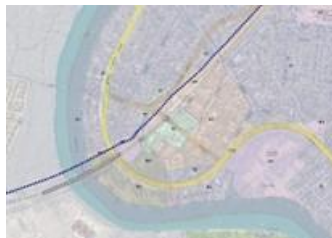
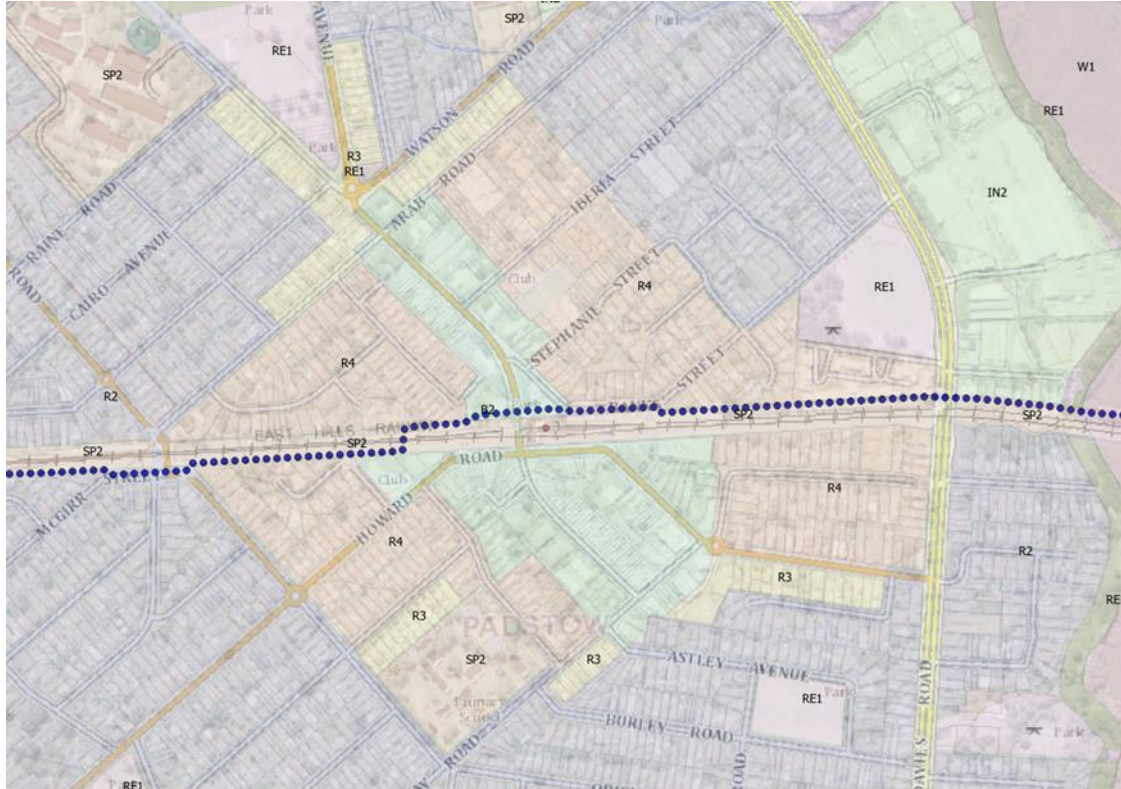


# Ethane Pipeline LUSS Summary Document

For Canterbury Bankstown Council

23 November 2022



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## DISTRIBUTION LIST

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## Notation

Abbreviation	Description
the City	City of Canterbury Bankstown
Arriscar	Arriscar Pty Limited
LEP	Local Environmental Plan
DP&E	NSW Department of Planning and Environment
PHA	Preliminary Hazards Analysis
LUSS	Land Use Safety Study
QRA	Quantitative Risk Assessment
NCC	National Construction Code
BCA	Building Code of Australia
FRL	Fire-resistance level

