

Throsby Creek Catchment Agencies Plan 2019 – 2024

**A project of the Throsby Creek Government
Agencies Committee**



ON TOTAL CATCHMENT MANAGEMENT

“...is not legally binding upon persons, companies or government agencies. Instead, its role is to promote cooperation and coordination. It aims to encourage a common purpose between all relevant agencies and groups so that they may carry out their respective activities in a complementary manner, directed towards coherent objectives that have received community endorsement.

By presenting an ‘integrated approach’, the Strategy has the potential to enable access to funding sources not available to projects in which catchment issues are addressed separately.

...a practical framework within which relevant agencies can prepare detailed annual programs for their activities.”

From Page 3. Throsby Total Catchment Management Strategy 2001

CHAIR'S FORWARD

Welcome to the Throsby Creek Catchment Agencies Plan 2019-2024!

The Plan aims to improve the health, amenity and safety of Throsby Creek and its catchment.

It was initiated by local community members who were concerned about the health of Throsby Creek and its catchment.

This Plan builds on the work of the two preceding Throsby Creek Total Catchment Management Plans published in 1989 and 2001 respectively.

Throsby Creek is such a vibrant and well used waterway. From the recreational water users such as rowers, paddlers, dragon boaters and fishers to those who simply love to walk or ride along the edges of the creek taking in the mangroves, ecosystem and birdlife.

The Plan seeks to further improve the environment of the Throsby Creek waterway and its surrounds, and the amenity of the area for residents, visitors and commercial users.

It will be used to deliver goals that improve the water quality, ecosystem health and biodiversity as well as alleviating the effects of flooding and decrease gross pollutants.

Thank you to all of the government agencies and community members who provided input into this plan to keep our beloved Throsby Creek healthy, clean and safe!



TIM CRAKANTHROP MP

Chair, Throsby Creek Government Agencies Committee
Member for Newcastle

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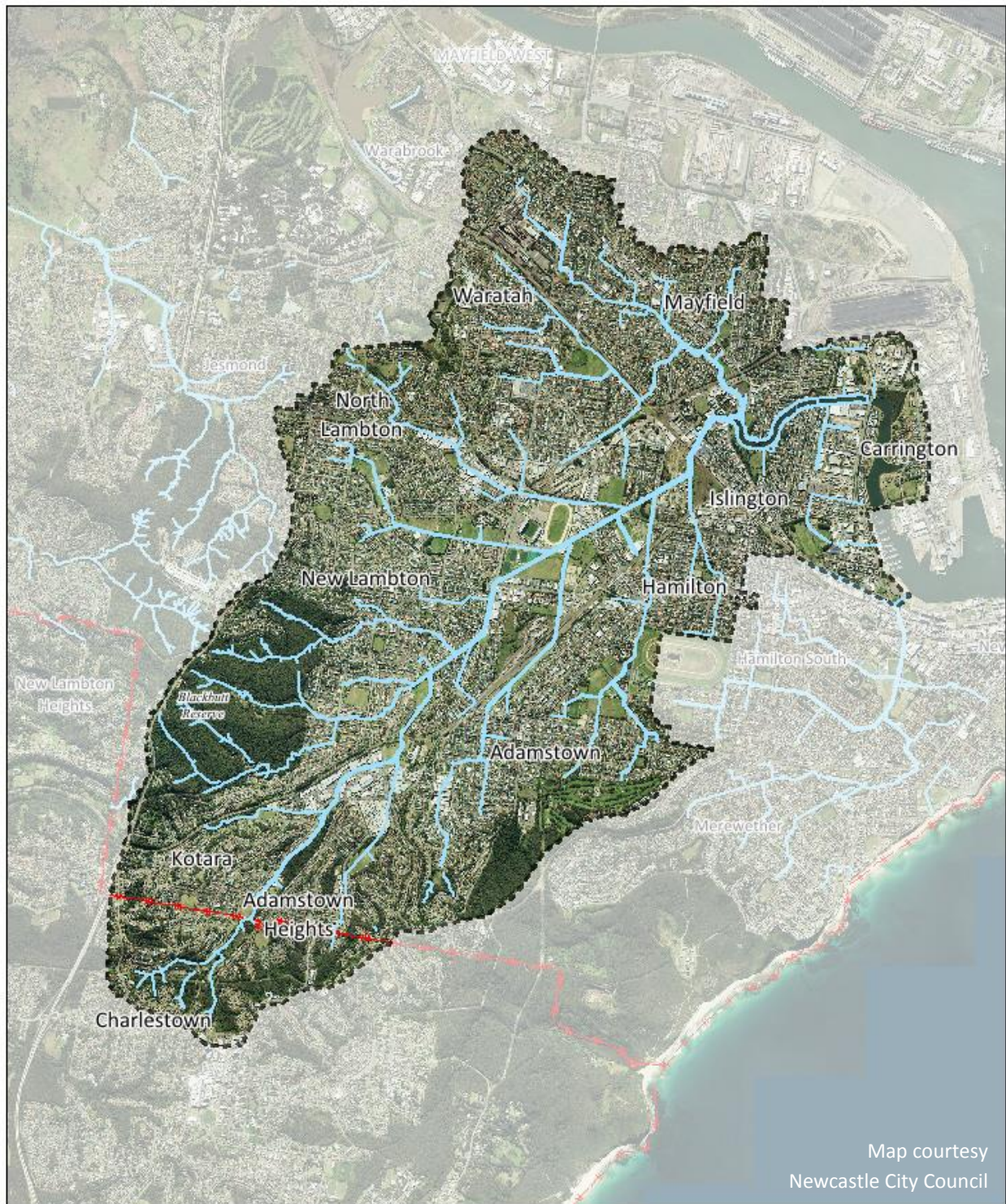


