Port of Tauranga Dredging Reconsenting Project: Channel Dredging (Capital and Maintenance)

Navigational Safety Assessment

Prepared for Port of Tauranga Ltd.

by

Navigatus Consulting

14 August 2026

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Port of Tauranga Dredging Reconsenting Project: Channel Dredging (Capital and Maintenance) - Navigational Safety Assessment

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Revision	Revision Type	Date	Authorised By
Ver 0	First draft for client review	4 December 2025	G. Bermingham
Ver 1	Response to client feedback and removal of draft watermark	22 December 2025	G. Bermingham
Ver 1.1	Minor naming convention change for consistency (Sec 2.1) "a corner of the No. 1 Reach"	23 December 2025	G Bermingham
Ver 1.2	Updated to reflect activities since previous issue. Minor terminology clarifications.	13 March 2026	G Bermingham
Ver 1.3	Additional note added in Section 1 (ES) and new Section 8 added in response to CVR issues raised	29 May 2026	G Bermingham
Ver 1.3.1	Minor changes to text based upon feedback Replaced Fig 2.1 with corrected Version - For consultation	4 Jun 26	G Bermingham
Ver 1.4	Material added related to Code of Conduct for Expert Witnesses.	14 August 2026	[redacted]

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Glossary

Term	Definition
ALARP	As low as reasonably practicable
Alongside	Secured to a wharf, pier, or pontoon
AIS	Automatic Identification System
AtoN	Aid to Navigation
BOPRC	Bay of Plenty Regional Council
Tauranga Pilotage Area	The area defined as the Tauranga Pilotage Area in Maritime Rule 90
Berth	A location in a port or marina where a vessel may lie alongside
Bunkering	The process of fuelling a ship
DMP	Dredging Management Plan
Draught	The vertical distance from the deepest part of the hull or appendages to a vessel's waterline.
Fetch	An uninterrupted stretch of water over which a wind or waves can build
GT	Gross tonnage
Harbourmaster	A person warranted by the regional council under s.33D of the Maritime Transport Act
ISO	International Organization for Standardization
Kn	Knots (nautical miles per hour)
LOA	Length overall (vessel)
Manoeuvre	Change the direction of a vessel – in this case within the port area
MNZ	Maritime New Zealand
MOSS	Marine Operator Safety System
MTOP	Maritime Transport Operators Plan
Navigate	The act or process of managing or directing the course of a vessel on, though, over, or under the water
NRA	Navigation Risk Assessment
NZCPS	New Zealand Coastal Policy Statement
NZS	New Zealand Standard
Pilot	A mariner who has specific knowledge of a harbour or channel authorised by the maritime authorities to guide vessels a given area.
Port side (port)	Left side of a ship when viewed from onboard look towards the bow (front)
PoT	Port of Tauranga Limited
RMA	Resource Management Act
SOLAS	The International Convention for the Safety of Life at Sea
Starboard (stbd)	Right side of a ship when viewed from onboard look towards the bow (front of the vessel)
Swinging / Turning basin	A designated area where vessels can be turned around or swung / turned
VHF	Very High Frequency. The frequency used for inter-vessel and routine ship to shore radio communications

Code of Conduct for Expert Witnesses

Subsequent to the preparation of this technical report, Navigatus has been asked to include a statement regarding compliance with the Code of Conduct for expert witnesses as set out in Practice Note 2023 of the Environment Court.

As this report was not structured as expert evidence, it has not been set out as anticipated by the Practice Note and was written by a team of experts rather than one expert. However, the following notes have been added to address each of the requirements of the Code of Conduct.

Duty to the Court

Referring to clause 9.2 of the Practice Note:

(a). This report has been prepared impartially. *As the risk assessment was originally intended to independently aid client decision making with regard to the navigational safety of the project, and now reflects any advice given, it is by its very nature impartial.*

(b). This report does not advocate. *This report makes no case for or against any technical point or decision. The concluding assessment is the result of an independent, formal and factual assessment process.*

(c). Navigatus' relationship with PoT. *The company's relationship with PoT is contractual. A fixed fee was charged for the preparation of the report with the subsequent support being on an hourly fee basis. The outcome of the Application will have no impact on the fee charged.*

(d). Respect for other experts. *Navigatus has not critiqued or expressed any opinion of any other expert during the preparation of the report or since.*

Evidence of an Expert Witness

Referring to clause 9.3 of the Practice Note:

While this is a technical report, it was not structured as 'evidence' in the sense this term is used in the Practice Note. The following is noted:

i. The Code has been read and is acknowledged by G. Bermingham and J. Mills. A. Flaws, who was originally involved in the work, is no longer with Navigatus.
ii. G. Bermingham: BEng (Hons) 20 years as Naval Officer, 17 years as maritime risk consultant, A. Flaws: 20 years as Naval Officer, J. Mills BSc (Hons): 7 years as data scientist and maritime risk consultant.
iii. The material of this report is entirely within the team's expertise and relies on general maritime sector information as well as information from PoT regarding the technical details of the proposed works.
iv. The data and information referred to in this report informed the risk assessment and conclusions drawn.
v. No 'opinions' as such are expressed. The 'assessments' made are the result of a formal and internationally established process and formal research. Where 'judgements' have been made, these are based upon professional knowledge and experience of the Navigatus team.

vi. All material facts known to the team have been considered.

vii. All key literature or other material used to make the assessments are referenced in the report. No ‘opinions’ as such are expressed.

viii. The work included incident data analysis and a site visit including witnessing port maritime operations.

ix. “Risk” by its nature considers the possibility of future events or circumstances. As such, there is inherent uncertainty as to the likelihood and consequence on a possibility occurring. However, the team’s extensive professional experience and the supporting analysis have informed the assessments made.

x. No mathematical model beyond a simple matrix has been applied.

xi. All terminology used is as formally defined and used within the maritime and maritime risk management sectors.

1 Executive Summary

This report summarises the findings of a Navigational Safety Assessment (NSA) for proposed capital and maintenance dredging within Tauranga Harbour. It also considers the navigation safety for all maritime users of the harbour of the intended operation and use of the main shipping channel by Port of Tauranga (PoT).

It is understood that PoT will shortly begin dredging to deepen the existing channel and widen the swinging basin in accordance with its existing (2013) resource consents which enable that dredging to occur.

The current capital dredging will deepen the main shipping channel within Tauranga Harbour. These works, in effect, complete the capital dredging that was originally legally authorised in 2013 and will enable the type of deep draught ships that already call at Tauranga to be less constrained by tide in terms of their arrival and departure times. This has both operational and safety benefits, as it increases safety margins for handling all vessels passaging within the main channel.

The works will primarily be undertaken by trailing suction hopper dredgers. Some works along the wharf face or where harder material is encountered may be undertaken using a long reach excavator or Grab Dredger which will load a hopper barge alongside. A similar method was used in phase one capital dredging in 2015/2016.

In compiling this report, Navigatus conducted a review of an independent 2021 Tauranga Port and Harbour Maritime Risk Assessment and identified potential changes to the risk profile for identified risks as a result of the proposed dredging. These risks were then evaluated and considered against standard maritime risk controls and additional controls identified to reduce risks to be As Low As Reasonably Practicable (ALARP). This assessment then compares the results of the safety assessment after risk treatments are applied against the ALARP criterion. It also assesses the environmental impact using the defined criteria for an Assessment of Environmental Effects (AEE) under the Resource Management Act (RMA).

Navigatus also undertook detailed research, an on-water site visit, interviews with Port staff and risk analysis during 2024 in support of prior port planning.

The proposed activities will result in minor potential changes to the navigational safety risk profile. The potential changes include a marginal reduction of operational risk in some areas, as well as minor increases in some risks during the capital dredging that require the implementation of routine additional controls to be considered ALARP. Overall, the capital and maintenance dredging proposed do not represent a notable change to the status-quo in terms of navigational safety; either for large commercial vessels with a marine pilot embarked or for other maritime users of the harbour. These risks and the overall impact of the proposed activities on navigation have been assessed and described using terms for the scale of effects as developed over time under the RMA framework. In terms of environmental impact, the overall effect of the changes in relation to navigational safety is assessed to be *less than minor.*

Further to the completion of this report, responses to a Cultural Values Assessment process where received. Navigatus has therefore subsequently considered the responses where

there was a navigational aspect. It was found that the concerns raised by a number of CVA parties appear to be predicated on an increase in vessel activity or else the cultural impact of additional maritime controls. Navigatus notes that the proposed maintenance dredging and limited capital dredging covered by this navigational safety assessment will not in themselves facilitate a 'increase' in vessel activity nor require additional or new safety protocols or controls outside of routine maritime controls. As noted above; the proposed dredging does not represent a material change to the status-quo in terms of navigational safety for any maritime users of the harbour.

2 Introduction

2.1 Scope

The aspects covered in this Navigational Safety Assessment (NSA) are navigational safety risks associated with:

- The capital dredging of sitting basins, the approach to berth 1, a corner of the No. 1 Reach, and maintenance dredging works across the harbour.
- The subsequent navigation of large vessels within the harbour/port.

The report also assesses the impact of the changes in resource management terms.

The NSA is independent of supporting reports by other specialists but relies in part on the information prepared and provided by them.

