Investigation into Stormwater Pollution from Noosa’s Industrial Activities

Authors:

Denise Brooks (MPH, Grad Dip Mgmt., Dual Dip Ecological Sustainability, Assoc Dip Env Hlth); and
Helen Eyre (Bachelor of Natural Science, Environment & Health)
# Table of Contents

1. Executive Summary .................................................................................................................. 2
2. Stormwater Quality Investigation Project ................................................................................. 3  
   2.1 Introduction ............................................................................................................................ 3  
   2.2 Program ...................................................................................................................................... 3  
   2.3 Results ...................................................................................................................................... 5  
   2.4 Recommendations from initial survey ..................................................................................... 8  
3. Environmentally Relevant Activities (ERAs) Inspection Program ........................................... 9  
   3.1 Introduction .............................................................................................................................. 9  
   3.2 Program .................................................................................................................................... 9  
   3.3 Results .................................................................................................................................... 9  
   3.3.1 Noosaville Industrial Estate .................................................................................................. 9  
   3.3.2 Noosaville, Noosa and Tewantin (outside the Rene St Industrial area) ......................... 12  
   3.3.3 Fuel Stations (excluding Cooroy and Pomona) .................................................................. 15  
   3.3.4 Cooroy area (including fuel stations) .................................................................................. 16  
   3.3.5 Pomona area (including fuel stations) ............................................................................... 17  
   3.3.6 Charts of Chemical Water Sample Results ....................................................................... 19  
   3.4 Discussion ............................................................................................................................... 22  
   3.4.1 Problem sites requiring further rectification in Noosaville ................................................. 22  
   3.4.2 Additional issues uncovered during inspections ................................................................. 28  
4. Conclusion ................................................................................................................................. 29  
5. Recommendations ..................................................................................................................... 30  
6. Bibliography .............................................................................................................................. 31
1. Executive Summary

1. Initial investigation

In 2016 an initial investigation into stormwater pollution from the Noosaville Industrial Estate was conducted due to concerns that previously licensed premises (Environmentally Relevant Activities known as ERA’s) were not maintaining the necessary standards to prevent stormwater contamination. Changes to legislation created an outcome where these premises were not required to be licensed, resulting in cessation of the annual inspections.

The investigation which lasted several months found that high levels of hydrocarbons were detected in the holding area of the larger of the two stormwater outlets, on two occasions. Both times the samples were taken during dry times to ensure the results were not influenced by first flush events.

Analysis of the results showed that the hydrocarbons were in the higher carbon fractions indicating that the likely contaminants were diesel, lubrication oil, heavy duty engine oil and components of grease. There are approximately 18 motor vehicle mechanics operating in the Stormwater 2 catchment area. Professor Chris Derry who interpreted the sampling results stated that the results for the C29-36 fractions “were in excess of 10 times the level that have been recorded on moderately trafficked areas of central Sydney”

Other findings from the investigation indicated that the water temperature, pH levels, electrical conductivity, total nitrogen and turbidity all increased in Eenie Creek downstream from where stormwater outlet 2 entered the creek (see Table 1 under section 2.3 of this report).

2. Inspection of industrial premises

As a result of this initial study initiated by the Environmental Health Section, it was recommended that more investigations were necessary to determine the source of the hydrocarbon pollution. It was also recommended that Council should consider re-establishing an inspection and monitoring program of businesses that previously required an ERA license. This could be achieved by the introduction of a local law for prescribed activities. Council endorsed this suggestion and allocated additional funding in the 2016/17 budget for resources to conduct a full investigation of sources of potential pollution.

At the beginning of February 2017 Denise Brooks and Helen Eyre were tasked with conducting an inspection of all previous ERA licensed businesses in the Noosa Shire, as well as any new businesses that would have required an ERA license. The inspections mainly concentrated on the work practices and the suitability of premises to prevent contamination of stormwater and land. Inspections focused on the Rene street area which drains into Eenie Creek, but also included other industrial premises throughout the shire of a similar capacity to cause environmental harm.

