## 3. BEXLEY WETLAND RESTORATION

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| Corporate Plan Output: Parks Plans and Policy Statements | |

The purpose of this report is to inform the Board of investigations that have been taking place to determine the best method of treating the contaminated site within Bexley Wetland.

### BACKGROUND

Bexley Wetland was acquired in 1995 for its regionally important remnant estuarine vegetation systems. This low-lying area was once part of the Avon River/Estuarine saltmarsh margin and subject to regular tidal inundation. Separation of the area from the Estuary by a stopbank and the subsequent drainage protection provided has enabled this area to be used over many decades for grazing and, in one area, as a scrap metal yard. Uncontrolled filling has also modified much of the land. The reserve now has a conservation zoning over it, which protects the area from inappropriate planting and development.

The wetland will be a major component of the Estuary Green Edge, the vision for which is currently being developed at the moment.

### RECENT DEVELOPMENT

Restoration of the area has already begun. Already a large moat and urban buffer strip have been created between the Pacific Park subdivision on the northern wetland boundary and the wetland. Community plantings in this buffer zone have greatly enhanced the area and the numbers of birds using the reserve is increasing. The planting and earthworks to date are in accordance with the attached draft landscape plan. Much of the planting has been carried out by the Bexley Wetland Trust.

The Council has produced a development plan (Bexley Wetland Development Plan), which will guide future planting, earthworks, pest management, signage and the development of recreation areas. This is now available for public comment.

### CONTAMINATED MATERIAL IN THE FORMER CUNNINGHAM'S YARD

An area of about 2.9 hectares, south of Anthony Road and formerly known as the Cunningham's Yard, was used from the 1940s up until the early1990s as a scrap metal yard. This area still contains material which is inconsistent with the rest of the reserve. Along with introduced fill material, specific areas of scrap metal are still evident and the former activities within the yard, have resulted in residue heavy metals and organic pollutants in the upper soil strata over much of the site. The heavy metals detected as the main contaminants include copper, chromium, nickel, zinc, cadmium and lead.

The extent and degree of contamination has been largely determined from site investigation and soil testing. In order to advance the wetland restoration beyond the wetland buffer, and achieve the objectives of the zoning and development plan for the area, it is now necessary to address the contamination issue.

**OPTIONS INVESTIGATED TO DATE**

Council staff, together with environmental engineers and scientists, have explored several options for the former Cunningham's Yard area. The nature of the principal contaminants, their relatively low average concentration over an extensive area, and their depth, narrowed these to:

**1. Do nothing**

Leave the area as it is as there is little evidence that contaminants are moving beyond the area.

- Direct Cost for contamination remediation work $0.
- Requires significant modification of existing landscape and management plan, significantly reducing the final restored wetland area.
- Any reintroduction of regular tidal water would allow continued and possibly accelerated transportation of contaminants into water bodies.
- Poses potential danger to wildlife.
- Does not reduce the problem of pollution in the Estuary and lower Avon.

**2. Removal**

Excavate the contaminated material and relocate it at the Burwood Landfill.

- Cut to waste of 8,250$m^3$ of contaminated soils to Landfill.
- Direct Cost for excavation and removal from site $67,000.
- Landfill Disposal Fees $700,000.
- Wetland restoration earthworks still required.
- Enhancement of Hard Standing Area still required.
- Concept will be achieved.
- Transfers problem to another part of the city.

**3. Containment**

Capping of affected Soils.

- Direct Cost $100,000 - $200,000.
- Continue to control tidal Inundation.
- Isolate affected area from restored wetlands.
- Requires importation of suitable fill.
- Inconsistent with concept and breaks wetland continuity.
- Provides High Ground Viewing area.
- Expense will result in Enhancement of 2.9ha of wetland.

**4. Containment Elsewhere On-Site**

Excavate the contaminated material and relocate it and contain it on the Bexley Wetland site, on an existing area of fill near Bexley Road.

- Direct Cost approximately $100,000 (depending on available capping material).
- Cut and fill of 8,250$m^3$.
- Confinement of contaminated soils over 8,000$m^2$.
- Use of Wetland Cuttings to 'cap' contaminated fill.
- Result in completed wetland earthworks.

