SALT PAN CREEK RESERVE, RIVERWOOD

REVIEW

3.0 REVIEW

3.1 Heritage

3.1.1 Historical Background and Environmental Context

The masterplan is informed by a Heritage Review undertaken by GML Heritage (Feb 2017) which identified a series of phases of heritage importance which can inform planning and design proposals and offer interpretation opportunities

Map of Salt Pan Creek and the surrounding areas in 1830, showing the natural topography and watercourses of the region. (Source: L Mitchell, engraved by John Carmichael, Map of the Nineteen Counties, State Library of NSW)

The only known depiction of Pemulwuy, created a year after his death. (Source: State Library of New South Wales)

PRE SETLLEMENT

- traditional lands of the Bediagul
- Pemulway most well known
- network of creeks and rivers important - economic and cultural exchange

Plan of the parish of St George in 1889, showing original grantees of the study area and Canturbury region. (Source: LPI NSW)

The Levingston family home during its later use as a golf club house, c1930. (Source: EM Jones, Canterbury Commons)

SETLLEMENT & RESISTANCE

- 1798 first exploration in area
- 1809 -areas adjoining Salt Pan Creek first subject to land grants
- Moxon Murphy Batty and Pashley early grant holders
- name potentially comes from salt boiling industry to east
- land clearing in 1809 led to conflict with Bediagul
- Wakefield Outwood Farm owned by Robert Levingston - 1930's
- Herne Bay estate company 1930's

Ellen and Hugh Anderson at their home on Salt Pan Creek, in c1925. (Source: State Library of NSW)

An 1943 aerial photograph showing the 118th General Hospital and surrounding residential development, with the study area marked in red. (Source: SIX Maps with GML overlay, 2016)

REFUGEES AND RIGHTS

- Bediagul maintained presence in the area through to 1930's
- Salt Pan Creek camps continued in the area drawing indigenous peoples from across Sydney
- Between 1926-35 Salt Pan creek became focal point for indigenous rights
- By end of depression pressure mounted for camps to be cleared and many Aboriginal people were moved out of area

The 118th General Hospital buildings, in use by the US Army in 1944. (Source: Lois Townsend, Canterbury Council Archives)

An 1943 aerial photograph showing the 118th General Hospital and surrounding residential development, with the study area marked in red. (Source: SIX Maps with GML overlay, 2016)

WWII AND POST WAR

- Late 30's Doctors Bush Camp -Levingston - brief use as golf course and grazing land
- 1942 portion of Levingston land requisitioned for largest miliatary hospital in Aust - to east of site
- 1946 hospital adapted into emergency housing

Aerial photograph from 1965 showing the now demolished hospital buildings, and otherwise swampy, mangrove-filled shoreline of the creek. (Source: LPI NSW)

Aerial photograph from 1986, during the operation of the Salt Pan Creek Garbage Depot. Much of the study area was by then reclaimed and filled. Only the southern sports field had been completed at this stage. (Source: LPI NSW)

LANDFILL

- By 60's most of hospital building replaced by housing
- Early juxtasposition of new and old buildings
- Riverwood gazetted in 1958
- Infrastructure fell behind development and polution of creek system major issue
- 1964 - proposal for landfill with end use playing fields
- tip operated from 1966 to 1992
- 1.3million m3 of domestic waste

Parish map for the study area from 1984, showing the extent of reclamation and proposed location for the M5. (Source: LPI NSW)

Aerial photograph from 1991, showing the largely remediated northern portion of the study area, with filling still taking place in the south. (Source: LPI NSW)

PUBLIC LAND

- Besides the reclamation and landfill areas, other land along the creek was claimed and converted to playing fields
- Eastern playing field was likely created during the 1960s
- McLaughlin Oval was levelled and transferred to the care, control and management of Canterbury Municipal Council in 1967. Baseball fields were completed by 1991 and named in honour of Mr Vernon McLaughlin
- The northwestern area was also levelled in the mid - 1980s, with no formal use for land identified
- The Garbage Depot was closed and remediated and coverted for public use, adding to the existing public lands along the foreshore

3.0 REVIEW

3.1 Heritage

3.1.2 Aboriginal Archaeological Sensitivity

The GMH Heritage report 2017 reviewed potential for Archaeological remains relating to the Aboriginal and non-Aboriginal occupation of the area. Aboriginal Archeological sensitivity is summarised below:

The areas of Aboriginal archaeological sensitivity within the study have been defined, following the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW.[42]

Level of Aboriginal Archaeological Sensitivity	Description
Areas of Nil Sensitivity	This sensitivity category was based on the absence of landforms which the predictive model identified as foci for Aboriginal activity, or erosion or ground disturbance completely removing the soil horizons which have the potential to contain Aboriginal archaeology.
Areas of Low Aboriginal Archaeological Sensitivity Buried	This sensitivity category was based on historical aerial analysis and the site inspection identifying earthworks/landscaping cutting into the soil horizon thus removing or redepositing potential Aboriginal objects. The definition of buried is defined by the base of the landfill overlying natural soil horizons. Thus, buried deposits are characterised by the presence of both disturbed or intact soil horizons.
Areas of High Aboriginal Archaeological Sensitivity	This sensitivity category was based on the presence of alluvial Birrong soils which can be up to 250cm in depth. These zones contain the potential to yield stratified archaeological deposits. Historical aerial analysis of this location has identified that the deposits have likely been capped and remain intact.
Areas of High Aboriginal Archaeological Sensitivity Buried	This sensitivity category was based on the presence of alluvial Birrong soils which can be up to 250cm in depth. These zones contain the potential to yield stratified archaeological deposits. It is also based on the potential location of shell middens, associated with the estuarine context of Salt Pan creek, applying the Port Jackson predictive modelling of Attenbrow 1994 within 10m of the 1965 shoreline (historical aerial mapping accuracy may vary and should be considered in any reassessment). The definition of buried is defined by the base of the landfill overlying natural soil horizons. Thus, buried deposits are characterised by the presence of both disturbed and intact soil horizons. Historical aerial analysis of this location has identified that the deposits have likely been impacted through clearing, dumping or landscaping, however, due to the depth of the alluvial profile and the potential for stratified deposits the location is classified as high archaeological sensitivity. This is because any potential stratified deposits in intact profiles may yield scientifically significant evidence.

