

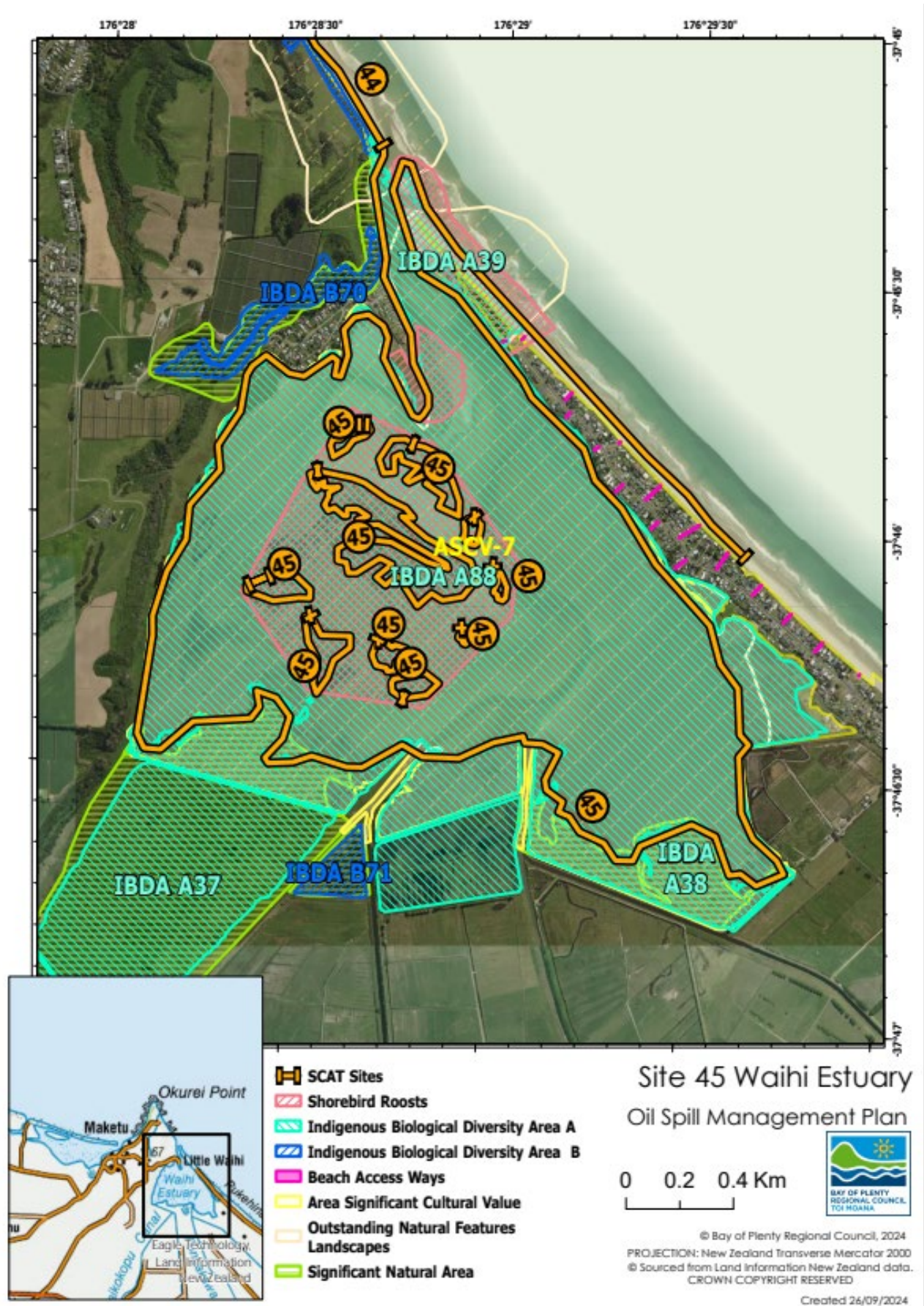
| Site 45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Waihi Estuary                                                                                                                                                                                                                                                                                                  | Risk ranking: 1                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>DESCRIPTION</b> <p>This site comprises of a large estuary with extensive saltmarsh vegetation and intertidal mudflats, and diverse sub tidal habitat. There is multiple freshwater contributions the: Kaikokopu Canal; Wharere Canal; Pongakawa Canal; Pukehina Canal, all enter from the southern end. Island ecosystems in estuary.</p> <p>Internationally protected migratory shore birds feeding – treaty obligations (JAMBA, CAMBA, ROKAMBA). Meets RAMSAR criteria for an internationally significant wetland.</p> <p>Waihi Estuary is identified as an Outstanding Natural Feature and Landscape (ONFL 13).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                |                                   |
| <b>Foreshore type/environmental value</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Intertidal sandflats, saltmarsh, mangroves, seagrass Habitat (intertidal), all shore segments have “habitat value”<br><br>The whole estuary, sand spit and coastal marine area are identified as an area of Significant Cultural Value (ASCV 7)<br><br>Indigenous Biological Diversity Area A39, A88, A37, A38 |                                   |
| <b>Map sheets</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>NZ Topo 50</b><br><br>BD 38 Maketu                                                                                                                                                                                                                                                                          | <b>Chart Number</b><br><br>NZ 541 |
| <b>Segments</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>BOP-00380 to 00420, BOP-00150, BOP-01350 to 01430</b>                                                                                                                                                                                                                                                       |                                   |
