

# APPENDIX 20

## EFFECTS ON NAVIGATIONAL SAFETY



# Effects of Lyttelton Port Recovery Plan on Navigational Safety

November 2014

## Revision History

Revision No	Prepared By	Description	Date
A	Mike Simmers	Draft 1 – for Pilot and Marine Manager Review	31/10/2014
B	Mike Simmers	Revision to Pilot feedback	3/11/2014
FINAL	Mike Simmers	Final revision for signature	4/11/2014

## Document Acceptance

Revision No	Prepared By	Description	Date
Prepared by	Mike Simmers	Project Director	4/11/2014
Approved by	George Philips Paddy Mathews	Marine Manager Pilot	10/11/2014 10/11/2014
on behalf of	Lyttelton Port Company		

Signed on behalf of Lyttelton Port Company



.....10 November 2014

George Philips – Marine Manager

## INTRODUCTION

Lyttelton Port of Christchurch (LPC) utilises an integrated health & safety-environment-quality business management system, modelled on recognised International Integrated Management Standards and covering all aspects of LPC operations.

The LPC business management system includes:

- Policies, work routines, practices and standards derived and continually improved consistent with “best practice” in a marine environment;
- Requirements of New Zealand statutory regulations e.g. Maritime Transport Act 1994 and Health and Safety in Employment Act 1992, Port Companies Act 1988;
- Requirements of various National and International Codes of Practice and Guidelines, including Maritime Rules and Marine Protection Rules;
- Agreements in respect of management and co-ordination of operations in the harbour between LPC and Environment Canterbury (ECan), in particular close liaison with the Regional Harbourmaster for Navigational Safety matters;
- Internal systems review (audit);



Figure 1 Pilot vessel following in a container vessel into Lyttelton

## HARBOUR SAFETY POLICY

The NZ P&H Safety Code requires a policy commitment by ECan to undertake and regulate marine operations in the Region’s Harbours in a way that safeguards these harbours, their users, and the environment.

The ECan Port & Harbour Safety Policy, Health & Safety and Environmental policies are fully supported by LPC policies. LPC commits to implementing the requirements of the NZ P&H Safety Code.

Environment Canterbury Statement of Intended Use:

*“The Harbour is to be kept open and clear for commercial vessels and Royal New Zealand Navy visiting the ports for purposes of international and domestic trade, and clear passage for passenger*

*transport, and to minimise conflict with recreational craft.”*

## **LYTTELTON PORT OF CHRISTCHURCH STATEMENT OF INTENDED USE**

LPC's statement of intended use for the port area echoes ECan's wider harbour statement:

*The Port is to be kept open and clear for commercial vessels and Royal New Zealand Navy visiting the ports for purposes of international and domestic trade, and clear passage for passenger transport, and to minimise conflict with recreational craft.*

LPC management is committed to implementing the requirements of the NZ P&H Safety Code.

## **LPC STANDARD OPERATING PROCEDURES, STANDARDS, POLICIES, PRACTICES & EMERGENCY PROCEDURES**

The LPC business management system encompasses a wide range of proprietary documents detailing work practices and standards.

These work practices and standards represent the most effective and safe way of performing important tasks. Current work practices and standards encompass:

- Marine Guidelines
- Passage Planning;
- Safe Ship Management and Vessel Certification;
- Emergency management;
- Accident management;
- Incident/event reporting & investigation;
- HR activities;
- Training and peer reviews;
- Qualifications and competencies of personnel;
- Risk assessment;
- Hazard identification;
- Induction;
- Pilot and PEC Training
- Hydrographical processes, surveys, survey schedules (scheduled & unscheduled localized surveys), post survey reviews;
- Weather & tidal information;
- Dredging activities (scheduled & unscheduled localised dredging);
- Aids to navigation maintenance;
- Harbour Control communications.

## **PROPOSED RECONFIGURATION OF THE PORT**

The Port to East concept underpins the recovery of the Port, with a new modern container terminal to be located on the reclaimed land in Te Awaparahi Bay. This will allow the port to handle future container volumes which is projected to increase by 400% in the next 30years. Some of the general cargo operations (logs/fertiliser/scrap steel/vehicles) can move from the Inner Harbour onto the current container terminal at Cashin Quay which will in turn open opportunities to the Port to deliver on long held desire for better connections with the waterfront and better recreational marine facilities.