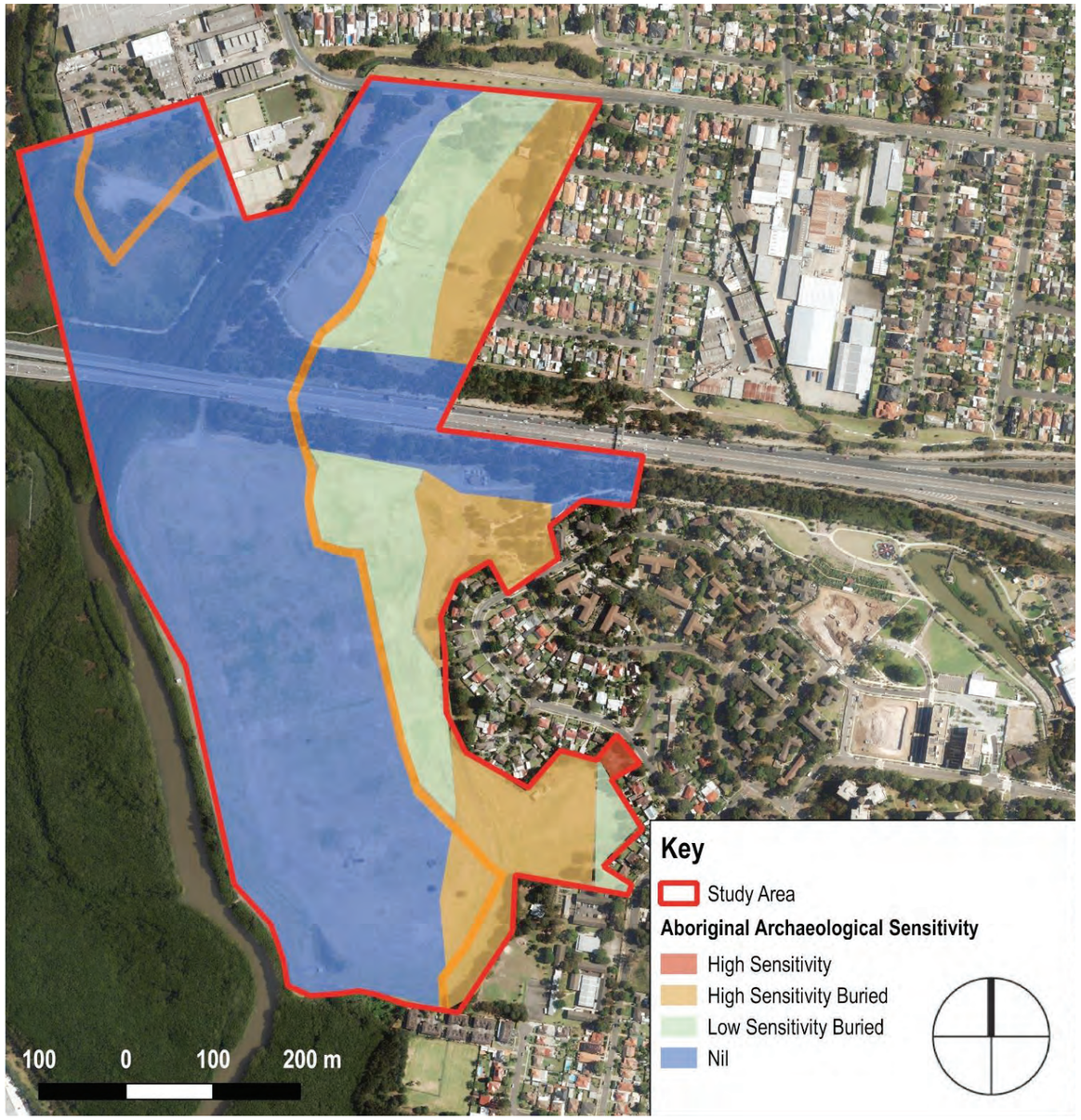

Figure 3.1 Aboriginal Archaeological Sensitive Zones. (Source: NSW LPI with GML additions, 2017

3.1.3 Historical Archaeology

The GMH Heritage report 2017 reviewed potential for Archaeological remains relating to the Aboriginal and non-Aboriginal occupation of the area. Historical Archeological sensitivity is summarised below:

Phase	Site Feature	Location	Types of Archaeological Evidence	Likelihood of Survival	Significance
Phase 1—1798–1939	Doctors Bush Camp	Northern playground/M5 boundary	Structural remains of buildings, post holes or footings Rubbish pits Evidence of fires and cooking Artefact scatters of traditional and introduced material	Low	State
	Levingston Estate and Golf Course	Carpark	Evidence of land clearing and cultivation Evidence of landscaping for golf course	Low	Local
Phase 2—1942–1946	Military hospital	Northern playground Northern and southern playground	Structural remains including post holes for footings, and demolition rubble Underfloor deposits from wards Isolated artefacts	Moderate	Local
Phase 3—1946–1960s	Housing estate	Northern playground	Evidence for modifications to buildings Domestic rubbish pits	Low	Local
	Remnant farmlands	Northern playground	Remains of unidentified structure Post holes of fencing Evidence of clearing or cultivation, possibly associated with Phase 1	Moderate Moderate Low	Local
Phase 4—1960s–1992	Garbage depot	Central mound Northern playground Northern mound	Local domestic refuse Introduced fills for reclamation and levelling	High	None
	Playgrounds and sporting facilities	Northern playground Southern playground McLaughlin Oval	Services including water, sewer, stormwater Footings for equipment, infrastructure and structures	High, extant	None
Phase 5—1992–Present	Salt Pan Creek reserve	Whole study area	Capping fills Landscaping, garden beds	High, extant	None

Figure 3.2 Aboriginal Archaeological Sensitive Zones. (Source: NSW LPI with GML additions, 2017

3.0 REVIEW

3.1 Heritage

3.1.4 Heritage Significance

The GMH Heritage report 2017 summarised a series of zones and recommendations for the site. In general terms the report identified :

- The site is significant at a local level due to:
  - -Continuing Aboriginal occupation
  - -Military Hospital
- The Doctors Bush Camp (which was a camp / shelter site to the south of the subject site was significant as place of Aboriginal occupation into 20th Century
- The area's role as an ongoing place of Aboriginal presence makes it important as a place of refuge and resilience
- Ongoing consultation required with Aboriginal community to further develop the background to these themes and the narrative arising
- WWII hospital is a symbol of war conditions and of international cooperation, and is worth of interpretation

Recommendations for areas requiring Heritage Management

The diagram this page indicates the areas that are of Archaeological potential and require consideration in ongoing planning and design.

These are both located to the eastern edge of the site. Where masterplanning proposals are not proposing excavations into these areas potential impact is likely to be low. Built structures over these areas will require assessment but are also likely to be of minimal impact. Excavation works would require assessment through the sequence identified in the Heritage report 2017

Figure 3.3 Area of archaeological potential and heritage significance within the Salt Pan Creek Reserve study area. (Source: NSW LPI with GML additions, 2017)

3.1.5 Interpretation

Given the local significance and the individual and distinctive combination of heritage narratives in the area of the site, there is great potential for interpretation to be embedded in ongoing park design as a key design influence.

Some recommended themes are outlined below and keyed on the plan this page

1. Interpret Original Creek shoreline

-interpretive trail

-markers in the landscape / discovery

-integration with boardwalk access

2. Interpret refuge and resilience (Aboriginal presence in area)

-Consultation

-Hilltop artwork

-Back to country spaces and activities

-Integrated interpretation through track network

-Playground - potential indigenous theming

-Aboriginal naming of park areas / elements

3. Interpret healing and compassion WWII Hospital

-Northern Playground

-Architectural character of amenities and shelters

Note: Hospital site was futher to east of Salt Pan Creek site - so physical "markers" interpreting presence are not appropriate

