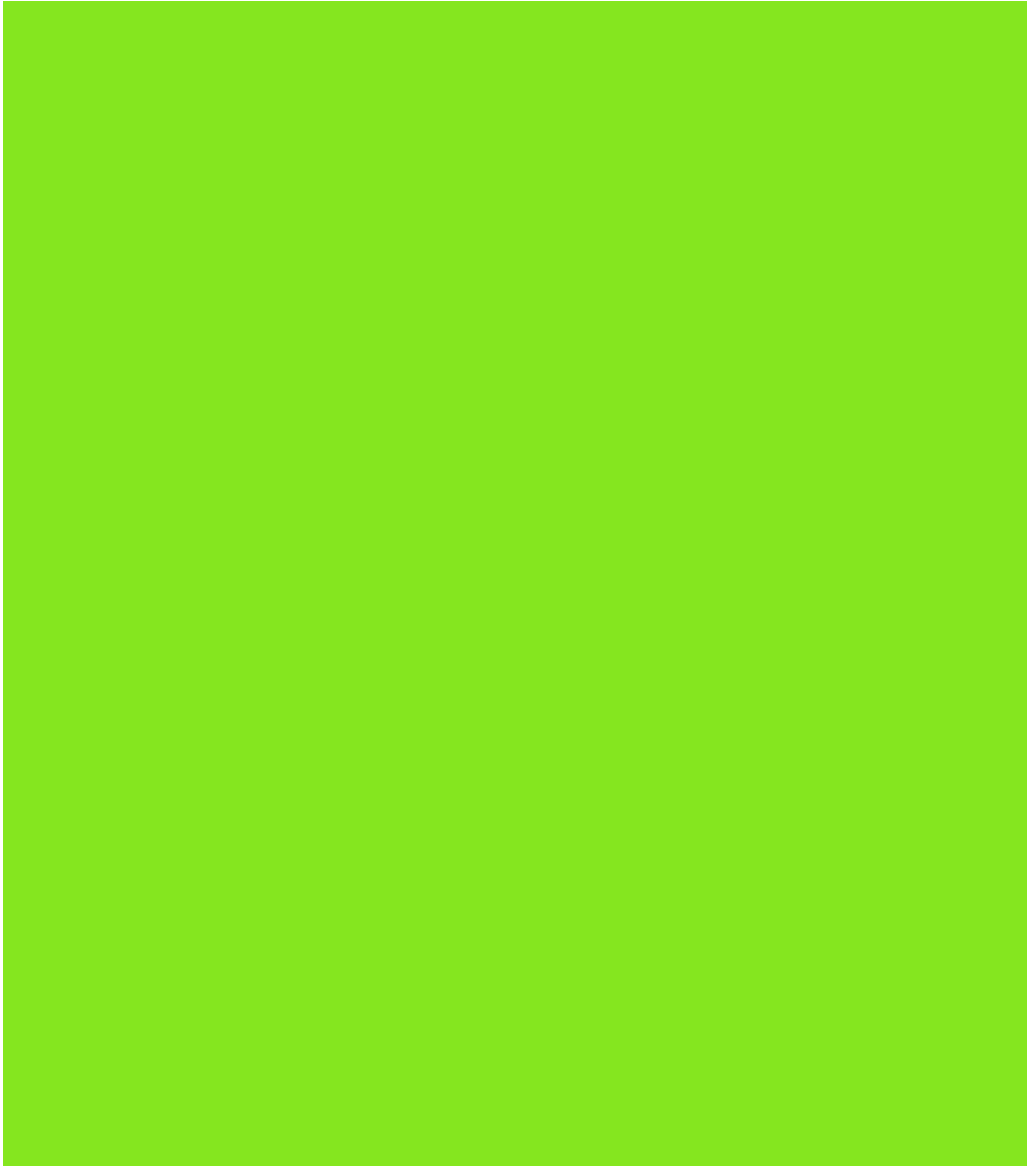


8.0 GIS Compilation and Database



8.1 Overview

An outcome of the processes study was to construct a comprehensive, integrated, spatial GIS database from which managers can interrogate all available physical, chemical and biological information on the study area.

A further objective of this task was to derive an environmental sensitivity map of the area.

This information shall establish the basis from which a Decision Support System (DSS) or tool can be developed at a later Stage (separate to this study).

