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Awakino oil spill report

(Smith, 2011)

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Te Kaunihera ā Rohe o Waikato

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Abstract

This report provides a technical summary of operations surrounding the recovery of used bunker oil following a truck and articulated trailer rollover on State Highway 3 in the Awakino Gorge. Tank rupture on the trailer unit released a substantial amount (approximately 20,000 litres) of waste oil into the Awakino River within twelve kilometres of the coastal marine area (CMA).

The interaction between a number of agencies and the oil recovery response under two different pieces of legislation is discussed in this report. Oil spill response capabilities and authority under the Resource Management Act 1991 (RMA) and the Maritime Transport Act 1994 (MTA) legislation are somewhat different.

Processes and procedures are examined for suitability and effectiveness with recommendations made to address issues. Restrictions imposed by working in an isolated area dominated work practices and provided challenges to well established practices and responders involved.

Wildlife and environmental impacts observed to date, including test procedures and results, also form part of this report as a comprehensive collation of events surrounding the Awakino spill.

Timeframe summary of events:

Response

June 22nd 2011	Oil spill occurs ICC established at Hamilton WRC
June 23rd	Oil response fully mobilised Massey University (wildlife response) staff on site
June 24th	Tier 2 response declared
June 25th	ICC established at Awakino
June 26th	Booms removed ICC disestablished Staff stood down
July 4th	Wildlife response crew stood down

Recovery and monitoring

July 5th	Testing of plant material and sediment started
July 14th	Interagency debrief
Dec 19th	Testing of plant material and sediment terminated
February 10th 2012	Tier 2 declaration terminated
Duration of event:	**234** days.

Executive summary

An estimated 20,000 litres of waste and bunker oil were discharged instantaneously into the Awakino River approximately twelve kilometres upstream from the coastal marine area (CMA) due to the overturning of an articulated truck. Tanker trucks are normally equipped with internal baffles to not only reduce surge but also reduce the quantity of fluid lost in the event of an accident. In this case the outer skin of the truck was compromised along the full length of the trailer allowing rapid and total loss of fluids.

Time of the accident was late on a wet winter's afternoon which hampered response because of the rapid loss of daylight, combined with the remoteness of the site, slowing the response time considerably. Because the tide was high at the time of the accident most of the oil escaped to the open sea during the night, leaving a residue of oil approximately 1m wide along the channel sides of the lower estuarine environment.

Initial response was conducted by Waikato Regional Council's (WRC) Ready Response team under a Tier 4 declaration and the activation of an Incident Command Centre (ICC) at WRC in Hamilton. Two staff were deployed to reconnoitre the scene and report back their findings as well as carry out any remedial actions they could to stop further release of the oil. Once on the scene, it was became clear from observations that there was very little to be done as the majority of the oil had already been released into the river. Ready Response personnel instructed Transpac on appropriate crash site remediation, and deployed sorbents to stop further leaching of oil from the river embankment.

At the crash zone, Transpac were on the scene very quickly, removing the crashed truck and scraping oil residue and soil off the road side with diggers. The following day there was very little evidence of the crash other than the oil residue in the lower reaches of the Awakino River.

Early the following day it became clear that the bulk of the oil had gone out to sea. A recovery operation was set up at the Awakino boat ramp in the lower reaches of the Awakino River to collect any remaining oil in the tidal estuarine area early the following morning. Additional personnel from WRC and Transpac were on scene at first light the following morning.

Method of oil collection was by rapid deployment boom into the main flow and land-sea boom on the sea/land interface. The collected oil was recovered by a relay of suction trucks supplied by the spiller (Transpacific Ltd) allowing time for one truck to work on recovery while other trucks decanted the oil and discharged the water back into the collection zone. Some of the oil was caught up in reeds on the side of the river, remobilising with tide changes and weather conditions making the recovery of the oil slow and sporadic.

Control of the incident changed from a Tier 4 event under the RMA to Tier 2 under the MTA. This was due to the amount of oil spilt, a significant number of oiled bird sightings, the likelihood of an escalated wildlife response, the significant threat to the environment, the number of agencies involved and the likely (long) duration of the event. The change from a Tier 4 RMA response to a Tier 2 response allowed access to additional resources such as Massey University's trained oiled wildlife recovery team, neighbouring Regional Council Marine Oil Spill (MOS) teams, and further resources from Maritime New Zealand (MNZ) should the environmental impact be greater than first thought.

Investigations by Massey University and the Department of Conservation over the following weeks revealed a minor impact on wildlife with only light oiling found on ten

birds, including some native species. Although two dead seals and one mallard were discovered post event, the deaths did not appear to be linked to the oil spill.

Ongoing monitoring of vegetable matter and sediment has indicated a substantial drop in total hydrocarbon levels since the spill. Hydrocarbon levels tapered off and stabilised from the peak of 15200 mg/kg as rcvd to between 65 – 149 mg/kg as rcvd.

Monitoring of vegetable matter has now stopped as of 19th December 2011 due to two consecutive test results of < 40 mg/kg as rcvd. As a result, the Tier 2 marine oil spill declaration was lifted on Friday 10th February 2012 after total response duration of 234 days.

There has been insufficient time lag to assess the net long term environmental impact of this event on the Awakino River ecosystem.

It is estimated that over ninety percent of the cost of the total oil spill response has been recovered from the spiller. For an accurate cost analysis of the Waikato Regional Council response refer to WRC Doc # 2156441

1 Introduction

On Wednesday 22nd June at 1530hrs a northbound truck and trailer unit carrying 24,000 litres of waste oil overturned onto its side near the northern end of the Awakino Gorge on State Highway 3 (Feek, 2011) (see diagram 2 for site map). The accident caused the truck's tank to rupture releasing approximately 20,000 litres of used oil onto the road and into the Awakino River.

Figure 1: Image showing the overturned truck on State Highway 3 in the Awakino Gorge (Source: WRC doc # 2013009).

The articulated trailer was constructed into six separate baffled compartments in which to contain the oil. The reason for the separate compartments is to minimise surge and restrict loss of contents in an accident. In this case the internal parts of the trailer stayed intact but the entire outside skin had been compromised during the accident causing the rapid and nearly complete loss of the trailers contents. The contents of the trailer discharged rapidly into the Awakino River which was approximately twelve kilometres from the river outlet to the sea. At the time of the oil spill the Awakino River flow was between 1.66m/s and 2.50m/s at the crash site and the tide at the time was at peak high, providing a window of six hours of outward flow toward the open sea.

The Awakino boat ramp was the site chosen for boom deployment to recover oil before it exited the estuary into the open sea (see diagram 1). This area is part of an estuarine environment with sand and mud banks forming the channel edges, with reeds growing on both sides of the channel within the tidal zone. The following picture shows the estuarine environment as well as the boat ramp and main oil recovery site.

Figure 2: Site of the oil spill recovery operations. Source: WRC doc # 2000188.

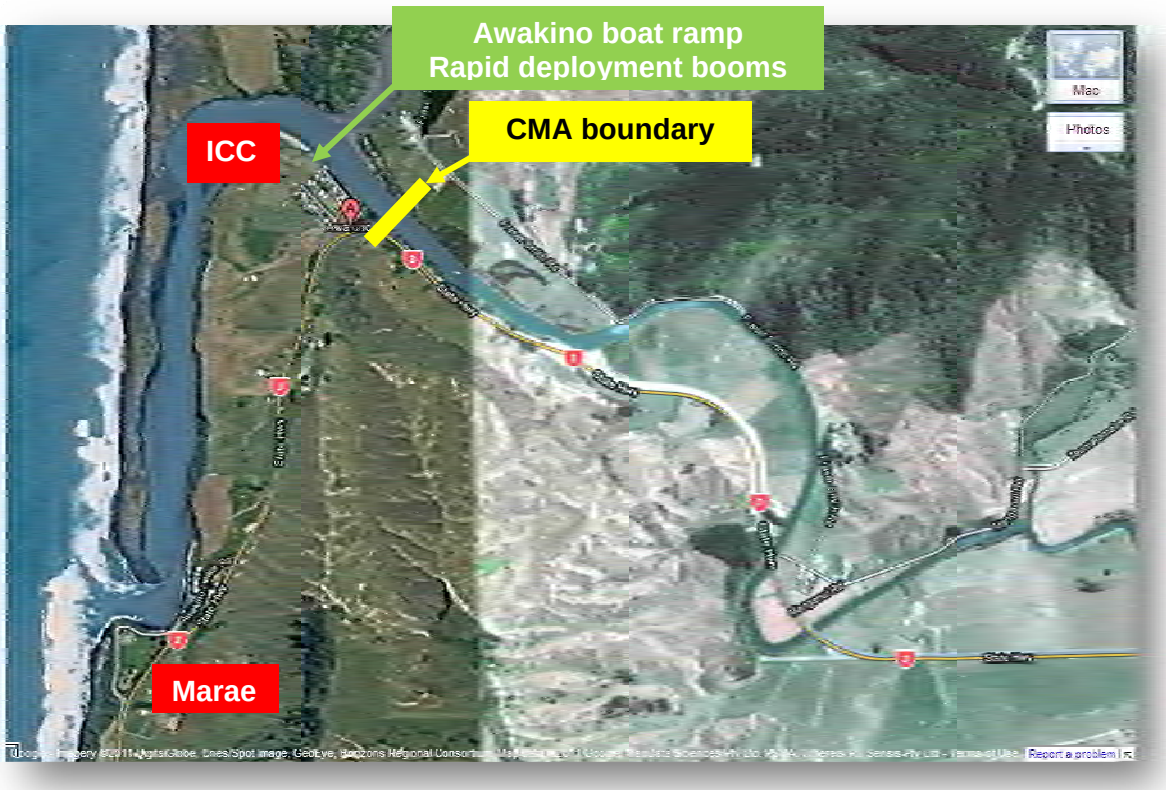


Diagram 1: Map showing the Awakino River estuary and key locations (Source: WRC doc # 1997356).