Figure 1: Throsby Catchment map

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AIM, MISSION AND GOALS

Aim of the Plan 2019 - 2024

- To provide a structured framework to progress coordinated planning and implementation by responsible agencies under the Throsby Government Agencies Committee in the time period of 2019 – 2024
- To agree on priorities
- To seek joint funding
- To provide a reference for public engagement with Throsby catchment planning and implementation

Mission

- To improve the health, amenity and safety of Throsby Creek and its catchment

Goals

1. To create a safe, healthy and beautiful environment
2. To improve the recreational amenity of the catchment waterways and their surrounds
3. To improve ecosystem health across the catchment, while building resilience to future climate change impacts
4. To increase the value the community holds for the catchment

Topics and Strategic Actions

The Goals will be delivered through the following Works Plan. In accordance with Total Catchment Management principles the Works Plan include Strategic Actions in the areas of research, policy, onground works and land management , and education under five Topic headers including:

- A. Streams, Ecosystem Health, and Biodiversity (Goal 3, 4)
- B. Water Quality (Goal 1, 3, 4)
- C. Gross Pollutants (Goal 1, 2, 3, 4)
- D. Flooding (Goal 1, 4)
- E. Implementation (Goal 4)

ABOUT THE PLAN

The Throsby Creek Catchment Agencies Plan (the Plan) is a working document of the Throsby Creek Government Agencies Committee (TCGAC). The Committee is convened by the State Member for Newcastle Tim Crakanthorp and hosted by Hunter Water Corporation.

The Plan is set to be a standing item of the TCGAC meeting agenda and all Committee members have a role in progressing the overall Plan while addressing their respective areas of responsibility as outlined in the following Works Plans tables.

The Plan was developed by staff from Hunter Local Land Services in consultation with TCGAC members and other stakeholders. It reflects the concept of Total Catchment Management (TCM) as per the two preceding plans for the Throsby Creek Catchment; the Throsby Creek TCM Strategy 1989 and the subsequent 2001 TCM Strategy. The previous plans were reviewed by relevant stakeholders with agreed outstanding and ongoing actions incorporated in the Plan.

The history of Throsby Creek, and the community driven campaign for its protection and improvement, is comprehensively told in *Turning the tide: the Throsby Creek campaign* (1993) available from the [Newcastle Region Library](#).

Members of the Throsby Creek Government Agencies Committee:

Chair:

- Member for Newcastle, Mr Tim Crakanthorp MP

Government Agencies:

- City of Newcastle (CN)*
- Hunter Local Land Services (HLLS)
- Hunter Water Corporation (Committee Secretariat) (HWC)
- Lake Macquarie City Council (LMCC)*
- Roads and Maritime Services (RMS)
- TAFE NSW (TAFE)

Business, Community and Stakeholder Representatives:

- Port of Newcastle
- Port Waratah Coal Services
- Community representative: Mr John McLeod, Newcastle Rowing Club
- Community representative: Mr John Sutton, Tighes Hill Community Group

*The Throsby Creek catchment is predominately within the Newcastle Local Government Area, with a small proposition of the upper catchment within the Lake Macquarie Local Government Area. While both Councils are members of the Committee, City of Newcastle is primarily responsible for actions ascribed to Councils within this document.

WORKS PLAN

TOPIC A - STREAMS, ECOSYSTEM HEALTH & BIODIVERSITY (Goal 3,4)