New Zealand Maritime School at Auckland is set up with the TRANSAS 5000 Bridge Simulator which has seven bridges – one larger full mission 300 degree bridge and six smaller bridges with 135 degree vision. This facility can simulate full mission controls for various ships including tug boats, cruise ships, container ships and bulk carriers. It has detailed Electronic Navigation Charts, Multi-

function displays showing radar and conning screens and it can be used for port specific training. Lyttelton Port profile has been set up since 2009 and our pilots use the facility every year for training (Figure 2) purposes and recently have been using the simulator to test the feasibility of new berth designs, approach channel and swinging basins. Ship handling of large tankers and cruise vessels has also simulated to understand the towage power required and any other restrictions.



Figure 2 – Bridge handling simulator

There will be an increase of recreational vessels into the Inner Harbour due to the Dampier Bay marina development. Whilst the risks are not insurmountable, there are risks nonetheless of combining recreational vessels and operational vessels through the same channels. Upon completion of the Port's reconfiguration the only piloted vessels in the Inner Harbour will likely be tankers which are presently returning every week to 10 days and from channel entrance to berthing is no more than 15 minutes. During this time and when larger vessels are being placed in the dry dock, Tug wash will be a consideration and this issue will need to be raised with recreational berth users.

### **Global shipping trends and how this will effect Lyttelton Port**

The growth of trade is often directly correlated to growth in vessels carrying that trade. Growth in container trade business world wide to 90% of non-bulk cargo, and increased nearly 100% in 8 years - correspondingly leading to an increase in the size of vessels worldwide. In 2009/2010 there was no regularly scheduled service using ships the size of 4,5000 to 5,000 TEU. In 2013 Lyttelton Port had over 30 visits of vessels this size. This is expected to increase as other operational New Zealand ports increase capacities and deal with the prospect of larger container vessels. Dry Bulk vessels are also predicted to increase in size to post Panamax size as the need for fertiliser and stock feed increases in the regions around Christchurch. Oil companies are also likely to require larger vessels entering the harbour particularly those coming directly from overseas (as opposed to Marsden Point).

In general, larger vessels do not mean greater risks as these vessels will remain Tug assisted and LPC piloted – however there is likely to be a heightened level of awareness associated with the larger vessels. Larger vessels does result in a larger channel and larger wharf infrastructure such as cranes, hoppers etc. The channel will be deepened incrementally to deal with additionally depth (draught) of vessels, widened to deal with the increased width (beam) and the turning basins will be lengthened to deal with longer vessels. This will ensure that the risk level remains relatively consistent with that today

### **EFFECTS ON NAVIGATIONAL SAFETY**

It is likely, although not confirmed, through the Port Lyttelton Plan that the oil berth will remain in the Inner Harbour. This results in large vessels continuing to be brought into the Inner Harbour with pilots and Tugs (Figure 3). In reality Tugs would always work the Inner Harbour due to the Dry Dock berthing requirements; however these vessels are considerably smaller than tankers being berthed at

the oil wharf. Berthing at the oil wharf involves bringing the vessels into the Inner Harbour, turning them and assisting them onto the berth. For this period of time, from entrance to berthing, there will be a requirement to cease recreational craft movement to and from the marina and the outer harbour. There may also be restrictions to and from marina when tugs are placing large or 'challenging' vessels into the Dry Dock. A detailed communications package will be provided to all berth holders ensuring all users are aware of restrictions, how they should act in certain circumstances and what to be aware of. In addition, shipping schedules will be made available at berths.



*Figure 3 Tug assisting vessel through the Inner Harbour moles*

With the movement east, there is a positive effect on the navigational safety aspects of particularly dry and break bulk vessels into the Inner Harbour. As noted above, Dry bulk vessels in particular are likely to get larger and having these vessels planned to exit the Inner Harbour and berth at Cashin Quay is a positive for safety

Like all bodies of water in New Zealand and around the world there will be challenges and risks when combining larger and more trade vessels with an increasing volume of recreational vessels. Education and training will be the most effective method to deal with this, along with a respect for large vessel shipping lanes.

Should the cruise berth off Naval Point eventuate this will necessitate the need for a change to starter buoys for yacht racing to ensure the ongoing safety of yachtsman as Cruise vessels are large vessels (some 350m long) and will require some degree of manoeuvring to berth off Naval Point.