Diagram 2: Map showing the approximate location of the truck crash site (Source: WRC doc # 2003725).

The report of the oil spill to Waikato Regional Council (WRC) triggered a Tier 4 response under the Resource Management Act 1991(RMA) and the activation of an Incident Control Centre (ICC) at the main office of WRC in Hamilton. As the response progressed it was decided to set up a small ICC at the oil recovery site in the Awakino Hotel to oversee and direct actions locally.

2 Incident response

At 1530 hrs on 22nd June, the Waikato regional Council was informed of the accident via the front desk receptionist. The message was relayed onto the Resource Use Group (RUG) and two staff were immediately deployed to the accident scene and arrived on scene at 1800 (WRC doc # 2001607). The Regional Hazards and Emergency Management (RHEM) team manager (also the Regional On Scene Commander) was informed of the spill at 1615 hrs once it became clear that the spill may impact on the Coastal Marine Area (CMA) and require the spill to be managed under the MTA. Because the incident had been declared a Tier 4 under the RMA, two Regional on Scene Commanders (ROSC) were brought in as advisors.

Initial reports suggested most of the oil had been lost from the tanker directly into the Awakino River. The oil was described as a mixture of waste automotive oil and ship bunker oil (refer doc # 2013953). The company responsible for the accident was identified as Transpac or Trans Pacific Industries. An incident management team was notified and the team assembled at the office of WRC at 2200 hrs. The initial response team consisted of:

- Scott Fowlds — Incident controller
- David Stagg — Operations
- Adam Munro — Advisor – Regional On-Scene Commander

- Brendan Morris — Advisor – Regional On-Scene Commander
- Mark Row — Intelligence
- Greg Ryan — Planning

A Tier 4 response under the RMA was declared by the Incident Controller at 00:00 hrs and a media release was authorised to be circulated thereafter (WRC doc # 1997885). Two ready response staff were deployed immediately to give an initial assessment of the scene and report back. After the completion of the incident action plan (IAP) at 0100 hrs, further resources were deployed to Awakino with an expected arrival time of 0700 hrs on Thursday 24th June. The list of equipment and staff requested included:

- Harbour boom – only if space allowed
- 99m of rapid deployment boom
- Sorbent pads/ pillows and sausages
- Wildlife kit
- Personal protective Equipment (PPE)
- Equipment for site cordon
- Phil Eccelstone and three other staff to be deployed with hiab truck and driver
- Two support utes as a minimum
- Vessel to arrive on site at 0700 with a crew of Richard Barnett and Colin Ferguson
- Spiller supplied sucker trucks (X5) to be on site.

Media updates released as follows:

1. Initial media release issued by WRC Communications Staff at 1404 hrs on Thursday June 23rd outlining the incident and the actions taking place to rectify the situation (WRC doc # 1997885).
2. Update issued at 1608 hrs on the same day (WRC doc # 1998071).
3. Update issued at 0930 hrs on Friday 24th June
4. Final incident response update at 1230 hrs on Friday 24th June (WRC doc # unknown).
5. Monitoring and public health information released 27th June (WRC doc # 1998940)

The Oiled Wildlife Response Unit comprising of two staff (Helen McConnell and Brett Gartrell) were deployed from Massey University arriving on site at 2230 Thursday the 23rd June. The initial response objectives were to:

- Provide and maintain a safe working environment
- Respond to the oil spill under the RMA
- Minimise the environmental impact to the Awakino River and Estuary
- Contain and recover as much spilt oil as possible
- Assess and respond to wildlife impacts.

The RUG Tier 4 response manager and the Duty ROSC established an on-site incident control centre in the early hours of Thursday morning. The ICC identified and liaised with the following key stakeholders:

- Department of Conservation (DOC)
- Local Iwi
- Maritime New Zealand (MNZ)
- Waitomo District Council
- Taranaki Regional Council
- Local community
- Massey University OWR
- Transpacific
- Waikato CDEM Group.

At the time of the crash a passing truck laden with lime had applied its load onto the spilled oil in the vicinity of the rolled over tanker in an attempt to absorb some of the oil which was still leaking from the tanker onto the road.

Transpac had personnel on the crash scene with sucker trucks trying to recover as much oil as possible from the crash site and heavy salvage equipment to recover the truck during the night of Wednesday 22nd June. As a result State Highway 3 was closed by emergency services for a few hours while the crash site was cleaned.

Figure 3: Support vehicles assisting in the clean up operation at the crash site on SH3 in the Awakino Gorge (WRC doc # 2009154).

Figure 4: Crash site after remedial works (WRC doc # 2009154).

Figure 5: Sorbent pads and booms were positioned on the river banks at the spill in an attempt to recover oil in the ground and intercept from leaching into the river. (WRC doc # 2009154).

Equipment and response personnel arrived on site at 0700 hrs and rapid deployment booms were immediately deployed into the river. Transpac sucker trucks arrived on site before 0700 hrs to commence the recovery of the oil as soon as possible.

At 0800 hrs on Thursday 23rd June, a comprehensive list of hazards directly related to the work site was established by the ICC and compared with field operations hazard

lists already established. At 1100 hrs three extra staff were deployed to the ICC comprising of one staff member on an observation/training opportunity along with two health and safety representatives. Extra specialised PPE gear was deployed to site at the same time in case extra specialised PPE was required during the response process. The health and safety advisors were also on site to observe the reflection of Waikato Regional Council's health and safety policies at the work site (WRC doc # 1999045).

An extra land-sea boom was deployed from the Taranaki regional council as a secondary containment measures in an attempt to stop the oil circumventing the rapid deployment boom especially around the conjoint of the constantly moving land/sea border. There was also an attempt to mobilise the oil in the reeds with the wash from the boat propellers on Friday 24th June to re-mobilise the last remaining oil detained in the reeds before the booms were removed from the river. However, residual oil staining and pockets of concentrated oil remained fastened to the vegetation. This was a key feature of the monitoring programme which followed the event.

A Sorbent boom was placed under the state highway bridge on Friday 24th June to collect any sheen that still remained upstream between the bridge and the spill site.

On Friday 24th June at 1000 hrs, a relatively small number (about 5-10) of oiled birds (of different species) were observed by Massey University and DOC staff (see detailed DOC file note below in this section).

Tier 2 Declaration
The following file note explains the train of events leading to the tier 2 declaration. Prior to the oiled bird discovery the oil recovery response was winding down and preparing to scale back on its recovery efforts due to the minimal amounts of oil remaining in the tidal parts of the river.

Following discussions with key parties concerned, a Tier 2 response under the Maritime Transport Act (MTA) was declared by the ROSC at 1600 hrs on Friday 24th June. This was due to:

- The possibility of a sudden increase in oiled bird observations which would lead to an escalated response from a wildlife perspective
- Most of the oil was now in the coastal marine area
- Response costs were mounting
- The number of agencies involved and the high public profile of the incident
- There remained the possibility that there may be the need for an escalated beach clean up and recovery if oil had made its way into a sensitive wildlife area or back to the beach.

Due to the close vicinity of Awakino to the Waikato boundary with Taranaki, a comprehensive collation of environmental information did not form part of the Regional Marine Oil Spill Contingency Plan. The plan has now been updated.

The ICC in Hamilton transferred the ICC to the spill site in case the response needed to be escalated. One ICC staff member was sent down to Awakino early on Saturday 25th June to set up an ICC based at the Awakino Hotel.

File note: Awakino Oil Spill June 2011 (Smith, 2011).

Department of Conservation summary:
Following a 20,000 litre oil spill in the upper Awakino gorge, DOC and Massey staff surveyed the Awakino River and nearby coast on five days over the following fortnight. Wildlife effects appear minimal. Initially 10-15 birds showed sign of oiling, however all were fully mobile. There was no known mortality due to the oil spill.

