



**STATE POLLUTION CONTROL COMMISSION**

**METROPOLITAN PETROLEUM  
PIPELINES INVESTIGATION**

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**Report and Findings  
of the  
Environmental Investigation  
into the Proposed Construction and Operation  
of Three Pipelines for the Transport of  
Crude Oil and Petroleum Products between Botany Bay  
and the Rosehill Area, Sydney**

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ISSUED UNDER THE AUTHORITY OF  
**THE HON. SIR JOHN FULLER, M.L.C.,**  
*Minister for Planning and Environment*

**SER/NSWSPCC  
MET/75**



N.S.W. - State Pollution Control Commission.

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# STATE POLLUTION CONTROL COMMISSION

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# STATE POLLUTION CONTROL COMMISSION

## METROPOLITAN PETROLEUM PIPELINES INVESTIGATION

### Report and Findings of the Environmental Investigation into the Proposed Construction and Operation of Three Pipelines for the Transport of Crude Oil and Petroleum Products between Botany Bay and the Rosehill Area, Sydney.

#### 1.0 Background to the Investigation

On 5th June, 1974, the Acting Premier, the Hon. Sir Charles Cutler, M.L.A., announced that on the recommendation of the then Minister for Mines and Power, the Hon. W.C. Fife, M.L.A., Cabinet had approved in principle a proposal for the construction of three pipelines to carry crude oil and petroleum products between Botany Bay and the western suburbs of Sydney. The Acting Premier stressed that the granting of licences to construct and operate the pipelines would depend on an acceptable firm proposal being submitted after the completion of route surveys.

In September, 1974, Mr. Fife, after consultation with the Minister for Planning and Environment, the Hon. Sir John Fuller, M.L.C., announced that the State Pollution Control Commission would conduct an environmental investigation into the petroleum companies' proposal. Mr. Fife said that the investigation would commence immediately after the companies had made application for licences under the Pipelines Act and that the granting of licences would not be considered until the Commission's investigation had been completed.

John Holland (Constructions) Pty. Ltd., on behalf of Shell, Caltex and Mobil, submitted to the Commission on 24th January, 1975, an environmental impact statement on the proposal. Simultaneously, the companies applied to the Minister for Mines and Energy, the Hon. G.F. Freudenstein, M.L.A., for licences under the Pipelines Act. A summary of the environmental impact statement is presented as Appendix B2 of this Report.

The environmental investigation commenced on 18th January, 1975.

#### 2.0 Terms of Reference for the Investigation

The Investigation had the following terms of reference:

- \* To investigate the need for the transport of crude oil and petroleum products as proposed by the Shell Company of Australia Ltd., Caltex Oil (Australia) Pty. Ltd., and Mobil Oil Australia Ltd.
- \* To determine the most desirable means for the transport of crude oil and petroleum products between Botany and Rosehill, Sydney.
- \* To investigate the likely impact on the environment of the applicant companies' proposal to transport crude oil and petroleum products between Botany and Rosehill, Sydney.

- \* To recommend safeguards which should be taken to prevent or control pollution and protect the environment with respect to all aspects of the transport of crude oil and petroleum products between Botany and Rosehill, Sydney.
- \* To investigate and make recommendations in the public interest on any relevant environmental matter.

### 3.0 Procedure for the Conduct of the Investigation

#### 3.1 Review of the Environmental Impact Statement

After satisfying itself that the companies' environmental impact statement was an adequate document suitable for public review, the Commission had the statement displayed at eleven locations from 17th February, 1975. Supplementary information supplied by the companies at the Commission's request was displayed from 28th February, 1975, at the same locations.

As part of the investigation, the Commission invited written submissions from interested persons and organisations, the closing date for submissions being 21st March, 1975. Including those lodged after the closing date, ninety-four written submissions were received, some in response to press advertisements, others in response to direct invitation by the Commission. All submissions received before 27th March, 1975, were put on public display in the Commission's library.

At the same time, the Commission itself made a detailed examination of the companies' proposal.

#### 3.2 Analysis of Written Submissions

Sixty-five written submissions opposed construction of the pipelines. Twenty submissions, including most of those received from government departments and statutory authorities, gave qualified support to the companies' proposal. Nine submissions supported the pipelines without qualification.

#### 3.3 Procedure for Conduct of the Round-Table Discussions

The written submissions were reviewed and condensed to provide:

- \* A summary of those matters pertinent to the Commission's deliberations.
- \* A summary of those factors which might govern the conditions of approval should the pipeline proposal be found acceptable.

After analysis of the submissions, the Commission invited forty-nine parties to attend round-table discussions on 15th and 18th April and on 2nd May, 1975, in the Chamber of the Legislative Council. The list of invitees is recorded as Appendix A.

Ninety-eight persons attended the round-table discussions, either as representatives of the invited parties or as advisers. The chairman was the Director of the State Pollution Control Commission, Mr. E.J. Coffey.

All invitees were supplied with a copy of the agenda and background papers for the discussions a few days before the first meeting, and all present at the Legislative Council Chamber were given copies of the summaries. These papers are presented as Appendix B.

The points arising from the discussions which added to or modified the points included in the summaries were identified and recorded as the discussions proceeded. These points are recorded as Appendix C.

These documents, together with the submissions, comprise the evidence to which the Commission has had regard in arriving at its findings and in making its recommendations.

### 3.4 The Logic for the Round-Table Discussions

The analysis of evidence presented to the investigation prior to the round-table discussions led to certain fundamental conclusions. These conclusions formed the basis for examination of the companies' proposal at the discussions, and the discussions did not bring forward any arguments which would suggest that they were not valid.

The fundamental conclusions were:

- \* A need exists and will continue to exist for some years for the transportation of petroleum products and crude oil to the western suburbs.
- \* For environmental and economic reasons, the need exists to reduce the transportation of petroleum products by road tanker.
- \* If the companies' proposal is to be denied, the only potentially acceptable alternative form of transport is rail, or a combination of rail and road.
- \* The factors to be evaluated in assessing whether rail transport should be preferred to pipeline transport are:
  - Practicability
  - Relative Cost
  - Relative Safety
  - Relative Environmental Impact.
- \* If both pipelines and rail transport are practicable, the choice must rest on a balanced assessment of cost, safety and environmental impact.
- \* If the assessment of factors favours pipelines, their approval must nevertheless be subject to conditions which would ensure that the environment is adequately protected and that the pipelines would be constructed and operated safely and with due regard for the rights of people.
- \* The companies have no "rights" to use the land traversed by the pipelines; they are seeking the indulgence of the public to the use of these lands. Presumably the granting of this indulgence must be dependent upon an assured outcome favourable to the public interest.



- \* The provision of a storage depot with tank-truck loading facilities at the western extremity is an integral and unavoidable feature of the Caltex-Mobil proposal, whether rail or pipeline is used for the transport of products from Kurnell. Appropriate controls over the siting, design and operation of this installation would be necessary to ensure protection of the public interest.

#### 4.0 The Findings of the Investigation

4.1 The transport of crude oil to the Clyde Refinery could be avoided only if the refinery were to cease operations. The Commission has no reason to anticipate or propose such a possibility.

4.2 The transport of jet fuel from the Clyde Refinery to Sydney Airport could be avoided only if the Shell Company were to cease manufacture of this product at that refinery. The Commission has no reason to anticipate or propose such a possibility.

4.3 The transport of white products from the Kurnell Refinery to the western suburbs could be avoided only by supplying that market entirely from the Clyde Refinery. This would involve the making of exchange or processing arrangements between the Shell Company and the various companies that market products in the area.

No such arrangements exist, and the Commission has no reason to suggest that enforcement of such arrangements could be justified on environmental grounds, that they could be enforced in any event, or that they would even be practicable having regard for the refining patterns of the Kurnell Refinery and the Clyde Refinery.

4.4 From both the environmental and economic viewpoints, there is clearly a case to replace the current arrangements for road transport of jet fuel and white products by a more desirable method.

In both instances the evidence shows pipelines to be more economical than rail, and discloses no environmental advantages for rail that would justify its use in preference to pipelines.

4.5 The Clyde Refinery currently is supplied with crude oil by pipeline from the receiving terminal at Gore Cove in Port Jackson. Should Botany Bay be developed as a terminal for very large crude carriers (V.L.C.C.'s), there would be strong economic incentives to supply the Clyde Refinery with crude oil from that terminal, rather than from Port Jackson. A pipeline would be the only practicable way of transporting the large quantities of crude oil involved, whatever the future capacity of the Clyde Refinery may be.

4.6 The Commission finds that the proposed pipelines are the preferred mode of transport of crude oil, jet fuel and white products across Sydney, and that there are no sufficiently weighty reasons to refuse them on environmental grounds.

4.7 The minimum environmental impact would occur if coincident sections of the pipelines were built simultaneously. To require this over the entire route of the pipelines, however, would impose an unjustified penalty on one or more of the applicant companies, since there is no firm decision on whether a V.L.C.C. terminal will be built

in Botany Bay, or when. Under any circumstances this would take some years, and in the meantime the need exists for the jet fuel and white products pipelines.

4.8 It nevertheless would not be in the public interest for certain environmentally sensitive sections of the pipeline route to be disturbed twice for separate pipelaying operations some years apart. In these sections the three pipelines should be constructed simultaneously.

4.9 The Commission's findings do not pre-judge or pre-empt decisions on questions that have arisen or may arise with regard to the proposed white products terminal at Silverwater, the possible V.L.C.C. terminal at Botany Bay, or the possibility of future expansion of the Clyde Refinery. These are matters to be determined in their own rights at the appropriate times.

## 5.0 The Commission's Recommendations

The Commission recommends:

5.1 That a licence be granted for construction and operation of the proposed 8-inch jet fuel pipeline, subject to the conditions specified below.

5.2 That a licence be granted for construction and operation of the proposed 14-inch white products pipeline, subject to:

- (i) It being established that the oil storage terminal associated with the pipeline at its western end is acceptable environmentally.
- (ii) The conditions specified below.

5.3 That a licence be granted for construction and operation of the proposed 20-inch crude oil pipeline in two stages, subject to:

- (i) Installation of the sections of the pipeline specified in Section 5.10 being carried out coincident with installation of the jet fuel and white products pipelines.
- (ii) The conditions specified below.

5.4 That in determining the exact locations of the pipelines, and in attaching conditions to any licence granted, the Department of Mines should have regard to not only the Commission's recommendations herein, but also to the requirements of those government instrumentalities that have relevant statutory responsibilities.

