FREMANTLE OIL SPILL INQUIRY

Report and Recommendations by the Environmental Protection Authority

Department of Conservation and Environment
Perth, Western Australia
Bulletin 259 September 1986

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REPORT AND RECOMMENDATIONS

by the

ENVIRONMENTAL PROTECTION AUTHORITY

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EXECUTIVE SUMMARY

The Fremantle Oil Spill Inquiry was established by the Environmental Protection Authority to report on the oil spill that occurred on Sunday, 27 July 1986. Fracture of an oil pipeline weld resulted in oil flowing into Fremantle stormwater drains and then into the fishing Boat Harbour. Some of the oil escaped into Cockburn Sound and eventually accumulated on Garden Island. Approximately 50 tonnes of oil were spilt with all but some 8 tonnes being recovered from the roads, stormwater drains and Fishing Boat Harbour.

The following are conclusions in relation to the terms of reference of the Inquiry.

1. *Assess the environmental hazards of existing and new petroleum fuel pipelines in the Fremantle region.*

   There is uncertain regulatory control over petroleum pipelines in the Fremantle area. However, the pipelines are a safe means of petroleum transport, and are constructed, maintained and operated according to petroleum industry and relevant Australian Codes of Practice.

   Pipeline spills in the Fremantle area could enter the sea or river either via the stormwater system or directly from pipelines crossing the Swan River or spillage in Wharf areas.

2. *Seek advice on the adequacy of pipeline monitoring schemes and emergency shut down arrangements.*

   Despite uncertain regulatory control, petroleum pipelines in the Fremantle area other than the Kwinana Refinery Pipelines and pipelines within the Fremantle Port Authority areas are monitored and maintained in accordance with the requirements of the Flammable Liquids Regulations of the Explosive and Dangerous Goods Act. Mechanisms to warn of and react to petroleum leakages from large pipelines need to be upgraded.

3. *Report on the effectiveness of the emergency response system.*

   The road and stormwater drain spill was efficiently managed in accordance with the Western Australian Road Transport Assistance Scheme.

   The overall response to the Fishing Boat Harbour oil spill was excellent. All those involved worked strenuously and with little regard for their own comfort. There was ongoing pressure by the America's Cup Syndicates on those involved to continue using dispersants, despite the poor cost effectiveness of this approach. A shortcoming which showed up was the absence of combat equipment at this location.

4. *Examine the environmental effectiveness of the oil spill clean-up arrangements and report on the extent of damage to the marine environment.*

   Little long-term ecological impact of any significance is expected. However, it is believed that dispersant usage has been excessive within the Fishing Boat Harbour. The incident has highlighted the need to have contingency plans for the protection of wildlife from oil spill impacts.

5. *Recommend whether further protection measures are required.*

The following recommendations are made following an assessment of the existing pipeline management system, the effectiveness of the emergency response systems and the environmental effects of the oil spill and clean-up arrangements.

1. Department of Marine and Harbours should have equipment on hand to respond to an oil spill in the Fishing Boat Harbour. This should include an adequate length of oil boom to be stored at the Fishing Boat Harbour. Training in the use of such equipment should be intensified.

2. The Minister for Minerals and Energy should consider amendments to existing legislation to enable licensing control over all petroleum (and other chemical) pipelines, from which spillages could result in a significant environmental hazard.

3. The Petroleum Industry should be requested by the Department of Mines to conduct an assessment of the adequacy of warning and shut down procedures applied to existing petroleum pipelines and develop a programme where necessary.

4. A detailed oil spill contingency plan should be prepared for the fishing boat harbour and other similar harbours as a matter of urgency.

5. The Minister for Transport should consider development of legislation to provide On Scene Coordinators with legal powers to enable more effective management of oil spill control activities.

6. The small amount of oil continuing to seep from rocks and oiled boats is unlikely to be effectively treated by the spraying of dispersants. Dispersant usage in the Fishing Boat Harbour should only continue for boat cleaning.

7. The Oil Spill Contingency Plans should define the headquarters to be used and ensure dedicated radio channels are available.

8. Oil Spill Control Equipment should include dedicated portable radios.

9. In any future spills, adequate administration staff should be appointed quickly.

10. The installation of oil traps or surge basins should be considered by the Water Authority of Western Australia or Local Authorities as appropriate, close to the outfall of storm water pipes entering environmentally sensitive areas, to provide a time delay in the escape of oil (or other spilt chemical).

11. The Department of Conservation and Environment should be the main point of contact for the environmental aspects of oilspills. This Department should then contact appropriate organisations to coordinate an efficient response to the emergency, in conjunction with the On Scene Coordinator. A formal duty officer system for the Department should be instituted.

