

# Attachment 12

## WESTERN PORT DREDGING AND RECLAMATION HISTORY

**31.01.2025**



Delivered by

# Table of Contents

---

|  |           |
|--|-----------|
| <b>Western Port dredging and reclamation history</b> | <b>3</b>  |
| 1. Introduction                                      | 3         |
| 2. Dredging in Western Port                          | 3         |
| 3. Land reclamation Western Port                     | 6         |
| 4. Dredge Disposal Grounds in Western Port           | 12        |
| <b>Appendix A: Historical Aerial of OTRA</b>         | <b>14</b> |
| <b>Appendix B: Dredging in Western Port</b>          | <b>15</b> |

# Western Port dredging and reclamation history

## 1. Introduction

Dredging in Western Port is reported to have commenced in the 1870's to support the oyster industry (Britton, 2015). Since this time, dredging and reclamation activities have occurred and continue to occur within Western Port. This document provides a summary of:

- > The historical occurrence of dredge campaigns since the 1960's (Section 2)
- > Land reclamation, using disposed material from dredging campaigns (Section 0)
- > Known planned dredging activities across Western Port (Section 4).

## 2. Dredging in Western Port

The earliest recorded dredging campaign within Western Port dates to 1916, to enable small vessels to access the shore (Britton, 2015). Dredging campaigns have occurred routinely since. Up until 2015, approximately 2.75 million m<sup>3</sup> has been dredged within Western Port. Most of this material (1.94 million m<sup>3</sup>) has been disposed offshore, at a range of dredge material grounds within Western Port. The remaining 810,000m<sup>3</sup> has been disposed onshore, mostly at the Old Tyabb Reclamation Area (OTRA) site (Britton, 2015). Figure 1 shows the locations of former dredging and disposal areas.

A substantial proportion of the dredging was conducted between 1968 and 1972, where a total of approximately 1.12 million m<sup>3</sup> was dredged from the Western Port seabed (Britton, 2015). From the 1980's onwards, dredge campaigns in the region have been smaller and for maintenance purposes.

The range of dredging methods to date used within Western Port include:

- > **Cutter suction dredgers (CSD)** – Dredgers that use a rotating cutter head, allowing for a variety of blades, at the end of a suction line. These dredgers are designed for a range of materials, from soft silt and sand to hard clay and rock
- > **Bucket dredgers** – Stationary dredgers, equipped with a continuous chain of buckets. These dredgers are primarily designed for use in shallow areas
- > **Trailer suction hopper dredgers (TSHD)** – Self-propelled vessels with suction pipes that extend to the seabed. These dredgers are designed for loose and soft materials including sand, gravel and silt.

A summary of the documented dredging campaigns is shown in Table 1 (also refer to Figure 1).

**Table 1 Dredge campaigns at Long Island Point and adjacent to OTRA**

| Location                                 | Timing    | Dredge Volume (m <sup>3</sup> ) | Disposal location          | Method          |
|--|-----------|---------------------------------|----------------------------|-----------------|
| Long Island Point (Phase 1) <sup>1</sup> | 1968-1969 | 153,000                         | Hastings Bight             | CSD             |
| Long Island Point (Phase 2) <sup>1</sup> | 1969-1970 | 294,000                         | Peck Point                 | Bucket dredgers |
| John Lysaght <sup>1</sup>                | 1971-1972 | 676,000                         | Old Tyabb Reclamation Area | CSD             |
| Main Shipping Channel <sup>1</sup>       | 1988      | 24,000                          | Tankerton DMG              | TSHD            |

<sup>1</sup> Britton, M. P. & G., 2015. Port of Hastings Development Project Dredging History in Western Port Final Working Draft (Revision 0), North Sydney: Royal Haskoning DHV. pg. iii & 26.