5.5 That the design, construction and operation of the pipelines be generally in accordance with the companies' submissions to the investigation, but modified:

- (i) To the extent agreed to by the companies from time to time during the round-table discussions and recorded in Appendix C of this report; and
- (ii) to the additional extent indicated below.

5.6 That to ensure availability of a proper basis for designing the pipelines a geotechnical survey should be made of the pipeline route, with particular reference to those areas that were identified during the round-table discussions as being likely to have low-strength soils, garbage fill, or high groundwater levels.

5.7 That where practicable, the pipelines should be installed at least ten metres from the bank of the Cooks River.

5.8 That the design of the pipelines should be such as to ensure their stability under all predictable conditions, and also such as to ensure the stability of river banks and other works likely to be affected by the pipelines during their construction and subsequent life.

5.9 That the conditions of approval should provide for periodic testing of the efficacy of the cathodic protection system by an independent laboratory.

5.10 That the following sections of the crude oil pipeline be installed simultaneously with the jet fuel and white products pipelines:

- (i) From the northern edge of an imaginary extension of Hale Street, Botany, to the point where the route turns generally to the south west along General Holmes Drive, Botany; i.e., under the waterway known as the Mill Stream.  
Under the Alexandra Canal, to points at least ten metres from each bank.
- (ii) Under the Princes Highway to points at least ten metres from each edge of the carriageway.
- (iii) Under the main southern railway line at Tempe.
- (v) Across the stormwater channel adjacent to Richardsons Crescent, Tempe, and under the Crescent to points at least ten metres from the southern edge of the channel and the northern edge of Richardsons Crescent.
- (vi) Along Mackey, Warren and Steel Parks, South Marrickville, in any section of the route where the pipelines are laid closer than ten metres to the bank of the Cooks River.
- (vii) In any section of the route from Wardell Road, Dulwich Hill to Close Street, Canterbury, where the pipelines are laid closer than ten metres to the bank of the Cooks River.
- (viii) Under Canterbury Road to points at least ten metres from each edge of the carriageway.
- (ix) In the section of the route from Whiddon Reserve along Walsh Avenue to Georges River Road, Croydon Park, so that subsequent installation of the 20-inch crude oil pipeline will not be required within ten metres of any residential property boundary.
- (x) From a point on the route south of where it crosses the main Sydney water supply pipelines to the point at which it enters Freshwater Park, Strathfield.

- (xi) From the point where the route leaves Hudson Park, Strathfield to a point at least ten metres from the northern edge of the Parramatta Road carriageway.
- (xii) Under Haslams Creek to points at least ten metres from each bank.
- (xiii) Under Silverwater Road, Silverwater, to points at least ten metres from each edge of the carriageway.
- (xiv) Under Duck River to points at least ten metres from each bank.

**METROPOLITAN PETROLEUM PIPELINES INVESTIGATION**

**ROUND-TABLE DISCUSSIONS, 15TH AND 18TH APRIL  
AND 2ND MAY, 1975**

**List of Invitees**

The Shell Company of Australia Ltd.  
Caltex Oil (Australia) Pty. Ltd.  
Mobil Oil Australia Ltd.  
John Holland (Constructions) Pty. Ltd.  
Department of Mines  
Department of Public Works  
Department of Lands  
Department of Main Roads  
Valuer General's Department  
Public Transport Commission  
Maritime Services Board  
Planning and Environment Commission  
Electricity Commission  
Electricity Authority  
Sydney County Council  
Metropolitan Water Sewerage and Drainage Board  
Board of Fire Commissioners  
Explosives Branch, Department of Labour and Industry  
Soil Conservation Service  
Commonwealth Department of Transport  
Parramatta City Council  
Auburn Municipal Council  
Strathfield Municipal Council  
Burwood Municipal Council

Canterbury Municipal Council  
Marrickville Municipal Council  
Rockdale Municipal Council \*  
Botany Municipal Council  
Randwick Municipal Council  
National Trust \*  
Standards Association of Australia  
Australian Gas Light Company  
Australian Federated Union of Locomotive Engineers \*  
Cooks River Valley Association  
Hurlstone Park Progress Association  
Marrickville Residents' Improvement Action Group  
Parklands, Reserves and Open Space Defenders  
Total Environment Centre  
West Strathfield Progress Association  
Mr. P.C. Burgess  
Mr. P.F. Cox, M.L.A.  
Mr. P.B. Cripps  
Mr. & Mrs. P.B. Flaherty  
Mr. R.A. Grey  
Mr. F. Holmes  
Alderman Mrs. H. L'Orange  
Dr. T.P. Maher  
Mr. B. Martin  
Mrs. M.D. Pogmore \*

\* *Did not attend*

Chairman: Mr. E.J. Coffey  
Director of the State Pollution Control Commission

## METROPOLITAN PETROLEUM PIPELINES INVESTIGATION

The following are the documents associated with the round-table discussions held on 15th and 18th April and 2nd May, 1975.

- Appendix B1      —    Agenda for the Round-Table Discussions.
  
- Appendix B2      —    Summary of the Companies' Case for Constructing the Pipelines. (Discussion Agenda Item 4.)
  
- Appendix B3      —    The Companies' Response to Criticisms of the Pipeline Proposal, as Extracted from the Environmental Impact Statement. (Discussion Agenda Item 5.)
  
- Appendix B4      —    Review of the Factors Pertinent to the Decision on the Pipeline Proposal. (Discussion Agenda Item 7.)
  
- Appendix B5      —    Review of the Factors which might Govern the Conditions of Approval of the Pipeline Proposal. (Discussion Agenda Item 8.)

## METROPOLITAN PETROLEUM PIPELINES INVESTIGATION

### ROUND-TABLE DISCUSSIONS, 15TH AND 18TH APRIL AND 2ND MAY, 1975

#### AGENDA FOR THE DISCUSSIONS

1. Introduction by Chairman.
2. Summary of background to the Investigation.  
(See Section 1 of the Report, *Page 3*).
3. Outline of the scope of the round-table discussions and the procedures for their conduct. (See Section 3.3 of the Report, *Page 4*).
4. Summary of the companies' case for constructing the pipelines.  
(See Appendix B2, *Page 14*).
5. The companies' response to criticisms of the pipeline proposal.  
(See Appendix B3, *Page 18*).
6. The logic for the round-table discussions.  
(See Section 3.4 of the Report, *Page 5*).
7. Review of the factors pertinent to the decision on the pipeline proposal.  
(See Appendix B4, *Page 21*).
8. Review of the factors which might govern the conditions of approval of the pipeline proposal (See Appendix B5, *Page 26*).



## METROPOLITAN PETROLEUM PIPELINES INVESTIGATION

### ROUND-TABLE DISCUSSIONS 15TH AND 18TH APRIL

### AND 2ND MAY, 1975

#### **Agenda Item 4 – Summary of the Companies' Case for Constructing the Pipelines**

The following extracts have been taken from the environmental impact statement submitted by John Holland (Constructions) Pty. Ltd. on behalf of the applicant companies.

#### **4a The objectives are:**

- \* To provide a safe, reliable and efficient system for transporting petroleum products by underground pipeline between the Banksmeadow/Mascot areas and the western suburbs of Sydney.
- \* To provide a safe and efficient means of transporting petroleum products which would reduce oil pollution of the roadways attributed to accidental collision.
- \* To reduce air pollution of the roadways by reducing the number of road-tank trucks between the Banksmeadow/Mascot areas and the western suburbs of Sydney.
- \* To reduce traffic congestion on the roadways utilised by petroleum product road tankers between the Banksmeadow/Mascot areas and the western suburbs of Sydney by conveying products through the proposed pipeline system.
- \* To provide a means of transportation of petroleum products which is considered to be less susceptible to large operating cost increases.
- \* To conserve demands for increased capital expenditure on public utilities such as roads, railways and harbours.

#### **4b Proposed Pipelines**

John Holland (Constructions) Pty. Limited has been retained by The Shell Company of Australia Limited, Caltex Oil (Australia) Pty. Limited and Mobil Oil Australia Limited to design three pipelines and facilities in accordance with international and Australian standards. The pipelines are to be constructed within a common easement.

The proposed pipeline system covers three individual lines having separate and defined usages, owned and operated by the following companies:

- \* The Shell Company of Australia Limited proposes to construct and operate an 8-inch diameter pipeline for the transportation of Jet A1 Aviation Turbine Fuel from their Clyde Refinery to the Joint Users Hydrant Installation at Sydney Airport, Mascot. It is intended that this pipeline will be operational by the end of 1975 or early 1976.
- \* Caltex Oil (Australia) Pty. Limited and Mobil Oil Australia Limited jointly propose to construct and operate a 14-inch diameter pipeline to transport refined petroleum products from the Australian Oil Refinery Pty. Ltd. at Kurnell via the existing Banksmeadow Terminal at Botany to a proposed new distribution terminal at Rosehill. It is proposed that the above pipelines be constructed simultaneously in the same trench. They are scheduled for construction immediately the necessary approvals are obtained.
- \* A third pipeline is proposed which will be constructed and operated by The Shell Company of Australia Limited, for the transportation of crude oil from a proposed large tanker oil receiving terminal, planned as part of the Botany Bay Port Development. This pipeline will be a 20-inch diameter pipe and will be constructed in the same easement as those above, but at a later date, depending on the timing of the Maritime Services Board's Botany Bay development. However, the Shell Company proposes to apply for a licence at this stage to enable it to construct strategic lengths of pipeline in difficult locations to minimise the construction disruption in these areas at the later stage.

The proposed route is 31 kilometres long, of which there are thirteen kilometres in open space of various classifications – park, reserves and county open space.

Ten kilometres are within road shoulders within established industrial areas. Five kilometres are within property controlled by the Commonwealth Department of Transport, being the Airport or land adjacent to General Holmes Drive.

Two kilometres are within the Metropolitan Water, Sewerage and Drainage Board Southern and Western Suburbs Trunk Sewerage Outfall Easement along the northern shores of Botany Bay, and the remaining one kilometre is within residential roadways.

Only five residential properties will be directly affected. All five properties are also affected by re-zoning for park extensions.

The use of parks, reserves and open space has provided the link between areas already established as service easements and industrial areas; in other areas the pipelines are located in the shoulders of roads. A minimum of residential roads has been utilised and only where no alternative exists.

All open space, parks and reserves will be fully restored, and in many cases improved, under the guidance of a landscape architect.

#### 4c **Alternative Proposals**

The companies have examined the following alternative proposals:

- \* The use of existing railway property.
- \* Selection of a pipeline route through suburban roads.
- \* The laying of a pipeline system within waterways – the Cooks River in this instance.
- \* The rail tanker transfer of products between the three centres.
- \* The continuation of road tanker traffic.

