Gladstone Ports Corporation
Growth, Prosperity, Community.

Appendix A – EIS Public Submissions

Queensland Government

Department of **Transport** and **Main Roads**

17 December 2009

The Coordinator-General
c/- EIS Project Manager: Port of Gladstone Western Basin Dredging Project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
City East QLD 4002
Attn: Mr Steve Alcock, EIS Project Manager – Port of Gladstone Western Basin Dredging Project

Department of Transport and Main Roads Response: Environmental Impact Statement (EIS) – Port of Gladstone Western Basin Dredging Project

Dear Mr Alcock

Thank you for inviting the Department of Transport and Main Roads to comment on the Environmental Impact Statement (EIS) – Port of Gladstone Western Basin Dredging Project. The Department has reviewed the EIS and is generally supportive of the overall content.

The EIS includes much of the necessary information and analysis to provide an adequate assessment of the impacts and proposed mitigation measures of the project. However, some additional information and assessment is required to ensure the road, rail and maritime safety impacts of the proposal are clarified. These requirements are set out in Attachment A and represent a coordinated departmental response. In addition traffic count data for Mt Larcom Road and Landing Road Gladstone have been included to assist the proponent in a more accurate assessment of project related impacts.

The relevant contacts have been included in Attachment A and should be consulted throughout the development of the Supplementary EIS. Should you have any queries regarding these comments, please contact Brent McLean of Planning Policy & Major Development, (07) 3146 1509.

Yours sincerely

Tom Orr
Principal Advisor (Planning Policy & Major Development Unit)
Enc (1): Attachment A. Department of Transport and Main Roads Response: Environmental Impact Statement (EIS) – Port of Gladstone Western Basin Dredging Project.
Enc (2): Traffic Count Data for Mt Larcom Road and Landing Road Gladstone.

Queensland Government

Department of Transport and Main Roads

File No:890/00329 P84645 SH

C/c

1. **General Manager**
Rail, Ports and Freight
Department of Transport and Main Roads
GPO Box 1549, Brisbane Qld 4001
Attn: Mr. Greg Hollands

2. **General Manager**
Marine Safety Queensland
Department of Transport and Main Roads
GPO Box 2595, Brisbane Qld 4001
Attn: Mr. Brad Lanagan

3. **MR RD Fitzroy Region / Rockhampton Office**
Department of Transport and Main Roads
PO Box 5096 Central Qld Mail Centre 4702
Attn: Mr. Chris Hewitt; Leah Ronczka

For your information.

Tom Orr
Principal Advisor (Development Leadership)
17 December 2009

Attachment A
Queensland Department of Transport and Main Roads Comments:
Environmental Impact Statement (EIS) – Port of Gladstone Western Basin Dredging Project

File: 890/00329 P8464SSH

Maritime Safety Queensland			
Name:	Patrick Quirk, Acting General Manager, Maritime Safety Queensland		
Address:	GPO Box 2595, Brisbane Qld 4001	**Contact:**	Mr Brad Lanagan, Manager (Operational Planning and Policy) Ph: 31207423

General

These comments have been approved by the Regional Harbour Master Gladstone and the A/Director, Maritime Services on behalf of Patrick Quirk, Acting General Manager, Maritime Safety Queensland.

Section	Describe the issue	Suggested amendments	Additional Information / Level of detail when undertaking S/EIS
Chapter 1 – Introduction – Figure 1-9 – Page 1-14 1.a.1	The table incorrectly lists the Transport Operations (Marine Pollution) Act as 1994	It should be noted that the correct citation is: *Transport Operations (Marine Pollution) Act 1995.*	
Chapter 2 – Description of Project – Table 2 -7 – Design of Dredged Areas for Each Dredging Stage – Page 2-3 1.a.2	The dimensions of the Stage 1B dredging differ from those in the Fisherman's Landing Northern Expansion Project EIS (Table 3.1) for the same channel and swing basin. The Western Basin EIS dimensions are: Targinie Channel: 200m wide, 13.3m deep LAT FL Swing Basin: 650m wide, 13.3m deep LAT	The proponent should liaise with the Regional Harbour Master (Gladstone) to ensure that there is consistency between the dredging requirements being quoted in all EIS's for the expansion of the Port of Gladstone. When agreed, these documents need to be amended accordingly.	Inconsistent dimensions have a major bearing on vessel movements in the port.