Thursday 23 June 2011

0745	Ray Scrimgeour (Maniapoto Area Manager) advised of incident by WRC (Scott Fowlds)
0830	Staff discussion. Dave Smith phone con with WRC Hamilton staff. Agreed to send DOC staff to support wildlife response. Advised that Massey staff en route. RS briefed Waikato Consy, Waikato Area Manager, Taranaki Area Manager.
1000	DOC staff Doug Taucher and Kate McKenzie arrive Awakino. Preliminary survey of true left river mouth on foot, with binocular survey of north bank.
1200	Meet with Massey staff Brett Gartrell and Helen McConnell. Formal wildlife response coordinated. DOC staff to support Massey staff. Requested Brian Williams (DOC Taranaki Area Office) with boat for Friday for wildlife response.
1300-1600	Further survey (HM, KM) on foot of true left of Awakino mouth and the coastal beach south of the river mouth. ~30 mallard, several Caspian terns, shelduck, black backed gulls. No sign of oiling, no capture attempts. Boat survey (DT, BG) of river from boat ramp to upper SH3 bridge. <10 mallard, shelduck, shags. One shelduck oiled but mobile, unsuccessful capture attempt.
1800	DT, KM arrive back Te Kuiti. Debrief. At this point wildlife effects assessed as minimal. DOC Taranaki boat/staff stood down.

Friday 24 June 2011

0830	DS, DT, KM depart Te Kuiti
1000	Discussion with BG, HM (Massey), who had surveyed the Awakino river mouth on foot at 0800. Had observed a reasonable number of birds, some with signs of oiling, including a species of conservation note (caspian tern, nationally vulnerable).
1030	Discussion with WRC, Transpacific staff. Agreed to upscale wildlife response.
1100	DT briefs RS. Further staff requested for survey on Saturday. BW again requested with Taranaki boat for Saturday.
1100-1500	DS, KM survey (kayak and foot) of north bank spit, both estuary and coastal side; boat ramp to heads; and the inlet opposite boat ramp. Observed approx 30 birds (oystercatchers, shags, Caspian tern, tern sp, pied stilt, kingfisher, black backed gulls). Two shags in group of seven showed light oiling. Two further shags on south bank showed moderate sign of oiling. All mobile and no capture attempts.
1500	DS, KM survey Mokau River mouth spit on foot. Binocular survey at readily accessible points around Mokau estuary. No sign of oiled wildlife taking shelter at

	Mokau area.
1500	DT on boat assists with boom turning and carries out survey upstream of boat ramp. ~30 birds (shags, oyster catchers, gulls, herons, kingfishers) observed. 6 showed signs of oiling (shags & a white-faced heron). All mobile, no capture attempts
1630	Discussion with BG, HM. No evidence of increasing oiling through course of day. Decided to downsize response for next day. Two additional Massey staff to attend.
1730	DS, DT, KM arrive Te Kuiti. Despite indications early in the morning, wildlife effects still appear minimal. Stood down some staff for weekend.

Saturday 25 June 2011

0830	DT, Joel Chisholm depart Te Kuiti. BW departs New Plymouth.
1000	Discussion and briefing with WRC and Massey staff
1030 - 1200	DT, BW boat survey below boat ramp and support foot party. 10 birds observed, 3 with signs of oiling (white-faced heron, little shag, variable oystercatcher). Two capture attempts unsuccessful. JC, HM, BG, +1 surveyed Awakino heads and ocean beach on foot. Transferred to north head by boat. Observed Caspian terns, gulls, shags. One juvenile Caspian tern showed sign of oiling. Took net gun. No capture attempt.
1300 - 1500	DT, BW, HM, +1 boat survey from boat ramp to upper SH3 bridge (boom preventing access further up river). Found dead oiled mallard. Cause of death uncertain, retrieved and taken to Massey. JC, BG, +1 road survey boat ramp up to spill site. Four stops for binocular survey of river at accessible points. Observed mallards, shelducks, herons, plover, kingfisher. No signs of oiling.
1500	Wildlife team discussion. Given the limited capture success and the lack of deterioration in the oiled birds seen it was decided to cease the wildlife response and stand teams down
1630	DT, JC arrive Te Kuiti. BW arrives New Plymouth

Sunday 26 June 2011

	No DOC staff present. Booms removed and pumping ceased.

Monday 27 June 2011

0900	KM, Abi Quinnell depart Te Kuiti.
1000	Foot survey from boat ramp to river mouth (true left). Binocular survey of north bank. Significantly greater bird numbers around the river mouth with ~40 birds seen (mallards, shags, black backed gulls, oystercatchers). All birds appeared healthy and mobile with no visible signs of oiling, with the exception of one variable oystercatcher downstream of the boat ramp showing ruffled feathers. No capture attempt made. General discussion with Awakino residents whenever opportunity arose.
1300	Foot and binocular survey of Mokau spit and estuary. No sign of distressed or oiled wildlife.
1700	KM, AQ return Te Kuiti

Tuesday 28 June 2011

	No DOC staff at Awakino. Email discussion DS/HM. No further survey justified this week. Plan one further visit early in following week.

Monday 4 July 2011

0830	KM final survey of Awakino boat ramp downstream (true left), river mouth true left. No sign of oiled wildlife. Approx. 20 birds observed, no sign of oiling.
1330	KM back Te Kuiti

(Smith, 2011)

Public Health impacts

The Medical Officer of Health heard of the incident on the radio and received no formal notification until the afternoon of Friday 24th June when oiled wildlife was discovered. It was unfortunate that the usual contact for the public health office was away on leave which led to confusion over the contact process. Recommendations to facilitate contact is made later in this report (refer 1.1.13 Operational recommendations).

Advice from experts (such as Maritime New Zealand's Environmental Advisor) suggested if oil had been ingested by fish the oil would be excreted again in time with no permanent harm to the organism. The advice of the public health office was that if fish or shellfish tasted of oil it should not be consumed (WRC doc # 1998940).

Local Iwi were contacted in regards the spill as early as possible which was widely well received. There were however some Iwi missed that were just outside the Waikato region boarder. They have been invited to send in their contact details to enable contact to be made during future events in the area.

On Saturday the 25th June the ROSC confirmed a demobilisation plan with the wildlife response confirming a decrease in oiled birds and oil in the river or on the beach. On Sunday the 26th all booms including the Sorbent boom were removed from the river and the decision was made to disestablish the ICC centre with the majority of staff returning to Hamilton on the Sunday.

For the entire response time frame, communications and media liaison kept the public informed as events unfolded and responded to media questions as required.

2.1 Observations and limitations controlling the response

The ready response team deployed to the scene reported back to the Incident Command Centre (ICC) at 1800 hrs on Thursday 23rd June with the following observations:

- Oil slick observed in the Awakino River as far downstream as the SH2 crossing
- No immediate land containment possible as most of the waste oil has gone directly into the river
- Water velocity readings are 1 to 3m/s at the bottom of the Gorge
- Cell phone coverage is limited in the spill area
- An oil slick of at least 1m is observed on the prevailing side of the river with pockets spread over the width of the river and estuary.

It was reported that by the time the staff had arrived on site there was very little chance of containment on land as most of the oil had directly entered the Awakino River. By first light in the morning it appeared obvious that most of the oil had travelled down the river and exited the estuary out to sea. There were still remnant remains of oil on the river and in particular the tidal or estuarine section of the river. It was observed that there was still a solid slick of oil on the windward side of the Awakino river banks. There was oil also coating the reeds and sand/mud on the side of the river bank.

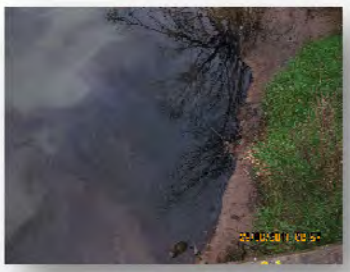


Figure 6: WRC Doc # Unknown. The extent of oil adhering to the banks and reeds of the river

The weather forecast on Thursday 23rd June and Friday 24th June 2011 was:

- Temperature: 12 degrees Celsius
- Rain: some heavy, easing in the afternoon
- Wind: Strong NE wind, westerly change expected later in the day on Thursday (Metservice, 2011).

The tides for the Awakino River on the Thursday were:

- 0308 hrs 3.1
- 0916hrs 0.8
- 1535 hrs 2.9
- 2129 hrs 1.0 (Niwa, 2011).

Marine conditions:

The marine conditions in the vicinity of the Awakino River mouth on Thursday 23rd June:

Forecast: Northerly 20 knots rising to 30 knots this morning. Changing westerly 20 knots early afternoon. Sea becoming rough for a time. Northwest swell rising to 3 metres for a time. Southwest swell 2 metres easing. Poor visibility in rain, easing this afternoon (Metservice, 2011).