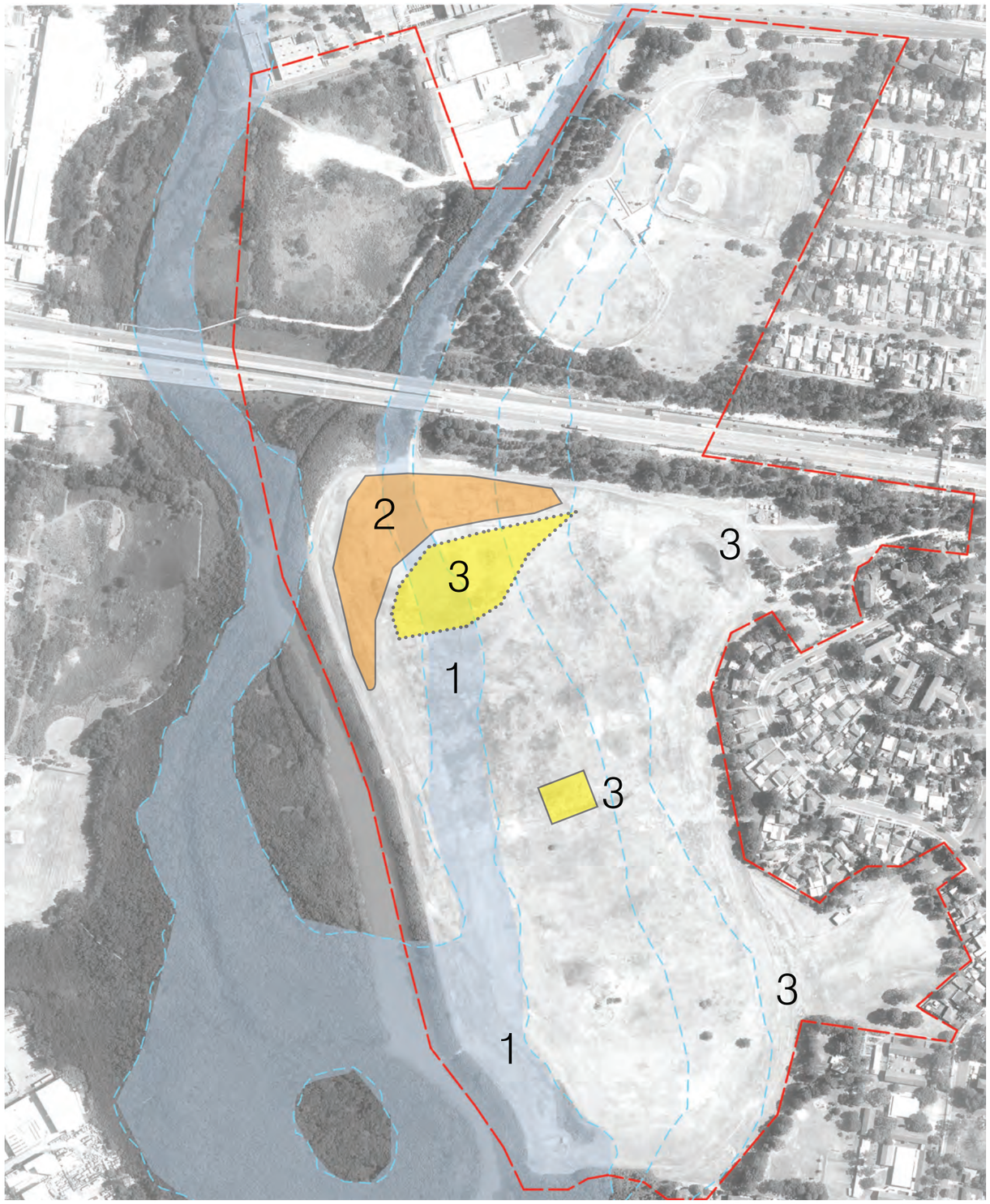

Figure 3.4: Original Creek Shoreline (Source: EP)

3.0 REVIEW

3.2 Ecology & Habitat

3.2.1 Habitat

Ecological Australia undertook and Ecological assessment in 2017 to review and summarise ecological values for the site (refer Attachment C) A review of the vegetation mapping (OEH 2013) identified ten vegetation communities within the subject site, including:

- Castlereagh Ironbark Forest
- Estuarine Mangrove Forest
- Estuarine Reedland
- Estuarine Saltmarsh
- Estuarine Swamp Oak Forest
- Plantations
- Sydney Turpentine-Ironbark Forest
- Urban native and exotic cover
- Weeds and exotics
- Cleared land.

Threatened ecological communities

Of these the following are listed as threatened ecological communities:

- Estuarine Saltmarsh
- Swamp Oak Forest

Fauna Habitat

No threatened fauna species were recorded during the site assessment, though habitat exists for a number of highly mobile species including Anthochaera phrygia (Regent Honeyeater), Haliaeetus leucogaster (Whitebellied Sea-eagle), Limosa lapponica (Bar-tailed Godwit), Gallinago hardwickii (Latham Snipe), Haematopus longirostris (Pied Oystercatcher), Ninox strenua (Powerful Owl), Pteropus poliocephalus (Grey-headed Flyingfox), Malurus Cyaneus (Superb Fairywren) and several microbats species.

The subject site also has the potential to provide habitat for the Litoria aurea (Green and Golden Bell Frog) within the Estuarine Saltmarsh, however targeted surveys would be required to confirm their presence.