| Strategic Actions | Budget and activities | Evaluation |
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| Research and Planning | | |
| 1.1 Major landholders to undertake a joint planning activity across the catchment to prioritise a suite of riparian rehabilitation and stormwater improvement works. Planning process to: <ul style="list-style-type: none"> use multi-criteria analysis of existing stream condition and biodiversity data and any new data required. ensure improving recreational and visual amenity is a criteria for prioritisation of works. review pollution control works and make any recommendation for additional works. ensure continual alignment of the Hunter Estuary Process Study and Management Plan and CN planning framework , with Throsby Creek planning and implementation as per Hunter Estuary Process Study Committee (facilitated by CN) Actions may include: <ul style="list-style-type: none"> stream restoration channel naturalisation channel naturalisation or in-stream features e.g. centre low-flow water polishing reed beds at-source stormwater pollution controls Lead agencies: CN, LMCC, HWC Other: NSW DoI - Water, NSW Soil Conservation Services | Agencies: CN, LMCC, HWC Action Working group reporting to Govt Agencies Committee When: by June 2019 Is budget identified: CN: Projects as included in the 4 year forward program and annual delivery Plan for adoption by Council. LMCC: Asset Department Function. Any new ecosystem enhancement works will need to be budgeted in Council's future works schedule, annually exhibited and adopted by Council. HWC: Operational budget for investigations into potential areas for concrete channel naturalisation/ amenity improvements. | Evaluation method: HWC and Council Plans Produced CN Indicators: Works plan produced and adopted annually by CN, LMCC, HWC Indicators: Stormwater Naturalisation Investigation Report completed and outcomes supported by Hunter Water and Councils. HWC PROJECT COMPLETED: Stormwater Naturalisation Investigation Report has been completed and was supported by HWC and the relevant Councils. Funding to start implementing the works has been sought as part of next Price Path Submission as detailed in action 1.3 below. This report will also guide future works when renewals are also required for the stormwater channels see action 1.8. |
| 1.2 Develop a Throsby Creek Mangrove Management Plan from Maitland Rd Islington down to the Hannell St bridge. Aim is to develop a Plan of Management for the long-term management of the mangroves to ensure conservation requirement are met, while also enhancing the Creek's vista and aesthetics. Plan of Management to include investigation of options to address litter accumulating in the mangroves. Lead agencies: HWC Other: CN, RMS | Agencies: HWC When: by June 2020 Is budget identified: HWC: Operational budget 2019-2020 financial years. | Indicators: Management Plan produced and adopted by Hunter Water and some clean up support from RMS Maritime |
| Works & Land Management | | |
| 1.3 Obtain funding and implement the works developed at 1.1 above. Lead agencies: CN, LMCC, HWC | Agencies: CN, LMCC, HWC Action: Implement prioritised works in the Throsby Catchment Works Plan When: Following completion of investigative works in June 2019, as funding becomes available. Is budget identified: | Evaluation method: Condition assesment of the asset renewed. CN Indicators: Water quality Indicators will vary depending on the works: eg water quality for (stream works before and after). Bushland improvement - species richness |

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| | <p>CN: Projects as included in the 4 year forward program and annual delivery Plan for adoption by Council.</p> <p>HWC: Depending on the works identified some may be able to be done under existing budgets otherwise funding could be sought in the future IPART Price Path submission. Communities willingness to pay for works described as discretionary will be investigated.</p> <p>LMCC: Funding to be considered though Council's operational and delivery plans, as adopted by Council. Some works already budgeted e.g. Kirkdale Drive nick-point control works.</p> | <p>HWC Indicators: Amenity around concrete stormwater channels improved at key locations as identified in the Stormwater Naturalisation Investigation.</p> |
| <p>1.4 Continue to incorporate 'water sensitive urban design' at-source controls (eg reduced area of impermeable surface, landscaping, swales, infiltration, basins, etc) into long-term stormwater asset and street pavement replacement strategies; having regard to issues such as capital and recurrent costs/savings, enhancement of property values and regional image. Lead agency: RMS, CN and LMCC</p> <p>* NB: While RMS is only responsible for a small percentage of the road network within the Throsby Creek catchment.</p> | <p>Agency: RMS Action: Incorporate water quality controls when designing or replacing infrastructure within the catchment area When: On an ongoing basis Is budget identified: Any works will need to be funded.</p> <p>Agency: CN Action: CN implement adopted Urban Water Cycle Policy. When: 2018-2024 Is budget identified: Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council.</p> <p>Agency: LMCC Action: Asset Department Function Is budget identified: Any new ecosystem enhancement works will need to be budgeted in future works schedule.</p> | <p>Evaluation method: % of relevant projects that include WSUD elements</p> <p>Indicators: Additions to SWQ asset register</p> |
| <p>1.5 Identify priority sites for bush regeneration projects (restoration, primary regen, secondary regen), and prepare and implement Action plans for these sites. Lead agencies: LMCC, CN</p> | <p>Agency: CN Action: Implementation of CN annual bushland renewal program, and Bushland Operational Program When: Annually Is budget identified: Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council.</p> <p>Agency: LMCC Action: tbc When: 2019</p> | <p>Evaluation method: Bushland condition assessment (5 year). Annual Progress report</p> <p>Indicators: Area of regen (extent) Number of plants planted Weed extent Area of erosion control</p> |