| <b>At Risk Resources</b> <ul style="list-style-type: none"><li>• Saltmarsh and mangroves, foreshore vegetation</li><li>• Fish spawning nursery areas</li><li>• There is a large diversity of birds including at risk and threatened species, e.g.: New Zealand dotterel (tuturiwhatu) (breeds on the spit), caspian tern (taranui), wrybill (ngutuparore), banded rail (kataitai), fern bird (matata), bittern (matuku hūrepo), spotless crane (pūweto), white heron (kōtuku), banded dotterel (tuturiwhatu), pied shag (karuhiruhi), reef heron (matuku moana), knots (huahou), eastern bar-tailed godwit (kuaka), pied stilt (poaka), pied oystercatcher (tōrea), variable oystercatcher (tōrea pango), white fronted tern (tara), little black shag (kawau tūi), little shag (kawau paka), royal spoonbill (kōtuku ngutupapa).</li><li>• Kaimoana: fishery and shellfish gathering (pipi and tuangi)</li><li>• Cultural sites: taiapure and is of special cultural significance as a food source</li><li>• NZAA V14/157 (Midden site), NZAA V14/2 (Pa site)</li><li>• NZAA V14/18 (Occupation layer (10-30 cm thick). Covers an area c. 50 x 30 m)</li></ul> |                                                                                                                                                                                                                                                                                                                |                                   |
| <b>Notes</b> <p>The main priority area for protection is the estuarine margin wetlands towards the back of the estuary, which have high wildlife values. Oil that enters the low energy systems of Waihi Estuary will remain for some time. Oil will harm saltmarsh habitat, biodiversity in intertidal flats and whitebait spawning areas in the estuary.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                |                                   |
| <b>Actions</b> <ul style="list-style-type: none"><li>• Establish collection and recovery on sandy areas east of the estuary mouth</li><li>• Establishing boom at estuary entrance difficult due to high currents</li><li>• Notify wildlife team</li><li>• Discuss pre-clean-up of intertidal debris - tidal range specific</li><li>• Consider pre-emptive capture of New Zealand dotterel</li><li>• Consider pre-emptive capture of wildlife generally</li><li>• Activation of oiled wildlife response collection teams if required</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                |                                   |