This report details the results of the inspections undertaken which in summary revealed:

- 31 (55.36%) of 56 premises in the Industrial Estate had deficiencies that presented potential for pollution.
- 25 (56.82%) of the 44 industrial premises in Noosaville, Tewantin and Noosa Heads (outside the Rene Street Industrial area) had deficiencies that presented potential for pollution.
- 7 (43.75%) of the 16 Industrial premises in Cooroy had deficiencies that presented potential for pollution.

Photographs that were taken during the inspection program depict the potential sources of pollution discovered. This report makes a series of recommendations for future action which includes a risk based annual inspection program of these premises and the development of a Local Law to support the imposition of fees to recover Council’s costs for performing the inspections and associated administrative costs.
2. Stormwater Quality Investigation Project

2.1 Introduction

The initial project was undertaken and the subsequent report ('An Investigation into Storm Water Pollution from Noosa Industrial Estate and the Impact on Eenie Creek', Dec 2016.), was written by Helen Eyre, student of Bachelor of Natural Science, Environment & Health, Western Sydney University, NSW. At the time Helen was an environmental health student gaining work experience with Council. Her report was also part of her final year assessment. Helen has since graduated.

The objective of the investigation was to determine if the Noosaville Industrial Estate stormwater runoff is having a negative impact on receiving waters of nearby Eenie Creek.

2.2 Program

The investigation was undertaken during the months of June and July 2016 at three creek sites and included runoff from the following stormwater outlets:

- **Eenie Creek Site 1**: located upstream of the stormwater outlets enter the creek.
- **Stormwater Outlet 1**: the smaller of the two stormwater outlets it services about 20 properties of the industrial estate (See Figure 1).
- **Eenie Creek Site 2**: located between where the two stormwater outlets enter the creek.
- **Stormwater 2**: is the largest of the stormwater outlets which has a gross pollutant trap installed and services the other 300 properties (See Figure 1).
- **Eenie Creek Site 3**: is located downstream of where the stormwater outlets enter the creek (See Figure 2).

Sampling parameters used:

- pH
- Water Temp (C degrees)
- Elec. Conduct.
- Dissolved Oxygen % saturation
- Turbidity (NTU)
- Lead (mg/L)
- Total Nitrogen (mg/L)
- Total Suspended Solid (mg/L)
- Total Petroleum Hydrocarbons (TPH) C6-C9 (ug/L)
- TPH C10-C14 (ug/L)
- TPH C29-C36 (ug/L)
Figure 1: Map of Noosaville Industrial Estate drainage leading to Eenie Creek

Figure 2: Map of Noosaville Industrial Estate sampling sites at Eenie Creek
2.3 Results

High levels of Dissolved oxygen, Nitrogen, Phosphorous, Total Suspended Solids, Turbidity, Total Petroleum Hydro Carbons C10 – C36 Fractions were measured at Stormwater outlet 2 of Eenie Creek from June – July 2016.
3. Stormwater drain (2) 13/1/17

4. Stormwater drain (2) 13/1/2017

5. Stormwater drain (2) 13/1/17

6. Stormwater drain (2) 13/1/17

7. Photo taken: 24/2/17 at stormwater drain

8. Photo taken: 24/2/17 at stormwater drain (2) bio media found
9. Photo taken: 24/2/17 at stormwater drain

10. Photo taken: 24/2/17 at stormwater drain (2) NB: biomedia found in drain.

11. Photo taken: 14/3/17 at stormwater drain 2 after 8” of rain

12. Photo taken: 14/3/17 at stormwater drain 2 after 8” of rain NB: strapping from industry in drain

13. Photo taken: 14/3/17 at stormwater drain 2 after 8” of rain

14. Photo taken: 14/3/17 at stormwater drain 2 after 8” of rain
Table 1: Summary of mean measurements collected at stormwater outlets and receiving waters of Eenie Creek in June and July 2016.