Section	Describe the issue	Suggested amendments	Additional Information / Level of detail when undertaking S/EIS
	The Fisherman's Landing Northern Expansion EIS dimensions are: Targinie Channel: 180m wide, 13.5m deep LAT FL Swing Basin: 550m wide, 13.5m deep LAT		
Chapter 17 – Hazard and Risk – Section 17.2.7 Emergency Response – Page 17-5 1.a.3	The Oil Spill Response Plan appears to be based on incidents in the port during the period 1985 – 1998. There have been several further incidents since that time (eg. Global Peace). Using outdated statistics could lead to an under or over-assessment of the risk of a particular type of incident that may lead to an oil spill.	The proponent should liaise with the Regional Harbour Master (Gladstone) to obtain the latest data on marine incidents in the Port of Gladstone, to determine if the risk assessment and mitigation measures detailed in the EIS are still valid. The Supplementary EIS should clarify the risk assessment and mitigation measures to appropriately reflect a thorough analysis of marine incidents in the Port of Gladstone.	Failure to appropriately address risks could prove catastrophic in the event of an oil spill incident in the harbour.

Rail, Ports and Freight			
Name:	Mr Lawrence Hannah, General Manager (Rail, Ports and Freight)		
Address:	GPO Box 1549, Brisbane Qld 4001	**Contact:**	Mr Greg Hollands, Senior Advisor (07) 3306 7376

Section	Describe the issue	Suggested amendments	Additional information / Level of detail when undertaking EIS
1 Introduction 1.10.3 State legislation Transport Infrastructure Act 1994 (TIA) (Page 1-44) 1.b.1	The project involves the potential haulage of bund wall rock under two options – a dedicated haul road carrying 3.6 Mt for one year; and (2) 800 000 tonnes pa for four and a half years. Option 2 involves heavy vehicles crossing two level crossings on the Fishermans Landing Branch rail line. In addition to assessing the requirements of s285 TIA, this section of the EIS should make reference to the requirements to assess the impacts of the project haulage on the railway level crossings under s255 TIA.	The proponent should be aware that in addition to legislative requirements outlined in 1.10.3 further permits or approvals are required to work in, or interfere with a state-controlled road or railway and for ancillary works and encroachments in a state controlled road corridor. An approval to interfere with a railway is dealt with under s255 TIA.	
1 Introduction 1.10.7 Summary of relationship of various Acts... Transport Infrastructure Act 1994 1.b.2	As per the comment above, because the project involves the potential haulage of bund wall rock across two railway level crossings, this TIA section should reference the need to carry out a level crossing assessment for the preferred Road Route option (RR3), as shown in Figure 11-1. It is noted that under RR3,	The proponent is required to undertake a railway level crossing assessment as per requirements under s255 TIA. This assessment should analyse potential damages to the railway level crossings which will be used by the preferred Road Route 3 and involves fully loaded haul vehicles crossing the railway.	

Section	Describe the issue	Suggested amendments	Additional Information / Level of detail when undertaking EIS
(Page 1-75)	haul vehicles will be fully loaded.		
2 Project description 2.4.1 Transport (Page 2-42) 1.b.c	The second paragraph of s2.4.1 states "A separate Haul Route Options Study and approvals process has been undertaken for the on-road and off-road haul routes that are proposed to be used." However, the EIS does not detail the outcomes of the study in sufficient detail to adequately assess the project impacts.	The proponent should provide a concise explanation of: • what assessment was undertaken in the Haul Road Options Study of impacts to the railway level crossings on the Fishermans Landing Branch Line; • what consultation with QR has occurred; and • what compensation will be provided for damage to any rail transport infrastructure arising from the use of the level crossings by the haul vehicles.	The "Memorandum of Understanding between the LGAQ, QR Limited, and the DTMR with respect to the management and funding responsibility for level crossing safety" – provides guidance on the responsibilities of parties involved in assessing potential impacts to railway level crossings in Queensland.
11 Transport 11.3 Potential impacts and mitigation measures 11.3.1 Potential Land Based Traffic Impacts and Mitigation Measures Impacts on the 1.b.4	This sub-section notes that the on-road haul route will traverse the Fishermans Landing Branch line and that adequate signage has been established to prevent potential collisions between haul vehicles and trains, "though a review will need to occur of the signage when the final haulage arrangements are confirmed". In addition, and as stated next above - a separate "Haul Route Options Study" and approvals process has been undertaken for the on-road and off-road	This Impacts on the Rail Network sub-section should be amended and expanded by the proponent to provide a clear analysis of: • what assessment was undertaken in the Haul Road Options Study of impacts to the railway level crossings on the Fishermans Landing Branch Line; • what consultation with QR has occurred in this regard; and • what compensation will be provided for damage to any rail transport	As the transport of 3.6Mt of rock is an exceptionally large and unusual transport task with potential to cause damage at two rail crossings (if the Road Route 1 Option is used), a condition for inclusion in the Coordinator-General's Final report should be that: • Gladstone Ports Corporation will compensate QR Limited for damage to any rail transport infrastructure arising from the use of level crossings by project road-haul vehicles using Road Route 1.

