

11 Conclusions

11.1 Zinc

For all three catchments the mass budgets for zinc are probably as complete as it is possible to achieve using the data presently available. In the commercial (CBD) and industrial (Mt Wellington) catchments roof run-off could account for almost all of the zinc in the catchment stormwater. For the residential catchment (Mission Bay) roof run-off contributes about 46% of the catchment load. Road run-off is a relatively small source of zinc in the stormwater from all catchments. The zinc budget for the Mission Bay catchment has about 20% of the catchment load unexplained but this could be within the error in the load estimates.

11.2 Copper

The mass budgets for copper for all three catchments are far from complete with the copper loads from unidentified sources amounting to about 60% of the total catchment load for the residential catchment, 70% for the commercial catchment and 80% for the industrial catchment. The mass budgets does not include run-off from building walls and fittings that drains directly onto impervious surfaces then into the stormwater network. The data obtained for soils adjacent to buildings in the Mission Bay and Mt Wellington catchments showed, however, that run-off from building walls in these catchments does not carry enough copper for it to be detectable in soils adjacent to buildings. The situation in the CBD catchment could be different, however, with possibly more copper used on buildings. In the industrial catchment the activities themselves could deposit copper on impervious sources which would be included in the total catchment loads but not in any of the identified sources.

There would appear to be some major gaps in our understanding of copper in urban catchments. Although unfortunately beyond the scope of this study, a careful examination of all available urban-related copper data possibly supported by a comprehensive step-by-step field sampling and analytical programme would be required to resolve this enigma.

11.3 Lead

The mass balances for lead in the commercial and industrial catchments are, like those for copper in these catchments, far from complete. As explained above for copper, however, run-off from building walls and flashings could be the source of some of the missing lead. This would appear to be the case for lead in the residential catchment. A realistic assumed average concentration of 500 mg kg⁻¹ for lead in 10% of catchment

soils (the “near building” soils) completed the lead mass balance for the Mission Bay catchment. As noted for copper, industrial activities could contribute some of the lead.

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