



Tanti Creek Friends

# Tanti Creek, Mornington

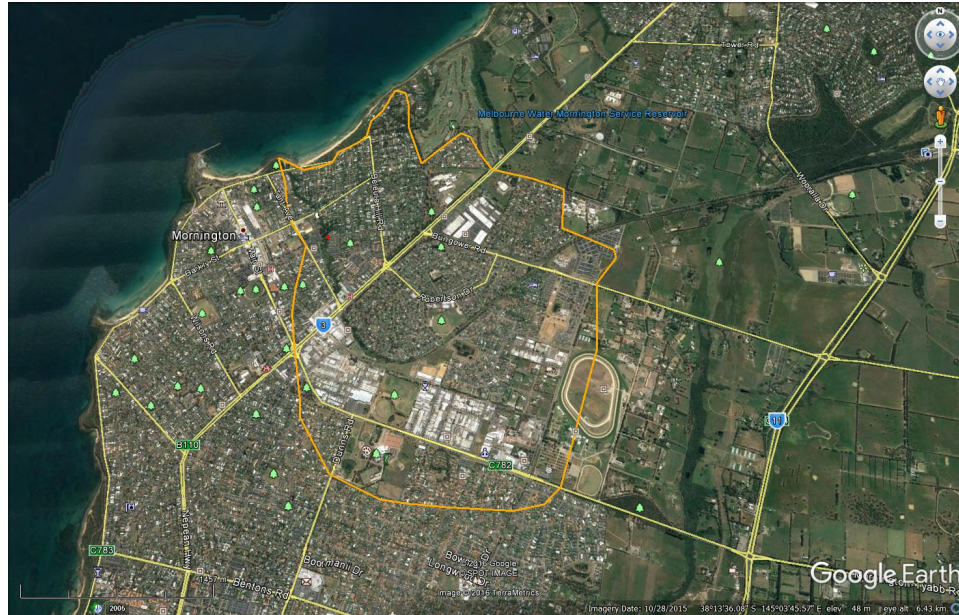
## Summary of Litter, Erosion & Siltation threats to Creek Health

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# Background

- Tanti Creek Friends (TCF) was approached by Paul Hodgson, Waterways and Land Officer, Melbourne Water for support and involvement in proposed efforts to reduce impacts of litter and sediment on the creek and the bay.
- A possible project is to install a GPT (Gross Pollutant Trap) in Tanti Creek.
- “We definitely need Tanti Friends endorsement and involvement in the project”.
- “As discussed if you can summarise your current efforts and suggest some monitoring points for litter and sediment comparisons that would be really helpful”.

# Major Issues facing Tanti Creek



Tanti Creek is an urban waterway with a catchment of approx 7 square km (orange line on Google Earth image).

The catchment comprises residential, commercial and most of Mornington's light industrial areas.

- Extensive development within its catchment has resulted in increasing flow volumes and velocity. This results in creek erosion and siltation.
- Litter from stormwater drains and erosional debris pollutes the creek and the bay



# Litter



Quick collection of rubbish at  
Stones Crossing, Aug, 2013

- Litter is not a new problem for Tanti Creek
- Erosion of the creek banks at the Tanti Estuary is exposing “historic” litter buried in the silt and mud (photo to the right and detail below).



“Palaeo” litter at Tanti Creek Estuary



# Litter (Cont.)

- However rapid urban development in the creek catchment has resulted in increased litter from stormwater drains and vegetative debris from eroding and collapsing creek banks



