Port of Townsville – Berth Load Limits Update

Berth No.	Deck RL at Face (m LAT)	Design(Max) Depth (m LAT) *(for declared depth, refer to note 1)*	Uniformly Distributed Load (UDL) (kPa)	Point Load (tonnes) (min. area of 0.3m x 0.3m uno)	Forklift [a] Capacity (tonnes)	Container [b] Stacking	Mobile Harbour Crane Capacity *(POTL approval required)*	Berthing Displacement[j] *(See note j vessel min/max dimensions)*	Notes
1	5.4	-14.5[4,5]	*See notes a, b*	*See notes a, b*	*See notes a, b*	*N/A*	*N/A*	90,000[5]	a. Loading of 9.5kPa on central operating platform[1], no information on dolphins. b. Under normal operational conditions only vehicles up to light trucks, with not more than 8t GVM, should be permitted onto Berth 1, heavier vehicles by exception pending review by POTL Engineering[3]. Design vehicle is H20-S16-44[1,2]. c. Minimum parallel body length of 67 metres[6] .
2	6.0	-12.2	37 See note e	71t See note f	78t/50t axle load See note g	1977 section: 20ft x 2 high 40ft x 2 high See note h	Yes, see note i	90,000 See note j	d. Berth 2 is constructed in 2 sections: 1977 section from CH650 to CH849; 1995 section from CH 849 northwards. e. UDL may be increased to 48 kPa with POTL Engineering approval[7]. f. 71t crane outrigger pad load allowable on 1977 section only alternate bays[8] Alternatively use 55t at 5m centres in 1977 section. g. Allowable forklift axle loads of 78t on 1977 Section and 50t on 1995 section. 1977 section has sufficient capacity for placing filled container onto second level of a stack. No forklift loading allowed beyond seaward rail[7]. h. Single container height only on 1995 section. Container loads based on 20ft half height 34t concentrate container[7]. i. G HMK 6507 with max pad loads of 252t and 60t axle loads analysed. Can only be operated with seaward outrigger pads located on crane beam grid E and can freely travel over 1977 section. No operation or travel on 1995 section. Single level of containers 10m from outrigger[7]. j. Use of PIANC berthing condition b allows up to 83,000t displacement at maximum berthing velocity 0.095m/s[10]. Displacement up to 90,000t is permitted with care taken to reduce berthing velocity.
3	6.0	-12.2[13]	35[11]	55[11] See note l	78.4t axle load[11]	20ft x 2 high[11] See note m	Yes, see note k	90,000[10,12] See note n	k. LHM 550 and 420 analysed[14,15,16,17] with double pads and maximum pad loading of 224.5 tonnes with seaward outrigger pads located on crane rail. Crane cannot be traversed sideways across berth (ie while positioned parallel to berth) – must be driven forwards/backwards only across berth. l. 5m minimum centres between adjacent point loads. m. 24t per container analysed. 40ft not analysed, but 40ft x 1 high acceptable for 30t container. 40ft x 2 high by application to POTL engineering. n. Use of PIANC berthing condition b allows up to 83,000t displacement at maximum berthing velocity 0.095m/s[10]. Displacement up to 90,000t is permitted with care taken to reduce berthing velocity.
4	6.0	-12.2[20]	48[19] See note q	60[19] See note p	96.4t axle load[19] See note s	40ft x 2 high[19] 40ft x 2 high[19]	Yes, see note r	70,000[18] See note o	o. Replacing existing Trelleborg SCN1000 fender cones with SCN1300 cones allows berthing displacement of 140,000 Tonnes[18]. p. Point loads at 5m minimum centres[19]. q. 10kPa seaward of seaward rail, no load within 1.5m of crane rail – see drawing X2250-003[19]. r. LHM 550 with standard pads analysed, see drawing X2250-003[19]. s. Based on Omega 48E with 4 front wheels[19].