| Location                           | Timing                     | Dredge Volume (m <sup>3</sup> ) | Disposal location                   | Method           |
|------------------------------------|----------------------------|---------------------------------|-------------------------------------|------------------|
| Main Shipping Channel <sup>1</sup> | 1994                       | 35,000                          | Tankerton DMG                       | TSHD             |
| BHP (Esso) berths <sup>1</sup>     | 2002                       | 16,000                          | Old Tyabb Reclamation Area          | CSD              |
| Hastings Boat Ramp <sup>2</sup>    | March 2022 – November 2022 | 5,000                           | 400m southeast of Long Island Point | CSD <sup>2</sup> |

Table 2 identifies locations within Western Port where dredging is still routinely undertaken. These dredge campaigns are required to maintain the safe and efficient operations of boating infrastructure such as boat ramps, jetties, and channels. The total volume of sediment that is dredged through these campaigns is relatively small in comparison to historic capital dredge campaigns.

**Table 2: Ongoing dredge campaigns within Western Port Bay**

| Location                          | Timing               | Dredge Volume (m <sup>3</sup> ) | Disposal location                             | Method  |
|-----------------------------------|----------------------|---------------------------------|---|---------|
| San Remo Jetty                    | Every 3 years        | 5,000                           | Unknown                                       | Unknown |
| Tankerton Channel and Jetty       | 1994                 | 12,500                          | Offshore                                      | CSD     |
|                                   | 2000                 | Unknown                         | Unknown                                       | Unknown |
|                                   | 2007                 | Unknown                         | Unknown                                       | Unknown |
|                                   | 2010                 | Unknown                         | Unknown                                       | Unknown |
|                                   | 2011                 | Unknown                         | Unknown                                       | Unknown |
|                                   | 2012                 | 2,000                           | Unknown                                       | Unknown |
|                                   | 2020 (Sumputh, 2020) | Unknown                         | 200m south of entrance channel                | CSD     |
|                                   | 2024 (Ritman, 2024)  | Unknown                         | 200m south of access channel                  | CSD     |
| Tooradin Boat Ramp                | Every 3-4 years      | 1,000                           | Unknown                                       | Unknown |
| Yaringa Boat Harbour              | 1988                 | 35,000                          | Onshore (location unknown)                    | Unknown |
|                                   | Every 10 years       | 5,000                           | Unknown                                       | Unknown |
| Hastings Boat Ramp                | Annually             | 500                             | Unknown                                       | Unknown |
|                                   | 2022                 | 5000                            | 400m southeast of Long Island Point           | CSD     |
| Stony Point Boat Ramp and channel | 2002                 | 3,000                           | Pumped to offshore bunded area 1200m offshore | Unknown |
|                                   | 2007                 | 2,800                           | Pumped to offshore bunded area                | Unknown |
|                                   | 2012                 | 3,000                           | Pumped to offshore bunded area                | Unknown |
|                                   | 2023                 | 1,958                           | Approx 900m offshore from Stony Point         | CSD     |

<sup>2</sup> Lyne, C., 2024. Email - Dredge Material Request. s.l.:Mornington Peninsula Shire Council.

