

## 11 PROPOSAL JUSTIFICATION

The proposed remediation of the CPWE would provide numerous benefits associated with the destruction of contaminants from the Site. Substantial environmental benefits would result from the remediation of the CPWE site, as well as numerous social and economic benefits including the clean up of contaminated material, and the return of the site to a productive use, compatible with the industrial zoning.

The proposal would therefore have resultant benefits for the local and wider community and the environment, as well as for present and future generations. These benefits can be maximised through a careful consideration of the principles of ESD in all aspects of the remediation project, in particular the detailed design of the plant. As such, Orica is committed to a meaningful consideration of the full range of environmental values and outcomes in relation to the project, including both the direct outcomes in terms of the removal and destruction of contaminants from soil, emission of contaminants to air, and the less direct outcomes such as implications for broader environmental issues such as climate change through the emission of greenhouse gas. Orica acknowledges that the best outcome for the project is one which strikes a delicate balance between all relevant environmental values consistent with the underlying principles of ESD.

### 11.1 Justification

The Director-General's EARs issued for this project require justification for the project to be provided, having regard to biophysical, economic and social considerations together with the principles of ESD. The environmental impact assessment of the proposal undertaken in this EA, and in particular in **Section 8** has addressed biophysical, economic and social considerations.

#### 11.1.1 Biophysical

The potential for biophysical impacts associated with the proposed project has been assessed in **Section 8** of this EA and includes examination of the following impacts seen to be of key significance to the proposal:

- Air quality;
- Water quality; and
- Soils.

An air quality assessment was undertaken in respect of the proposed works, which concluded that the works would not result in a significant increase in emissions from the Site. The proposed remediation works involve the removal of contaminants which are currently the source of HCBd and PCE gas emissions, as well as emissions from a range of other VOCs.

While there is currently no unacceptable risk to human health from the abovementioned emissions, the remediation works would result in the removal of the existing contaminants which are the source of the emissions from the soil. The proposal would therefore result in a direct improvement in air quality to off-site residential and recreational receivers, and off-site industrial workers associated with emissions from the CPWE.

However, the proposed remediation works could potentially result in other types of emissions on the Site, including:

- Dust during earthworks; and
- Emissions from the DTD Plant.

As described in **Section 4** of this EA, earthworks associated with remediation will take place within an enclosed shed, fitted with a ventilation system which is linked to an ECS. As such, dust emissions as a result of the works are expected to be minimal. Emissions from the DTD Plant are assessed in detail in **Section 8.1** of the EA and were predicted generally to comply with relevant standards and would not result in significant environmental harm or unacceptable human health risk.

It is important however, to consider the relationship between destruction of organics in the soil and the potential for volatilisation of mercury and its subsequent emission to air. A key consideration in determining the final operating temperature of the rotary dryer, will be the balance between the destruction of organics and the volatilisation of mercury, as well as the volume of greenhouse gases produced, which increases with increasing soil treatment temperature in the rotary dryer. A similar situation exists for the thermal oxidiser. Orica will review these issues in the Technology Assessment for the project, and consider how to balance these competing factors in determining the operating parameters for the plant.

The project has the potential to result in impacts on water quality through the transfer of contaminants to both the surface and groundwater during excavation of the contaminated material from the CPWE. Similarly with soils, the potential exists for the transfer of contaminants to soils surrounding the CPWE through sedimentation and erosion during excavation. Provided the environmental safeguards outlined in **Section 8.6** and **8.7** are implemented, there are not expected to be residual impacts associated with water quality and soils. The proposed works would ultimately remove a potential source for water and soil contamination, consequently preventing future ongoing contamination.

The assessment of the impact of the proposed project on each of the biophysical elements of the environment has concluded that, provided identified management measures and monitoring systems are implemented to mitigate potential impacts, the proposed works would not have a significant impact on the biophysical environment.

As required by the Director-General's EARs for the project, environmental mitigation, management and monitoring requirements have been compiled and summarised into a SoC, which is provided as **Section 9** of this EA.

The project is therefore justifiable in terms of the biophysical elements of the environment.

### 11.1.2 Economic

The economic impacts of the proposed works are largely related to employment generation and the return of the land to productive use.