8 (Expansion joint bays) See note t	5.8	-14.3[24]	35 (25)[21,22] See note u	40 (15) [22] See note v	78.4t (28t) [22] axle loads	20ft x 1 high [22] 40ft x 1 high [22] No loading on expansion joint bays	NA	70,000 [22, 23]	t. Values in brackets denote limit in expansion joint bays – see dwg TPIX-KBR-DRG-MAR94-0380-1 – area denoted on wharf by yellow hatching[21]. u. UDL of 10kPa allowed in vicinity of shiploader (within 3m of shiploader), but no load within 2m of front rail and 3m of rear rail in vicinity of shiploader (hatched area) [22]. v. Point loads applied over minimum 0.3 x 0.3m area with minimum centre to centre spacing of 6.0m. Loads not applied in vicinity of shiploader loads. No point loads on pit lids[22]. w. No container loading on expansion joint bays. 40ft container weight maximum 30t. 20ft container weight of 24t. No container corner casting loads on pit lids [22].
9	5.8	-12.5[29]	38[25,26]	40[25,26]	78.4t axle load[25,26]	20ft x 1 high[25,26] 40ft x 1 high[25,26] See note x	NA	80,000 See note **Error! Reference source**	x. Berth 9 extension can accommodate higher container loads and crane loads – see drawings P1599 and P1600[28]. y. Design at 45,000t displacement at 1.2m/s[27,28]. Use of PIANC berthing condition b allows up to 80,000t displacement at maximum berthing velocity 0.090m/s. Displacement up to 90,000t may be permitted with controls used to reduce berthing velocity.
10 (infill + secondary) See note aa	5.8[31]	-13.3[32]	50[32] (40) [32]	100[32] See note aa	100t axle load[32]	20ft x 2 high[32] 40ft x 2 high[32]	Yes, see note bb	50,000[32]	z. Infill wharf and secondary wharf have lower load rating for live load, MHCs and Defence vehicles[30]. See drawing TPIX-KBR-DRG-MAR12-0211 for location of infill and secondary wharf. aa. 100t loads at minimum 7m spacing over 1.0m x 1.0m area. Primary wharf also designed specifically for M1A1 AIM-SA Abrams Tank and other defence vehicles[32]. bb. Liebherr LHM600 with 200t capacity[32] or other MHC with 5.5m x 1.8m outriggers spaced at 14.0m centres with max pad load of 363T[32] on primary wharf. 100t capacity MHC allowed on secondary and infill wharf with 5.5m x 1.8m outrigger pads spaced at 12.0m centres with maximum outrigger load of 268t[32].
11	9.5	-12.2[35]	10[33] T44 truck See note cc	30[33] Nil Jetty See note dd	10t axle load See note ee	Nil	Nil	55,000[33]	cc. T44 truck weights 44t and has a max double wheel load of 4.8t, max axle load of 9.6t (four wheels), wheel group load 9.6t two double wheels 1.2m apart – see AS5100.2. dd. Mobile crane outrigger load of 300kN allowable on wharf roadway and shiploader maintenance area[33] ee. 10t axle load based on T44 truck axle load – higher loads may be permitted on request to POTL.
TMP-Common User Facility (CUF Area A)	5.7[36]	-3.0[37] See note gg	15[37,38]	20 See note hh	2t forklift 9t mobile crane See note hh	Nil	Nil	150[37]	ff. TMP common user facility jetty is designed to provide berth for trawler vessels of 25m LOA, 9m beam, 3m draft & average displacement of 150t[37]. Berthing of any vessel that has dimensions larger than 25m LOA, 9m beam, 3m draft and 150t displacement require POTL approval. gg. The common user facility has designed seabed level of – 3.5m(LAT) and dredged seabed level of – 3.0m (LAT) subject to verification of declared depth[37]. hh. Concentrated load of 200kN over 400mm x 700mm area at 4m spacings[37]. Forklift standard 2T, 9T mobile crane max 750kPa/tyre – 4 off (0.2m x 0.2m). T44 truck, W7, W8, A160 wheel as per AS 5100.2. Note design based on 100t crawler crane for construction so higher loads may be available on request[38] – see AS-BUILT TMPA-MA-DR-MW-0003-3.

Note 1. Port users to confirm the latest declared depths and vessels LOA for Townsville Harbour via Maritime Safety Queensland's web site: http://www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-townsville

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Berth No.	Reference
1	1. 196406 Berth 1 Design Report. 2. 1965 Highway Loadings. 3. 20151002 Berth 1 vehicle load limits - POTL Engineering. 4. 20140925 Proposed Berth 1 Pocket Deepening- Drawing # P3314. 5. Drawing 1550-100-1, 1995, Macknight Civil & Marine. 6. 20120331 Stolt Azami and Stolt Botan berthing at Townsville Berth 1 - vessel length.