<table>
<thead>
<tr>
<th></th>
<th>Eenie Creek Site 1 - Upstream of the stormwater drains</th>
<th>Stormwater Outlet 1</th>
<th>Eenie Creek Site 2</th>
<th>Stormwater Outlet 2</th>
<th>Eenie Creek Site 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH (pH units)</td>
<td>5.46</td>
<td>7.18</td>
<td>5.82</td>
<td>6.61</td>
<td>6.31</td>
</tr>
<tr>
<td>Water Temp. (°C)</td>
<td>16.09</td>
<td>16.8</td>
<td>16.64</td>
<td>19.28</td>
<td>17.92</td>
</tr>
<tr>
<td>Elec. Conduct. (µS/cm)</td>
<td>0.12</td>
<td>0.26</td>
<td>2.11</td>
<td>9.51</td>
<td>10.47</td>
</tr>
<tr>
<td>Dissolved O² (% Saturation)</td>
<td>36.8</td>
<td>47.58</td>
<td>38.47</td>
<td>62.18</td>
<td>38.23</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>2.65</td>
<td>13.92</td>
<td>5.61</td>
<td>44.65</td>
<td>8.64</td>
</tr>
<tr>
<td>Lead (mg/L)</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Total Nitrogen (mg/L)</td>
<td>0.46</td>
<td>0.47</td>
<td>0.48</td>
<td>2.63</td>
<td>0.6</td>
</tr>
<tr>
<td>Total Phosphorus (mg/L)</td>
<td>0.03</td>
<td>0.05</td>
<td>0.02</td>
<td>0.21</td>
<td>0.02</td>
</tr>
<tr>
<td>Total Suspended Solid (mg/L)</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>8.67</td>
<td>3</td>
</tr>
<tr>
<td>TPH C6 - C9 (µg/L)</td>
<td>&lt;50</td>
<td>&lt;50</td>
<td>&lt;50</td>
<td>&lt;50</td>
<td>&lt;50</td>
</tr>
<tr>
<td>TPH C10 - C14 (µg/L)</td>
<td>&lt;50</td>
<td>&lt;50</td>
<td>&lt;50</td>
<td>93.33</td>
<td>&lt;50</td>
</tr>
<tr>
<td>TPH C15 – C28 (µg/L)</td>
<td>&lt;50</td>
<td>120</td>
<td>110</td>
<td>2243.33</td>
<td>&lt;50</td>
</tr>
<tr>
<td>TPH C29 – C36 (µg/L)</td>
<td>&lt;50</td>
<td>&lt;50</td>
<td>&lt;50</td>
<td>926.67</td>
<td>&lt;50</td>
</tr>
</tbody>
</table>

2.4 Recommendations from initial survey

The officer performing the initial investigation recommended that an investigation should follow up on the results of the stormwater pollution in the Noosaville Industrial Estate and:

- Further identify any contributing factors of local industries impact to the pollution and contamination of Noosa's Waterways with heavy metals and Hydrocarbons.
- Determine the source of hydrocarbons by initially inspecting sites within the Noosaville Industrial area that were previously required to hold an ERA license and determine their potential to effect of stormwater runoff polluting Eenie Creek.
3. Environmentally Relevant Activities (ERAs) Inspection Program

3.1 Introduction

This project followed on from the initial stormwater quality investigation, and was initially proposed given the ecological and recreational importance of Noosa’s waterways, and the potential impact industry could have on these waterways.

Prior to the previous State Government’s green tape reduction exercise, local government had a regulatory role involving ensuring certain categories of industries had appropriate measures in place to prevent their activities causing environmental harm.

The majority of these industry types e.g. service stations, mechanical workshops and concrete batching plants etc. no longer have any regulatory monitoring, albeit their legislative obligations to prevent environmental harm or nuisance still exists. Our regulatory role ceased in early 2013, so it was thought timely to check on how well industry was self-regulating.

The results from the stormwater quality investigation indicating an adverse impact on the Eenie Creek waterway close to the stormwater outlets discharging from the Noosaville Industrial estate, added to the impetus to carry out this inspection program.