12. The Department of Conservation and Land Management and the Waterways Commission should develop contingency plans for protection of susceptible areas under their control and generally for wildlife protection, in the event of an oil spill.

13. The Water Authority of Western Australia, in conjunction with Local Authorities and the petroleum industry, should examine the plans of existing petroleum pipelines and provide a clear analysis of Fremantle stormwater outlets which could be affected by pipe breakages. This information should be provided to the Police and State Emergency Service and incorporated in the chemical spills and Marine Oil Spill Contingency Plans covering the area.

14. The Road Transport Emergency Assistance Scheme should be extended to cover all possible instances of chemical spillage on land and to ensure proper communications control.

Although in this particular case the companies responsible for the oil spill have volunteered to pay for the costs of clean up activities, we further conclude that there should be specific liability on the operator of a facility for damages and costs of clean up incurred. The State should also have power to require the operator to install leak detection equipment, take action to stop a pipeline leak or cease pumping through a leaking pipe.

1. INTRODUCTION

On Sunday, 27 July 1986, an oil pipeline weld fractured in Knutsford St, Fremantle while the pipeline was transporting ship bunker fuel. This resulted in oil flowing into stormwater drains and then into the Fishing Boat Harbour. Some of the oil escaped into Cockburn Sound and eventually accumulated on Garden Island. Approximately 50 tonnes of oil were spilt with all but 8 tonnes being recovered from the roads, stormwater drains and Fishing Boat Harbour.

The Environmental Protection Authority set up an inquiry into the spill which was the most severe test of the emergency response system, last reviewed in November 1984. The inquiry reported to the Authority on 3 September, 1986. The Inquiry's findings formed the basis for this report.

The terms of reference for the inquiry were as follows:

- Assess the environmental hazards of existing and new petroleum fuel pipelines in the Fremantle region.
- Seek advice on the adequacy of pipeline monitoring schemes and emergency shut down fuel arrangements.
- Report on the effectiveness of the emergency response system.
- Examine the environmental effectiveness of the oil spill clean-up arrangements.
- Report on the extent of damage to the marine environment.
- Recommend whether further protection measures are required.

The invited members of the inquiry represented port, pipeline safety and conservation interests as follows:

Mr P Browne-Cooper (Chairman)	Department of Conservation and Environment
Captain J Barron	Fremantle Port Authority
Mr W Carr	Department of Conservation and Environment
Mr H Douglas	Department of Mines
Mr S Hancocks	Department of Conservation and Land Management (Wildlife Protection Branch)
Captain R Hudson	Department of Marine and Harbours
Dr H Jones	Fisheries Department
Mr B White	Department of Conservation and Land Management (Metropolitan Region)

In addition, BP Australia Limited and Shell Oil Company which own the affected pipeline, provided a full report on the incident. Further information was given by the Water Authority of Western Australia, the Fremantle City Council, and volunteers involved in bird rescue activities.

2. SUMMARY OF EVENTS

SUNDAY, 27 July 1986

0810 Bunker fuel pumping commenced from the BP Fremantle East Terminal to the "Baron Murray" at F Berth Victoria Quay.

0825 Line pressure 850 kpa reached.

0835 Swan Taxis Fremantle informed BP of pipeline leak in Knutsford Street, Fremantle.

0840 Fuel pumping ceased, suction commenced.

0855 Fremantle City labour, materials and plant mobilised, private contractors and additional staff called for as it was apparent oil could flow to harbour.

0930 Containment and recovery of oil from road and drains. Fremantle Port Authority and Marine and Harbours aware that oil could enter Fishing Boat Harbour (FBH).

0940 Oil entering FBH from drains.

1000 Fremantle Harbour Master (A member of the State Combat Committee) assumed role of On Scene Coordinator.

1015 Marine and Harbours Department informed of supervision by Fremantle Harbour Master.

1100 Oil booms in place containing oil from drain. Dispersant was applied to slick in harbour. Conservation and Land Management Department informed of birds being oiled. Volunteers alerted for bird collection.

Department of Conservation and Environment visited road spill then harbour.

1700 Sand spreading and road oil recovery completed.

2000 All operations ceased. Overnight patrols by Marine and Harbours.

MONDAY, 28 July 1986

All day Returning of roads to reasonable condition. Washing down drains, removing oil fluids by sullage truck.

National Plan sorbents and dispersant provided. Continuing Harbour clean-up and bird collection. Overnight Marine and Harbour patrols.

1200 Oil coming ashore on Garden Island. RAN clean-up commenced.

TUESDAY, 29 July 1986

Clean-up of roads. Lower drain flushed with detergent. Harbour clean-up continues with bird collection. Skimmer arrives from Geraldton. Overnight Marine and Harbour patrols.