2.2 Overview of Methodology

This NSA has been guided by:

- AS/NZS 31000:2009 Risk Management – Principles and guidelines. Adopted international standard[1].
- Port and Harbour Marine Safety Code[2].
- Key Principles for Marine Safety Risk Management[3].
- PIANC Report n° 121 – 2014 Harbour Approach Channels Design Guidelines[4].

In accordance with the risk management process, this NSA:

- Sets out the Context and Scope.
- Describes the current harbour environment, channel and operations.
- Describes the proposed harbour channel and operations.
- The navigational safety assessment is described in section 6.

[1] Similar to: International Organization for Standardization, "ISO 31000:2018 Risk Management."
[2] Maritime New Zealand, "New Zealand Port and Harbour Marine Safety Code."
[3] Maritime New Zealand, "Key Principles for Marine Safety Risk Management."
[4] The World Association for Waterborne Transport Infrastructure, "PIANC Report N° 121 – 2014 Harbour Approach Channels Design Guidelines."

- Proposes any additional controls to address risks that are assessed as not being as low as reasonably practical (ALARP).

2.3 Proposed Works

2.3.1 Purpose of Works

In 2013, Port of Tauranga Limited (PoT) obtained resource consents that authorised capital dredging activities to enhance the depth and width of the existing shipping channels and to conduct ongoing maintenance dredging. Under these consents, a significant dredging initiative was implemented during the 2015/2016 period, primarily focused on deepening and widening the shipping channels. Subsequently, annual maintenance dredging has been undertaken.

These consents are set to expire in December 2027. Stage 2 of the consented works is expected to be concluded in late 2026. PoT is seeking to replace these resource consents in order to maintain the ability to undertake relatively minor capital dredging as well as the uninterrupted continuation of maintenance dredging operations. This resource consent application is pivotal for maintaining operational efficiency, and strategically positioning the port for future expansion and development.

2.3.2 Description of Works

In outline, the dredging process consists of:

- Excavating bottom material at the area being worked.
- Loading a hopper barge (some dredges also transfer material).
- Sailing / towing the hopper barge (loaded) to the deposition area, located approx. 6 nautical miles (nm) from the harbour entrance.
- Discharging (bottom opening or by pumping).
- Sailing / towing the empty hopper barge to the working area (the working area progressively moving as the works progresses).

The following sections expand on the detail of the above.

2.3.3 Dredging (Capital)

Description of dredging

The proposed capital dredging will:

- Deepen a portion of the inner harbour off No.1 Berth to a depth of 16m:
  - 52,553m^2
- Deepen an area of the Passing Lane to a depth of 17.4m to ease the corner in No 1 Reach
  - 2,788m^2
- Deepen the sitting basins alongside the Maunganui Roads wharfs to 16m:

- 1506m x 50m

- Deepen the sitting basins alongside the Stella Passage wharfs to 16m:
  - 2800m x 50m
- Deepen the sitting basins alongside the Sulphur Point wharfs to 16m:
  - 1222m x 50m

It is anticipated that a Trailing Suction Hopper Dredger (TSHD) will be used for the works. However, Grab Dredgers (GD) or Back-Hoe Dredge/Back-Hoe Digger (BHD) dredgers may also be employed for the work. It is understood that similar methods were used in phase one capital dredging in 2015/2016 and are being used in phase two in 2026. The dredgers and support vessels are further described in section 2.3.5.

Changed areas / channels

As displayed in Figure 2.1, other than an overall deepening off No.1 Berth and the corner in No1 Reach, the capital dredging is limited to deepening the sitting basins that run along the existing wharfs. Sitting basins allow ships that would otherwise not be able to sit alongside at low tide to do so regardless of the state of the tide. Such sitting basins are common for commercial ports sited within tidal harbours.

2.3.4 Dredging (Maintenance)

PoT has undertaken routine maintenance dredging under the existing consents since 2013. This application seeks to renew consent for ongoing maintenance dredging to ensure charted depths are maintained. See Figure 2.2 for the areas that need to be maintained and are within the scope of this application.

2.3.5 Dredging *Vessels*

A number of vessels will be employed during the dredging operations. Dredging vessels will be operated under their respective Maritime Transport Operators Plan (MTOP) and will be required to comply with all Maritime Rules and Harbourmaster's directions.

Dredgers are required to show special lights and shapes while working – this to show to other mariners the activity in hand and hence its manoeuvring constraints, and the need to maintain a safe distance.

As mentioned in section 2.3.3, it is anticipated that TSHD will be employed for both proposed capital and maintenance dredging works. A GD or BHD may also be employed for work which the TSHD cannot reach or if the material being dredged is too hard. A GD normally comprises a clamshell grab suspended from a crane mounted on a barge/the shore. The dredged material is normally loaded into barges moored alongside the dredge area. For barge-mounted operations, position is held by using anchors or spuds as with the BHD. For the proposed work, some work along the wharf face may be carried out using a long reach excavator or GD where a TSHD may struggle.

Support vessels

Support vessels will include survey vessels (9m-15m length overall (LOA)) and crew vessels to transport project staff/dredger crew to the dredging vessels when required.

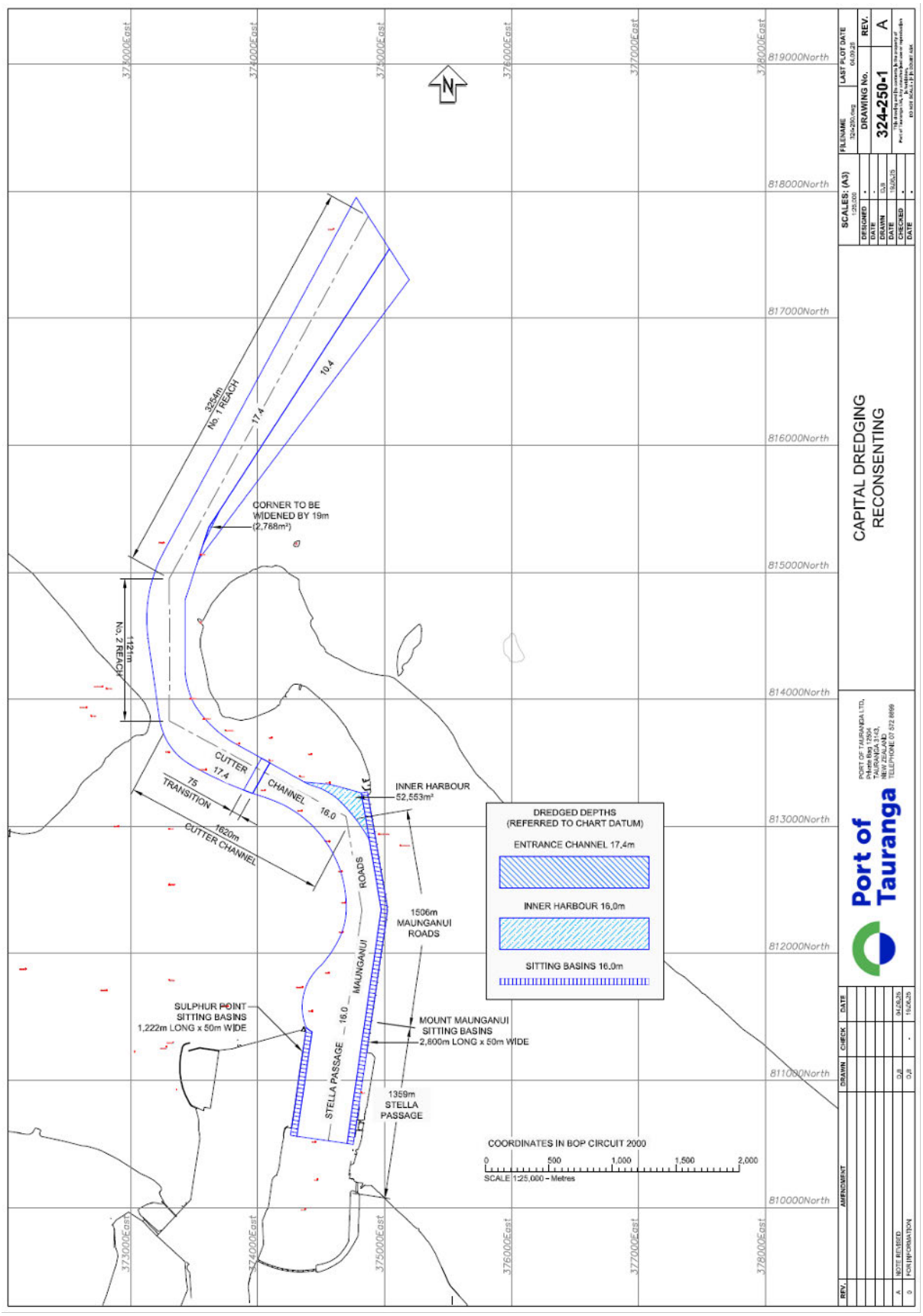


Figure 2.1 - Proposed Capital dredging areas[5].

[5] Port of Tauranga, "Drawing 324-250-1 Rev A".