Section	Describe the issue	Suggested amendments	Additional Information / Level of detail when undertaking EIS
Rail Network (Page 11-6) 1.6.3 1.C.1	haul routes that are proposed to be used. However this sub section provides no analysis of what assessment of impacts to the railway level crossings was undertaken in the haul Road Options Study, what consultation with QR has occurred, and what compensation will be provided for damage to the rail transport infrastructure.	infrastructure arising from the use of the level crossings by the haul vehicles.	

Main Roads			
Name:	Mr Chris Hewitt, Manager (Corridor Land Management & Operations), Rockhampton Regional Office		
Address:	PO Box 5096, Central Qld Mail Centre Qld 4702	**Contact:**	Miss Leah Ronczka, Engineer (07) 4931 1628

Section	Describe the issue	Suggested amendments	Additional Information / Level of detail when undertaking EIS
Page 2-1 Chapter 2 Section 2.1 Overview of Project & Chapter 5 Section 5.2. Land Use and Tenure 1.c.1	The department is concerned that the reclamation area will later be developed without the necessary development controls established under the current Queensland planning regime.	To ensure the ongoing safety and efficiency of the state-controlled network the department will require the amendment of the GPC Land Use Plan to include the Western Basin Reclamation Area upon approval of the Coordinators General Report. The Supplementary EIS should detail the intentions of the GPC to amend the Land Use Plan, timing for this to occur, and details regarding the amendment to ensure all relevant stakeholders are referred proposed development applications for the Reclamation Area.	
Page 11-7 Chapter 11 Section 11.3 Potential Impacts and Mitigation Measures	Assumptions made in the traffic analysis are inconsistent with DTMR traffic count data, and are not supported by project specific data collection. These sections state the following: • The 'current flow of vehicles on	The Supplementary EIS should undertake traffic analysis for Gladstone – Mt Larcom Road and the Intersection of Gladstone – Mt Larcom Road with Landing Road based on DTMR's traffic count volumes attached to this EIS submission.	Significant differences between the proponent's traffic data and DTMR's traffic data raises considerable concern regarding the creditability of the proponents' data and therefore accuracy of the analysis undertaken.

Section	Describe the issue	Suggested amendments	Additional Information / Level of detail when undertaking EIS
Subsections Gladstone-Mt Larcom Road & Landing Road Intersection 1.c.2	Gladstone – Mt Larcom Road is approximately 9,000 vehicles per day' • The Landing Road Intersection morning peak is 5:30am – 6:30am and evening peak is 5:30pm – 6:30pm. This traffic volume data is not consistent with DTMR's traffic count volumes, and the EIS provides no evidence to support the assumptions.		The review of the traffic analysis should be undertaken in consultation with the DTMR Rockhampton office (contact details noted above). The DTMR Rockhampton office will require an electronic version of the projects SIDRA analysis. Please note, DTMR traffic count volumes attached are for: • Gladstone – Mt Larcom Road Ch 4.62km – 12.29km (2008); and • The intersection of Gladstone – Mt Larcom Road with Landing Road (2009).

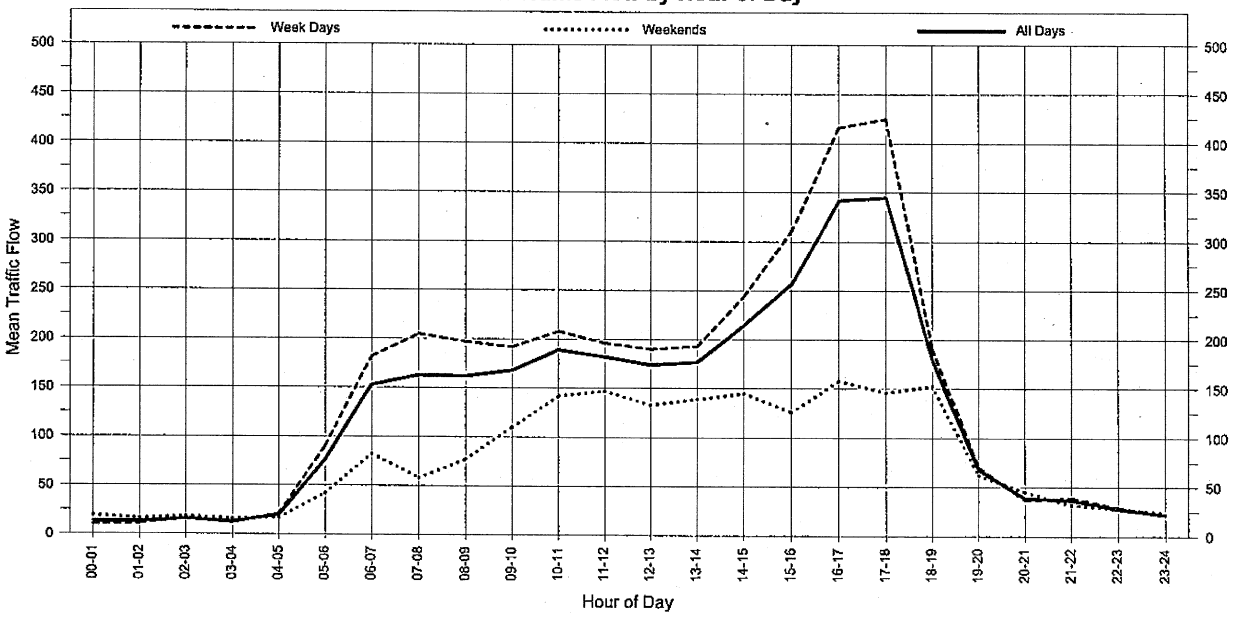
Traffic Analysis and Reporting System
Weekly Volume Report