High tide litter at the Estuary



Rubbish near Creek Rd, Jan 2017

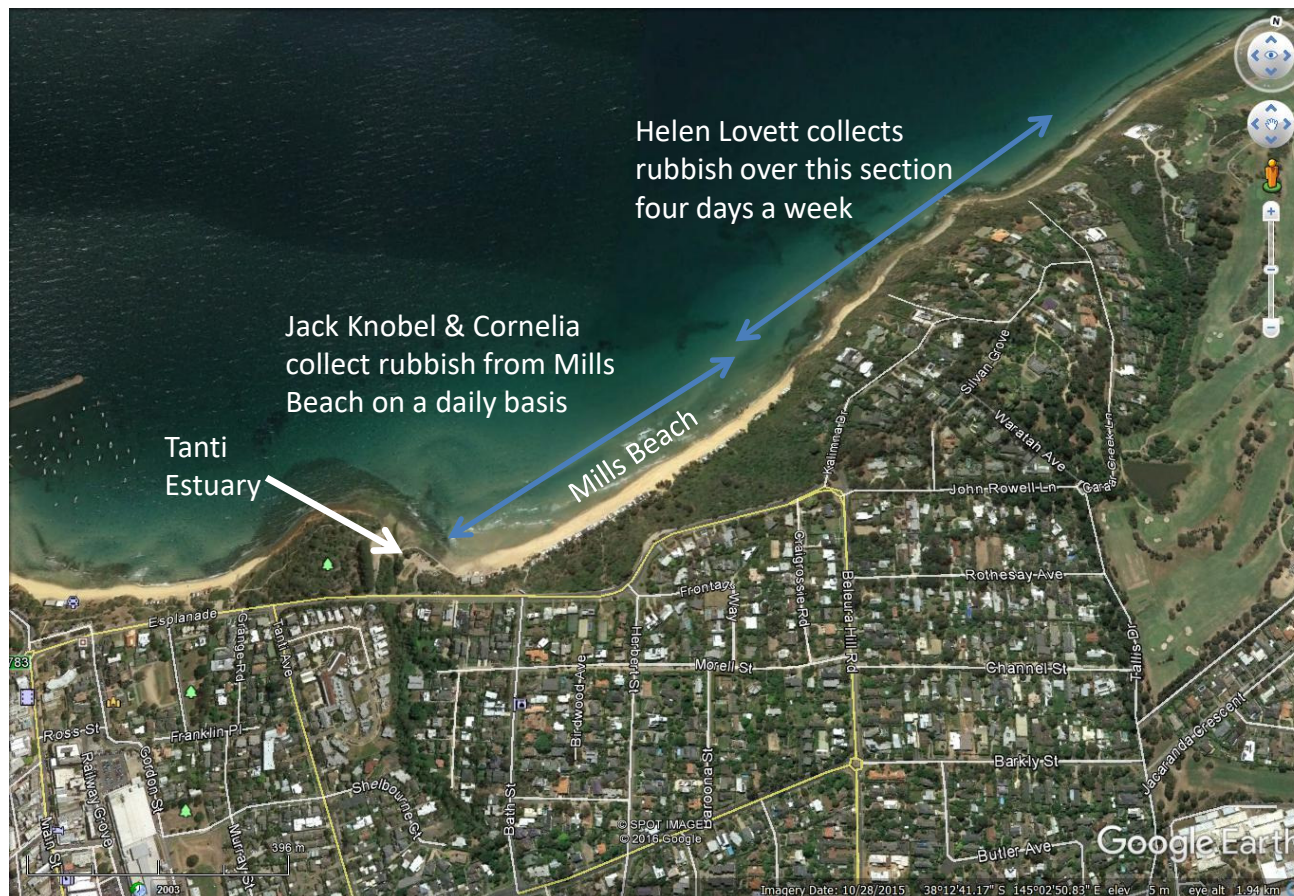


Rubbish near Creek Rd, June 2016

- This litter and debris is not only an eyesore along the creek and local beaches, but poses a direct threat to the creek aquatic and Bay marine life due to entanglement in plastic bags and digestion of both macro and micro-bead plastic particles.

# Community action on Litter

- Tanti Creek Friends regularly undertake litter collection as part of their monthly working bees.
- Local residents are also dedicated to removing litter from beaches:





# Community action on Litter (Cont.)

- Jack Knobel reported that following the 24mm of rain on Fri 20<sup>th</sup> Jan it took “hours and hours” to clean up the litter at the Tanti Creek Estuary.
- Helen Lovett also showed me the litter collected from her section of the beach after this rain event. Helen mentioned that if southwesterly winds occur after rain she sees a significant increase in litter (sourced from Tanti Creek). This material has been washed over 1km from the creek mouth.