3.2 Program

A list of all previous ERA licenced premises was provided, including any new businesses that fitted into the ERA criteria. The list of premises for inspection was divided into the following geographical locations:

- Noosaville Industrial Estate - 56 premises
- Noosa, Noosaville, Tewantin - 44 premises
- Fuel Stations (all areas except for Cooroy, Pomona) - 10 premises
- Cooroy (includes Fuel Stations) – 16 premises
- Pomona, Cooran (includes Fuel Stations) - 6 premises

3.3 Results

3.3.1 Noosaville Industrial Estate

Inspection summary

- 56 premises inspected
- 31 premises non-compliant-55%
- 25 premises compliant-45%

Summary of issues

- 1 Aqua Culture
  - Contain bio media onsite
  - Clean up loose bio media around yard
  - Cease to allow bio media to stormwater drain
• 1 Landscape Supply
  o Clean up sediment in gutter
  o Clear drain across driveway
  o Keep driveway clear of sediment
  o Monitor for ongoing compliance
• 2 Vehicle Storage
  o Leaking bund
  o Oil leakage in chemical store
  o Maintain bunds
  o Clean up litter on site to avoid entering stormwater drain.
• 2 Printers
  o Clear drain across driveway.
  o Ensure separator waste is not tipped on ground and disposed of in a correct manner.
• 2 Plastic Manufacturer/Fibreglass
  o Avoid fibres being released to air
  o Clean up yard and remove all rubbish & waste (both premises)
  o One (1) premises to remove oil drums previously used for truck servicing
• 3 Wood Production
  o Clean drains in driveway
  o Pick up litter around yards
  o Remove metal storage in yard
  o Ensure sawdust does not escape into stormwater drains by vacuuming up wood dust frequently.
• 1 Metal Fabrication
  o Clean silt trap
• 1 Smash Repairs
  o Provide bund to paint mixing area.
• 15 Motor Vehicle Workshops
  o 5 to obtain spill kits
  o 5 Provide compliant bunds around oil storage.
  o 2 No greasy parts to be stored on the ground or in the open.
  o 1 Keep workshop floor dry of oil.
  o 2 Remove empty drums regularly.
  o 1 Repair cracked hardstand, clean up loose surplus bitumen.
  o 1 Clean out driveway drain.
  o 1 Storm water drain.
• 3 Concrete Batching Plants

NB: 5 of the premises in the above list were of critical concern and required ongoing investigations and problem resolution. These premises consisted of 2 Mechanical Workshops and 3 Concrete Batching Plants. This reflects the types of stormwater quality issue identified in the stormwater quality investigation.
Summary of compliant premises

- 1 Boat Repair
- 4 Smash Repair/ spray painter
- 5 Wood Production
- 2 Heavy Vehicle Storage - (1 Removalists 1 Skip)
- 4 Plastic Manufacturing
- 2 Printers
- 4 Metal Fabrication
- 3 Motor Vehicle Workshops

It can be seen by Charts 1 and 2 below that motor vehicle workshops make up the majority of the non-compliant premises followed by concrete batching plants, landscaping supply, wood production and aquaculture.

Chart 1. ERA compliance and non-compliance of Noosaville Industrial Area.
Chart 2 Pie Chart showing a breakdown of the non-compliant business in the Industrial area

3.3.2 Noosaville, Noosa and Tewantin (outside the Rene St Industrial area)

Inspection summary
- 44 premises inspected
- 25 premises non-compliant-57%
- 19 premises compliant-43%

Summary of issues
- 1 Engineering
- 1 Wood Production
  - Provide bund across paint room
- 1 Plastic Manufacturing
- 2 Smash repair / Spray painting
- 2 Pick up Litter and clear stormwater drain
  - Provide bund across paint room
- 5 Marine repair
  - Provide booms to contain spillage in river.
- 3 maintain litter and waste on site
  - Maintain separators
- 2 maintain bund to outdoor oil storage area
- 2 clear stormwater drain
  - Remove oil soak tree stump and ground material
  - Dispose of old damaged oil drums
• 15 Motor Vehicle Workshops
• 3 Repair bund to car wash
• 3 Provide/ repair bund to waste oil area
  o Clean up back area and bund
• 4 pick up litter
• 6 clean out storm water drains
  o Ensure no oil or chemicals enter stormwater from hard stand
  o Keep bunded materials within the bunded area
  o Drain and clean bunding trays
• 5 provide bund across garage door
  o Remove waste from outside door
  o Remove old oil drums
• 2 Keep floor dry
  o Consider floor revamp and installation of oil separator
• 2 seal roofing over bund to prevent rainwater filling up bunded area
• 2 provide Spill kit
  o Provide safe, bunded undercover area for storage of new and used oil
• 2 clean out entire workshop
  o Clean up back yard area
• 2 provide filter and sock system to stormwater drain to prevent contaminants
  o Ensure batteries are stored under cover
  o Repair leaking walls and roof
• 2 ensure oily and greasy parts are stored so as not to leak oil or grease onto floor/ground.