District	6 - Central District
Road Section	181 - Gladstone - Mt Larcom Road
Site	60074 - G'stone-Mt Larcom Rd1km N Calliope River
Thru Dist	6.27
Type	C - Coverage
Stream	TA - Thru traffic -against gazettal
Traffic Class	00 - All Vehicles
Date Range	Monday 30-Jun-2008 - Sunday 13-Jul-2008

Data Profile

	Mondays	Tuesdays	Wednesdays	Thursdays	Fridays	Saturdays	Sundays
Days in Date Range	2	2	2	2	2	2	2
Days Included	2	2	2	2	2	2	2
Calendar Events	0	0	0	0	0	0	0

Mean Traffic Flow by Hour of Day



Notes.

- 12-hour time periods extend from 07:00 to 19:00. 16-hour time periods extend from 06:00 to 22:00. 18-hour time periods extend from 06:00 to 24:00. 24-hour time periods extend from 00:00 to 24:00.
- Days for which traffic counters did not operate for the entire day are excluded from the calculations. This is the only cause of differences between "Days in Date Range" and "Days Included". Days classified as Calendar Events are included in the calculations.
- Calendar Events include public holidays, local show holidays etc. Averages derived for such Calendar Event days will generally be different from the usual averages.

Hour	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Average Week Day		Average Weekend Day		Average Day	
00-01	13	0.4%	10	0.3%	13	0.4%	10	0.3%	5	0.1%	21	1.0%	17	1.0%	10	0.3%	19	1.0%	13	0.4%
01-02	9	0.3%	13	0.4%	8	0.2%	12	0.3%	14	0.4%	14	0.7%	18	1.0%	11	0.3%	16	0.8%	13	0.4%
02-03	12	0.4%	18	0.5%	13	0.4%	18	0.5%	18	0.5%	20	1.0%	16	0.9%	16	0.5%	18	0.9%	16	0.5%
03-04	8	0.2%	15	0.4%	16	0.5%	8	0.2%	12	0.3%	18	0.9%	13	0.7%	12	0.3%	16	0.8%	13	0.4%
04-05	23	0.7%	21	0.6%	20	0.6%	23	0.6%	18	0.5%	21	1.0%	13	0.7%	21	0.6%	17	0.9%	20	0.7%
05-06	111	3.3%	88	2.6%	88	2.5%	82	2.2%	83	2.4%	52	2.5%	31	1.8%	90	2.6%	42	2.2%	76	2.5%
06-07	190	5.6%	182	5.4%	172	4.9%	191	5.1%	174	5.0%	87	4.2%	77	4.4%	182	5.2%	82	4.2%	153	5.0%
07-08	256	7.6%	196	5.8%	199	5.7%	204	5.4%	172	4.9%	72	3.4%	43	2.4%	205	5.8%	58	3.0%	163	5.3%
08-09	205	6.1%	195	5.8%	209	5.9%	206	5.5%	169	4.8%	98	4.7%	55	3.1%	197	5.6%	77	4.0%	162	5.3%
09-10	188	5.6%	182	5.4%	187	5.3%	203	5.4%	198	5.7%	132	6.3%	87	4.9%	192	5.5%	110	5.7%	168	5.5%
10-11	197	5.8%	230	6.8%	192	5.5%	220	5.8%	199	5.7%	168	8.0%	115	6.5%	208	5.9%	142	7.3%	189	6.2%
11-12	175	5.2%	188	5.6%	193	5.5%	201	5.3%	224	6.4%	138	6.6%	156	8.8%	196	5.6%	147	7.6%	182	6.0%
12-13	182	5.4%	172	5.1%	177	5.0%	193	5.1%	225	6.4%	134	6.4%	132	7.5%	190	5.4%	133	6.9%	174	5.7%
13-14	196	5.8%	187	5.6%	159	4.5%	203	5.4%	219	6.3%	150	7.2%	128	7.3%	193	5.5%	139	7.2%	177	5.8%
14-15	206	6.1%	218	6.5%	228	6.5%	272	7.2%	295	8.4%	160	7.6%	129	7.3%	244	7.0%	145	7.5%	215	7.0%
15-16	286	8.5%	288	8.6%	312	8.9%	300	7.9%	364	10.4%	131	6.3%	121	6.9%	310	8.8%	126	6.5%	257	8.4%
16-17	401	11.9%	416	12.4%	463	13.2%	471	12.5%	330	9.4%	168	8.0%	147	8.3%	416	11.9%	158	8.2%	342	11.2%
17-18	373	11.0%	391	11.6%	509	14.5%	499	13.2%	353	10.1%	151	7.2%	140	7.9%	425	12.1%	146	7.5%	345	11.3%
18-19	174	5.2%	190	5.7%	196	5.6%	193	5.1%	200	5.7%	155	7.4%	151	8.6%	191	5.4%	153	7.9%	180	5.9%
19-20	70	2.1%	55	1.6%	68	1.9%	80	2.1%	77	2.2%	63	3.0%	60	3.4%	70	2.0%	62	3.2%	68	2.2%
20-21	34	1.0%	37	1.1%	30	0.9%	40	1.1%	46	1.3%	44	2.1%	45	2.6%	37	1.1%	45	2.3%	39	1.3%
21-22	30	0.9%	28	0.8%	25	0.7%	67	1.8%	47	1.3%	35	1.7%	29	1.6%	39	1.1%	32	1.7%	37	1.2%
22-23	20	0.6%	24	0.7%	19	0.5%	53	1.4%	28	0.8%	30	1.4%	25	1.4%	29	0.8%	28	1.4%	28	0.9%
23-24	18	0.5%	16	0.5%	21	0.6%	25	0.7%	28	0.8%	32	1.5%	15	0.9%	22	0.6%	24	1.2%	22	0.7%