Outlook: Outlook following 3 days: Rising Friday morning northwest 30 knots. Becoming Friday afternoon westerly 15 knots rising overnight southwest 30 knots, ease early Saturday 20 knots tend overnight Saturday southeast then late Sunday southwest. Sea rough at times. Moderate northwest swell easing Friday. Southwest swell becoming heavy for a time Friday, easing moderate Saturday (Metservice, 2011).

Due to the fact that it was not whitebait season and the inclement weather being experienced in the area there was very little public activity on or around the spill site.

2.2 Response under the RMA

Because of the apparent severity and volume of the spill a tier 4 declaration was made early on in the event. Declaring a tier 4 response under the RMA enables organisational wide resources to be utilised during the response. Waikato Regional Council resources utilised for the spill response included the use of Coms group for media releases and enquiries, and the River and Catchments Services (RCS) staff as advisors forming part of the ICC. By declaring a tier 4 response under the RMA the authority for the event was delegated on to the Controller on duty at the time.

A response under the RMA does not give the site manager wide ranging powers of authority over the movement of the public in and out of the work site.

The river pollution response is carried out under section 30 of the Resource Management Act (RMA). The waste oil discharge was unauthorised under Section 15 of the RMA, and under section 17 of the RMA Transpac had a duty to remedy the adverse effects of the spill.
The following format is the tiered criteria used by Waikato Regional Council Resource Use Group (RUG) for river pollution response.

TIER 1 Criteria

- No action required. e.g. the issue is the responsibility of another agency.
- Can be dealt with by phone.

TIER 2 Criteria

- Action is required.
- Effects minor.

Can be dealt with by phone e.g. dead cow in stream, rubbish on stream bank, odour complaint that can be logged.

TIER 3 Criteria

- Effects more than minor.
- Effects are significant but the event is historical.

Site inspection is required to assess what action is necessary e.g. small oil spill, objectionable odour occurring, sediment to a waterway.

TIER 4 Criteria

- There is significant public involvement or potential for it, e.g. visible/odorous spill, other agencies involved, public activities affected (road closure).
- There are potentially significant adverse effects e.g. fish kill, major spill of oil, chemical, milk etc, road/train accident involving chemicals, moderate discharge to the Waikato River.

2.3 Response under the MTA

Consistent with overseas practice, New Zealand has implemented a three tier approach to marine oil spill preparation and response.

TIER 1 Criteria

- Responders are typically industry based oil suppliers involved in any oil transfer site. All tier 1 sites are expected to be capable of developing and maintaining both a marine oil spill contingency plan (reviewed by the regional council) and an operational response capability.

TIER 2 Criteria

Responders are Regional Councils working under the delegated authority of Maritime New Zealand (MNZ). They are also responsible for producing a Regional Marine Oil Spill Contingency Plan (reviewed by MNZ) and an operational response capability commensurate with a larger and/or challenging spill. A tier 2 response is initiated when a Tier 1 operator asks for assistance or the Regional on Scene Commander (ROSC) decides the Tier 1 response is incapable of containing and recovering the oil spill. Estimated costs are estimated not to exceed $250,000. A tier 2 response is normally declared if the spiller or source is unknown. De-escalation of a tier 2 down to a tier 1 is not permissible (Maritime New Zealand, 2011).

TIER 3 Criteria

- Response and production of the National Marine Oil Spill Contingency Plan is the responsibility of MNZ. Tier 3 responses are typically outside the 12 nautical mile limit and/or costs estimated to exceed $250,000 (Maritime New Zealand, 2011).

Any oil spill from a vessel of any kind with the potential to contaminate the CMA is now classified as a spill under the jurisdiction of the MTA. The fact that this vessel may be well upstream in freshwater is irrelevant if there is a likelihood the spill will reach the CMA (Maritime New Zealand, 2011). This change to legislation still does not give precise guidance and is dependent on the size of the spill as well as the distance form the CMA and other contributing factors which may restrict the spills movement.

There can be anomalies such as this accident at Awakino where the spiller was identified, but not a tier 1 operator. The normal sequence is for the tier 1 response to be activated and escalated to a tier 2 if it is beyond the capabilities of the tier 1 response (Maritime New Zealand, 2011). In this case however, the spiller was not a tier 1 plan holder but was capable and willing to respond (in a limited way) to help clean up the spill.

2.4 Response of the spiller

In all aspects of the spill response Transpac has responded in a professional and timely manner. Appropriate resources have been supplied to the spill site and there has been good cooperation between Transpac and those in charge of operations on the ground. The response of making available five sucker trucks for the cleanup operation made the removal and disposal of oil from this remote location a much easier task than it may have been. The representative from Transpac reiterated these observations at the interagency debrief by expressing the good fortune in having such a large number of specialised trucks in the near vicinity of the spill.

2.5 Discussion on tier 2 declaration

Initial cleanup operations of the oil spill were directed under a Tier 4 declaration, driven by RMA legislation, as the spill had entered a fresh water environment. Once reports came in that the oil may have had greater impact on wildlife than had been first indicated, demanding a response beyond the capabilities of an RMA driven response, control was handed over to the Regional on Scene Commander (ROSC) by a Tier 2 declaration under MTA legislation. A response under the MTA has more direction to control the marine oil spill work site and can access other resources such as wildlife teams including oil response teams from other regions, as well as the stockpile of oil

recovery equipment stored in the Waikato and available for MTA response (but owned by Maritime NZ).

Although initially there was a reluctance to declare a Tier 2 response because the spiller was cooperative and Ready Response were handling the spill well under RMA legislation, it soon became apparent once the reports of oiled wildlife started to come in that there was a need for more resources. The reluctance by Maritime NZ to support WRC in declaring a Tier 2 response appeared to be centred around extra costs that could be imposed on the spiller and the threat to the oil pollution fund. By not declaring a tier 2 response it could be argued the worksite was still under the control of the spiller's policies and spill response direction.

Although Ready Response were responding to the spill under the RMA there appears to be little jurisdiction over other non-WRC personnel, actions, or on-site policies outside RMA legislation. It may have been prudent to respond under the MTA once it became obvious the response was beyond the capabilities of the spiller (one of the criteria to escalate) to give certainty to control over the spill recovery and worksite policies. This point could be very important if the spiller was not cooperative and/or had bad or non-existent policies around health and safety and working on roads etc, or was incompetent in handling the situation. This in no way reflects the ability of Ready Response to handle the response and work site within the WRC structure, but merely highlights the different pieces of legislation and the support the legislation provides. Once the response incorporates other agencies on the work site and if there is the possibility oil may enter the CMA, MTA legislation may be beneficial to personnel across the WRC group and give certainty to the response direction.

It was fortunate in this case that the spiller adopted good work practices and was willing to work with Ready Response and put considerable effort into the cleanup which limited the environmental impacts.

It is very clear in legislation (i.e. the MTA) when a Tier 2 event is to be declared:

- There is a risk of the oil entering the CMA.
- When the tier 1 spill coordinator (or ships master if it is a vessel) seeks the support of the Regional Council.
- If the Regional Council considers the response is beyond the capability of the spiller.

Regional Councils can also take control by declaring a condition in all individual Tier 1 Marine Oil Spill Contingency Plans that once oil enters water it requires a tier 2 response (Maritime New Zealand, 1998). This should not be a mandatory condition as some larger operators may wish to, and be capable of, providing their own response (Maritime New Zealand, 1998). The reasoning behind this train of thought is; tier 1 operator's should focus on preventing the spill entering the marine environment as they are normally not resourced enough to effectively recover the oil. This also gives a distinct set-point at which to declare a tier 2 response that is visible to all parties. Unfortunately this would still give no guidance for this type of event, which is another complicating factor of this spill.

Although Transpac were well resourced and enthusiastic in its response they were ill equipped to recover the oil from the river and needed booms, equipment, and personnel very early on in the incident. This was another reason why a Tier 2 marine oil spill declaration should have been made earlier.

3 Challenges of working coherently within multiple organisations

List of organisations involved:

1. NZ Police
2. NZ Fire Department
3. Maritime NZ
4. Waikato Valley Civil Defence
5. District Health Board
6. Massey University
7. Department of Conservation
8. New Zealand Transport Association
9. Taranaki Regional Council

The issue with many organisations on the one site is the control of the worksite itself and health ands safety procedures as well as the direction of the response leading to influential decisions regarding the direction of the spill response. Throughout the Awakino River oil spill response there was good cooperation between all departments and communications generally was efficient and well directed. If this cooperation had not been forthcoming between all stakeholders it may have forced the declaration of a tier 2 response under the RMA to be made earlier to give authority and control of the work site to the ROSC.

General consensus amongst ICC staff has been that it may have been a good option to declare a tier 2 earlier in the oil spill response as tier 2 declaration gives certainty to roles and response direction with minimal added cost to the spiller if there is good cooperation as was the case here.

The cooperation, communications and lending of spill response equipment by the Taranaki Regional Council helped alleviate the problem of distance that Awakino posses for the Waikato Regional Council. Awakino is at the extremes of the Waikato region and the swift dispatch of gear from Taranaki helped in the oil recovery with the supply of a land/sea boom.