#### 4d **Selection of the Pipeline Route**

In determining the proposed pipeline route, the companies have taken into account the following requirements:

- \* To avoid, as far as possible, populated areas.
- \* To avoid areas of property improvement, i.e., orchards, buildings, etc.
- \* To avoid locations which may be affected by future redevelopment. Although the possible redevelopment may be uncertain or undefined, the companies have endeavoured to select alternatives away from these areas, so that their future redevelopment will not be compromised.
- \* To minimise the number of private residential properties traversed by the pipelines as far as possible.
- \* The need to have a continuous line, bearing in mind the availability of space within normal service easements and road space.
- \* To select a route to minimise disruption of normal traffic, etc., during the construction period.
- \* To select a route which would have the least impact in respect to construction noises, dust and traffic on private residences.
- \* To select a route which allows conservative engineering design.
- \* To select a route with minimum electrical interference.
- \* To select a route with ready access for inspection and maintenance personnel.
- \* To select a route which has the least effect in the event of pipeline failure and which allows the easiest and most effective containment of any leakage.
- \* To avoid main trunk roads other than to cross such roads at right angles.
- \* To select a position to minimise third party interference by unauthorised excavation over or adjacent to the pipelines.

#### 4e Basic Design and Operating Procedures

The following safeguards against leakage from the proposed pipelines will be incorporated in the basic design and operating procedures:

- \* Line pipe specifications, including method of steel manufacture, ultrasonic and radiographic testing of longitudinal welds, etc.
- \* Mechanical testing of steel tubular products.
- \* Standards for welding pipelines.
- \* 100% radiograph examination of pipelines.
- \* Hydrostatic testing of pipelines.
- \* Pipelines externally coated and the underwater sections with additional reinforced concrete coating.
- \* The entire pipeline system cathodically protected and tested on a regular frequency.
- \* Instrumentation incorporated to measure flow and volume transferred, regularly maintained and calibrated.
- \* Design will incorporate means for evacuation of product by displacement with water (pigging).
- \* Line patrolled on a regular frequency.
- \* Communication systems proposed are telephone and radio between both ends of the pipelines. The pipeline patrol will utilise radio communication.
- \* Tankage provided at both ends of the pipelines to store total volume of pipelines.
- \* Oil spillage clean-up equipment is available for an oil spillage emergency.
- \* Oil spillage clean-up organisation and training will be established for an oil spillage emergency.

## METROPOLITAN PETROLEUM PIPELINES INVESTIGATION

### ROUND-TABLE DISCUSSIONS, 15TH AND 18TH APRIL

AND 2ND MAY, 1975

#### Agenda Item 5 — The Companies' Response to Criticisms of the Pipeline Proposal (Extracted from the Environmental Impact Statement)

In the view of the companies, much of the concern expressed at the recent Royal Commission on Petroleum and in other quarters can be grouped into the broad categories listed below.

##### 5a Parklands

Parklands, playing fields and open spaces will not be alienated by the pipelines.

The pipeline route has been planned to avoid mature trees, and undertakings have been given to restore small trees and shrubs which are affected by the construction. CLASP Pty. Ltd. will make recommendations regarding restoration, and these recommendations will be discussed with councils before implementation. There is no reason to suppose that the building of the pipelines will prevent or inhibit either a coherent and attractive system of parklands or renewal of the river. The facts are that the pipelines will be underground and will not at all lessen the areas of park and open space through the soil of which they pass: there is a "loss" of land only in the technical sense that an easement involves an alienation of an interest in land. The plans provide for an easement three metres wide. It is proposed that agreement with the councils concerned will provide additionally for control of planting in a strip two metres either side of the easement. There would be limitations of tree planting within the seven metres wide strip as follows: the easement itself will tolerate planting of selected large indigenous shrubs up to six metres high. e.g. *Acacia longifolia*. Within the two metres strips on either side there would be no restriction on indigenous tree species except for a limited variety such as *Ficus sp.*

It is also relevant to observe that there are a number of parks already crossed by easements for the Electricity Commission and the Water Board. Quite a number of the areas are retained as easements for access to the river banks and there are restrictions on the planting of trees or shrubs within these easements.

Reference has been made to damage to trees in a narrow strip from Warren Park to Mackey Park. It is possible that twenty-five immature trees (*Populus sp.*) of all those in this area may need removal in Mackey and Warren Parks. If their removal is unavoidable, these trees, presently 2.5 metres high, could easily be replaced with stock of the same size, and that will be done if the Council requires it. It is possible, however, that the Council may regard these existing trees as inappropriate exotics and may favour replanting with indigenous *Eucalyptus spp.* and *Casuarina glauca*. In the event, the companies will replant with whatever are preferred. It is noted that the area is a Department of Public Works' access easement for maintenance of the Cooks River bank.

Some concern has been expressed that patrolling of the pipelines will require the establishment of roadways. This is not the case. Patrolling will take place from established roadways. When necessary, the pipeline patrol will walk to points from which third party action adjacent to the pipelines may be observed.

#### **5b Pipeline Safety**

A great deal of evidence has been presented in the Environmental Impact Statement regarding pipeline safety. Any enterprise which is subject to human involvement must have an element of risk. The fact is that the element of risk in an oil pipeline not only is statistically slight (or negligible) but is considerably less than the element of risk in any alternative method of transport. Much of the criticism offered fails to distinguish between pipelines carrying gases or liquids. This proposal deals with liquid pipelines. The two categories each have their own distinguishing features and their own safety records.

The potential danger arising from accidental damage or vandalism along the pipeline route, which is predominately through parks and open areas, is considerably less than if the route was in roadways or built up areas. Any such potential danger is certainly not a greater potential danger than that presented by other underground utilities.

#### **5c Pollution**

There is no doubt that any accidental spills and leaks could have serious consequences to existing parks and reserves, as well as to residential areas. This potential for damage does not mean that the companies consider the likelihood of spills or leaks to be high or that if a spill or leak occurs it will have widespread effect; to the contrary they believe the likelihood of spills or leaks to be remote and that if a spill or leak occurs the effect will be confined to the soil immediately adjoining the pipeline.

The companies rate the adverse effect of accidental spills on existing trees and shrubs as medium; few trees or shrubs would be affected by any leak or spill which did occur. It must not be supposed that if a leak or spill did occur any trees or shrubs would be damaged; further, temporary contact between the root system of a tree or shrub and any escaped liquid would not necessarily be damaging to the plant concerned.

In the unlikely event of a leak within the parklands, the strong likelihood is that only the soil immediately adjacent to the pipeline would be affected. All affected soil would be removed and replaced and steps taken to restore the surrounding vegetation to a level acceptable to the council. Previously existing conditions would be recreated or improved upon.

#### **5d Service Corridor**

It is not intended to create a service corridor for further pipelines and services through the Cooks River Valley. The proposed pipelines will be of a size to cope with petroleum requirements for a period in excess of twenty years. There is no room for additional pipelines in the three metres easement being sought and space is so restricted at a number of locations along the route that it is doubtful if additional services could be physically accommodated outside the easement. There are, of course, many other services and

utilities within the general area traversed by the pipelines, and whether or not these are to be extended will be a matter for consideration by the State or municipal authorities pursuant to the relevant procedures laid down.

#### **5e Inconvenience during Construction**

Some inconvenience during construction is inevitable but considerable steps will be taken to minimise the effects. Among these are that the hours of work will be restricted to avoid night work and weekend work in certain areas, strict limits will be set on the length of trench to be opened at any one time, road traffic will be maintained at all times during road crossings, temporary crossings will ensure residents always have access to their homes and due notices and warnings will be given as appropriate during the construction.

It has been alleged that the major factor in determining the route of the pipelines has been economy of construction. This is not so: the principal consideration was to select a route which during construction and operation of the pipelines was calculated to bring about the minimum public inconvenience overall.

The detriment involved in the construction of the pipelines will not be serious: there will be temporary disturbance during construction and thereafter the lands through which the easement runs will be restored to their prior condition or even improved. Every effort will be made to avoid disruption to sporting facilities, but it is inevitable that during construction of the pipelines inconvenience of a temporary nature will be caused to those who use the parks.

Reference has been made to stormwater drains leading to the river suggesting –

- (i) that they may be ruptured; and
- (ii) that consequent and possibly irremediable damage would in that event follow. The fact is that drain locations are generally known and will be recorded on plans. It is unlikely that any drains will be damaged during construction; of course, any which are damaged will be completely repaired. They will not be out of service at all and no adverse consequences of damage such as suggested will occur after such repair.

Requirements will be discussed in detail with councils and arrangements will be made to construct the pipelines at a level which will not interfere with stormwater connections which now exist or which may be required to be made in the future. Hence the placement of fuel pipelines adjacent to the river will neither complicate nor endanger the making of such connections.

## **METROPOLITAN PETROLEUM PIPELINES INVESTIGATION**

### **ROUND-TABLE DISCUSSIONS, 15TH AND 18TH APRIL AND 2ND MAY, 1975**

#### **Agenda Item 7 – Review of the Factors Pertinent to the Decision on the Pipeline Proposal**

- 7a Is rail transport a practical alternative for each of the three pipelines? Can the existing system accommodate the incremental traffic? Can rail sidings be accommodated?
- 7b What are the comparative costs of the pipelines and the rail alternative?
- 7c Can the pipelines be constructed and operated safely?
- 7d How does the safety of rail transport compare with that of pipelines built to the standard proposed?
- 7e Except for short-term effects prior to restoration, what features of the environment would be harmed by the pipelines?
- 7f Compare these with the effects on the environment of rail transportation.
- 7g Can a terminal depot be satisfactorily sited in the Rosehill area?
- 7h What benefits will accrue to the public from the companies' proposal?

#### **Summary of the Arguments Presented in the Submissions to the Investigation**

##### **7a-1 Is rail transport a practical alternative for each of the three pipelines?**

A number of submissions claim that the use of rail tankers on existing lines could cope with the demand for many years ahead. The argument is advanced irrespective of whether the demand be that projected by the companies or that postulated by those opposed to the proposed pipelines. The latter is based upon a slackening in demand due to expected higher prices for petroleum products, on the recognition of a need to preserve dwindling supplies of petroleum and on re-assessment of the population growth of Sydney.