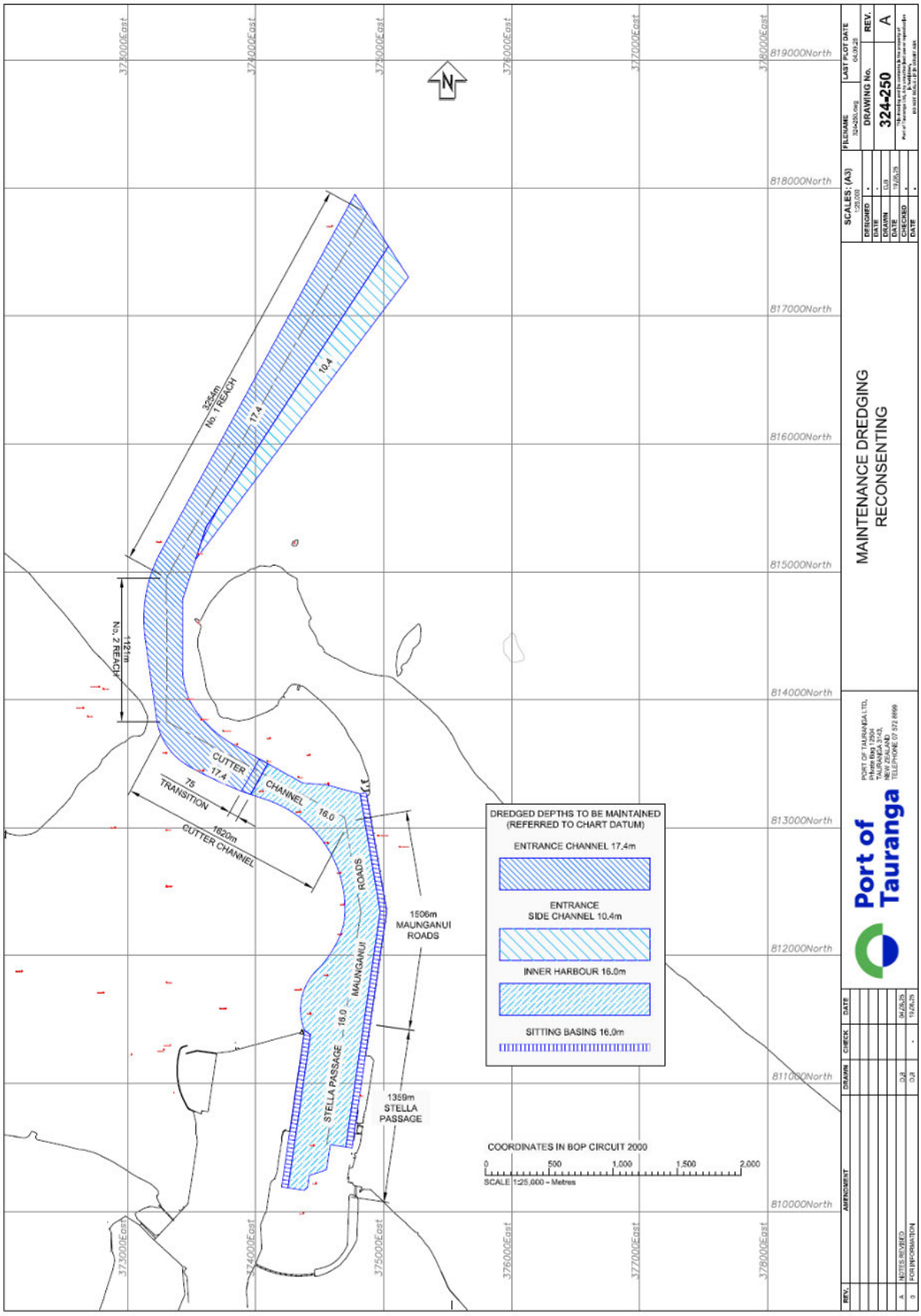


Figure 2.2 - Areas covered by this application for the maintenance dredging programme.

2.4 Regulatory Context

All vessels are subject to maritime legislation, regulations and rules. At the national level, Maritime NZ (MNZ) sets Maritime Rules, of which the following apply:

- Maritime Rules Part 22 – Collision Prevention[6].
- Maritime Rules Part 90 – Pilotage[7].
- Maritime Rules Part 91 – Navigation Safety Rules[8].

At the regional level, the Bay of Plenty Regional Council (BOPRC) makes a Regional Navigation Safety Bylaw pursuant to sections 33M and 33R of the Maritime Transport Act 1994 and in line with the Maritime Rules. This bylaw sets out how the following standard definitions and requirements apply in the local context:

- Designation of a narrow channel.
- Duty of Master of a Vessel under 500 Gross Tonnage.
- Moving Prohibited Zone.
- Compulsory pilotage[9].

In addition, Part 3A of the Maritime Transport Act 1994[10] also gives the Harbourmaster a range of powers to manage maritime safety in the region.

[6] Maritime New Zealand, *Maritime Rules Part 22: Collision Prevention*.
[7] Maritime New Zealand, *Maritime Rules Part 90: Pilotage*.
[8] Maritime New Zealand, *Maritime Rules Part 91 - Navigational Safety Rules*.
[9] Bay of Plenty Regional Council, "Bay of Plenty Regional Navigation Safety Bylaw 2024."
[10] New Zealand Government, Maritime Transport Act 1994.

3 Tauranga Harbour

3.1 General Description

Tauranga Harbour serves as a significant commercial and customs port, catering primarily to rural, hinterland, and local industries in the Bay of Plenty, Waikato, and Auckland areas. Key exports from the port include forestry and dairy products, fruits, steel, and general merchandise. The port facilities also provide for the handling of imported goods, such as petroleum products, fertiliser bases, chemicals, cement, dry and liquid bulk cargoes, and general goods.



Figure 3.1 - Satellite image of Tauranga Harbour and approaches[11].

Tauranga Harbour is an expansive harbour characterised by a predominantly low, sandy foreshore and is situated between Matakana Island and the mainland to the west. The northwestern region of the harbour extends from Katikati Entrance to Matakana Point, spanning approximately 8nm to the southeast (Figure 3.1). This area is primarily comprised of drying sand and mud flats, interspersed with small tidal channels that offer navigable

[11] Google, “Google Maps.”

water for smaller vessels. In contrast, the south-eastern part of the harbour features shallow or drying banks of sand and shell, with various navigable channels, including those only accessible by small vessels, as well as the main shipping channel utilised by the large commercial traffic calling at PoT.

PoT facilities are primarily situated in Mount Maunganui, which is located on the eastern side of the southeast entrance to Tauranga Harbour. PoT's other facilities are located in Tauranga City, approximately 3nm south of the harbour entrance.

3.2 Environmental Conditions

3.2.1 Wind

As with most New Zealand harbours and inlets, Tauranga Harbour experiences seasonal weather patterns. These patterns are generally predictable, especially during the summer months where the winds are strongly influenced by global meteorological conditions such as El Niño and La Niña. In non-El Niño/La Niña years, summer winds are variable, coming from any direction with approximately equal probability. Wind speeds are generally light to gentle, mostly ranging between Beaufort Force (BF) 1-3 (<10kn). Winds at or exceeding near-gale (BF 7 or ≥33kn) occur infrequently (approx. 9% of the time).

As autumn progresses, southwest winds become more prevalent. Predominant wind speeds are moderate to fresh (BF 4-6 or 11-27kn). The frequency of BF 7 winds or higher increases slightly to around 12%.

Winter provides the most predictable wind direction, predominantly from the southwest or west. Winter wind speeds are similar to those in autumn, with the highest likelihood of speeds in the BF 4-6 range. However, winter does carry the highest probability of encountering high winds with BF 7 or higher expected approximately 16% of the time.

In spring, the winds remain predominantly from the western quadrant, with nearly equal chances of northwest, west, or southwest winds. Spring is the least likely season to experience strong winds with BF 7 or higher winds expected approximately 8% of the time.

3.2.2 Tidal Streams

In the approaches to Tauranga Harbour, the No1 Reach (refer Figure 3.2) is affected by a flood tidal stream that sets to the west[12]. A second flood stream sets to the south over the Matakana Bank. These two streams converge in the vicinity of North West Rock in the No2 Reach. The combined flood stream sets to the south at speeds of up to 4kn through the harbour entrance before the stream splits; with some of the flood stream conforming to the direction of Cutter Channel and the remainder fanning out over the centre bank and into the Western Channel. The tidal stream velocity varies depending on the height of tide and percentage springs; however, the peak rate can be as much as 2kn where the tidal stream heads south into the Western Channel. After the point at which the streams split inside the harbour entrance, the rate of the flood tide is significantly reduced; with peak rates of 0.8kn to be expected in Cutter Channel and 1.2kn in Maunganui Roads and Stella Passage.

[12] United Kingdom Hydrographic Office, *Admiralty Sailing Directions: New Zealand Pilot (Np51)*.

The ebb tide generally conforms to the main channels in the Stella Passage and Maunganui Roads at a peak rate of 1.3kn. The peak rate of the outgoing tide increases to 1.7kn in the Cutter Channel as water drains off the centre bank and the stream gathers speed towards the harbour entrance. The main channel stream sets generally west around Stony Point where it is joined by a second stream from the Western Channel, draining a large volume of water from the northwestern area of the harbour. This second ebb stream sets in a northerly direction as it enters the main channel at a rate of up to 2.5kn and combines with the main outgoing stream. This combined stream can reach peak rates of up to 4.5kn, setting in a northerly direction through the harbour entrance and out the No2 Reach. Towards the northern end of the No2 Reach, the ebb tide sets to the northeast towards North Rock before turning eastward.