The reclamation at Te Awaparahi Bay and associated berths will clearly affect recreational vessel users that previously used that area as the large extent of Te Awaparahi Bay will become operational port land. The berths at Te Awaparahi Bay will not materially affect navigational safety as vessels will still turn off Cashin Quay. It is likely, but yet to be confirmed, that Tugs will join larger vessels earlier than they presently do providing more safety at an early stage in the berthing process. Presently LPC are undertaking internationally approved simulations to confirm turning, berthing and navigating scenarios in and around the proposed reclamation and off Cashin Quay. There have also been a number of simulations related to increased oil berth vessel capability and moving large bulk vessels in the Inner Harbour. Once final design details are completed for these areas, simulations will be run again to confirm all aspects – with navigating and manoeuvring safety being absolutely non-negotiable.

## APPENDICES

Appendix 1 - Pilotage Channel and berth plans



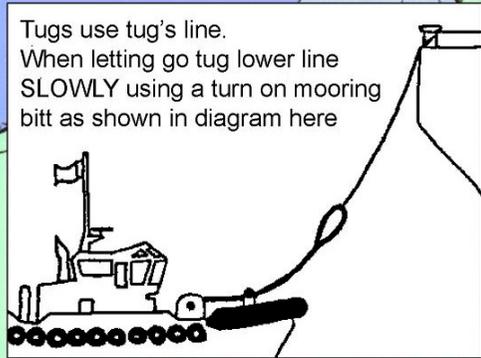
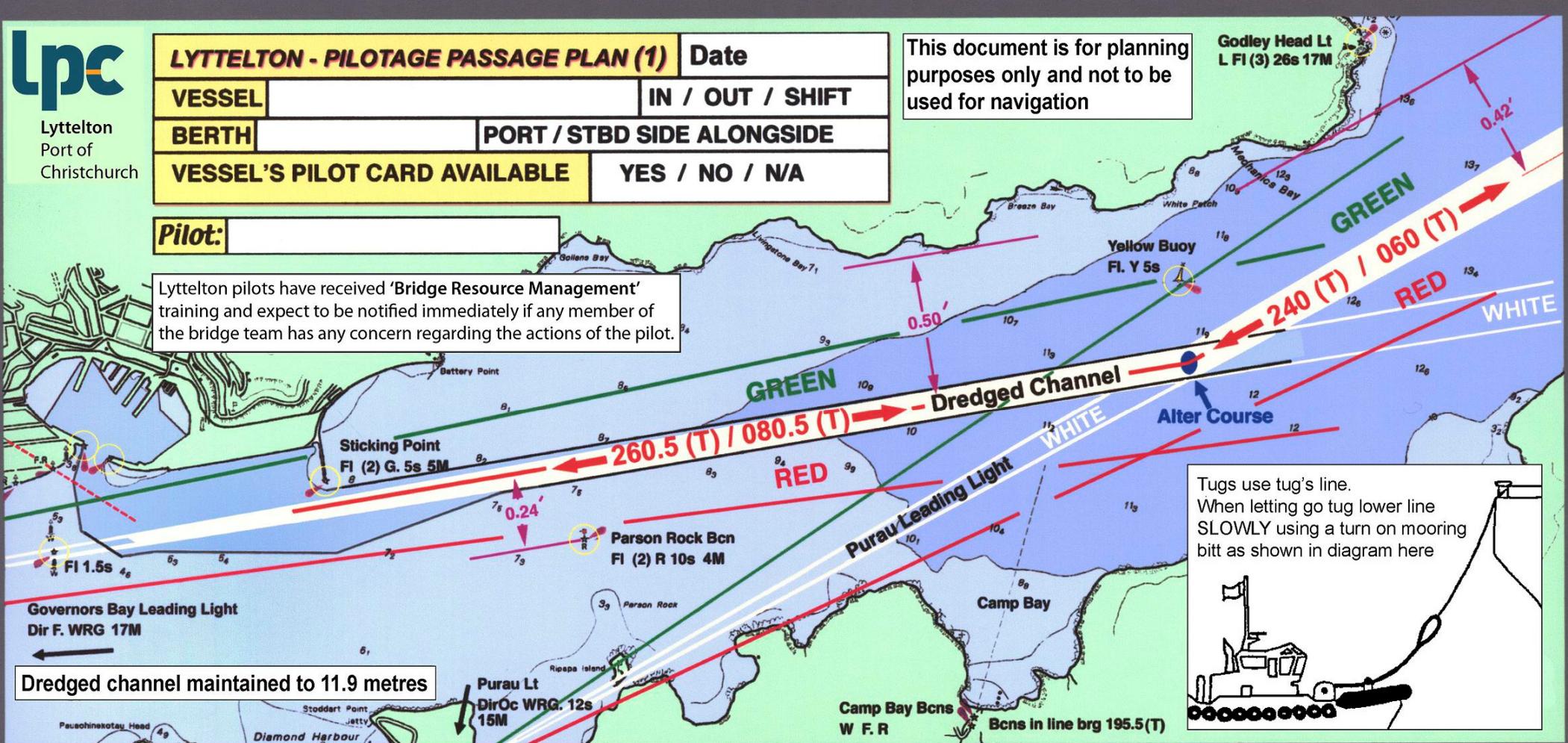
Lyttelton Port of Christchurch