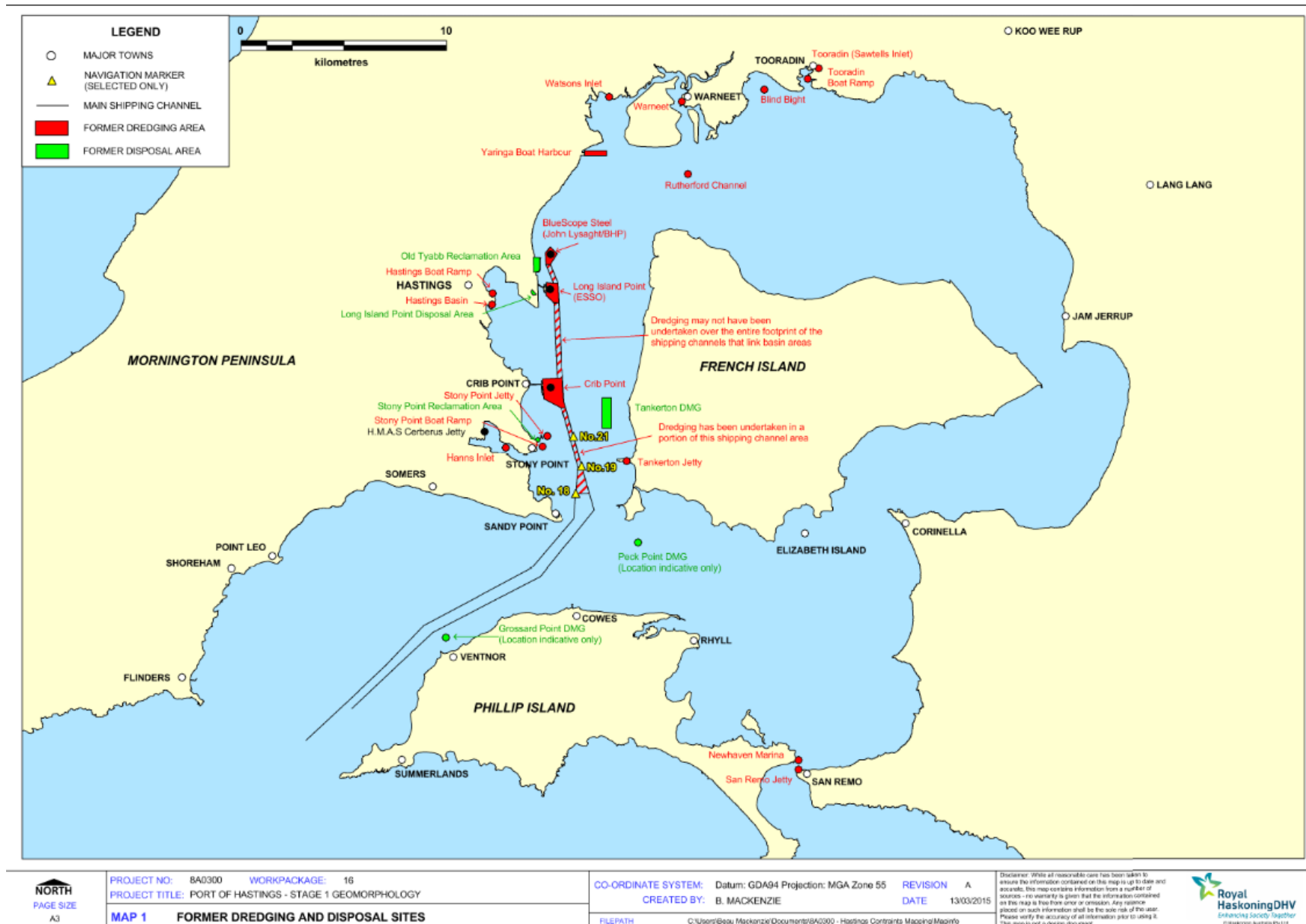


Figure 1 Map of dredging and disposal areas within Western Port (Britton, 2015)

### **3. Land reclamation Western Port**

Reclamation within Western Port dates back to the 1960's. Reclamation sites in Western Port include:

- > Old Tyabb Reclamation Area (OTRA)
- > BlueScope
- > Stony Point
- > Long Island Point.

The locations of these reclamation areas are shown in Figure 2.





Figure 2 Location of reclamation areas in Western Port Bay

The **Old Tyabb Reclamation Area (OTRA)** is situated in Hastings, Victoria, approximately 58km southeast of Melbourne.

The OTRA is an almost entirely man-made piece of land, reclaimed in 1971 from approximately 692,000m<sup>3</sup> of dredge material (Britton, 2015). This material originated from the seabed of Western Port and was dredged to establish a new shipping channel, as shown in Figure 3. The dredge material used for the OTRA enabled vessels access to John Lysaght - now BlueScope Steel, as shown in Figure 4.

Construction and bathymetric surveys provide evidence of the pre-reclamation conditions of the coastline and intertidal mudflats prior to the construction of OTRA, as shown in Figure 4. Refer to Appendix A for historical aerial photographs.