2	7. 2018 Berth 2 Future Use Options – Structural and Geotechnical Assessment – GHD. 8. 20020226 Berth 2 Loading Capacities Report - Maunsell McIntyre P/L. 9. 19920904 Deepening of No. 2 Berth Stability Study. Sinclair Knight DJ Douglas. 10. 20130411 Berth 2 Fender System Capacity Review – AECOM – revision B (Note: also considered to cover identical arrangement on Berth 3).
3	11. 19990914 Berth3 - Stage 1 & 2 Slab Design Check Report -Maunsell McIntyre - contained in “1990 to 2002 Wharf Loading Report – Maunsell McIntyre.pdf”. 12. 20001214 – Email from Clem Vanderloos providing energy absorption capacity of Arch fenders – contained in “20100128 Berth 2 & 3 fender correspondence records from AECOM.pdf”. 13. 19700821 Drw# 02-523-a Proposed Jetty Wharf Reconstruction - Berth 03. 14. 20140331 – Berth 3 Design Check for Liebherr LHM550 Mobile Harbour Crane – T109-14 – AECOM. 15. 20180620 –Structural Assessment of Berth 3 and Berth 3 South for Liebherr LHM550 Mobile Harbour Crane – T196-18 – AECOM. 16. 20141207 - Berth 3 - Design Check for Liebherr LHM420 Mobile Harbour Crane – T367-14 – AECOM. 17. 20170824 - Berth 3 South - Structural Assessment of Berth 3 South for Liebherr LHM420 Mobile Harbour Crane – T243-17 – AECOM.
4	18. 20160223 Drw # X2250-002 Berth4 Upgrade General Notes Sheet 1- AECOM. 19. 20160223 Drw # X2250-003 Berth4 Upgrade General Notes Sheet 2- AECOM. 20. 20160223 Drw # X2250-102 Berth4 Upgrade – Revetment Design Slope Details Sheet 1- AECOM.
8	21. 20130620 – Drw# TPIX-KBR-DRG-MAR94-0380-1. 22. 20130722 – Drw# TPIX-KBR-DRG-MAR92-0102-6. 23. 20130315 Refer to TPIX Design Basis Report ADM01-0001-5 - notes berth can accommodate outside limits provided appropriate controls in place when berthing (i.e. by approval). 24. 20130910 – Drw# TPIX-KBR-DRG-MAR93-0205-3.
9	25. 20000427 Berth 8 & 9 Slab Design Check Report - Maunsell McIntyre P/L. 26. 20020424 Berth 9 Expansion Joint Review Draft Report - GHD P/L. 27. 19940715 Drawing # P1639 – Upgrade of Fendering Berth 9 Suter Pier, Locality and Site Plans. 28. 1993 Drawing # P1599 – Wharf Extension, Berth 9 Suter pier, Project Notes, Drawing List and Design Loads. 29. 19930805 Drawing # T1486 Berth 9 Upgrade to Accommodate Panamax Class Vessels.
10	30. 20120321 Berth 10A General Notes- Drawing # TPIX-KBR-DRG-MAR12-0202 – KBR Pty Ltd. 31. 20130722 Berth 10A Wharf General Arrangement Plan and Elevations- Drawing # TPIX-KBR-DRG-MAR12-0211 – KBR Pty Ltd. 32. 20130315 Refer to TPIX Design Basis Report ADM01-0001-5.
11	33. 19961205 B11 Shiploading Facility General Notes SKM Drw # 8C115-330C002/2 X1892-002. 34. 19950904 Outer Harbour Wharf Berth 11 Design Criteria Report. Revision 2.TPA & BHP Mineral. 35. 19951102 Wharf and Jetty General Arrangement SKM Drw # 8C080-200S02-C X1892-139.
TMP- Common User Facility (CUF)	36. 20100827 Townsville Marine Precinct -Area A Jetty – Plan and Elevation Drawing #TMPA-ST-DR-MW-5001 Rev 1. 37. 201006 Townsville Marine Precinct Project -Marine Structures Design Basis Report TMPA-MA-RP-MW-0007. 38. 20101108 Townsville Marine Precinct – General notes Drawing #TMPA-MA-DR-MW-0003 Rev 3.

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