The period of slack water is typically brief and may be barely noticeable in the northern part of the No2 Reach. In the area near Panepane Point, slack water commonly extends for approximately 20 minutes. To the south of Stony Point, the duration of slack water can range from 10 to 30 minutes.

3.2.3 Waves

Owing to its location in the Bay of Plenty, the entrance to Tauranga Harbour is highly sensitive to swell and sea conditions. Conditions can be challenging where the swell has a strong easterly component, reducing under keel clearance. Large swells, particularly from the northeast can be treacherous, particularly on an ebb tide.

The inner harbour is well protected from ocean swells by Matakana Island and Mount Maunganui. The size of waves in these enclosed waters is dependent on the wind speed, direction, duration and fetch. The prevailing westerly wind can generate slight wave heights (0.5-1.25m)[13] which can be hazardous to small vessels, particularly when wind opposes tide.

3.2.4 Visibility

Visibility in Tauranga Harbour is generally good with reports of reduced visibility, to an extent that may affect navigation, being relatively uncommon. Visibility is most likely to be reduced in conditions of heavy rain and squally showers rather than fog, which is recorded approximately 2-3 days per year.

3.3 Aids to Navigation

The area is generally well served in terms of Aids to Navigation (AtoN) infrastructure. Leads, prominent marks and cardinals are well designed and in good condition. Fixed AtoN are located across the Tauranga Pilotage Area and are in conformance with standard national[14] and international conventions[15].

The approach and commencement of the dredged channel is marked by “A Beacon” (easterly cardinal mark). Situational awareness at the transition from No1 to No2 Reaches is aided by “B” and “C” buoys (starboard and port lateral marks, respectively). The main

[13] “Douglas Sea Scale.”
[14] Maritime New Zealand, Aids to Navigation Guideline.
[15] IALA, “IALA Guideline 1094 - Daymarks for Aids to Navigation.”

navigation channel is easily distinguished from minor or side channels at night, by the differentiation of the light phasing.

In the case of the No1 and No2 Reaches and Cutter Channel, channel centrelines are marked with a transit of two prominent navigation marks, each lit with either a fixed or flashing light and sectored directional lights. The Maunganui Roads and Stella Passage do not have leading lights. However, the design and spacing of lateral marks allow for situational awareness to be easily maintained.

3.4 Channel and Berths

The naturally occurring main channel in Tauranga Harbour has undergone staged capital dredging to deepen, widen and realign the channel to meet the demands of the size of vessels handled throughout its time serving as a major commercial port. It has also been routinely dredged to maintain safe depths for the large vessels navigating within harbour limits.

At the harbour entrance, the dredged channel runs in a south-westerly direction before turning in a southerly direction (No2 Reach), and then southeast into the Cutter Channel. Once inside the lee of Mount Maunganui (protected from ocean swells), the previously maintained depth shoaled from 15.8m to 14.5m will be dredged to a depth of 17.4m and 16m in 2026.

Cutter Channel runs in a south-easterly direction towards the Mount Maunganui wharf, passing between Pilot Bay to the north and Centre Bank to the south. The channel then makes a sweeping turn through the Maunganui Roads into Stella Passage, providing safe manoeuvring to all commercial berths at Sulphur Point to the west, and the southern berths of Mount Maunganui to the east of Stella Passage.

From Stella passage, smaller vessels can either take the Ōtūmoetai channel, which runs westward to the north of Sulphur Point, or continue south into the Town Reach.

Access to Tauranga Harbour for commercial vessels is via the Mount Maunganui entrance, with several key channels:

3.4.1 Main Harbour Channel

The Main Harbour Channel, displayed in Figure 3.2, extends southwest through No1 Reach before turning south into No2 Reach and passing through the harbour entrance. It then leads east-southeast from the harbour entrance through Cutter Channel to Maunganui Roads, continuing south through Stella Passage into the Town Reach to the east of Tauranga City. Major berths and port facilities are located along Mount Maunganui Wharf, situated on the east side of Maunganui Roads. To the east of Sulphur Point, a peninsula extending approximately 2nm north-northeast of Tauranga City, PoT provides additional berths and cargo handling facilities for containers and general cargo. The Town Reach features a marina and designated mooring areas for small craft on the east side of the main channel.

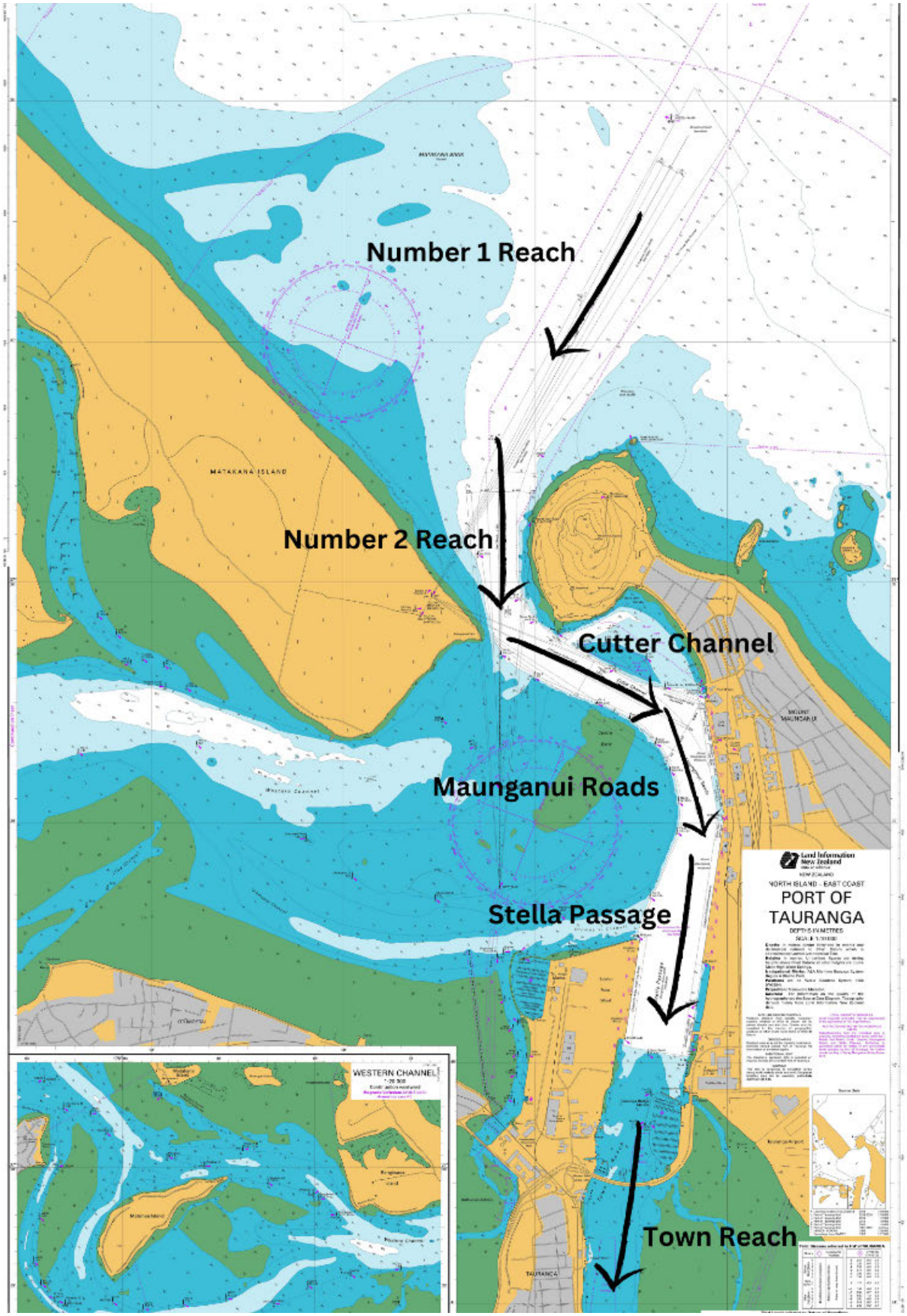


Figure 3.2 - Port of Tauranga chart with Main Harbour Channel overlay.

3.4.2 Other Channels

Pilot Bay Channel: Serving as a small craft channel, navigates between Pilot Bay and a shallow bank on the northeast side of Cutter Channel. Small craft mooring areas are present on both the northeast and southwest sides of this channel.

Western Channel: Designed for small craft, this channel passes south of Matakana Island and connects with other smaller channels leading to the northwestern part of Tauranga Harbour.

Ōtūmoetai Channel: Another small craft channel, it leads west from the southern end of Maunganui Roads, connecting with Western Channel approximately 2nm west-northwest of Sulphur Point. A substantial marina is situated on the south side of Ōtūmoetai Channel on the western side of Sulphur Point.

3.4.3 Summary of Major Wharfs and Berthing Facilities

Mount Maunganui – These berths consist of a continuous concrete wharf of a little over 2,000m. This comprises 11 numbered berths. A number of berths have a charted depth of 12.5m, allowing a vessel of 11.7m maximum draught alongside. The longest berth is number 5, which is 228m in length and has a maximum vessel draught of 9m.