Based upon the companies' assessment, the projected demand and the equivalent number of round-trip train loads are as follows:

Year	Jet Fuel 8-inch pipeline (Tonnes per day/ Trains per day)	White products 14-inch pipeline (Tonnes per day/ Trains per day)	Crude Oil 20-inch pipeline (Tonnes per day/ Trains per day)
1975	443/0.29	1,458/0.97	* 10,000/6.6
1990	1,366/0.91	3,300/2.2	* 20,000/13.3
Capacity of proposed pipeline	6,000/4.0	15,612/10.4	36,000/24.0

\* estimated figure

**7a-2 Could the existing rail system accommodate the incremental traffic?**

It has been pointed out that with the planned development of new port facilities at Botany Bay by the Maritime Services Board, there will be an up-grading of the rail system in the Banksmeadow-Sydenham areas.

The companies, however, express doubt as to whether the necessary additional train journeys could be threaded through an already heavily taxed suburban rail system without unacceptable delays to either fuel or passenger trains.

**7a-3 Can rail sidings be accommodated?**

The companies contend that if rail transport were used, additional rail sidings would be required at both the Banksmeadow and proposed Rosehill terminals and in the Mascot area in the vicinity of the Airport. They allege that suitable land for such sidings is scarce and expensive. Also that the siting of the necessary storage depot close to the Airport would be environmentally irresponsible.

**7b What are the comparative costs of the pipelines and the rail alternative?**

The companies estimate that for a twenty-year period the rail transportation system would cost \$7.5M, and the proposed pipeline system \$5M. No break-down of costs is presented.

**7c Can the pipelines be constructed and operated safely?**

**7c-1** The Cooks River is a major drainage canal for much of its length, and has banks with a long history of instability. The course of the river has been greatly modified over the years and much of the ground adjacent to the existing banks has been reclaimed and is subject to flooding.

A number of submissions allege that construction of the pipelines along the northern bank, as proposed, would result in a greater loading on the canal walls and sheet-steel piling and could result in breaks in the pipelines if the banks collapse during storms.

7c-2 It has been alleged that both the Public Transport Commission and the Department of Main Roads have refused permission for the pipelines to be laid longitudinally in their land because of the risks to life and property. Also, the Electricity Commission and the Metropolitan Water, Sewerage and Drainage Board have indicated that the proposed pipelines should not be placed within 30 metres of their structures or works.

In view of these departmental requirements and alleged departmental refusals on the grounds of safety, it has been claimed in a number of submissions that the safety of residents and people using parklands should not be placed at risk by the installation of the proposed pipelines.

7c-3 Documented reports, it is claimed, indicate petroleum pipeline accidents are occurring at an increasing rate despite improved construction technology. Also, that more than 60 per cent of pipeline accidents result from damage to the pipeline by a third party. It is further claimed that the proposed route through an urban area, whether through roadways or parklands, would readily allow third party interference. It is suggested that some form of mechanical protection, say encasement in a weak concrete mix, should be afforded the pipelines along their entire length so as to reduce the potential for damage by third parties.

7c-4 The potential for fire and/or explosion, either by a slow undetected leak allowing build-up of vapour over a large area, or by a large leak such as would occur in the event of a major line fracture, would pose an unacceptable threat to life. An explosion in densely populated suburbs such as Marrickville, Croydon Park or Strathfield, it is alleged, could result in death or injury to large numbers of people.

7c-5 It has been suggested that, for safety reasons, and to reduce the extent of leakage if damage is done to a pipeline, the intermediate control valves should be automatically operated, rather than manually operated, as proposed.

The pipelines and intermediate control valves, it has been submitted, would provide a ready target for vandalism or sabotage.

7c-6 If, as proposed, high pressure natural gas and petroleum pipelines share adjacent easements between Dulwich Hill and Tempe, the risk of an explosion in the event of damage to a petroleum pipeline is increased.

7c-7 A number of submissions have expressed concern that the proposed pipelines could be damaged by heavy machinery passing over them when dredging of the Cooks River is carried out in the future.

7c-8 It has been stated that if the pipelines are installed on the northern bank of the river, as proposed, this will complicate and severely restrict the making of new storm-water connections to the river or the augmentation of existing works, including the widening of the river itself.

7c-9 It has been submitted that Botany Bay is inadequate for V.L.C.C.'s of 200,000 tonnes or more, and could not be developed to safely accommodate such vessels. V.L.C.C.'s it is claimed, have a bad safety and pollution record. Hence it would be better to continue using Sydney Harbour for the import of crude oil for the Shell Refinery and to use rail transport for conveying jet fuel and petroleum products.

**7d How does the safety of rail transport compare with that of pipelines built to the standard proposed?**

There are conflicting views as to the relative safety of rail transport and pipeline transport of petroleum products. It is claimed that petroleum products have been carried by rail in New South Wales for much longer than they have by pipelines and that there is no known record of any fatal accidents connected with the rail transportation of such products. Also that the risk of a derailment, the most common cause of rail accidents, is much less on a suburban route such as that between Botany and Rosehill than on a long distance route.

**7e Except for short-term effects prior to restoration, what features of the environment would be harmed by the pipelines?**

7e-1 It is claimed by some that significant restoration work recently undertaken in the Cooks River Valley would be adversely affected by installation of the proposed pipelines, especially by the installation of one pipeline (the 20-inch) some five years after the installation of the first two pipelines (the 8-inch and the 14-inch).

7e-2 The companies consider that trees of height up to four metres can be readily replaced. It is claimed by others that clayey soils in the upper reaches of the valley prohibit replacement of four-metres trees, and also prevent rapid growth of smaller trees.

7e-3 Some local residents have suggested that a natural rock outcrop at Foord Avenue, Hurlstone Park, would be irreparably damaged by installation of the pipelines.

7e-4 Intermediate block valves and associated protective works have been mentioned as a source of visual pollution.

7e-5 A number of submissions have suggested that notices warning of underground petroleum pipelines would instil a sense of insecurity in people using the parks, and result in people avoiding the areas.

**7f Compare the above with the effects on the environment of rail transportation**

7f-1 Botany Municipal Council, in supporting the use of pipelines for the transportation of petroleum products, has said that the number of rail movements necessary on the line through its municipality would increase by 1000 per cent, with a corresponding increase in noise pollution. A significant impact on the amenity of the neighbourhood is expected when the railway line is up-graded for the proposed container berths and coal loader on the northern foreshores of Botany Bay, and it is Council's wish to minimise that impact.

If rail transportation were used, the necessary additional sidings and depot/terminal in the Mascot area would create a long-term adverse environmental impact. There could also be a significant adverse impact resulting from increased traffic on the western suburbs rail lines.

7f-2 Rockdale Municipal Council, also supporting the pipelines, pointed out in its submission that energy consumption for transportation of the petroleum products by pipelines would be far less than the energy consumption for transportation by any other means.

**7g Can a terminal depot be satisfactorily sited in the Rosehill area?**

7g-1 A number of submissions state that a decision cannot be made on the matter of a Rosehill depot, as an environmental impact assessment of the proposal has not been made.

7g-2 Others state that the siting of a depot at Rosehill, the population centre of the Metropolitan area, would be reprehensible. They say the risk of fire and explosion are considerable and the damage that might be caused in the area could be very great.

It has been suggested that such a petroleum storage terminal should be sited well away from residential areas.

**7h What benefits will accrue to the public from the companies' proposal?**

The companies say that the proposed pipelines would provide a safer, more efficient, more environmentally acceptable and more economic means of conveying petroleum products to the western suburbs than any other means of transportation.

## METROPOLITAN PETROLEUM PIPELINES INVESTIGATION

### ROUND-TABLE DISCUSSIONS, 15TH AND 18TH APRIL AND 2ND MAY, 1975

#### **Agenda Item 8 – Review of the Factors which might Govern the Conditions of Approval of the Pipeline Proposal**

- 8a Has the optimum route been selected? Does it traverse any land or features that should be avoided?
- 8b Are the companies' design and construction practices acceptable?
- 8c Are the companies' restoration measures adequate?
- 8d Should the companies merely restore, or should they be required to effect environmental improvements along the route? If so, what improvements should be demanded?
- 8e Are the companies' operating and maintenance practices acceptable?
- 8f What compensation is offered by the companies for use of the land, for degrading it prior to its restoration and for any long-term effects that may be occasioned by its use?
- 8g In the event of mishaps during operation of the pipelines, are the companies' clean-up and restoration proposals adequate?

#### **SUMMARY OF THE ARGUMENTS PRESENTED IN THE SUBMISSIONS TO THE INVESTIGATION**

##### **8a Has the optimum route been selected? Does it traverse any land or features that should be avoided?**

8a-1 The companies contend that the preferred route, passing predominantly through parklands, offers a higher degree of safety, since the potential for third party damage, the most significant cause of pipeline losses, would be minimised.

Others do not agree that third party effects would be lessened by siting the pipelines in parks rather than in roadways.

8a-2 Many submissions allege that the greatest impact of the proposed pipelines would be the alienation of existing parklands by the granting of easements. Most consider that the granting of licenses would create a precedent that could result in other parklands in the area being turned into service corridors.

The companies say that there would be no diminishing of parklands save to the extent to which the sought easement technically would involve the alienation of an interest in land.

8a-3 Those who support pipelines as a means of transportation for petroleum products, but oppose the proposed route on the above grounds or because of the risk of pipeline breakages due to the instability of the river banks, suggest that pipelines should be put through on a route utilising roadways.

8a-4 Botany Municipal Council supports the parklands route but does not consider that specific easements should be granted. It considers, rather, that the pipelines should be laid under licence, allowing Council to retain its rights in respect of public domains.

8a-5 A number of submissions contend that the presence of pipelines near property would seriously reduce its value to the owner. This view is disputed by the companies.

8a-6 Conditions to be imposed by the Electricity Commission and by the Metropolitan Water, Sewerage and Drainage Board make it unclear as to whether the proposed pipelines would be accepted in their lands. These matters require resolution.

8a-7 The Sydney County Council has submitted that a number of sections of the proposed route in the western suburbs would be unsatisfactory with respect to Council's electricity supply system. An alternative route has been suggested.

8a-8 Some residents in the vicinity of Strathfield Golf Course consider that the proposed pipeline route is unnecessarily close to their homes and should be relocated nearer to Cooks River. The management of the Strathfield Golf Club takes an opposing view.

8a-9 A large number of residents of Walsh Avenue, Croydon Park, have opposed the proposed pipelines being routed along their street. The companies claim they have investigated every possible alternative in this area but that none is acceptable.

8a-10 It has been claimed that the pipelines between Warren and Mackey Parks, Marrickville, would be only two metres from the river's bank.

**8b Are the companies' design and construction practices acceptable?**

8b-1 The pipelines are proposed to be constructed so as to comply with appropriate standards and specifications. Nevertheless, it has been claimed that overseas experience has shown that there is an unacceptable potential for defective welding, longitudinal splitting of the pipe if it should be damaged at any one point, and fatigue failure of the steel adjacent to welded joints.