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| | Is budget identified: No Any new ecosystem enhancement works will need to be budgeted in future works schedule. | |
| 1.6 Revegetation on streams and erosion sites to use appropriate endemic species for private land. HLLS and Landcare to advise private landholders on correct species palette, with reference to regional vegetation mapping developed by OEH and Hunter Councils, and promote erosion control, natural channel design and give advice on applicability and requirements of the NRAR guidelines for controlled works on waterfront land. Lead agencies: HLLS | Agency: HLLS Action: Review species lists When: 2017-2018 Is budget identified: NA accessed via extension officer | Evaluation method: Advice to private landholders, and/or production of appropriate collateral for distribution. Indicators: Advice provided to landholders |
| 1.7 Recognise Throsby Creek's function as a valuable green corridor, and continue to ensure Councils and other contractors/agencies riparian open space management practices have minimal impact by eliminating unnecessary mowing, expanding creek buffers, replacing exotic species with native vegetation and reducing use of chemicals that may impact on biodiversity in accordance with planning frameworks Lead agencies: CN, LMCC Other: HWC | Agencies: CN Action: Annual delivery of continuous improvement for Council business units When: 2018-2024 Is budget identified: Operational (Facilities and Recreation) Agency: LMCC Action: No Mow Markers can be utilised to define mowing boundaries. When: 2018-2024 Is budget identified: tbc | Evaluation method: CN: Meeting parks Services Guidelines and Service Plan Level Indicators: CN: Service levels met. Increased staff awareness. |
| 1.8 Continue to implement stormwater rehabilitation/repair works to maintain the structural integrity of Hunter Water's stormwater Assets. Where works are required to open channels works should be aligned where possible with the outcomes of the Stormwater Naturalisation Investigation developed in action 1.1. Agency: HWC | Agency: HWC When: Ongoing. Is budget identified: Annual capital budgets are available for stormwater rehabilitation/replacement work and new funding sought for large projects or discretionary works. | Indicators: Stormwater system functional and rehabilitation of open stormwater channels aligned with the outcomes of the Stormwater Naturalisation Investigation report developed as part of action 1.1. |
| Policy & Development Control | | |
| 1.9 (also 2.6, 3.8 5.5) Continue to promote and enforce Council DCP and water sensitive design guidelines to improve management of biodiversity and stormwater runoff at the development application stage - particularly for development sites that adjoin bushland or drainage lines Lead agencies: LMCC, CN | Agency: CN Action: Council will deliver ongoing review of DCP. When: 2018-2024 Is budget identified: Review incorporated within service unit operations. Agency: LMCC Action: Program across Departments When: Ongoing Is budget identified: | Evaluation method: CN: Updates to Stormwater DCP and associated Technical Manual Indicators: CN: Improved biodiversity factors – eg. water bugs, weed extent, etc |
| 1.10 Undertake review of Natural Areas planning framework including Urban Forest Policy, Plans of Management and Riparian areas to improve permeability and connectivity of native vegetation corridors throughout the catchment. | Agencies: CN Action: Investigate current policy framework through review of the Newcastle Environment Management Strategy and Urban Forest Policy. | Evaluation method: Review completed Indicators: Policy review and associated action plan prepared and adopted by CN. |

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| | When: Commence Financial Year 2017-18 Is budget identified: Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council. | |
| Education & Awareness | | |
| 1.11 Continue community natural resource management engagement programs focussing on Urban biodiversity awareness, riparian corridors, Landcare support and training, WSUD Lead agencies: CN, LMCC Others: Hunter Water to on promote | Agency: CN Action: Natural Connections, Landcare, living streets, green waste When: From March 2019 Is budget identified Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council. Agency: LMCC Action: Sustainable Neighbourhoods Program LandCare Program When: Is budget identified: | Evaluation method: Annual program reporting Indicators: Community aware and supportive of works to be undertaken. Participation (number of participants) Satisfaction rating |

TOPIC B: WATER QUALITY (Goal 1, 3 and 4)

| Strategic Actions | Budget and activities | Evaluation |
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| Research and Planning | | |
| 2.1 Define water quality monitoring required in addition to 3.1 Gross Pollutant monitoring and design program to 2024. Use results to investigate and further understand hotspots and causes of water pollution across the catchment. Determine responses to address any water quality problems identified through this process, see Works and Land management section below. Lead agencies: CN Others: TAFE, UoN | Agency: CN Action: Establish updated water quality maintenance data capture Is budget identified: Deliver through stormwater asset management activities. | Evaluation method: Annual Delivery Plan reporting Indicators: Water monitoring program developed and implemented. |
| Works and Land Management | | |
| 2.2 Define and install a suite of 'at source' water quality controls, with a focus on pollution hotspots such as car parks and commercial areas. Lead agency: CN | Agency: CN- direction see Councils 2012 DCP Action: Ongoing review. Council implements ongoing retrofit program for "Hot Spot" stormwater pollution generation sites eg car parks, shopping centres citywide as part of the annual Stormwater program implementation. When: Annually to 2024 Is budget identified: Included as part of Councils Stormwater Program of Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council. | Evaluation method: Number and variety of water quality controls installed. Indicators: Annual Delivery Plan Report – Stormwater deliverables. |
| 2.3 Improve the quality of runoff from roads through the use of 'at source' controls including street sweeping. Lead agency: CN and LMCC with RMS | Agency: Councils and RMS Action: Street sweeping Is budget identified: RMS provides funding to Councils for sweeping of roads as required. | Evaluation method: CN Monitor street sweeping in line with 4 year Delivery Plan Indicators: Inclusion of data within Annual Report |
| 2.4 Continue to implement sewer upgrade works in accordance with licence conditions and work with EPA and others to investigate Effects Based Investigations to drive where future upgrade work should be implemented. Lead agency: HWC Other: EPA | Agency: HWC Action: Ongoing Is budget identified: Funding for upgrades will be sought in accordance with licence conditions and future Effects Based Investigations. | Evaluation method: Indicators: Meeting licence conditions |
| 2.5 Reduce the output of nutrients from public lands through continuous improvements in vegetation management around fertiliser and herbicide use, mowing, landscaping and channel maintenance. Lead agency: CN Other: LMCC, HWC, RMS | Agency: CN Action: Annual Delivery of continuous improvement for Council business units When: 2018 ongoing Is budget identified: Included in operational as part of Councils Environment Program - within CN Annual Delivery Plan approval process. | Evaluation method: Reporting from relevant service units Indicators: Contract inclusions. Staff feedback |

