ArupSustainability

Danbrew

Upgrade of Tooheys Brewery, Lidcombe

Preliminary Environmental Assessment

FINAL

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Preliminary Environmental Assessment

October 2006

Arup Sustainability
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Contents

1 Introduction

1.1 Background

Lion Nathan, as the Proponent, is proposing to upgrade the Tooheys Brewery site, located at 29 Nyrang Street, Lidcombe NSW. The brewery has been in operation since 1955 and has undergone several small scale upgrades during this time. The upgrades have involved replacement of old process equipment and addition of equipment and supporting structures as new technologies have emerged. However, until this time, an upgrade has not been considered with respect to the entire operation and overall efficiency of the site.

1.2 Overview of Project

Lion Nathan proposes to upgrade the beer production facilities and utility services at the Tooheys brewery site in Lidcombe NSW. The main objective of the project is to reduce production costs without an increase in production capacity. The project seeks to reduce production costs through the following key drivers:

- Reduce loss of product.
- Increase energy efficiency.
- Reduce water consumption.

The production volume today is over 3 million hectolitres (hl) per year with a capacity for approximately 4 million hl/year.

The proposed upgrade involves the replacement of outdated equipment and will be limited to the beer production, utility service facilities and canning/ bottling equipment. The upgrade will not include extension of the brewhouse or the existing warehouse areas. The major components of the upgrade are:

- Extension of the yeast storage area and yeast propagation plant.
- Installation of a new beer processing building and relocation and upgrade of the associated beer processing equipment.
- Installation of a new bright beer tank cellar and bright beer tanks, coupled with decommissioning of the old tanks and cellars.
- Upgrade of utility services including the heating plant, refrigeration plant and compressed air plant.

1.3 Need for the Project

In response to strong competition within the Australian market and the increasing costs associated with product, energy and water inefficiencies, Lion Nathan commissioned Danbrew, a Danish specialist brewing consultancy, to undertake a review of Lion Nathan's Tooheys brewery to improve current performance and produce sustainable cost reductions.

In April 2006, Danbrew produced an upgrade plan for the site. Danbrew's recommendations that have been adopted by Lion Nathan form the basis of the project proposal.

1.4 Statutory Context

The site is located within an industrial area within Auburn Council (the Council). The statutory context of previous development occurring on site can be classified as either:

- any development prior to 1979 with no requirement for Council approval or environmental assessment under the EP&A Act;
- exempt development after 1979 including maintenance and minor building improvements with no statutory requirement for Council approval; and
- permissible development after 1979 with requirement for Council approval and environmental assessment under Part 4 of the EP&A Act.

The various upgrades have typically been of a minor nature and the environmental assessments produced for Council have focussed on the isolated upgrade, with limited consideration of the entire site operations.

The capital expenditure of the proposed upgrade is approximately $70 million, and as such it constitutes a Major Project under Part 3A of the EP&A Act. The project has therefore been referred to the NSW Department of Planning (DoP). Consultation with the DoP has indicated that the proposed upgrade is to be assessed in the context of the continued operation of the site. The PEA therefore considers the environmental impact of the project with respect to the existing facilities, operations and baseline environmental conditions.

1.5 Objective of this Report

Under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) an application is to be made to the Department of Planning (DoP) for approval of the project supported by a Preliminary Environmental Assessment (PEA). The following PEA document has been prepared by Arup identifying the potential for environmental impact from the proposal, including the anticipated positive impacts.

The objective of the PEA is to describe the project and to guide the further stages of environmental assessment by:

- Identifying those impacts which are significant and are likely to require further investigation.
- Identifying those impacts which are not likely to be significant and for which no further investigation is likely to be required.

2 Existing Site

2.1 Site Description

2.1.1 Location and Context

The Tooheys Brewery site is located at Nyrang Street, Lidcombe. Figure 1 shows the location of the existing brewery south west of Parramatta Road and east of Haslams Creek.

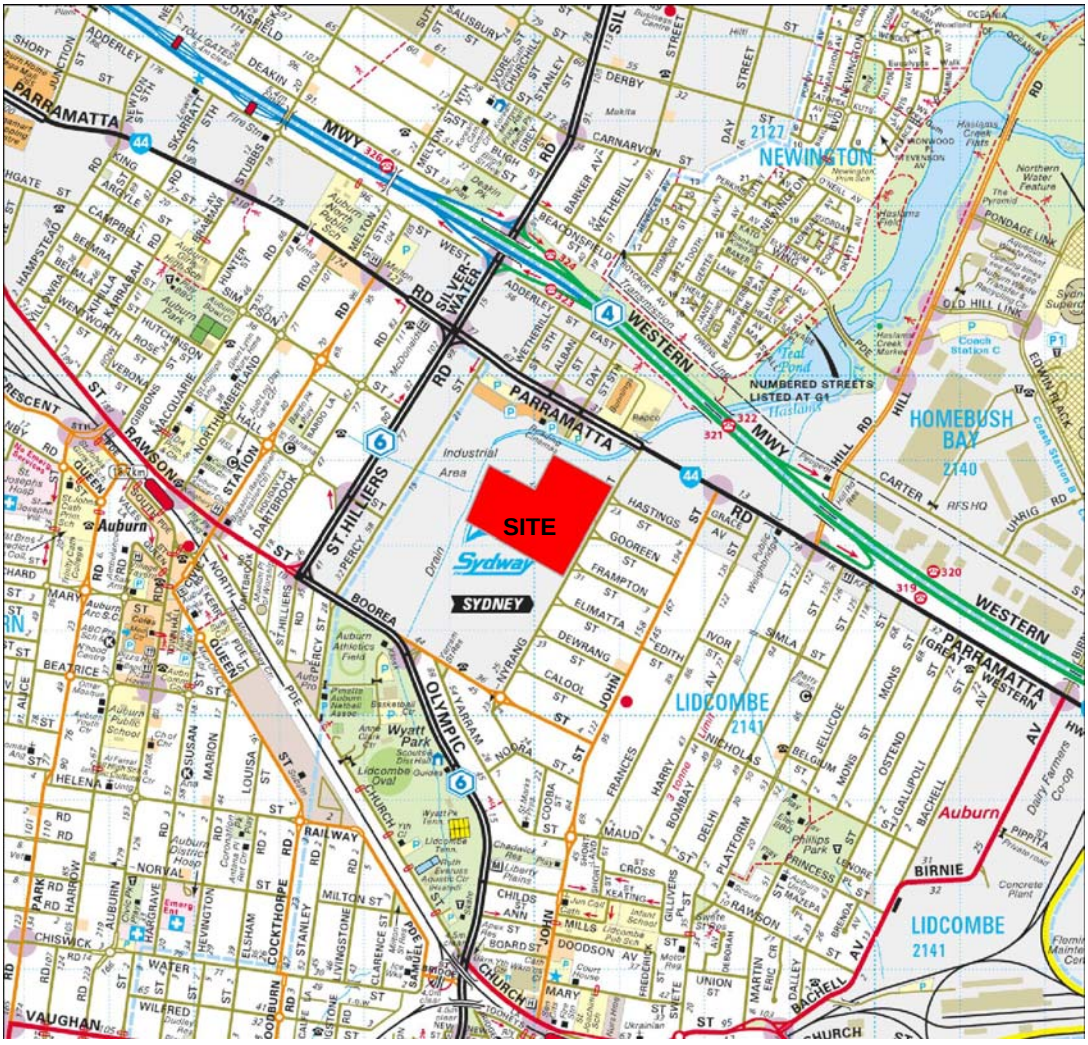

Figure 1 Site Location

The site is within an industrial area, and on land zoned 4(c) (Industrial Enterprise) under the *Auburn Local Environmental Plan 2000*. There are industrial developments to the north and south of the Tooheys site, and a number of developments to the west of Haslams Creek. East of the brewery site (on the eastern side of Nyrang Street) is a residential area, which mainly comprises stand alone houses.

Haslams Creek has been canalised where it is adjacent to the brewery site. North of the industrial area, the creek passes through a wetland area, before discharging into Homebush Bay.

Parramatta Road forms the northern boundary of the industrial area that the brewery site is located within. The convergent intersection of the Western Motorway (M4) with Parramatta

Road is to the east of the industrial area. The M4 runs to the north of the Parramatta Road in the vicinity of the industrial area.

2.1.2 Access

Access to the site is gained via both the Percy Street and Nyrang Street entrances. A manned gatehouse is located at the entrance on Nyrang Street which is the main entrance to site. The secure access on Percy Street is used by most of the heavy vehicles that enter and leave the site.

The Lion Nathan national distribution centre, proposed for the adjacent site (see section 4.5) will include a realignment of the Percy Street entrance road, which will allow for increased use by heavy vehicles, reducing the need for heavy vehicle access from Nyrang Street.

2.1.3 Topography and Landform

The site is located in a slightly undulating topographic setting that generally falls to the north and north-west at up to approximately 5° to 10°. The brewery site is generally flat with falls to the north and west at up to approximately 2° to 4°.

2.1.4 Geology and Hydrogeology

Various subsurface investigations have been undertaken on site including geotechnical and environmental assessments. These investigations indicate that the site soil consists of alluvial and residual clay to groundwater level, with underlying shale.

Groundwater at the site is reported at approximately 6 – 7 m below ground level. It is considered likely that groundwater flow would be towards Haslams Creek and/or Homebush Bay in an approximate north to north easterly direction.

2.2 Existing Operations

The brewery currently produces over 3 million hl of beer per year, with a total current production capacity of approximately 4 million hl/year. Total capacity at the brewery is limited by a number of factors. These factors include the brewhouse, utilities and services, beer processing facilities, and the volume of fermentation, maturation and storage vessels.

The brewing process is made up of the following key components as shown in Figure 2.

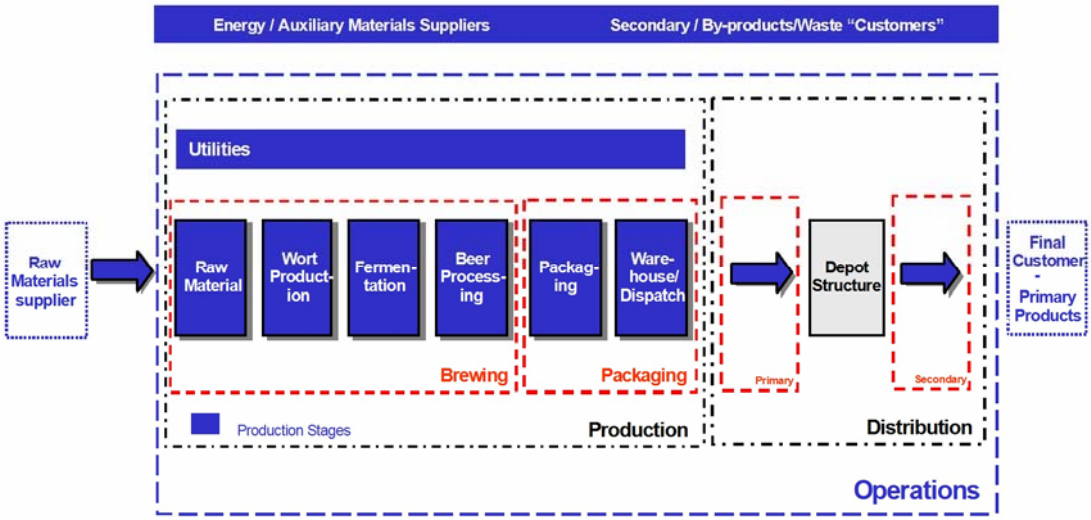

Figure 2 Process Description

The existing site layout is shown in Figure 3.

2.2.1 Raw Material

In general, methods of just in time delivery of raw materials are adopted rather than on site storage.

Malted grain is delivered by truck to the brewery and is pneumatically transferred to concrete or silos. The grain is cleaned and weighed as required and pneumatically transported to the brewhouse malt tower where it is milled to grist in preparation for wort production.

Other raw materials used in the brewing process include hops, yeast and liquid adjunct (maltose/sucrose). Hops and hops extract are stored within silos located within the brewhouse. There are currently a number of different yeast strains used by Tooheys. Each strain is propagated from small amounts maintained in the laboratory. Yeast collected in excess from the fermentation process is stored in tanks within the yeast storage room for later re-use in the fermentation process. The yeast storage room is located to the south of the brewhouse and includes two yeast pitching tanks for measuring out the required volume of yeast and eight storage tanks where the yeast is stored at cold temperatures for a limited amount of time. Liquid adjunct (sugar) is stored in tanks to the south of the brewhouse building with a capacity equivalent to 4 days storage.