Taranaki Regional Council expressed concern that the spill may have an impact on its Region. The option of dispatching a light aircraft was discussed between all parties to try and locate the oil and carry out monitoring on the oil at sea. Due to the inclement weather an aircraft was unable to take to the air. Ocean currents in this area move predominantly south so there was a risk it may impact the Taranaki region. This concern was expressed by the Taranaki Regional Council (and Maritime NZ) who kept a close check on wildlife in their protected and sensitive wildlife areas. There have been no reports of any oil impacting the Taranaki region.

4 Oil recovery options

Oil recovery options at Awakino were (Maritime New Zealand, 2011):

- Monitor

The monitor only option was not possible in the estuarine river system as the oil was creating an environmental and public health risk the longer it remained. The bulk of the oil that discharged straight to sea however was only monitored as there was nil chance of oil recovery in the open ocean due to weather, lack of appropriate equipment, and sea conditions at the time of the spill. Given the low environmental risk, sea conditions, and oil type, there would have been very little benefit in sourcing and deploying the equipment required.

- Contain and recover

This option was used in the river and estuarine area as river currents were slow enough to enable a reasonable quantity of the oil to be contained by the booms and recovered by sucker truck. The oil/water mixture recovered was decanted in the truck before the underlying water was discharged back into the boomed area. If the sucker trucks had not been supplied by Transpac, trucks could have been hired or a weir skimmer and holding tanks used in a similar manner before being transferred to sucker trucks or tankers for site removal. Unfortunately weir skimmers have a low oil to water recovered ratio. Oil recovered this way is normally associated with in excess of 90% of water being removed with the skimmed off oil.

The most efficient means to remove the oil would have been disc skimmers which have a very high ratio of oil to water recovery rate with the oil/water ratio of the weir skimmer being reversed depending on the oil type and disc speed. There are no disc skimmers held in the Waikato equipment stockpile but a disc skimmer could have been dispatched from MNZ in Auckland.

- Shoreline protection

Because of the large size of the coastline and the sea conditions shoreline protection was seen as inappropriate for this response. Sea conditions also did not allow the monitoring of the oil once it entered the Coastal Marine Area (CMA).

- Dispersants

Confined marine areas are not appropriate for the use of dispersants as the oil would tend to sink to the bottom and stay in the environment rather than being flushed out to sea and allowed to naturally degrade. Weather and sea conditions at the time were conducive to the rapid degradation of the oil in the open sea.

5 Health and safety on the work site

There has been a report compiled in regard to Health and Safety procedures and observations during the Awakino oil spill event (WRC doc # 1999045).

Material safety data sheets (MSDS) collate all the known information, characteristics, and associated risks of a compound (WRC doc # 1999752). These sheets guide personnel behaviour by collating specific characteristics of a compound, should the compound be present in an emergency such as a spill.

6 Operational constraints and challenges

The remoteness of the spill site made the response more challenging than if it had occurred in an area closer to equipment and personnel. This remoteness although creating problems with communications and equipment dispatch also made the response to the spill easier as population density and a lack of infrastructure put at risk by the spill meant the response could be low key. In other areas of high population density there would be a high probability of water takes being impacted either directly or through closure of the intake during oil recovery.

Changeable weather conditions with varying levels of rain intensity plus wind strength and direction, mobilised the oil and changed the position and flow of the oil slick in the river. During heavy periods of rain it was observed the oil would disperse over the width of the river and reform along the banks once the squall has passed by. The quantity of oil circumventing the booms was minimal due to low river currents.

The purchasing of any extra equipment or supplies was very difficult in the area with no retail shopping available in the immediate vicinity. This reinforces the need for any response to be fully self-contained. It was fortunate there was food, toilets and accommodation in close vicinity to the recovery site. Thought probably needs to be

given to the welfare requirements of field workers who may be committed to staying in the field for extended times.

Even though there are constraints due to cost recovery, the situation at the time of the spill is the only time available to experiment with any new oil recovery techniques. There is an inability to set up training scenarios to capture unique spill events and the challenges they pose for each response. Every spill response needs to be utilised as a training and systems refinement opportunity.

Duck shooting season ended the weekend of the spill. This reduced the amount of water traffic and the amount of people on the river at the time of the spill. Duck shooting season not only increases the risk to the public but also the risk to personnel working on the river.

6.1 Operational recommendations

Even though the response went very well there are lessons learned from the response which provide valuable feedback enabling Waikato Regional Council to respond more effectively. The following are issues and recommendations regarding operational procedures. This list is without prejudice and is intended as an educational tool only.

1. **Issue:** It is expected that satellite phones are able to give reliable service from any part of the Waikato region. The satellite phone used at Awakino proved to be unreliable. This may have been a problem with operation rather than the phone itself. Torrential rain meant that the users of the phone moved under shelter to make phone calls. This may have interfered with the signal.

   Recommendation: It is recommended that there is training given to all staff in the use of all communication devices. The suitability of the satellite phone needs to be investigated and trialled in different geographical locations to establish efficiency and suitability.

2. **Issue:** The RT in a pool vehicle used in the response had no allocated call number.

   Recommendation: It is recommended that all RT's have the call number clearly noted on the hand piece.

3. **Issue:** Because of the large number of staff and organisations involved in a Tier 4 RMA or Tier 2 MTA response contact can be delayed and sporadic.

   Recommendation: All staff involved in any of these responses and including outside organisations are contacted via SMS texting as well as email. This would give a rapid heads up to all organisations or staff for the potential of involvement in an event. This would allow staff to reorganise outside commitments if need be or reschedule work commitments. Outside organisations and staff can elect to make contact or go to a source of information such as a website or radio/TV once they have been made aware of an event.

4. **Issue:** Cell phone cover was very weak in the spill area.

   Recommendation: External cell phone aerials (boosters) would help cell phone reception in marginal areas such as Awakino. There are car-kits in some of the pool vehicles but training may be appropriate to enable efficient use of the car-kits.

5. **Issue:** Lack of sun and rain shelter on work site for personnel.

   Recommendation: Covers, ropes, or portable gazebo and any other suitable equipment required are included in response equipment.

6. **Issue:** There was potentially a lack of decontamination equipment. It was fortunate the spilt oil was light and lacking viscosity, as there was insufficient means to clean off personnel. Large objects such as vessels and booms would need to be decontaminated in a heavy oil spill on removal from the water.

   Recommendation: Sufficient equipment is purchased and become part of the equipment sent to a response to enable best practice red-zone decontamination processes. This may have to include water blasters or methods to decontaminate large objects and contain the wash.

7. **Issue:** This response highlighted the need for car chargers for cell phones. Even though cell phones were of little use at the scene, responders need to have use of the phones on transit to and from the site. There is no guarantee phones are fully charged at departure.
   Recommendation: Car chargers should be supplied with response phones. There needs to be response gear bags or containers available for responders with all necessary equipment in them.

8. **Issue:** Remote sites may not have the ability to purchase supplies.

   Recommendation: Response must be self contained.

9. **Issue:** The same incident in a highly populated area would create major public control issues and require a bigger response.

   Recommendation: Thought given and incident action plans established to allow the organisation to respond effectively to a spill in a densly populated area.

10. **Issue:** Even though currents remained low in the collection area there was a small amount of oil escaping under the boom. This was not a huge issue and the amount of oil escaping was minimal but best practice should always dictate oil spill response procedures.

    Recommendation: Longer booms set at a more acute angle to the current would minimise oil lost underneath the boom.

11. **Issue:** Communication avenues were restricted in the Awakino area. Although this did not cause any major issues with this event, a larger event may pose problems with limited communication.

    Recommendation: Explore other methods of communication and train staff in the use of all communications methods.

12. **Issue:** The rapid deployment boom allowed oil to escape past the boom at the constantly changing interface of shoreline and water.

    Recommendation: The use of land/sea boom is critical to minimise oil loss in the sea/ shoreline interface and in minimising oil escaping the collection area. It is recommended land/sea booms are despatched as early on in the response as possible to replace, or to be used in tandem with, the rapid deployment boom.

13. **Issue:** Communication with the DHB could be improved.

    Recommendation: All potential stakeholders are contacted as early on in the response as possible and rely on the contacted organisation electing to be a part of the response or not. It is recommended there be more than one contact person and more than one method of contact. To facilitate rapid and effective contact it is recommended that electronic contact devices are used for initial heads up contact. This can include:
    1 Email
    2 SMS texting
    3 Paging (key personnel of other organisations may carry pagers).
    4 Auto dialling system with pre-recorded message

    Initial contact can refer the contact to a website for information or an open information forum.

14. **Issue:** Some key agencies or organisations were not contacted in a timely manner or missed entirely.

    Recommendation: As above.