8b-2 The pipelines are to be protected by a cathodic protection system approved by the Electricity Authority of N.S.W. It has been said that such protection would result in accelerated corrosion of adjacent and unprotected steel structures. If sheet steel piling used to prevent river bank erosion is not properly protected, it could corrode rapidly and allow river bank and possibly pipeline collapse.

8b-3 The hydrostatic testing of the pipelines after the backfilling of trenches has been questioned. It has been suggested that pressure testing equipment may not be sensitive enough to record pressure drops resulting from small, slow leakages, even over 24 hours, and that backfilling of the trenches prevents visual inspection of the pipeline for such leakages.

8b-4 Concern has been expressed about the proposed disposal to stormwater drains of the water used in the hydrostatic testing of the pipelines. If the water contains corrosion inhibitors, water pollution may result.

8b-5 The proposed installation of the 20-inch crude oil pipeline some years after the installation of the other two pipelines is regarded as giving rise to unwarranted environmental impact. It has been suggested that if the proposed pipelines are approved, the companies should be required to install the three pipelines simultaneously.

For their part, the companies say that they cannot justify the expense of installing the 20-inch pipeline, estimated to cost \$6M., without firm guarantees from the Maritime Services Board concerning the Botany Bay port development.

8b-6 In its submission, the Soil Conservation Service says that there could be significant siltation of the rivers, streams and drainage lines adjacent to the proposed pipeline route, unless adequate precautions are taken to prevent erosion of disturbed or stockpiled soil material during earth-moving operations.

8b-7 Concern has been expressed about the possible adverse impacts of construction activities on active recreation in the parklands.

8b-8 It has been suggested that if the pipelines are approved a detailed timetable and route plan of excavation, stockpiling of pipe, installation and restoration procedures should be specified and incorporated as conditions of approval.

8b-9 Reference has been made to the need for possible future widening and dredging of the Cooks River and other waterways traversed. It has been suggested that installation of the proposed pipelines may jeopardise such operations.

8b-10 It has been alleged that trenching associated with pipelaying in Walsh Avenue, Croydon Park, would create an unnatural stormwater course which could cause flooding of low-lying properties.

**8c Are the companies' restoration measures adequate?**

8c-1 Restoration measures would be severely restricted by the need to install a 20-inch pipeline some five years after laying the other two pipelines.

8c-2 No consideration has been given in the companies' Environmental Impact Statement to the landscaping of the pipeline route between Banksmeadow and Tempe or between Flemington and Rosehill.

8c-3 Botany Municipal Council has questioned the need to restrict tree planting in the pipelines easement. Council points out that the presence of gas and water mains in the footpaths of public roadways has not prevented councils from growing trees within these areas.

**8d Should the companies merely restore, or should they be required to effect environmental improvements along the route? If so, what improvements should be demanded?**

8d-1 For example, if the pipelines are approved, should the companies be required to undertake some landscaping within the industrial and commercial areas at the western end of the proposed route?

8d-2 The companies' landscape architect consultants have suggested that the pipeline route might provide a pedestrian/bicycle way linking the western suburbs to the Botany Bay foreshores. Should the companies be required to install and maintain such a cycle way?

**8e Are the companies' operating and maintenance practices acceptable?**

8e-1 A number of submissions seek advice concerning the need, procedure and frequency for pipeline maintenance operations and whether or not excavation would be involved.

8e-2 Continuous monitoring for leaks would be carried out using the line balance technique. The Environmental Impact Statement does not discuss the follow-up action if a long time duration measurement detects a small leak and if that leak is not visible on surface inspection.

8e-3 The frequency of testing for leaks, whether by line balance technique or by ultrasonic pigging is not stipulated in the Environmental Impact Statement. Would reports of such testing be submitted to and examined by the Department of Mines?

**8f What compensation is offered by the companies for use of the land, for degrading it prior to its restoration, and for any long-term effects that may be occasioned by its use?**

8f-1 Strathfield Municipal Council states that negotiations are proceeding between it and the companies concerning an agreement for easements. The Council submits that such agreements should be finalised before any licences are issued to construct the pipelines.

8f-2 It has been suggested that the extent of monetary compensation proposed to be made to councils by the companies should be made known to residents for comment.

8f-3 The extent of insurance cover held by the companies in respect of injury or death to persons or damage to property as a consequence of pipeline malfunctions or accidents should be made known.

**8g In the event of mishaps during operation of the pipelines, are the companies' clean-up and restoration proposals adequate?**

It is stated in the companies' Environmental Impact Statement that emergency procedures to deal with all circumstances, including pipeline leakage and fire, will be prepared in time for commencement of operations.

It has been suggested that these procedures should be submitted to and approved by the Department of Mines, the Board of Fire Commissioners and the State Pollution Control Commission before the commencement of operations. It also has been suggested that the procedures should be tested on a regular basis by the carrying out of exercises simulating a break in a pipeline, an explosion, a fire, etc.



## METROPOLITAN PETROLEUM PIPELINES INVESTIGATION

### Summary of the Points Raised at the Round-Table Discussions held on 15th and 18th April and 2nd May, 1975

The following is a record of the points of particular interest that emerged from the round-table discussions convened by the State Pollution Control Commission on 15th and 18th April and 2nd May, 1975, in the chamber of the New South Wales Legislative Council. The record should be read in conjunction with the agenda documents for that meeting, copies of which are attached as Appendix B.

In each instance, the number recorded against the comment is the number by which the matter is identified in the agenda.

Where no comment is recorded, the argument presented in the agenda received general acceptance as being pertinent to the Commission's consideration of the petroleum companies' proposal.

#### **Agenda Items 7a-1 and 7a-2**

The applicant companies suggested that the number of rail movements necessary to transport the stated quantities of crude oil and petroleum products would, in fact, be greater than is indicated in the summary presented in Agenda item 7a-1.

**Jet Fuel:** The Shell Company expects that on average one train load would be transported every four days in 1975, increasing to one train load a day in 1990. The Public Transport Commission has said that such movements are entirely practicable with the existing rail system and with the system proposed for the future.

The Department of Mines pointed out that double handling, i.e., transfer from tankage to train and from train back to tankage, increased the potential for contamination of the jet fuel. The concept was accepted that the system which involves the least number of transfers is the one least likely to cause either contamination or accidents.

**White Products:** Caltex and Mobil consider that the number of train movements is more likely to average 1.6 a day in 1975, increasing to 3.3 a day in 1990. The Public Transport Commission indicated that these anticipated average train movements could be accommodated by the rail system.

In respect of the rail transport of white products, however, Caltex and Mobil stated there is no potentially acceptable site for a storage depot and distribution terminal in the Rosehill area to which rail access currently exists. The companies also indicated that the selected site, subsequently revealed as being at the corner of Silverwater Road and Holker Street, Silverwater, was not capable of being serviced by any future rail spur line. This was confirmed by the representative of the Public Transport Commission, and no

evidence was produced, or has since been produced, to show that such a spur line could in fact be constructed.

**Crude Oil:** Both the Public Transport Commission and the companies agreed that it would be impracticable to transport the anticipated volumes of crude oil by rail. No arguments were presented which disputed this.

### **Agenda Item 7a-3**

The Department of Mines brought out the point that for the rail transport of jet fuel to be practicable, it would be necessary to install additional tankage at Sydney Airport to accommodate the train loads of jet fuel prior to it being used at the Joint Users Hydrant Installation.

Mr. J.C. Wiggins, Chief Engineer and Town Planner of Botany Council, expressed the view that the accommodation of another terminal in the vicinity of Mascot would be undesirable. He also indicated his belief that suitable land would not be available. This view was corroborated by the representative of John Holland (Constructions) Pty. Ltd. who had been commissioned to survey the area to identify any suitable site for a rail siding.

An alternative proposal was considered whereby jet fuel would be transferred by rail from Shell's Clyde Refinery to the Caltex Terminal at Banksmeadow and then to Sydney Airport by the pipeline at present under construction for Caltex. The practicability of this alternative was accepted by the companies, although they pointed out that to implement it additional tankage would have to be installed at Banksmeadow, and the capacity of the rail tanker unloading facilities at the terminal would have to be reviewed. The Public Transport Commission considered the alternative proposal to be practicable.

The question was asked whether a rail facility could be constructed at the Clyde Refinery, so that white products might be transferred by pipeline from that location to the proposed site for the Caltex-Mobil Terminal at Silverwater. The Shell Company representative advised that the company did not have land at the refinery site which it could make available to Caltex and Mobil for such a purpose.

### **Agenda Item 7b**

**Jet Fuel:** The Shell Company tabled a report giving an economic evaluation over twenty years of the alternative means of transporting jet fuel between the Clyde Refinery and Sydney Airport. To permit an economic comparison of alternatives with differing capital and annual operating costs, the figures submitted had all been converted to present day values.

In brief, the comparative costs, both capital and operating, of the three alternative means of transportation considered were estimated as:

1. Pipeline transportation as proposed  
(Jet Fuel and white products pipelines  
being laid simultaneously) \$2,261,000

2.	Rail transportation to a Mascot depot (subject to the availability of land for such a depot)	\$3,081,000
3.	Rail transportation to Banksmeadow Terminal and subsequent transfer by Caltex pipeline to Sydney Airport	\$3,116,000

For comparative purposes, the Shell Company's representative gave the cost of road transportation of jet fuel at the present day value equivalent, estimated over twenty years, as approximately \$2,250,000.

It was pointed out that operating costs in the above evaluations were produced in 1975 money values; that no attempt had been made to forecast and include inflationary trends over the specified period; but that as the rail and road transportation alternatives were more labour intensive, it might be anticipated that those alternatives would be significantly more costly than estimated.

A cost breakdown of each of the alternative proposals was incorporated in the economic evaluation tabled by Shell. Those figures were made available for examination by interested parties and were not disputed.

**White Products:** Caltex and Mobil tabled a joint statement giving comparative present-day costs for the transport of white products between Banksmeadow and the Rosehill area by block-train operation and by pipeline over a fifteen-year period.

The companies pointed out that since the existence of a western suburbs terminal was common to both the rail and pipeline alternatives, for the purposes of the comparison the capital and operating costs of such a terminal had been excluded.

In brief, the comparative costs, both capital and operating, of the two alternative means of transportation considered were estimated as:

1.	Pipeline transportation as proposed {White Products pipeline and jet fuel pipeline being laid simultaneously)	\$3,807,000
2.	Block-train transportation	\$5,150,000

Although regarded as confidential by the companies, cost breakdowns for each alternative were tabled by Caltex and Mobil and, with their approval, were made available for examination by interested parties. The companies' estimates were not disputed.