To reclaim OTRA, a clay bund was constructed on what was formerly part of Western Port, into which the dredge spoil was disposed, as shown in Figure 5. When reclamation occurred in 1971, the position of the shoreline was shifted. Prior to reclamation the shoreline was situated approximately 350 metre west of its current position, approximately 10 to 30 metres east of the OTRA boundary, as shown in Figure 6. Almost the entirety of OTRA is situated in an area that was formerly part of the intertidal zone of Western Port.

Other land reclamation sites in Western Port Bay include:

- > **BlueScope** – BlueScope Steel conducted a reclamation project during the early 1970's. This included the reclamation of 17.4ha of land to the immediate north of OTRA. This area was predominantly filled with excavated materials from the BlueScope site, made available from site levelling (Reville, 2022)
- > **Stony Point** – In 1965, 142,000m<sup>3</sup> of material was dredged from the area around the Stony Point Jetty by a cutter suction dredge and pumped behind the jetty to reclaim an area of approximately 1.8ha (Britton, 2015). This area is currently used by Port of Hastings Corporation for their offices and depot
- > **Long Island Point** – 153,000m<sup>3</sup> of dredge spoil was disposed amongst the mangroves to the south west of Long Island Point Jetty. This occurred following the dredge campaign of Long Island Point during the late 1968 and 1969.