15. **Issue:** Health and safety on the work site should not be the responsibility of the site manager. Specialised H@S staff should always be on site to allow the manager to strategise and lead the response. Health and safety and security of the work site have developed into a much larger job than it historically has been. Waikato Regional Council has successfully moved incident communications into a specialised field outside the immediate response group.

    Recommendation: Health and Safety representatives need to be on site to provide guidance and to ensure safe practices are being followed in line with WRC health and safety policies.

16. **Issue:** The collection point of the oil is probably not the ideal place for the boat to be tied up. The engine could be an ignition source for the oil. Section 6 of the MSDS recommends the removal of all ignition and heat sources (safety – Kleen Systems, 2011). Although there was conjecture on site over the ignition point of the oil slick it would seem prudent to use the MSDS relevant to the material being handled.

    Recommendation: Use the MSD sheets supplied to lead worksite structure, procedures, and workplace practices. Best worksite practices from the industry Standard should also be inquired into and adopted.

17. **Issue:** Although the concentration of gases given off by the oil was minimal there needs to be a threshold established as to what tolerable limits are, and this threshold measured accurately. The MSD sheets stated the following properties of the spilled oil under section 11 toxicology information:
    1 Sensitization
    2 Mutagenicity
    3 Carcinogenicity
    4 Teratogenicity
    5 Toxicologically synergistic

    Recommendation: A gas meter be purchased and threshold established using best practice guidelines.

18. **Issue:** Section 7 of the MSDS refers to Handling and storage. It specifically notes the oils vapour and mist is not to be breathed. Whether vapours emitted from the suction trucks released quantities of oil laden mist is unknown.

Recommendation: Adopt best practice standards concerning air quality.

19. **Issue:** An oil spill requiring a tier 4 RMA or tier 2 MTA response will inevitably lead to concern about public health

    Recommendation: The DHB is contacted immediately when a tier 4 response under the RMA, or a tier 2 response under the MTA are declared.

20. **Issue:** Response staff; although skilled at using the equipment at the work site, are not formally trained in MOS response.

    Recommendation: Remaining untrained staff directly involved with equipment deployment should receive formal training as soon as possible.

21. **Issue:** Different departments of Waikato Regional Council have different reporting systems making collating information for combined reports more time consuming than they should be.

    Recommendation: Standardise reporting techniques, procedures and data storage methods across all departments.

22. **Issue:** No traffic management plan.

    Recommendation: Waikato Regional Council enters into a contractual agreement with a traffic management company to supply services when required.

23. **Issue:** Lack of cell-phone coverage made short distance communication on site very difficult.

    Recommendation: Have handhelds available for staff during similar events.

24. **Issue:** Large vessel had trouble reconnoitring the scene because of the size of the vessel.

    Recommendation: Have smaller vessels on site to access smaller and shallower water.

25. **Issue:** There is no documentation to enable signoff of cost recovery from the spiller at the scene.

    Recommendation: Draft templates for cost recovery are made available to staff regarding spill sites.

26. **Issue:** The release of trained response staff for emergency response is reliant on the release of personnel from business as usual duties (BAU) by managers. During short duration spills this does not normally pose a problem, but a protracted response puts strain on BAU. WRC are bound by legislation to respond to oil spills, making a suitable response not a matter of choice.

    Recommendation: Agreed set points defined and acknowledged to guarantee the release of trained MOS responders and activate a WRC system to cover BAU if a response is protracted.

27. **Issue:** There was no environmental/cultural information of the Awakino area present in the Regional Marine Oil Spill Contingency Plan.

    Recommendation: An addition is made to the Regional Plan to include the missing information.

28. **Issue:** If the road accident had resulted in a fatality access to the spill may have been delayed considerably while finding an alternative route.

    Recommendation: Alternative routes need to be ascertained quickly. The best way to achieve this is by carrying GPS units during initial response. These units can establish the quickest alternative route instantly.

29. **Issue:** Remote areas do not have residual light from surrounding light forms and can result in very limited vision.

    Recommendation: Efficient portable flood lighting (this can be handheld in the vehicle) is made available for site assessment for health and safety compliance and reporting accuracy.

30. **Issue:** Percentage of oil to water ratio of recovered slurry remains unknown

    Recommendation: An agitated sample of slurry taken for settling comparison to establish ratio before slurry leaves site.

7 Wildlife

Current whitebait knowledge indicate juvenile whitebait may have already hatched from the eggs attached to the reeds and had gone to sea before the spill happened (Feek, 2011). It is however not confirmed that the whitebait had hatched prior to the spill. The whitebait season was closed at the time of the spill and re-opens on the 15th August running through till the 30th of November. It is hoped that the seasonal heavy rain and wind conditions will help to flush and degrade the remnants of the oil by the start of the whitebait season.

The following section is the official report from Massey University staff (McConnell, 2011).

7.1 Awakino Oil Spill – Massey Wildlife Report

Massey University Oiled Wildlife Response Team
25 June 2011(McConnell, 2011)

Operational Summary:

<u>22 June 2011</u>

10:15pm	Received notification from EW and requested to stand by
10:45pm	Core Group of the National Oiled Wildlife Response Team - standby
11:50pm	Brett Gartrell & Helen McConnell requested to attend on-site as soon as possible on 23 June. Blue box of wildlife equipment mobilized.

<u>23 June 2011</u>

Wildlife personnel on-site: Doug Taucher (DOC), Kate McKenzie (DOC), Joel Chisholm (DOC), Brett Gartrell (Massey), Helen McConnell (Massey)

10:00am	Wildlife advice received from Rob Chappell
12:00pm	Helen McConnell arrived at spill site
1:00pm	Brett Gartrell arrived at spill site
Onwards	Wildlife assessments conducted:

- River from boat ramp to beyond second bridge by vehicle
- River from boat ramp to beyond second bridge boat
- Beach south of river mouth by foot
- River mouth

- Survey results found low numbers (< 10) of common species present in the river (mallards, shelducks, shags), with only one paradise shelduck showing signs of moderate oiling (capture attempt on this individual was unsuccessful).
- Bird numbers were higher at the river mouth (30), but common natives or introduced species (mallards, shelducks, black backed gulls), no oiled birds obvious.

7:15pm Due to survey results indicating relatively low numbers of common species and low oiling rates, the Core Group of the National Oiled Wildlife Response Team was stood down

<u>24 June 2011</u>

Wildlife personnel on-site: Dave Smith (DOC), Doug Taucher (DOC), Kate ? (DOC), Brett Gartrell (Massey), Helen McConnell (Massey)

8:00am Wildlife assessment made of beach just inside river mouth
- Survey results found 25 birds in this vicinity (terns, gulls, shags, mallards), with at least 3 birds showing light to moderate oiling (caspian tern, black backed gull, little shag)

9:00am Briefing

10:00am Wildlife assessments conducted:
- Lower estuary and sand spit by kayak
- River from boat ramp to beyond second bridge by boat
  - Survey results found 20 birds (pied stilts, shags, lapwing, gulls, mallards, shelducks), with one moderately oiled little shag.

11:00am Four additional capture & stabilization personnel, and equipment were mobilized – on account of the survey results of the morning: higher numbers of wildlife observed compared with previous day, in particular the inclusion of oiled coastal wildlife of moderate conservation value.

12:30pm Cost estimate of $10 – 20 000 for wildlife response provided to the oil spill duty officer at MPRS (based on six Massey staff attending on-site for an additional 4 days and subsequent treatment of low numbers of oiled wildlife at Massey's oil spill facility)

1:00pm Wildlife assessments conducted:
- River from boat ramp to second bridge by boat
- Lower estuary by foot
  - Survey results found approximately 30 birds (shags, oyster catchers, gulls, herons, kingfishers), 6 of which had light - moderate oiling (little shags & white faced heron). All observed oiled birds were still very mobile and no capture attempts were made due to difficulties with approaching oiled birds to a suitably close distance.

4:00pm Tier 2 Maritime Spill declared based on predicted ongoing wildlife operations in the coastal area.

5:00pm Two of the four additional capture & stabilization personnel were stood down before departing Palmerston North based on emerging difficulties with capturing lightly oiled birds.

<u>25 June 2011</u>

Wildlife personnel on-site: Doug Taucher (DOC), Brian Williams (DOC), Joel ? (DOC), Brett Gartrell (Massey), Helen McConnell (Massey), Sarah Michael (Massey) & Tom Burns (Massey)

8:00am Wildlife assessment made of beach just inside river mouth
- Survey results found 10 birds in this vicinity (terns, gulls, shags, heron & oystercatchers), with at least 4 birds showing light to moderate oiling (caspian tern, white faced heron, little shag,

variable oyster catcher). A capture attempt on the heron was unsuccessful.

9:00am Briefing

9:30am Wildlife assessments conducted:

- Lower estuary & river mouth by foot and boat
  - Survey results were provided to EW on laminated maps. A capture attempt was initiated on a group of little shags, but was unsuccessful.