**Crude Oil:** It was pointed out by the Shell Company representative that the figures referred to in the agenda were the comparative costs for transporting crude oil only, either by pipeline or by rail. As transportation of crude oil by rail had been shown to be impracticable, a breakdown of the comparative costs was not required.

#### **Agenda Item 7c-1**

Questions were raised concerning the stability of existing sheet-steel piling and other structures along the Cooks River in the event of pipelaying being approved. Several

parties to the round-table discussions also indicated that both garbage and solid fill had been used to reclaim certain areas along the banks of the river. Specifically mentioned were Mackey Park, Steel Park, Ewen Park, Flockhart Park and other unidentified parks between Burwood Road and Georges River Road, Croydon Park. Marrickville Council's representative indicated that Council also had knowledge of garbage fill in Tempe Recreation Reserve.

The companies' consultants, John Holland (Constructions) Pty. Ltd., made available copies of a terrain evaluation report prepared for them by Coffey and Hollingsworth Pty. Ltd., consulting engineers in the geotechnical sciences. Review of and discussion on this report identified the possibility of a number of engineering problems associated with the construction of the pipelines. These problems need to be identified and satisfactory solutions provided, and the companies undertook to have this carried out by professional consultants should their applications for licences be approved.

The Total Environment Centre representative tabled two reports claiming that much of the soil along the banks of the Cooks River is of very poor quality, with extremely low strength parameters, and concluding that in their present condition the banks could not safely support the proposed pipelines. He recommended that, if approved, the pipelines should be placed beyond any likely failure zone for sheet pile retaining walls and associated structures.

In a letter dated 16th April, 1975, and tabled at the round-table discussion on 18th April, John Holland (Constructions) agreed that soil conditions and adjacent features or works along the proposed route present problems. They indicated that Coffey and Hollingsworth had been engaged:-

- \* To prepare an evaluation of the terrain based on existing information and supplemented by a visual inspection of the route.
- \* To provide data for the detailed civil engineering designs to be performed when the route became sufficiently firm to justify the expenditure.
- \* To provide geotechnical advice to tenderers.

The consultants pointed out in their letter that they had already made special provision for protective measures at several locations along the proposed route, and that they intended to give particular attention to pipeline installation at other nominated points where the route was close to the bank of the Cooks River.

Subsequently, on 2nd May, in response to a request by the Chairman on 18th April, the consultants tabled a further report by Coffey and Hollingsworth, in which they identified the known areas of possible geotechnical problems along the proposed pipeline route and the possible solutions that could be adopted in such areas. The consultant's report concluded that the types of problems likely to be encountered in areas of residual soils and bedrock are "normal" construction problems that would generally be solved by application of design techniques recommended in the company's reports (5530 and 5530/1). The report also indicated the principal areas where specific geotechnical problems might be anticipated, and suggested design solutions to those problems.

With the exception of the data contained in the reports tabled by the representative of the Total Environment Centre, no further information on this aspect was available from those present at the round-table discussions.



### **Agenda Item 7c-2**

The objection raised by the Electricity Commission to the placing of the pipelines closer than 30 metres to the Commission's structures relates only to those structures bearing overhead high voltage transmission lines. It is based on technological restrictions not necessarily related to the safety of petroleum pipelines. The same restrictions would apply to any metal pipeline, e.g., water or sewer. The Electricity Commission's representative indicated that, if necessary, the petroleum pipelines could be installed within 30 metres of such towers provided appropriate precautions were taken.

The Public Transport Commission clarified its reasons for refusing to allow longitudinal installation of the pipelines in railway easements. The reasons were based on technological considerations related to the stability of rail facilities. They were not based on the Public Transport Commission's assessment of the safety of the transport of petroleum products by pipeline.

The Department of Main Roads confirmed that it would not permit pipelines to be installed longitudinally within the confines of land set aside for future county roads. Its reasons for this decision were of a similar nature to those of the Public Transport Commission.

For the Metropolitan Water, Sewerage and Drainage Board, the representative, Mr. K. Aubrey, indicated that the restriction of 30 metres related to certain specific works along the proposed route of the pipelines, for example the southern and western suburbs ocean outfall sewer between Sir Joseph Banks Park and General Holmes Drive, Botany. The Board said that the basis for its restrictions included an element of assessment of the potential risk of petroleum pipelines, although Mr. Aubrey indicated his personal view that, when constructed in accordance with approved standards, high pressure petroleum pipelines could be installed and operated safely.

See also agenda item 8a-6, *Page 42*.

### **Agenda 7c-3**

No relevant statistical information was presented to either support or discredit the safe performance of liquid petroleum pipelines installed to the standards and in the terrain and conditions of the proposed pipelines.

A great deal of statistical data relating to overseas cross-country pipelines, much of it concerned with gas rather than liquid pipelines, and most of it some years old, was submitted in support of the claim that pipeline accidents are occurring at an increasing rate despite improved construction technology.

The most recent figures available from the United States Department of Transportation point to a decreasing number of accidents with liquid petroleum pipelines as a consequence of improved construction and operation technology.

Third party interference with pipelines is by far the most common cause of pipeline failures. The Total Environment Centre representative suggested that third party damage to the proposed pipelines could arise from dredging and general maintenance work in the Cooks River and on its banks.

It was estimated that total encasement of the pipelines in concrete would require some 23,000 cubic metres of concrete, at a cost of approximately \$900,000. The companies considered that such total mechanical protection of the pipelines was neither practicable nor necessary.

Mr. A. Angus of the Institution of Engineers, in his capacity as adviser to the Standards Association of Australia, suggested that where utility services run parallel with the proposed pipelines, the latter should be laid on a lower elevation than the utility services. This would reduce the risk of third party interference.

John Holland's representative indicated that wherever the proposed pipelines would be laid adjacent to or crossing other services or other projected services, unless exempted by the responsible authority, the petroleum pipelines would be installed at an elevation beneath the elevation of the existing or proposed services. Exceptions would be made where sewer lines are already laid at a considerable depth, such that it would be impracticable to lay the petroleum pipelines beneath them.

#### Agenda Item 7c-4

With regard to the safety of pipelines, the companies indicated that the major risks of failure of a pipeline would be from the following possible causes:

- \* External damage
- \* Corrosion
- \* Land slip
- \* Excessive pressure

**External Damage:** The Department of Mines advised that the construction and installation of the pipelines would be supervised by officers of the Department.

See also agenda item 7c-3 and 8a-9, *Page 34 and Page 43.*

**Corrosion:** The pipelines would be designed without a wall thickness allowance for corrosion. The Code which would be applied if construction of the pipelines is approved (ANSI B31.4-1974), does not require a wall thickness allowance for corrosion provided control of external corrosion is accomplished by the application of an effective protective coating, supplemented with cathodic protection and suitable drainage bonds in stray current areas.

The representative of the Standards Association indicated that an Australian code was in course of preparation and was currently out for public comment. The new code also provides that no corrosion allowance need be provided for pipelines that are suitably protected.

Under the worst combined stress conditions, the stress in the pipeline is close to 72 per cent of the specified minimum yield strength, which is the maximum that would be permitted by the ANSI Code. Hence, the safety of the pipelines would be very seriously prejudiced were corrosion to occur.

The safety of the pipelines, therefore, is dependent upon the continued correct operation of the cathodic protection system. The Electricity Authority's representative expressed the view that a properly designed and operated cathodic protection system would ensure adequate protection of the line against corrosion. No evidence was produced to deny this.

See also agenda item 8b-2, *Page 44*.

**Land Slip:** Questions were asked concerning the safety of the proposed pipelines in the event of earthquakes. Mr. P. Burgess of Coffey and Hollingsworth, adviser to John Holland, indicated that the pipelines could be affected if they were embedded in loose sand. This highlighted the need for proper compaction of the backfill sand around the pipelines during installation, and the companies undertook to ensure that this compaction was provided.

See also agenda item 7c-1, *Page 32*.

**Excessive Pressure:** The companies stated that the proposed pipelines had been designed to comply with the conditions laid down by the ANSI Code, namely to meet the simultaneous application of pump pressure, surge pressure and superimposed pressures from road traffic, etc. The companies tabled a statement to show that the maximum combined stress under the worst of each of the three sets of conditions would be slightly less than 72 per cent of the specified minimum yield strength of the pipe steel.

See also agenda items 8b-1 and 8b-3, *Page 44 and Page 45*.

The volume of petroleum product or crude oil that could be released should there be a major fracture of a pipeline so as to expose the full free ends of the two ruptured sections was re-assessed. The consultants tabled a report which reviewed the vertical profile of the pipeline route and tabulated the volumes that could flow from such leaks at low points, on the basis of there being seven intermediate control valves in each pipeline. If the valves were closed promptly, the worst possible spillage was estimated to be:

From the 8-inch jet fuel pipeline	20.0 m <sup>3</sup>
From the 14-inch white products pipeline	69.3 m <sup>3</sup> at 21°C
From the 20-inch crude oil pipeline	160.0 m <sup>3</sup> at 21°C
	296.0 m <sup>3</sup> over 35°C

Under the worst possible conditions, with no intermediate valves closed, 757 cubic metres of crude oil could escape.

The representative of the Board of Fire Commissioners indicated that the type of fire which could result from ignition of such releases would be well within the capacity of normal fire fighting services.

See also agenda item 7c-5, *Page 37*.

#### **Agenda Item 7c-5**

The companies propose to install seven intermediate valves on each pipeline between the Joint Users Hydrant Installation and Clyde. They pointed out that the proposed spacing of the valves, from 3.7 to 6.4 km apart, is much closer than the 16 km permitted by the ANSI Code.

The consultants also pointed out that increasing the number of valves could cause problems.

The question as to whether the intermediate valves should be manually or automatically controlled was discussed. John Holland recommended strongly against automatic control in that it would increase the complexity of the system and would not be in the best interests of pipeline safety, since it would involve above-ground control equipment and could also cause surge pressures if maloperation occurred.

The view was expressed that since the proposed pipelines would be installed in an urban environment, standards which would be appropriate for cross-country pipelines might not be appropriate in this instance. The companies disputed this on the grounds that the pipelines have been designed specifically for installation in an urban situation and along a river bank.

The Department of Mines commented that the inclusion of remotely controlled equipment along the pipelines would increase the opportunity for third party interference.

The companies stated that the intermediate valves would be fitted with pneumatic actuation devices and located so that they could be operated under any predicted condition of flood.