WEDNESDAY, 30 July 1986

1000 State Emergency Service debriefing on roadspill.

1300 Harbour clean-up scaled down. All but one boom at drain outlet removed. Bird collection continues.

THURSDAY, 31 July - FRIDAY, 17 August 1986

Harbour clean-up continued, using booms, sullage trucks and cleaning down using dispersant. Oil still seeping from between rocks bounding harbour, but in small quantities. Bird rescue activities ceased on 6 August.

SATURDAY, 18 August - TUESDAY, 22 August 1986

Continuing clean-up of minor oil seepage.

TUESDAY, 2 September 1986

Biological survey showed no effects outside Fishing Boat Harbour following an examination immediately outside the Harbour and on the eastern side of Garden Island.

3. ASSESS THE ENVIRONMENTAL HAZARD OF EXISTING AND NEW PETROLEUM FUEL PIPELINES IN THE FREMANTLE AREA

3.1 FREMANTLE PETROLEUM INSTALLATIONS

Four petroleum terminals are situated in Fremantle and Fremantle East with six in North Fremantle. There is some degree of interconnection by pipelines between the various tanks as well as pipeline links to the Kwinana Oil Refinery and Wharves in Fremantle and North Fremantle.

The petroleum pipelines are generally below ground. However, they cross the Swan River via the Old Fremantle Traffic Bridge, are suspended underneath wharves and are situated in a trench paralleling Port Beach Road in North Fremantle.

3.2 LEGISLATION

Legislation directly referring to the pipeline conveyance of petroleum in the Fremantle region is as follows:

Anglo-Persian Oil Company Limited's Private Act, 1919
Oil Refinery (Kwinana) Agreement Act, 1952-1985

Legislation providing for the regulation of petroleum pipeline activity, administered by the Department of Mines, is as follows:

Petroleum Pipelines Act, 1969
Explosives and Dangerous Goods Act, 1961-1986

The management of oilspills into marine waters is covered by the Prevention of Pollution of Waters by Oil Act, 1960-1973.

Oil and chemical spills on land due to road transport accidents are covered by the Dangerous Goods (Road Transport) Regulations, 1983 of the Explosives and Dangerous Goods Act, 1961-1986.

The Anglo-Persian Oil Company Act allows BP to construct and operate petroleum pipelines and installations in Fremantle and on Fremantle Port Authority land. It requires that the Company do as little damage as possible and compensate for any damage done during its activity.

The Oil Refinery (Kwinana) Agreement Act gives the right to BP to construct and operate petroleum distribution pipelines from the Kwinana Refinery to oil installations in Fremantle and Perth and to others within a 64 km radius of the Refinery. Section 5(r) of the Agreement states that it "is to be interpreted according to the laws for the time being in force in the State." Section 5(y), added in 1985, provides for compliance with any environmental protection requirements under any Act in force.

The Petroleum Pipelines Act, 1969, deals specifically with pipelines from petroleum production well fields to processing installations. As a result, it cannot be applied to the regulation of pipelines in the Fremantle area as they are downstream of the Kwinana Refinery.

The relevant provisions of the Petroleum Pipelines Act in relation to spillage control and pollution are as follows:

Section 37 of the Act specifies that:

(a) A licensee shall not suffer the waste or escape of any substance from the pipeline specified in the licence.

(b) A penalty of $2 000 on each day the offence occurs.

Section 41 provides for the Minister to give directions to licensees on any matter with respect to which regulations may be made.

Section 64(1) provides that the Governor may make regulations with respect to:

(a) the escape of substances from a pipeline;

(b) the prevention of damage to any land used for the construction or operation of pipelines; and

(c) failure to comply with a direction or regulation incurs a penalty of $500 for every day on which the offence continues.

In addition to the above, the licensee has to lodge a security not exceeding $60 000. Also, in awarding a licence, the Minister may impose such conditions in the licence as he thinks fit. Current licences impose the following conditions:

"The licensee shall comply with the Environmental Review and Management Programme for the Project and the recommendations made by the Environmental Protection Authority."

Specifically excluded from the Petroleum Pipelines Act are those pipelines built and operated under the Oil Refinery (Kwinana) Agreement Act 1952-1985 Amendment.

The Explosives and Dangerous Goods Act, 1961-1986 provides, amongst other issues, for the control of flammable liquids with a flash point of less than 150^{o}C. Oils with higher flash points are not included. There is also some uncertainty as to whether the Act is intended to cover conveyance by pipeline. The bulk storage of oils by petroleum companies in the Fremantle area is licensed by authority of the Explosives and Dangerous Goods Act under the Flammable Liquids Regulations, 1967.