1:00pm Wildlife assessments conducted:

- River from boat ramp to second bridge by boat & into Awakino Gorge by vehicle
  - Survey results were provided to EW on laminated maps. Very few birds observed during this survey.

4:00pm Wildlife operations were halted based on limited capture success, and that lightly oiled birds were not displaying obvious signs of suffering (either physiological or behavioural). At this stage we deemed that the cost of continued wildlife operations were not proportionally aligned with the predicted animal welfare or conservation benefits.

Summary of oiled birds seen:

Data presented are the minimum number of individuals affected. Degree of oiling was light to moderate in all cases.

- Paradise shelduck 1
- Little shag 5
- White faced heron 1
- Black backed gull 1
- Caspian tern 1
- Variable oyster catcher 1
- **TOTAL observed 10**

Two dead fur seals and one dead mallard were located during the wildlife surveys and assessed. Neither of the fur seals showed any sign of oiling and the state of decomposition suggested they had died prior to the spill. The mallard had oiled feathers but had been heavily scavenged by black back gulls and it was not possible to determine if the oil had contributed to its death.

Conclusions:

- At least 10 oiled birds were observed during surveys over the three days
- The total number of birds oiled by the spill was likely to be greater than those documented as discrete counts can't account for oiled individual birds moving in and out of the surveyed area.
- Movement in and out of the survey area was highly likely as in most cases oiling was not heavy enough to limit flight
- We estimate that the overall number of oiled birds in the spill vicinity was 10 - 20
- The number of oiled birds present during surveys contributed only a small percentage (3-13%) towards the total number of birds observed during surveys, indicating that birds were still able to inhabit the area without becoming contaminated with oil.
- Based on the degree of oiling observed we predict that most affected birds have a reasonable chance of survival without capture and treatment.
- We do predict that there will be some bird mortality from the spill based on observations of a small number of moderately affected individuals (McConnell, 2011).

Author: Helen McConnell, Massey University (McConnell, 2011).

There was a recommendation at the inter agency debrief to contact the white baiters association to provide them with information on the state of the river before the season starts.
It was confirmed by Iwi that there are no shellfish beds in the immediate vicinity of the estuarine outlet. Known shellfish beds were mainly north of the river mouth and upstream of the main current flow on this coastline.
Other than the impact on wildlife highlighted in the previous DOC report there have been no ongoing reports of birds affected by the oil.

8 Monitoring

8.1 Recommendations

Helen McConnell from Massey University recommended the following wildlife monitoring regime be put in place.

1. DOC Te Kuiti staff to conduct kayak surveys on Monday 27 June.
2. The necessity of further DOC monitoring in the coming week will be contingent on the findings of this assessment
3. We also propose that a follow up survey by Massey staff and DOC occur in 1-2 weeks time to assess any medium term effects on wildlife
4. Awakino Hotel has been informed of actions to take should members of the public bring oiled wildlife to them
5. The local commercial eel fisherman has also been asked to collect dead birds and report these back to Massey (McConnell, 2011).

Because of the wide spread environmental impact of an oil spill of this size and type, DOC/Massey University and Waikato Regional Council ecology staff have agreed on periodic monitoring of the Awakino River and estuary over the period of 27th June to the 11th July to monitor impacts to vegetation, wildlife, and the benthic environment (WRC doc # 20000687).

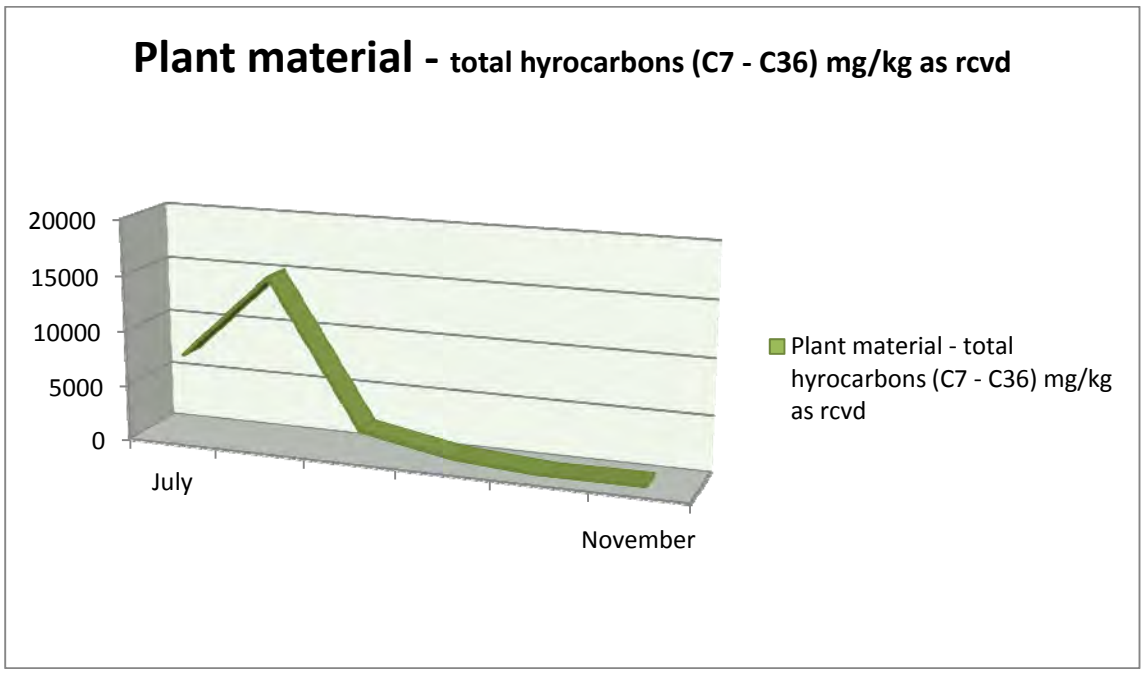
Methodology

Vegetation - Monitor weathering of oil and recovery rate of vegetation.	Take oil samples from the reeds. 5 sites 2m apart. 10 stems at each location. Take the oiled length if visible otherwise a length 200 mm from the base, irrespective take a consistent length. Equipment scissors, ruler and bag. Cut the oiled section of stems, combine and bag. Solvent removal of hydrocarbon from the stems in the lab. Parameter - Total Petroleum Hydrocarbons results as chromatograph and mg/kg dry wt. Location to be clearly identifiable and documented and photo post sampling. Add a photo point to record visual change. Location to be clearly identifiable and documented. First samples and photos to be taken in the week of 4 July, second on 21 July then monthly after that.	Initial sampling to be undertaken by Colin Fergusson (RUG), with a follow up sampling run by WRC RIG staff.
Wildlife	Monitor state of wildlife – especially in boat ramp to river mouth reach. Capture severely impacted priority species if possible (native excluding Paradise ducks) and transport to Massey. Dispose of dead birds. Ask public to report sick or dead wildlife to DOC.	DOC staff to lead – inspections 27 June 2011 and report back. Follow up inspections

		unlikely. Massey yet to confirm
Fish	Unlikely to be major impacts to adults. Oil will be absorbed by fish and excreted over a period of 2-3 weeks. Advise public not to eat fish if they smell oily. *Note from Maritime NZ:* *Whitebait are unlike salmon and eels, in that they do not return to the same river once they migrate back inland - rather, they form a "mass pool" of juveniles that spread across the West Coast river systems. Therefore, it is unlikely that the impact upon the river will be serious in terms of diminishing the whitebait population next season*	No monitoring actions required
Surface sediments Monitor weathering of oil.	Take surface samples (cores not required) of sediment. . First samples to be taken in the week of 4 July, second on 21 July then monthly sampling after that. Samples to be taken from near the boat ramp in an area affected by oil at or slightly below the high tide mark. Consistent sampling depth will be crucial to be able to have even an approximate quantification. 10 mm depth, 300 mm length, 40 mm wide combine 5 sub-samples 2m apart. Location to be clearly identifiable and documented, photo post sampling. Advise the lab that mixing is required. Parameter - Total Petroleum Hydrocarbons results as chromatograph and mg/kg dry wt.	Initial sampling to be undertaken by Colin Fergusson (RUG), with a follow up sampling run by WRC RIG staff.

