SUMMARY

INTRODUCTION

Hydrodec is proposing to build and operate a commercial scale oil treatment facility in Young. The proponent currently operates a 3,000L per day demonstration plant at the site in Young and wishes to expand operations to 20,000L per day.

The proposed plant will take used and spent transformer oils from the electricity supply and distribution industries which may be contaminated with polychlorinated biphenyls (PCBs), chemically treat the contaminated oil to achieve total destruction of the contaminants including PCBs and then sell the clean transformer oil back to the market.

The proposed oil treatment facility will be built and operated in accordance with the requirements of both the PCB Management Plan and the Hydrodec site licence No 11385 under the Environmentally Hazardous Chemicals Act 1985. This licence permits the keeping, conveying and processing of scheduled wastes on site.

The facility will have the capability of destroying many other persistent organic pollutants (POPs) such as Dioxin, DDT, DDD and other organohalogens, however, the proposed project will only treat PCB free and PCB contaminated transformer oils.

PROJECT NEED

Transformer oils used within the electricity supply and distribution industries degrade over time through oxidation and subsequent acidification of the oils. A substantial quantity of oils currently in service is also contaminated with PCB due to the historical use of this organohalogen as a fire retardant. When the oils are withdrawn from service they are disposed of in various ways depending on their PCB contamination status. PCB free oils are regularly disposed of as low value substitute fuels. PCB contaminated oils can be incinerated or chemically treated in other ways that destroy the oil.

This approach to contaminated transformer oil management is unsustainable both environmentally and commercially. It leads to the depletion of natural oil resources, generation of significant greenhouse emissions through the production of new oil and generation of hazardous emission and by-products from PCB destruction processes. Commercially, this approach results in high costs associated with disposal and purchase of new oil, and limited options to enable utility companies to achieve triple bottom line expectations and to develop more environmentally sustainable business practices.

The proposed commercial scale oil treatment facility provides a proven approach to PCB contaminated used and spent transformer oil management. The process

was developed in conjunction with CSIRO Australia and adopts a total life cycle management approach for these oils. The process allows transformer oils, or similar, to be infinitely recycled and treated as a long term asset rather than a consumable material.

APPROVALS

The proposal includes the treatment of more than 1000 tonnes per year of non aqueous liquid industrial waste and therefore is subject to State Environmental Planning Policy - Major Projects. Developments to which this SEPP applies are assessed under Part 3A of the Environmental Planning and Assessment Act (EP&A Act), 1979. This requires the preparation of an Environmental Assessment (EA) and the issue of an approval by the Minister for Planning.

The approval process is described in detail in Chapter 4 of this EA Report.

THE SITE AND SURROUNDS

The proposed site is located at 90 Old Temora Road, Young in New South Wales and is referred to as Lot 102 DP 1060400. The site is located within an industrial area approximately 2 km from Young Town Centre. The site has a primary frontage to Old Temora Road with vehicle access. To the west is Krebs Lane and to the south are industrial lots. The confluence of Spring Creek and Burrangong Creek is located to the east of the site. To the north of the site are Boorowa Road and the Blayney Demondrille Railway line. Hydrodec are the current owners of the site.

The area surrounding the site consists of both natural and modified landscapes. The natural landscape is characterised by small undulating hills amongst surrounding landscape which is sparsely vegetated. Immediately surrounding the subject site is the main industrial area of Young. A mixture of residential and commercial activities is located in the surrounding areas, with the township of Young being predominant to the east of the site.

PROJECT DESCRIPTION

Context and Timing

Hydrodec is undertaking an upgrade of the existing facility in several directions. The first activity is independent of this application for consent and is designed to improve the operability, safety and environmental performance of the existing activities at the site. These works do not involve any increase in production and have therefore been determined as non designated local development by Young Shire Council. Consent for these works was granted by the Council in late October 2005.

The subject of the proposal described in this EA involves the construction and operation of a commercial scale (20,000L per day) oil treatment facility. The main elements of the proposed project include:

- *The oil treatment unit;*
- *The hydrogen production plant (treatment of 20,000 L per day);*
- *The wastewater treatment facility; and*
- *Utilities and services connections from the new facility to the existing facility.*

The main oil treatment unit, hydrogen production and wastewater treatment plants will be housed in a building that is 20m by 15m and 8m high. This building will be constructed of a steel frame and steel cladding for the walls and roof. Footings may be driven piles or concrete poured. The building will have a concrete floor and will be bunded such that any spills from the process units will be contained.

