Coastal matters affecting Port siting

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Five options considered in Sapere (2020) report assuming existing port location not viable after approx. 30 years without substantial (approx. 60 hectare) reclamation

- Northport expansion
- Port of Tauranga expansion
- a shared increase in capacity at both Northport and Port of Tauranga
- a new port (greenfield site) on the Firth of Thames, and
- a new port (greenfield site) on the Manukau Harbour.
Northport and Tauranga proposals could provide capacity for next 30 to 60 years
Manukau Harbour and Firth of Thames the only two options that meet the gateway test
Manukau Harbour entrance is a significant challenge for this option that has had limited investigations and studies done.

Historic changes from 1863
More recent changes 2000 - 2016

Manukau: Keeping the channel open would require large scale works and ongoing maintenance

- PFS (2016) and subsequent studies (Black Quay 2020) have identified that more studies/research needed to explore how bar operates and effectiveness and effects of management options – only high level assessments done.
- Likely to need to be dredged down to 17 to 20m CD and may need tug support
- Length of dredged channel could be in the order of 7 to 10 km and need active management to keep open, i.e.
  - Training works
  - Maintenance dredging and sand bypassing
  - Fluidization or other innovative means

How does Manukau Entrance compare?

<table>
<thead>
<tr>
<th></th>
<th>Spring tidal prism (m³)</th>
<th>Spring tidal range (m)</th>
<th>Wave climate</th>
<th>Dredge volume (m³/year)</th>
<th>Alongshore drift volume (m³/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manukau Harbour</td>
<td>918,000,000</td>
<td>3.4</td>
<td>Highly energetic</td>
<td>225,000 to 375,000</td>
<td></td>
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<tr>
<td>San Francisco</td>
<td>1,610,440,000</td>
<td>0.5</td>
<td>Moderately to highly energetic</td>
<td>300,000 (80,000 – 800,000)</td>
<td>80,000 to 200,000</td>
</tr>
<tr>
<td>Figueira da Foz (Portugal)</td>
<td>890,000</td>
<td>2.2</td>
<td>Highly energetic</td>
<td>&gt;2,925,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Port of Santos (Brazil)</td>
<td>55,100,000</td>
<td>1.2</td>
<td>Moderately energetic</td>
<td>1,644,000</td>
<td>355,000</td>
</tr>
<tr>
<td>Punta Umbria (Spain)</td>
<td>20,000,000</td>
<td>3.2</td>
<td>Weak to moderate</td>
<td>44,000</td>
<td>300,000</td>
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<tr>
<td>Currumbin Creek (Australia)</td>
<td>1610</td>
<td>1.5</td>
<td>Moderate to high</td>
<td>46,000</td>
<td>500,000 to 800,000</td>
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<tr>
<td>Port Otago</td>
<td>69,000,000</td>
<td>2.15</td>
<td>Moderate</td>
<td>250,000</td>
<td>500,000</td>
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<tr>
<td>Port of Tauranga</td>
<td>178,000,000</td>
<td>1.6</td>
<td>Moderate</td>
<td>62,000</td>
<td>73,000 to 210,000</td>
</tr>
</tbody>
</table>

Modified from eCoast, 2020
Once inside the harbour, more straightforward from coastal perspective, but many other issues:

- Dredged channels
- Avifauna
- Ecology
- Airport restrictions
- Unitary Plan designations
- Etc, etc
Firth of Thames Site

- Deeper water close to land
- Sheltered relatively low wave energy
- Rocky coast
- = Easier from marine side from coastal processes
- But complex land side and complex issues within CMA
Thank you