The construction phase of the project is likely to generate in the order of 45 jobs, whilst the remediation works would require 25 to 30 additional employees, with subsequent direct and indirect benefits for the local economy.

The site comprises prime industrial land, however it is currently vacant and unable to be used for any purpose due to the presence of the engineered waste cell – the CPWE. The proposed remediation works would allow the CPWE site to be returned to productive use such as future redevelopment for industrial purposes, thus representing orderly and efficient use of the land.

Given these benefits, the proposed project is justifiable on economic grounds.

### 11.1.3 Social

The potential social impacts of the proposed works have been assessed in **Section 8.3** of this EA, and include consideration of a wide range of issues, including the following key issues:

- Noise; and
- Hazards and risk.

Other social or cultural issues assessed as part of this EA include impacts on visual amenity heritage, land use and traffic.

A number of these issues interrelate with the biophysical and economic impacts of the project, where, as described above, it has been concluded that the project would not have a significant impact provided identified mitigation measures are implemented, and that the proposal is justifiable on biophysical and economic grounds.

The noise impact assessment undertaken in respect of the proposal indicates that the proposed works are not likely to result in significant impacts, provided appropriate mitigation measures are implemented. There is the potential for noise impacts on nearby sensitive receivers during the night time period and possible, infrequent impacts associated with sheet piling activities if required. However, mitigation measures such as fitting silencers to plant equipment can result in significant acoustic reductions which would ensure that these impacts are not significant. Further, the community would be kept informed of significant noise events and when they might occur (such as sheet piling) throughout the duration of the project such that the impacts of the events are minimised.

A PHA and HHIA have been undertaken in respect of the proposal and conclude that the works represent a low risk in terms of hazards and do not pose an unacceptable risk to human health. Further, the removal of the contaminants existing on the CPWE site would have significant benefits to the local and wider community through the further reduction of risk due to hazard and harm to the surrounding environment.

The proposed works are therefore not considered to have significant adverse impacts with respect to social impacts on the community, provided design and management measures are implemented in accordance with the SoC. The project is therefore justifiable on social grounds.

## 11.2 Ecologically Sustainable Development

The term 'ecologically sustainable development' (ESD) was introduced by the Commonwealth Government in June 1990 and is defined as:

*'Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased. (ref: Ecologically Sustainable Development: A Commonwealth Discussion Paper)'*

ESD Working Groups were subsequently established and involved representatives of government, industry, environment, union, welfare and consumer groups. The ESD Working Groups developed a series of policy directions and recommendations which provided the foundation for development of the *National Strategy for Ecologically Sustainable Development*.

The *National Strategy for Ecologically Sustainable Development* was endorsed by the Council of Australian Governments in December 1992. In addition, the *Intergovernmental Agreement on the Environment* (IGAE) was signed in 1992 by Federal and State Governments, Territories and the Australian Local Government Association, promoting intergovernmental cooperation.

ESD is a concept now firmly entrenched in NSW environmental legislation and government policy. The concept of ESD has been given legal definition in NSW by the *Protection of the Environment Administration Act 1991* (NSW). Section 6(1)(a) of that Act requires the DEC which was established by the Act, in its role in protecting, restoring and enhancing the quality of the environment in NSW, to have regard to the need to maintain ESD requiring the effective integration of economic and environmental considerations in decision making processes.

Schedule 2 of the EP&A Regulation establishes four guiding principles to assist in achieving ESD, as follows:

- **The precautionary principle** – namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- **Inter-generational equity** – namely, that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
- **Conservation of biological diversity and ecological integrity** – namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration.
- **Improved valuation and pricing of environmental resources** - namely, that environmental factors should be included in the valuation of assets and services, such as polluter pays, full life cycle costing, and utilising incentive structures/market mechanisms to meet environmental goals.

The EPBC Act also identifies a fifth principle for consideration in environmental impact, namely:

*‘Decision making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations.’*

These five principles are interrelated and need to be considered both individually and collectively as part of determining whether or not a project would be consistent with the principles of ESD in Australia.

## 11.2.1 Precautionary Principle

Orica has taken on board the ‘precautionary principle’ for the proposed remediation works, as represented by the identification and consideration of a range of potential remediation options with the final option selected on the basis of its suitability for the specific remediation requirements of the site, proof of performance and effectiveness, and its potential environmental impacts. The project is for the remediation of contaminated land which would result in environmental improvements not only for the CPWE site itself but also for surrounding areas.