Figure 3 Extent of dredge area that formed the reclaimed OTRA site

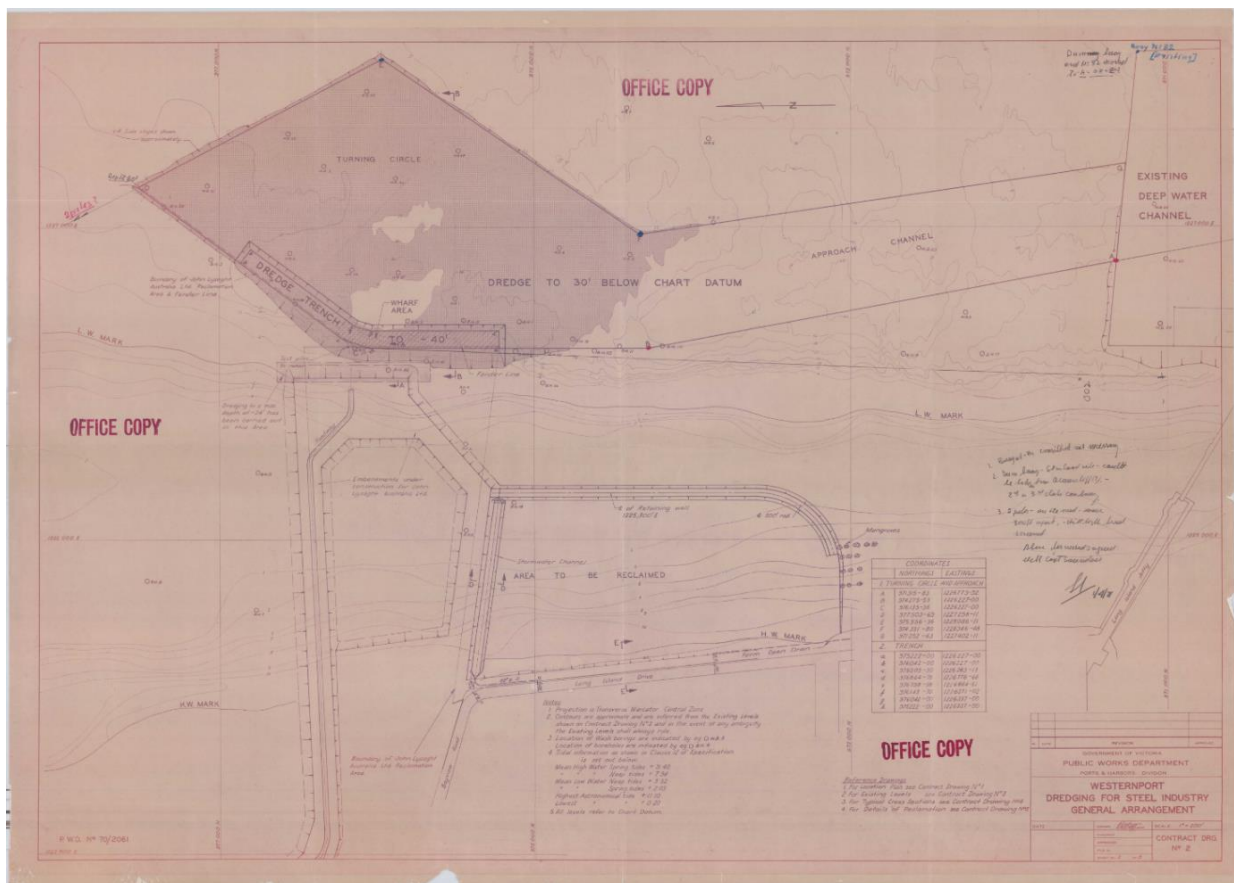


Figure 4 OTRA dredge and reclamation plan 1971 (Government of Victoria - Public Works Department Ports and Harbors Division, 1971).

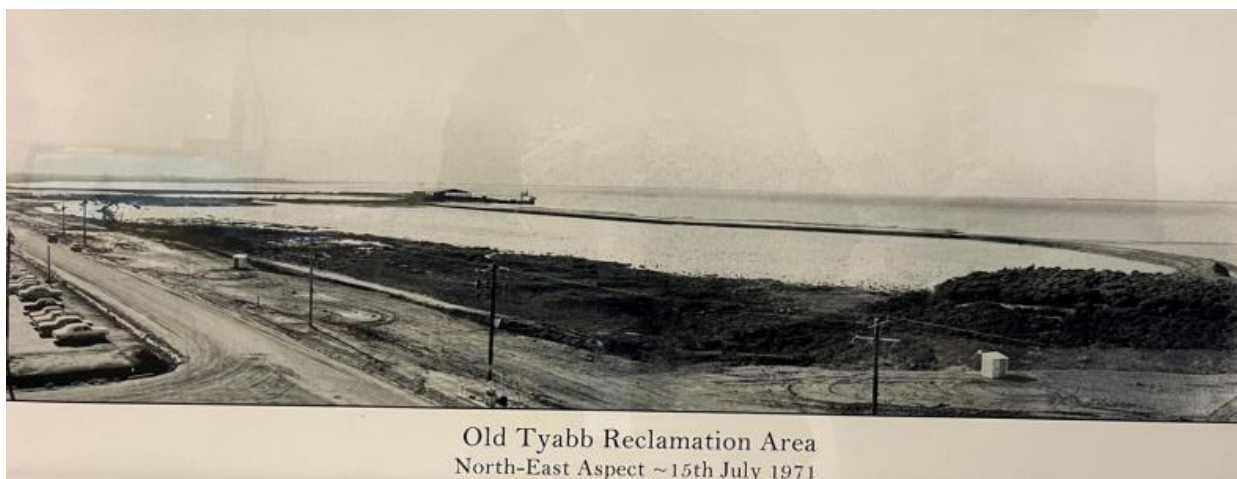


Figure 5 OTRA during reclamation (Port of Hastings Corporation, 1971)





Figure 6 Historic Shorelines (pre-reclamation) at OTRA – sourced through historical aerial imagery

## 4. Dredge Disposal Grounds in Western Port

There are a range of locations around Western Port where dredge material has been historically disposed, onshore and offshore. These locations are outlined in Table 3 and shown in Figure 1. In addition to the formal dredge disposal grounds and the reclamation activities, a range of other locations have been used for dredge campaigns associated with access channels and small craft facilities, these are outlined in Table 4 (Britton, 2015). A full list of dredge campaigns and associated disposal areas are outlined in Appendix B.

