



Evaluation of creek restoration works at Blacktown City Council's Lalor Creek

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Overview:

Blacktown City Council has recognised the need to implement best practice management of urban streams, which includes robust investigation to determine if objectives of stream rehabilitation projects are met. The rehabilitation of Lalor Creek, Kings Langley provided the opportunity to establish a monitoring strategy to determine the effectiveness of rehabilitation activities against project objectives, which were to ameliorate and mitigate against creek bed and bank erosion, improve water quality and improve biodiversity.

Results of the study revealed that the objective of mitigating against creek bed and bank erosion was achieved, however biodiversity improvements only occurred within the riparian ecosystem and that there were no improvements in water quality. Lessons learnt from the study include:

- improvements to aquatic biodiversity and water quality are limited if stormwater flow is not ameliorated,
- riparian biodiversity can be improved by implementing simple management practices, and
- most importantly project objectives need to be feasible and realistic.

Information gained by Council from this study have been presented to Council's design, construction and maintenance sections and will be applied to future restoration projects to ensure continuous evaluation of project outcomes. This will enable iteration of Councils approach to urban stream management which will allow a flexible yet robust approach managing these complex environments.

Objectives:

The objectives of this project were to:

- Monitor the current ecological and structural condition of Lalor Creek and compare results across an unrestored reach and two restored reaches.
- Evaluate if stream restoration works have met the original project objectives of improving biodiversity, mitigating against creek bed and bank erosion, and to improve water quality.
- Report the results to Council and determine how creek rehabilitation works can be improved for future creek rehabilitation projects.
- Implement improved approach to creek rehabilitation across the Blacktown Local Government Area (LGA).

Method:

This project compared a suite of commonly applied indicators of waterway and riparian condition which included benthic diatoms, aquatic macroinvertebrates, riparian vegetation and creek channel condition assessment, biometric vegetation assessment and a modified landscape function analysis, to assess if differences in condition were apparent between unrestored and restored reaches of Lalor Creek.

Results:

The results from the study indicated that:

- The creek and riparian condition was still considered poor to fair as the vegetation is still immature and therefore has not improved from the base case.
- Native plant species diversity in the riparian zone is much greater than the original site.
- Aquatic biodiversity showed no evidence of improvements between restored and unrestored reaches because urban stormwater flows were not mitigated against.
- Sandstone armouring is effective at protecting the creek bed and bank, however it is restricting any natural variation in habitat and sediment deposition.

Conclusion:

This monitoring and evaluation study has indicated that this creek rehabilitation project did not meet all of its objectives. There are a number of key recommendations that need to be used for future creek restoration projects, to ensure Council has learnt from the study and has modified the design and construction practices to ensure the next project is a success and all objectives are achieved.

This study confirms the importance of monitoring and evaluation of project objectives to determine success, and to learn from mistakes to improve the outcomes of future projects.