Cement/Tanker berth – This berth has a length of 81m, which is further extended by dolphins at either end. It has a depth alongside of 12.9m.

Sulphur Point – This wharf contains over 600m of berthing space, divided into three berths. Each berth is nominally 200m long with a depth alongside of 15m. The Sulphur Point berths are utilised by the largest container ships calling at PoT, currently the Maersk “S-Class”.

Railway Wharf – The Railway Wharf is predominantly used by local fishing vessels. It has a length of 165m and maximum depth of 4.5m.

3.5 Existing Dredging (Maintenance)

The main channel and PoT berths have been regularly surveyed to monitor bathymetry, with particular attention to sedimentation or shifting sand build-up around Panepane Point and in the area to the west of the No1 and No2 Reaches. Regular surveying has also ensured monitoring of channel toe-lines and bank erosion in the areas around Centre Bank. An annual dredging plan has been undertaken to ensure charted depths are maintained.

Ahead of the current capital dredging programme (Consents 65806 and 65807), the dredged channel in the approaches to Tauranga has been maintained to a depth of 15.8m throughout the No1 Reach from “A Beacon”, No2 Reach and the first (seaward) half of Cutter Channel. A gradual transition of approximately 200m to the west of No5 and No6 Beacons, where the maintained depth shoals. The depth of 14.5m has been maintained through the remainder of Cutter Channel, Maunganui Roads and Stella Passage.

PoT berths are currently dredged to maintained depths of between 9.5-15m.

3.6 Current Dredging (Capital)

Capital dredging is currently underway to deepen the existing channel and widen the swinging basin. This is being done under the existing 2013 resource consents. This work is due to be completed in 2026 and will result in charted depths of:

No.1 Reach:	17.4m
No.2 Reach:	17.4m
Cutter Channel:	17.4m shoaling to 16m
Maunganui Roads:	16m
Stella Passage:	16m

3.7 Vessels Serviced

Tauranga Harbour is a very busy harbour by New Zealand standards. It hosts the commercial facilities of PoT, which is NZ's busiest commercial port by vessel visits (22.2% of international ship visits to New Zealand in 2024[16]), bulk tonnage and container throughput.[17] In addition, Tauranga Harbour is utilised by a large number of recreational vessels. In recent years there has been a marked increase in population in the wider Tauranga area, with the region's higher population being reflected in numbers of recreational vessels using the harbour.[18]

Vessels in Tauranga may be broadly categorised as:

Large commercial vessels

These include bulk carriers and container ships conducting general import and export shipping. These vessels are piloted within the harbour by PoT marine pilots. The largest of these vessels is the Maersk "S-Class" container ship (347m LOA, 43m beam and 14.5m draught) which regularly visits Tauranga.

Cruise ships

These ships are some of the largest handled anywhere in the world and may have thousands of passengers and crew onboard. These ships are piloted by PoT marine pilots and have vastly experienced bridge teams. The largest cruise ship to visit Tauranga is the Ovation of the Seas (348m long, 49m beam and 8.5m draught).[19]

Small commercial vessels

Generally coastal or small international vessels, such as tankers, call at PoT. These vessels may be piloted by PoT marine pilots or may hold a pilot exemption certificate (PEC) granted by MNZ and endorsed by the Harbour Master.

Local commercial vessels

[16] Deloitte, "New Zealand Ports and Freight Yearbook 2025."
[17] Deloitte.
[18] South Maritime Solutions, "Tauranga Port & Harbour Marine Risk Assessment."
[19] Yeoman, "Biggest Ship to Visit New Zealand Ovation of the Seas Sails into Tauranga."

Small, locally operated commercial vessels calling at various locations around Tauranga Harbour include local fishing vessels, charter operators, water taxis and other small vessels used commercially. These vessels will generally not meet the threshold for compulsory pilotage.

Recreational vessels

Tauranga Harbour is a very popular harbour for maritime recreation. Hundreds of people use the harbour for water-based recreational activities every day. These recreational users of the harbour that are relevant for the assessment of navigational safety with regard to the proposed works are briefly summarised below.

- **Recreational trailer boats.** There are several key boat ramps that provide access to the Tauranga Harbour for trailer boats. There are launching facilities provided in seven locations throughout the harbour, with the largest and most utilised being on the western side of Sulphur Point, the Harbour Bridge ramp at Whareroa and the Pilot Bay ramp. Recreational trailer boat activity is not limited to any particular part of the harbour but given the very shallow nature of the harbour, much of the traffic is confined to the main shipping channels.
- **Sailing vessels.** The Tauranga Harbour is home to a large number of sailing vessels of all sizes. A number of yacht races occur within the harbour throughout the year, with courses published to account for any given weather conditions. These courses can cover large areas of the main shipping channel but generally utilise the areas around Ōtūmoetai Channel, Stella Passage and Maunganui Roads. There are two designated small craft mooring areas within the harbour. One in Pilot Bay and the other on the eastern side of the Town Reach. There are also a number of sailing vessels berthed in the two large marinas; the Tauranga Marina, on the western side of Sulphur Point, and the Tauranga Bridge Marina on the eastern side of the Town Reach.
- **Large recreational power boats**. A number of larger recreational power boats are also based in Tauranga Harbour. These are predominantly berthed in the Tauranga Marina at Sulphur Point or in the Tauranga Bridge Marina in the Town Reach. Due to their size and draught, these vessels will generally use the main shipping channel when navigating within the harbour.
- **Personal Watercraft**. Includes stand-up paddle boards, kayaks, jet skis, waka ama paddlers and other personal watercraft. There are a number of areas within the harbour that are popular with small individual watercraft. They primarily are confined to the shallow bays and fringes of the main shipping lane, although there is some degree of overlap with large commercial vessels in the use of the harbour's waterspace.

3.8 Incidents

The *Tauranga Port and Harbour Marine Risk Assessment*[20], undertaken in 2021, noted that "PoT maintains a comprehensive incident reporting and investigation system." Incidents are recorded in the 'Vault incident reporting system'. Navigatus reviewed the incidents to identify

[20] South Maritime Solutions, "Tauranga Port & Harbour Marine Risk Assessment."

those involving dredging activities in the proposed dredging areas during approach/departure from berth. The 981 incidents were filtered by the following keywords:

- Dredge/dredger/dredging.
- Barge.
- Hopper.
- Hoe.
- Suction.
- Grab.
- Pocket.
- Sitting.
- Grounding.

These searches resulted in eight incidents which were then examined. None of the incidents involved dredgers nor were they relevant to the proposed activities.

Based on the information provided in the reports, dredging activities have not appeared to cause or affect the outcome of incidents in the approaches or sitting basins.

4 Assessment Methodology

Navigatus has evaluated the risks associated with the proposed works within the context of the environmental conditions within the port and harbour with particular emphasis on large commercial maritime traffic and interaction with other maritime activities in the area – both commercial and recreational. The following has been undertaken as part of the assessment:

- Navigatus staff previously visited the port in late 2023 and interviewed staff at PoT regarding the operation of the port, maritime traffic, and forecast expected operations. Given the expected scale of the work then planned and given the relatively routine nature of the proposed works, a follow up visit has not been necessary.
- Review of the existing consents RC65806/65807 and the basis of these.
- Consideration of the applicable navigational rules and regulations issued by MNZ and by the Tauranga Harbourmaster and the locational context in which the activity occurs.
- Review of the incident record for the harbour.

4.1 Consultation

In preparing an earlier NSA, Navigatus consulted with the key stakeholders with a view to understand the potential impacts on safety to navigation of the proposed changes. The key focus for those discussions was to fully flesh out the existing risk profile and the nature of harbour operations and any operational challenges. During that time, discussions were undertaken with the following stakeholders:

- PoT
  - Engineering manager
  - Operations manager
  - Marine pilots
  - Tugs masters
  - Tug crews
- BOPRC
  - Harbourmaster
  - Deputy Harbourmaster

In preparing this NSA, Navigatus has relied on that prior work and other information previously provided by the Client's staff. As well as some updating of that, that engagement included on-water time to witness large vessel arrival and departure as well as a tour of the wharfs.

Risks associated with the interaction between recreational vessels and large vessels within the harbour have been assessed using recreational harbour use as described in the Port of

Tauranga Recreation Effects Assessment report prepared by Rob Greenaway & Associates.[21]

4.1.1 Review of Relevant and Background Documents

In the production of this NSA, Navigatus has reviewed a number of documents pertaining to existing resource consents, contextual factors regarding navigation within the harbour, and information specific to the proposed works. They are summarised in Table 4.1.

Table 4.1 - Documents reviewed.

Document Name	Comment
Tauranga Port & Harbour Marine Risk Assessment[22]	Provides contextual information about the operation of PoT, key navigation risks and safety management considerations.
Memorandum – Navigation and the Stella Passage Development[23]	Provides contextual information, methodologies and rationale behind aspects of other dredging operations within the harbour, and some of the identified risks and associated controls.
Stella Passage Development and Navigation Safety Assessment[24]	Provides contextual information, methodologies and rationale behind aspects of other dredging operations within the harbour, and some of the identified risks and associated controls.
Resource Consent Notification and Conditions – 65806/65807[25]	Provides the contextual background of the consents seeking renewal. Provides accepted consent conditions to be used as a basis for proposed risk controls.
Stella Passage Development RCA - AEE[26]	Provides contextual information, methodologies and rationale behind aspects of dredging operations within the harbour, and some of the identified risks and associated controls.
Port of Tauranga Recreation Effects Assessment[27]	Provides information on other maritime users of the harbour, informing the NSA.
Bay of Plenty Regional Navigation Safety Bylaw 2024[28]	Provides information and context relevant to standard risk controls.