The relevant sections of the Act are as follows:

Section 62(1) of the Act prescribes that the Governor may make regulations prescribing such matters " ... necessary or desirable for public safety and for giving effect to the purposes of this Act";

Section 45(1) provides for the licensing of storages of dangerous goods " ... subject to such terms and conditions as the Chief Inspector may see fit to impose in the interest of safety of life and protection of property".

The Act provides for penalties for the breach of any regulation not exceeding $2 000 and $200 for each day the breach has continued.

The Flammable Liquids Regulations prescribe requirements (Regs 102-121) for the conveyance of flammable liquids and oils in pipelines, however, for oils the requirements are moderate. Regulation 121 prescribes, inter alia, "Pipelines for the conveyance of oils shall be constructed in accordance with good engineering practice and to approval of the Chief Inspector, and adequate precautions shall be taken to prevent leakage of any oil".

Under these regulations, pipelines are tested every five years, the results being made available to the Department of Mines on request.

The Marine and Harbours Act 1981 provides for regulations that cover the safety and handling of dangerous or other goods on Department of Marine and Harbours land. Petroleum pipelines on land under Department of Marine and Harbours control must be regularly inspected by the companies to certify that the pipelines are in a sound condition.

The Prevention of Pollution of Waters by Oil Act, 1960-1973, covers discharge of oil to the sea either from ships or from land. It provides for the recovery of costs of any oil spill clean-up activity incurred by the appropriate authority (Department of Marine and Harbours or relevant Port Authority). Legal powers of the On Scene Coordinator of the oil spill clean-up activities are not specified although under 7(1) the appropriate authority "may take such action as it deems appropriate" to conduct the clean-up.

In conclusion, it is apparent that regulation of petroleum pipelines in the Fremantle area and in Western Australia generally is uncertain, because of the limitations of the various Acts, in particular, the Petroleum Pipelines Act and Explosives and Dangerous Goods Act. It appears that the State has no specific powers to compel an operator to take action to stop a pipeline leak or cease pumping through a leaking pipe; furthermore, there are no powers to enable the State to claim from the operator the cost of clean up or damage from an incident such as occurred on 27 July.

3.3 COMPANY PRACTICE

Despite uncertainty as to the validity of regulatory control over petroleum pipelines in the Fremantle area, the companies maintain their facilities according to the relevant requirements of the Flammable Liquids Regulations under the Explosives and Dangerous Goods Act, 1961-1986. Further, the company pipelines are constructed, maintained and operated according to petroleum industry and relevant Australian Codes of Practice. For example, bunker fuel pipelines are managed in accordance with a specific petroleum industry "Code of Practice for Design and Operation of Wharflines."

3.4 ENVIRONMENTAL HAZARDS

Pipeline conveyance of oil is accepted as much safer than using tanker trucks. This is highlighted by the small numberof incidents that have occurred in the Fremantle area over the long history of pipeline usage.

There are, however, large pipelines from the Kwinana Oil Refinery to Fremantle storage tanks and bunkering lines from the various fuel depots to

the Harbour. Large volumes of petroleum products are regularly conveyed via these pipelines. For example, the bunker fuel pipeline involved in the 27 July incident was served by three pumps capable of delivering 300 t/hr each. It is evident that many pipelines do not have instrumentation or automatic facilities to allow for a quick response in the event of a pipeline failure.

Currently, petroleum pipeline spills in the Fremantle area could enter the sea either via the stormwater system or directly. Direct spills could be either from numerous pipelines crossing the Swan River at the Old Fremantle Traffic Bridge or from a pipeline accident in a Wharf area during bunkering. Wharf spillages during bunkering are likely to be small as such activities are closely supervised on site. Location details of Water Authority stormwater drains and petroleum pipelines are provided in Figure 1.

4. SEEK ADVICE ON THE ADEQUACY OF PIPELINE MONITORING SCHEMES AND EMERGENCY SHUT DOWN ARRANGEMENTS

The BP bunkering pipelines from their Fremantle East Depot were constructed prior to the introduction of the Flammable Liquids Regulations in 1969 but apparently in accordance with good engineering practice. The pipeline which fractured has been in service for almost 50 years and only one previous, minor break is known to have occurred in the line, some five years ago. The precautions to warn of leakage were obviously not sufficient, relying as they did on a passing taxi driver. However, maintenance precautions taken by the Company, ie periodic ultrasonic inspection and pressure testing, were in accordance with accepted practice.

The Department of Mines is satisfied that the petroleum companies maintain their pipelines in accordance with the requirements of the Flammable Liquids Regulations. However the regulatory requirements for oil pipelines are moderate and in general allow for self regulation by the operating petroleum companies. It is believed that the feasibility should be considered of greater control over such pipelines under Section 45(1) of the Explosives and Dangerous Goods Act. This control could include the requirement for automatic pump shut down in the event of a pipeline pressure drop.