<b>LYTTELTON - PILOTAGE PASSAGE PLAN (1)</b>		Date
VESSEL	IN / OUT / SHIFT	
BERTH	PORT / STBD SIDE ALONGSIDE	
VESSEL'S PILOT CARD AVAILABLE	YES / NO / N/A	

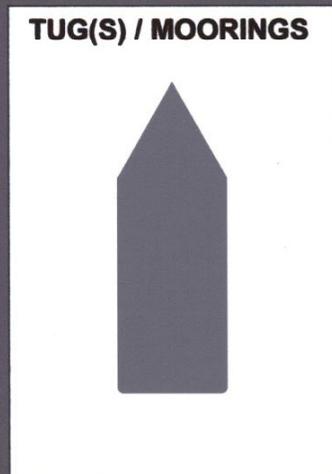
This document is for planning purposes only and not to be used for navigation

Pilot: \_\_\_\_\_

Lyttelton pilots have received 'Bridge Resource Management' training and expect to be notified immediately if any member of the bridge team has any concern regarding the actions of the pilot.



TUG(S)	BLACKADDER (62t bp)	FWD / AFT	PURAU (35t bp)	FWD / AFT
LINES	FWD	AFT	1ST / LAST LINE	FWD AFT
MAIN ENGINE(S)	CPP	FIXED	TESTED	
THRUSTER(S)	BOW	STERN	TESTED	
ANCHORS CLEAR	PORT	STBD	USE	
VHF	CHANNEL 12 / 16	GYRO ERROR	BRIDGE EQUIP. OK	
WEATHER	PRESENT	EXPECTED		
TIDE	TIMES: HW	LW	FLOW: EBB / FLOOD / SLACK	
REMARKS				ABORT POS'N (S)

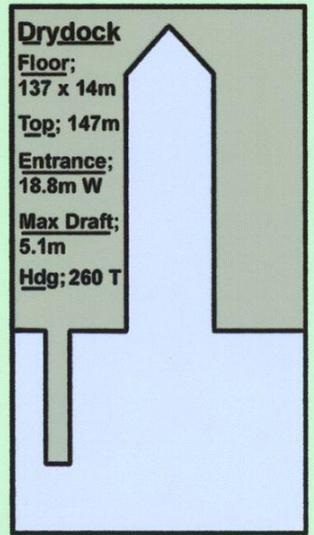


UKC CALCULATION	(metres)
TIDE HEIGHT	
DEPTH AT CD	
TOTAL DEPTH	
DRAFT	
UKC STATIC	
SQUAT	
UKC DYNAMIC (1)	
SWELL (if any)	
UKC DYNAMIC (2)	

