inlet via Pauatahanui stream. The stormwater process is generally as follows:

1. Stormwater runs off your property;
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2. Stormwater runs into stormwater sumps (enviropod filters) that collect silt and sediment that contain oils, grease and metals
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3. Filtered stormwater flows into stormwater retention ponds where further sediment and contaminants are collected
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4. Stormwater flows from retention ponds into the Pauatahanui stream and then finally into the Pauatahanui inlet

How can you help?

We all have a responsibility to protect the environment. If everyone contributes by adhering to Silverwood's protective covenants we can mitigate and eventually enhance the quality of Silverwood's stormwater network. Silverwood Joint Venture and the Department of Conservation recommend you read the points below carefully to decide how best to comply with these. These points relate directly to the protective covenants registered to the title on your property:

1. To mitigate stormwater contamination and in turn, make it easier for all parties involved to approve your house plans, you should prohibit the use of building or roofing materials on your property that leach contaminants such as lead, copper and zinc into Silverwood's storm water system. These include any bare galvanised, zincalume or unpainted metal which can corrode making your property susceptible

to causing storm water contamination. This also includes not using any metal-clad roof that has not been factory pre-painted

2. By observing Silverwood's covenants pertaining to stormwater, purchasers will adopt where reasonably practicable best practices to enhance the quality of storm water with the objective that no discharge from residential lots of a soluble or insoluble nature is detrimental to the water quality in the storm water network.
3. Purchasers are also advised to adhere to the covenant, prohibiting the construction of building materials that do not minimise the leaching of contaminants into the storm water system.
4. To ensure due allowance is made for stormwater drainage as per the clauses in the covenants, and to ensure minimal stormwater discharge runs off into kerb and channel, sunken swales act as good garden filters as they absorb stormwater overflow. A swale is a wide, shallow depression in the ground designed to channel drainage of stormwater. This method of garden filtering can be hugely beneficial as they can slow run-off from your property into the subdivision's stormwater network and stabilises soil. A swale should of course not be directed towards neighbouring properties as each property owner is directly responsible for their own stormwater run-off. Here's an example of a swale below:



Example of a man-made stormwater swale

5. Within 9 months of commencement of excavation, the construction of a driveway constructed from permanent continuous surfacing. Semi-permeable (*def: some*

substances can pass through but others cannot) materials eg. Interlocking Firth pavers or Gobi Blocks that meets Part H1 of the Porirua City District Plan standards for driveways are also acceptable in addition to your driveway, which are good for washing or parking cars as they absorb water, soap suds and (some) pollutants straight into the ground rather than running straight into kerb and channel:

H1 CAR PARKING, PRIVATE WAY AND DRIVEWAY TECHNICAL STANDARDS

The Council requires all car parks, private ways and driveways to meet the following standards:

- (i) Maximum gradient of 1 in 5;
 - (ii) Except in the Rural Zone, each car park including aisles, turning circles, driveways and access ways shall be formed and surfaced with an all weather surface such as concrete, bitumen or seal, before use of the site or building (as appropriate) commences.
6. To clarify the above points, you are required under Silverwood's covenants to submit all house and landscaping plans to Silverwood Joint Venture for approval prior to applying for a building permit and/or commencing site works. The submission must include building, roofing, landscaping and driveway requirements before any approval can be granted. There is no guarantee that any plans that are approved by Silverwood Joint Venture will result in a successful building permit from Porirua City Council. Any questions, please refer to your Silverwood covenants or contact the sales office on +64 4 234 8867 or info@carrus.co.nz.

Further Information

For further information on best practice information on stormwater and Pauatahanui Inlet and stream values, please contact any of the following:

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