2.2.2 Wort Production

Wort production occurs in the brewhouse building and encompasses the process operations combining the malt grist and liquid adjunct occurring prior to fermentation. In 1993, the brewhouse operations were upgraded and a new brewhouse building was installed. The brewhouse operations are therefore relatively modern and efficient compared to the remainder of the site operations.

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TOOHEYS

Legend

- Existing building area
- New building area or renovated area with new utilisation
- New tank area
- New road area
- Existing tanks or equipment
- New or relocated tanks or equipment
- M.W.S.& D.B. Easement
- Haslam's Creek

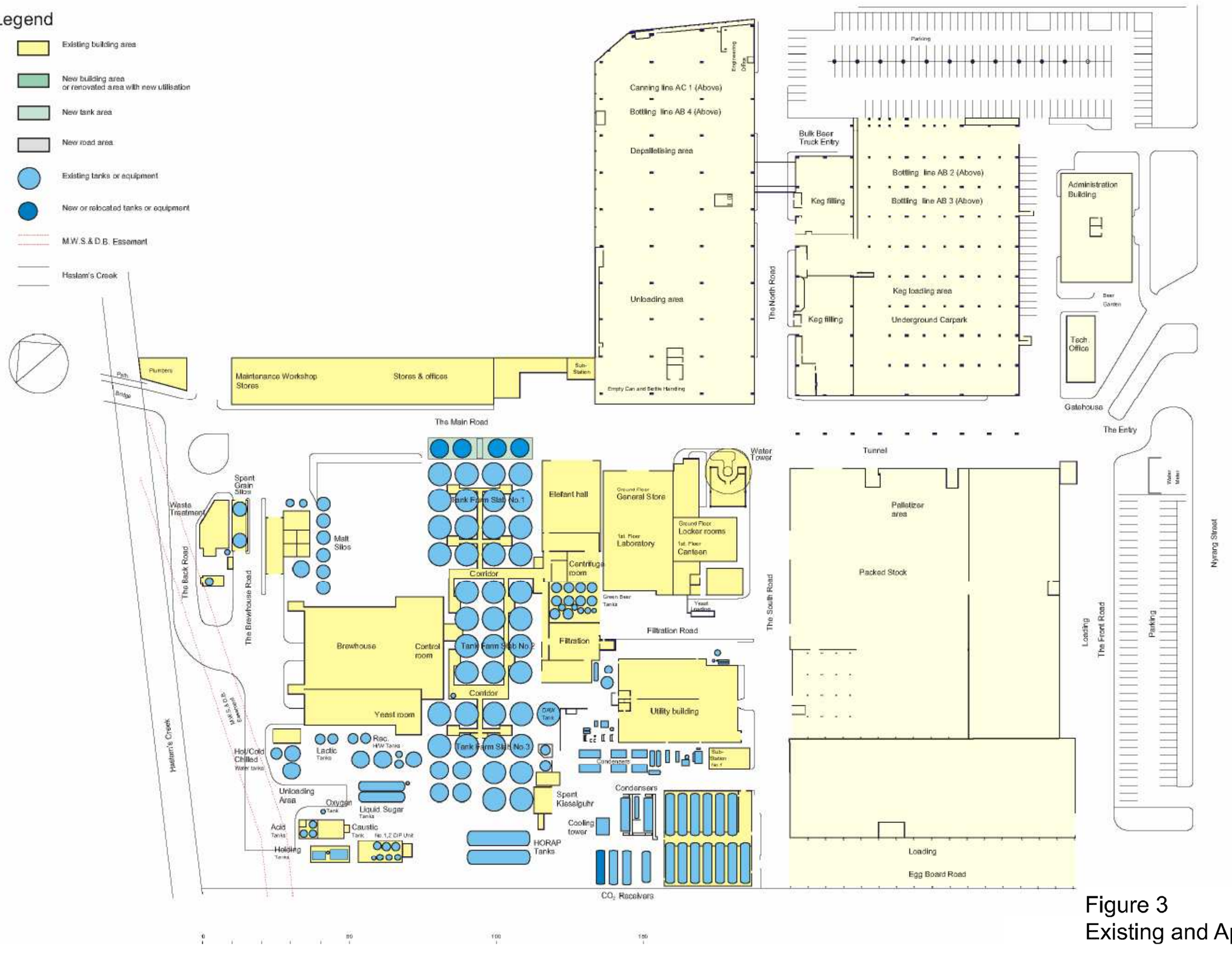

Figure 3
Existing and Approved Development

The milled malt and water is mixed into mash tuns located within the brewhouse building. The malt and water mixture is then heated in a controlled manner within the mash tuns in the brewhouse to produce a malt grist and water slurry known as mash.

The mash is then pumped to the lauter tuns within the brewhouse building where the insoluble grains are allowed to settle on a false bottom which acts as a filter bed to clarify the mash. The liquid, called sweet wort, is separated from the spent grain. The spent grain is collected and sold as animal feed.

The final brewhouse operation is the boiling of the wort in brew kettles. This process stops the starch to sugar conversion, sterilises and concentrates the wort, extracts bittering and flavour compounds and removes undesirable flavour and other nitrogenous and tannin materials. Hops and hop extracts are added at this time depending on the beer type to be produced. After brewing the hops are strained and the remaining insoluble material allowed to settle and transferred to the spent grain holding tanks and the cooled wort transferred to the fermentation tanks.

2.2.3 Fermentation/Maturation

Fermentation occurs when yeast is added to the cooled wort, converting the sugars in the wort to ethanol and carbon dioxide (CO_2) within fermentation tanks.

Yeast (either propagated or re-used) is added to the wort within stainless steel fermentation tanks located outdoors in the tank farms on Slab 1 and Slab 3 installed in the 1970s. All fermentation tanks are connected to the main process pipes via hoses and swing bends which must be manually changed when a line is to be redirected.

Two additional stainless steel horizontal fermentation tanks are located on the southern boundary of the site adjacent Slab 3.

The first fermentation stage is typically completed within 7 days to convert the wort to "green beer". At this stage of the process, the carbohydrate material is converted to alcohol and CO_2 and various other materials which contribute to flavour and character of the beer.

Maturation or aging occurs to remove the last remains of undesirable flavour and aroma components and is controlled at lower temperatures than the first fermentation stage. The secondary fermentation occurs over an approximate 5 day period within maturation tanks.

The maturation tanks are located on Slab 2 and Slab 3 as well as 34 horizontal maturation tanks within the Cellar 2 building. Eight of the tanks on Slab 3, installed in the 1980s, are dual process and able to operate as either fermentation or maturation tanks. These tanks are currently fitted with cone cooling jackets so that they are able to be used for maturation. Four additional maturation tanks have development approval and are currently being installed to the north of Slab 2, and will likely be in operation within the next few months.

A summary of the fermentation/maturation tanks on site is presented in Table 1.

Table 1 Existing Fermentation and Maturation Tanks

Tank Type	Quantity	Total Volume	Location
Fermentation Tanks	22	76,000 hl	Slab 1 and 3
Fermentation/Maturation Tanks	8	32,000 hl	Slab 3
Maturation Tanks	54	114,000 hl	Slab 1 and 2 and Cellar 2

2.2.4 Beer Processing

After the primary fermentation, most of the solids (mainly yeast) are removed from the green beer by centrifugation. There are three centrifuges operating in parallel within the centrifuge room. The waste solids (viable yeast) is stored in the sale yeast tanks and sold as a revenue generating stream. The green beer is chilled during the centrifugation process.

Following the maturation, the beer is transferred to filtration where it is dosed with a filter additive (kieselguhr) and filtered in the kieselguhr filters which clarify the beer by removing residual yeast and other solids. The spent kieselguhr is dried and removed from site to be used for soil conditioning by the same company that buys the spent grains.

The existing beer recovery plant is a conglomerate of four buildings including the "elephant house" and filtration buildings, located in the centre of the site to the east of the tank farms. These four buildings contain the filter lines, auxiliary filtration equipment and Cleaning In Process (CIP) plant. The layout of the process equipment within these buildings is complex and indicates that a number of upgrades have occurred over the history of the brewery in an unsystematic fashion.

2.2.5 Packaging

Following filtration the finished product, known as bright beer, is stored prior to packaging within three cellaring areas (Cellar 1, Cellar 2 and Cellar 3). Cellars 1 and 3 are located within the packaging area and Cellar 2 within the brewing area. The cellars supply three bottling lines, one canning line, and one keg line, and have a combined total storage capacity of almost 30,000 hl.

The cellars feed the packaging lines through partly manual and partly automatic processes.

Finished products are warehoused on site before loading for delivery. Unloading of new cans and bottles and loading of finished goods is done automatically.

2.2.6 Utilities Services

The brewing process is supported by a number of key utility services as below.

Heating Plant

The existing heating plant consists of two 15MW gas fired steam boilers and one 2MW gas fired steam boiler with flue gas vented through a 50m stack. All boilers are more than 30 years old with unknown efficiencies.

Refrigeration Plant

The cooling requirements for the site are supplied by an ammonia refrigeration plant including 9 screw compressors and 8 evaporative condensers. A newly installed glycol chiller plant including 3 screw compressors is used for supply cooling as presented in Table 2.

Table 2 Existing Cooling Loads

Ammonia Plant	Glycol Plant
Fermenters	4 new maturation tanks
Maturation tanks	Yeast storage and propagation
Green beer coolers	Yeast cooler
Ice water chiller (for wort cooling)	Two pre-filter beer coolers
Deaerated water chiller	Beer coolers in the packaging area
	Beer flash pasteurisers
	Room cooling in packaging area
	Horizontal fermenters
	Cellar room drying
	Air dryers
	CO_2 dehumidifier

CO_2 Recovery and Supply

A new CO_2 recovery plant has been purchased and recently commissioned. The new plant has a capacity to replace the existing CO_2 liquefaction plant which is over 30 years old. Development approval has also been received from Auburn Council for the installation of an additional CO_2 storage tank with a capacity of 50 tons. Upon commissioning, the new CO_2 liquefaction plant will make the brewery self-sufficient with CO_2.

Compressed Air Plant

The compressed air plant consists of five oil-free screw compressors. The compressed air is dried in glycol cooled air dryers reported to be highly inefficient. The inefficient air plant sometimes results in water in the air pipes at the site from time to time, causing fouling and corrosion.

Electrical Power Supply

Electrical power is currently supplied to the site by three 11 kV incoming lines to an Energy Australia substation. The substation is connected to the brewery high voltage (HV) main distribution board in Substation 1.

The HV is supplied to 7 transformers in the utility centre and to 8 other transformers across the site as presented in Table 3.

Table 3 Existing Substations

Transformer	Capacity	Area Supplied
Substation 1 – Utility Centre		
Transformer 1	1000kVA	Warehouse, Cellar 2, Engine Room, Filtration
Transformer 2	1000kVA	Warehouse, CO_2 Recovery Plant, Engine Room
Transformer 3	1000kVA	Warehouse, Cellar 2, Engine Room, Filtration
Transformer 4	1000kVA	Warehouse, CO_2 Recovery Plant, Engine Room
Substation 2 – Packaging		
Transformer 1	1000kVA	Racking and Bottling
Transformer 2	1000kVA	Racking and Bottling
Substation 3 – Utility Centre		
Transformer 1	1500kVA	Chiller units and warehouse
Substation 4 – Office		
Transformer 1	750kVA	Main office, Link building
Substation 5 – Packaging		
Transformer 1	1000kVA	Warehouse, Cellar 2, Engine Room, Filtration
Transformer 2	1000kVA	Warehouse, CO_2 Recovery Plant, Engine Room
Substation 6 – Future		
None		
Substation 7 – Tank farm		
Transformer 1	1000kVA	Tank farm and Brewhouse
Transformer 2	1000kVA	Tank farm and Brewhouse
Substation 8 – Brewhouse		
Transformer 1	1000kVA	Brewhouse and Tradewaste
Substation 9 – Ammonia Compressor		
Transformer 1	3.3kV/1000KVA	Ammonia Compressor
Substation 10 – Ammonia Compressor		
Transformer 1	3.3kV/1000KVA	Ammonia Compressor

2.2.7 Auxiliary Buildings

Other buildings on site include the laboratory, canteen, general store, offices, workshops, recycling centre, administrative area and visitor facilities.

The existing central laboratory is used for quality control and other laboratory testing and is located above the general store in the centre of the site.

Workshop areas are located across the site with the general workshop located on the main road on the north eastern boundary of the site. Total workshop area across the site is approximately 380m^2.

The existing offices for team leaders, brewers, process improvement team and management are spread throughout the site, with the administration and technical offices located at the Nyrang Street entrance.

The canteen serving the on site staff, are located in the centre of the site to the east of the laboratory.

There is an existing recycle centre on the western side of the warehouse on the other side of Haslams Creek. The area is used to store old plant and equipment for repair or sale.