[21] Rob Greenaway & Associates, "Port of Tauranga Reconsenting Project Channel Dredging Recreation Effects Assessment."
[22] South Maritime Solutions, "Tauranga Port & Harbour Marine Risk Assessment."
[23] Julian, "Navigation And the Stella Passage Development."
[24] Julian, "Stella Passage Development and Navigation Safety Assessment."
[25] Bay of Plenty Regional Council, "Resource Consent 65806 & 65807 Conditions."
[26] Port of Tauranga, "Stella Passage Development Resource Consent Application Assessment of Environmental Effects."
[27] Rob Greenaway & Associates, "Port of Tauranga Reconsenting Project Channel Dredging Recreation Effects Assessment."
[28] Bay of Plenty Regional Council, "Bay of Plenty Regional Navigation Safety Bylaw 2024."

5 Standard Risk Treatments (Maritime Safety Controls)

5.1 Standards of Risk Management

The governing legislation for maritime safety in New Zealand is the Maritime Transport Act (1994)[29]. Section 17 of the Act imposes a requirement on participants in the maritime system to ensure that activities are carried out safely. As this requirement falls most directly on the maritime operators, they need to be satisfied that operations are carried out in accordance with the relevant safety standards and that the risks are being adequately managed.

New Zealand is a member of the International Maritime Organisation (IMO) and actively implements a wide range of IMO recommendations and protocols.[30] The IMO has adopted the principle of ALARP which is generally applied internationally in maritime and other industries.

The New Zealand Health and Safety at Work Act 2015 adopts a similar principle for the management of hazards: *So Far As Is Reasonably Practicable* (SFAIRP). A common feature of both the ALARP and SFAIRP approaches is the concept of driving risk to as low as is reasonably practicable but not to the extent that is a disproportionate effort that exceeds the risk reduction benefits.

In this NSA consideration is given to whether the proposed activities can be carried out safely and whether any proposed suite of risk treatments can be considered effective and reasonable and reduce risk to an ALARP level.

5.2 Standard Maritime Safety Controls

The following standard maritime safety controls will apply to all phases of the operation:

5.2.1 SOLAS Safety Management Systems

The safety management system for SOLAS vessels (as defined in Maritime Rule Part 21) is provided under the International Safety Management Code. This Code covers SOLAS vessels that are either NZ-owned or foreign flagged vessels that are visiting New Zealand that meet the requirements of Regulation 2 of the code.

There are some exceptions where certain commercial vessels are required to meet the safety standards of SOLAS vessels. These vessels are required to be in Class and have an International Safety Management system in place (ISM Code).

SOLAS vessels (including those non-SOLAS vessels that meet the exceptions) are subject to Section 1 of Maritime Rule Part 21[31] and Maritime Rule Part 40B[32].

[29] New Zealand Government, Maritime Transport Act 1994.
[30] Refer Appendix 5 *Measures and Tolerability of Risk* of the Annex to IMO circular MSC-MEPC.2/Circ.12/Rev.2, *Revised Guidelines For Formal Safety Assessment (FSA) For Use In The IMO Rule-Making Process.* International Maritime Organization, "Revised Guidelines for Formal Safety Assessment (FSA) for Use in the IMO Rule-Making Process."
[31] Maritime New Zealand, *Maritime Rules Part 21: Safe Ship Management Systems*.
[32] Maritime New Zealand, *Maritime Rules Part 40B: Design, Construction and Equipment - SOLAS Ships*.

5.2.2 Non-SOLAS Safety Management Systems

The safety management system for all non-SOLAS ships is broken into the following separate categories:

Marine Operator Safety System (MOSS)[33]

Commercial vessels are required to operate under a Marine Transport Operators Certificate. The conditions of granting the certificate include that all the operator's vessels have a current Certificate of Survey and that the operator has an Operator Plan. This plan includes safe operating and information management procedures as well as a vessel survey plan, maintenance plan and safety equipment list for each vessel. In addition, anyone operating the organisation's vessels must comply with the relevant maritime regulations including licence requirements. Vessels berthing in the Tauranga or Tauranga Bridge marinas will be recreational and thus not subject to MOSS. MOSS can, in effect, be considered to only act as a mitigation during the dredging phase.

Other non-SOLAS categories include:

- **Safe Operational Plans (SOPs)** for smaller specialist vessels and their operations.
- **Safety Case** for operations that don't fit under Maritime Rules.
- **Specified Limits Permit** for commercial operations within restricted areas.

These categories are further described on the MNZ website[34].

5.2.3 Seamanship

Vessels engaged in dredging will be managed by professional crews with sufficient training and experience to be able to hold the relevant vessel operating licence. The quality of seamanship on other vessels varies, especially for recreational vessels.

There are high concentrations of recreational boating traffic on the Tauranga Harbour at times. Levels of skill and understanding of the maritime rules vary greatly and the skipper's situational awareness and ability to take appropriate action to avoid collision cannot always be relied on. This can be assumed to be equally the case for the berth owners.

5.2.4 Navigation Safety Bylaw 2024

The *Bay of Plenty Regional Navigation Safety Bylaw 2024*[35] applies to the operation of vessels in Tauranga Harbour and all other regional waters (See section 2.4).

5.2.5 Tauranga Port Control (Customer Service Centre)

PoT maintains a 24-hour Customer Service Centre that is responsible for implementing a range of services to assist in controlling navigation safety, namely:

- Monitoring of harbour traffic.
- Communicating with vessels.
- Planning shipping movements.

[33] Maritime New Zealand, "Maritime Operator Safety System (MOSS)."
[34] Maritime New Zealand.
[35] Bay of Plenty Regional Council, "Bay of Plenty Regional Navigation Safety Bylaw 2024."

- Pilot and tug services.
- Security and surveillance.
- Berth allocation and planning[36].

5.2.6 Maritime Rules Part 22: Collision Prevention

Maritime Rules Part 22 sets out what is known in marine circles as the "rules of the road" regarding how vessels should manoeuvre to avoid collisions. These rules apply to all mariners including recreational.

One definition under Part 22 that applies in particular during dredging operations is for "vessels restricted in their ability to manoeuvre". Under Part 22, a *"vessel restricted in its ability to manoeuvre"* is defined as:

> *"a vessel which from the nature of its work is restricted in its ability to manoeuvre as required by this Part and is therefore unable to keep out of the way of another vessel and includes but is not limited to –*
>
> *(a) a vessel engaged in laying, servicing or picking up a navigation mark, submarine cable or pipeline:*
>
> *(b) a vessel engaged in dredging, surveying or underwater operations:*
>
> *(c) a vessel engaged in replenishment or transferring persons, provisions or cargo while underway:*
>
> *(d) a vessel engaged in the launching and recovery of aircraft:*
>
> *(e) a vessel engaged in mine clearance operations:*
>
> *(f) a vessel engaged in a towing operation that severely restricts the towing vessel and its tow in their ability to deviate from their course"* [37]

Any barges used for dredging works will, at times, be restricted in their ability to manoeuvre. Also, depending on the dredge method and equipment in use, the dredge may require a tug to tow it into position where it will anchor or otherwise hold itself. A tug may not always be on standby, so any required movement of the barge needs to be planned.

All vessels must show the day marks and lights as required by the applicable maritime rule. This rule applies to all vessels including dredging vessels underway/at anchor. Under Maritime Rule 22.27 (2) b, vessels which are restricted in their ability to manoeuvre must show three black shapes in a vertical line where they can best be seen, the highest and lowest of those shapes being balls and the middle one a diamond.

5.2.7 Navigational Charting

Charts are the principal means of communicating navigational information of locations and areas including hazards, depths and cautions as well as information on any AtoN. Changes within these areas that are material to safe navigation must be transferred to all relevant charts. Changes should be notified to the Harbourmaster and LINZ using the established maritime procedure. In the case of dredging works, the updated charts will be expected to

[36] Port of Tauranga, "Port Control."
[37] Maritime New Zealand, *Maritime Rules Part 22: Collision Prevention*.

show the confirmed changed depths, the bottom profile, any associated cautions and each AtoN.

6 Navigation Safety Assessment

6.1 Assessment of Current Channel Against PIANC

It is common practice to review new port/harbour designs against industry Standards as one of the first steps in a safety assessment process. For assessing harbours, the top-level industry Standard is The World Association for Waterborne Transport Infrastructure ('**PIANC**') *Harbour Approach Channels Design Guidelines*[38]. However, in assessing a well-developed port/harbour such as Tauranga, where routine navigation has been proven by experience to be safe, there is less value in assessing the entire port/harbour against a standard. Rather, greater value can be obtained from assessing only the proposed changes and any effects from these against the standard. That noted, given the very limited scale and routine nature of the proposed works, changes are in this case very limited.

Where a design is not covered by associated Standards, an assessment can be made against another industry best-practice design baseline or where a design has been in place for an extended time – local experience.