Litter collected by Helen after the 20/01/2017 rain



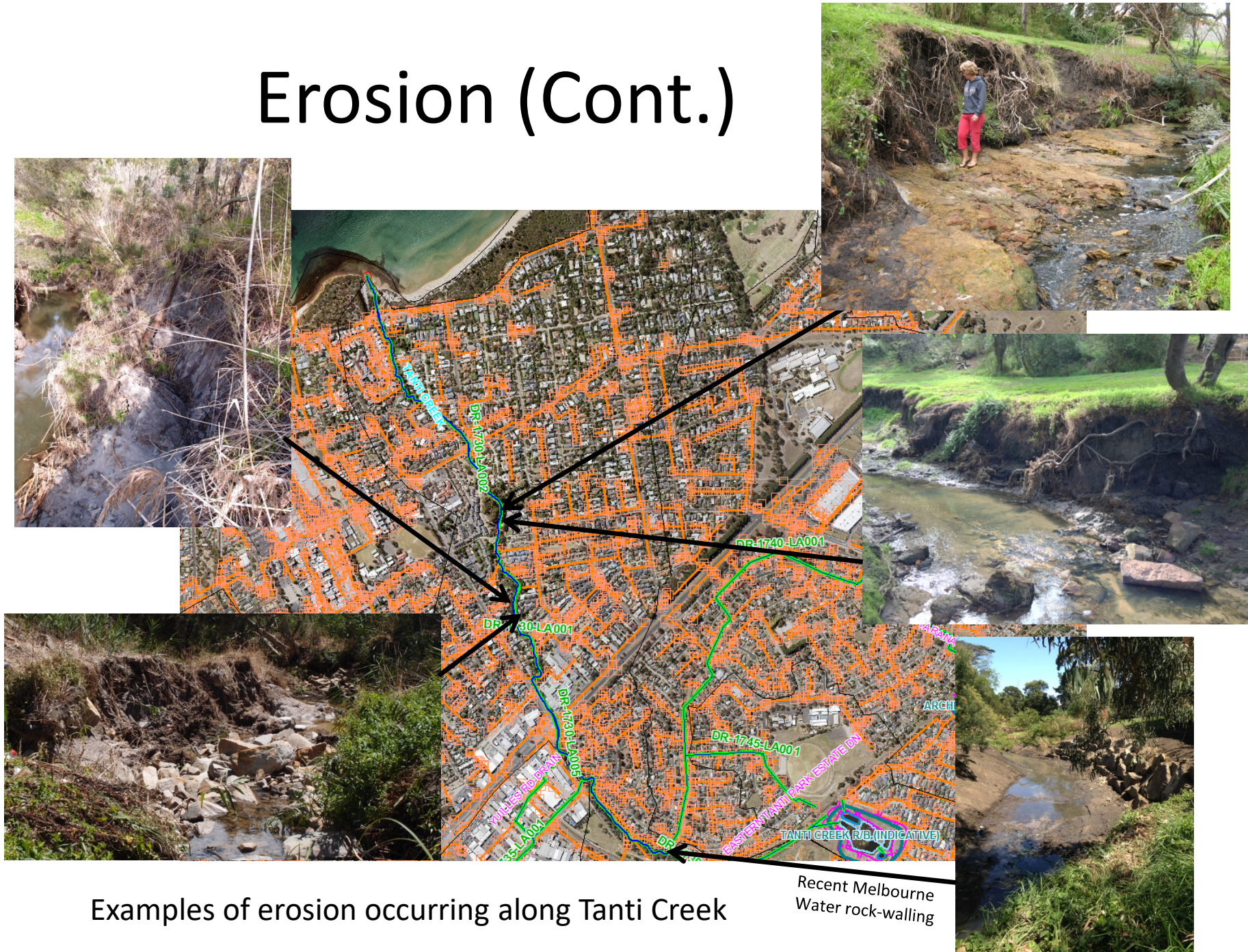
Helen in action

# Erosion

- Erosion of the bed and banks of Tanti creek has been increasing for decades
- This results from the increasing velocity and volume of stormwater flows, exacerbated by clearing of bank vegetation and in some cases over-zealous woody weed removal without follow-up restoration.
- The erosion is focussed on the outer side of bends in the creek.
- Melbourne Water has undertaken rock-walling in several locations, but usually only where private assets are threatened.
- The only thing preventing even worse erosion is that many sections of the creek are rock-lined.