- Enhancement of existing hard standing area already filled with rubble.
- Realisation of Current Concept.
- Contains contaminated material on-site.
- Provides High Ground Viewing area.
- Mounding of contaminated soil could provide suppression of traffic noise.

In weighing up the options five factors were considered:

1. The desire to improve habitat, ecological systems and the hydrological relationship that the reserve has with the nearby Avon River.
2. Cost.
3. The idea of not just moving the 'problem' somewhere else.
4. The opportunity of using the material in a contained way to improve the landscape or recreation opportunities on the Bexley Wetland site.
5. Keeping options open for future contamination treatment.

**PREFERRED OPTION FOR THE CONTAMINATED AREA**

Based on the above criteria, the investigation team favour Option 4 - excavation of contaminated material and containment elsewhere on the reserve. This could be achieved over the existing hard fill area, known as the horse paddock, adjacent to Bexley Road. Contaminated material would be mounded to minimise the *footprint* area of soils and allow shaping for rainwater runoff. The mounds will be lined and capped with impermeable material, which prevents the contaminants breaking down or transporting to any water bodies. The capping would minimise rainwater percolating through the mounded contaminated material and the lining elevates the material above groundwater and tide levels, thereby greatly reducing the migration potential of contaminants beyond the mound. The mound would then be covered in topsoil and planted with appropriate indigenous vegetation.

Landscaping will include opportunities for passive recreation including a site lookout point and grassed areas. Importantly, mounding contaminated soils in one reasonably small, contained area will allow for efficient monitoring, and should it prove necessary, easy access for future treatment or removal.

**FUNDING OF PREFERRED REMEDIATION OPTION**

The remediation of the contaminated area at Bexley Wetland is estimated to cost approximately $100,000. This estimate is based on the availability of a suitable medium to cap and contain the contaminated material. There is a possibility that this type of material could be difficult to source which could raise the cost of containment of it on the horse paddock site.

The Parks Unit has $30,000 budgeted in 2000/01 for enhancement of Bexley Wetland. Approximately $5,000 has been spent on soil testing and consultant fees. Because some of this funding ($10,000) has been set aside to continue planting along the moat further funds are required to complete the remediation of the contaminated area.

Within the 2000/01 budget $287,847 has been set aside for the Estuary Green Edge. It is likely that expenditure on the Estuary Green Edge may be limited as the area has been included in waste water treatment issues which may take some time to resolve. It is therefore suggested that $85,000 of this budget could be transferred to the Bexley Wetland budget so that the above option for the contaminated area can be implemented in February/March 2001.

**CONSULTATION WITH KEY INTEREST GROUPS**

A discussion paper (Bexley Wetland Contamination Discussion Document), which is in line with this report, was referred for comment to key interest groups, which include:

- Bexley Wetland Trust and members (115 members)
- Bexley Residents' Association
- Environment Canterbury
- Estuary Association
- Ngai Tahu
- Wai Taha

Those who returned comments were in favour of Option 4 above. The ability to contain and later treat the material when new methods of remediation are developed was seen as very positive. However, careful capping and containment with possible monitoring of the area was suggested by submitters to avoid any leakage into groundwater.

In addition, staff were available to provide further information at the Linwood Service Centre on 27 September 2000.

**CONCLUSION**

In weighing up the various options for removing the contaminated material from the future ecological restoration site within Bexley Wetland, the relocation of this material on an existing area of hardfill (also known as the horse paddocks) near Bexley Road is favoured. The estimated cost of this work is approximately $100,000, which is well below the cost of transporting the material to the Burwood landfill, estimated to cost more than $750,000. Relocating the material to the landfill is philosophically questionable as it is just shifting the problem to another part of the city.

Limited funding within the Bexley Wetland budget is available in 2000/01. To complete the works, $85,000 could be transferred from the Estuary Green Edge budget to the Bexley Wetland budget.

**Recommendation:** That the information be received.

**Chairman's Recommendation:** That the Environment Committee support the completion of the Bexley Wetland Restoration Project.