Summary of compliant premises
• 10 Motor Vehicle Workshops
• 2 Wood Production
• 1 Boat Builder
• 1 Marine repair
• 2 Car washes
• 1 Plastic Manufacturer
Chart 3: Noosaville Tewantin Compliance/ Non Compliance

As can be seen by Charts 3 and 4 motor vehicle workshops make up the majority of the non-compliant premises followed by marine repairs.
3.3.3 Fuel Stations (excluding Cooroy and Pomona)

**Inspection summary**
- 10 premises inspected
- 9 premises non-compliant-90%
- 1 premises compliant-10%

**Summary of issues**
- 9 Fuel Stations
  - Ensure all stormwater from hardstand is contained and not released to stormwater
  - Recent storms show that stormwater containment is inadequate
- 2 Clean drains
  - Have storage tanks pumped out regularly
- 6 Clean out stormwater drains
- 3 Clean up litter from around site
  - Provide bunding on each side of car and dog wash area
  - No stormwater catchment to hard stand requires upgrading

**Summary of compliant premises**
- 1 fuel station had no requirements.

**Chart 5: Compliance / Noncompliance of Fuel stations not including Cooroy and Pomona**

*NB:* While the results show that 90% of the fuel stations are non-compliant these breaches were mainly in regard to cleaning of drains and litter problems, rather than the release of hydrocarbons.
3.3.4 Cooroy area (including fuel stations)

Inspections summary
- 16 premises inspected
- 7 premises non-compliant - 44%
- 9 premises compliant – 56%

Summary of issues
- 2 Fuel stations
  - Not enough roof coverage over hardstand area
  - Clean up spillages and pump area to avoid spills of hydrocarbons running into stormwater
  - Get site assessment by engineer to design hard stand to avoid spillage of hydrocarbons into stormwater drains
- 1 Abrasive blasting
  - Sweep back sand blasting material from door
  - Clear out storm drains
- 4 Motor vehicle workshops

Summary of compliant premises
- 2 Engineering
- 1 Wood Production
- 1 Metal Recovery
- 5 Motor Vehicle Workshops

Chart 6: Compliance / Noncompliance of Cooroy including 2 Fuel Stations
3.3.5 Pomona area (including fuel stations)

**Inspection summary**
- 6 premises inspected
- 4 premises non-compliant - 67%
- 2 premises compliant - 33%

**Summary of issues**
- 2 Fuel Stations
  - Repair hard stand
  - Clean up all spillages immediately to avoid run off into Stormwater drains
- 1 Metal Surface Coating
  - Clean out stormwater drains
- 1 Motor Vehicle Workshop
  - Bund around perimeter of property at the rear to provide a permanent dedicated area or use a portable bund to drop and store engines with oil
  - Improve site housekeeping, clean all unwanted engines, parts, etc. and litter
  - Keep site clean and organised. Cease repairing and storing oily machinery in uncovered area.
Chart 8: Noncompliance / Compliance of Pomona including 2 Fuel Stations

Chart 9: Compliance/Non Compliance Entire Noosa Shire including Noosaville Industrial Estate.
3.3.6 Charts of Chemical Water Sample Results

The following sampling dates are represented by the following numbers on the graphs below.