3 Description of Proposal

3.1 Scope

Total capacity at the brewery is primarily limited by the volume of beer fermentation, maturation and storage vessels. It is not intended to increase the total capacity of the brewery as a result of the proposed upgrade. As such, the capacity after the upgrade would remain at approximately 4 million hl/year.

The proposed final layout of the upgraded brewery is present in Figure 4 and described below.

3.1.1 Raw materials

There are to be no changes to the process for malt storage and milling. However, the six 80 ton steel silos are to be relocated to accommodate a new beer processing building. The liquid adjunct tanks will remain as existing.

3.1.2 Wort Production

The brewhouse operations are to be slightly modified to include 4 small hops silos for automatic dosing and an associated 5 dosing lines. The control room within the brewhouse is to be relocated to a position between the brewhouse and the new beer processing room making it possible to establish a central control room for the supervision of brewhouse, cellars, beer processing and utility services.

3.1.3 Fermentation/Maturation

The yeast storage room on the first floor of the brewhouse above the brewhouse store room will be extended. The existing yeast storage tanks are to remain and an additional 4 new yeast storage tanks installed. The existing yeast propagation plants are to be removed and replaced with 2 two-stage propagation plants. The new yeast storage room will accommodate the new yeast storage tanks and propagation plants.

The Cellar 2 maturation tanks are to be removed so that all maturation tanks are located on Slab 2 and Slab 1 within the tank farm area. The unnecessary tank farm corridors are being removed and the process waste water system will be upgraded. New valve matrices and automated piping system will be installed to eliminate the need for manual changing of lines.

A new CIP plant will also be established in the tank farm areas.

3.1.4 Beer Processing

Green beer from the fermentation process will be transferred to the new beer processing building to be located in the cleared area to the north of the existing brewhouse, which is shown in Plate 1. The green beer may undergo centrifugation depending on the beer type being produced. The centrifuge equipment and transfer lines will be relocated from the old building. CIP installations for centrifugation will all be new.

The filtration plant is to be relocated from the existing location to the new beer processing plant to be established in the cleared area adjacent to the existing brewhouse. The kieselguhr filters are to be replaced with two new filter lines using new membrane filter technology and the old transfer line relocated. The kieselguhr and waste kieselguhr storage will become redundant, and will be decommissioned. New CIP plants for the filter and transfer lines will be installed.

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TOOHEYS

Legend

- Existing building area
- New building area or renovated area with new utilisation
- New tank area
- New road area
- Existing tanks or equipment
- New or relocated tanks or equipment
- M.W.S.& D.B. Easement
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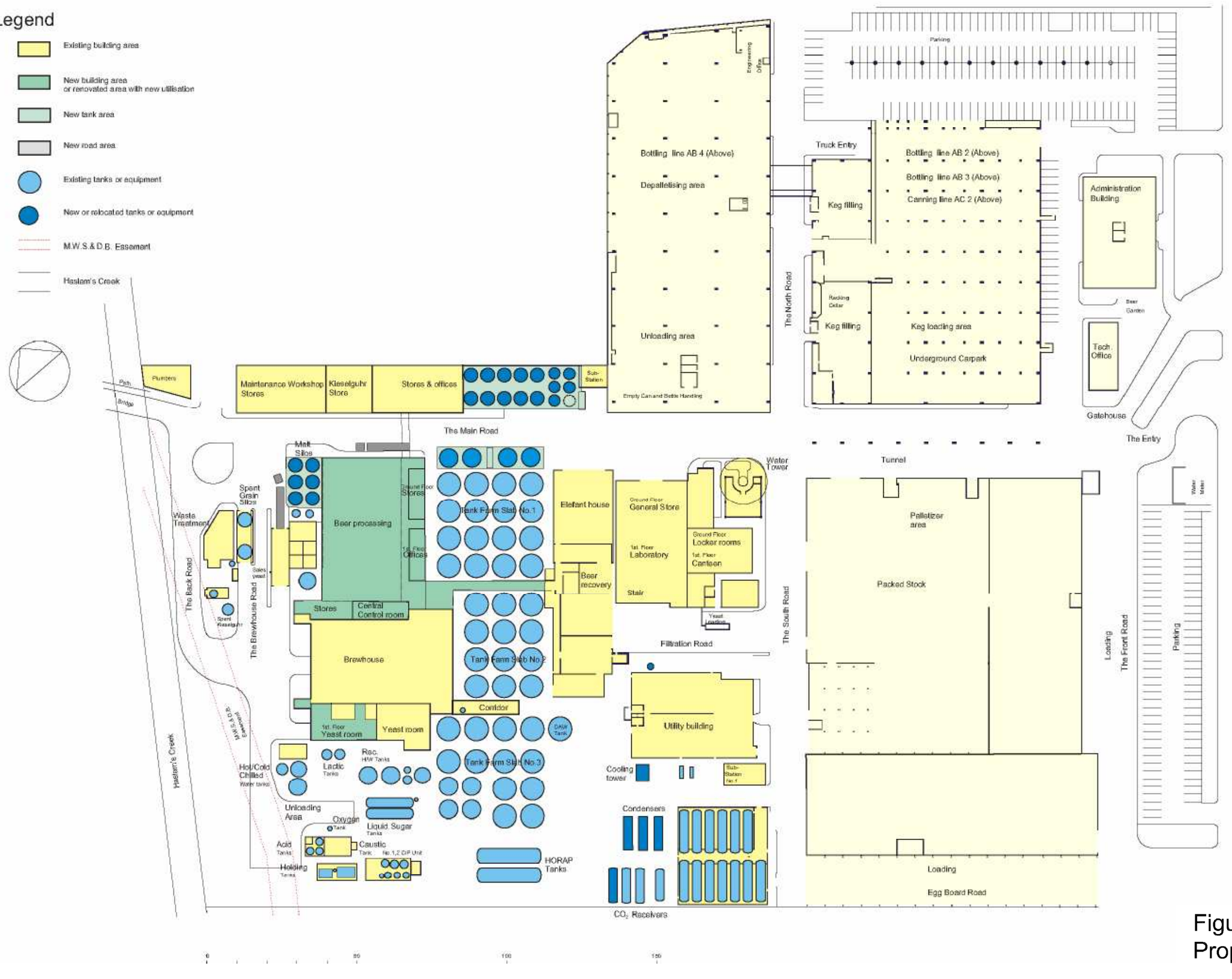

Figure 4
Proposed Development

Plate 1 The cleared area to the north of the existing brewhouse, where the new beer processing building would be located (the photo is taken from the top of the silos in front of Tank Farm Slab No. 1, looking south west towards the brewhouse and the existing malt silos). The malt silos shown would also be moved to the northwest to make way for the new building.

3.1.5 Packaging

A new Bright Beer Tank (BBT) cellar including CIP plants for tanks and pipes is to be installed on the north east boundary of the site. The new tanks in the BBT cellar will all be able to supply any of the packaging lines with beer. The total storage volume will be reduced by approximately 16%, based on the flexibility of the tanks and the expectation that the entire process will be more efficient requiring a smaller buffer volume of filtered beer.

The existing three BBT cellars will decommissioned in a phased approach. Cellar 1 will be closed down first, followed by Cellar 3 and Cellar 2 as they become unviable and the BBT cellars are centralised.

The upgrade within the canning and bottling facility will be limited to the replacement of outdated plant and conveying systems inside the existing buildings.

3.1.6 Utility Services

Heating Plant

The existing heating plant is to be decommissioned and replaced with a completely new boiler system. The existing stack will no longer be utilised but will not be demolished and will remain in its current location. The new on site heating plant will consist of:

- Two new high efficiency boilers each 10MW equipped with economiser for waste heat.
- A new deaerator.
- A new 30m stack.

- A reverse osmosis water treatment plant.
- A new steam header.

Refrigeration Plant

The ammonia refrigeration plant is to be downscaled and some of the cooling load to be shifted to the glycol plant including the green beer chillers. The new CO_2 plant and air dryers will also relieve some of the glycol cooling load. One additional glycol chilling unit is required.

CO_2 Recovery and Supply

The new CO_2 recovery plant has recently been installed will make the brewery self-sufficient with CO_2 for both the existing and proposed scenarios and no further upgrades are likely to be required.

Compressed Air Plant

It is anticipated that there will only be a minor increase in the compressed air peak load following the upgrade. However a new air compressor is proposed to be installed in addition to the existing screw compressors so as to provide the capacity to discharge spent grains during peak load.

A new air adsorption drying plant is to be installed to dry the compressed air. The proposed plant utilises the compressor heat for drying and requires energy for operation of a small motor.

Electrical Power Supply

No changes in the electrical power supply are proposed. The required electrical load following the upgrade has been calculated to be 7.5MW. This can be met by the existing system, which has a capacity of up to 8.5 MW. The total installed transformer capacity is 15, 250 kVA which is also considered to remain sufficient to meet the requirements of the brewery.

3.1.7 Auxiliary Buildings

The existing Central Laboratory is to be maintained and a satellite laboratory included in the new Beer Processing Building on the ground floor.

Existing offices are to be centralised in the new Beer Processing Building.

The General Workshop will be relocated to the north west within the same building complex to accommodate the new BBT Cellar.

Other auxiliary buildings including the canteen and general store are to be retained as existing.

3.2 Capital Expenditure

The total capital expenditure of the proposed upgrade is approximately $70 million, including building and civil costs, new process plant and equipment, and utilities services.

3.3 Timing

The proposed timeframe for the project is presented in Table 4 . The brewery will remain operational during the construction period for the proposed upgrade.

Table 4 Proposed Timeframe

Activity	Proposed Timing
Civil and Building Construction	June 2007 – March 2008
Process and Utility Installation	December 2007 – May 2008
Close-up and Disestablishment	May 2008 – July 2008
Testing and Commissioning	March 2008 – September 2008

4 Legislative Review

4.1 Commonwealth Environmental Planning Legislation

4.1.1 Environmental Protection and Biodiversity Conservation Act, 1999

The *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides protection to matters of National Environmental Significance (NES) which include:

- World heritage properties
- Ramsar wetlands of international importance
- Nationally threatened species and communities
- Migratory species protected under international agreements
- Nuclear actions
- Commonwealth marine environment
- Any additional matters specified by regulation

The proposed development will not affect any matters of NES, and therefore referral to Department of Environment and Heritage is not required. Section 5 provides a preliminary assessment of environmental impacts associated with the project.

4.2 NSW Environmental Planning Legislation

4.2.1 Environmental Planning and Assessment Act, 1979

The Project constitutes 'development' and, therefore, is to be considered under the *Environmental Planning & Assessment Act 1979* (the Act) and the *Environmental Planning & Assessment Regulation 2000* (the Regulation). The Act and Regulation sets out the assessment framework under which development must be assessed. The original brewery development predates the Act and therefore the majority of the operations have not been subject to environmental assessment and approvals process. Development occurring since 1979 has either been assessed under Part 4 as permissible development requiring development consent from Auburn Local Council or exempt development not requiring consent. The nature and scale of the proposed upgrade, however, represents a major project under the Act.

Part 3A

Recent amendments to the Act have established a new framework under Part 3A for environmental assessment for major projects in NSW. These changes integrate a number of approvals required under other pieces of state legislation, reducing the complexity of the approvals process in NSW as well as establishing a degree of flexibility in the environmental assessment of major infrastructure projects.

Projects assessed under Part 3A require development consent from the NSW Department of Planning (DoP) including any parts of the project which would otherwise be assessed under Part 5 or Part 4.

Part 3A applies if a project meets any of the types set out *in State Environmental Planning Policy (Major Projects) 2005* or if the development constitutes an activity for which the project would otherwise require an EIS under Part 5 and the Proponent is a determining authority.

State Environmental Planning Policy (Major Projects) 2005

The Major Projects SEPP outlines four types of Part 3A projects under the following schedules

- Schedule 1: classes of development
- Schedule 2: specified sites
- Schedule 3: State significant sites
- Schedule 5: Critical infrastructure projects

Breweries are listed under clause 3(b), Group 1, Schedule 1 of the SEPP. Under the SEPP, a brewery development that employs 100 or more people or has a capital investment value of more than $30 million constitutes a "Major Project".

The total capital expenditure of the proposed development at the Tooheys brewery is approximately $70 million, and as such it constitutes a Major Project under the SEPP, and Part 3A of the EP&A Act would apply.

4.2.2 State Environmental Planning Policy No 11 - Traffic Generating Developments

State Environmental Planning Policy No. 11 (SEPP 11) aims to ensure that the Roads and Traffic Authority is made aware of, and given an opportunity to make representations in respect of, development referred to in Schedule 1 or 2 of the SEPP.