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| Policy and Development Control | | |
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| 2.6 Facilitate the upgrade and maintenance of stormwater diversion, conveyance and treatment systems within industrial areas Eg. Tighes Hill, Carrington, through planning controls. Lead agencies: CN, EPA, industries | Agency: CN Action: Include role of industrial areas generally in stormwater DCP review process and ammend controls as required. Is budget identified: To be delivered as part of CN's ongoing biannual planning controls review | Evaluation method: Inclusions in DCP review report provided to Council.. Indicators: Council adoption of report. |
| Education and Awareness | | |
| 2.7 Continue community education and awareness programs aimed at reducing input of nutrients, organic matter and pollution into to the catchment, such as by promoting appropriate landscaping practices, conducting stormwater education and catchment awareness initiatives Lead agencies: CN, LMCC | Agency: CN Action: Natural Connection – Stormwater pollution education awareness initiatives eg Gutter Talk , Landcare, Living Streets, Waterbug Survey, green waste When: From July 2018 Is budget identified: Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council. | Evaluation method: Annual program reporting Indicators: Community aware and supportive of works to be undertaken. Participation (number of participants). Satisfaction rating. |
| 2.8 Develop targeted education campaigns for industrial and commercial and construction activities - including self-administered pollution audits to increase awareness and develop skill base of site managers. Lead agency: EPA Other: CN, LMCC | Agency: EPA Action: tbc Is budget identified: tbc Agency: CN Action: Deliver Business Pollution Prevention Program (BPPP) Is budget identified: yes, as part of Annual Delivery Plan Agency: LMCC Action: Support in principle Is budget identified: | Evaluation method: EPA program running in Throsby Catchment Indicators: Improved water quality management practices at an increasing number of commercial premises. Evaluation method: CN Annual Business Pollution Prevention Program BPPP delivery report (see compliance rates). Indicators: CN: An improving trend in annual compliance rates on first inspection. Number of businesses and improved practices delivered through BPPP implementation. |

TOPIC C: GROSS POLLUTANTS (Goal 1, 2, 3, 4)

| Strategic Actions | Budget and activities | Evaluation |
|---|---|--|
| Research and Planning | | |
| 3.1 Review previous Gross Pollution Studies and develop a future action plan. To be undertaken in action 1.1 detailed above. | | Indicators: Gross Pollutants investigated and included in the action 1.1 above. |
| 3.2 Finalise the Multi Agency Throsby Creek Sediment Study. Lead agencies: CN, HWC, HLLS | Agency: CN, HWC, HLLS Action: Complete Multi Agency Throsby Creek Sediment Study When: by Dec 2018 | Indicators: Multi Agency Throsby Creek Sediment Study completed endorsed by Management at CN, HWC. PROJECT COMPLETED: Study outcomes endorsed by CN and HWC and to be implemented in action 3.4 |
| 3.3 Review the sediment levels in lower Throsby Creek in 2017-18 to determine when the trigger point for moving forward with dredging is reached. Assess the impact of mangroves on flooding. If the dredging point is not reached in the 2017-18 assessment, reassess sediment levels again in 2022-23 to confirm dredging timing. If dredging is still not justified as part of this investigation Hunter Water may consider assessing the community's Willingness to Pay for bringing forward dredging in order to address amenity issues as part of preparation work for the Next Price Path Submission around 2024-25. Lead agencies: HWC | Agency: HWC Action: Review sediment levels in 2017-18 and assess the impact of sediment and mangroves on flooding. When: 2017-18 Is budget identified: Yes, operational budget Agency: HWC Action: Review sediment levels in 2022/23 and if dredging is still not justified consider the communities Willingness to Pay to bring forward dredging in order to address amenity issues. When: Review in 2022/23 Is budget identified: Operational budget to be sought for this investigation | Indicators: 2018 review of sediment levels completed. Future action plan developed. PROJECT COMPLETED: Sediment and Mangrove impact on flooding assessed. Future action is to reassess sediment levels in 2022-2023 and implement an interim mangrove management which may involve removal of mangroves on the accumulating sediment banks. See action 3.7 below. Indicators: 2022-23 review of sediment levels completed. Future action plan developed. |
| Works and Land Management | | |
| 3.4 Implement suite of coordinated works relating to sediment as identified in the Multi Agency Throsby Creek Sediment Study, see outcomes of action 3.2 above. Lead agencies: CN, HWC | Agencies: CN, HWC Action: complete suite of works to meet requirements of responsible agencies. When: From Jan 2018 when funding becomes available. Is budget identified: CN: Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council.. HWC: Funding approved for some Hunter Water's specific actions. | Indicators: Funding sought for Actions identified in the Throsby Creek Sediment Study and works implemented. |