## 1 INTRODUCTION

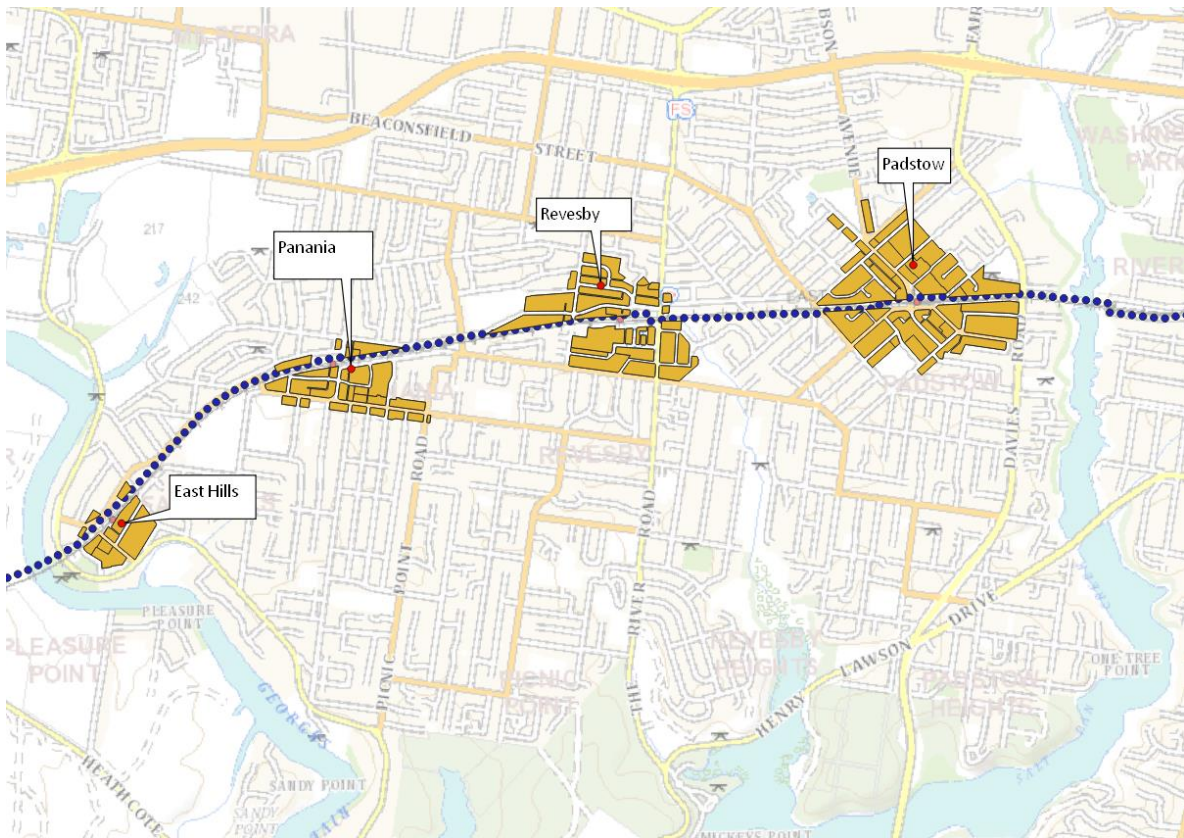
The City of Canterbury Bankstown (the City) was proclaimed on the 12 May 2016. It is located 8 to 23 km south-west of the Sydney CBD and covers an area of just over 100 square kilometres, with 41 suburbs and 30 urban centres. Four of the urban centres, Padstow, Revesby, Panania and East Hills are located along the East Hills railway corridor.

The City has developed a draft consolidated Local Environmental Plan (LEP) that includes the rezoning of sites within the four town centres along the East Hills railway corridor. The plan aims to accommodate projected population growth in the area utilising existing infrastructure.

The high-pressure Moomba Sydney Ethane (MSE) pipeline is located parallel to the East Hills railway corridor. The presence of this pipeline creates a potential land use safety risk, for which the NSW Department of Planning and Environment (DP&E) requires an assessment against specific quantitative and qualitative risk criteria.

The City engaged Arriscar Pty Limited (Arriscar) to prepare a Land Use Safety Study (LUSS) to assess the potential land use safety risk impacts of the MSE pipeline along the East Hills railway corridor. This document contains a summary of the findings and recommendations of the LUSS.