8.2 GIS Database

Existing GIS data from a range of sources, including data collected as part of the data compilation study (Cardno Lawson and Treloar 2008), has been reviewed, standardised and incorporated into the project GIS database. GIS data layers that were created during this study and which are also incorporated into the database include:

Boundaries

- Cropped_LGA.shp (polygon);
- Geozones.shp (polygon);
- Waterbody.shp (polygon);
- Major_Catchments.shp (polygon); and
- Minor_Catchments.shp (polygon).

Assets

- Seawalls.shp (polyline);
- Canals.shp (polyline);
- NaturalShore.shp (polyline);
- Facilities.shp (point);
- Stormwater_GPT (point);
- Stormwater_Outlets.shp (point); and
- Stormwater_shp (polyline).

Vegetation

- Est_Veg_AECOM_2010.shp (polygon); and
- Seagrass_AECOM_2010.shp (polygon).

Other

- Land_use_changes.shp, including 1943 land use (LU_43) and 2009 land use (LU_09) (polygon);
- Foreshore_1943.shp and Foreshore_2009.shp (polyline);
- Reclamation.shp (polygon); and
- Priority_sediments.shp (polygon).

8.3 Environmental Sensitivity Mapping

Environmental sensitivity mapping produced for this study includes the following values and threats:

- Values:
 - public foreshore open space (Section 6.6),
 - seagrass habitat (Section 7.4),
 - mangroves and saltmarsh (Section 7.5 and 7.6), and
 - riparian endangered ecological communities (Section 7.7).
- Potential threats:
 - reclaimed land and industrial land use (Section 2.0),
 - gross pollutants in catchment runoff (Section 3.0),
 - degrading seawalls (Section 4.0),
 - foreshore erosion (Section 5.0),
 - potential sewer overflows (sewer overflow weirs and pumping stations are shown on Figure 8.2)
 - contaminated sediments (Section 8.3.1), and
 - contaminated lands (Section 8.3.2)

8.3.1 Sediment Contamination

Contamination of sediments in Port Jackson has been extensively studied by Sydney University (Birch and Taylor 2004, Birch and Taylor 2006, McCready et al., 2006) who have found that mean concentrations of heavy metals, organochlorine compounds and polycyclic aromatic hydrocarbons (PCBs) in surficial sediments of Port Jackson are among the highest reported in the world. Typically, concentrations of all three classes of contaminant are highest in the upper reaches of embayments and tributaries, especially those on the southern shores of the estuary, upstream of the Harbour Bridge. High concentrations of contaminants occur in these embayments because they are:

- Close to the sources of contamination;
- Mantled in muddy sediments which have an affinity for pollutants; and
- Poorly flushed by tides and currents.

Findings relevant to the study area include:

- Heavy metal concentrations are most enriched in Five Dock Bay, Hen and Chicken Bay and Iron Cove Bay;
- The distribution of organochlorine compounds (DDD and DDE) are dominated by high concentrations in Homebush Bay; and
- PAHs are most abundant in the main channel upstream of Hen and Chicken Bay and Iron Cove.

Birch and Taylor (2004) systematically identified 'areas of concern' in Port Jackson by using a combination of 27 pollutants. Areas of the harbour were prioritised using a combined Effects Range Median¹⁵ quotient for all contaminants, in relation to possible biological effects.

¹⁵ The Effects Range Median is the level above which adverse biological effects occur frequently, or are predicted amongst most species to occur. The equivalent nomenclature in the ANZECC is the Interim Sediment Quality Guidelines - High (ISQG-H). In the Australian context, sediments with contamination concentrations exceeding ISQG - Low values automatically trigger additional environmental investigation.

High priority areas are where the probability of sedimentary toxicity is estimated to be the greatest. In the study area high priority areas are confined to small parts of Five Dock Bay, Iron Cove and the main channel of the river upstream of Hen and Chicken Bay.

Medium to high priority areas with a lower probability of sediment toxicity include parts of the river, Homebush Bay, Iron Cove, and Five Dock. Medium-low-priority areas are located in the main channel of the central and lower harbours (refer Figures 8.3 and 8.4).

8.3.2 Contaminated Lands

As a relic of past land reclamation and industrial land use a number of locations within the study area are affected by some form of contamination. Birch and Taylor (2004) report an estimated 20% of Port Jackson as having been reclaimed, with most of this area upstream of the Harbour Bridge. The nature of the waste materials used for backfilling was mostly unregulated, resulting in a large proportion of the material being toxic. Little information is available on the composition of reclamation material, but in one of the few locations where this material has been remediated (i.e. Sydney Olympic Park) it was established that an estimated 9 million tonnes of domestic, commercial and industrial waste had been dumped over several decades. About 800 tonnes of this material was designated as 'scheduled chemical waste', which had to be remediated on site. Depending on the permeability and physiochemical characteristics of the fill material, leachates from these deposits could be a major source of contaminants to the upper part of these bays and tributaries.