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| <p>3.5 Continue to implement a prioritised program of 'at-source' controls (eg kerb protectors, pit inserts) and maximise the effectiveness of existing street cleansing regimes as identified in the Multi Agency Throsby Creek Sediment Study 2017, see outcomes of action 3.2 above. Lead agency: CN Other: LMCC</p> | <p>Agency: CN Action: Review recommendations of The Study and incorporate in annual Delivery Plan. When: Ongoing from Jan 2018 Is budget identified: Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council.</p> | <p>Evaluation method: Report on annual delivery program Indicators: Increase in the number assets in water quality device register</p> |
| <p>3.6 Work with the operators/owners of major existing litter hot spots to plan for reducing on-site litter management e.g. Stadium, shopping centres, community sporting groups, services stations, take-away. Lead agencies: CN, EPA, HC</p> | <p>Agency: CN Action: Negotiations with event managers and user groups to ensure litter free events. BPPP program delivery. When: Ongoing, annual program. Is budget identified: CN - EPA projects Better Waste Funding (42% reduction by 2017-18)</p> | <p>Evaluation method: Report on annual delivery program and event data Indicators: Litter levels meet targets</p> |
| <p>3.7 Undertake removal of mangroves growing on accumulated sediment banks within Throsby Creek in the vicinity on the Union St footbridge as recommended in action 3.3 above. As mangroves are a protected species undertake a Review Of Environmental Factors (REF) before any works are undertaken and seek fisheries approval. Lead agencies: HWC</p> | <p>Agency: HWC Action: Mange mangroves within Throsby Creek When: 2019 and ongoing as required. Is budget identified: Budget available for current mangrove management program however budgets will need to be sought for any future works.</p> | <p>Indicators: Mangroves within the creek contained to the existing islands within the creek and the banks of the channel.</p> |
| <p>3.8 Undertake all investigations, design work and environmental assessments necessary to undertake sediment dredging works within Lower Throsby Creek once the when trigger point is reached. See Section 3.3 above. Undertake dredging works. Lead agencies: HWC</p> | <p>Agency: HWC Action: Investigations, Design, Environmental approvals and then dredging of sediment When: Timing dependant on when trigger point for dredging is reached. Is budget identified: Funding for dredging will need to be sought through Price Path Submission process once the trigger point for dredging is nearing.</p> | <p>Evaluation method: Indicators: Dredging works completed.</p> |
| <p>3.9 Monitor and manage vessel activity and provide Aids to Navigation for safety, amenity and recreation downstream of Hannell Street Bridge Lead agencies: RMS</p> | <p>Agency: RMS Maritime Action: When: continuous as required Is budget identified: as required</p> | <p>Evaluation method: Indicators: Clear passage for safety, amenity and recreation, taking into consideration waterway constraints.</p> |
| Education and Awareness | | |
| <p>3.10 Continue targeted education and awareness programs via dedicated E&S Compliance/Education Officers for the construction industry eg, preparing and implementing erosion control plans, informing of changes to development requirements. Lead agencies: CN, LMCC</p> | <p>Agency: CN Action: Erosion and Sediment control resources identified through annual Delivery Plan (Stormwater Maintenance</p> | <p>Agency: CN Evaluation method: Annual Reporting on Delivery Plan implementation. Indicators:</p> |

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| | <p>Service Charge). UWC community of practice group/ review underway When: Ongoing – annual review Is budget identified: Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council..</p> <p>Agency: LMCC Action: Development Assessment and Compliance (DAC) – dedicated Compliance Officers and Erosion and Sediment Control Officer. When: Ongoing Is budget identified: Yes</p> | <p>Number of compliance issues investigated and best practice changes reported annually.</p> |
| <p>3.11 Continue capacity building programs for best practise in erosion and sediment management by Councils and other agencies. Lead agencies: CN, LMCC, DLWC</p> | <p>Agency: CN Action: Continuous improvement in E&S delivery through delivery of the UWC community of practice action plan When: Ongoing - Is budget identified: operational activity endorsed by Management</p> <p>Agency: LMCC Action: Dedicated Erosion and Sediment Control Officer. When: Ongoing Is budget identified: Yes</p> | <p>Agency: CN Evaluation method: Review of UWCM community of practice action plan</p> <p>Indicators: Report on UWC Policy action plan implementation</p> |
| <p>3.12 Undertake a specific litter education program - including attitude surveys, media campaigns, printed material at key sites, clean up days and linkages with existing education programs. This may include: Marine debris monitoring (using Australian Marine Debris Database) Signage Public place recycling bins ‘Why I love Newcastle’ – ‘Do the Right Thing’ messages Lead agencies: CN, EPA, HLLS, HC, PWCS, RMS</p> | <p>Agency: CN Action: Deliver Annual Waste Education Campaign When: Ongoing as program funding allows Is budget identified: EPA - Waste Less Recycle More regional funding stream</p> <p>Agency: LMCC Action: Support in principle When: Is budget identified:</p> <p>Agency: HC - LHCCREMS Action: Regional litter Strategy and Implementation When: 2016 if funded. Already staffed (funded by grant) Is budget identified: EPA - Waste Less Recycle More regional funding stream</p> | <p>Agency: CN Evaluation method: Reporting based on Annual Report and funding documentation</p> <p>Agency: HC Evaluation method:</p> |