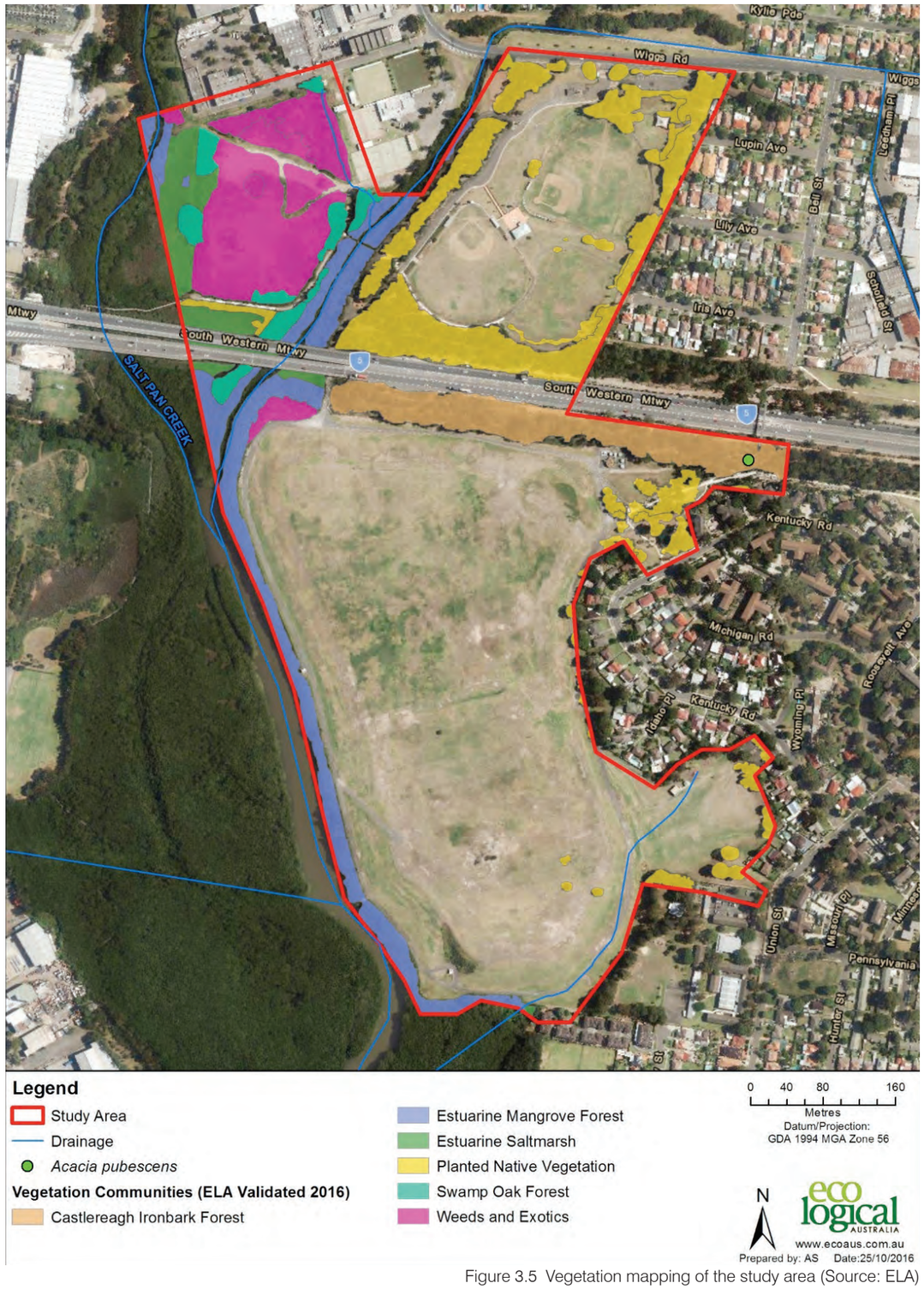

Figure 3.5 Vegetation mapping of the study area (Source: ELA)

3.2 Ecology & Habitat

3.2.2 Habitat values and opportunities

Important environmental values

The following important environmental values were identified within the subject site and are recommended for retention and enhancement:

- Cooks River/Castlereagh Ironbark Forest in the Sydney Basin Bioregion, listed as an Endangered Ecological Community (EEC) under the Threatened Species Conservation (TSC) Act and a Critically Endangered Ecological Community (CEEC) under the Environment Protection and Biodiversity Conservation (EPBC) Act.
- Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions, listed as an EEC under the TSC Act.
- Coastal saltmarsh in the NSW North Coast, Sydney Basin and South East Corner bioregions, listed as an EEC under the TSC Act and Subtropical and Temperate Coastal Saltmarsh listed as vulnerable under the EPBC Act.
- Acacia pubescens, listed as vulnerable under the TSC Act and EPBC Act
- Potential habitat for approximately nine threatened fauna species
- Wildlife corridors (connected habitat) to the east and west, and north and south-west

These values have been identified in the figure this page.

Environmental management and enhancement

Revegetation and regeneration

It is recommended that selected parts of the subject site are revegetated or regenerated to:

- enhance existing ecological communities
- improve wildlife corridors and connectivity
- allow for potential sea level rise
- utilise ecological values to contribute to improved amenity e.g. more shade trees around the edge of ovals.

Recommended areas for revegetation and regeneration are provided in the figure this page.

To re-establish the three Threatened Ecological Communities (TECs) within the study area, timing and spacing for planting is recommended as follows:

- Castlereagh Ironbark Forest community planting should take place over one year in order to ensure proper establishment and achieve a final density of one plant per m2 for trees / shrubs and three plants per m2 for sedges/ rushes and grasses.
- Swamp Oak Floodplain Forest community planting should take place over one year in order to ensure proper establishment and achieve a final density of one plant per m2 for trees / shrubs and three plants per m2 for sedges/ rushes and grasses.
- Coastal Saltmarsh planting should take place over three years in order to ensure proper establishment and achieve a final density of 4 plants per m2 for rushes, herbs and grasses.

Offset Opportunities

There may be options to explore establishment of a Biobanking Agreement site within the north-western of the site on Whitmarsh Reserve. This area is approximately 10 ha in size, which is a viable size for a Biobank site, however the site is largely dominated by exotic vegetation and costs to establish and manage the site may become prohibitive and therefore not economically viable for the landholder.

It is estimated that the proposed biobank site would establish approximately 90 credits. CRCIF credits currently trade for between $12,000 - $17,000 / credit. A Biobank feasibility study would provide a more certain outcome for this opportunity.

Figure 3.6 Important environmental values within the study area (Source: ELA)

3.0 REVIEW

3.2 Ecology & Habitat

Castlereagh Ironbark Forest recorded within the study area

Estuarine Mangrove Forest within the study area

Estuarine Saltmarsh recorded within the study area

Estuarine Swamp Oak Forest recorded within the study area

Planted native vegetation recorded within the study area

Weeds and exotics within the study area

Maintained grass / cleared land recorded within the study area

Acacia pubescens recorded within the study area

(Source: ELA)

3.3 Access

The site has potential to integrate with access networks at a number of levels

3.3.1 District Access

- strong east west link along Riverwood Parkland corridor
- potential linkages to south in adjoining LGA and the existing bridge across Salt Pan Creek via Riverwood Park
- potential additional linkage to west linking to Salt Pan Creek walkway system

3.3.2 Local Access

- access to McLaughlin oval from adjoining streets
- limited access across / under M5 corridor
- need for east west connections through new communities to east - ideally this edge would be as permeable as possible to enhance security and usability