Further, a more stringent regulatory approach could be afforded by the use of the Petroleum Pipelines Act. A State/Commonwealth group is currently developing Model Rules to apply to all pipelines. These rules are expected to provide for a "quality assurance approach" to control the conveyance of dangerous goods in pipelines. This approach would require a company to develop Safety Audit procedures within guidelines set by the State and monitored by the Department of Mines.

5. REPORT ON THE EFFECTIVENESS OF THE EMERGENCY RESPONSE SYSTEM

Two emergency response systems were involved as a result of the oil spill. The Western Australian Road Transport Emergency Assistance Scheme covered the road and stormwater drain aspects of the spill. The oil spill into the Fishing Boat Harbour and Fremantle Outer Harbour was covered under Marine Oil Spill Contingency Plans.

5.1 ROAD AND STORM WATER DRAIN OIL SPILL

The control of chemical spills associated with transport accidents is covered by the Western Australian Road Transport Emergency Assistance Scheme. Under this scheme, the Police are responsible for management at the spill site and there is a list of contacts to be called in, depending upon the nature of the spill and its implications.

Following the reporting of the spill, the Police controlled traffic, Fremantle Council personnel and local contractors mechanically contained the spill using sand levees and sullage collection trucks recovered the oil. Both procedures were directed at minimising the flow of oil into the stormwater drain system. Oiled vehicles were cleaned by BP.

The roads were finally cleaned using detergents supplied by BP. The stormwater drains were sealed at strategic locations during the road cleaning exercise and the mixture of washing down liquids and oil were recovered by sullage tanker. Further cleaning of the drains using chemical flushing was arranged between the Fremantle Port Authority, Water Authority of Western Australia, Fremantle City Council and BP.

The Department of Conservation and Environment inspected the operation at an early stage.

The combined response of all relevant authorities was well conducted. The Fremantle City Council efficiently coped with the clean-up work required.

Participants in the road and drain clean-up exercise considered that better results could have been achieved if a mobile communication centre had been established at any early stage with radio and telephone control.

5.2 FISHING BOAT HARBOUR OIL SPILL

Management of marine oil spills associated with Western Australian harbours is under the control of the administrative authority of the harbour. However, this authority can request another to act as the oil spill combat authority on its behalf. The responsibility for combatting a marine oil spill may be shared between the Port Authorities, Department of Marine and Harbours and the Commonwealth Department of Transport, depending on the scale of the spill.

The petroleum industry has developed its own Marine Oil Spill Action Plan which enables it to initiate action to clean-up oil pollution or, when necessary, jointly act with the responsible authority.

For marine oil spills, particularly from ships, outside the capabilities of the responsible authority, the resources of the National Plan to Combat

Pollution of the Sea by Oil can be used. This employs the combined efforts of the Commonwealth and State Government and the oil industry. A State Oil Spill Combat Committee consisting of State and Commonwealth representatives is responsible for the administration and operation of the National Plan in Western Australia.

Actions in response to marine oil spills are based on Contingency Plans, either specifically related to a local area or a general State Contingency Plan which covers the full Western Australian coastline. An important aspect of these plans is that an On Scene Coordinator is clearly established to have overall responsibility for management of oil spill combat activity.

Once it was realised that oil could enter the Fishing Boat Harbour via the stormwater drains, the Department of Marine and Harbours (the administrative authority for the harbour) was informed. Also informed was a member of the State Oil Spill Combat Committee - the Fremantle Port Authority Harbour Master. The Harbour Master took responsibility as On Scene Coordinator.

Booms were quickly deployed and were effectively operating some two hours after work commenced on the land spill and within an hour after oil was reported entering the harbour. Under the influence of a fresh north-easterly breeze, oil spread to the southern section of the harbour and some oil escaped to the open sea. Oil was mechanically recovered within the boomed area and in other confined areas and dispersant was used within the harbour, outside the boomed area. Resources of the Fremantle Port Authority, Department of Marine and Harbours, National Plan and BP were employed.

The oil was trapped in a number of locations behind rocks forming the margins of the harbour. With changes in the tide this oil has continued to seep into the harbour. As a result more dispersant than would usually be recommended has been employed to clean rocks and boats. The presence of the America's Cup Yachts has increased the pressure to continue using dispersants. Some two weeks after the spill, oil was still seeping from the rocks despite active cleaning.

Oil escaping from the harbour entered Cockburn Sound and came ashore on Garden Island, the day following the spill. This was effectively cleaned up by RAN personnel.

The general conclusions of those participating in the harbour oil spill clean-up were as follows:

- All those involved worked strenuously and with little regard for discomfort and dirt.