# Erosion (Cont.)





# Turbidity

Turbidity is a measure of the clarity of water

Why measure it?

- Turbidity can be an indication of increased suspended sediment
- It reduces the amount of light penetrating the water.
- Turbid waters absorb more heat and may increase temperature
- High levels can interfere with respiration of gilled organisms.
- Impact of sediment entering the waterway can smother habitat of fish and macroinvertebrates and smother vegetation.
- Increased turbidity can indicate transporting of nutrients and toxicants

Natural sources include catchment erosional processes

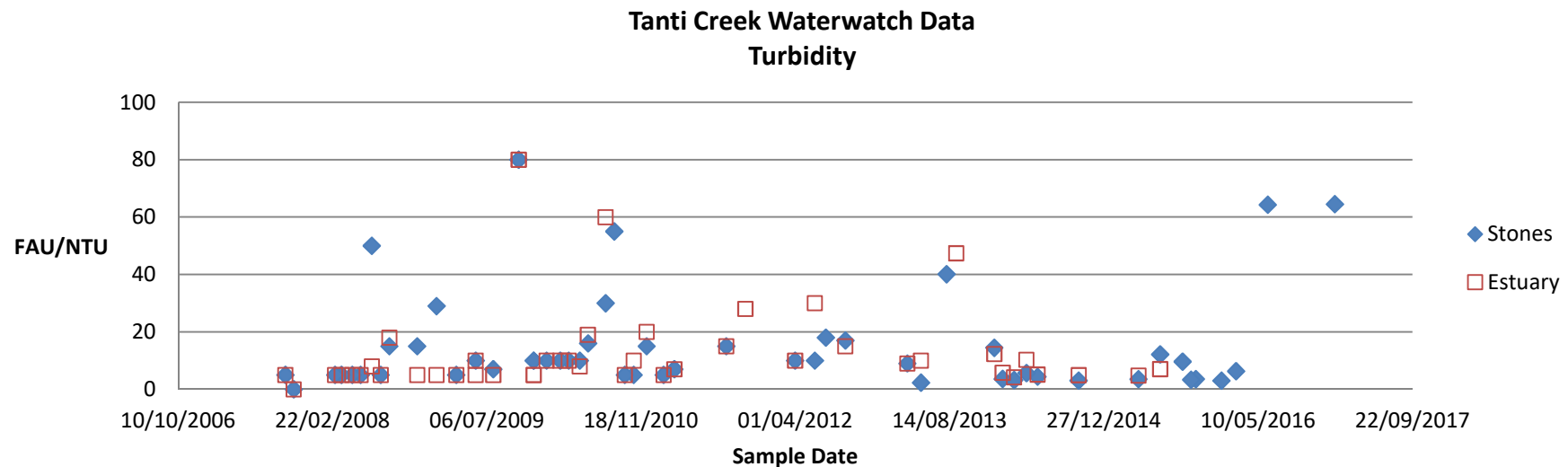
Human induced sources include, agricultural practices, forestry, unsealed roads and residential developments.