Contaminated soils may disperse from these sites to the estuary through a range of methods, including aeolian transport, or directly where the contaminated site is located adjacent to a watercourse or via interaction with the groundwater.

The repair or replacement of aging and dilapidated seawalls that provide support to contaminated lands in the study area is therefore an important management issue.

DECCW maintains a register of notices issued under the *Contaminated Land Management Act 1997* (CLM Act) or the *Environmentally Hazardous Chemicals Act 1985* (EHC Act). Only Ashfield and Ryde Councils did not have any records of notices issues under the CLM Act. Table 8-1 lists those sites which have current notices under either of the CLM or EHC Acts.

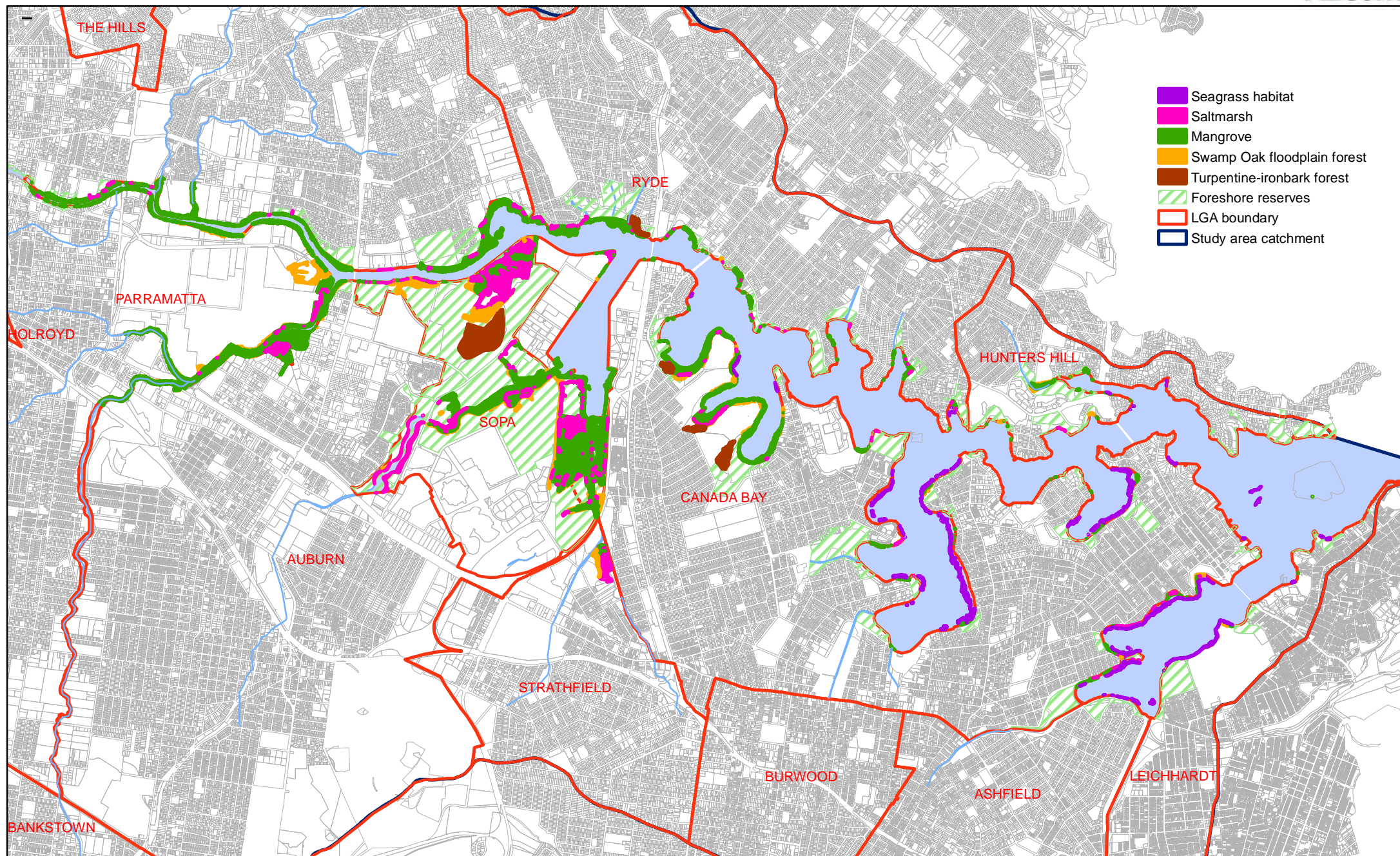
Contaminated lands, land reclamation and current industrial land use are shown in Figure 8.3, and all values and threats identified during this study are present in Figure 8.4: Environmental Sensitivity Map.