**Table 3: Dredge Disposal Grounds within Western Port (Britton, 2015)**

| Dredge Disposal Ground          | Location   | Quantity of dredge material (m <sup>3</sup> ) |
|---------------------------------|--|---|
| Old Tyabb Reclamation Area      | South of BlueScope Steel   | Unknown                                       |
| Long Island Point Disposal Area | South of Long Island Point Jetty   | 153,000                                       |
| Stony Point Jetty Reclamation   | West of Stony Point Jetty  | 142,000                                       |
| Tankerton DMG                   | North of Tankerton Jetty   | Unknown                                       |
| Peck Point DMG                  | South of Tankerton Jetty (Only known to be used from 1969-1970 for the disposal of dredge material from Long Island Point)   | 294,000                                       |
| Grossard Point DMG              | North of Ventnor (Only known to be used during 1975-1976 for the disposal of dredge material from the main shipping channel) | 10,000  |

**Table 4: Additional known locations of dredge disposal (Britton, 2015; Appendix B)**

| Location                                  | Year                            | Quantity of dredge material (m <sup>3</sup> ) |
|---|---------------------------------|---|
| Hanns Inlet                               | 1916-1921                       | 760,000                                       |
|   | 1971                            | 50,000  |
| Sawtells Inlet                            | 1968                            | 2,300   |
| Watson Inlet                              | 1964                            | 15,000  |
| Yaringa Boat Harbour                      | 1963-1970 and 2013              | 9,000   |
| Tooradin                                  | 1971-1972                       | 19,000  |
| San Remo                                  | 1972                            | 2,600   |
| Rutherford Channel                        | 1972                            | 2,700   |
| Blind Bight                               | 1972                            | 11,000  |
| Hastings Basin                            | 1972-1973                       | 16,000  |
| Stony Point - onshore                     | 2000                            | Unknown                                       |
| Tankerton - beach                         | 2000, 2007, 2010, 2011 and 2012 | Unknown                                       |
| Newhaven Marina - onshore                 | 2005                            | Unknown                                       |
| Hastings - Long Island Point <sup>3</sup> | 2022                            | 5,000   |
| Stony Point - offshore <sup>4</sup>       | 2023                            | Unknown                                       |

<sup>3</sup> Lyne, C., 2024. Email - Dredge Material Request. s.l.:Mornington Peninsula Shire Council.

<sup>4</sup> Witton, C., 2024. Email - Dredge Information Request. s.l.:Crib Point Stony Point Foreshore Committee.



# References

- Britton, M. P. (2015). *Port of Hastings Development Project Dredging History in Western Port Final Working Draft (Revision 0)*. North Sydney: Royal HaskoningDHV.
- Government of Victoria - Public Works Department Ports and Harbors Division. (1971). Westernport Dredging for Steel Industry General Arrangement.
- Lyne, C. (2024). Email - Dredge Material Request. Mornington Peninsula Shire Council.
- Port of Hastings Corporation. (1971, July 15). Old Tyabb Reclamation Area North-East Aspect.
- Reville, P. (2022). *The Western Port Story*. Mornington: Centreforce Pty Ltd.
- Ritman, D. (2024, May 14). *Victorian Notice to Mariners*. (Parks Victoria) Retrieved June 27, 2024, from <https://vrca.vic.gov.au/wp-content/uploads/2024/05/204T-24-Parks-Vic-Western-Port-Tankerton-Jetty-Maintenance-Dredging.pdf>
- Sumpth, D. (2020, February 18). *Victorian Notice to Mariners*. Retrieved June 27, 2024, from <https://vrca.vic.gov.au/wp-content/uploads/2020/02/066T-20-Parks-Vic-Tankerton-Maintenance-Dredging-at-Jetty.pdf>
- Witton, C. (2024). Email - Dredge Information Request. Crib Point Stony Point Foreshore Committee .