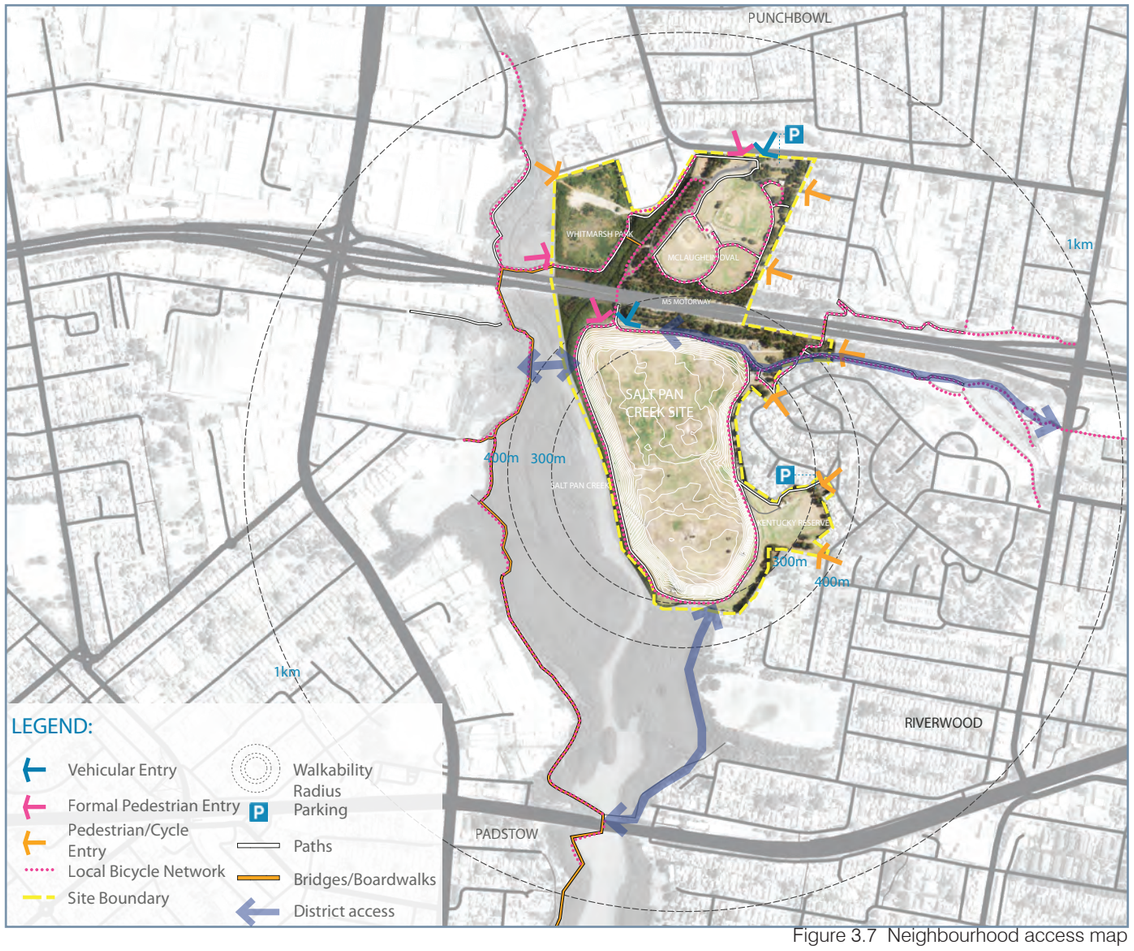

Figure 3.7 Neighbourhood access map

Figure 3.8 Local access map

3.0 REVIEW

3.4 Recreation

Development of the masterplan has straddled the merger of Canterbury and Bankstown Councils. The project was originally commissioned by Canterbury Council, but with the merger into one LGA, the site is now pivotally located at the centre of Canterbury Bankstown.

The review of the project at the time of the merger addressed the question of the future role of a parkland on the post landfill site and considered the potential role the site could play for the community of the expanded LGA. It was resolved for the purposes of the masterplan that the park had potential to provide a regional role for informal recreation and a district role for organised sports. Definitions of these categorisations follow:

- *Regional: 'High value' open space that has the capacity to draw from or benefit people across and beyond the City due to its size, facilities, features, innovation, location.*
- *District: Good quality open space that has the capacity to draw from or benefit people across or beyond a district within the City (west, central, east) due to its size, facilities, features*

As Council's merger process progressed conceptualisation of the consolidated recreational resource and the related shortfalls and opportunities were able to be identified. As a result a refined perspective of the role of the park was defined. This has guided the masterplan's development, with the covenant that where possible development of the park build in the maximum potential for future flexibility and adaptability.

Key points of the refined recreational profile for the park are listed following:

- The context of the Riverwood LUIIP development to the immediate east of the site is significant and is discussed in further detail in section 3.5 opposite page)
- Council resolved to consider options for relocation of Sydney Olympic Football Club to a location at Salt Pan Creek. This will free 3 leased football fields at Tasker Park (Canterbury Town Centre) which form part of the critical open space for the Urban Renewal Corridor Relocating Sydney Olympic Football Club also frees Peter Moore field adjacent to Belmore Oval (Canterbury Bulldogs precinct)
- A new football facility would be a regional level and be provided with NPL-1 level amenities including a synthetic field, covered seating / grandstand, ticket office and perimeter fencing, parking and other associated change rooms, office and gym facilities. Council considered 1 x synthetic and 1 x grass full field would address the Sydney Olympic role.
- Baseball, AFL / Cricket / Athletics, Football/ soccer and passive recreation facilities including significant water treatment and water course are to be provided within the masterplan area
- Council identified that two multi-purpose "pads" catering for different modes of use:
  - -2 x football fields or
  - -1 x cricket wicket or
  - -1x AFL field

  be provided within the park south of the M5

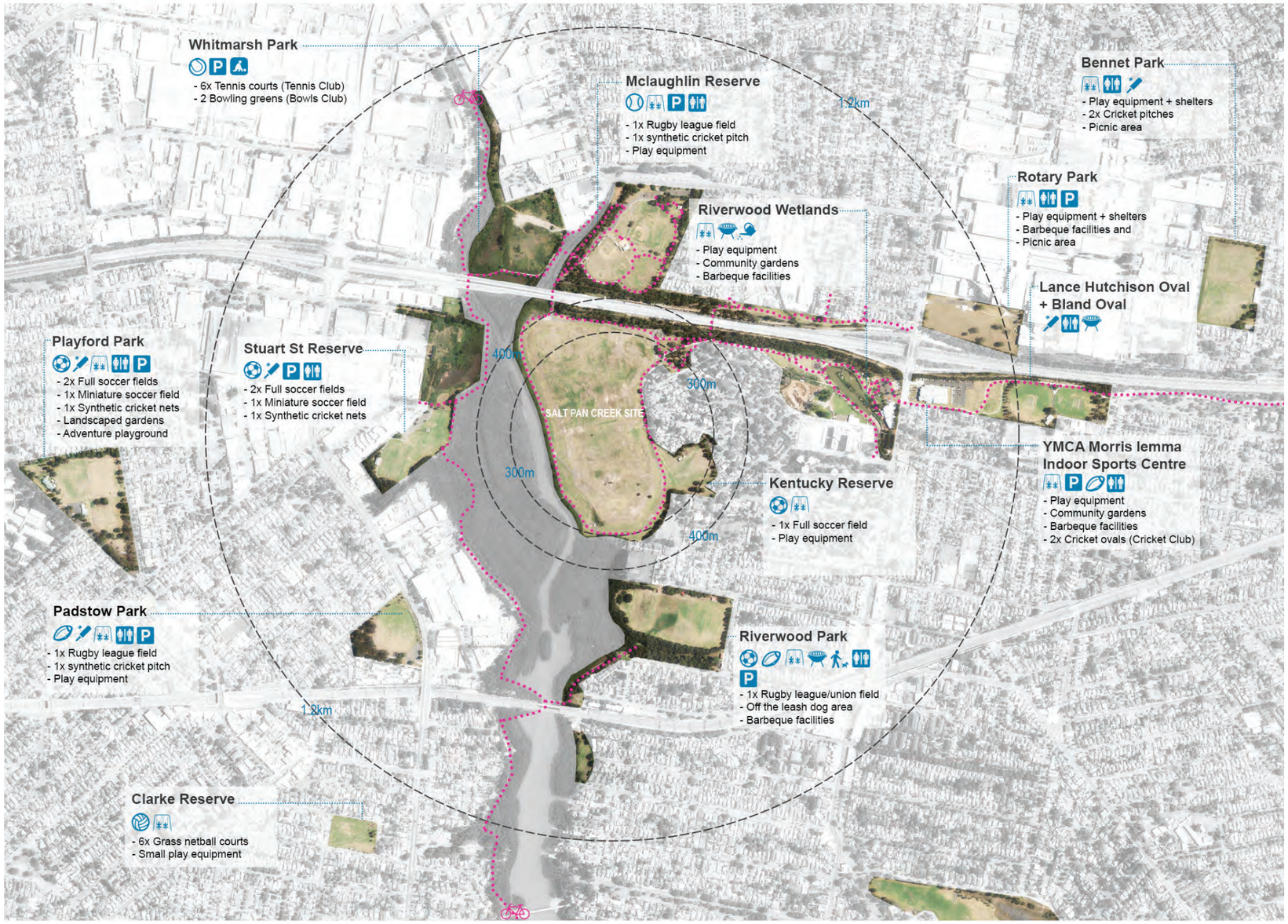

Figure 3.9 Existing open space / recreational context


Morris Iemma Indoor Centre


Stuart Street Reserve


Apex Park

3.5 Adjoining Development

The Riverwood precinct to the immediate east of the site is the subject of a significant redevelopment project which will result in increased residential densities adjoining the site and built form up to six storeys at the park edge.