Peaks	Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count	
AM	08:00	256	11:00	230	09:00	209	11:00	220	12:00	224	11:00	168	12:00	156	11:00	208	12:00	147	11:00	188
PM	17:00	401	17:00	416	18:00	509	18:00	499	16:00	364	17:00	168	19:00	151	18:00	425	17:00	157	18:00	345
12-Hour	2,839	84.1%	2,853	84.9%	3,024	86.0%	3,165	83.9%	2,948	84.3%	1,657	79.1%	1,404	79.6%	2,967	84.6%	1,534	79.3%	2,554	83.7%
16-Hour	3,163	93.7%	3,155	93.9%	3,319	94.4%	3,543	93.9%	3,292	94.1%	1,886	90.1%	1,615	91.6%	3,295	94.0%	1,755	90.7%	2,851	93.4%
18-Hour	3,201	94.8%	3,195	95.1%	3,359	95.5%	3,621	95.9%	3,348	95.7%	1,948	93.0%	1,655	93.9%	3,346	95.4%	1,807	93.4%	2,901	95.1%
24-Hour	3,377	100.0%	3,360	100.0%	3,517	100.0%	3,774	100.0%	3,498	100.0%	2,094	100.0%	1,763	100.0%	3,506	100.0%	1,935	100.0%	3,052	100.0%
Avg Week Day		96.3%		95.8%		100.3%		107.6%		99.8%						100.0%		55.2%		87.1%
Avg Weekend Day												108.2%		91.1%		181.2%		100.0%		157.7%
Avg Day		110.6%		110.1%		115.2%		123.7%		114.6%		68.6%		57.8%		114.9%		63.4%		100.0%

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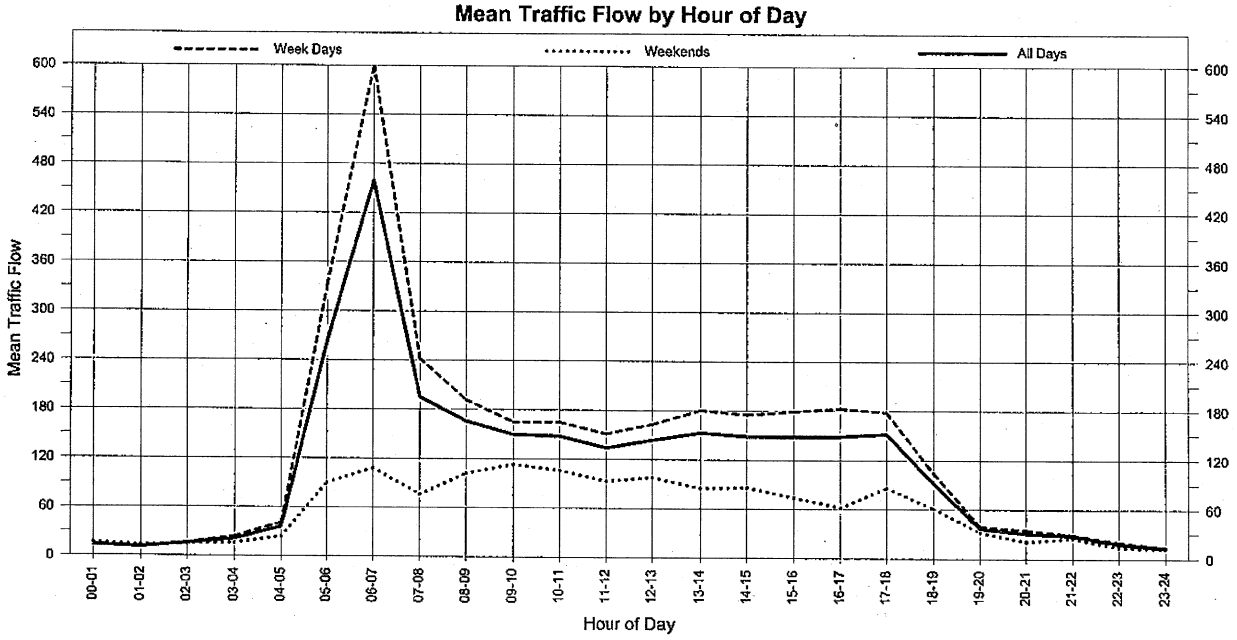