- The overall response was most satisfactory and demonstrated the benefits of training.

- There was satisfactory cooperation with all Government Departments involved.

- The Department of Conservation and Land Management alerted volunteer members of the Fauna Rehabilitation Foundation and assisted in the collection of oiled seabirds, by providing equipment and personnel. A group of volunteers, mainly from Murdoch University, devoted considerable time and effort to the collection and treatment of oiled birds.

- Printouts of possible oil spill trajectories under typical weather and sea conditions were useful in predicting the movement of the oil which escaped to Cockburn Sound.

A number of shortcomings were evident. These are summarised as follows:

- An Oil Spill Contingency Plan exists for the Fremantle Port Authority area. However, this excludes the Fishing Boat Harbour which is under Marine and Harbours control.

- Provision of dedicated equipment for the Fishing Boat Harbour could have resulted in a quicker response.

- Access to the stormwater drain outlets leaking oil was difficult as they had to be approached via leased areas. Adequate authorisation was not available to allow properly identified personnel and vehicles to enter and operate in private and restricted areas.

- The State Oil Spill Combat Committee was not convened at an early stage. This resulted in greater pressure on the On Scene Coordinator due to the lack of a supporting committee, and probably also resulted in the lack of an early warning to the RAN of an approaching oil slick.

- The On Scene Coordinator found it difficult to direct that boats be cleaned by hand if the owners permission could not be obtained. This left the alternatives of not cleaning the boats or cleaning inefficiently using dispersant spraying.

- Communications could have been improved. A specific headquarters and agreed radio channels would have made management simpler.

- Accurate records of men, time and equipment were not taken throughout the operation. No financial recorder was appointed.

- The lack of early, accurate knowledge of the quantity of oil spilt made assessment of the situation difficult.

- Department of Conservation and Land Management Metropolitan Region staff acted independently, without reference to the On Scene Coordinator.

- The bird rescue volunteers suffered from equipment shortages and from a lack of a logistical framework for the treatment of oiled wildlife within which they could work.

- There was no clear analysis of Fremantle Marine Storm Water outlets that could receive a spill from a large petroleum pipeline (or other chemical spillage). This information is necessary for the police, Fremantle Port Authority and Department of Marine and Harbours to enable a quick response to a potential oil spill.

6. EXAMINE THE ENVIRONMENTAL EFFECTIVENESS OF THE OIL SPILL CLEAN UP ARRANGEMENTS AND REPORT ON THE EXTENT OF DAMAGE TO THE MARINE ENVIRONMENT

6.1 OIL SPILL CLEAN UP ARRANGEMENTS

The oil spill clean-up arrangments in the harbour used the accepted techniques of containment booms, absorbents and mechanical oil recovery. Water hoses were used to dislodge oil trapped in berth areas and from the margins of the harbour. Dispersants were applied on oil not contained by booms in the Fishing Boat Harbour and also on oil adhering to rocks and trapped behind rocks on the margins of the harbour.

Cleaning of the road and stormwater drain system was conducted by water flushing and addition of detergent, minimising the flow through to the harbour by blocking sections of the system and pumping out using sullage tankers. Booms were maintained across the outlets of the stormwater system during the full period of clean-up.

Earthmoving equipment removed the oil-contaminated sand from Garden Island for disposal at a land fill site.

Dispersants were added to the Fishing Boat Harbour directly and detergent entered the harbour via the stormwater drain outlets during cleaning of the lower part of the stormwater system.

The general clean-up system used was environmentally acceptable apart from concerns about the extent of dispersant usage.

Although being able to provide an immediate improvement in visual appearance, dispersants by their nature, disperse oil vertically through the water without having any effect on its chemical nature. The oil thus becomes readily available to a broad variety of marine life. It has therefore been recommended in DCE Bulletin 104 "Procedures for the Protection of the Western Australian Marine Environment from Oil Spills" that dispersant is not favoured in waters less than 10 m deep nor within 3 km of the coast. This allows for adequate dilution of the dispersed oil.

In excess of 16 000 litres of dispersant had been used by Thursday 31 July and there was pressure to continue using dispersant to cope with oil trapped on the margins of the Fishing Boat Harbour. With 8 tonnes of oil uncollected, some of this being beached on Garden Island, at least 2 tonnes of dispersant were used for each tonne of oil that was trapped within the Fishing Boat Harbour. This is far in excess of the recommended application rate which should have required about 800 litres of dispersant (some 5% of the volume actually used). This use of dispersants has lead to an unnecessary increase in the chemical contamination of the Fishing Boat Harbour. This only appears to have affected intertidal organisms. (See 6.3.) The long term implications of such excessive dispersant use are not known. Closer cooperation between the Department of Conservation and Environment and the On Scene Coordinator could have reduced the usage.