#### **Agenda Item 7c-6**

The Australian Gas Light Company advised that it would probably proceed with the installation of its pipeline in roadways under the provisions of the Gas and Electricity Act.

#### **Agenda Item 7c-7**

See also agenda item 7c-3, *Page 34*.

#### **Agenda Item 7c-8**

The Metropolitan Water, Sewerage and Drainage Board sees no insurmountable problems arising, and would negotiate appropriate arrangements with the companies to permit construction of the proposed pipelines adjacent to its installations. However, amplification works in fifteen to twenty years might necessitate relocation of some sections of the pipelines. Any agreement reached between the companies and the Board would provide that the cost of any pipeline relocation be met by the companies. Where practicable, the Board would insist that the pipelines be installed clear of all known future works.

With respect to possible widening of the Cooks River, the Department of Public Works' representative indicated that this aspect would be carefully considered by the Department



before it agreed to installation of the proposed pipelines in areas subject to its jurisdiction. It was indicated that the Department has statutory powers over development within two chains of the river banks.

See also agenda items 7c-3 and 8a-6, *Page 34 and Page 42.*

#### **Agenda Item 7c-9**

The representative of the Maritime Services Board indicated that there was no reason to believe that Botany Bay could not accommodate very large crude carriers (V.L.C.C.'s) of 200,000 tonnes capacity or even larger vessels. He indicated that the Board had received, but has not yet determined, an application from a company for provision of facilities at Botany Bay to receive such vessels.

In the view of the Board's representative, the safety aspects relating to the navigation and berthing of an 80,000 tonne ship into Gore Cove to supply crude oil to the Clyde Refinery would be more complex than those involving a similar operation with a V.L.C.C. of 200,000 tonnes into Botany Bay. He further indicated that by the end of 1975 one in every five tankers in the world would be of 200,000 tonnes or larger, and it was apparent that provision would have to be made in due course for the handling of such tankers in Australia.

Whether Botany Bay should be developed to accept tankers of 200,000 tonnes or more is a question of national importance not necessarily related to the specific proposal under investigation. The Board's representative indicated that no other refinery port in Australia would appear capable of being developed to receive such large tankers. He suggested that if the overall economics of crude oil movements into Australia dictated the need to receive such V.L.C.C.'s, it would be necessary to receive them at Botany Bay, either for transshipment of their cargo into smaller tankers or to enable the V.L.C.C.'s to carry reduced loads to other ports.

In the event of Botany Bay being developed to receive 200,000 tonne tankers, no practicable alternative would be available other than to transport the crude oil from Botany Bay to inland refineries by pipeline. Rail transport would be quite impracticable for this purpose.

#### **Agenda Item 7d**

Nothing was brought forward which would suggest that, in an urban system, rail is an unsafe mode of transport of petroleum products.

The safety of pipelines was discussed under a number of agenda items, and it would seem from an evaluation of these that the question of the comparative safety of rail and pipelines is not likely to be significant in this investigation.

See also agenda items 7c, 8b and 8e, *Pages 22, 27 and 29.*

### **Agenda Item 7e-1**

The Canterbury Council representative advised that plans were currently being developed for beautification of certain sections of the Cooks River banks. He requested that, if the pipelines were to be approved, consideration be given to the simultaneous installation of the three pipelines in those sections of the proposed route which could be adversely affected by construction in two stages.

The companies indicated that they would be prepared to adjust the scheduling of their construction programme so that it would be consistent with all councils' scheduled river bank improvement programmes.

See also agenda items 8b-5 and 8c-3, *Page 45 and Page 47.*

### **Agenda Item 7e-2**

There was dispute as to whether four-metre high trees could be re-established. The companies said that they intended to replace trees of that size with equivalent specimens where necessary. It would be acceptable to the companies as a condition of approval.

### **Agenda Item 7e-3**

The companies indicated that they do not propose to traverse the natural rock outcrop at Foord Avenue, Hurlstone Park

### **Agenda Item 7e-4**

The intermediate block valves and associated protective works would all be within valve pits below ground level. The only visual evidence of a valve pit would be a vent pipe to which would be affixed a sign indicating the location of the pipelines.

### **Agenda Item 7e-5**

There was no feeling from the discussions to support concern of this kind.

### **Agenda Item 7f-1**

Apart from the considerations advanced, consideration would also need to be given to the effects on road traffic movements of trains using the existing level crossings. There are presently nine such level crossings which would be traversed if rail transport were used between Banksmeadow and the Rosehill area.

The Public Transport Commission's representative indicated that certain major level crossings might be removed within a few years, but that many of the nine level crossings in question would remain for a substantial period. They would be up-graded only to the extent that flashing lights, etc., may be provided.

### **Agenda Item 7f-2**

While the point made is technically correct, the total energy consumption for the transportation of products is not of such magnitude as to be a factor in this investigation.

### **Agenda Items 7g-1 and 7g-2**

The companies had intended to site the terminal at the eastern end of Grand Avenue, Rosehill. However, their negotiations for purchase of that land were abortive and at the commencement of the round-table discussions, the companies reported that they were still negotiating for an alternative site within a two km radius of the original land.

The companies subsequently tabled a draft environmental impact statement for a proposed terminal to be constructed at the north eastern corner of Silverwater Road and Holker Street, Silverwater. The companies and the Public Transport Commission had earlier confirmed that there was no rail access to the site; nor was rail access possible.

Mr. P.F. Cox, M.L.A. for Auburn, indicated that he had sought financial assistance from the Commonwealth Government for the purchase of the land in question for use as parkland.

Mr. M.K. Dunphy of the Total Environment Centre, requested that a period of two weeks be made available to enable the Centre to produce a case to show whether a rail spur line could not, in fact, be constructed to the proposed terminal site at Silverwater. The request was granted, but the Total Environment Centre had made no further submission on the matter.

In view of the advice that rail access to the Silverwater site was not possible, alternative methods of transportation for white products were canvassed.

The suggestion was made that white products should be transported from Botany Bay to the proposed terminal at Silverwater by a shallow draft tanker.

The companies expressed the view that there was no viable method by which they could transport white products by water from Botany Bay to Silverwater in the one vessel. The only possible way would be by small tanker from Botany Bay to Port Jackson with subsequent transshipment to barges for conveyance to Silverwater. From the companies' viewpoint, the multiple handling of products required by this method would present considerable problems and would not be economically viable. The companies also indicated that the method would be contrary to Government policy, that oil movements within Port Jackson be minimised.

The Maritime Services Board's representative confirmed that this was Government policy. He was unable to advise whether the Parramatta River would be deep enough to accommodate shallow draft tankers. He also indicated his support of the companies' viewpoint that the use of barges as proposed would not be economically viable.

The Chairman sought opinion as to whether any alternative site, other than the five considered by the companies, might be suitable as the site for the proposed terminal. No further suggestions were forthcoming. The Chairman indicated he would accept any relevant submissions on the matter of an alternative site during the two weeks following the round-table discussions.

The criteria by which an alternative site might be assessed are:

- \* Its proximity to the market it is to serve.
- \* Its zoning.
- \* Its safety in relation to the surrounding community.
- \* Its environmental impact.
- \* The availability of rail access to it.
- \* Its cost.

#### **Agenda Item 7h**

A question was asked as to what reduction in road tank-truck movements would be achieved by installation of the proposed 14-inch white products pipeline. The companies indicated that the reduction would correspond to 160 truck movements each way per sixteen-hour non-daylight day between Banksmeadow and the Rosehill area, or to the movement of a truck once every six minutes past any point on the route.

#### **Agenda Item 8a-1**

In other contexts it was established that the susceptibility of the pipelines to third party damage would be greater in roadways than elsewhere.

See also agenda items 7c-3 and 8a-9, *Page 34 and Page 43*.

#### **Agenda Item 8a-2**

No arguments were produced which would substantiate the suggestion that if pipelines were installed along the proposed route they would attract other utilities to be built in the same location.

#### **Agenda Item 8a-3**

The considerations pertinent to a decision as to whether the proposed pipelines should be installed within roads or within parklands and other areas, are:

- \* Relative environmental impact.
- \* Relative susceptibility to third party damage.

These matters are adequately traversed elsewhere.

#### **Agenda Item 8a-4**

The question as to whether the proposed pipelines should be laid under license or under arrangements whereby easements are granted conditionally and subject to payment of

rental, is an administrative matter not pertinent to the investigation. If necessary, it should be resolved between the Department of Mines, Botany Council and the companies.

With regard to the construction of the proposed pipelines on Commonwealth land, the Department of Transport's representative indicated that the pipelines would be laid under license.

#### **Agenda Item 8a-5**

The Valuer General's Department stated that there was no reason to suggest that the presence of petroleum pipelines in road shoulders in front of residential properties would be a factor likely to seriously reduce the value of those properties, any more than the normal utility pipelines and other services that generally exist in such road shoulders. The Department's representative stated, however, that there could in some circumstances be an effect due to the vagaries of the market. He did not consider that such effects would be a matter of significance.

#### **Agenda Item 8a-6**

In the course of the investigation each of the statutory authorities, that had raised points of contention in submissions concerning the proposed pipelines, agreed that a basis could be reached with the companies which would permit conditional installation of the pipelines in lands subject to their jurisdiction.

The Department of Lands favoured construction of the pipelines alongside arterial roads rather than through parklands. The Department of Main Roads, however, affirmed that it would not permit the installation of pipelines within the confines of land set aside for future county roads.

#### **Agenda Item 8a-7**

The alternative route in the Municipality of Auburn proposed by the Sydney County Council would obviate the pipelines crossing a number of existing and proposed electricity cables. If adopted, it would also remove the pipelines from a proximity of high voltage installations. John Holland's representative advised that the proposed alternative route was through land largely under the control of the Commonwealth Government, and as the property was used for the storage of explosives, the Commonwealth would not permit installation of the proposed pipelines under any circumstances.

See also agenda item 8a-6, *Page 42*.

#### **Agenda Item 8a-8**

An alternative route through Freshwater Park, Strathfield, has been proposed and is acceptable to Strathfield Council, the Strathfield Golf Club and the companies. The selected route is further removed from residential properties in Ada Avenue, Strathfield, than was originally proposed, and would be environmentally acceptable.

### **Agenda Item 8a-9**

The section of the pipeline route proposed to be installed along Walsh Avenue, Croydon Park, would be laid adjacent to other utility lines. It was proposed by the residents that some special arrangements be made to ensure safety of the pipelines in the event of maintenance work being undertaken on the other utility lines in the vicinity. The companies agreed that if approval were given to lay the pipelines along Walsh Avenue, they would protect the lines in that area by covering them with a concrete pad or concrete slabs.

