TP108 assessment

Methodology and verification record for the McKenzie & Co. stormwater tool. This document is generated from the engine source and its test suite, so it cannot drift from what the tool actually does.

What this implements

TP108 is Auckland Regional Council Technical Publication 108, *Guidelines for stormwater runoff modelling in the Auckland Region* (1999). The tool implements its desktop assessment: the SCS curve number loss model with Auckland-specific curve numbers and a fixed initial abstraction, the TP108 time of concentration relationship, and both the composite and the split pervious/impervious catchment treatments.

Verified against the source document

The following are checked directly against ARC TP108 (1999), including its own Pakuranga worked examples and Worksheet 1. Each line is a test that runs on every change; the list is read from the test suite when this document is generated.

Compute tp108 desktop matches worksheet end to end	test_compute_tp108_desktop_matches_worksheet_end_to_end
Fixed ia matches worksheet	test_fixed_ia_matches_worksheet
Land cover cn table matches source table 3 3	test_land_cover_cn_table_matches_source_table_3_3
Pakuranga impervious sub catchment matches worked example	test_pakuranga_impervious_sub_catchment_matches_worked_example
Pakuranga pervious sub catchment matches worked example	test_pakuranga_pervious_sub_catchment_matches_worked_example
Peak flow cross check runs and is positive	test_peak_flow_cross_check_runs_and_is_positive
Runoff depth matches worksheet	test_runoff_depth_matches_worksheet
Runoff index matches worksheet	test_runoff_index_matches_worksheet
Split combined hydrograph conserves volume and bounds peak	test_split_combined_hydrograph_conserves_volume_and_bounds_peak
Split combined volume is sum of components	test_split_combined_volume_is_sum_of_components
Split uses tp108 own lag relationship	test_split_uses_tp108_own_lag_relationship

Suggested tc min is advisory not applied	test_suggested_tc_min_is_advisory_not_applied
Suggested tc min none without flow path	test_suggested_tc_min_none_without_flow_path
Tc equation matches pakuranga impervious worked example	test_tc_equation_matches_pakuranga_impervious_worked_example
Tc equation matches pakuranga pervious worked example	test_tc_equation_matches_pakuranga_pervious_worked_example
Tc floors to tp108 minimum	test_tc_floors_to_tp108_minimum
Weighted cn matches worksheet	test_weighted_cn_matches_worksheet

What is NOT taken from TP108

Peak flow, where a rainfall location is chosen, is computed with this tool's SCS unit hydrograph engine rather than TP108's own graphical method (Figure 5.1), which is not digitised here. That engine is the one used by the detention tank sizing tool, and it has been validated against HEC-HMS 4.11 across a five case matrix to within 0.5%. It is a methodology substitution and is labelled as one in the tool and in the engine source.

Curve numbers are held only for the Auckland land uses TP108 itself tabulates in Table 3.3. Soil group D is not tabulated in the source document, so the tool declines to supply a curve number for it rather than interpolating one. Anything outside the table must be entered by the engineer.

Data sources

Rainfall	NIWA HIRDS v4 depth-duration-frequency surfaces, sampled at eight Auckland reference points. For design, obtain the site-specific HIRDS point report and apply the applicable climate change factor.
Site boundary	LINZ NZ Primary Parcels (layer-50772) via the LINZ Data Service. Shown for reference: the contributing catchment is often not the parcel.
Address	LINZ NZ Addresses (layer-123113).
Contours	Auckland Council Contours MapServer, derived from the Auckland LiDAR survey. Rendered at 0.5 m intervals at site scale.
Aerial imagery	Esri World Imagery.

Standing limitations

Start and end reduced levels for the flow path are not derived automatically; read them from the contours on the map or from a survey. The tool produces a desktop assessment: it does not replace a calibrated hydraulic model where one is required, and the engineer signs off the result.

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