**Access**

Vehicle access is via Pukehina Beach Road from the east and via Maketu to the west. The western side of the estuary can be accessed from Bledisloe Park Avenue. A boat ramp and jetty is located at the end of the peninsula that Bledisloe Park Avenue provides access to. There is also a boat launching ramp at the end of Pukehina Beach Road.

**Preferred Response Option Matrix**

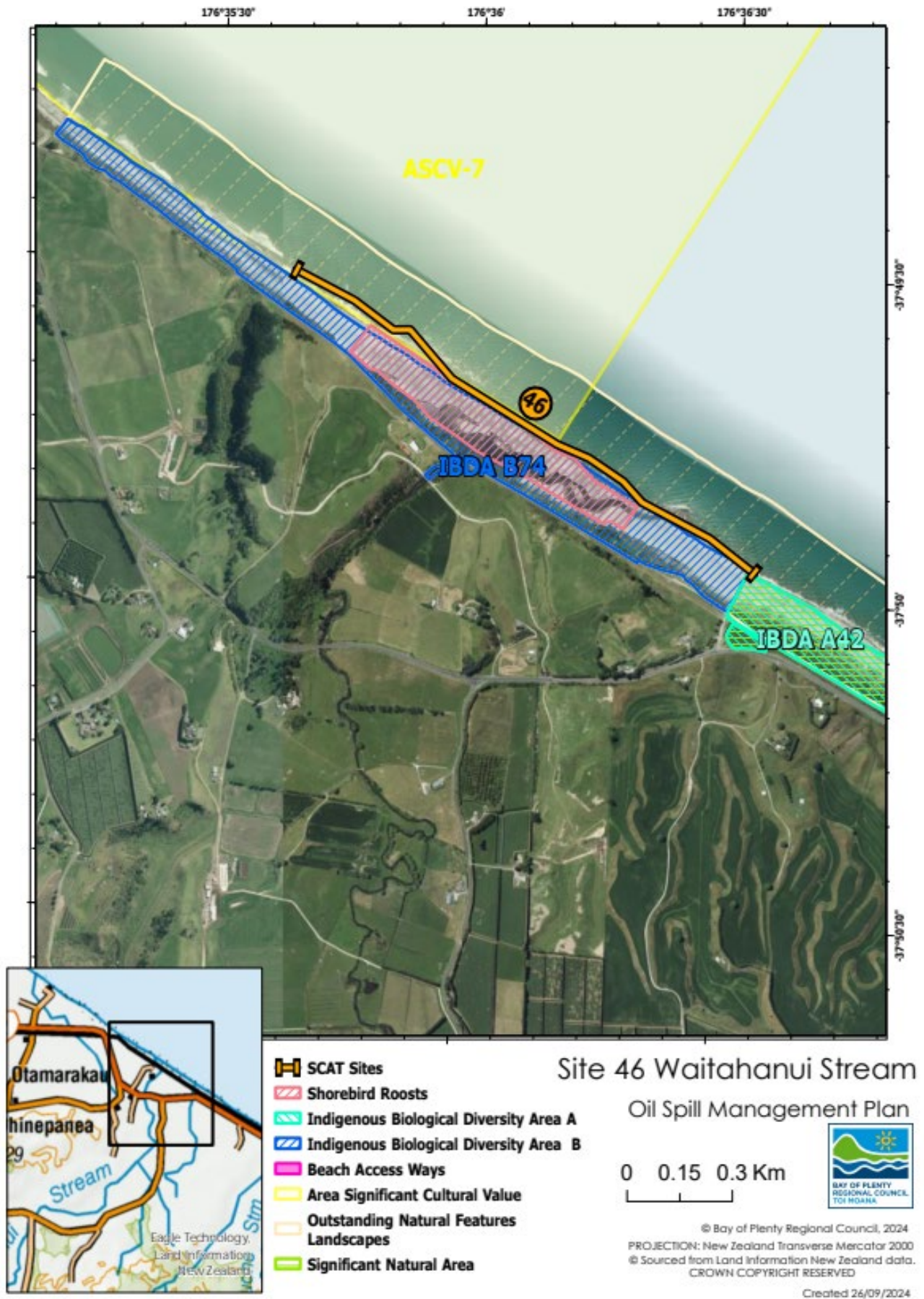
|                          | Most preferred | Least preferred                                | Feasibility                                                              |
|--------------------------|----------------|------------------------------------------------|--------------------------------------------------------------------------|
| Containment and Recovery | High           |                                                | Some deflection booming possible                                         |
| On water Recovery        | High           |                                                | Strong tidal flows, not a good option                                    |
| Dispersant Application   | Low            | Requires escalation to Tier 3 and MNZ approval | Water depth won't allow                                                  |
| Shoreline Clean-up       | Medium         |                                                | Sandy areas provide good clean-up options                                |
| Natural Recovery         | Medium         |                                                | Due to shallow and sensitive area, some natural recovery may be required |