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| 3.13 On-promote activities identified at 3.12 above to the community through the Throsby Creek Government Agencies Committee. Lead agencies: Committee Secretarat HWC | Agency: Committee Action: Promote activites When: From June 2019 Is budget identified: Operational funding from June 2019 | Evaluation method: Community awareness of action 3.12. |
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TOPIC D: FLOODING and CATCHMENT MODELING (Goal 1, 4)

| Strategic Actions | Budget and activities | Evaluation |
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| Research | | |
| 4.1 Newcastle City Wide Risk Management Plan Action - Flash Flood Warning System - Deliver service to Throsby community by way of City-wide flash flood warning service by 2020 and continue for duration of Plan Lead entity: CN | Agency: CN & Newcastle Flood Committee Action: Newcastle City Wide Flood Risk Management Plan Actions - <i>Flash Flood Warning System - deliver service to Throsby community</i> When: Installed in 2009 and soon to be a service for the community in 2020 – Ongoing Is budget identified: Yes. Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council. | Evaluation method: Community Survey Indicators: Indicators may cover: <ul style="list-style-type: none"> • number of subscribers • human safety factors • ecosystem health • amenity: recreational and/or beauty • community involvement • community value for creek and catchment |
| Works & Maintenance | | |
| 4.2 Newcastle City Wide Risk Management Plan Action - Strategic Position for the Low Lying Suburbs 2019 Lead entity: CN | Agency: CN & Newcastle Flood Committee Action: Implementation of approved Newcastle City Wide Flood Risk Management Plan Actions and Strategic Position for the Low Lying Suburbs When: In progress - ongoing delivery Is budget identified: Ongoing application to relevant funding bodies eg State Govt Flooding Grant | Evaluation method: Community Survey Indicators: grant funding success |
| 4.3 Undertake further works where practicable to alleviate the effects of tidal flooding at Maryville and Carrington, including investigation of options to upgrade tide gates to reduce obstruction and maintenance requirements. Lead entity: CN, HWC | Agency: CN Action: Investigate options to upgrade tide gates to reduce obstruction and maintenance requirements - Carrington, Maryville. When: Ongoing Is budget identified: Projects as included in the 4 year forward program, and annual delivery Plan for adoption by Council. Agency: HWC Action: Continue to monitor tidal gates and when required undertake any rehabilitation / replacement works in line with current best practices. When: Ongoing Is budget identified: Budget sought when repairs or replacement are required. | Evaluation method: Pilot testing of recommended options Indicators: Tidal gates working efficiently - reduction in inundation events. |

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| <p>4.4 Continue to monitor sea level in Newcastle Harbour, investigate medium to long term groundwater monitoring and implement actions for the Strategic Position for the low-lying areas as required. Lead entity: CN</p> | <p>Agency: CN Action: DCP development When: Ongoing Is budget identified: Monitoring budget in Annual Council Delivery Plan adopted. Funding for implementation not identified and subject to future investigations.</p> | <p>Evaluation method: Through Council consideration and adoption</p> <p>Indicators: Indicators may cover:</p> <ul style="list-style-type: none"> • human safety factors • ecosystem health • amenity: recreational and/or beauty • community involvement • community value for creek and catchment |
| Planning & Development Control | | |
| <p>4.5 Develop the Throsby Creek Catchment Model to cover all storm and flood events. Utilise the Model in project design phase to ensure integrity of design process/ outcomes. Lead entity: CN</p> | <p>Agency: CN Action: Complete Model development. When: 2018 - 2024 Is budget identified: Project as included in the 4 year forward program, and annual delivery Plan for adoption by Council.</p> | <p>Evaluation: Model available Indicators: Application of model to project briefs/delivery</p> |
| <p>4.6 Implement 'Water Sensitive Design' elements of the Stormwater DCP including requirements relating to stormwater infiltration, retention and detention to reduce urban runoff quantities (as outlined in the stormwater technical manual). Lead entity: CN, LMCC</p> | <p>Agency: CN Action: Review effectiveness of the DCP implementation as part of the annual review process. When: Ongoing Is budget identified: Internal staff resources</p> <p>Agency: LMCC Action: On-going program across Departments.</p> | <p>Evaluation method: 4 yearly review of planning approvals.</p> <p>Indicators: Indicators may cover:</p> <ul style="list-style-type: none"> • updates to DCP • human safety factors • ecosystem health • amenity: recreational and/or beauty • community involvement • community value for creek and catchment |
| <p>4.7 Implement the Newcastle Development Control Plan - Flood Management, to manage risks to life and property on flood prone land. Lead entity: CN</p> | <p>Agency: CN Action: Review DCP When: 2018 - ongoing Is budget identified: N/A. Staff resources Integrated Water Cycle Engineer</p> | <p>Evaluation method: Public exhibition of revised DCP</p> <p>Indicators: Indicators may cover:</p> <ul style="list-style-type: none"> • human safety factors • ecosystem health • amenity: recreational and/or beauty • community involvement • community value for creek and catchment |
| <p>4.8 Investigate the implications of climate change through flood studies and assessment of flood mitigation options. and application of 'water sensitive cities' design philosophy Lead entity: CN, LMCC</p> | <p>Agency: CN Action: Update CN Urban Water Cycle Policy to include a review of current flood</p> | <p>Evaluation method: CN: Consideration by elected Council</p> |