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01-02	13	0.4%	10	0.3%	8	0.2%	14	0.4%	9	0.3%	15	0.9%	11	0.9%	11	0.3%	13	0.9%	11	0.4%
02-03	17	0.5%	12	0.4%	11	0.3%	25	0.8%	15	0.5%	17	1.1%	12	1.0%	16	0.5%	15	1.1%	16	0.6%
03-04	20	0.6%	23	0.7%	23	0.7%	28	0.9%	25	0.9%	18	1.1%	13	1.0%	24	0.7%	16	1.1%	21	0.8%
04-05	42	1.2%	44	1.3%	44	1.2%	47	1.4%	30	1.1%	29	1.8%	19	1.5%	41	1.3%	24	1.7%	36	1.3%
05-06	338	10.1%	367	11.1%	355	10.1%	358	11.0%	243	8.7%	115	7.2%	65	5.2%	332	10.2%	90	6.3%	263	9.6%
06-07	613	18.2%	635	19.2%	644	18.3%	635	19.5%	471	16.9%	137	8.6%	78	6.2%	600	18.5%	108	7.6%	459	16.8%
07-08	242	7.2%	250	7.5%	258	7.3%	271	8.3%	190	6.8%	84	5.3%	68	5.4%	242	7.4%	76	5.3%	195	7.1%
08-09	200	5.9%	184	5.6%	203	5.8%	207	6.4%	165	5.9%	117	7.3%	86	6.9%	192	5.9%	102	7.1%	166	6.1%
09-10	165	4.9%	162	4.9%	196	5.6%	156	4.8%	145	5.2%	130	8.2%	96	7.6%	165	5.1%	113	7.9%	150	5.5%
10-11	175	5.2%	174	5.3%	175	5.0%	142	4.4%	158	5.7%	114	7.2%	97	7.7%	165	5.1%	106	7.4%	148	5.4%
11-12	156	4.6%	154	4.6%	168	4.8%	136	4.2%	139	5.0%	103	6.5%	83	6.6%	151	4.6%	93	6.5%	134	4.9%
12-13	199	5.9%	167	5.0%	162	4.6%	141	4.3%	145	5.2%	107	6.7%	89	7.1%	163	5.0%	98	6.9%	144	5.3%
13-14	199	5.9%	184	5.6%	187	5.3%	173	5.3%	157	5.6%	98	6.2%	72	5.7%	180	5.5%	85	6.0%	153	5.6%
14-15	180	5.4%	162	4.9%	195	5.5%	176	5.4%	161	5.8%	98	6.2%	74	5.9%	175	5.4%	86	6.0%	149	5.5%
15-16	182	5.4%	184	5.6%	219	6.2%	153	4.7%	158	5.7%	74	4.6%	73	5.8%	179	5.5%	74	5.2%	149	5.5%
16-17	205	6.1%	183	5.5%	210	6.0%	152	4.7%	166	5.9%	64	4.0%	60	4.8%	183	5.6%	62	4.3%	149	5.5%
17-18	184	5.5%	183	5.5%	216	6.1%	154	4.7%	152	5.4%	91	5.7%	81	6.5%	178	5.5%	86	6.0%	152	5.6%
18-19	99	2.9%	102	3.1%	122	3.5%	96	2.9%	103	3.7%	60	3.8%	61	4.9%	104	3.2%	61	4.3%	92	3.4%
19-20	40	1.2%	40	1.2%	34	1.0%	37	1.1%	43	1.5%	30	1.9%	34	2.7%	39	1.2%	32	2.2%	37	1.4%
20-21	31	0.9%	27	0.8%	26	0.7%	56	1.7%	34	1.2%	21	1.3%	20	1.6%	35	1.1%	21	1.5%	31	1.1%
21-22	17	0.5%	25	0.8%	17	0.5%	54	1.7%	31	1.1%	23	1.4%	27	2.2%	29	0.9%	25	1.8%	28	1.0%
22-23	18	0.5%	18	0.5%	22	0.6%	20	0.6%	22	0.8%	17	1.1%	11	0.9%	20	0.6%	14	1.0%	18	0.7%
23-24	17	0.5%	10	0.3%	11	0.3%	13	0.4%	17	0.6%	12	0.8%	12	1.0%	14	0.4%	12	0.8%	13	0.5%