Segment/region	SEPP (WoV) objective (75th percentiles) (NTU)	Typical range in healthy waterbodies (NTU)	Level which may cause ecosystem damage (NTU)
Highlands (including the alps)	$\leq 5$	$\leq 5 - 10$	$\geq 20$
Forests	$\leq 5$	$\leq 5 - 10$	$\geq 25$
Cleared hills	$\leq 10$	$\leq 10 - 20$	$\geq 100$
Coastal plains	$\leq 10$	$\leq 10 - 20$	$\geq 100$
Murray plains	$\leq 30$	$\leq 30 - 100$	$\geq 200$
Western Victoria	$\leq 10$	$\leq 10 - 20$	$\geq 100$
South western Victoria	$\leq 10$	$\leq 10 - 20$	$\geq 100$

Diagram sourced from 'Interpreting River Health Data Waterwatch Victoria'.

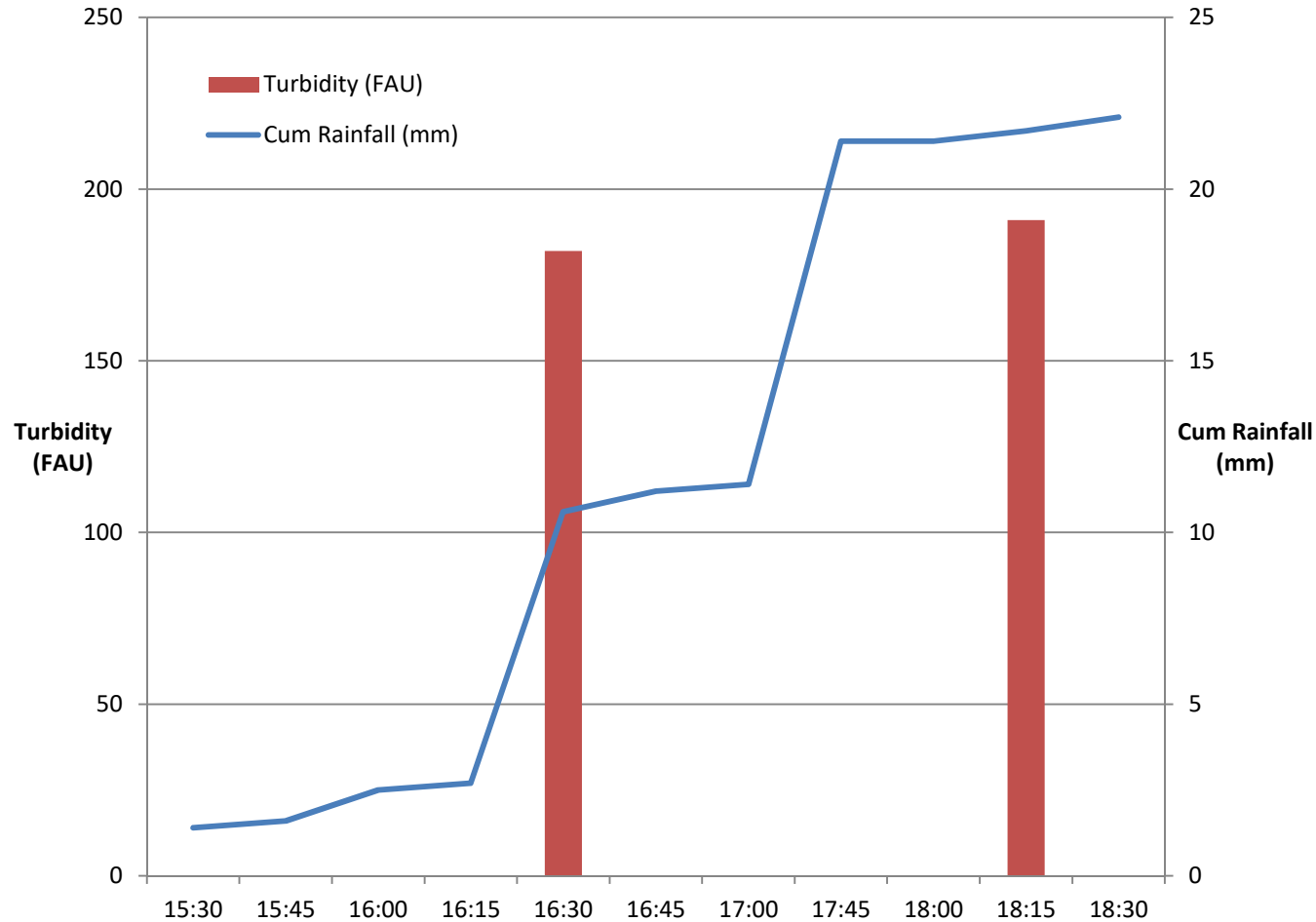
# Waterwatch Data - Turbidity

- Tanti Creek Friends have undertaken Waterwatch water quality monitoring since 2006
- Two sites are sampled: ETN900 immediately upstream of the Esplanade road bridge and ETN600 at Stones Crossing.
- The data (below) shows the turbidity level during base flow to average approx 10 NTU, within the SEPP (WoV) objective (75<sup>th</sup> Percentiles) (NTU) for coastal plains.
- However, there has been no sampling during or immediately after rain events to measure turbidity during peak stream flows when most erosion occurs. Sampling to obtain this data has commenced.





## Turbidity measurements during a rain event 29/12/2016



The turbidity measured in Tanti Creek during rain events is 10 times the typical level in healthy waterbodies and above the level that may cause ecosystem damage.

# Creek Siltation

**Tanti Creek 10<sup>th</sup> March 2014**



**Tanti Creek 8<sup>th</sup> August 2016**



This is Waterwatch monitoring site ETN 900 close to the Estuary. The creek has silted up so much in the past 2 years that the creek is now too shallow to sample.



# Siltation (Cont.)



Examples of siltation occurring along Tanti Creek



# Impact of Siltation

Despite the impact of polluted stormwater flows, Tanti Creek hosts important aquatic fauna including short-finned eels, spotted and common galaxias, tupong and freshwater burrowing crayfish.

This fauna is threatened by the impact of sediment entering the waterway. The sediment smothers the habitat of fish and macroinvertebrates and can also smother vegetation. High turbidity levels can interfere with respiration of gilled organisms.