- 02/06/2016
- 15/06/2016
- 02/02/2017
- 24/02/2017
- 21/03/2017
- 23/03/2017
Chart 11: Calcium levels for sampling in 2017, calcium was not tested for in 2016

Chart 12: Total Phosphorus levels for sampling in 2016 and 2017

Chart 13: Electrical Conductivity levels for sampling in 2016 and 2017
Chart 14: Total Dissolved Solids levels for sampling in 2016 and 2017

Chart 15: Total Alkalinity levels for sampling in 2017, calcium was not tested for in 2016

Chart 16: Total Petroleum Hydrocarbon C10-C14 fraction levels for sampling in 2016 and 2017
Charts 12-17 demonstrate that all pollution levels in the results have declined over time. This is not only from the 2016 samples to the 2017 samples but also a decline over the sampling period undertaken in 2017. This could safely be assumed to be due to improved practices undertaken by industry and increased awareness raising and education of industry operators during inspections conducted during the project. It was difficult to pin point specific businesses that may have contributed to the cumulative effect of the results which caused the initial stormwater pollution. But there have been definite improvements demonstrated from the beginning to the completion of the onsite inspections undertaken by EHO’s.

3.4 Discussion

3.4.1 Problem sites requiring further rectification in Noosaville

During the inspections there were sites that were of major concern in the Noosaville Industrial estate, 2 of the sites were Motor Vehicle Workshops and the other 3 sites were the concrete batching plants.

A site in Rene Street followed through as requested and cleaned up their workshop and outdoor areas as well as their drains, and improve the bunding in the oil area of the workshop. See before and after photos below.

Another premises in Rene Street has reported that they are getting their oil trap drains unblocked however the oil water separator didn’t appear to be in operation. This site has many problems which require further monitoring. Both these sites are connected to a main drain to Eenie Creek.
Vehicle Workshops

Before Inspection

Remove rubbish and old engines close to drain

Spillage of oil on ground, remove unused equipment and clean up floor

Remove and clean up area of unwanted equipment and store undercover

After Inspection

Rubbish and engines removed

Oily parts washer removed, area and floor cleaned

Equipment cleaned up and placed into container for storage
Before Inspection

No Bunding to oil drum store (a high risk of causing contamination of ground and drains)

Oil filled drain that owner claimed was not connected anywhere and disused

Drain had oil and rag inside, owner claimed drain was not connected to stormwater

After Inspection

Bunding provided and risk of oil spillage reduced

Drain being decommissioned and filled with Expanda foam

Drain cleaned out
Before Inspection

![Before Inspection Image](image1)

After Inspection

![After Inspection Image](image2)

**Drain with oil and leaves near an uncovered disused oil separator. Oil going into drain**

**Drain still full a few weeks later during heavy rains**

**Note:** The business owner advised that he had attempted to clean out drains but discovered that a plumber was required to service the complex layout of drains because they were badly blocked and he did not have a plan of where the drains were connected.

The whole hard stand and site had poor drainage. A severe problem was observed during heavy rains. The topography of the land and the existence of an archaic shared drainage system located at the back of the property was insufficient to handle the heavy rains. This situation was aggravated by cumulative run off from the neighbouring properties that included a concrete batching plant.

Severe flooding of the mechanical hoist and car parking area outside of covered mechanical workshop was evident during heavy deluge of rain. It is a distinct possibility that this site is contributing to the presence hydrocarbons in the stormwater 2 outlet. Urgent attention needs to be focused on this site with follow up inspections, collaborative consultation with neighbouring property owners sharing the boundary and common stormwater drain with Council. They need to agree and contribute to the design and funding for a suitable stormwater drainage system to be installed as soon as possible to prevent further risks of contaminating the water bodies of Eenie Creek.

![Drain from concrete plant flowing into the back of affected property](image3)

![Water from neighbouring properties draining away at back of affected property](image4)
Drain from concrete plant flowing into the back of affected property hoist area

Flooded area of Mechanical workshop outside. A rainbow slick indicating hydrocarbons was observed

Flooded car park where the oil sump and blocked drains are located

Flooded car park where the oil water sump drains are located

Concrete Batching Plants

During a rain event this pond overflows

The overflow runs down through wire fence into drain at back of Motor Mechanic property
It is more than likely that each of the concrete batching plants in Noosaville industrial estate could have contributed to the concrete looking milky substance found in drain 2. There was also a large fresh pour of concrete conducted a couple of days before photos were taken on 13th January 2017. This may also have contributed to the concrete looking milky substance found in drain 2, and to the spike in pH, phosphorous and turbidity levels in the water samples taken during the survey. Refer to Charts 11-15.
3.4.2 Additional issues uncovered during inspections