Table 8-1. Contaminated Land Sites in the study area

Site Name	Owner / Occupier	Address	LGA
Haslams Creek South Areas 1 & 2	Sydney Olympic Park Authority	Kevin Coombs Avenue, Homebush Bay	Auburn
Landfill - North Newington	Olympic Co-ordination Authority	Bennelong Road, Newington	Auburn
Auburn Landfill	Sydney Olympic Park Authority	Jamieson Street, Silverwater	Auburn
Wilson Park	DLWC / Sydney Olympic Park Authority	Silverwater Road, Silverwater	Auburn
Bicentennial Park	Sydney Olympic Park Authority	Bennelong Road, Homebush Bay	Auburn
Haslams Creek South Area 3	Sydney Olympic Park Authority	Hill Road, Homebush Bay	Auburn
STA Burwood	State Transit Authority NSW	Parramatta Road, Burwood	Burwood
Former AGL Gasworks	Various Residential	83 Wymston Parade, Abbotsford	Canada Bay
Former AGL Gasworks	Various Residential	84 Wymston Parade, Abbotsford	Canada Bay
Former AGL Gasworks	Various Residential	43 St Albans Street,	Canada Bay

Site_Name	Owner / Occupier	Address	LGA
		Abbotsford	
Sediments adjacent former gasworks	Waterways Authority/Australian Gas Light	Tennyson Road, Mortlake	Canada Bay
Homebush Bay South Sediments	NSW Maritime Authority	Alfred Street West, Rhodes	Canada Bay
Bed of Homebush Bay	NSW Maritime Authority	Rhodes	Canada Bay
Majors Bay Reserve	Concord Municipal Council	Nullawarra Avenue, Concord	Canada Bay
Concord RSL Club	Concord RSL Club	Nullawarra Avenue, Concord	Canada Bay
Foreshore land	NSW Health	Adjacent 7-11 Nelson Parade, Hunters Hill	Hunters Hill
Former SRA Site	State Rail Authority of NSW	Moore Street West & Balmain Road, Leichhardt	Leichhardt
Hymix	Hymix Australia Pty Ltd	14 Grand Avenue, Camellia	Parramatta
12 Grand Avenue, Camellia	Mobil Oil Australia Pty Ltd / SAMI and EMOLEUM	12 Grand Avenue, Camellia	Parramatta
Sydney Water	Sydney Water Corporation	41 Grand Avenue, Camellia	Parramatta
Akzo Chemicals	Akzo Chemicals Ltd	6-10 Grand Avenue, Camellia	Parramatta
Seatons Containers	Seatons Distribution Services (Qld) Pty Ltd / Patricks Logistics	39 Grand Avenue, Camellia	Parramatta
Collex	Collex	37 Grand Avenue, Camellia	Parramatta
Rheem Rydalmere	Rheem Australia Pty Ltd	1 Alan Street, Rydalmere	Parramatta
Shore Petroleum	Name Withheld / Shore Petroleum	2 Blaxcell Street, Granville	Parramatta
Pentecostal Church	Pentecostal Church of Australia	2 Ritchie Street, Rosehill	Parramatta

In addition, Cardno Lawson and Treloar (2008) report that information provided by Parramatta City Council, during the compilation of data for the estuary, confirmed that a sizeable portion of George Kendall Reserve in Ermington is classed as Unhealthy Building land in relation to the former use of the site as a garbage tip.