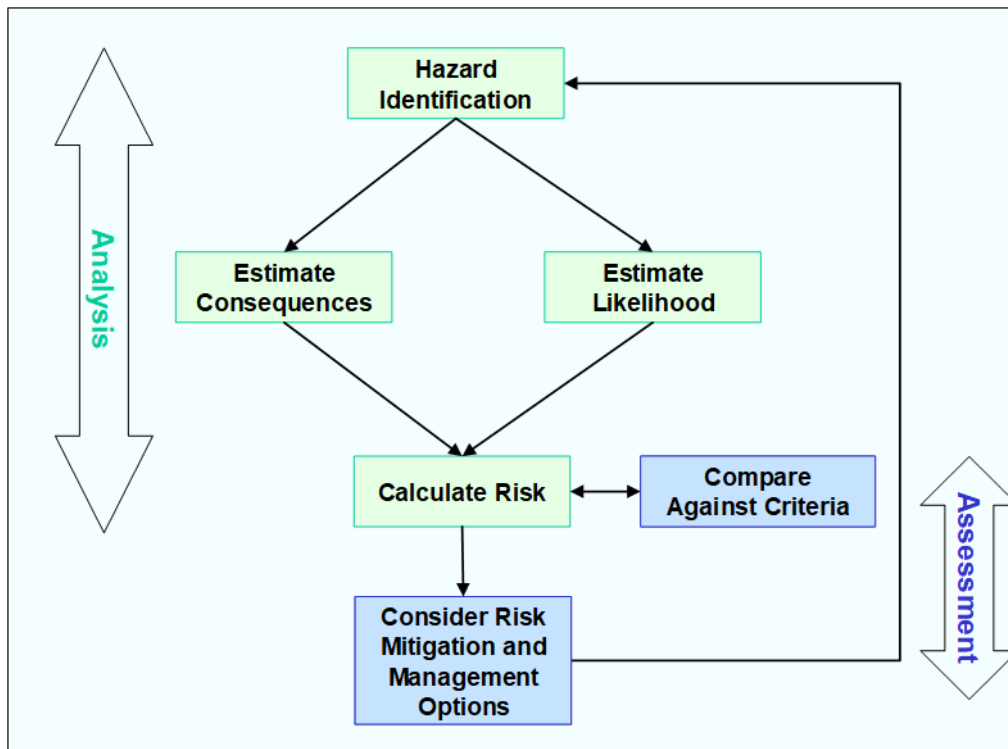
**Figure 1 Town Centre Locations**



## 2 RISK ASSESSMENT METHODOLOGY

A Quantitative Risk Assessment (QRA) was conducted for the LUSS. The key steps of the QRA process are shown in Figure 2. Hazards associated with the MSE pipeline were identified and the consequences and likelihood of potential accidents were estimated. The risk was then determined and compared against the land use safety risk criteria published by the DP&E [1].

Figure 2 Overview of QRA



The consequences of fire and explosions were analysed using the specially developed software PHAST/SAFETI. The likelihood of each scenario was estimated from domestic and international historical incident and failure data.



### 3 FINDINGS AND RECOMMENDATIONS

The LEP complied with most of the DP&E risk criteria. The study made three recommendations for the draft LEP to comply with all DP&E criteria and reduce risk to as low as reasonably practicable.

#### 3.1 Sensitive Use Developments

Sensitive use developments should be restricted on selected properties near the pipeline.

Sensitive use developments are those for use by sectors of the community who may be unable to protect themselves from the consequences of a pipeline failure. They include the following land uses from Standard Instrument—Principal Local Environmental Plan (2006 EPI 155a) - NSW Legislation:

- School
- Hospital
- Senior's housing
- Respite day care centre
- Early education and care facility
- Correctional centre

The properties where this restriction applies are those bounded by the green lines in Figures 3 to 6.

**Figure 3 Revesby Precinct**



**Figure 4 Panania Precinct**



**Figure 5 East Hills Precinct**



**Figure 6 Padstow Precinct**



### 3.2 Protection from Fire

Developments on selected properties should incorporate protection measures for features potentially exposed to a fire on the MSE pipeline and should be able withstand a heat flux of 20 kW/m<sup>2</sup>.

The properties where this restriction applies are those bounded by the red lines in Figures 3 to 6.

According to Table C1V1 of the National Construction Code (NCC), the incorporation of measures should be done as if the building is 3 m from an allotment boundary. Deemed to satisfy (DtS) provisions for this requirement include:

- Fire-resisting construction (shafts, walls, floors, roofs)
  - Fire-resistance level (FRL) dependent on the type of construction required, but details specified in Building Code of Australia (BCA) Spec C1.1.
  - Note: FRL is achieved when subjecting a system to the AS1530.4 standard fire test.
- Openings exposed to the pipeline (i.e., doors, windows – if any) protected in accordance with BCA Clause C3.4, with measures such as:
  - Fire-rated windows, drenchers, fire-shutters etc.
  - Note: If passive protection is relied upon, the system would need to achieve the same FRL as the fire-resisting element it is located within.
- Service openings (e.g., mech, hydraulic - if any) protected in accordance with BCA Clause C3.15.
- Construction joints, spaces and the like in and between building elements required to be fire resisting (including external walls) with respect to integrity and insulation must be protected in a manner identical to a tested prototype in accordance with AS1530.4-2012 to achieve the required FRL.
- Fire stair exits must discharge into locations that are shielded and away from the pipeline location.

The proponent must prepare an appropriate emergency response plan/s for use by the building occupants.

### 3.3 Control of Construction Activities

Construction activities in the Study Area should not impact upon the existing MSE pipeline.

At the development application stage, the proponent should demonstrate how this will be achieved by submitting a Safety Management Study in accordance with the State Environmental Planning Policy (Transport and Infrastructure) 2021.



## **4 REFERENCES**

- [1] NSW Department of Planning, "Hazardous Industry Planning Advisory Paper No.10 - Land Use Safety Planning," Sydney, 2011.