Schedule 1 includes:

> f) the erection of a building for the purposes of industry where the gross floor area of the building is or exceeds 20 000 square metres or the enlargement or extension of a building used for the purposes of industry where the gross floor area of that enlargement or extension is or exceeds 20 000 square metres:

Schedule 2 includes:

> f) the erection of a building for the purposes of industry where the gross floor area of the building is or exceeds 5,000 square metres, or the enlargement or extension of a building used for the purposes of industry where the gross floor area of that enlargement or extension is or exceeds 5,000 square metres; and
>
> i) premises licensed under the Liquor Act 1982, or the Registered Clubs Act 1976, in each case having accommodation for 50 or more motor vehicles or the enlargement or extension of any such premises where the enlargement or extension includes accommodation for 50 or more vehicles,

The floor area of the proposed new buildings and building extensions is less than the Schedule 2 threshold. However, the brewery, as a licensed premise with accommodation for more than 50 vehicles, may be considered as a Schedule 2 development.

In any case, Schedule 2 development need only be referred to the Traffic Authority where it is development on or of land that has direct vehicular or pedestrian access to:

> a) an arterial road, or
>
> b) a road connecting with an arterial road, if the access is within 90 metres (measured along the road alignment of the connecting road) of the alignment of the arterial road,

The nearest arterial road (St Hilliers Road) is greater than 90m from the site and therefore referral to the Roads and Traffic Authority is not considered necessary under the SEPP.

4.2.3 State Environmental Planning Policy No. 33 – Hazardous and Offensive Developments

State Environmental Planning Policy No. 33 (SEPP No. 33) relates to potentially hazardous and offensive developments. The brewery is likely to be considered a potentially hazardous industry under the SEPP, given the dangerous goods storage on site. Risks and hazard assessment is discussed in Section 5.8.

The brewery is also likely to be considered a potentially offensive development given the potential for noise, and air emissions. An EPL is held by Tooheys under the POEO Act for the Scheme, and is applied for this Project, which controls such emissions. Noise and emissions to air are discussed in Section 5.4, Section 5.5 and Section 5.6.

4.2.4 State Environmental Planning Policy No.55 – Remediation of Land

State Environmental Planning Policy No. 55 (SEPP No. 55) requires that the issue of contamination be considered whenever a planning authority considers a development in NSW. Clause 7, subclause 1 of SEPP No. 55 is as follows:

> 7 Contamination and remediation to be considered in determining development application
>
> (1) A consent authority must not consent to the carrying out of any development on land unless:
>
> (a) it has considered whether the land is contaminated, and
>
> (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
>
> (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

The project will require excavation for footings for the new buildings and will therefore involve exposure of potentially contaminated soil. Any identified contaminated soil will be disposed of to an appropriately licensed landfill in accordance with the NSW EPA (1999) *Environmental guidelines; Assessment, classification and management of liquid and non-liquid wastes,* and therefore represents a waste management issue rather than a planning consideration.

SEPP 55 requires that the consent authority considers whether the site is suitable for continued industrial use. A preliminary site investigation will be undertaken to demonstrate the suitability of the site as discussed in Section 5.7.

4.2.5 Protection of the Environment and Operations Act 1997

The Protection of the Environment Operations Act 1997 (POEO Act) regulates emissions to air, water and land. It regulates specific types of activities and installations that have the potential to cause environmental harm as a result of their operations. The POEO Act covers the preparation and implementation of environmental protection policies, pollution prevention and control, and the licensing of certain development activities and installations. The NSW Department of Environment and Conservation (DEC) administers the requirements of the POEO Act.

Breweries or distilleries that produce alcohol or alcoholic products and that have an intended production capacity of more than 30 tonnes per day or 10,000 tonnes per year are listed under Part 1, Schedule 1 as an activity for which the occupier of a premise at which the activity is carried on, requires an Environmental Protection Licence (EPL) from the DEC authorising the activity to be carried on at that premise.

Tooheys holds an Environmental Protection Licence (EPL) No. 1167 administered by the DEC, covering emissions to air, generation of noise and discharges to water from the brewery operations.

An annual return is prepared for Tooheys each year detailing areas of non-compliance with Commonwealth and State environmental legislation including requirements of the EPL as well as mitigating actions.

4.3 Local Environmental Planning Legislation

4.3.1 Auburn Council Local Environment Plan, 2000

The Tooheys Brewery site is located within land zoned 4(c) under the *Auburn Local Environmental Plan 2000*. Under the plan the brewery would constitute an "industry" and any development at the site for the purposes of the brewery would be permissible.

Permissible development would require development consent from Auburn Council under the EP&A Act 1979.

4.3.2 Auburn Council Exempt and Complying Development Control Plan, 2000

The exempt and complying development DCP describes development of a minor nature that does not require consideration under the Act. Such development is generally limited to maintenance and superficial changes to buildings including facades.

Previous development at the site has included both permissible and exempt development.

4.4 Existing Development Consents

Existing development consents issued by Auburn Local Council are shown in Table 5.

Table 5 Existing Development Consents

Reference	Determination Date	Description
DA 270/2006	31/08/06	Construction of CO_2 tank
DA 92/2006	30/05/06	Construction of 4 maturation tanks, Extension of existing cooling tower platform to accommodate cooling tower and CO_2 condenser Construction of new platform and enclosure for new CO_2 balloon on roof of existing engine room
DA 20/2006	12/04/2006	Construction of new link bridges between two existing buildings (the can hall and the bottling hall) for equipment and materials transfer systems.
DA 402/04	20/09/04	Two new mini fermenters and water filter vessel located beside the brewhouse with associated concrete slab works
DA 215/04	02/09/04	Construction of 6 malt silos and 3 fermenters
DA 544/03	22/12/03	Erection of platform on the warehouse roof and installation of cooling towers
DA 284/96	1996 (exact date unknown)	Canopy extension and brick wall

These previous development applications relate to upgrades of process equipment and the associated building modifications within the brewery site at isolated locations across the brewery site, with limited or no consideration of the entire site operations

4.5 Current Development Applications

Lion Nathan has lodged a development application with Auburn Council for a national distribution centre on an adjacent site, also owned by Lion Nathan, on the western side of Haslams creek. This warehouse is to operate independently of the brewery for a range of Lion Nathan products including wine and Ready To Drink (RTD) products, manufactured at other Lion Nathan facilities throughout Australia.

This distribution centre site is bounded by Percy Street on the north-western side, St Hilliers Road Branch Channel to the south and Haslams Creek Channel to the east, and would have street access solely via Percy Street. The proposed distribution centre is not related to the proposed brewery upgrade.

Construction of the Lion Nathan national distribution centre is programmed during 2007, and it is expected that the distribution centre will be completed prior to the completion of the brewery upgrade. Once it is completed Tooheys products will also be warehoused within this centre, transferred by an internal road and bridge across Haslams Creek. The co-location of the distribution centre adjacent to the brewery will significantly reduce the number of heavy vehicles that currently leave the brewery via Nyrang Street.

5 Environmental Impacts

5.1 Stormwater/ Effluent

5.1.1 Baseline Conditions

Within the Tooheys Brewery site there is an established stormwater drainage network draining to Haslams Creek to the north-west and north of the site. This network is likely to provide an adequate drainage network for normal level stormwater events. During major storm events, the capacity of drainage network is generally exceeded and the existing overland flow routes within the site (i.e. internal path and roadways) would convey these major event flows to either Haslams Creek or Nyrang Street.

In addition to the stormwater drainage network, there is also a stormwater protection system diverting spills and contaminated run off to trade waste. Tooheys currently has a Consent to Discharge Industrial Tradewater with Sydney Water Corporation which specifies criteria for pH, temperature, biological oxygen demand (BOD), suspended solids concentration, total dissolved solids concentration and grease concentration. For the most part, the site stormwater protection system is effective in diverting the majority of the spillages to the trade waste system.

However, Tooheys Brewery is acutely aware of the risk posed by the Tank Farm to the water quality within Haslams Creek via the stormwater drainage network. This risk is posed through a number of possible scenarios from medium scale spills through mechanical failure to large scale spills of an entire vessel in conjunction with wet weather. Tooheys currently has in place a first flush stormwater system which is capable of handling spills with a high occurrence and a moderate magnitude of severity. The stormwater risks and measures to reduce risks are documented in a Spill Containment Action Plan, which was prepared for the DEC.

5.1.2 Preliminary Impact Assessment

The proposed upgrade of the Brewery site will see virtually no increase in impervious area. As there will be negligible increase in the volume of runoff generated on the site the existing drainage network/overland flow routes should be of sufficient capacity to cater for the proposed upgrade works.

Improving operations and development of the tank farm will address the root cause of spills. The proposed measures include level control on external tank farm, automated valve manifolds, bunded equipment roofed by the tank itself and minimal numbers of pumps. Such measures are likely to improve the stormwater quality by reducing and eliminating the risk and impact of beer spills.

5.1.3 Recommendations for Further Assessment

The existing drainage network will be reviewed, and the interface of the proposed drainage design for the new plant and equipment with the existing network will be assessed with reference to the design requirements in Auburn Council's *Stormwater Drainage Development Control Plan*.

Where relevant, existing and proposed spill reduction and spill containment measures will also be described.

5.2 Flooding

5.2.1 Baseline Conditions

The Tooheys Brewery site is within the Haslams Creek Catchment draining to Homebush Bay. The main branch in the catchment is Haslams Creek channel running parallel to the 150 m long north-western boundary of the site. Haslams Creek flows in a concrete channel which is in the order of 7 m wide by 2 m deep and falls at approximately 0.6%. Midway along the north-western boundary of the site is the confluence of the St Hilliers Road Branch Channel and Haslams Creek. The St Hilliers Road Branch flows in a smaller concrete channel in the order of 2.5 m wide by 1.4m deep; falling at 0.7% approximately. Although the centrelines of these two channels are at about 90º, the St Hilliers Road Branch flows through a curved section of channel immediately upstream of the confluence which results in the two channel flows merging at an angle of about 35º.

There is an existing concrete bridge crossing Haslams Creek approximately 60 m downstream from the confluence and near the north-western corner of the site. This bridge and its abutments have the potential to obstruct Haslams Creek flood waters and therefore likely to result in flooding upstream of the bridge during major flooding events. Consequently, there has been several flood studies commissioned to predict and assess the impact of flooding in the area. One study, compiled by Bewsher Consulting Pty Ltd; *Haslams Creek Floodplain Risk Management Study and Plan,* July 2002, was commissioned and subsequently adopted by Auburn Council to form the basis for impact assessments of new developments within the Haslams Creek Catchment.

For major storm events, where the capacity of drainage networks is normally exceeded, the existing overland flow routes within the Brewery site (i.e. internal path and roadways) would convey these major event flows to either Haslams Creek or Nyrang Street.

5.2.2 Preliminary Impact Assessment

There will be negligible impact on the volume of runoff generated on the brewery site as a result of the proposed upgrade, as there is virtually no increase in impervious area of the site. However, there is potential for a flooding issue associated with the section of Haslams Creek running along the north-western boundary of the Tooheys Brewery site. Previous flood studies have highlighted the fact that the existing bridge and its abutments obstruct flows in this Creek during major flooding events resulting in upstream flooding.

As part of the distribution centre development proposal for the adjacent site to the west of Haslams Creek, adjustments are to be made to the site topography and the existing bridge providing vehicular access to the brewery site. As part of the development approvals process, the impact of flooding from the proposed distribution centre have been modelled and presented in Buckton Lysenko Consulting Engineers' Report *Flood Study for 17 to 19 Percy Street*, August 2006. The report indicates that under both the existing and proposed conditions for the distribution centre site, there is likely to be a limited impact to the brewery site or proposed brewery upgrade in terms of depth and velocity of floodwater, or the area likely to be inundated by floodwaters. The proposed bridge replacement will reduce the potential for obstruction to Haslams Creek and the overall potential for flooding at the brewery site.

5.2.3 Recommendations for Further Assessment

It is recommended that further assessment address potential impacts, if any, from flooding of Haslams Creek Catchment on the Tooheys Brewery site. This assessment will incorporate the effects of the proposed distribution centre development and proposed bridge modifications on the brewery site, and be undertaken with reference to Auburn Council's *Stormwater Drainage Development Control Plan*.

5.3 Traffic

5.3.1 Baseline Conditions

The site is located to the south of Parramatta Road, with site access through existing driveways on both Percy Street and Nyrang Street. Nyrang Street is the main entrance to the site, where the gatehouse is located, however a secure entrance is also located on Percy Street. The access on Percy Street is primarily used for heavy vehicle access to the site. Nyrang Street is bound by industrial development on one side, and residential development on the other, whereas Percy Street runs entirely through the industrial estate.