The Riverwood Land Use Infrastructure Implementation Plan (LUIIP) was declared a NSW Government Priority Precinct and development of the Salt Pan Creek Parklands masterplan has involved liaison with the Riverwood project team.

The project will markedly change the character of the neighbourhood adjoining the parklands, and provide a more active and safe "edge" to the park than the existing closed residential rear yards and fenclines.

The uplift in population will create a local user catchment that will help activate path and trail systems and facilities such as fitness nodes

Some key opportunities as indicated on Figure 3.11 include:

1. review road access integrated with adjoining development to optimise integration with adjoining community and spread traffic load for access to the parklands
2. promote "green" corridors to open space / streets leading to the parklands
3. pursue active frontages adjoining the new community and promote walk in access to the parklands through an attractive and usable park edge
4. explore potential WSUD opportunities and water in the landscape

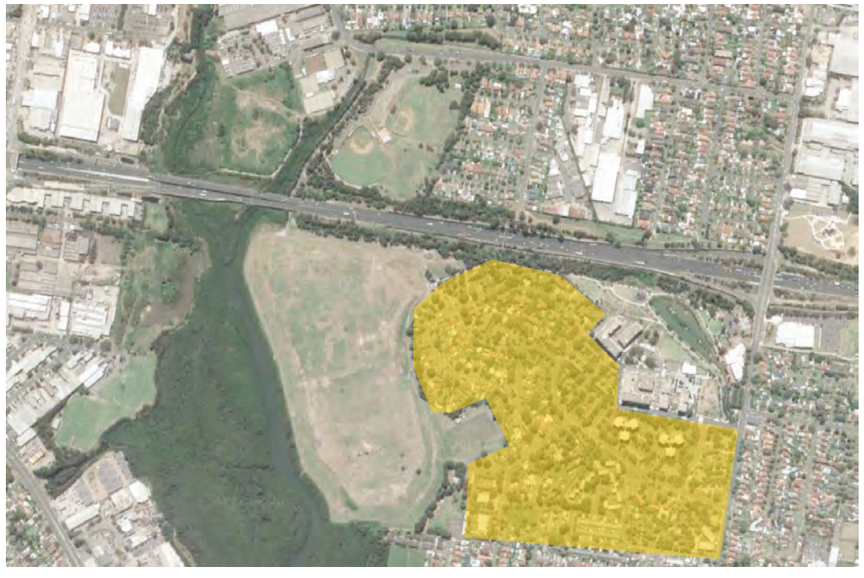

Figure 3.10 Adjoining Riverwood development site (Source: Draft Riverwood Masterplan)

Figure 3.11 Adjoining Development (Source: Draft Riverwood Masterplan)

3.0 REVIEW

3.6 Landfill, Landform and Drainage

3.6.1 Landfill background

As a post landfill site the effective capping of the landfill profile, and the ongoing management of leachate and gas from the subsurface zones are key influences on park planning. Addressing these requirements must be at the forefront of an integrated site planning approach. At the same time this masterplan seeks to ensure that the landfill legacy does not unduly limit the potential of the site to provide an interesting and stimulating landscape environment.

Canterbury Councils Tip Closure Plan in 2015 identified recommendations for end use planning:

- Promote positive falls. Runoff away from site with a minimum of 2% slope for playing fields
- Reduce infiltration into soil
- Promote evapo-transpiration (water exchange from soil and plants to atmoshpere)
- Prevent leachate (water that has moves through soil and leached embedded minerals or chemicals) entering groundwater /surface water
- Treat leachate to remove solids, sulfides
- Preferred landfill geometry involves minimum 2% slopes to facilitate construction of sporting fields and playing areas
- Prevent exposure of buried waste.
- The site is preferred to be partially or fully re-vegetated and integrated with a wetland water body for water quality treatment and
- Possible leachate pump installation.
- Preferred landfill gas management involves the construction of passive structures such as gravel trenches and or bio-pads due to elevated landfill gas concentrations on the mound (mulch piles integrated with treatment/landscaped areas without flaring equipment). Gravel trenches are proposed near the more sensitive residential and school areas.

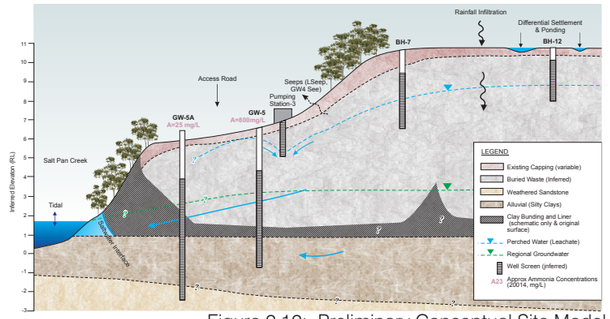

Figure 2.12: Preliminary Conceptual Site Model
(Source: City of Canterbury Council Closure/Rehabitation of Salt Pan Creek Landfill The Concept Plan (EPL 10636) July 2015)

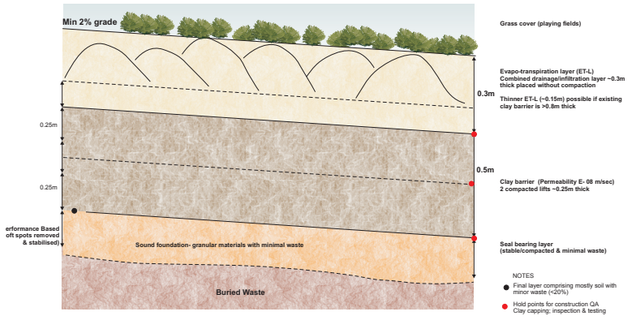

Figure 2.13: Proposed Landfill Capping Plan
(Source: City of Canterbury Council Closure/Rehabitation of Salt Pan Creek Landfill The Concept Plan (EPL 10636) July 2015)

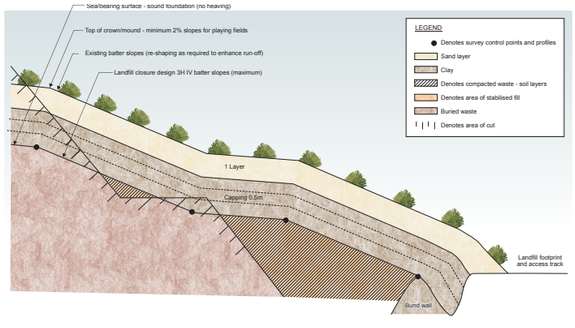

Figure 3.14: Schematic Concept Plan - Reshaping of Mound & Filling Plan
(Source: City of Canterbury Council Closure/Rehabitation of Salt Pan Creek Landfill The Concept Plan (EPL 10636) July 2015)