Orica’s commitment to this principle is further demonstrated through its ongoing commitment to environmental sustainability in the development of the detailed design of the DTD Plant, where sustainability will be a key consideration in the determination of operating parameters for specific components of the plant such as the thermal oxidiser and the rotary dryer. In the case of these plant components, Orica will be seeking to optimise outcomes for the removal and destruction of contaminants in soil, emissions of toxic pollutants to air and emission of greenhouse gas to air from the combustion of fossil fuel, while complying with the treatment and emission targets of the DEC and the Stockholm Convention, which it should be noted were developed prior to climate change being recognised as a serious environmental issue.

Further, the identification of potential impacts to the environment through environmental studies undertaken as part of this EA has enabled the proposed project to be designed to minimise significant environmental impacts, and has allowed environmental safeguards to be developed to manage potential impacts.

## 11.2.2 Intergenerational Equity

The principle of 'intergenerational equity' requires that decisions made by the present generation would not result in a degradation of the environment for future generations.

Of importance to this principle is the need to consider not only the direct environmental impacts of the proposal, but the less direct and perhaps broader environmental impacts of the proposed remediation works. Whilst many of these are positive, such as the health and environmental benefits of the removal of contaminants from the CPWE site, and the return of the land to productive use, equal consideration must be given to the implications of certain aspects of the project, such as those relating to natural resource use and climate change.

The proposed works will require the consumption of fossil fuels (largely in the form of natural gas) for the operation of the DTD Plant with subsequent implications in terms of greenhouse gases and climate change. This issue is discussed in greater detail in **Section 11.3** of the EA. Balancing outcomes for competing issues of removal and destruction of contaminants and greenhouse gas emissions from the combustion of fossil fuels is important in optimising the overall sustainability of the project and in achieving consistency with the principle of intergenerational equity. Orica is committed to minimising the greenhouse gas emissions from the DTD Plant through the detailed plant design and selection of operating parameters for the rotary dryer and thermal oxidiser. This will be done while considering other, equally important environmental outcomes such as DEC emission concentration limits and the requirements of the Stockholm Convention, noting that these were developed at a time when greenhouse gas emissions and climate change were not an issue.

In consideration of the above, and that the proposed remediation works would result in the destruction of contaminants at the CPWE site with subsequent environmental benefits, the project is considered to provide benefits to both present and future generations and meets the principle of 'intergenerational equity'.

## 11.2.3 Biological Diversity and Ecological Integrity

The principle of 'biological diversity and ecological integrity' requires a full and diverse range of plant and animal species to be maintained and conserved.

The potential impacts of the proposed remediation works on flora and fauna has been taken into consideration as part of the EA. Inspection of the Site found the land to be clear of trees with the exception of a small strip of landscaping along the eastern boundary of the CPWE that would require removal for the proposal. This landscape strip was originally planted by Orica and replanting would be undertaken on completion of the remediation works. The EA of the Site concludes that the removal of the landscape strip is unlikely to result in significant impacts on habitat for native fauna.

The proposed remediation works involve the destruction of contaminants at the CPWE site with subsequent benefits for ecological integrity and biodiversity.

#### 11.2.4 Valuation and Pricing of Environmental Resources

The IGAE and POEO Act require improved valuation, pricing and incentive mechanisms to be included in policy making and program implementation. In the context of environmental assessment and management, this would translate to environmental factors being considered in the valuation of assets and services.

Integration of environmental and economic goals is a key principle of ESD, which can be measured undertaking a cost-benefit analysis, that is, by measuring the costs of proceeding with a project against the benefits arising from the project.

Given the different values placed on different elements of the environment, and the various components of the environment, it is difficult to assign a monetary value against the environmental costs and benefits associated with a project. In recognition of this, the approach adopted for this project is the management of environmental impacts through appropriate safeguards, and to include the cost of implementing recommended safeguards in the total cost of the project. Orica would implement the environmental safeguards outlined in this EA to minimise potential environmental impacts resulting from the proposed remediation works.