Nyrang Street and Percy Street both provide connections to Parramatta Road in the north. Nyrang Street is a two way local road with left-in, left-out access to Parramatta Road. Percy Street is one way southbound at Parramatta Road providing left-in access only. To the south, connection to St Hilliers Road (an arterial road and part of metro route 6) from Percy Street is available via Hall Street. A connection to Olympic Drive (also an arterial road and part of metro route 6) from Nyrang Street is available via Boorea Street.

The brewery has a range of vehicles that access the site, including small utility vehicles, rigid trucks, semi trailers, B-Doubles and tankers. The average number of vehicles that access the site daily is 345, with the following approximate breakdown:

- Semi-trailers (42%) – for keg and stock deliveries, and for packaging materials (such as bottles and cans).
- Rigid trucks (41%), primarily for transport of empty kegs and pallets, as well as for stock delivery, brewing supplies and store materials.
- B-doubles (14.5%) – primarily for keg and stock deliveries.
- Tankers (1%) – for brewing supplies and caustic.
- Small vehicles including vans and utes (1.5%) – for delivery of store materials.

Currently most heavy vehicles enter the site view Percy Street, and exit via Nyrang Street. The exception is the smaller rigid trucks that supply the general store. These smaller vehicles enter and exit the brewery via Nyrang Street.

The warehouse currently operates 24 hours per day. As such, truck movements associated with the stock delivery, and the bulk of packaging materials, also occur 24 hours per day, corresponding to over 85% of heavy vehicles movements. The remaining truck movements, including some heavy vehicles, the smaller rigid trucks, vans and utes generally access the site during daytime hours, between 6 am and 6 pm.

There are 385 car parking spaces reserved for Tooheys staff and contractors (approximately 200 staff). There are 37 car parking spaces for visitors. There is also off street car parking available on Nyrang Street.

5.3.2 Preliminary Impact Assessment

The proposed site upgrade will not increase the capacity of the brewery. As such no increase in traffic generation or staffing levels is anticipated as a result of the upgrade.

However, once the Lion Nathan national distribution centre is operational on the adjacent site there will be a significant reduction in heavy vehicles accessing the brewery site. Stock (other than keg deliveries) would be transported internally from the brewery to the adjacent distribution centre, where the loading and dispatch of finished product would be made solely via Percy Street. Significant reductions in the number of heavy vehicles that leave the brewery site via Nyrang Street are expected.

Construction of the Lion Nathan national distribution centre is expected to take place during 2007. During this time there may be access issues through the Percy Street entrance and

conflict between activities at the brewery site (construction works and regular brewery operation) and the construction works associated with the national distribution centre.

5.3.3 Recommendations for Further Assessment

The available traffic information relates to the existing brewery operations which are under capacity. It is proposed to undertake a traffic assessment of the site to develop a more detailed understanding of traffic associated with current and full capacity operations, as well as traffic patterns on the surrounding road network.

This understanding will be used to manage construction related traffic issues. Proposed measures to minimise conflicts between construction activities at the brewery site, the construction works associated with the national distribution centre, whilst ensuring that the brewery remains operational during the construction period will be considered.

Further assessment would include:

- Review of daily traffic generation and hourly profile, including staff arrival and departure, mode of travel and pedestrian routes.
- Identify expected changes in future just-in-time delivery/supply characteristics including consideration of the improvements resulting from the proposed distribution centre.
- Analysis of peak traffic conditions at the Nyrang Street and Percy Street intersections with Parramatta Road.
- On and off-street parking demand and capacity.
- Heavy vehicle turning paths for access to/ from and within the site.

5.4 Noise

5.4.1 Baseline Conditions

Existing Noise Limits

The site is subject to an Environment Protection Licence (EPL), which requires noise from the premises not to exceed the following criteria:

- An $L_{A10,15\ min}$ noise emission criterion of 70 dB(A) (7am-10pm)
- At all other times an $L_{A10,15\ min}$ noise emission criterion of 65 dB(A)
- Noise from residential boundary or other noise sensitive areas must not exceed an $L_{A10,15\ min}$ noise emission of 50 dB(A) at all times.

Existing Noise Levels and Impacts at Receivers

The background noise (L_{A90}) is generally controlled by:

- Road traffic noise from Nyrang Street (including vehicular movements generated by Tooheys).
- Road traffic noise from distant traffic (this would primarily be the case during the night-time period).
- On-site operational activities associated with Tooheys (in particular mechanical plant).

In April 2006 a noise compliance audit was undertaken. The audit report, *Tooheys Lidcombe Brewery Environmental Noise: Compliance Noise Monitoring Environment Protection Licence No. 001167 (April 2006)* identified the following.

- On-site noise levels generally do not exceed 65 dB(A) - 70 dBA(L_{A10}) except where character adjustments are required for “impulsive” noise. Activities such as unloading of kegs at night-time attracted a 5 dBA adjustment.
- Baseline conditions for noise levels nearest to Nyrang Street (L_{A10}) are generally dominated by road traffic noise from Nyrang Street (including vehicular movements generated by Tooheys) and on-site operational activities associated with the Tooheys brewery.
- L_{A10} noise levels at some nearby residences exceeded the 50 dBA criterion by between 8 and 12 dBA. This is attributed to constant background noise associated with mechanical plant noise and noises from the bottling plant which is operational both day and night.

Findings from this report have been incorporated into an Annual Return report for the EPA outlining statement of compliance and monitoring and complaints summary for the conditions outlined in the EPL.

Implemented Noise Reduction Strategies

A range of noise reduction strategies have been implemented over the past 5 years. These include:

- Reducing glass wastage, and noise associated with handling.
- Restrictions on waste glass dumping.
- Enforcement of closure of roller doors- keg and bottling halls.
- Speed limits on forklifts and trucks.
- Maintenance of roads and sealed areas.
- Signage.
- Baffled glass dumping hopper.

Further, a cross-functional noise minimisation team has been established and a noise minimisation action plan has been drafted to continue noise reduction initiatives at the brewery.

5.4.2 Preliminary Impact Assessment

Based on a review of the site layout and the proposed works, it would appear that the potential noise impacts due to the new plant are relatively insignificant compared to the ongoing bottling and loading/dispatch operations, which are much closer to the residential areas surrounding the site. Furthermore, the upgrade will be limited to indoor operations.

With the continued implementation of the noise reduction strategies discussed above, it is expected that noise from the site will be reduced as a result of the proposed upgrade.

5.4.3 Recommendations for Further Assessment

Detailed noise modelling is not likely to be required as the impacts from the proposed development are likely to be negligible (particularly relative to current noise emission from the site).

However, it is proposed a review of noise criteria and licence conditions, and description of the existing noise environment based on previous site measurements is undertaken. The environmental assessment will also describe the proposed development in terms of the key sources of noise and provide a qualitative description of the likely noise impacts of the proposed development and potential noise mitigation.

5.5 Air Quality

5.5.1 Baseline Conditions

Existing Emissions

The emissions to air from the brewery operations are associated with:

- Point source emissions from the boiler stack.
- Emissions from the brewhouse stacks.
- Vehicle emissions.
- Fugitive process emissions from process losses and spills.

The specific emission types are detailed in Table 6 below.

Table 6 Existing Air Emissions

Compound	Emission Type
Ammonia	Fugitive
Arsenic	Boiler Stack
Beryllium	Boiler Stack
Cadmium	Boiler Stack
Carbon Monoxide	Boiler Stack, Vehicle
Chromium (III) and (VI)	Boiler Stack
Chromium (III)	Boiler Stack
Chromium (VI)	Boiler Stack
Cobalt	Boiler Stack
Copper	Boiler Stack
Ethanol	Fugitive, Brewhouse Stack
Lead	Boiler Stack
Manganese	Boiler Stack
Mercury	Boiler Stack
Nickel	Boiler Stack
Selenium	Boiler Stack
Zinc	Boiler Stack
Oxides of Nitrogen	Boiler Stack, Vehicle
Particulates	Boiler Stack
Polycyclic aromatic hydrocarbons	Boiler Stack
Sulphur dioxide	Boiler Stack
Total Volatile Organic Compounds	Fugitive

Tooheys report annually upon these emissions as part of their requirements under the National Pollutant Inventory (NPI) National Environment Protection Measure (NEPM). This NEPM requires industry to report emission of 90 substances when emissions are deemed to be above the threshold levels. Individual substance emissions are reported as total mass of pollutant emitted on an annual basis. The reported emissions from each facility are compared against the maximum emission of that substance from all of the facilities reported on the NPI, on a scale of 1-100 (from lowest to highest) - if the total emission of a substance is 10% of the maximum reported to the NPI, the emission ranking would be 10; if the total emission is 95% of the maximum, the ranking would be 95. A score of 100 means that the facility is the highest facility emitter of that substance.

Tooheys report emissions for 18 substances to the NPI. In the 2005 report, Tooheys were a low emitter ranked as either 1 or 2 for all substances.

Emissions from the boiler are estimated for NPI purposes, using total volume of natural gas consumed on an annual basis as well as emission estimation factors for small boilers, which may not be appropriate for estimating emissions from the stack at peak load. Furthermore, the efficiency of the boilers is not known. The 50 m high stack is reported to be oversized, with an exhaust temperature of approximately 200°C and outlet pressure at approximately atmospheric. The existing boilers are reported to have a total capacity of 32 MW with unknown efficiencies.

Emissions of nitrogen oxides (NO_x) are likely to be the most significant emissions in terms of potential environmental impact to the site neighbours. In recognition of this, Tooheys have installed low NO_x burner technology.

Existing Air Environment

Meteorological data relevant to the site has been recorded at the NSW EPA Lidcombe air quality monitoring site between 1972 and 2002. The monitoring site was located in the grounds of the EPA laboratories, on the corner of Weeroona Road and Joseph Street, approximately 4km to the south of the site in a mixed residential and commercial area.

Meteorological data including wind speed and direction was collected at the monitoring station by the NSW EPA for 9am and 3pm time periods. Data from 1999 has been reviewed and is summarised below.

The 9am data indicates that during autumn and winter there is a predominance of light to moderate southwest to north-westerly winds with westerly winds being most predominant in winter. During spring the westerly winds are still dominant but there is an increase in winds from the south-south-east. In summer the occurrence of westerly and south-south-easterly winds are approximately equal.

The 3pm data for Lidcombe suggests that during spring and summer, winds are predominantly from the east and southeast. By autumn, the easterly and south-easterly winds are still dominant, with an increase in winds from the south-south-east and west. During winter, moderate winds from the southwest to northwest are the most dominant.

The residences within the vicinity of the site are located to the east, south east and south of the site and are therefore most susceptible to air quality impacts in light to moderate north-westerly winds. The EPA data suggests such conditions occur all year round during the morning particularly in autumn and winter, but are generally not experienced in the afternoon except occasionally during the winter months.

Existing Air Quality

The monitoring site is located in an industrial area and therefore the brewery emissions are considered cumulatively. Existing data from the Lidcombe monitoring station collected between 1996 and 2002 during which time the gas boiler was operating at the site and would likely have been contributing to the background NO_x concentrations.

The data suggests that maximum NO_x concentrations in the area were generally below the NSW EPA criteria for ambient air quality during this time. It is unknown whether background concentrations have varied significantly since this time.

5.5.2 Preliminary Impact Assessment

The three existing boilers are to be replaced with two new high efficiency boilers each 10 MW, reducing the amount of natural gas consumption required and hence the likely emissions to air. A new stack will be installed with a reduced height of 30 m which will affect the plume dispersion from the stack. However, it is considered that the improved efficiencies, decreases in capacity and low NO_x burners will result in a decrease in stack emissions and hence a decrease in ground level concentrations of NO_x and other compounds at the site neighbours.

The reduced production losses anticipated as a result of the upgrade will also contribute to a reduction in fugitive emissions.

5.5.3 Recommendations for Further Assessment

It is therefore considered that further environmental assessment should demonstrate that the proposed stack emissions will not result in exceedances of the relevant NSW EPA ground level concentration criterion at adjacent residences. Given the improved efficiencies of the process it is considered that dispersion modelling will not be required, particularly if it can be shown that emissions from the stack are significantly below the standards for concentration of scheduled premises as specified in the *Protection of the Environment Operations (Clean Air) Regulation 2002.*

5.6 Odour

5.6.1 Baseline Conditions

As a condition of the EPL, Tooheys were required to produce an Odour Action Plan identifying and assessing all existing and potential sources of odour, and develop an odour reduction plan. Sources of odour were identified as the waste compound, fugitive emissions associated with product loss and brewhouse emissions.

5.6.2 Preliminary Impact Assessment

The mitigation measures proposed in the odour reduction plan will be carried forward where appropriate to the upgrade.

In addition, it is anticipated that production losses will be decreased from 12.5% to 6% as a result of the upgrade. This is likely to decrease fugitive emissions to air and hence the likelihood for off site odour impact.