| Site 46                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Waitahanui Stream                                                                                                                                                                                                   | Risk ranking: 1               |
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| <b>DESCRIPTION</b> <p>This site comprises the Waitahanui Stream mouth, tidal lagoon to the west on the shore side of the dunes. The tidal influence is 500 m up to SH 2.</p> <p>No major wetlands, small lagoon within dune system.</p> <p>The area falls within the Kohioawa Beach Dune Field and Wetlands, identified as an Outstanding Natural Feature and Landscape (ONFL 14).</p>                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                     |                               |
| <b>Foreshore type/environmental value</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Sand, lagoon, riparian vegetation<br>All shore segments have “habitat value”<br>The coastal marine area is identified as an area of Significant Cultural Value (ASCV 7)<br>Indigenous Biological Diversity Area B74 |                               |
| <b>Map sheets</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>NZ Topo 50</b><br>BD 38 Maketu                                                                                                                                                                                   | <b>Chart Number</b><br>NZ 542 |
| <b>Segments</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>BOP-00299, BOP-00301</b>                                                                                                                                                                                         |                               |
| <b>At Risk Resources</b> <ul style="list-style-type: none"><li>Numerous at-risk birds, threatened species including: banded rail (kataitai), spotless crake (pūweto), bittern (matuku hūrepo), fernbird (kareni), New Zealand dotterel (tuturiwhatu)</li><li>Freshwater fish - whitebait (inanga)</li><li>Indigenous dune vegetation and raupo reedland.</li><li>Lagoon – aquatic vegetation present</li><li>Cultural sites/values:<ul style="list-style-type: none"><li>NZAA V15/719</li></ul></li></ul>                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                     |                               |
| <b>Notes</b> <ul style="list-style-type: none"><li>Public use including fishermen and whitebaiters</li><li>Oil that enters the low energy systems of the estuary will remain for some time. Oil will harm intertidal and sand flats habitat</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                     |                               |
| <b>Actions</b> <ul style="list-style-type: none"><li>Limit the amount of oil entering the estuary by putting protection or deflection booms in place</li><li>Alternatively, close the lagoon at high tide to prevent oil entering the low energy lagoon system, repair lagoon cut off at low tide (flow dependent)</li><li>Consider pre-emptive capture of New Zealand dotterels from the western spit</li><li>Notify wildlife team of potential for oiling</li><li>Discuss pre-clean-up of intertidal debris - tidal range specific – with wildlife team</li><li>Consider pre-emptive capture of wildlife generally</li><li>Activation of oiled wildlife response collection teams if required</li><li>The size of the lagoon may vary from that in the map/photo</li></ul> |                                                                                                                                                                                                                     |                               |
| <b>Access</b> <p>Via SH 2, Otamarakau. Onto beach, will need to cross the estuary from the eastern side. Alternative access is across private farmland to the west of the lagoon and then by foot across the train tracks.</p> <p>Note that access is across a train line. Develop safety plan for safe access to this site, in conjunction with KiwiRail.</p>                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                     |                               |