Peaks	Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count	
AM	07:00	613	07:00	635	07:00	644	07:00	635	07:00	471	07:00	137	11:00	97	07:00	600	10:00	113	07:00	459
PM	17:00	205	14:00	184	16:00	219	15:00	176	17:00	166	13:00	107	13:00	89	17:00	183	13:00	98	14:00	152

12-Hour	2,186	65.0%	2,089	63.1%	2,311	65.7%	1,957	60.1%	1,839	65.9%	1,140	71.6%	940	74.9%	2,077	63.9%	1,042	73.0%	1,781	65.3%
16-Hour	2,887	85.8%	2,816	85.0%	3,032	86.1%	2,739	84.1%	2,418	86.6%	1,351	84.8%	1,099	87.6%	2,780	85.5%	1,228	86.0%	2,336	85.6%
18-Hour	2,922	86.9%	2,844	85.8%	3,065	87.1%	2,772	85.1%	2,457	88.0%	1,380	86.6%	1,122	89.4%	2,814	86.6%	1,254	87.8%	2,367	86.8%
24-Hour	3,363	100.0%	3,313	100.0%	3,520	100.0%	3,257	100.0%	2,792	100.0%	1,593	100.0%	1,255	100.0%	3,251	100.0%	1,428	100.0%	2,728	100.0%

Avg Week Day		103.4%		101.9%		108.3%		100.2%		85.9%						100.0%		43.9%		83.9%
Avg Weekend Day												111.6%		87.9%		227.7%		100.0%		191.0%
Avg Day		123.3%		121.4%		129.0%		119.4%		102.3%		58.4%		46.0%		119.2%		52.3%		100.0%

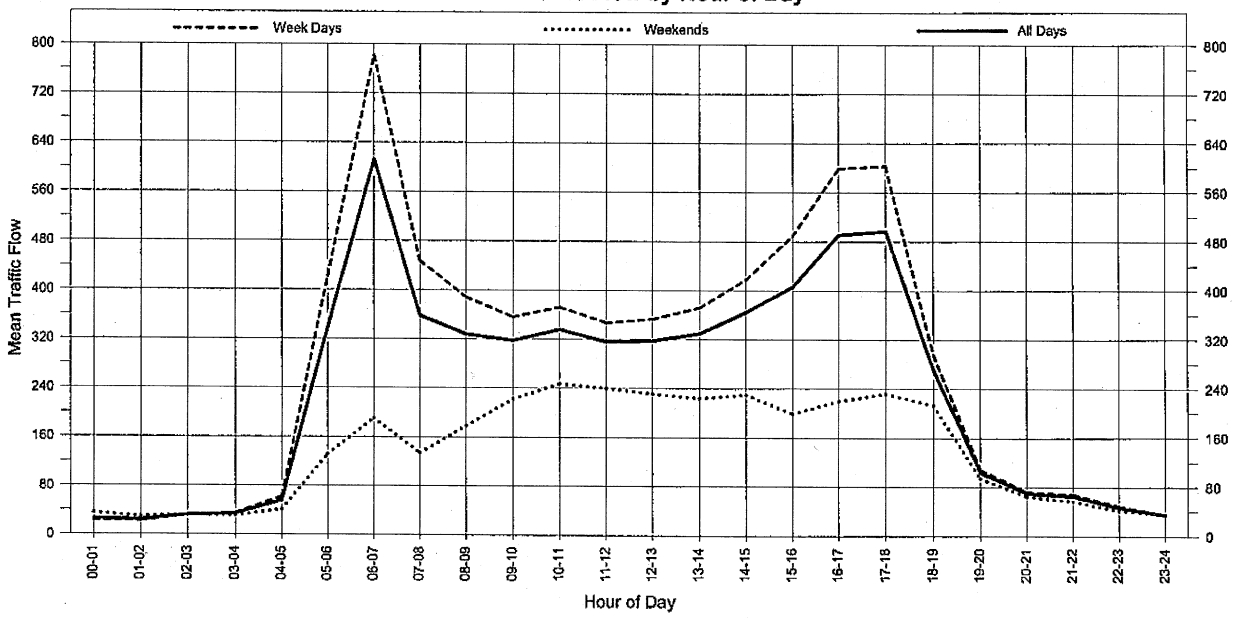
Traffic Analysis and Reporting System
Weekly Volume Report