5.6.3 Recommendations for Further Assessment

No further assessment is proposed. The results of air quality impact assessment will be used to provide further input to the consideration of likely odour impacts.

5.7 Contamination

5.7.1 Baseline Conditions

Contamination of surface and subsurface soils generally arises from potentially contaminating activities that may have occurred on site during existing or previous land use. The main potential contamination receptors are considered to include Haslams Creek located approximately 200m to the west of the site, site visitors, workers and adjacent property owners, who may come into contact with contaminated soil and/or be exposed to contaminated dust arising from construction activity.

Site History

The Tooheys Brewery site formed part of a larger land holding which was occupied by the Sydney Meat Preserving Company opening in 1869 occupying a 146 acre site between Parramatta Road in the north and Haslams Creek Railway Station in the south. The company specialised in 'Apert's' method of preserving meat which refers to meat being boned, tinned and cooked in vacuum.

Written descriptions and photographs of the site illustrate the majority of buildings were concentrated on the western side of Haslams Creek toward Parramatta Road.

Originally a modest collection of buildings, the brewery site grew to contain a number of industrial structures and stock yards. The construction of these structures is likely to have included importing of fill material. Imported fill soils may contain contaminants derived from unknown sources. The brewery was used as a packaging facility until the commencement of brewing in 1973.

The old brewhouse was formerly located on the grassed area to the north of the existing brewhouse. Contamination may therefore be present in this area associated with imported fill and the former industrial use.

Underground Fuel Storage

There are currently three decommissioned underground fuel storage tanks (USTs) remaining in situ on the site.

Two of the remaining USTs were installed over 30 years ago at the heating plant to supply heavy oil to the boilers. The USTs are reported to have been emptied 16 years ago. The third remaining UST located on the north eastern boundary of the site was formerly used for storage of petrol for on site vehicle refuelling. This UST is reported to have been sand filled and capped approximately 20 years ago and remains in situ.

Contamination Investigations

In May 2006 an environmental assessment was carried out at the CO_2 plant as part of the development approvals process for the installation of an additional CO_2 tank. The investigation included soil sampling and analysis from within the 500 m^2 area. Soil samples were collected from five boreholes to an approximate 1m depth and submitted for a laboratory analysis for the following potential contaminants of concern:

- Heavy metals
- Organochlorine pesticides
- Polychlorinated Biphenyls (PCBs)
- Polynuclear Aromatic Hydrocarbons (PAHs)
- Total Petroleum Hydrocarbons (TPH)
- Benzene, Toluene, Ethyl benzene, Xylene (BTEX)
- Asbestos

Elevated levels of contaminants were not detected in the samples analysed and all results were less than the appropriate Health Investigation Levels for industrial use as set in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B(1) - Guideline on Investigation Levels for Soil and Groundwater. However field observations reported fill material including igneous gravel, ironstone gravel, traces of ash, rootlets and PVC.

No groundwater investigation has been carried out at the site.

5.7.2 Preliminary Impact Assessment

The project will involve installation of footings underneath the new buildings which will likely extend 7 m to 9 m below ground level into the underlying shale and may intercept groundwater. An environmental management plan will be produced to ensure that the materials and methodologies will not adversely affect groundwater quality.

It is considered that there is potential for existing contamination of site soil associated with former imported fill material, former and existing industrial use, and underground fuel storage. The potential contamination is considered typical for an industrial site and the site is therefore likely to be suitable for continued industrial use. Contamination of site soil may become a waste management issue if identified in the areas proposed for excavation. Any identified contaminated soil will be disposed of to an appropriately licensed landfill in accordance with the *NSW EPA (1999) Environmental guidelines; Assessment, classification and management of liquid and non-liquid wastes*.

There may be potential for groundwater contamination depending on the condition of the USTs, prior to decommissioning, which is unknown. The former refuelling UST at the location of the proposed new Bright Beer Tank Cellar on the north east boundary of the site will be removed prior to the installation of piled footings in this area. Any groundwater contamination associated with the UST may be better ascertained and addressed at this time.

5.7.3 Recommendations for Further Assessment

A preliminary site investigation will be carried out to address the requirements of SEPP 55, i.e. to demonstrate that the site is suitable for continued industrial use. The investigation would include soil sampling targeting the areas for the proposed upgrade, particularly in the vicinity of the proposed new buildings where excavation will be required and the installation and sampling of one groundwater monitoring well to supplement the existing information.

Soil sampling and analysis will also be required upon the excavation of the UST on the north eastern boundary of the site, but is proposed to be carried following development approval and therefore will not form part of the environmental assessment documentation.

The potential for groundwater contamination migrating off site will be better understood following the results of the preliminary site investigation and excavation of the former refuelling UST. The USTs are not likely to further impact groundwater quality, having been decommissioned. It is therefore recommended that any requirement for comprehensive groundwater investigations, including the installation of a groundwater monitoring well network, is addressed following the upgrade and is not proposed for the environmental assessment stage.

5.8 Hazards and Risk

5.8.1 Baseline Conditions

Tooheys currently store and use a number of dangerous goods at the existing site. Table 7 summarises the key dangerous goods that are held on site, including approximate volumes and storage locations.

Table 7 Dangerous Goods Stored At the Tooheys Site

Class	Dangerous Good	Comment
Class 2	LPG	7,000 L
	Liquid CO_2	195,000 kg in two locations, one in the utility building and the other at the southern end of the operating area of the site.
	Liquid Oxygen	2,100 L, stored in the south eastern corner of the site.
	Ammonia Anhydrous	Capacity of 10.7 tonnes (although generally up to 5.5 tonnes is stores on site at any one time). Storage is located immediately south of the utility building.
Class 3 / Class 8	Flammable and Corrosive Liquids (PG II/III)	Up to 2,500 L, stored mostly in the general store building, but also in the laboratory, canning and bottling buildings.
Class 5.1	Hydrogen peroxide / peroxyacetic acid mixture (PG II)	Up to 11 tonnes, in various locations around the site including, mostly adjacent to the utility room, but also in the canning building and in the south eastern corner of the site.
	Oxidizing solid (PG II)	400 kg
	Hydrogen peroxide solution (PG II)	1000 L, stored adjacent to the utility room.
Class 8 (PGII)	Sodium Hydroxide (PGII)	Up to 56,000 L, mostly stored in the south eastern corner of the site, but also adjacent to the utility room.
	Cleaning liquids, corrosive and caustic alkali (PG II/III)	Up to 38,000 L, stored in various locations around the site including the utility room, the bottling building, the canning building, and in the south of the site.
	Phosphoric Acid (PG III)	Up to 30,000 L, stored mostly in the south eastern corner of the site, but also in the bottling building.

Up to three deliveries per week are made to the site, for bulk chemicals, including caustic, cleaning and sanitisation products. In addition, approximately one delivery is received per fortnight of liquid CO_2, and one delivery every three weeks of ammonia. CO_2 deliveries might be reduced to nil as a result of the CO_2 plant that is currently being installed.

There are also small deliveries of other products direct to the store (including gas cylinders from BOC).

5.8.2 Preliminary Impact Assessment

It is not expected that the proposed upgrade will result in significant change in the types or quantities of any dangerous goods stored on site. Therefore, it is not expected that new types of significant potential hazardous events with off-site impact will be associated with the proposed site changes. Notwithstanding this, there are possible hazards associated with the new or upgraded equipment and processes that are similar or identical to existing site hazards, as well the interaction of the proposed upgrade with the existing developments at the site.

5.8.3 Recommendations for Further Assessment

In accordance with the requirements of the NSW Department of Planning's *Hazardous Industries Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis* (HIPAP 6), it is proposed to identify the hazardous events which could be caused by the operations associated with the proposed project, including new equipment, or events associated with the existing equipment that can propagate to the new equipment, with the potential for off-site effects.

The causes and consequences of each of the hazardous events would be identified and major preventative and protective features to be included as part of the design would be proposed.

5.9 Visual Amenity and Landscape

5.9.1 Baseline Conditions

The Tooheys site, together with adjoining industrial sites, forms part of large landholdings. Much of the surrounding area is characterised by a finer grain of residential allotments. Owing to the relatively level topography and low density development and open space surrounding the Tooheys site, the brewery functions are visible from a wide catchment.

Both the stack and malt tower with the Tooheys logo are prominent local landmarks. Within the site the age of the buildings and their architectural style vary. The majority are basic structures purpose built to contain processing plant and equipment.

5.9.2 Preliminary Impact Assessment

The majority of the proposed works are focused at the western end of the site. The strongest visual relationship will be with the industrial area at Percy Street, which is not considered to be a sensitive environment. The lowering of the stack and new architecturally designed buildings of a similar bulk and scale to the existing are considered to visually enhance the site and its surrounds.

5.9.3 Recommendations for Further Assessment

It is considered no further visual assessments are required given the scale of the proposed development. Images will be produced to adequately describe the proposed visual changes, and to illustrate proposed building facades and landscaping treatments.

5.10 Heritage

5.10.1 Baseline Conditions

The Wangal clan of the Eora Aboriginal tribe were the original inhabitants of the Auburn area and its surrounds. The site has been significantly modified and it is considered unlikely for indigenous artefacts to remain.

The Tooheys Brewery site forms part of a larger land holding which was occupied by the Sydney Meat Preserving Company and originally part of Samuel Haslam's land grant. It opened in 1869 occupying a 146 acre site between Parramatta Road in the north and Haslams Creek Railway Station in the south. The company specialised in 'Apert's' method of preserving meat which refers to meat being boned, tinned and cooked in vacuum and received many prizes at international exhibitions including a Gold Medal at the Paris Exhibition in 1878.

When the Sydney Meat Preserving Company closed in 1955, the site was progressively reduced in size to 32 acres. Written descriptions and photographs of the site illustrate the majority of buildings were concentrated on the western side of Haslams Creek towards Parramatta Road. Originally a modest collection of buildings, the site grew to contain a

number of industrial structures and stock yards. Buildings were of a simple form with saw tooth roofs clad in corrugated iron and brick chimney stacks and a number of small weather board buildings with shingle roofs. Buildings were also erected along the creek line which was made navigable. An aerial photograph of the site taken in 1948 shows what appears to be a large cleared building pad (possibly the result of a demolished structure) on the Tooheys site.

The *Auburn Heritage Study* (volume 3, 1996) identified the meat preserving works site, being the block bound by Parramatta Road, Percy, Nyrang and Boorea Streets (including the Tooheys site) as being of archaeological significance. While buildings and structures associated with the Sydney Meat Preserving Works have been removed and the ground surface has been disturbed, the study identifies that below ground archaeological features are likely to survive. According to the study, 'the site is significant because it may preserve remains of archaeological significance, pertaining to the technology of meat preserving.'[1] The site has not been formally identified in Auburn Council's register of archaeological sites and potential archaeological sites.

Although the brewery site is not within a conservation area, nor is it a listed heritage item, it is adjacent to a non-indigenous heritage item of local significance, being the canalisation of Haslams Creek. The creek is named after Samuel Haslam who received two land grants in the area, one being on the eastern side of the creek, on 8 October 1816. In the late 1800s, Haslams Creek was used by boats to transport timber from the area into Sydney. It was also used for domestic purposes and by adjoining industrial properties, including the Sydney Meat Preserving Works.

In the mid 1920s, the quality of the creek had degraded to such an extent that swimming in the creek was prohibited. Effluent from meat preserving activities and leachate from the Rookwood cemetery were thought to be the causes. Ministerial inspections were undertaken in the late 1920s and a decision was made by the Public Works Department to fill in the original creek bed and construct a concrete channel. The project was undertaken during the 1930s and is considered to be as much of a scheme geared toward unemployment relief. According to the *Auburn Heritage Study*, the canalisation is considered significant as it is 'representative of drainage channels in the area, and is associated with government employment schemes in the 1930s Depression'.[2]

5.10.2 Preliminary Impact Assessment

In the vicinity of the site is a heritage item identified in Schedule 2 of the *Auburn Local Environmental Plan 2000* (Auburn LEP) being the canalisation of Haslams Creek south of Parramatta Road. In addition, the site has been identified as a potential archaeological site, relating to the former Sydney Meat Preserving Company.

Clause 43 of the Auburn LEP relates to development in the vicinity of heritage items or heritage groups and requires the consent authority to consider the likely effect the proposed development on the heritage significance of the heritage item. Although a number of works are proposed on the Tooheys site, none of which will physically impact upon the canalisation of Haslams Creek. The significance of the creek and its setting are not considered to be affected by the brewery upgrade.