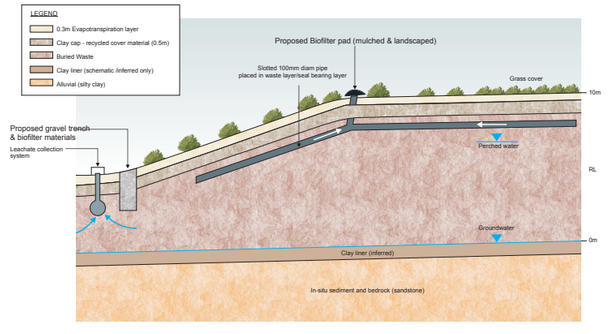

Figure 3.15 Preliminary Landfill Gas Management at Salt Pan Creek Landfill
(Source: City of Canterbury Council Closure/Rehabitation of Salt Pan Creek Landfill The Concept Plan (EPL 10636) July 2015)

Legend: Mound reshaping from <1% to 2% slope (adjustment in m)

Figure 3.16: Preliminary Concept Cut & Fill Plan
(Source: City of Canterbury Council Closure/Rehabitation of Salt Pan Creek Landfill The Concept Plan (EPL 10636) July 2015)

3.6.2 Landfill Investigations 2017

Council commissioned Coffey to undertake further testing on the site and to assist with the masterplan process in addressing remediation and capping requirements. Coffey developed an updated set of contours of the landfill and existing surface landform.

The diagrams below reflect those investigations. Existing capping depth is varied but averages somewhere between 09-1.5 metres

Figure 3.19 composites the two profiles and highlights the high points of the existing landfill profile. Any earthworks must avoid disturbance of the existing landfill profile.

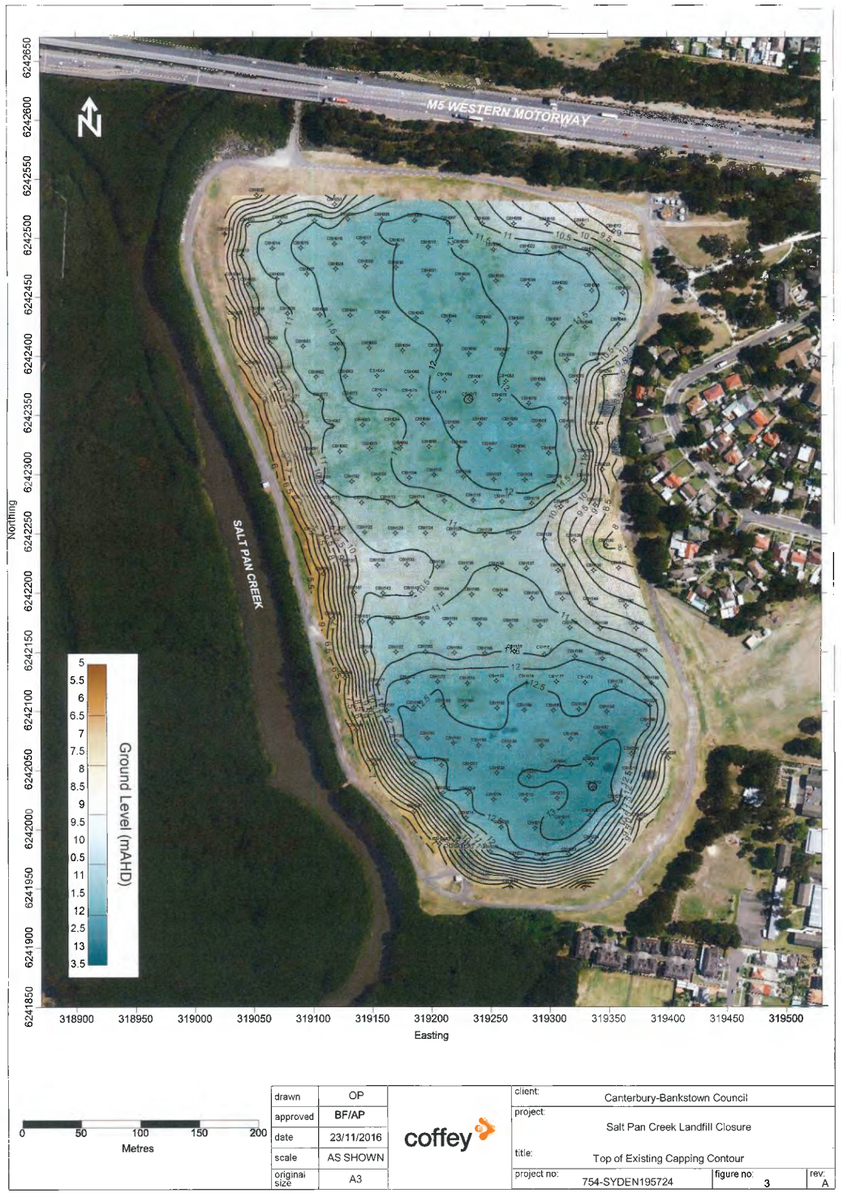

Figure 3.17 Existing Landform (Source: Coffey 2017

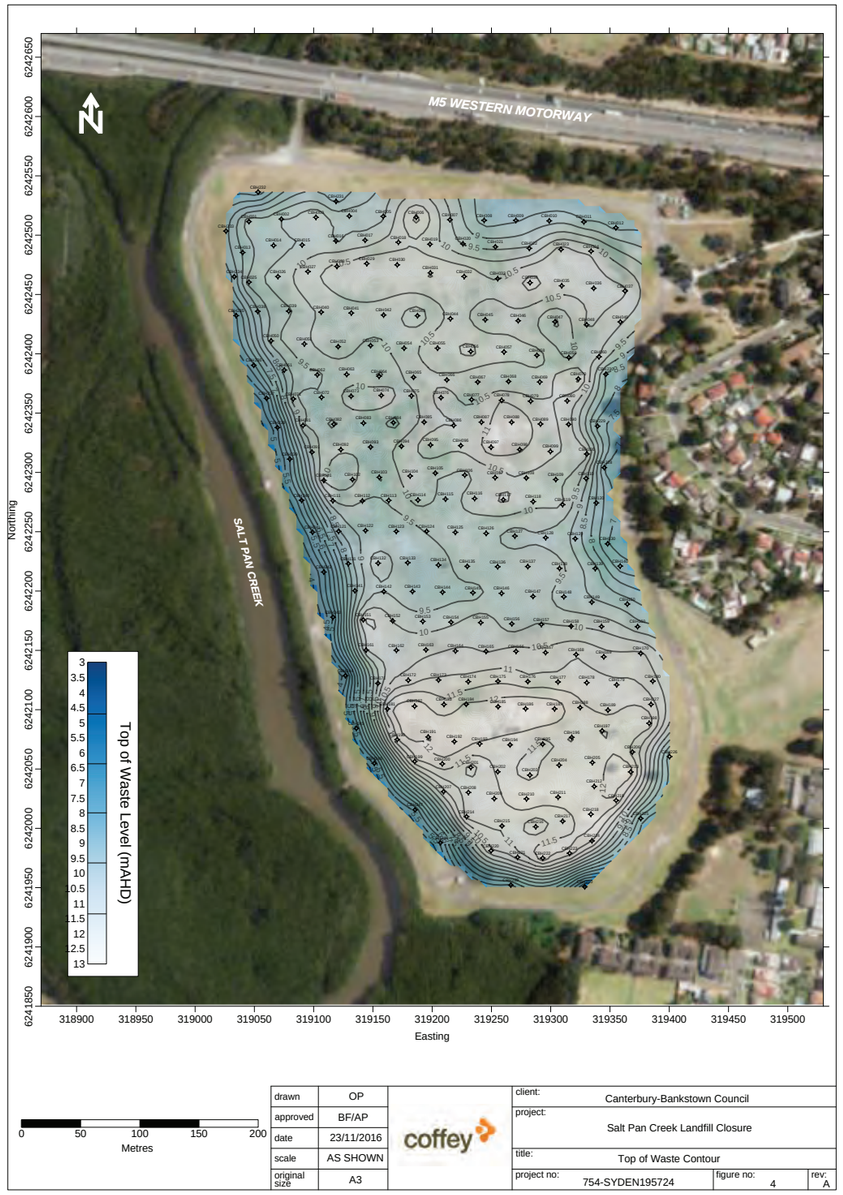

Figure 3.18 Landfill profile beneath existing capping (Source: Coffey 2017)

