Presentation and Objective

EES OBJECTIVE:
• Assess location of contamination
• Assess volumes of all spoil and waste types
• Develop plans to manage spoil and contamination during construction and operation of the NEL

This presentation describes:
• How these objectives were met
• Works conducted since the EES
• Addressing issues from public submissions
Post-EES

Works conducted since the EES included:

- Reviewed public submissions and submissions from EPA and water authorities
- Reviewed Interim report from Craig Barker and relevant expert evidence (including Carey Grammar)
- Further investigation works on areas along the alignment including Borlase Reserve, Bullen Oval, former Bulleen Drive In, Eastern Freeway/M80 Interchange, groundwater
- Prepared: response to IAC request; and an analysis of Landfill capacity (Attachment C to my report)

Contamination – Project Elements
Contamination assessment method

Staged approach:
- Preliminary Site Investigation - desk top study and site visits
- Limited supporting sampling of soil/rock, groundwater, landfill gas
- Estimation of spoil volumes
- Develop Initial Environmental Performance Requirements (EPRs)
- Tier 1 risk assessment of contamination – comparison of analytical results to investigation criteria
- ‘Final’ EPRs based on investigation work – mitigation methods

Existing conditions - Geology

Figure 6-1 Geology of the proposed North East alignment
Existing conditions - Acid sulfate soil/rock

Yellow - ‘Low Probability/Very Low Confidence - Bn(p4)’
Green - ‘Extremely low probability of occurrence/Very Low Confidence - Co(p4)’

Extract from Atlas of Australian Acid Sulfate Soils

Potential contaminating sources – Element 1
Potential contaminating sources — Element 1

Potential contaminating sources — Element 2
Potential contaminating sources – Element 3

northeastlink.vic.gov.au

Potential contaminating sources – Element 3

northeastlink.vic.gov.au
Potential contaminating sources – Element 3

![Map of potential contaminating sources](northeastlink.vic.gov.au)

Contamination – Existing conditions
EES Preliminary field investigation (up to Sept 2018)

<table>
<thead>
<tr>
<th>Element</th>
<th>Soil Bores</th>
<th>Soil Samples</th>
<th>Acid sulphate samples</th>
<th>Groundwater Wells (new/existing)</th>
<th>Groundwater Samples</th>
<th>Landfill gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element 1</td>
<td>66</td>
<td>80</td>
<td>32</td>
<td>16</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>Element 2</td>
<td>91</td>
<td>172</td>
<td>55</td>
<td>20</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>Element 3</td>
<td>27</td>
<td>38</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>184</td>
<td>290</td>
<td>95</td>
<td>43</td>
<td>47</td>
<td>4</td>
</tr>
</tbody>
</table>
Existing conditions - Results

- **Soil:**
  - Majority of soil samples represent Fill Material
  - Prescribed industrial waste (PIW) – Predominantly Category C
    - Predominantly Category C spoil
    - Minor Category A and B in former landfills
    - PFAS – located in Bulleen, Watsonia
  - Potential Acid sulfate soil/rock may be present in:
    - Moderately weathered to fresh Silurian rocks and
    - Alluvium in Bulleen area

- **Groundwater:**
  - Minor metals (likely natural)
  - Hydrocarbons – BTEX (Yallambie Fuel Station) and PCE (Watsonia drycleaner)
  - PFAS – Bulleen and one occurrence in Watsonia

- **Landfill gas** – no guideline exceedances

Spoil volume assessment and management strategy

- Modelled total waste spoil volume estimates (in-situ)

<table>
<thead>
<tr>
<th>Location</th>
<th>Estimated in situ volume (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M80 Ring Road to Northern Tunnel</td>
<td>2,155,000</td>
</tr>
<tr>
<td>Northern Tunnel to Southern Tunnel</td>
<td>3,265,000</td>
</tr>
<tr>
<td>Eastern Freeway</td>
<td>680,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6,100,000</strong></td>
</tr>
</tbody>
</table>
## Spoil volume assessment and management strategy

Indicative in-situ waste categories estimates (m$^3$)