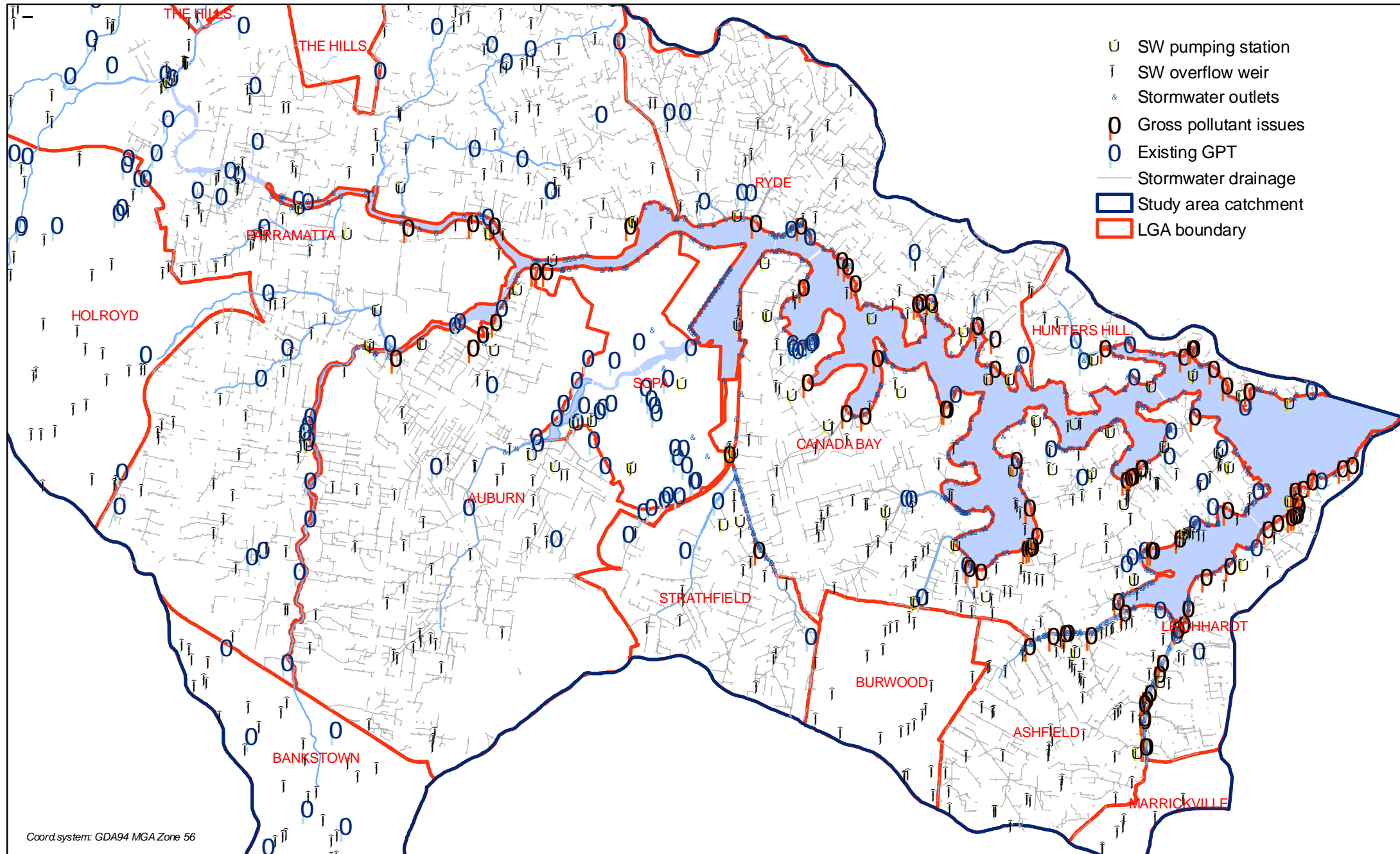
Seagrass data source: I & I NSW 2003
Vegetation data source: SMCMA 2007
Coord.system: GDA94 MGA Zone 56