6.2 SEABIRDS

The rescue and treatment of seabirds was conducted by volunteers. Wildlife officers of the Department of Conservation and Land Management assisted in the rescue operations and departmental equipment was loaned to volunteers of

the Fauna Rehabilitation Foundation. The oil spill left birds contaminated but few of them were debilitated ie the birds were not immobilised by the contamination and were therefore capable of avoiding capture/rescue and also capable of continuing to contaminate themselves. Hence oiled seabirds first rescued were those most heavily contaminated and those least likely to recover. Of the birds collected and treated, none have survived.

Bird mortalities included several silver gulls and approximately 100 Cormorants including some 30 cormorants beached at Garden Island.

The oil spill effects on Garden Island highlighted the potential vulnerability of the Australian sea-lion colony on nearby Carnac Island.

6.3 MARINE LIFE

Observations were made by the Department of Conservation and Environment on 28 and 29 July in the Fremantle to Carnac Island and Garden Island area. Samples were taken and further observations made on 4 and 11 August.

Intertidal marine life within the Fishing Boat Harbour was markedly affected by the oil, dispersant and clean-up operation. However, before the oil spill both intertidal and bottom living marine life was depauperate and of limited ecological significance.

Since the oil, oil-dispersant mix and dispersant were limited to the top metre or so of water, the preliminary conclusion is that there was very little impact on the harbour floor marine life.

There has been no observed affect on marine life in Success and Challenger Harbours nor immediately outside the Fishing Boat Harbour.

The intertidal marine life on Garden Island was affected by the oil and clean-up operation. However, it is expected that they will re-establish within the next year. No evidence was seen of damage to the subtidal seagrass beds.

The Fisheries Department has not received any complaints of interference with fishing practice in the area or oil contamination of fish catches. The slick did not pass near abalone stocks on Carnac Island or mussel patches in Cockburn Sound. Due to the nature of the oil and its beaching on sandy areas of Garden Island it is unlikely that harm to fish species will be evident from the spill.

7. RECOMMEND WHETHER FURTHER PROTECTION MEASURES ARE REQUIRED

The following recommendations are made following an assessment of the existing pipeline management system, the effectiveness of the emergency response systems and the environmental effects of the oil spill and clean-up arrangements.

1. Department of Marine and Harbours should have equipment on hand to respond to an oil spill in the Fishing Boat Harbour. This should include an adequate length of oil boom to be stored at the Fishing Boat Harbour. Training in the use of such equipment should be intensified.

2. The Minister for Minerals and Energy should consider amendments to existing legislation to enable licensing control over all petroleum (and other chemical) pipelines, from which spillages could result in a significant environmental hazard.

3. The Petroleum Industry should be requested by the Department of Mines to conduct an assessment of the adequacy of warning and shut down procedures applied to existing petroleum pipelines and develop a programme where necessary.

4. A detailed oil spill contingency plan should be prepared for the fishing boat harbour and other similar harbours as a matter of urgency.

5. The Minister for Transport should consider development of legislation to provide On Scene Coordinators with legal powers to enable more effective management of oil spill control activities.

6. The small amount of oil continuing to seep from rocks and oiled boats is unlikely to be effectively treated by the spraying of dispersants. Dispersant usage in the Fishing Boat Harbour should only continue for boat cleaning by hand.

7. The Oil Spill Contingency Plans should define the headquarters to be used and ensure dedicated radio channels are available.

8. Oil Spill Control Equipment should include dedicated portable radios.

9. In any future spills, adequate administration staff should be appointed quickly.

10. The installation of oil traps or surge basins should be considered by the Water Authority of Western Australia or Local Authorities as appropriate, close to the outfall of storm water pipes entering environmentally sensitive areas, to provide a time delay in the escape of oil (or other spilt chemical).

11. The Department of Conservation and Environment should be the main point of contact for the environmental aspects of oilspills. This Department should then contact appropriate organisations to coordinate an efficient response to the emergency, in conjunction with the On Scene Coordinator. A formal duty officer system for the Department should be instituted.

12. The Department of Conservation and Land Management and the Waterways Commission should develop contingency plans for protection of susceptible areas under their control and generally for Wildlife protection, in the event of an oil spill.

13. The Water Authority of Western Australia, in conjunction with Local Authorities and the petroleum industry, should examine the plans of existing petroleum pipelines and provide a clear analysis of Fremantle stormwater outlets which could be affected by pipe breakages. This information should be provided to the Police and State Emergency Service and incorporated in the chemical spills and Marine Oil Spill Contingency Plans covering the area.