**Preferred Response Option Matrix**

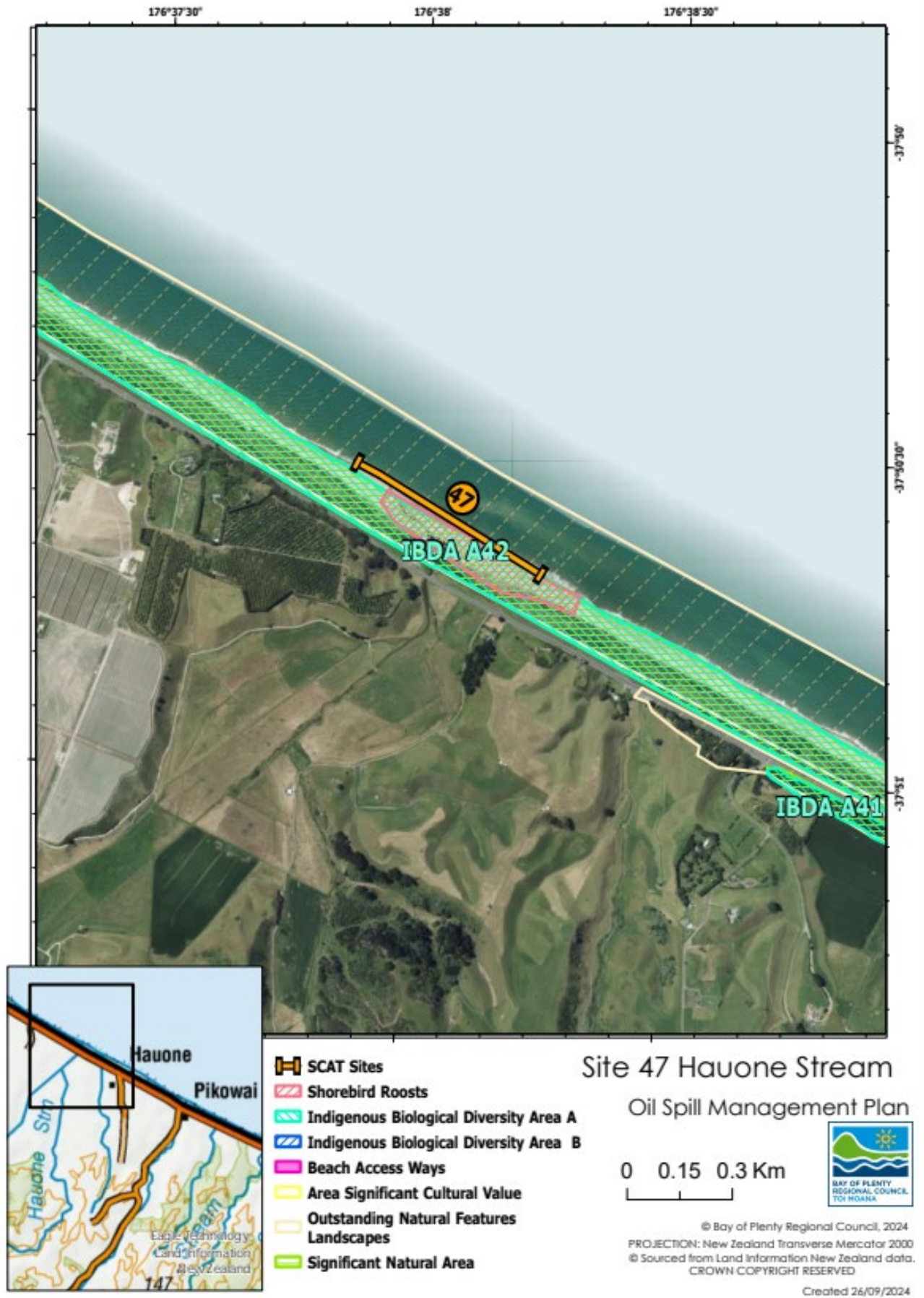
|                          | Most preferred | Least preferred                                | Feasibility                                     |
|--------------------------|----------------|------------------------------------------------|-------------------------------------------------|
| Containment and Recovery | High           |                                                | Shallow coastal environment                     |
| On water Recovery        | High           |                                                | Prior to reaching shore with appropriate vessel |
| Dispersant Application   | Low            | Requires escalation to Tier 3 and MNZ approval | Shallow coastal environment                     |
| Shoreline Clean-up       | High           |                                                | Good access for beach teams, pre-clean required |
| Natural Recovery         | Medium         |                                                | May be required due to foreshore moments        |