PARRAMATTA RIVER ESTUARY PROCESSES STUDY
ENVIRONMENTAL SENSITIVITY: VALUES

AUG 2010
60097281

0 0.5 1 2 Km

Fig. 8.1



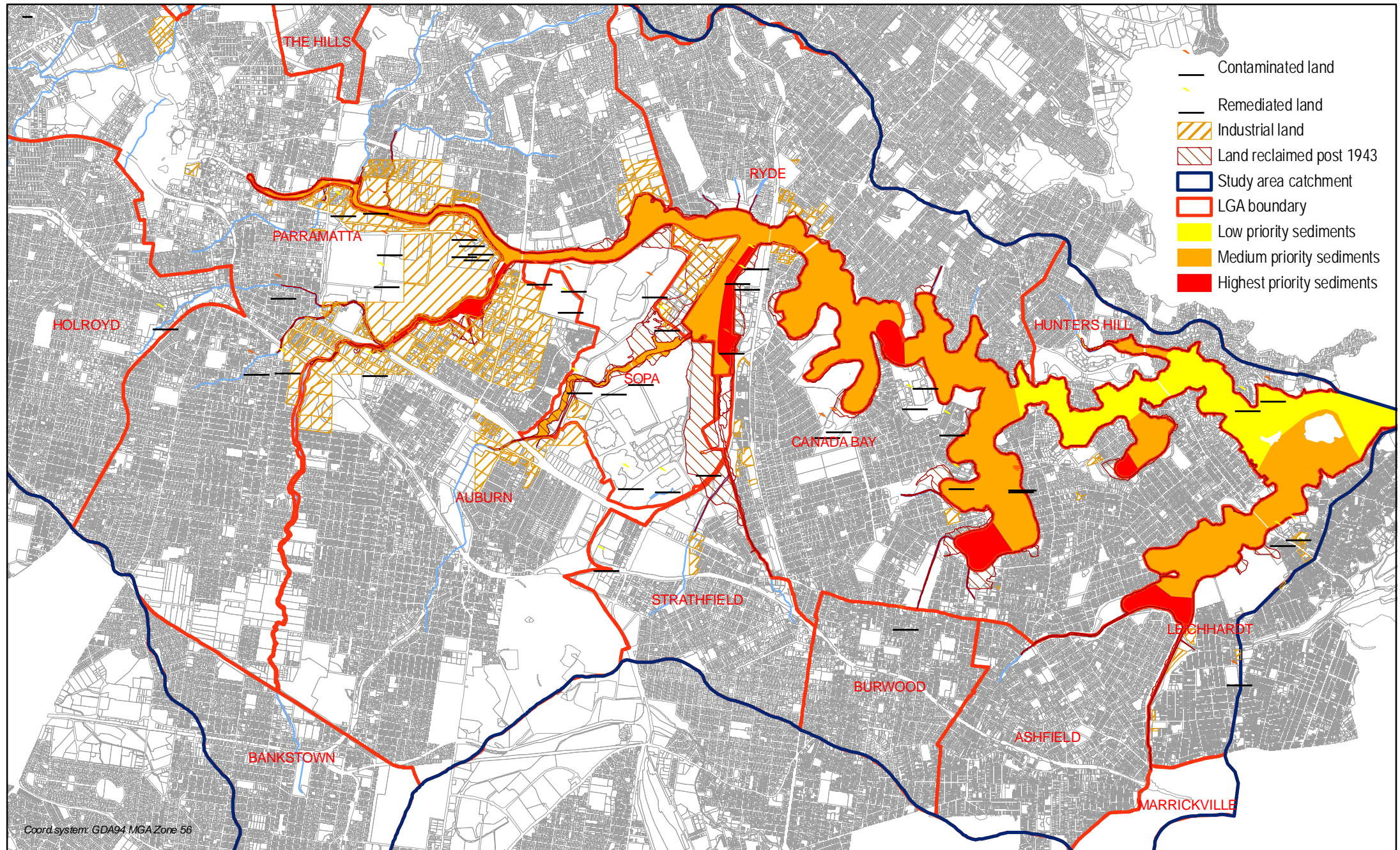
PARRAMATTA RIVER ESTUARY PROCESSES STUDY
ENVIRONMENTAL SENSITIVITY: STORMWATER & SEWER