14. The Road Transport Emergency Assistance Scheme should be extended to cover all possible instances of chemical spillage on land and to ensure proper communications control.

Although in this particular case the companies responsible for the oil spill have volunteered to pay for the costs of clean up activities, we further conclude that there should be specific liability on the operator of a facility for damages and costs of clean up incurred. The State should also have power to require the operator to install leak detection equipment, take action to stop a pipeline leak or cease pumping through a leaking pipe.

8. ACKNOWLEDGEMENTS

The Environmental Protection Authority commends all those who participated including volunteers in the oil spill clean up operation. The Authority also wishes to thank the members of the Inquiry for the information provided at short notice and for the preparation of a clear and comprehensive report.

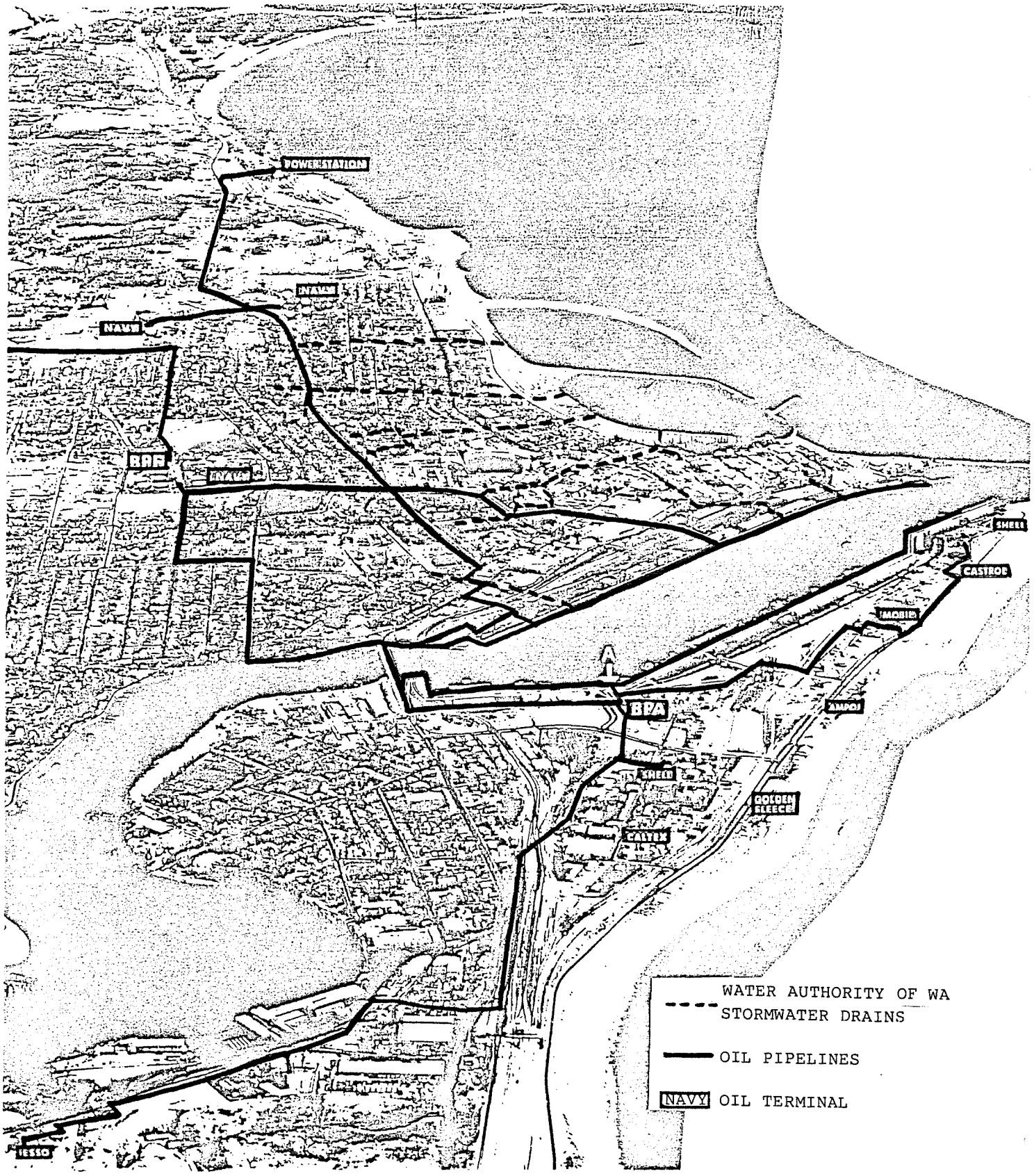

Figure 1. Major Fremantle Petroleum Facilities and Water Authority Stormwater Drains.