8.2 Results of sampling.....as of 06/12/2011

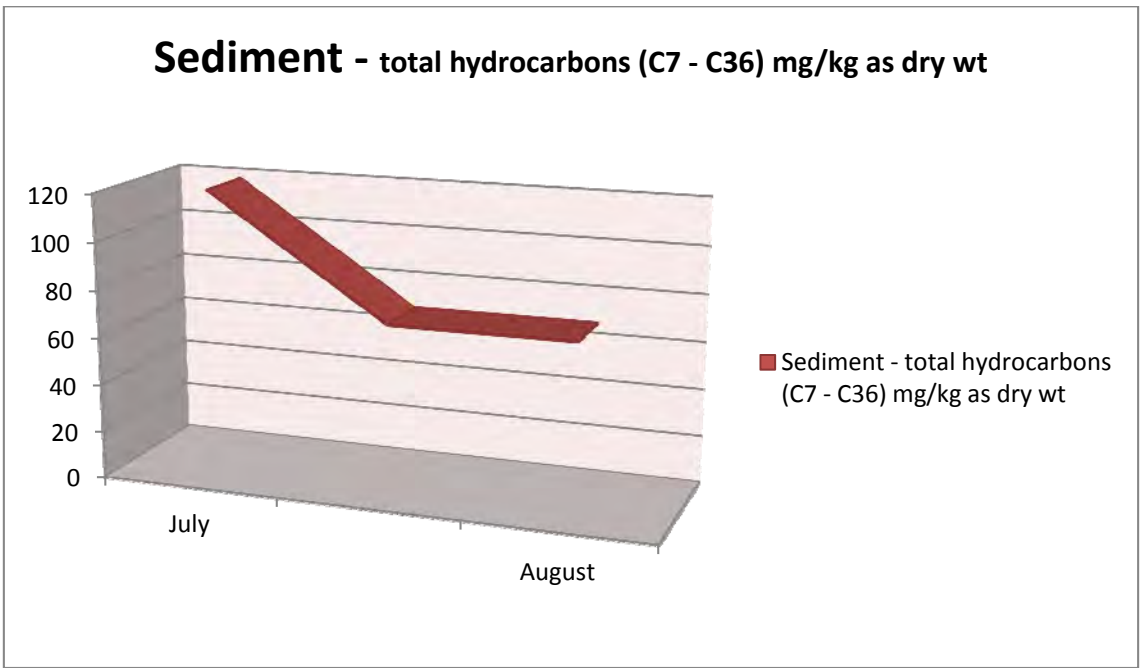
For information on the exact sites used for sampling purposes refer to WRC doc # 2067738. Awakino Oil Spill Sample Programme Doc # 2006075.



Sample results are as follows:

05th July	7500 mg/kg as rcvd
21st July	15200
18th Aug	2200
22nd Sept	660
20TH Oct	65
18th Nov	149
19th Dec	<40

Although the graph appears to continue to trend downward there was a slight lift in hydrocarbon levels in the last test.



Sample results are as follows:
05th July <120 mg/kg dry wt
21st July <70
18th Aug <70

Individual test sheets can be accessed on: WRC doc # 2010249, 2024192, 2046729, 2079835, 2085063, 2091155,

There is a further report on water quality (methodology: surface sampling) by Pattle Delamore and Partners (WRC doc # 2096489). The purpose of the site inspection and surface water sampling is to ensure there is no long term seepage of oil residues from the embankment at the crash site.

9 Summary of inter-agency debrief (14 July 2011)

Present:

WRC:	Adam Munro
	Will Gauntlett
	Ainsley Alexander
	Scott Fowlds
	Andrew Alston
	Chris Mclay
	David Stagg
	Dave Lovatt
	Wayne Reed
Transfield:	Cara Fahey
Transpac:	Greg Bovaird
DHB:	Dell Hood
MNZ:	Dayne Maxwell
NZTA:	Chris Millar, David Greig
Massey:	Brett Gartrell
Brendan Morris Consulting:	Brendan Morris

- Ecology and wildlife advice from MNZ, Massey, DOC and WRC were all consistent. This was especially appreciated when press releases and interviews were carried out.
- Pre-emptive press releases stopped speculation and kept the public informed.
- Formal WRC investigation outline:
  - 29th June investigation started
  - 1st July requested file notes from WRC staff and NZ police files
  - 5th July site visit
  - 6th July truck inspected
  - Ongoing investigations by Police, Transpacific and insurance
- On scene communications improved throughout the response due to interagency efforts.
- Each agency to undertake internal hazard management reviews.
- Media well handled by Massey and WRC.
- If oil enters, or can enter the CMA, the Maritime Transport Act guides response.
- Communication restricted in the area and needs addressing for similar scenarios.
- DHB found out details of incident over the radio and requested they be notified earlier on in an event. Normal DHB contact point was away and this caused the communications to fail. Contacts to be added and notification to be more departmental than individual.
- MNZ happy with the amount of communications and sitreps provided enough information for them.
- MNZ would like WRC to formalise environmental analyst role and include in Regional Plan.
- MNZ requested their Oiled Wildlife experts be consulted early on in a similar event (not required under RMA).
- Report to go to MNZ.
- Taranaki Regional Council thanked for assistance given. It was noted that perhaps TRC should have been invited to debrief.
- Letters of thanks to go out to others involved in response.
- Overall, interagency and divisional cooperation reported as very good throughout event.
- It was acknowledged that there were challenges and a certain amount of luck involved in the incident which cannot always be counted on for all scenarios.

WRC doc # 2012508

10 Vehicle accident investigation findings

Waikato Regional Council carried out an investigation into the accident to assess the culpability on any person or organisation relating to the Resource Management Act 1991. The driver was charged with careless use of a vehicle by the NZ Police but no prosecution was brought against Transpacific or any other organisation involved under the RMA.

For full details refer WRC doc # 2059722, 2103411, and 2057926.

11 Conclusion

There were many circumstances that lessened the impact of the incident, making the response easier, resulting in a successful response. Had circumstances been different the results of the response may not have been so successful. These circumstances were:

- The spiller was well resourced with sucker trucks
- The spiller was cooperative and helped where ever possible.
- There was never any indication of reluctance by Transpac to reimburse costs for the response.
- Duck shooting season had just finished the previous weekend.
- The opinion was that the whitebait juveniles had already hatched from the reeds.
- Whitebait fishing season had not started (Start date: 15th August. Incident date: 22nd June).
- Low spring tide at time of spill (majority of spill went straight out to sea). While this scenario may not be desirable for maximum oil recovery, it assisted the response as the oil would have been difficult to recover effectively without disc skimmers if sucker trucks were not available (disc skimmers are not available in the Waikato stockpile but may have been dispatched from MNZ Auckland).
- Low density population area.
- Cold and wet weather which kept the public indoors and away from the worksite.
- Potential damage to shellfish beds or other vulnerable kaimoana in the near vicinity of the spill appeared to be minimal requiring nothing in the way of preventative actions.
- According to local Iwi the nearest shellfish beds were upstream of natural coastal flow.
- Ideal spill recovery site close to accommodation and food etc available.
- Low volume traffic site to work from.
- Low current flows in the recovery area.
- Taranaki Regional Council was very close to the site and was keen to assist with resources and personnel.

Having highlighted circumstances conducive to spill response and recovery, there were challenges to the spill with the remoteness of the worksite as well as communication hurdles and the blurry boundaries between an oil spill response under the RMA and a response under the MTA. Changing the demographics of the rollover scenario to a densely populated coastal area in peak summer months on a busy state highway with multiple water resource users including commercial, and the degree of difficulty increases dramatically.

Lessons learnt from this response need to be built on and acted on to make future responses more effective. Main lessons learnt and positive actions include:

- Interaction between two different divisions of WRC was very good and worked efficiently.

- Declaring a Tier2 response early in an event does not have negative effects on the response but strengthens resources and clarifies potentially conflicting and confusing situations.
- To standardise WRC response to health and safety at various work sites in an emergency response situation there needs to be dedicated staff allocated to this task. This not only standardises the response but frees up the site manager to deal with current operational situations and forward planning.
- Stakeholders need to be informed very early on in an event and it is better to inform too many than not enough.
- Proactive media response and regular press releases not only keeps the public informed but stops speculation and inaccurate reporting. Accurate specialist advice given to personnel fronting media interviews was appreciated and made the task easier. COM's were very effective at pre-empting the media interest and were pro-active in providing information to the public as soon as it was available.
- Iwi liaison is a very important part of a response and needs to be delegated to those personnel best equipped to do so. In Waikato Regional Council's case this would be the Iwi liaison group (Tai – Ranga Whenua) within WRC who are well resourced for the task.
- Communication is not always guaranteed and needs to be better resourced as the Waikato region does have some remote areas.
- Extra supplies or equipment cannot always be sourced on the day and responders need to be as self-contained as possible.
- Sourcing expert ecological advice from Massy University and Waikato Regional Council staff aided decision making. It is also recommended that a WRC ecologist be designated as a point of contact for the MOS response.

Cooperation by the spiller, all departments and agencies throughout the duration of the spill response and on to the monitoring phase has made a potentially complicated event transparent, efficient and devoid of conflict. Confirmation of robust systems already in place and the value of strong networks creating efficient and timely response were highlighted in this operation.

Systems must always be refined and modified to ensure the most efficient and appropriate response to any scenario while safeguarding staff and minimising the impact on the environment. Events such as these provide ideal opportunities for training and refinement in situations that cannot be replicated in exercises and should be utilised as much as possible, while still providing an efficient and cost effective response. This report should be viewed as only the first step in reviewing procedural refinement and not the conclusion.

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