In addition, Orica is seeking to ensure that equal consideration is given to all relevant environmental outcomes in relation to the project and that, throughout all aspects of the project a balance is achieved between all relevant environmental outcomes, such that no one outcome is achieved at the expense of another. This is of particular relevance in the detailed design of the DTD Plant which must balance treatment and emissions targets for competing contaminants, as well as an overall need to optimise environmental sustainability in the achievement of these outcomes.

#### 11.2.5 Decision Making Process

The proposed project requires approval under Part 3A of the EP&A Act 1979.

An assessment of the short, medium and long term impacts of the proposed activity, taking into account the principles of ESD is described in this EA. The SoC provided in **Section 9**, forms the environmental mitigation, management and monitoring requirements for the proposed remediation works.

The project approval process prescribed under Part 3A of the EP&A Act and subsequent environmental management frameworks ensure that decision making and monitoring of the project would be undertaken in an integrated manner, having regard to relevant issues associated with the project within its context.

### 11.3 Climate Change and Greenhouse Effect

The Greenhouse Effect involves certain gases, known as greenhouse gases, capturing heat radiated from the earth and re-radiating heat back to the earth. The thermal balance that is known to control earth's climate is maintained by this mechanism, and is influenced by the steadily increasing concentrations of certain greenhouse gases such as carbon dioxide (CO<sub>2</sub>), with other greenhouse gases including methane, ozone (O<sub>3</sub>), NO<sub>x</sub> and Chloro-fluorocarbons (CFCs).

Anticipated greenhouse emissions for the CPWE remediation project based on a preliminary mass and energy balance for the DTD Plant plus emissions from other plant and equipment for the project are:

- CO – estimated to be 4 tonnes

- CO<sub>2</sub> – estimated to be 10,800 tonnes
- NO<sub>x</sub> – estimated to be 11 tonnes.

CO<sub>2</sub> emissions from electrical consumption is estimated at a further 400 tonnes.

The Department of Environment and Heritage (DEH) Annual Report 2004-2005 indicated that total greenhouse gas emissions for Australia in 2003 were equivalent to 550 megatonnes of CO<sub>2</sub>, with 6% of this being from industrial processes. The amount of CO<sub>2</sub> estimated to be produced by the proposed remediation facility therefore represents an increase of 0.001% on the total greenhouse gas emissions and as such is considered to be negligible. Further, this increase will be temporary as works on the Site will cease and the Plant will be decommissioned once remediation is complete. Nevertheless, Orica is committed to minimising greenhouse gasses emitted as a result of the remediation project as much as possible through the detailed plant design and selection of final operating parameters for certain components of the plant.

Overall, the construction and operation of the proposed upgrade works as a whole is not expected to contribute significant levels of greenhouse gases, and would not therefore have a significant impact on the greenhouse effect.

## 11.4 Consequences of Not Proceeding

The proposal comprises the remediation of contaminated land in accordance with the requirements of an EPL applying to the CPWE site.

Should the project not proceed, the contaminants contained within the CPWE would remain on the CPWE site with the following potential consequences:

- Further breakdown of the (Hypalon®) liner leading to potential release of contaminants into surrounding soil and groundwater;
- Continued release of emissions from the CPWE;
- Possible spread of contaminants off-site;
- Legacy of contamination left for future generations;
- Limited use of prime industrial land; and
- Breach of EPL Condition E3 with associated penalty.

The above consequences are considered serious enough to outweigh the potential residual environmental impacts of the remediation proposal and to justify the proposed works being undertaken.

## 11.5 Conclusion

The proposal is for the purpose of remediating contaminated land in accordance with the requirements of the EPL applying to the CPWE site.

The potential impacts of the proposal have been discussed and assessed throughout this EA and mitigation measures have been identified to minimise these potential impacts. In all cases examined, the potential impacts of the proposal are considered to be acceptable provided that appropriate mitigation and management measures are implemented and maintained for the duration of the project.

The consequences of not proceeding are identified in **Section 11.4** above and are considered serious enough to outweigh the potential residual impacts associated with proceeding with the

proposal. The proposal is therefore considered justifiable on biophysical, economic and social grounds and is considered to be consistent with the principles of ESD. The benefits of the project are such that the proposal is considered to be in the interests of the local and wider community and the public in general.