From the date of planning approval, the schedule for the proposal is estimated as:

Six weeks: *Delivery of plant to site, connection to utilities and commissioning.*

Four months: *Commence oil treatment and tune plant to optimum commercial operation.*

Seven months: *Plant operations.*

Year 1: *Possible average process rate of 8 000 L per day with 75% low level PCB transformer oil, with progressive increase in throughput of the process up to 20 000 L per day average in Year 4.*

Year 4: *Plant operating at full capacity to 20 000L per day.*

Treatment Technology

The Hydrodec treatment process is an advanced form of catalytic hydrogenation. While hydrogenation processes have been used in the petroleum, petrochemical and food industries for decades, the Hydrodec application has the unique ability to selectively process halogenated chemicals and oxidised hydrocarbons while providing complete intact recovery of the base hydrocarbon skeleton. The process operates through eight fundamental steps using standard 'off the shelf' equipment and engineering. The basic steps to the process are:

1. *Feedstock pumped into the process at the system operating pressure.*
2. *The scavenger system and top up hydrogen is pumped into the process at system operating pressure.*
3. *The combined feed is heated up to the reaction temperature.*

4. *The feed is gravity fed across a catalyst bed.*

5. *The gas component of the product is separated and captured for recycling into the process.*

6. *The product oil is collected and washed.*

7. *The wash water is collected and separated from the product oil.*

8. *The product oil is recovered for recycling into the process or for sale as a refined product.*

The reaction proceeds to completion and achieves complete destruction of all PCBs in the oil, within the limits of detection of normal analytical procedures.

The hydrogen required for the process is proposed to be produced on-site. The production of hydrogen will be via an electrically powered electrolytic hydrogen production plant which uses water as the feedstock.

Wastewater from the process will be collected and disposed of by a licensed waste contractor. In the immediate future, it is proposed that wastewater from the process be treated within an on-site wastewater treatment plant eg. ozomolysis and ion exchange, which will allow treated water to be completely reused within the process.

Further details of the treatment process are provided in Section 2.3 of this EA report.

CONSULTATION

A stakeholder engagement process has been included as part of the environmental assessment to inform the community and key stakeholders of the project development and to identify key issues for consideration by Hydrodec.

In the preparation of this project and subsequent environmental assessment approval process, there will be three stages of consultation, two of which have already been undertaken:

- *Consultation during the development of the project;*

In early 2005, prior to commencement of the formal development application process and the stakeholder consultation process, Hydrodec presented the technology and the plans for the site at a public meeting of Rotary in Young. Additionally, Hydrodec had several consultations with Young Shire Council. These activities were undertaken as an important part of the policy of Hydrodec to be open with and participate in the community of Young. During these consultations Hydrodec outlined the activities at the site and the potential for redevelopment of the site. Informal feedback from these activities was consistently positive.

- *Consultation during the preparation of the EA;*

Consultation during this phase was with both government agencies and the community. Key stakeholders were invited to community consultations through individual letters and were also forwarded copies of the community newsletter. The community consultations were also broadly promoted through general distribution of the community newsletter in the week preceding the consultations and by advertisements in the local newspaper, the Young Witness.

The consultation was undertaken through:

- *A Planning Focus Meeting (PFM) – This was attended by representatives from Young Shire Council, the Department of Planning, Department of Lands, Country Energy, NSW Roads and Traffic Authority and Emergency Services such as NSW Rural Fire Services and the SES. The purpose of the meeting was to provide information regarding the proposal, undertake a site inspection and provide stakeholders an opportunity to identify any issues or concerns. The Director General's Requirements for the project were prepared following this PFM;*
- *Additional meetings - one with Young Shire Council, two with the NSW Department of Conservation (DEC), and two with the Department of Planning to discuss issues regarding the proposal;*
- *An open display – this featured posters illustrating the site and the treatment process. In addition, oil samples were provided for viewing. Hydrodec and ERM representatives answered questions from members of the public who attended and gave detailed explanations of the treatment process where requested.*
- *An information session - this session included presentations from Hydrodec and ERM representatives, and provided details of the proposal, a description of the process, potential impacts and risk management and environmental, social and economic benefits. This session also provided opportunity for questions to be asked and for issues to be raised.*
- *Community newsletters – Two community newsletters were produced and mailed to identified stakeholders as well as being distributed at primary venues, Council offices, retail outlets and community centres in the town. The first of these provided information outlining the proposal and the second newsletter addressed issues that were raised during the consultations.*

- *Consultation during the exhibition period.*

The exhibition of the Environmental Assessment Report is an important component of the consultation process.

The report will be lodged with the Department of Planning in November 2005.

The environmental assessment will be placed on public exhibition for at least 30 days, inviting written submission from any person including public authorities.