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| Site 47                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Hauone Stream                                                                                                              | Risk ranking: 3               |
| <b>DESCRIPTION</b><br><p>This site is comprised of a small freshwater stream that is tidal to SH 2. Although no wetlands, there is a 500 m long lagoon behind the dune system. The stream mouth is highly mobile and may not be connected in normal flow conditions to the sea.</p> <p>The area falls within the Kohioawa Beach Dune Field and Wetlands, identified as an Outstanding Natural Feature and Landscape (ONFL 14).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                            |                               |
| <b>Foreshore type/environmental value</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sand, lagoon, steep beaches, stream<br>All shore segments have “habitat value”<br>Indigenous Biological Diversity Area A42 |                               |
| <b>Map sheets</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>NZ Topo 50</b><br>BD 38 Maketu                                                                                          | <b>Chart Number</b><br>NZ 542 |
| <b>Segments</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>BOP-00305</b>                                                                                                           |                               |
| <b>At Risk Resources</b> <ul style="list-style-type: none"><li>• New Zealand dotterel (tuturiwhatu) nesting</li><li>• Whitebait (inanga) and other native freshwater fish</li><li>• Potential birds: white-faced heron (matuku-moana), grey duck (pārera), australasian bittern (matuku hūrepo), black-billed gull (tarāpuka), banded dotterel (tuturiwhatu), Caspian tern (taranui), New Zealand dabchick (weweia), pied shag (karuhiruhi), red-billed gulls (akiaki), reef heron (matuku moana), marsh crake (koitareke), spotless crake (pūweto), banded rail (kataitai), black shag (māpunga), little black shag (kawau tūī), little shag (kawau paka), royal spoonbill (kōtuku ngutupapa), North Island fernbird (mātātā), pied stilt (poaka), white fronted tern (tara), variable oystercatcher (tōrea pango).Common gecko (mokomoko)</li><li>• Lagoon behind vegetated supratidal area</li><li>• Riparian vegetation</li><li>• Moderate public use by fishermen and whitebaiters</li></ul> |                                                                                                                            |                               |
| <b>Notes</b> <p>Oil that enters the low energy system of this lagoon will remain for some time. Oil will harm saltmarsh habitat and whitebait spawning areas</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                            |                               |
| <b>Actions</b> <ul style="list-style-type: none"><li>• Prevent oil from entering the side lagoon</li><li>• Notify wildlife team</li><li>• Discuss pre-clean-up of intertidal debris - tidal range specific (maintain gecko habitat)</li><li>• Consider pre-emptive capture of New Zealand dotterel</li><li>• Consider pre-emptive capture of wildlife generally</li><li>• Activation of oiled wildlife response collection teams if required</li><li>• Shoreline clean-up – remove cleaned material from beaches daily (do not allow to remain over any high tidal period) and place at staging location to be agreed</li></ul>                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                            |                               |
| <b>Access</b> <p>Via SH 2, Hauone.</p> <p>Note that access is across a train line. Develop safety plan for safe access to this site, in conjunction with KiwiRail.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                            |                               |