<table>
<thead>
<tr>
<th>Element</th>
<th>WASS*</th>
<th>Fill Material</th>
<th>Prescribed Industrial Waste</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>M80 Ring Road to Northern Tunnel</td>
<td>-</td>
<td>2,120,000</td>
<td>3,000</td>
<td>32,000</td>
</tr>
<tr>
<td>Northern Tunnel to Southern Tunnel</td>
<td>2,630,000</td>
<td>481,000</td>
<td>5,500</td>
<td>11,500</td>
</tr>
<tr>
<td>Eastern Freeway</td>
<td>minor</td>
<td>612,000</td>
<td>500</td>
<td>1,500</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>2,630,000</td>
<td>3,213,000</td>
<td>6,000</td>
<td>16,000</td>
</tr>
</tbody>
</table>

*WASS estimate is considered to be highly conservative

Waste volumes will be confirmed by the Contractor

northeastlink.vic.gov.au

---

Landfill and treatment facility capacity – not included in EES Report

northeastlink.vic.gov.au
Contamination – impact assessment overview

• Construction and operation risks:
  • Potential for human health impacts
  • Potential for environmental impacts
  • Potential for amenity impacts – odour, vapour releases

• Management approaches:
  • Environmental performance requirements (EPRs) – including Spoil Management Plan and Acid Sulphate Spoil Management Plan

Responses to IAC Adviser Interim Report – Craig Barker

• Responses to the Interim Report have been provided in Technical Notes 11 and 20.

• Further response on issues:

<table>
<thead>
<tr>
<th>Issue</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement with Defence</td>
<td>Publically available data was reviewed and other discussions were confidential</td>
</tr>
<tr>
<td>Groundwater discussion</td>
<td>The main considerations for groundwater with respect to contamination are:</td>
</tr>
<tr>
<td></td>
<td>• What to do with extracted groundwater during dewatering</td>
</tr>
<tr>
<td></td>
<td>• Confirm no migration of contaminants towards sensitive receptors</td>
</tr>
<tr>
<td></td>
<td>These are considered to be addressed in the EPRs for contaminated land and groundwater</td>
</tr>
<tr>
<td>Deep impact from BTEX in well near Yallambie Rd Fuel Station</td>
<td>Likely to be associated with the fuel station which is to be removed during construction. Construction will need to consider dewatering in this area and potential vapours during operation</td>
</tr>
<tr>
<td>Statutory Auditor</td>
<td>Project includes an auditor. The Spoil Management Plan will require endorsement and confirmation of compliance by an accredited environmental auditor (as per EPA guidelines).</td>
</tr>
</tbody>
</table>
Issues raised in submissions

These have been considered in my report

- I have reviewed the submissions and have concluded that the EPRs will address the issues raised. This presentation also provides explanation.
- Intentions regarding the restoration of construction compounds was unclear – I propose an addition to EPR CL1 to address this.

Environmental Performance Requirements (EPRs)

<table>
<thead>
<tr>
<th>EPR</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL1</td>
<td>Spoil Management Plan (SMP)</td>
</tr>
<tr>
<td>CL2</td>
<td>Acid Sulfate Management Plan (SMP)</td>
</tr>
<tr>
<td>CL3</td>
<td>Odour Impact mitigation</td>
</tr>
<tr>
<td>CL4</td>
<td>Vapour and ground gas mitigation</td>
</tr>
<tr>
<td>CL5</td>
<td>Chemical, fuel, hazardous material management</td>
</tr>
<tr>
<td>CL6</td>
<td>Minimise contamination risk during construction</td>
</tr>
</tbody>
</table>

EPRs developed by other disciplines were also assessed for relevance to contamination and soil
Contamination – conclusions

- Main areas of contamination interest identified along the alignment
- Contaminants are not unusual and are often encountered – established management methods available
- PFAS – emerging contaminant of concern – but management options are available. Landfill disposal criteria likely to be released soon
- Preliminary waste volumes have been estimated:
  - Post-EES work has not indicated material changes to waste classifications in EES
  - Further work is required to confirm waste estimates
- Spoil management strategy: the landfill capacity assessment confirms the availability of disposal options
- EPRs developed to mitigate risks - Application of EPRs results in all residual risks rated “Low”

Contact us

northeastlink.vic.gov.au

1800 941 191

North East Link Authority
GPO Box 4509
Melbourne VIC 3001

@northeastlinkmelb
@nelmelb