Hazard and Risk Assessment

The development was screened using applicable guidelines. It was found that the development was potentially hazardous and thus a preliminary hazard analysis was carried out. Initially hazard identification and consequence analysis were conducted, which corresponded to the Level 1 assessment in the Multi-level Risk Assessment guidelines published by the Department of Urban Affairs and Planning.

Following the Level 1 assessment, it was recommended that Hydrodec:

- *Ensure that the hydrogen cylinders are stored and secured so that any release from the cylinder connections would be directed vertically, and not horizontally;*
- *Ensure that the small bore pipework connecting the hydrogen generator, compressor, bottles and downstream equipment is protected from external mechanical impact;*
- *Ensure any changes to the process, equipment, layout and controls be reviewed and justified from a risk perspective; and*
- *Review occupational health and safety procedures to identify those issues that are critical to the safe operation of the proposed oil treatment facility. The procedures will be customised and implemented prior to operation of the proposed facility.*

In addition, the following safety studies/plans that normally accompany a potentially hazardous plant will be prepared prior to operation of the proposed oil treatment facility, including:

- *Final Hazard Analysis;*
- *Fire safety evaluation to ensure compliance with standards;*
- *Emergency response plan;*
- *Contingency plan; and*
- *Safety management plan.*

In order to provide greater assurance that the development posed an acceptable risk to the surroundings, a Level 2 assessment was conducted. From this assessment it was found that the effects of the hydrogen stored at the site are 'ignorable'.

Air Quality

The Hydrodec process is a closed loop system and emissions to air have been demonstrated within this EA to be negligible. Predictive air dispersion modelling of key contaminants shows that ground level concentrations are all well below nominated environmental and health criteria.

An analysis of climate in the areas shows that during the summer month's winds are predominantly from the southeast, while during autumn, winter and spring winds are predominantly from the south.

Changes to the existing pilot treatment facility as a result of the expansion will incorporate the following controls to minimise atmospheric emissions:

- *Installation of sampling points on the point source to enable regular emissions testing;*
- *Installation of alarm systems to tighten process controls, prevent unacceptable environmental emissions and /or detect air pollution control equipment faults;*
- *Pollution control equipment that has been designed to minimise the risk of atmospheric emissions with the capacity to treat emissions for the proposed production throughput; and*
- *All roads, storage and car park areas will be sealed to prevent particulate emissions.*

Geology and Hydrogeology

Minor excavations are proposed during the construction phase. The key ground disturbances will occur as modifications to existing structures such as laying pipes for connection of utilities and storage tanks.

Potential impacts associated with the construction phase include:

- *Soil erosion from movement of construction vehicles; and*
- *Spills of fuel or chemicals.*

Potential issues associated with the operation phase of the project include:

- *Risk of health impacts on workers;*
- *Spills on site either during loading or unloading of oils; and*
- *Spills off site during transportation of oils.*

A number of mitigation measures are recommended to prevent, monitor and contain potential releases of contaminating materials on site during construction and operation phases, details of which are provided in Chapter 14 of this EA

Report. Provided these measures are implemented, the proposed project is unlikely to have significant impacts on soils and groundwater.

Water Management

No adverse impacts on stormwater drainage, flooding, water quality and water and sewerage utilities are expected as a result of the proposed works. Some improvements in water quality can be expected as a result of part of the paved area being replaced by equivalent roof area.

Potential risks from spills entering waterways will be reduced through bunding and containment augmented by backup systems utilising the stormwater detention tank and other spill containment tanks.

The increase in production on the developed site will have a negligible impact on water supply and sewerage services and no adverse impact on stormwater drainage for the facilities proposed.

The facility complies with Water Sensitive Urban Design (WSUD) principles that aim to reduce non-sustainable water demands, improve the quality of stormwater runoff and protect receiving water ecosystems. Rainwater tanks, first flush containment, stormwater detention, bioswales, bunding of storage areas and spill containment systems are key elements of this approach.

Noise and Vibration

An assessment of the potential noise and vibration impact from the proposed Hydrodec plant at Young has shown:

- *No construction noise impacts are anticipated;*
- *No road traffic noise impacts are anticipated;*
- *No vibration impacts are anticipated;*
- *The plant should be designed to a recommended Sound Power Level of 92 dB(A) to avoid night time impacts under all assessable weather conditions;*
- *No daytime operational noise impacts are anticipated;*
- *Mobile plant and truck use should occur during the daytime hours (7am to 6pm) to avoid evening noise impacts under adverse weather conditions; and*
- *Outlets for any pressure relief systems should be silenced to reduce the potential for sleep disturbance impacts.*

Traffic and Transport

Traffic generation for the construction phase of the development includes the movements of a range of construction vehicles to the site over a relatively short time period. These will consist of both heavy and light vehicles. Construction traffic will be of short term effect only.