This photo shows the plume of sediment resulting from the high turbidity creek flows on 29/12/2016 (see slide 12).

The sediment-laden water extends at least 300m out to sea and 400m along Mills Beach.

Peter Nicholson (who took this photo) advises that he has observed much larger plumes from Tanti Creek (this was a 24mm rain event).

The short and long-term impacts of this sedimentation on the Tanti estuary, coastal marine environment and Mills Beach are not known.

# How to Address the Threats to Creek Health

- Implement the recommendations of the *Tanti Creek Management Plan, August 2002*, namely:
  - Creek Bed Erosion
    - Construction of drop structures to raise the stream level and prevent the undermining of the banks at priority erosion locations eg: 50m upstream of Stones Crossing and between Stones Crossing and Barkly St.
  - Litter
    - Installation of litter trap devices at major drains eg Richardson Dr, Watt Rd & Yuilles Rd.
    - If a trap can be installed in-stream a site immediately south of the Nepean Hwy would be ideal as it appears most of the litter is sourced upstream of this point.

# How to Address the Threats to Creek Health (Cont.)

- Pollution
  - Utilise the Archer Retarding Basin to create a wetlands that actual removes pollutants from the drainage.
  - This drain is the main source of organic pollutants into Tanti Creek (refer below)





# Monitoring points for litter and sediment comparisons

Tanti Creek Friends are happy to assist Melbourne Water with monitoring to provide baseline and on-going comparative data. The following sites are suggested:

## Creek Bed Erosion (Monthly photo-documentation):

- Head erosion site 60m upstream of Stones Crossing
- Erosion site immediately south of the reed swamp
- Erosion site rear of 45 Herbert St

## Siltation (Monthly photo-documentation):

- 50m upstream of Stones Crossing
- 50m upstream of the Esplanade road bridge (Waterwatch Site ETN 900)

## Litter

- Creek Rd sedge litter trap (monthly photo-documentation)
- Tanti Estuary photo-documentation after significant rainfall events (or daily if required)
- Beleura Cliffs photo-documentation after significant rainfall events

Additional quantitative data may also be provided, but the detail of this needs to be discussed