Mr. P.C. Burgess, of No. 34 Walsh Avenue, raised the question of the safety of his property should the pipelines be constructed to pass through his land. The representative of John Holland indicated that the companies would, as necessary, build a retaining wall between Mr. Burgess' property and that of Mr. C.W. Chan at No. 36 Walsh Avenue. Also, they would fully encase the pipelines in concrete in Mr. Burgess' property in order to obviate the possibility of pipeline damage.

Mr. R.A. Grey, representing residents of Walsh Avenue, wished it recorded that forty-two residents of Walsh Avenue objected strongly to the proposed construction of the pipelines in front of their homes.

See also agenda item 7c-3, *Page 34*.

### **Agenda Item 8a-10**

The companies indicated that between Warren and Mackey Parks, Marrickville, the pipelines would be laid more than two metres from the river bank but, nevertheless, could be very close to two metres from the bank.

The point was made that in some sections of the proposed route in Warren and Steel Parks, the fashioning of the river bank following construction of the pipelines would be important aesthetically as well as structurally. The companies considered that fashioning the river bank with carefully placed rock fill in those sections where the pipelines are proposed to come close to the river bank would seem to be an appropriate treatment. They agreed to do this should their applications for licences be approved.

### **Additional Submissions Concerning the Proposed Route of the Pipelines.**

1. The Commonwealth Department of Transport expressed the desire to seek an alternative route for the proposed pipelines in the vicinity of Sydney Airport, so that the proposed traversing of the Airport's north-south runway could be avoided.

Some possibilities exist, but during the course of the round-table discussions the Department of Transport and the companies were not able to resolve the question.

From the viewpoint of potential for environmental impact in this area, there would not seem to be any reason for differentiating between the alternative routes across the Sydney Airport.

There were certain considerations though, which were brought forward. If, for example, Airport Drive were a State county road, the Department of Main Roads would not

condone the installation of the proposed pipelines therein. The Commonwealth Department of Transport indicated that under normal circumstances it would attempt to apply the same standards as would be applied by the Department of Main Roads. However, the Department of Transport is faced with alternatives here which would not be considered normal, in that the alternative route for the pipelines would involve boring under the north-south runway. The Department's final decision on the preferred route may therefore conflict with the Department of Main Road's standards.

2. The point was made that sheet-steel piling along the Cooks River banks is considered unsatisfactory by some and deserving of alternative construction. The companies were asked if they would consider locating the proposed pipelines as far away from the sheet piling as possible, so as not to inhibit alternative construction of those sections of the bank in the event of sheet piling being removed in the future. The companies said that they would undertake to locate the pipelines as far from the sheet-steel piling as was practicable.

See also agenda item 7c-1, *Page 32*.

#### **Agenda Item 8b-1**

Concerning the possibility of failure of the material or welding of the proposed pipelines, the companies stated that the pipes would be tested, both non-destructively and hydrostatically, at the point of manufacture, in accordance with the provisions of the Liquid Petroleum Pipelines Code (ANSI B31.4-1974). The pipelines would be stressed to between 90 and 95 per cent of the specified minimum yield strength in the normal wall thickness sections of the line. Those sections of the pipelines where wall thickness would be greater than normal, for example, at road crossings, etc., would obviously be stressed to a lower value. The Code indicates that defects in the material of the pipes will not become evident by failure provided that during operation the pipeline pressure is not raised to more than 80 per cent of the test pressure.

The companies indicated that they had no knowledge of any propagating-type failure occurring in a liquid petroleum pipeline. In the past, propagating-type failures have occurred in gas pipelines. However, relatively little energy is stored within a liquid petroleum pipeline and the likelihood of a propagating-type failure is virtually non-existent.

The representative of the Standards Association of Australia and an officer of Tubemakers of Australia Ltd. subscribed to all of the statements made by the companies under this agenda item.

See also agenda item 7c 4, *Page 35*.

#### **Agenda Item 8b-2**

Under the provisions of the Electricity Authority Act and Regulations, a cathodic protection system may not be operated unless it has been registered and approved by the Electricity Authority. The Electricity Authority's representative stated that before approving any system, the Authority ensures that adequate measures are taken to prevent stray current corrosion of nearby structures.

The companies indicated that test points would be provided at appropriate intervals along the pipelines. These would be capable of demonstrating whether the cathodic protection system was operating correctly.

No statutory controls exist to police the operation and adjustment of cathodic protection systems, and hence inspections must be carried out by the companies. However, the Department of Mines indicated that if the pipelines were approved, licence conditions would require that the companies submit annual reports of the impressed current readings taken periodically from the test stations.

The view was expressed that there should be some form of statutory control over the operation of the proposed cathodic protection system to ensure that the public interest was being protected. Arguments were advanced that such control would not be necessary as the companies would be so dependent upon the continued correct operation of the cathodic protection system as to be unlikely to neglect its surveillance.

See also agenda item 7c-4, *Page 35*.

### **Agenda Item 8b-3**

The companies stated that the proposed hydrostatic testing procedures are in accordance with the Code requirements and with updated techniques of such testing for liquid petroleum pipelines. They indicated that there are particular reasons which necessitate the backfilling of pipeline trenches prior to hydrostatic testing. These reasons, and advice concerning the sensitivity of testing procedures, were tendered by the companies in a paper tabled at the round-table discussions.

The Department of Mines said that an inspector of the Department would be present throughout all hydrostatic tests.

### **Agenda Item 8b-4**

Disposal of the water used in hydrostatic testing to any waters would be subject to the statutory controls of the State Pollution Control Commission under the provisions of the Clean Waters Act and Regulations.

In the paper tabled at the round-table discussions and referred to under agenda item 8b-3, the companies outlined proposed disposal procedures and advice concerning the pollution potential of the corrosion inhibitors that would be employed.

### **Agenda Item 8b-5**

The question of the proposed timing of the installation of the two products pipelines and the crude oil pipeline was thoroughly traversed. After consideration of various alternatives, the Shell Company submitted a written proposal which would provide for the simultaneous construction of lengths of the crude oil pipeline with the two products pipelines in areas it considers to be environmentally sensitive. Those areas, listed in an appendix to the submission, were:-



Duck River	Walsh Avenue, Croydon Park
Haslams Creek	Near Palmer Avenue, Strathfield
Alexandra Canal	Sydney Farm Markets Site, from Parramatta Road to The Crescent
Parramatta Road	
Silverwater Road	Melville Reserve
Canterbury Road	Part of Airey Park

The Public Transport Commission suggested that in addition to these areas, simultaneous construction of the three pipelines should be carried out at all rail crossings.

It was suggested that any areas used for active recreation should be considered as being environmentally sensitive. The companies indicated that they would propose to route the pipelines around any areas established for active recreation. If circumstances made this impracticable, the companies' view was that the disruption of active recreation, as a consequence of the proposed pipelines traversing part of any one area used, would be measured in days.

See also agenda item 7e-1, *Page 39*.

#### **Agenda Item 8b-6**

The Soil Conservation Service drew attention to certain requirements which should be met in order to prevent siltation of waterways during construction. The companies indicated that they would observe the requirements of the Soil Conservation Service.

#### **Agenda Item 8b-7**

See agenda item 8b-5, *Page 45*.

#### **Agenda Item 8b-9**

See agenda item 7c-8, *Page 37*.

#### **Agenda Item 8b-10**

In the letter tabled by John Holland on 18th April (see agenda item 7c-1), the company indicated that where accumulation of ground water in trench backfill at low points is of concern, cut-off collars of clay or concrete would be placed to stop longitudinal flow. In particular, such remedial action would be adopted at Walsh Avenue, Croydon Park.

See also agenda item 7c-1, *Page 32*.

#### **Agenda Item 8c-1**

See agenda item 8b-5, *Page 45*.

### **Agenda Item 8c-2**

The companies stated that in sections of the proposed route not covered by the CLASP landscape report there would seem to be little scope for landscaping. However, to the degree to which landscaping would be appropriate they would provide it.

### **Agenda Item 8c-3**

This is a matter for resolution between the companies and the Department of Mines, should the pipelines be approved. It is not particularly significant to decision-making in the context of the pipelines investigation.

### **Agenda Item 8d-1**

The companies indicated that where landscaping would be desirable at the western end of the proposed route, they would provide it.

### **Agenda Item 8d-2**

The arguments for and against pedestrian/bicycle ways are so diverse as to make it impracticable for this investigation to traverse them. It is not particularly significant in the context of the pipelines investigation.

### **Agenda Item 8e-1**

The companies said there would be no excavation required for pipeline inspections. They would normally anticipate excavation only in the event of a leak occurring.

The Department of Mines pointed out that the applicable codes prescribe inspection and maintenance requirements. In any event, if procedures were required over and above those laid down by the codes, they would be incorporated as conditions of any licence which might be granted under the provisions of the Pipelines Act.

### **Agenda Item 8e-2**

The companies indicated that for a leak which would not be visible on the ground surface, the application of the in-line ultrasonic pigging technique would be capable of detecting even a pin-hole leak to within two to three metres of pipeline.

See also agenda item 8b-3, *Page 45*.

### **Agenda Item 8e-3**

The companies indicated that the line balance instruments were in operation continuously but that ultrasonic pigging would nevertheless be carried out periodically as a further check on the possibility of the existence of small leaks.

The Department of Mines indicated that one of the conditions of any licence granted under the Pipelines Act would require the company to inform the Department of any

leaks which occurred either during the initial hydrostatic testing or subsequently during operation of the pipelines.

See also agenda items 8b-3 and 8e-2, *Page 45 and Page 47.*

**Agenda Items 8f-1 and 8f-2**

The companies stated that they wished to reach mutually acceptable agreements with all councils concerning compensation for the effects arising from construction of the proposed pipelines on lands within the councils' control. The law provides for the Minister for Mines and Energy to resolve disputes should the parties concerned be unable to agree. Also, an aggrieved party has the right of appeal to the courts.

**Agenda Item 8f-3**

The three companies indicated that they had insurance provisions which, in brief, provided for sums of twenty million pounds sterling in the case of Shell and one hundred million U.S. dollars in the case of Caltex and Mobil, to cover injury or damage to property as a consequence of the construction or operation of the proposed pipelines.

**Agenda Item 8g**

The companies indicated that they would provide emergency procedures for review by the authorities at interest. The Department of Mines stated that, as a licence condition, it would require that the emergency procedures be properly displayed at the control rooms associated with the operation of each of the proposed pipelines.

**E. J. COFFEY**  
*Chairman*