# Appendix A: Historical Aerial of OTRA

Historical Aerial- South OTRA- 1958



Historical Aerial- South OTRA- 1968



## Appendix B: Dredging in Western Port

| Date                   | Location                                       | Volume (m³) | Equipment              | Disposal Location  |
|------------------------|--|-------------|------------------------|--|
| 1916-1921 <sup>1</sup> | Hanns Inlet                                    | 760,000     | CSD and Bucket Dredger | Southern side of Hanns Inlet, northern side of inlet, or at the site of the HMAS Cerberus Jetty.                   |
| 1964 <sup>1</sup>      | Hastings Boat Ramp                             | Unknown     | CSD                    | Unknown  |
| 1965 <sup>1</sup>      | Stony Point Jetty                              | 142,000     | CSD                    | Stony Point Reclamation  |
| 1964-1965 <sup>1</sup> | Crib Point                                     | 384,000     | Bucket Dredger         | Tankerton DMG  |
| 1966 <sup>1</sup>      | San Remo Jetty                                 | unknown     | CSD                    | Unknown  |
| 1968 <sup>1</sup>      | Sawtells Inlet                                 | 2,300       | CSD                    | Tidal flats near Sawtells Inlet  |
| 1964-1969 <sup>1</sup> | Long Island Point (Phase 1)                    | 153,000     | CSD                    | Long Island Point (mangroves)  |
| 1969-1970 <sup>1</sup> | Long Island Point (Phase 2)                    | 294,000     | Bucket Dredger         | Peck Point DMG   |
| 1963-1970 <sup>1</sup> | Yaringa Boat Harbour                           | 76,500      | Dragline               | Drawn up into a batter on each side of the dredged channel   |
| 1971 <sup>1</sup>      | Hanns Inlet                                    | 50,000      | CSD                    | Pumped to several sites ashore in the rubbish dump reserve near the HMAS Cerberus Jetty and on the interior flats. |
| 1971-1972 <sup>1</sup> | Johns Lysaght (BlueScope Steel) Swinging Basin | 676,000     | CSD                    | Old Tyabb Reclamation Area   |
| 1971-1972 <sup>1</sup> | Tooradin                                       | 19,000      | CSD                    | Pumped into the middle of a proposed swimming pool area to form an island  |
| 1972 <sup>1</sup>      | San Remo Jetty                                 | 2,600       | CSD                    | Pumped onto beach near Phillip Island Bridge   |
| 1972 <sup>1</sup>      | Rutherford Channel                             | 2,700       | CSD                    | Pumped across tidal flats onto subtidal slope of the main channel of Bagge Harbour                                 |
| 1972 <sup>1</sup>      | Warneet  | 1,500       | CSD                    | Unknown  |
| 1972 <sup>1</sup>      | Blind Bight                                    | 11,000      | CSD                    | Pumped ashore on the mangroves at the head of the bight and at the western entrance to Blind Bight                 |
| 1972-1973 <sup>1</sup> | Hastings Bight                                 | 16,000      | CSD                    | Pumped ashore behind boat ramp   |
| 1975-1976 <sup>1</sup> | Main Shipping Channel                          | 10,000      | Unknown                | Grossard Point DMG   |
| 1980 <sup>1</sup>      | Main Shipping Channel                          | 10,000      | TSHD                   | Tankerton DMG  |
| 1988 <sup>1</sup>      | Main Shipping Channel                          | 24,000      | TSHD                   | Tankerton DMG  |
| 1988 <sup>1</sup>      | Yaringa Boat Harbour                           | 35,000      | Unknown                | Unknown  |
| 1990 <sup>1</sup>      | Stony Point Boat Ramp                          | 500         | Unknown                | Unknown  |
| 1991 <sup>1</sup>      | Tooradin Boat Ramp                             | 500         | Unknown                | Unknown  |
| 1994 <sup>1</sup>      | Stony Point Boat Ramp                          | 500         | Unknown                | Mudflats   |
| 1994 <sup>1</sup>      | Tankerton Jetty                                | 12,500      | CSD                    | Tankerton DMG  |
| 1994 <sup>1</sup>      | Hastings Boat Ramp                             | 4,000       | Unknown                | Island   |
| 1994 <sup>1</sup>      | Long Island Point between No.19 and No.21 Buoy | 35,000      | TSHD                   | Tankerton DMG  |
| 2000 <sup>1</sup>      | Stony Point boat ramp access channel           | Unknown     | CSD                    | Pumped 900m up the road to a site selected by the EPA.   |