6.2 Summary of Potential Changes to Current Risk Profile

In 2021, a comprehensive evaluation of maritime hazards in Tauranga Harbour was conducted by an independent risk management consultant[39]. To provide a thorough understanding of the evolving risk dynamics within Tauranga Harbour that may result from the proposed works, Navigatus reviewed the risk assessment.

This NSA involved analysis of how the proposed works might materially impact the existing risk factors, both in terms of their likelihood and potential consequences. Additionally, Navigatus sought to identify potential areas where the implementation of the proposed works could give rise to entirely new risks. The assessment is summarised in Table 6.1.

Table 6.1 - Assessment of potential changes to identified risk (all phases).

Risk	Potential change in likelihood or consequence	Comment	Applicable phase(s) / periods
Collision	Yes	Marginally increased likelihood of collision between other vessels during dredging due to reduction in available navigable water whilst dredgers are in operation.	Capital and maintenance dredging phases.
		Marginally increased likelihood of collision with dredgers whilst in operation.	Capital and maintenance dredging phases.
		Marginally increased likelihood of collision between small vessels and large commercial vessels manoeuvring within turning basin.	Operational.

[38] The World Association for Waterborne Transport Infrastructure, "PIANC Report N° 121 – 2014 Harbour Approach Channels Design Guidelines."
[39] South Maritime Solutions, "Tauranga Port & Harbour Marine Risk Assessment."

Risk	Potential change in likelihood or consequence	Comment	Applicable phase(s) / periods
Grounding	Yes	Marginally increased likelihood during dredging due to reduction in available navigable water whilst dredgers are in operation.	Capital and maintenance dredging phases.
		Marginally increased likelihood of small vessel grounding due to reduced available space while large vessels manoeuvring in turning basin.	Operational.
Contact (between a vessel underway and a fixed object, wharf or vessel alongside)	No	Reduction in likelihood of contact due to large ships being turned in turning basin (versus between Sulphur Point and Tanker Berth).	Operational.
Loss of stability (vessels not involved in the works)	No	No material change to likelihood or consequence.	
Loss of stability (vessels involved in the works)	Yes	Increased local likelihood only due to increased vessel numbers / activity. Managed by routine maritime regulations and processes.	Capital dredging phase.
Fire and explosion	No	No material change to likelihood or consequence.	
Oil Spill	Yes	Potential likelihood of a spill marginally increased by the operation of dredgers within the harbour.	Capital and maintenance dredging phases.
Weather event	No	No material change to likelihood or consequence.	
Mooring breakout	No	No material change to likelihood or consequence.	
Container ship vs crane	No	No material change to likelihood or consequence.	

6.3 Navigation Risks (Capital and Maintenance Dredging Phases)

6.3.1 Dredger Interaction with other Maritime Users (Collision or Grounding)

The operation of dredgers within the main shipping channel, from No1 Reach through to Stella Passage, increases the likelihood of a collision or grounding due to the presence of the large, slow-moving dredges, with their limited manoeuvrability, in the channel. The

impact of the dredging operations on other maritime users, considering the application of the maritime safety controls in Section 5, can be described as:

Commercial

The impact of capital dredging on commercial traffic can be expected to be minimal. The use of dredgers within New Zealand harbours is not uncommon with regular maintenance dredging occurring in Tauranga Harbour. Throughout the proposed capital and maintenance works, dredging within the main shipping channel will be deconflicted with large vessel movements to provide safe water for large vessels to enter and leave the harbour. This will be coordinated through the port Customer Service Centre and follow established maritime practice.

PoT pilots and PEC masters are familiar with dredging operations, will be well informed of dredging activities and will maintain VHF communication with dredgers, barges and support vessels. At times, planned routes or berthing manoeuvres for large vessels may need to be amended due to the location of dredging activity, such as when a dredging barge is spudded in position. However, this will be known in advance and managed through advanced planning.

Smaller commercial vessels (not subject to compulsory pilotage) may be similarly impacted. However, they require significantly less sea room, are more manoeuvrable and capable of stopping in a much shorter distance. Where commercial vessels are not operated by or under control of PoT, there will be less awareness around dredging operations. See section 6.6.2 for mitigations regarding notice and communications.

Further to the above and as noted previously, dredgers are required to show day-shapes and lights to indicate the activity in hand and that they are restricted in their ability to manoeuvre. All commercial masters are required to know the meaning of shapes and lights and so will be well aware of the status of a dredger as they approach and pass.

Recreational (small)

The public users of the harbour include small recreational craft, rowers, waka ama and other activities typical in a New Zealand sheltered harbour. Dredging activity will have an impact on the recreational vessels. However, as with commercial traffic, the capital dredging activities and associated risks are not unfamiliar. Navigational hazards will exist during the capital dredging and these will be managed through standard maritime safety controls – namely shapes, lights, Notice to Mariners (NTM), local notices published by the Harbourmaster and, in the case of boating clubs, also local notice boards.

It is also noted that the crew of dredgers are required to maintain a look-out. In the case that a recreational craft approaches too close or it appears that it may, the barge can call on the local VHF channel (or the emergency channel – CH16) and also sound their horn as a warning.

6.3.2 Oil Spill

The likelihood of an oil spill is marginally increased as a result of the proposed dredging. This arises only from the fact that the presence of a dredger provides an additional source of a potential spill, thus increasing the likelihood. The standard maritime safety controls proposed effectively mitigate this risk.

6.4 Navigational Risks (Operational Phase)

6.4.1 *Normal Use of the Harbour*

Given that the overall design of the channels will not materially change from the current layout and the only physical changes will be increased water depth at the wharfs, the proposed works will have no material impact on the existing risk profile of the harbour.

6.4.2 *Vessels Serviced*

As described in section 2.3.2, the design vessel and other ships of similar dimensions and tonnage routinely call at PoT. However, due to limiting factors of tidal stream velocity and under keel clearance, these vessels are only able to do so around the period of slack high water. The capital dredging will provide additional water depth alongside the wharfs and so the maximum draught of the vessels that can lay alongside the wharfs will be able to be increased.

6.4.3 *Changed Areas / Channels*

Other than the overall deepening of the area off No.1 Berth and the deepening of the sitting pockets, no changes are proposed. These areas and their rationale are described in section 2.3.2. The potential impact on risks regarding collision and grounding and the proposed controls are described in section 5.2.

6.4.4 *Impact of Dredging on Tidal Flows*

Tidal flows inherently create a risk that the masters of small watercraft, particularly in areas where wind opposes tide, may not be able to navigate safely. However, the proposed capital dredging is limited and, given the locations are out of the main channel, would not be expected to change the flow to the extent that it will be material to mariners.

6.5 Risk Assessment Summary without Additional Risk Controls

The navigational safety effects with only standard controls were assessed by phase (Table 6.2). This assessment is on the basis that all of the standard maritime safety controls are in place.

In addition, the assessment is prepared on the basis that the current regulatory context of maritime rules and bylaws remain in place and are enforced.

The baseline of comparison is existing marine traffic in the harbour including maintenance dredging but without the proposed capital dredging activity.

Table 6.2 - Assessment of navigational safety effects with standard controls, by phase.

Activity	Navigational Risk Assessment for capital dredging activity with proposed controls	ALARP?
Capital dredging	Marginally increased but low risk for all vessels.	Yes
Maintenance dredging	As is - low risk for all vessels.	Yes

6.6 Controls for Dredging Activities

The following controls are recommended prior to and during dredging:

6.6.1 Dredging Management Plan

A Dredging Management Plan which sets out how the dredging will be managed to ensure that both environmental and safety requirements are met will need to be prepared by the dredging operator in conjunction with PoT. This is a routine requirement that PoT will need to oversee. As maintenance dredging has been ongoing for many years and a major capital dredging program commenced in January 2026, such planning will be well understood and practiced.

Ongoing communication with stakeholders and consultation with the Harbourmaster will be an important part of this plan. Given the limited scale and routine nature of the works, simply advising local boating clubs of the plans should suffice. The benefit of this will be largely that of communicating to these parties what the plan is and how to keep their vessels/members safe.

6.6.2 Early Formal Notification

The port Engineering Manager, Marine Manager, or an appropriate representative should formally notify the following key stakeholders of the location, duration and nature of the works ten days before commencement:

- The Bay of Plenty Regional Harbourmaster.
- Port of Tauranga Ltd (Port Control).
- Tauranga Coastguard.
- Local marina operators.
- Boating clubs and marina operators.
- General public through advertisements in social media and signs at local boat ramps.

6.6.3 Notice to Mariners

For this dredging, we recommend that both systems are used:

- An NTM is issued through LINZ advising mariners of the Capital dredging.
- Local Notice to Mariners (Local NTM) are issued as the campaign stops and starts to notify local mariners of where the dredge will be operating, the location the deposition sites, and any special precautions that mariners should take.
    - As is the usual process for works in the harbour, the Harbourmaster will need to issue the Local NTM identifying the works prior to commencement. The process is commenced by the PoT notifying the Harbourmaster as set out above. As these are local notices, the BOP Regional Harbourmaster will cancel the Local NTM when notified by the PoT that the work is complete.

6.6.4 Dredging Vessel Communication with Port Customer Service Centre

Dredging/works vessel masters will need to maintain communication with Port Control using VHF channel 12. In particular, the vessel masters must liaise with Port Control before moving their vessels.