**Preferred Response Option Matrix**

|                          | Most preferred | Least preferred                                | Feasibility                              |
|--------------------------|----------------|------------------------------------------------|------------------------------------------|
| Containment and Recovery | High           |                                                | Sand boom across entrance                |
| On water Recovery        | High           |                                                | Shallow coastal shoreline                |
| Dispersant Application   | Low            | Requires escalation to Tier 3 and MNZ approval | Shallow coastal shoreline                |
| Shoreline Clean-up       | High           |                                                | Access to stream area is over train line |
| Natural Recovery         | Medium         |                                                | High intensity coastline                 |



| Site 48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Pikowai Stream                                                                                                     | Risk ranking: 3              |
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| <b>DESCRIPTION</b><br><p>This site comprises a small fresh water stream that is tidal to where it is crossed by SH 2. A 500 m long lagoon sits behind the dune system. Stream may not be connected in normal flow conditions to the sea.</p> <p>The area falls within the Kohioawa Beach Dune Field and Wetlands, identified as an Outstanding Natural Feature and Landscape (ONFL 14).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                    |                              |
| <b>Foreshore type/environmental value</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Sand, lagoon, dunes, stream<br>All shore segments have “habitat value”<br>Indigenous Biological Diversity Area A42 |                              |
| <b>Map sheets</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>NZTopo50</b><br>BD38 Maketu                                                                                     | <b>Chart Number</b><br>NZ542 |
| <b>Segments</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>BOP-00308</b>                                                                                                   |                              |
| <b>At Risk Resources</b> <ul style="list-style-type: none"><li>New Zealand dotterel (tuturiwhatu) nesting</li></ul> <p>Potential birds: white-faced heron (matuku-moana), grey duck (pārera), australasian bittern (matuku hūrepo), black-billed gull (tarāpuka), banded dotterel (tuturiwhatu), Caspian tern (taranui), New Zealand dabchick (weweia), pied shag (karuhiruhi), red-billed gulls (akiaki), reef heron (matuku moana), marsh crake (koitareke), spotless crake (pūweto), banded rail (kataitai), black shag (māpunga), little black shag (kawau tūi), little shag (kawau paka), royal spoonbill (kōtuku ngutupapa), North Island fernbird (mātātā), pied stilt (poaka), white fronted tern (tara), variable oystercatcher (tōrea pango).</p> <ul style="list-style-type: none"><li>Whitebait (inanga) and other native freshwater fish</li><li>Sand spit</li><li>Locally important recreational fisheries</li><li>Moderate public use by fishermen and whitebaiters. Pikowai Campground beside</li></ul> |                                                                                                                    |                              |
| <b>Notes</b> <p>Oil that enters this system will be able to be cleaned up as there is no natural vegetation in the riparian areas</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                    |                              |
| <b>Actions</b> <ul style="list-style-type: none"><li>Limit the amount of oil entering and moving through the estuary by placing a barrier across the entrance as oil approaches and monitor</li><li>Release built-up stream water from sand barrier during low tides as required, but close before high tide returns</li><li>Sand may form an effective barrier, but only after local cultural liaison and/or supervision</li><li>Shoreline clean-up – remove cleaned material from beaches daily (do not allow to remain over any high tidal period) and place at staging location to be agreed</li><li>Notify wildlife team of potential for oiling</li><li>Discuss pre-clean-up of intertidal debris - tidal range specific – with wildlife team</li><li>Consider pre capture New Zealand dotterels from the western spit</li><li>Consider pre-emptive capture of wildlife generally</li><li>Activation of oiled wildlife response collection teams if required</li></ul>                                            |                                                                                                                    |                              |

**Endpoint Criteria**

Clean segments to endpoint criteria (refer to endpoint clean-up criteria according to environmental value).

**Access**

Via SH 2, Pikowai.

Note that access is across a train line. Develop safety plan for safe access to this site in conjunction with KiwiRail.

**Preferred Response Option Matrix**

|                          | Most preferred | Least preferred                                | Feasibility                             |
|--------------------------|----------------|------------------------------------------------|-----------------------------------------|
| Containment and Recovery | High           |                                                | Sand boom across entrance               |
| On water Recovery        | High           |                                                | Shallow coastal shoreline               |
| Dispersant Application   | Low            | Requires escalation to Tier 3 and MNZ approval | Shallow coastal shoreline               |
| Shoreline Clean-up       | High           |                                                | Access to stream area is over trainline |
| Natural Recovery         | Medium         |                                                | High intensity coastline                |