| Date              | Location                             | Volume (m <sup>3</sup> ) | Equipment                                 | Disposal Location  |
|-------------------|--------------------------------------|--------------------------|---|--|
| 2000 <sup>1</sup> | Tankerton Jetty Approach Channel     | Unknown                  | CSD                                       | Deposited onto beach area between the rock groyne and the pier abutment. |
| 2002 <sup>1</sup> | BHP Berths                           | 16,000                   | CSD                                       | Old Tyabb Reclamation Area   |
| 2002 <sup>2</sup> | Stony Point Boat Ramp and Channel    | 3000                     | Unknown                                   | Pumped to offshore bunded area 1200m offshore.                           |
| 2004 <sup>1</sup> | Tankerton Jetty                      | Unknown                  | Material excavated and loaded into barges | Tankerton DMG  |
| 2005 <sup>1</sup> | Newhaven Marine                      | Unknown                  | CSD                                       | Bunded area onshore  |
| 2007 <sup>2</sup> | Stony Point boat ramp access channel | Unknown                  | CSD                                       | Unknown  |
| 2007 <sup>1</sup> | Tankerton Jetty approach channel     | Unknown                  | CSD                                       | Deposited onto beach area between the rock groyne and the pier abutment  |
| 2008 <sup>1</sup> | San Remo Jetty inner arm             | Unknown                  | Unknown                                   | Unknown  |
| 2010 <sup>1</sup> | Tankerton Jetty approach channel     | Unknown                  | CSD                                       | Deposited onto beach area between the rock groyne and the pier abutment  |
| 2011 <sup>1</sup> | Tankerton Jetty approach channel     | Unknown                  | CSD                                       | Deposited onto beach area between the rock groyne and the pier abutment  |
| 2012 <sup>2</sup> | Stony Point boat ramp access channel | Unknown                  | CSD                                       | Unknown  |
| 2012 <sup>1</sup> | Tankerton Jetty approach channel     | 5,306                    | CSD                                       | Deposited onto beach area between the rock groyne and the pier abutment  |
| 2012 <sup>1</sup> | Tooradin Boat Ramp                   | Unknown                  | CSD                                       | 1km downstream   |
| 2013 <sup>1</sup> | San Remo Jetty                       | 1,798                    | CSD                                       | Beach to the west of the jetty   |
| 2013 <sup>1</sup> | Yaringa Boat Harbour access channel  | Unknown                  | CSD                                       | South of the access channel  |
| 2020 <sup>4</sup> | Tankerton Jetty                      | Unknown                  | CSD                                       | 200m south of entrance channel   |
| 2022 <sup>3</sup> | Hastings Boat Ramp/marina            | 5000                     | CSD                                       | 400m southeast of Long Island Point                                      |
| 2023 <sup>2</sup> | Stony Point Boat Ramp and channel    | 1,958                    | CSD                                       | Approx 900m offshore from Stony Point                                    |
| 2024 <sup>5</sup> | Tankerton Jetty Access Channel       | Unknown                  | CSD                                       | 200m south of the access channel   |

<sup>1</sup> Britton, M. P. & G., 2015. Port of Hastings Development Project Dredging History in Western Port Final Working Draft (Revision 0), North Sydney: BrittonDHV.

<sup>2</sup> Witton, C., 2024. Email - Dredge Information Request. s.l.:Crib Point Stony Point Foreshore Committee.

<sup>3</sup> Lyne, C., 2024. Email - Dredge Material Request. s.l.:Mornington Peninsula Shire Council.

<sup>4</sup> Sumpth, D., 2020. Victorian Notice to Mariners. [Online] Available at: <https://vrca.vic.gov.au/wp-content/uploads/2020/02/066T-20-Parks-Vic-Tankerton-Maintenance-Dredging-at-Jetty.pdf> [Accessed 27 June 2024].

<sup>5</sup> Ritman, D., 2024. Victorian Notice to Mariners. [Online] Available at: <https://vrca.vic.gov.au/wp-content/uploads/2024/05/204T-24-Parks-Vic-Western-Port-Tankerton-Jetty-Maintenance-Dredging.pdf> [Accessed 27 June 2024].