- The breaking up of roads and gutters especially in the Noosaville Industrial area outside of heavy industry where large trucks contribute to the damage.
- The large spoon stormwater drain that runs between properties on Eumundi Noosa Road and Project Avenue. Due to the current damaged state of the drain, heavy water flows have caused the water membrane to be broken on the back of the Project Avenue buildings which is causing problems with flooding of a motor mechanic workshop in Project Avenue. See photos below.
- Many hardstand areas of driveways and yards in many Noosaville industrial sites are ageing and the concrete is cracking up and adding to sediment running into drains during heavy rains.
4. Conclusion

There were a total of 132 businesses inspected during this project in the Noosa Shire area. As the results show the motor vehicle workshops make up 47% of the non-compliant businesses, followed by fuel stations (17%), marine repairs (7%), wood production (5%), and concrete batching plants (4%). The overall results show while concrete batching is only 4% of the total, their impact is more important as there are only 3 plants in operation in the Shire and all three were non-compliant. Water sampling results did show that cement was most likely the cause of some of the stormwater pollution. Wood production also showed as a problem, but in relation to stormwater pollution the non-compliance issues were minor in relation to stormwater contamination.

The feedback that was received from the businesses was positive and the majority of businesses couldn’t understand why the ERA inspections had ceased and were glad to have Council again reviewing what was happening in the area to prevent pollution of the waterways. There were a few comments made about certain operators in the industrial area that were known for their not so environmentally friendly operations and it was discovered that these particular businesses were no longer in operation.

With the feedback received and the results from the project, the introduction of a reasonably priced license / registration and inspection program on troublesome businesses such as motor vehicle workshops, fuel stations and concrete batching plants should be introduced under the prescribed activity area of local laws.
5. Recommendations

1. That a Noosa Council Local Law be developed which enables the continual monitoring of “Environmental Activities”.

2. That Noosa Council cost analyse and support the introduction of fees to industry to conduct regular “Environmental Activities” inspections by Environmental Health Officers.

3. That cost analysis includes sufficient administration, system development, staffing and resources to fully implement the recommendations.

4. That Council support the formation of an Industry group (Steering Group) consisting of multi-skilled industry representatives, State and Local Government service providers to:
   a. Educate and support key players in industry to contribute to positive environmental outcomes for Noosa.
   b. Advise and support key decisions in regard to:
      • Local Law consultation, development, content and implementation.
      • Pollution mitigation on a holistic, local and industry levels.
      • Innovations in pollution control and “Pollution Solutions.”
6. Bibliography

*Investigation into Stormwater Pollution from the Noosa Industrial Estate and the Impact on the Receiving Waters of Eenie Creek.* Helen Eyre, Environmental Health Student, Wester Sydney University.

**Biological filters for aquaculture.** [http://biofilters.com/webfilt.htm](http://biofilters.com/webfilt.htm)


**Environmental Protection Act 1994**

**General Environmental Duty-Code of Practice for the concrete batching industry** [www.qld.gov.au](http://www.qld.gov.au)
Publication number EM467.

**Development Conditions for Petrol Stations,** Noosa Council

**General Environmental Duty-Code of Practice for motor vehicle workshop operations** [www.lgaq.asn.au](http://www.lgaq.asn.au)

**Industry Environmental Guide for Concrete Batching,**

**Queensland Water Quality Guidelines 2009,** QLD Government

**Healthy Waterways- Soil Erosion & Sediment Control Basic Principles and Practices**

**Standard Site Specific Conditions- Panel Beaters & Spray painters.**
[http://lgaqnet.asn.au/lgaq...3835bced61d6ddff02567a60043356d?](http://lgaqnet.asn.au/lgaq...3835bced61d6ddff02567a60043356d?)

**Water testing and monitoring services, Unity Water Laboratory.**