During operation of the proposed facility, traffic generation would consist of:

- *Tanker (20,000L) movements for importing and dispatching of oil;*
- *Small rigid trucks for other deliveries and dispatch;*
- *Light vehicle movements for employees; and*
- *Light vehicle movements for visitors, couriers and so on.*

Traffic modelling results indicate that the long term effect of the proposed facility at the Boorowa Street/Wickhams Lane intersection will be limited to a minor increase to the level of saturation and worst case vehicular delay. No change to the Level of Service would occur as a result of the proposal

The existing on-site parking and vehicle circulation areas are sufficient to cater for the increase in operational traffic.

Waste Management

A waste management protocol will be developed for inclusion in the construction and the operational environmental management plans. The plan will outline the location of stockpile areas, recycling area, bins and provide a clear description of the waste streams associated with each one. It will also outline waste handling, management, storage and disposal procedures, waste tracking protocols, training requirements for all site staff and contractors, and emergency and contingency plans.

Ecology

The proposed site itself is located within an industrial area and has already been subject to very high levels of disturbance including the removal of most of the native vegetation. A review of background information including aerial photos, vegetation mapping, topographical maps and search of relevant databases indicated that the subject site is already highly disturbed, is largely devoid of any native vegetation and does not support any suitable habitat for threatened species.

It is not anticipated that the proposed project will have any significant impacts on threatened flora and fauna.

Socio-economic

The proposal has a number of positive social impacts for Young in terms of employment and business development. The workforce at the plant is planned to increase from its current level of 15 staff to 40 staff. This will include a range of positions such as engineers, machinery operators, drivers, clerical, management and maintenance. There will also be around 40 jobs created during construction of the expanded facility in a variety of trades and in labouring. There is a commitment from the proponent to source as many of these short and longer term jobs locally as possible.

There is also an expectation of increased use of local professional services and trades, particularly in relation to ongoing maintenance of equipment and machinery at the plant. The creation of employment opportunities in trades and labouring in particular is likely to be of benefit to the Young workforce given its occupational patterns.

As the proposed project represents a significant advance in recycling technology, delegations of both Australian and overseas visitors will tour the facilities. These visits are likely to generate additional demand for local goods and services in Young.

It is not anticipated that the proposed project will have any significant negative social impacts.

Heritage

A search of the relevant heritage databases was conducted to establish whether previously recorded heritage items were located in the study area. No items were found on the site on any of the lists included in the search.

Given the high level of disturbance in the study area, it is unlikely that the proposed project will have any significant impacts on any undisturbed Aboriginal or historic heritage deposits. Should any archaeological remains (Aboriginal or historic) be found during the construction of the facility, site work must cease and consultation with the NSW Heritage Office or the Department of Environment and Conservation be conducted.

Visual Amenity

The site is not highly visible from a range of vantage points in the metropolitan area of Young. As the proposed project is confined within the existing industrial precinct of Young, the change of views of the activity experienced from urban areas of Young are negligible.

ENVIRONMENTAL MANAGEMENT

Hydrodec currently own the existing plant and as such have existing environmental management plans and statutory licensing requirements for the facility. As the proposed expanded oil treatment facility will be a component of the overall Hydrodec plant in Young, environmental management procedures for the new facility will be incorporated in existing plans. Hydrodec propose to consolidate environmental management for operations in the near future through implementation of an ISO14000 accredited system.

The management procedures will ensure that all mitigation measures are effectively implemented and sustainable practices are adopted throughout the construction and operation phases of the new facility. The monitoring and reporting required to be carried out as part of the site procedures will enable Hydrodec to demonstrate compliance with licensing and approval requirements.

The site operational procedures will be a dynamic document, which can be updated and modified as necessary so that it is applicable and practical for ongoing operations at the facility.

Chapter 15 of this EA provides a Draft Statement of Commitments from Hydrodec in regards to implementing environmental management measures.

CONCLUSIONS

This EA has found that all potential impacts identified in association with the facility are capable of being mitigated and the development does not represent a threat of serious or irreversible environmental or human health damage.

The objective of Hydrodec is to upgrade the existing 3,000 L per day demonstration plant to a 20,000 L per day commercial scale treatment facility. This will allow Hydrodec to offer a total life cycle management approach for the use of transformer oils. Used or spent transformer oils will be re-refined through the removal of oil oxidation products and chemical contaminants, without changing the base oils. The process will achieve full re-refined oil recovery that can be infinitely recycled and treated as a long term asset rather than a consumable material.

The assessment has been undertaken in accordance with the Director General's Requirements issued by the Department of Planning. No significant environmental impacts have been identified during the EA that cannot be mitigated by appropriate safeguards and management strategies.