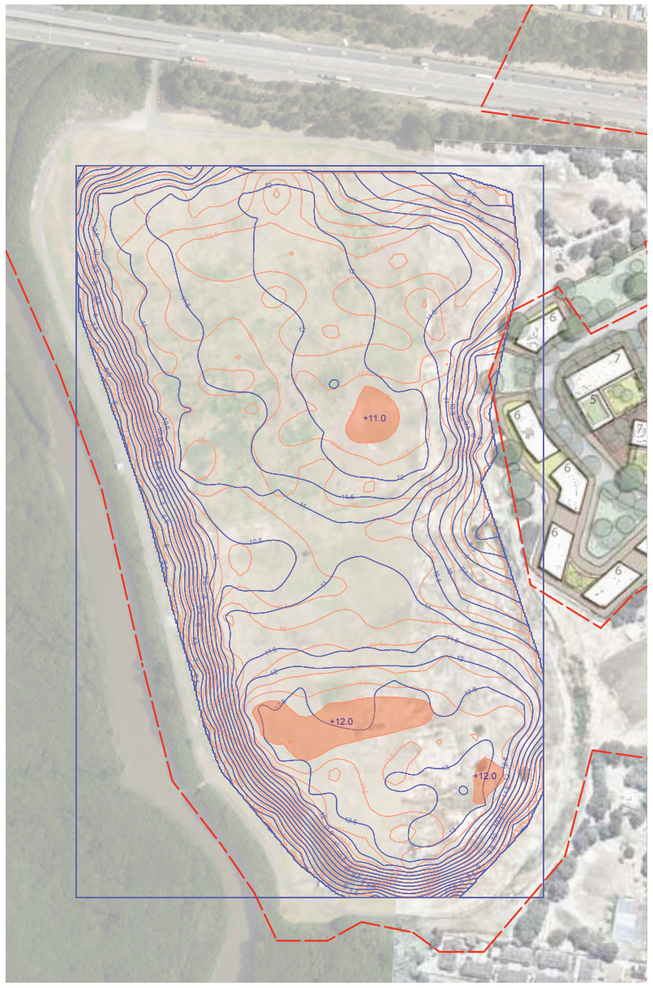

Figure 3.19 Composite of landform and capping highlighting high points in landfill profile which cannot be disturbed (EP)

3.0 REVIEW

3.6 Landfill, Landform and Drainage

3.6.3 Landform

The landform of the landfill zone is largely a flat and open platform with embankments down to adjoining areas. Some key characteristics are noted:

- RL 12.5 - 13.5 high points
- edge batters generally 1:5-6

Figure 3.20: Landform (Source: EP)

3.6.4 Drainage - Surface Drainage

Drainage is dictated by the landfill profile with the landfill forming a barrier to natural drainage from adjoining areas to the east, and directing drainage along the east edge of the landfill to a trapped lowpoint mid way along the east boundary. Some other key characteristics are noted

- limited falls to landfill top surface
- implications of rl 8.0 water table contour for regrading at edges need to be considered
- potential integration with drainage from new development for WSUD and water harvesting

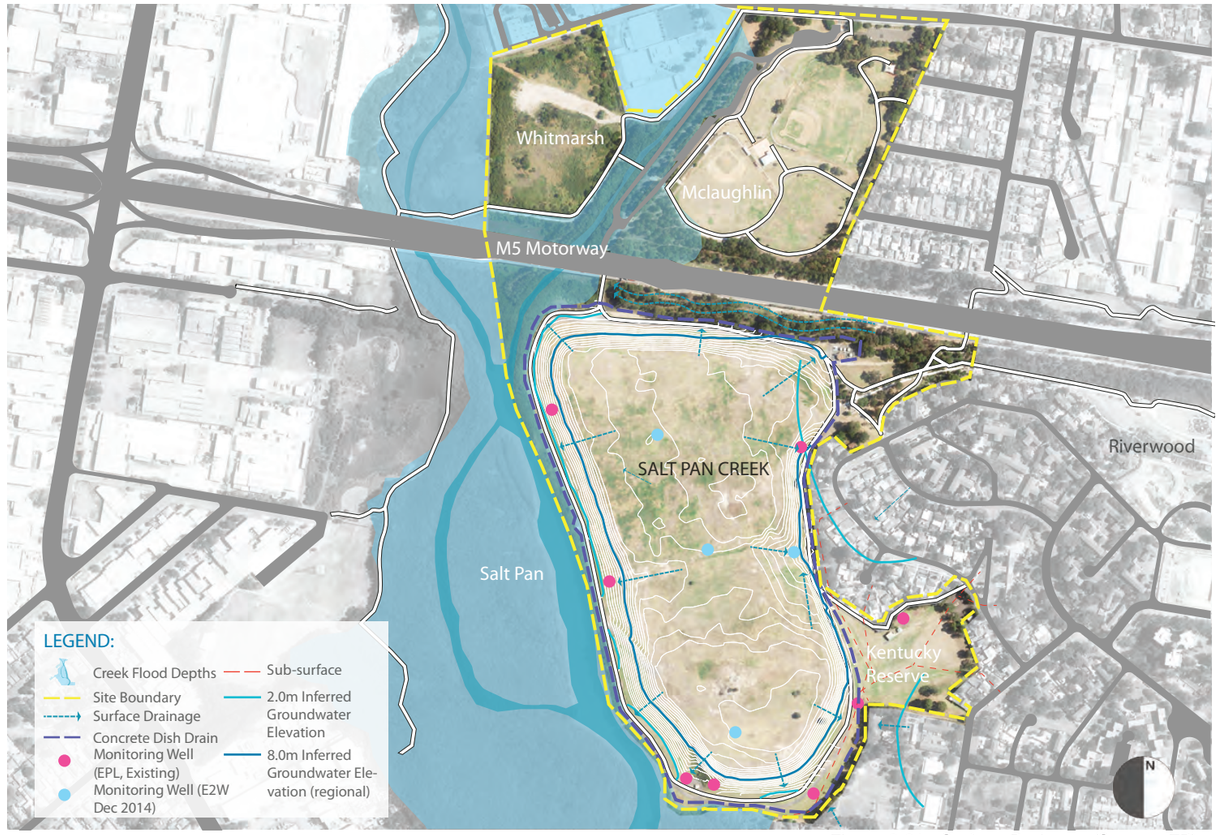

Figure 3.21: Surface Drainage (Source: EP)

View south across Salt Pan Creek Parklands site south of M5