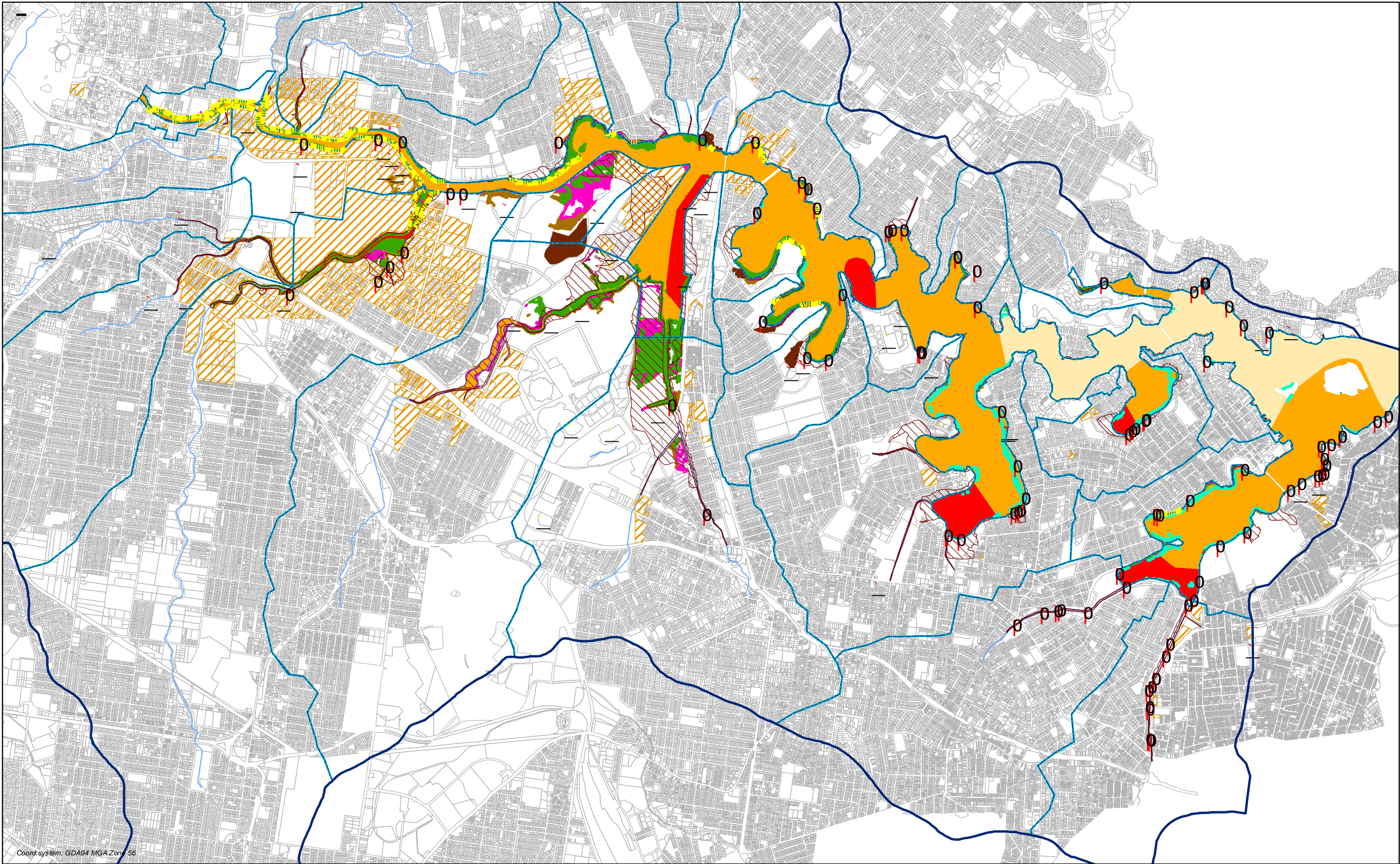
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Fig. 8.2



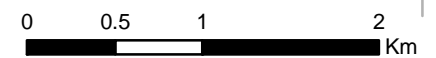


Coord. system: GDA94 MGA Zone 56

- | | | | | | | |
|------------------------|-------------------|--------------------------|------------------|-----------------------------|----------------------------|----------------------|
| Gross pollutant issues | Contaminated land | Land reclaimed post 1943 | Seagrass habitat | Swamp-oak floodplain forest | Low priority sediments | Study area catchment |
| Seawalls | Remediated land | Industrial lands | Mangrove | Turpentine-ironbark forest | Medium priority sediments | Sub-catchments |
| Foreshore erosion | | | Saltmarsh | | Highest priority sediments | |