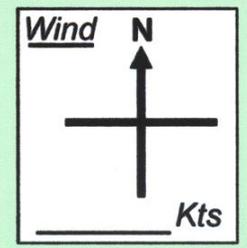


Lyttelton  
Port of  
Christchurch

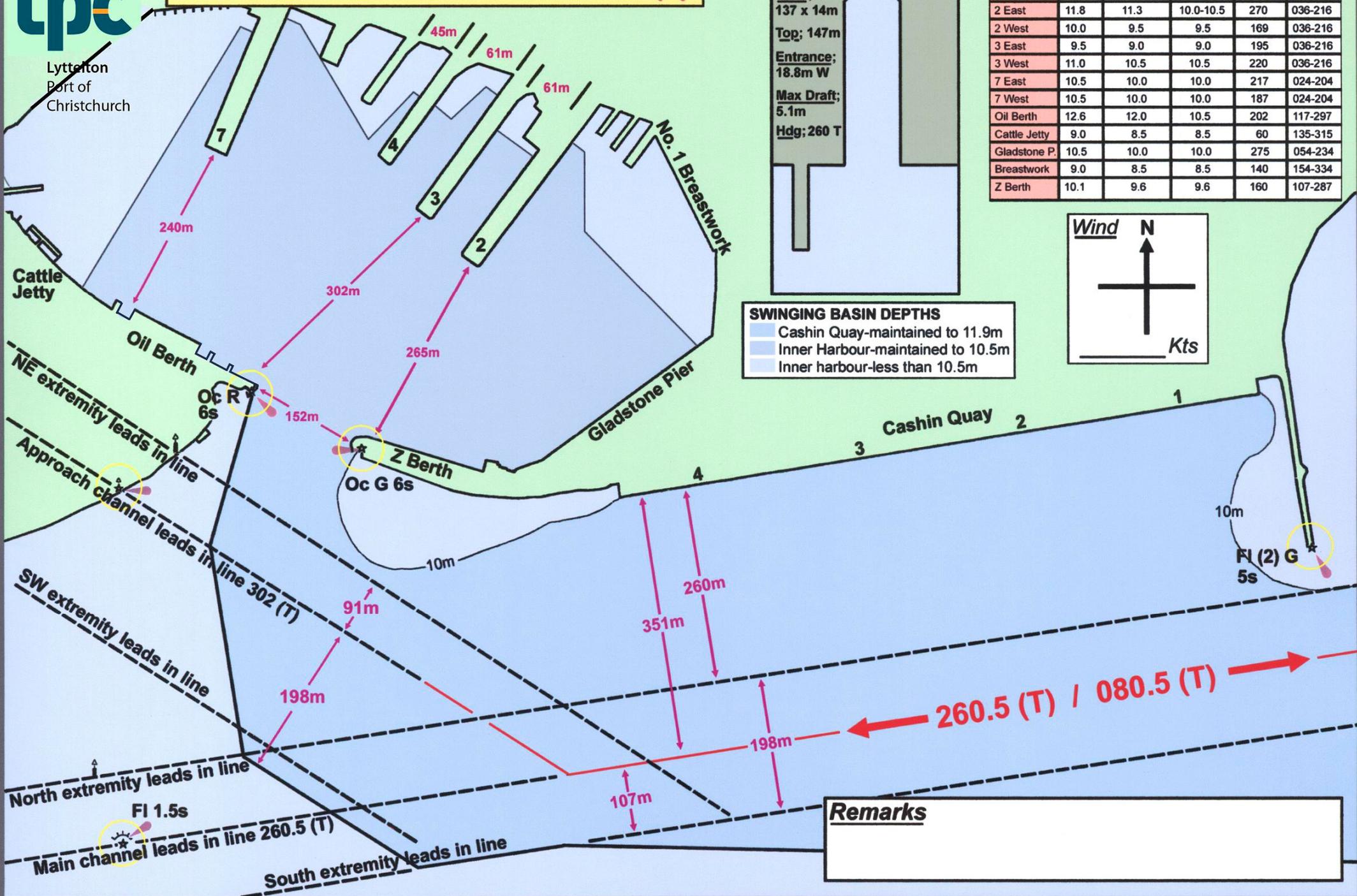
# LYTTELTON - PILOTAGE PASSAGE PLAN (2)



BERTH	DEPTH	HW DRAFT	LW DRAFT	LENGTH	HDG
Cashin Q.	13.1	12.4	11.0	855	260-080
2 East	11.8	11.3	10.0-10.5	270	036-216
2 West	10.0	9.5	9.5	169	036-216
3 East	9.5	9.0	9.0	195	036-216
3 West	11.0	10.5	10.5	220	036-216
7 East	10.5	10.0	10.0	217	024-204
7 West	10.5	10.0	10.0	187	024-204
Oil Berth	12.6	12.0	10.5	202	117-297
Cattle Jetty	9.0	8.5	8.5	60	135-315
Gladstone P.	10.5	10.0	10.0	275	054-234
Breastwork	9.0	8.5	8.5	140	154-334
Z Berth	10.1	9.6	9.6	160	107-287



**SWINGING BASIN DEPTHS**  
 Cashin Quay-maintained to 11.9m  
 Inner Harbour-maintained to 10.5m  
 Inner harbour-less than 10.5m



**Remarks**

260.5 (T) / 080.5 (T)

Fi 1.5s  
Main channel leads in line 260.5 (T)

Fi (2) G 5s

NE extremity leads in line  
 Approach channel leads in line  
 SW extremity leads in line  
 North extremity leads in line  
 South extremity leads in line