Clause 46 of the LEP is also relevant as it concerns development of archaeological sites or potential archaeological sites. Potential archaeological features may exist on the brewery site, specifically remains relating to the meat processing use of the site. Pursuant to the LEP, the consent authority may grant consent to the development of a potential archaeological site or archaeological site if:

[1] Schwager Brooks and Partners Pty Ltd (1996) *Auburn Heritage Study: draft final report (volume 3)*
[2] Schwager Brooks and Partners Pty Ltd (1996) *Auburn Heritage Study: draft final report (volume 3)*

(a) it has considered an assessment of how the proposed development would affect the conservation of the site and any relic known or reasonably likely to be located at the site, and

(b) it has notified the Heritage Council and taken into consideration any comments received from the Heritage Council within 28 days after the notice is sent.

While the potential for archaeological remains has been identified, it is not known to what extent the Sydney Meat Processing Company covered the brewery site or what level of change has occurred on the site. As such, it is possible for a relic to be in the land. 'Relics' are any deposit, object or material evidence that is relevant to the settlement of NSW, not being an indigenous settlement, and which are fifty or more years old.

5.10.3 Recommendations for Further Assessment

It is considered the redevelopment within the Tooheys site will not adversely affect the canalisation of Haslams Creek heritage item. As such, it is considered the preparation of a heritage impact assessment is not warranted.

The *Heritage Act 1977* provides protection of archaeological relics in NSW. Initial research has determined that there is limited potential for archaeological features to be present on the site. If a relic is uncovered during works, notice will be give to the appropriate Authority and the relevant permits obtained.

5.11 Flora and Fauna

5.11.1 Baseline Conditions

The Tooheys brewery is a highly modified site with negligible potential for containing threatened species. The site has cleared and landscaped areas in the south western corner of the site. This is generally a grassed area, with some planted trees. The site for the proposed new beer processing building is also a cleared and grassed area. There a handful of planted trees in this area. Along the banks of Haslams Creek is a landscaped area, with a range of planted trees and shrubs.

A search of the NSW Government's BioNet database has been undertaken. While a number of threatened species have been identified in the Auburn local government area in the vicinity of the site, there are no recordings of any threatened species on the Tooheys site. The fauna species that are listed on the *Threatened Species Conservation Act 1995* (TSC Act) and that have been identified in the vicinity of the site are listed in Table 9. Most of these species have been recorded to the north of the site in the vegetated areas between Olympic Park and Homebush Bay (including the waterbird refuge adjacent to the Bay). Other locations where threatened species have been recorded are south of the site adjacent to the railways lines, and nearby to or within the Rockwood Cemetery.

Table 9 Threatened species identified in the vicinity of the site

Threatened Species	Threat [1]	Location Recorded
Grey headed Flying-fox (*Pteropus poliocephalus*)	V	South of the site
Miniopterus schreibersii oceanensis	V	South of the site, near railway line
Green and Golden Bell Frog (*Litoria aurea*)	E1	Homebush, Olympic Park and south of cemetery
Freckled Duck *(Stictonetta naevosa)*	V	Homebush
Little Tern *(Sterna albifrons)*	E1	Homebush
Great Knot *(Calidris tenuirostris)*	V	Homebush
Broad-billed Sandpiper (*Limicola falcinellus)*	V	Homebush
Black-tailed Godwit (*Limosa limosa)*	V	Homebush
Australasian Bittern (*Botaurus poiciloptilus)*	V	Homebush
Regent Honeyeater (*Xanthomyza phrygia)*	E1	South in cemetery
Swift Parrot (*Lathamus discolour)*	E1	Homebush
Tyto capensis	V	Homebush

Notes: 1. E1 identifies that a species is listed as Endangered under the TSC Act.
V identifies that a species is listed as Vulnerable under the TSC Act.

In addition to the listed threatened or vulnerable species, a total of 139 fauna species that are protected under the *National Parks and Wildlife Act 1974* have been identified in the vicinity of the Tooheys site. Most of these species are birds (116), but they also include reptiles (13), amphibians (8) and mammals (2). Similar to the threatened and vulnerable species tabulated above, most of these protected species have been recorded near Homebush Bay, or south of the site near the Rockwood Cemetery.

5.11.2 Preliminary Impact Assessment

The majority of the proposed works are focused at the western end of the site, within the operational part of the brewery. There are currently planted trees located in the cleared area where the new beer processing building will be located, and construction of this building requires removal of these trees. The removal of the trees has the potential to remove habitat for birds and bats in the vicinity of the site. However, due to the exposed nature of the trees, and the small size of the trees compared to the surrounding industrial features (such as silos and buildings), it would not be expected that birds and bats would use these trees. Further, the more heavily vegetated areas on the south western side of the site and along Haslams Creek would not be affected by the proposed upgrade.

5.11.3 Recommendations for Further Assessment

It is considered no further ecological assessments are required given the scale and location of the proposed development, and considering the limited impact to a small number of planted trees.

5.12 Greenhouse Gas and Energy

5.12.1 Baseline Conditions

Energy requirements for the brewery are supplied by grid electricity, natural gas fired boilers for heating and small amounts of LPG for on site vehicles. The present specific electricity consumption for the brewery is 10.5 kWh/hl and natural gas consumption of 82.7 MJ/hl.

Emissions for this reporting period (2004/05) were 53,094 tonnes CO_2 -e (equivalent tonnes of carbon dioxide) which is a decrease of 2,128 tonnes or 3.9% compared with 2003/04. Over the same period, beverage production at Tooheys decreased by 3.5%.

Lion Nathan has participated in the Australian Government's Greenhouse Challenge Program since 1996. As a participant in the programme, Lion Nathan has implemented projects which have reduced greenhouse gas emission by 46,000 tonnes per annum and has a commitment to develop emission inventories at all its facilities including the Tooheys Brewery site.

Tooheys' greenhouse emissions index for the 2004/05 reporting period was 179.4 kg CO_2-e per kL beer. These emissions include those emissions attributable to grid electricity consumption, natural gas and LPG usage, process emissions and waste to landfill. Emissions from the facility since 1995 are presented in Figure 5 below.

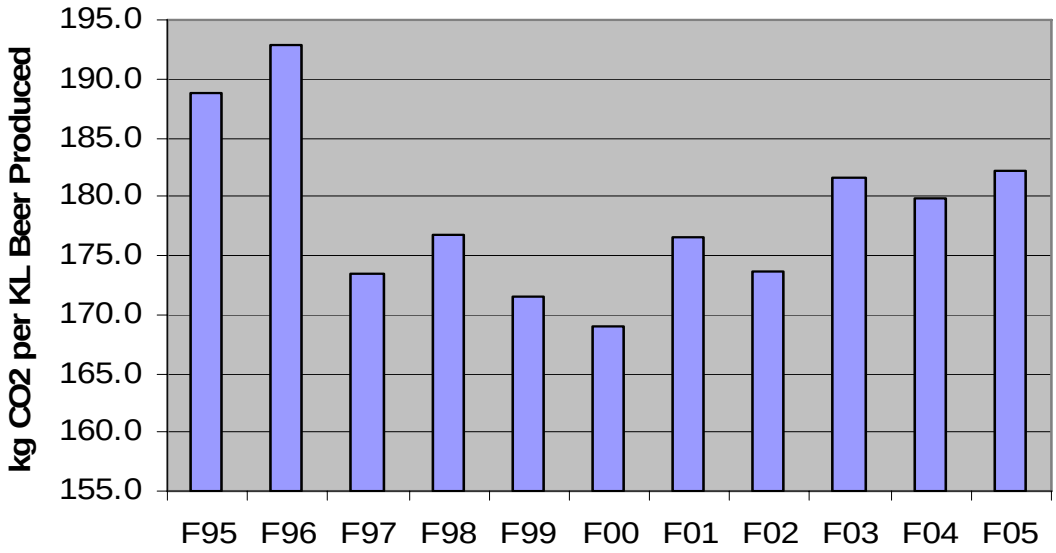

Figure 5 Greenhouse Gas Emissions

5.12.2 Preliminary Impact Assessment

Improved energy efficiency is one of the primary objectives of the upgrade. It is estimated that the electricity consumption will be reduced to 9kWh/hl and natural gas consumption of 70 MJ/hl. It is anticipated this can be achieved by:

- The introduction of a proper Energy Management System
- New more efficient boilers
- Repair of steam and air leaks
- Repair and increase in insulation
- Improved condensate return rate
- Improved hot water balance

- Increased use of variable speed drives for pumps, motors and fans
- Installation of a new more efficient CO_2 recovery plant
- Installation of a local air compressor for spent grains discharge
- High efficiency motors for new equipment
- Installation of new and more efficient evaporative condenser plant for the main ammonia refrigeration plant
- Utility systems will be designed to stand-by capacity to ensure the utility plant does not perform at all times, only when required.

In addition, process greenhouse gas emissions will be reduced by the installation the CO_2 recovery plant which will make the site self sufficient with CO_2.

Since there is to be no net increase in production, total energy consumption and greenhouse gas emissions at capacity are anticipated to decrease as a result of the project.

5.12.3 Recommendations for Further Assessment

It is considered that the description of the proposed upgrade adequately demonstrates the likely decrease in energy consumption and greenhouse gas emissions. The further assessment stage will present the energy saving initiatives in greater detail and will quantify energy savings and associated greenhouse gas emissions where possible.

5.13 Water Consumption

5.13.1 Baseline Conditions

Water is supplied to the site by a Sydney Water mains connection from Nyrang Street. Water consumption within the brewing process, represents 73% of the total water consumption, packaging (25%) and amenities and other water fixtures 2%. Water usage is continually monitored and compared with production quantities. Water consumption has been declining at the site with a reduction of 23% since 2002 resulting from a series of water saving initiatives. The current ratio of water consumption to beer production is 3.9kL/kL or approximately 2,800 kL per day.

Tooheys Brewery is currently participating in Sydney Water's 'Every Drop Counts Business Program' to improve water efficiency on site and as such is subject to water efficiency audits by the NSW Department of Commerce.

5.13.2 Preliminary Impact Assessment

Reduced water consumption is a primary objective of the upgrade. The proposed process upgrades are anticipated to result in water consumption of 3.5kL/kL. Globally, this goal is generally recognised as the lowest achievable figure before ultra-filtration is used to recycle water.

This will be achieved by:

- Reduction in process losses.
- The introduction of a proper energy management system.
- Improving the hot water balance.
- The maintenance and repair of leaks.
- Adjusted flows in off-peak periods; and.
- Improved condensate return and turn off water when not used.

- New CIP plants.

Since there is to be no net increase in production, net water consumption at capacity will decrease as a result of the project.

5.13.3 Recommendations for Further Assessment

It is considered that the description of the proposed upgrade adequately demonstrates the likely decrease in water consumption. The further assessment stage will present the water saving initiatives in greater detail and will quantify reductions in water consumption where possible.

5.14 Waste Management

5.14.1 Baseline Conditions

Waste is currently stored at locations across the site as well as within a waste compound located adjacent to the Percy Street entrance on the western side of Haslams Creek.

Bins for waste are labelled General Waste or Recyclable.

The total waste to landfill was reported to be 252,440 kg for the 2005 financial year including general waste.

Other waste streams generated which are recycled include:

- Plastic
- Cardboard
- Glass (broken and rejected bottles are collected and crushed and separated by colour in the packaging area)
- Aluminium
- Spent grain (including insoluble solids from wort production and centrifugation, and dust collected from dust extraction systems on the hoppers)
- Spent kieselguhr filter aid which is used to produce a nutrient rich raw material sold to composters
- Waste oil
- Waste beer

A glass crusher is used in the Packaging Area to facilitate re-cycling of broken or rejected bottles.

Tooheys receive income from waste beer, spent grain and aluminium recycling schemes.

5.14.2 Preliminary Impact Assessment

Operational Waste

It is anticipated that the upgraded brewery will not produce an increase in waste volumes or generate any new waste types. Increases in production efficiency and reduction in product loss will likely result in decrease in total waste volume and waste to landfill. With the move to membrane filtration, kieselguhr will be eliminated (approximately 280,000 kg dry weight). The waste generated from the membrane filtration technology is yet to be determined but is likely to be less than for the kieselguhr filtration.

Changes in waste operational waste management systems are likely to be minimal but may include minor changes in storage area locations as some facilities are relocated. These changes are yet to be determined.

Construction Waste

The project will require demolition and disposal of existing buildings and process equipment. A construction waste management plan will be produced to ensure that construction and demolition waste is reduced and recycled to the extent possible.

Although much of the asbestos has been removed from site, asbestos may be encountered during demolition. In such an event, details will be placed on the asbestos register. Asbestos is a hazardous material and will be disposed of through an accredited consultant and contractor.