PARRAMATTA RIVER ESTUARY PROCESSES STUDY
ENVIRONMENTAL SENSITIVITY MAP

AUG 2010
60097281



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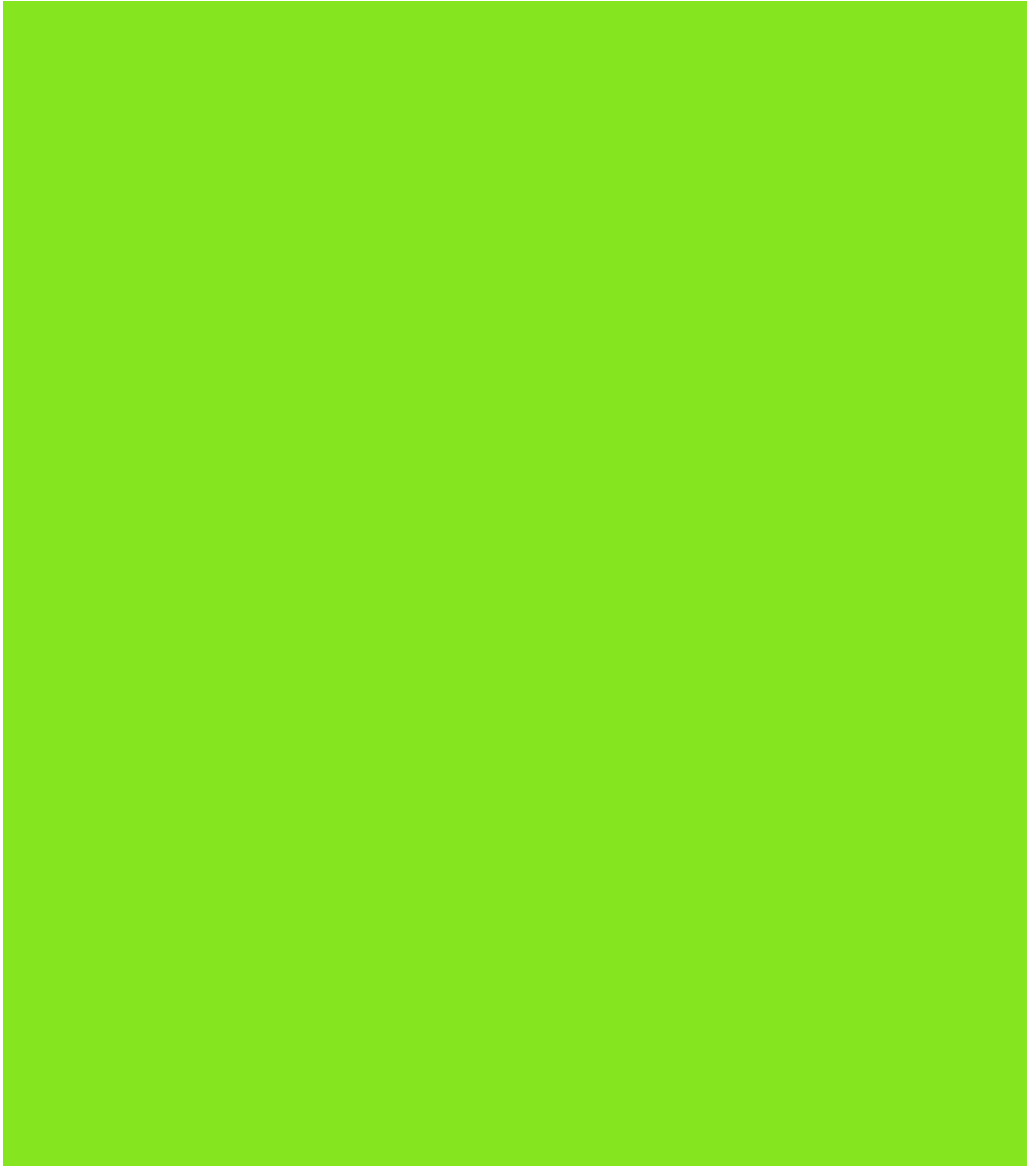
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9.0 LGA Management Summaries



9.1 Overview

This section of the study provides a summary of management issues, recommendations, and site plans for each LGA. Management issues and recommendations are relevant to each of the following aspects:

- Stormwater Management and Gross Pollutant Control (Section 3.0);
- Seawalls (Section 4.0);
- Foreshore Erosion (Section 5.0);
- Foreshore Facilities (Section 6.0);
- Estuarine Vegetation (Section 7.0); and
- GIS Compilation and Database (Section 8.0).

Each of the following LGA specific management summaries should be read in conjunction with the above-listed study sections which provide relevant background information, and the methods in which each aspect has been assessed.

LGAs on the south shoreline of the River are presented first as order from east to west and then those on the north shoreline from east to west, as follows:

River South (east to west)

1. Leichhardt
2. Ashfield
3. Canada Bay
4. Strathfield
5. Sydney Olympic Park
6. Auburn

River North (east to west)

7. Hunters Hill
8. Ryde
9. Parramatta