6.6.5 Dredging/Works Vessels and Equipment Management

Any dredging/works vessels should be properly secured when not crewed to ensure they do not come adrift and cause a navigation hazard. In addition, the vessels should also be secured such as to prevent unauthorised persons moving the vessels.

Flotsam such as plastic and paper bags can interfere with vessel propulsion cooling systems creating a hazard. Larger items can cause damage to propellers and hulls. Therefore, items on the dredging/works vessels must be secure to ensure no equipment, materials or packaging can come loose and cause a navigational hazard.

6.6.6 Lighting

Lighting should be used to only illuminate the works areas and should be managed so it does not cause a distraction, dazzling, or temporary blinding to other water users, or interfere with other AtoN.

6.7 Additional Controls – Operational

Given the routine nature of the maintenance dredging and the limited physical extent of the capital works – most being close up to the wharfs – further non-standard controls are not considered necessary.

6.8 Risk Assessment Summary including Additional Risk Controls

The navigational safety effects, assuming additional controls are implemented, were again assessed by phase (Table 6.3) after application of the additional risk controls outlined above.

Table 6.3 - Assessment of navigational safety effects with additional controls, by phase.

Activity	Navigational Risk Assessment for capital dredging activity with proposed controls	ALARP?
Capital dredging	Low risk for all vessels.	Yes
Maintenance dredging	Low risk for all vessels.	Yes

7 Rating of Risks against Resource Management Act

This NSA uses an internationally recognised approach for assessing the risks associated with the proposed dredging. The risk associated with any particular event identified within the assessment is a combination of the likelihood and the consequence of that event occurring. In the case of navigational risk, the consequence being in terms of navigational safety. This standard risk methodology and the associated language as used to describe a risk rating does not directly translate into effects as those are understood in the Resource Management Act (RMA) context. For example, the term “low risk” does not equate to a “low” or “minor” effect just as “high risk” does not necessarily equate to a “significant adverse effect” or similar under the RMA.

Therefore, in response to this non-equivalence, a methodology has previously been developed from first principles by Navigatus to assess navigational risk in RMA terms. The process for developing the methodology for another project[40] is described below.

We started by considering the terms typically used for scale/level of effect in an RMA context and describing how these could best be characterised or described in terms of effect on maritime navigation. Table 7.1 sets out our descriptions. This is a seven-step scale that includes as a starting point; “No effect at all / de minimis” and extends to an impact of “Major”. Impact has been described in terms of the matters that a master of a vessel must consider prior to navigating within the area affected by any proposed development. The level of impact is a comparison between the environment without the proposed development and the environment with the development in place.

Table 7.1 - Proposed effects scale.

Effect level term	Description of level of impact on navigation
No effect at all / de minimis	Not creating any effect or factor for a master to consider during navigation planning or marine activity.
Insignificant	May be noted by a master but self-evidently not needing to be considered during navigation planning or marine activity.
Less than minor	Can be expected to be routinely considered by a master during navigation planning but having no effect on the safe conduct of navigation or marine activity.
Minor	An effect that needs to be considered by a master during navigation planning and may influence the conduct of navigation or marine activity but having no material effect on the ability to undertake safe navigation or vessel handling. Considered an incidental factor to consider and respond to.

[40] This process was used in evidence for the NZ King Salmon “Blue Endeavour” project. The process was accepted in the decision by the Marlborough District Council: Marlborough District Council, “Decision of Marlborough District Council.”

Effect level term	Description of level of impact on navigation
More than minor	An effect that would have to be considered by a master during navigation planning and that influences the conduct of navigation or marine activity. Normal responses would continue to enable safe navigation or vessel handling. Considered a routine factor that would be considered and responded to.
Moderate	An effect that would have to be considered by a master during navigation planning and would require additional planning and response. Normal responses would continue to enable safe navigation or vessel handling. Considered a non-routine factor that would be considered and responded to.
Major or significant	An effect that would have to be carefully considered by a master during navigation planning and that would influence the intended marine activity. Special planning responses would be required to ensure safe navigation or vessel handling in the vicinity.

In addition to the above scale of effect table, we considered a number of matters in the Department of Conservation's (DoC) New Zealand Coastal Policy Statement (NZCPS) Guidance to determine the extent to which an adverse effect is 'significant' (adapted from the Department of Conservation's Guidance Note on NZCPS Policy 11, May 2019[41]):

- The status of resources;
- The proportion of a resource affected/area of influence;
- The persistence of effect;
- The sensitivity of resources;
- Reversibility or irreversibility;
- Probability of effect;
- Cumulative effects;
- Degree of change;
- Magnitude of effect.

An assessment of the proposed dredging against these matters is summarised in Table 7.2.

Table 7.2 - DoC Guidance to determine whether an adverse effect is significant.

DoC guidance	Navigatus definition and assessment of proposed dredging and subsequent operations
Status of resources	Defined as the importance of the area, locally and regionally. The local area requires a high level of navigational / maritime skill for large vessels to safely operate and navigate within. Evidence of this is shown in the pilotage requirements for Tauranga Harbour.

[41] Department of Conservation, "NZCPS 2010 Guidance Note Policy 11: Indigenous Biological Diversity (Biodiversity)."

DoC guidance	Navigatus definition and assessment of proposed dredging and subsequent operations
	The presence of dredging vessels and support vessels and subsequent harbour activity on completion will add further to the inherent navigational complexity.
Proportion of resource affected/area of influence	We understand this to be that the size of the area affected by the activity will often influence the degree of impact. The proposed volume of material to be dredged is approximately 6.5 million cubic metres during the capital phase of dredging. An additional maintenance dredging proposed limit of 225,000 cubic metres per year averaged over five years.
Persistence of effect	We understand this to be the duration and frequency of effect. Effects generated during capital and maintenance dredging will persist while dredging operations are being conducted. This will occur in line with the dredging management plan, and will likely occur over an approximately 12-month period (capital), and several weeks per year (maintenance). The effects generated as a result of the operation of the harbour as designed will be constant and persistent.
Sensitivity of resources	Defined as the effect on the area and its sensitivity to change. The effect of the dredging activities and the subsequent change in harbour activity on completion will have very limited effect on navigation – with the dredgers (during dredging operations) and ships being one of many natural and man-made obstacles that mariners need to navigate past and avoid while operating in the area. As such, the navigational complexity of the area will not be sensitive to the presence of the proposed effects.
Reversibility or irreversibility	Defined as whether the effect is reversible or irreversible. On completion of capital/maintenance dredging activities there will be no residual adverse navigational effect on the area and as such the effect will be fully reversible.
Probability of effect	Defined as the likelihood of an adverse effect resulting from the activity. The effect on navigation of the dredging activities and subsequent harbour activity is deterministic. The operation of the harbour in terms of numbers of vessels will remain largely unchanged and therefore there will be minimal effect on navigation.
Cumulative effects	Defined as the accumulation of impacts over time and space resulting from the combination of effects from one activity/development or the combination of effects from a number of activities. Given that the dredging and subsequent harbour activity will be contained within a clearly marked and charted area, the effect of the development can be expected to be largely constant and there will be no cumulative effects over time.
Degree of change	Defined as the character and degree of modification, damage, loss or destruction that will result from the activity. The presence of dredgers represents a limited change to the navigational complexity of the area as dredging activity is relatively common throughout the harbour. Operation of vessels post-dredging will not result in any material change.

DoC guidance	Navigatus definition and assessment of proposed dredging and subsequent operations
Magnitude of effect	Defined as the scale and extent of possible effects caused by an activity (for example on the number of sites affected, on spatial distribution, etc.). Activities that have a large magnitude of effect are generally more significant. The navigational effect will be limited in itself and extend to the dredged areas of the main shipping channel.

We then looked at each of the risks associated with dredging activities and subsequent harbour operations after controls are applied. We assessed the effects associated with the risks in RMA terms, using the scale set out in Table 7.1. This assessment is set out in Table 7.3.

Table 7.3 - Effect of Activity in RMA terms.

Activity	Change from current	ALARP?	RMA Effect
Capital dredging	Yes	Yes	Less than Minor
Maintenance dredging	No	Yes	Less than Minor

It is therefore concluded that:

- the risk profile for risks that existed pre-capital dredging are comparable post-capital dredging.
- the risk profile for risks that result from the maintenance dredging are the same as with the previous and current maintenance dredging programs.

Having regard to the effects associated with the risks of the proposed dredging and operations thereafter, the overall effect of the proposal on navigational safety in RMA terms is, at its worst, *less than minor*.

8 Conclusion

The capital and maintenance dredging proposed do not represent a meaningful change to the status-quo in terms of navigational safety; either for large commercial vessels with a marine pilot embarked or for other maritime users of the harbour.

The proposed activities are not expected to result in changes to the existing navigational safety risk profile. Routine maritime risk controls are able to manage the types of risk identified and these achieve ALARP. Therefore, no additional controls beyond that routinely employed during dredging works are considered necessary.

These risks and the overall impact of the proposed activities on navigation have been assessed and described using terms for the scale of effects as developed over time under the RMA framework. In terms of environmental impact, the overall effect of the changes in relation to navigational safety is assessed to be *less than minor.*

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