In 2004 a *Walkthrough Asbestos Materials Assessment* was undertaken and reported by Eva and Associates. Asbestos was found in "Super 6" profile cement sheeting, electrical backing boards, vinyl floor tiles, flue and cement products. Areas containing asbestos were highlighted and included:

- Office 37- Roof material and external walls (leave and maintain)
- Filtration Building- Top floor, ceiling panels painted white (leave and maintain)
- Warehouse- Roof material, sections of external walls, cappings, gutters and downpipes (leave and maintain), and infill panel above doorway (remove)
- Warehouse Centre Building (Old Brewhouse)- external wall, roof material, sections of external walls, internal ceiling, eaves lining, stairwell (leave and maintain), and service cavity (remove)
- Warehouse Packed Stock- Roof material, cappings, gutters, downpipes, cement sheeting and cubicle partitions (leave and maintain)
- Fabrication Building (Elephant House)- Roof material, wall cladding and cappings (leave and maintain)
- Engine Room- external wall cladding (leave and maintain), verandah (remove)
- Laboratory Building- lining, flooring (leave and maintain), fire stairs (replace)
- Technical Building- External eaves lining, manhole covers (leave and maintain)
- Administration Building- ceiling panels, kitchenette (leave and maintain)
- Percy Street Warehouse- Roof, wall panels, gutters, downpipes, flashings, partition wall lining, floor tiles (leave and maintain)

5.14.3 Recommendations for Further Assessment

It is considered that the description of the proposed upgrade demonstrates the likely decrease in waste likely as a result of the process efficiency. The further assessment stage will present any changes proposed for the operational waste management systems as well as further details of the construction waste management systems and construction waste compound.

5.15 Socio-Economic

5.15.1 Baseline Conditions

Company Profile

The Tooheys Brewery represents the largest brewery in NSW and supplies approximately 43% of the share of the NSW beer market. The brewery also has a share of markets within the other states. The brewery is significant in the context of the NSW economy providing direct employment to over 200 staff, and employment and income within the supply chain companies and grain farmers.

Beer consumption levels in Australia declined steadily during the early 1990s, stabilized and grew modestly in the late 1990s. The levels slightly declined following the introduction of GST and other taxes in 2000 and are now again stabilising with such stability forecasted to continue into the future.

The Australian beer market has changed during the past years. Competing breweries have merged and have rationalised their production. Efficient production is imperative to withstand the competition and remain viable within the market.

Local Auburn Community

Tooheys brewery is located in the ethnically diverse local government area of Auburn, some 17 kilometres west of Sydney city. The site forms part of a larger industrial cluster and is surrounded by the residential suburbs of Lidcombe and Auburn. Much of the industry in the Auburn Local Government Area (LGA) has moved to Silverwater, north-west of the Tooheys site, together with business parks. Based on a review of the Auburn Council Community Profile, Lidcombe has a population of 13,499 which has steadily increased over the past ten years. Unemployment in Lidcombe is slightly less than that of the Auburn LGA (9.8%) as measured in 2001. The majority of those employed work within the Auburn LGA. The City of Sydney, Parramatta and Bankstown are other LGAs of employment for residents of Auburn. Of those working in the Auburn Council area, the majority work in a manufacturing capacity. Approximately 12% of the labour force is comprised of tradespersons.

5.15.2 Preliminary Impact Assessment

The proposed works will be undertaken over a 24 month period and will employ a number of on-site construction management, workers and contractors over this period. The labour profile for this type of workforce is typically males between the ages of 25 and 55 years. It is anticipated that the workforce will be from the Auburn LGA and surrounding areas.

At present, much of the process equipment, particularly the utility services at the brewery are inefficient and in poor condition. In addition, the brewery is not considered efficient in terms of industry standards for water, energy and production losses. These inefficiencies are likely to add significant costs to brewery operations in the future as water and energy costs and taxes increase. To remain viable in the competitive market the brewery will require an upgrade.

The closure of the brewery would have significant impact to direct employment, across the supply chain and to the NSW economy as a whole.

5.15.3 Recommendations for Further Assessment

It is recommended that the environmental assessment consider the impact on employment in the local community during construction and operation into the future as well as provide comment on the importance of the continuing viability of the brewery.

6 Summary

Table 8 presents a summary of the potential impact associated with each issue described in Section 5, and recommendations for further assessment. The table also assigns a level of significance to the issue, based of the extent and likelihood of the potential impact, with consideration of existing mitigation or management measures. The three levels of significance are:

- High environmental significance: A high likelihood of adverse environmental impact or the potential environmental impact is of a severe nature. These issues are key decision making factors, and require detailed and specific investigations to adequately characterise the nature of the impact and to determine appropriate mitigation or management measures to ensure impacts are minimised to acceptable levels.
- Moderate environmental significance: Some likelihood of adverse environmental impact and the potential environmental impact is predicted to be of a manageable nature. These issues are not likely to be key decision making factors, and may require investigations to characterise the nature of the impact. Standard mitigation and management measures are likely to be required to ensure impacts are minimised to acceptable levels.
- Low environmental significance: Low likelihood of adverse environmental impact and the potential environmental impact is negligible or of a manageable nature. These issues are not likely to be key decision making factors, and are unlikely to require investigations. Standard mitigation and management measures may be applied.

No issues of high environmental significance have been identified. This reflects the fact that the project is an upgrade to an existing development, to improve the efficiency of the brewery. As such, there are expected to be significant beneficial environmental outcomes resulting from the proposed upgrade including decreased resource consumption, reduced waste generation and improvements in pollution control equipment and procedures.

Table 8 Summary of potential impacts and further environmental assessment proposed

Issue	Potential Impact	Recommendations for Further Assessment
Stormwater/ Effluent	The brewery poses an ongoing risk to the water quality within Haslams Creek, in the event of spills in conjunction with wet weather. This risk is currently mitigated through a first flush stormwater system. The proposal results in virtually no increase in impervious area and negligible increase in the volume of runoff drainage. The upgrade reduces the risk of beer spills entering the stormwater system. **Moderate environmental significance.**	Assessment of proposed drainage design and how it will interface with the existing stormwater management system, with reference to Auburn Council's *Stormwater Drainage Development Control Plan*. Detailed description of relevant spill reduction measures.
Flooding	Flooding along Haslams Creek is a documented issue, with modelled flooding effects along both sides of the creek. Negligible change in the volume of runoff generated on the brewery site as a result of the proposed upgrade, as there is virtually no increase in impervious area of the site. Existing network/overland flow routes are likely to have sufficient capacity. The distribution centre site will have limited or no impact to the brewery site or proposed brewery upgrade in terms of depth and velocity of floodwater, or the area likely to be inundated by floodwaters. **Moderate environmental significance.**	Assessment of the potential impact from flooding of Haslams Creek Catchment on the Tooheys Brewery site. The assessment will consider the effects of the proposed distribution centre on the brewery upgrade site.
Traffic	No increase in traffic generation or staffing levels is anticipated as a result of the proposed upgrade. The adjacent Lion Nathan national distribution centre will reduce the number of heavy vehicles accessing the brewery site, and leaving via Nyrang Street. **Moderate environmental significance.**	A traffic assessment will be undertaken to develop a more detailed understanding of current operations on site and any potential changes, as well as traffic patterns on the surrounding road network. Conflict between the proposed upgrade, the operational brewery and the construction of the national distribution centre will also be addressed.

Issue	Potential Impact	Recommendations for Further Assessment
Noise	Potential noise impacts are relatively insignificant compared to the ongoing bottling and loading/dispatch operations, which are closer to the surrounding residential areas. Noise impacts from the proposed upgrade are likely to be low compared to current noise. Continuing implementation of noise reduction strategies are expected to reduce noise as a result of the proposed upgrade. **Moderate environmental significance.**	Describe the existing noise environment based on previous site measurements. Describe the proposed development in terms of the key sources of noise. Qualitative description of the likely noise impacts of the proposed development and potential noise mitigation. Detailed noise modelling is not proposed.
Air Quality	Reduction of stack height from 50 m to 30 m and relocation of stack will affect the plume dispersion from the stack. However, emissions to air will reduce as a result of new boilers with improved efficiency and lower generating capacity, which will result in a reduction in natural gas consumption. Reduced production losses anticipated as a result of the upgrade will contribute to a reduction in fugitive emissions. **Moderate environmental significance.**	Air emissions will be assessed against the standards specified in the *Protection of the Environment Operations (Clean Air) Regulation 2002.* Given improved efficiencies dispersion modelling will not be required if low NO_x burners are installed and if emissions from the stack are significantly below the standards in the regulation.
Hazards and Risk	No significant change in the types or quantities of any dangerous goods stored on site. No new types of significant potential hazardous events with off-site impact will be associated with the proposed site changes. **Moderate environmental significance.**	In accordance with HIPAP 6, hazardous events with the potential for off-site effects would be identified (including from new operations, equipment or events, or events associated with the existing equipment that can propagate to the new equipment). Causes and consequences of hazardous events would be identified, and preventative/ protective features proposed.

Issue	Potential Impact	Recommendations for Further Assessment
Contamination	There is potential for existing contamination of site soil associated with former imported fill material, former and existing industrial use, and underground fuel storage (USTs). Contamination of site soil may become a waste management issue if identified in the areas proposed for excavation. There may be potential for groundwater contamination from USTs. USTs will be removed prior to the installation of piled footings. The USTs are not likely to further impact groundwater quality, having been decommissioned. Foundations may intercept groundwater. **Moderate environmental significance.**	A preliminary site investigation will be undertaken focussing on the areas for the proposed upgrade, including targeted soil sampling and limited groundwater sampling to demonstrate that the site is suitable for continued industrial use in accordance with SEPP 55. Contaminated soil that is excavated will be disposed of to an appropriately licensed landfill in accordance with the EPA's guidelines. Soil sampling and analysis, and groundwater investigations will be undertaken during excavation of USTs. Groundwater management measures will be implemented to ensure that materials and methodologies will not adversely affect groundwater quality.
Visual Amenity and Landscape	The proposed works are focused within the operational part of the existing brewery. There are no new tall structures, and the stack will be lowered. The new architecturally designed buildings are of a similar bulk and scale to those existing, and visually enhance the site. **Moderate environmental significance.**	Images of how the brewery as it is proposed to be upgraded will be produced. Description of the changes to views over the brewery that will occur, and assessment of visual impacts. Description of landscaping.
Odour	Reduced production losses expected from the upgrade will contribute to a reduction in fugitive emissions to air and hence the likelihood for off site odour impact. Mitigation measures in the odour reduction plan will be continued where appropriate. **Low environmental significance.**	No further assessment is proposed. The results of air quality impact assessment will be used to provide further input to the consideration of likely odour impacts.
Heritage	No adverse affect to the canalisation of Haslams Creek. Limited potential for archaeological features to be present on the site. **Low environmental significance.**	No further assessment If a relic is uncovered during works, notice will be give to the appropriate Authority and the relevant permits obtained.

Issue	Potential Impact	Recommendations for Further Assessment
Flora and Fauna	Proposed upgrade within the operational part of the brewery. Some planted trees would be removed for the new beer processing building. No impact to the vegetated areas on the south western side of the site and along Haslams Creek. **Low environmental significance.**	No further assessment. Vegetation proposed to be planted would be described as per landscaping.
Greenhouse Gas and Energy	Reduction in energy use and GHG emissions. **Low environmental significance.**	No further assessment
Water Consumption	Reduction in water consumption. **Low environmental significance.**	No further assessment
Waste Management	Reduction in volume to waste due to increased process efficiencies. **Low environmental significance.**	No further assessment
Socio-Economic	Ongoing viability of brewery, with associated investment into State economy. Employment impacts. **Low environmental significance.**	No further assessment

7 Conclusion

Lion Nathan proposes to upgrade the existing Tooheys brewery at Lidcombe. The proposed upgrade constitutes a 'Major Project' in accordance with *State Environmental Planning Policy (Major Projects) 2005* and therefore requires approval from the Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979*.

This document provides a description of the proposed upgrade, and presents conceptual designs for the proposed upgrade, in order to inform the Environmental Assessment process.

The preliminary environmental assessment contained in this document identifies environmental issues that will require further assessment and the methods proposed for assessing these issues as part of the detailed Environmental Assessment.

Importantly, no issues of high environmental significance have been identified. This reflects the fact that the project will improve the efficiency of the brewery with significant beneficial environmental outcomes resulting from decreased resource consumption, reduced waste generation and improvements in pollution control equipment and procedures.

This document acts as a formal request to the Department of Planning for the Director-General's Environmental Assessment requirements for this proposal.

Upon receipt of the Director General's Requirements, Lion Nathan will undertake a detailed Environmental Assessment and submit it to the Department of Planning as part of formal application for project approval.

The Environmental Assessment will be publicly exhibited and submissions from interested parties and Government agencies will be sought.

After assessing the Environmental Assessment, and considering the issues raised in submissions, the Minister for Planning will determine whether or not to grant approval to the proposed upgrade.