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| | <p>mitigation controls and standards against AR&R 2016; When: Review 4 years or in line with IP&R Framework timeframes Is budget identified: NA. Staff time.</p> <p>Agency: LMCC Action: Environmental Security Unit dedicated to SLR mitigation, strategic planning and community engagement. When: On-going Is budget identified: Yes already resourced</p> | <p>Indicators: CN: Council adoption Indicators may cover:</p> <ul style="list-style-type: none"> human safety factors ecosystem health amenity: recreational and/or beauty community involvement community value for creek and catchment |
| <p>4.9 CN Urban Water Cycle Policy and framework to guide Councils position and delivery of WSUD. Lead entity: CN</p> | <p>Agency: CN Action: UWC Policy and framework implemented When: 2018 and ongoing Is budget identified: Operational budget- staff resources and UWC community of practice</p> | <p>Evaluation method: Annual review of implementation plan Indicators: Actions in Plan completed</p> |
| Education & Awareness | | |
| <p>4.10 Newcastle City Wide Risk Management Plan Action - Flood Education – know your flood risk and be flash flood safe - Deliver service to Throsby community by 2018 and continue for duration of Plan Lead entity: CN, Funder/owner or coordinating body</p> | <p>Agency: CN Action: Newcastle City Wide Flood Risk Management Plan Actions - Flood Education - Deliver to Throsby community for duration of Plan When: Deliver to Throsby community by 2018 and continue for duration of Plan Is budget identified: Yes. Incorporated in Annual Council Delivery Plan adopted.</p> | <p>Evaluation method: Electronic media metrics- Record of attendance at museum flood exhibit</p> <p>Indicators: Indicators may cover:</p> <ul style="list-style-type: none"> human safety factors improved knowledge, awareness, motivation to implement flood safe behaviours and flood preparedness plans |

TOPIC E: IMPLEMENTATION (Goal 4)

| Strategic Actions | Budget and activities | Evaluation |
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| Management of Implementation | | |
| 6.1 Facilitate community involvement in decisions on catchment management strategies, project plans and on-ground activities and provide mechanisms for community members to provide ongoing feedback to the Government Agencies Committee on the Throsby Creek Catchment Agencies Plan 2019 - 2024 Lead entity: Throsby Creek Government Agencies Committee | Agency: Throsby Creek Government Agencies Committee. Action: When: Ongoing Is budget identified: n/a | Evaluation method Indicators: Community consultation on Plan, project specific consultation and inclusion of community representatives on Throsby Creek Government Agencies Committee |
| 6.2 Finalise and adopt the Throsby Creek Catchment Agencies Plan 2019-2024 with plan progress as a standing agenda item of the Throsby Government Agencies Committee. Annual progress checks to be undertaken by the Committee. Lead entity: Throsby Creek Government Agencies Committee | Agency: Throsby Creek Government Agencies Committee. Action: Adoption of Plan When: By June 2019 following public exhibition Is budget identified: NA | Evaluation method: Adoption of the Throsby Creek Government Agencies Action Plan |
| 6.3 That the Committee meets six-monthly, and provides an update on progress against the Plan's actions (to be made available in the Committee's meeting minutes, as a transparent record posted on: www.throsbycreek.net.au) Lead entity: Committee Secretary | Agency: Throsby Creek Government Agencies Committee. Action: Regular updates on progress When: 6 monthly Is budget identified: NA | Evaluation method: Minutes on Throsby Creek Government Agency Committee website |
| 6.4 That, noting the numerous agencies involved, consideration be given to the most appropriate government agency land ownership structure to achieve the aim, mission and goals for Throsby Creek Lead entity: Chair | Agency: Chair Action: Convene a meeting with Government and senior representatives of key agencies to consider long-term land ownership When: by end of Plan Is budget identified: N/A | Evaluation method: Discussions occur |
| 6.5 Undertake a final review and audit of the Throsby Creek Catchment Agencies Plan during 2023-24, and establish and initiate the process for developing the next Throsby Creek Catchment Plan. Lead entity: Throsby Creek Government Agencies Committee | Agency: Throsby Creek Government Agencies Committee. Action: Final audit and update of Plan When: 2023-24 | Evaluation method: Initiation of process for the next Catchment Plan in 2023-24. |
| Education and Awareness | | |
| 6.6 Work with local Aboriginal community to develop a program of engagement and awareness on the cultural aspects of Throsby Creek; and include Aboriginal cultural content in agency and community activities. Lead agencies: CN Gurakai Committee, Hunter HLLS | Agency: CN Action: Continued engagement with Gurakai Committee and relevant CN officers When: Throughout the delivery of the Plan | Evaluation method: Meaningful involvement of Aboriginal Community within Throsby Creek Activities. Indicators: |

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| <p>6.7</p> <p>Support community events on Throsby Creek as an opportunity to focus community attention on the rehabilitation of the Throsby Creek catchment.</p> <p>Lead entity: Throsby Creek Government Agencies Committee</p> | <p>Agency: all</p> <p>Action: consideration of sponsorship opportunities as they arise</p> <p>When: annually</p> <p>Is budget identified: to be determined annually by Agencies</p> | <p>Evaluation method: Collaborative support of community events</p> <p>Indicators: Community engagement in activities</p> |
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