District	6 - Central District
Road Section	181 - Gladstone - Mt Larcom Road
Site	60074 - G'stone-Mt Larcom Rd1km N Calliope River
Thru Dist	6.27
Type	C - Coverage
Stream	TB - Bi-directional traffic flow
Traffic Class	00 - All Vehicles
Date Range	Monday 30-Jun-2008 - Sunday 13-Jul-2008

Data Profile

	Mondays	Tuesdays	Wednesdays	Thursdays	Fridays	Saturdays	Sundays
Days in Date Range	2	2	2	2	2	2	2
Days Included	2	2	2	2	2	2	2
Calendar Events	0	0	0	0	0	0	0

Mean Traffic Flow by Hour of Day



Notes.

- 12-hour time periods extend from 07:00 to 19:00. 16-hour time periods extend from 06:00 to 22:00. 18-hour time periods extend from 06:00 to 24:00. 24-hour time periods extend from 00:00 to 24:00.
- Days for which traffic counters did not operate for the entire day are excluded from the calculations. This is the only cause of differences between "Days in Date Range" and "Days Included". Days classified as Calendar Events are included in the calculations.
- Calendar Events include public holidays, local show holidays etc. Averages derived for such Calendar Event days will generally be different from the usual averages.

Weekly Volume Report

Hour	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Average Week Day		Average Weekend Day		Average Day	
00-01	24	0.4%	23	0.3%	27	0.4%	23	0.3%	18	0.3%	39	1.1%	30	1.0%	23	0.3%	35	1.0%	26	0.4%
01-02	22	0.3%	23	0.3%	16	0.2%	25	0.4%	22	0.4%	29	0.8%	29	1.0%	22	0.3%	29	0.9%	24	0.4%
02-03	29	0.4%	30	0.4%	24	0.3%	43	0.6%	33	0.5%	36	1.0%	28	0.9%	32	0.5%	32	1.0%	32	0.6%
03-04	28	0.4%	38	0.6%	39	0.6%	36	0.5%	36	0.6%	35	1.0%	26	0.9%	35	0.5%	31	0.9%	34	0.6%
04-05	65	1.0%	65	1.0%	64	0.9%	69	1.0%	48	0.8%	50	1.4%	31	1.0%	62	0.9%	41	1.2%	56	1.0%
05-06	449	6.7%	455	6.8%	442	6.3%	440	6.3%	325	5.2%	167	4.5%	95	3.2%	422	6.3%	131	3.9%	339	5.9%
06-07	803	11.9%	816	12.2%	815	11.6%	825	11.7%	644	10.2%	224	6.1%	155	5.1%	781	11.6%	190	5.7%	612	10.6%
07-08	497	7.4%	446	6.7%	457	6.5%	475	6.8%	362	5.8%	156	4.2%	111	3.7%	447	6.6%	134	4.0%	358	6.2%
08-09	405	6.0%	379	5.7%	412	5.9%	412	5.9%	334	5.3%	215	5.8%	141	4.7%	388	5.7%	178	5.3%	328	5.7%
09-10	353	5.2%	344	5.2%	382	5.4%	358	5.1%	343	5.5%	261	7.1%	182	6.0%	356	5.3%	222	6.6%	318	5.5%
10-11	371	5.5%	404	6.1%	366	5.2%	362	5.2%	357	5.7%	282	7.7%	212	7.0%	372	5.5%	247	7.4%	336	5.8%
11-12	331	4.9%	341	5.1%	361	5.1%	337	4.8%	363	5.8%	241	6.6%	239	7.9%	347	5.1%	240	7.2%	316	5.5%
12-13	381	5.7%	339	5.1%	339	4.8%	334	4.8%	370	5.9%	241	6.6%	221	7.3%	353	5.2%	231	6.9%	318	5.5%
13-14	394	5.9%	371	5.6%	346	4.9%	375	5.3%	376	6.0%	247	6.7%	200	6.6%	372	5.5%	224	6.7%	330	5.7%
14-15	386	5.7%	380	5.7%	423	6.0%	447	6.4%	456	7.3%	258	7.0%	202	6.7%	418	6.2%	230	6.9%	365	6.3%
15-16	468	6.9%	472	7.1%	531	7.6%	453	6.5%	522	8.3%	204	5.5%	193	6.4%	489	7.2%	199	5.9%	406	7.0%
16-17	606	9.0%	599	9.0%	673	9.6%	623	8.9%	495	7.9%	232	6.3%	207	6.9%	599	8.9%	220	6.6%	491	8.5%
17-18	556	8.3%	574	8.6%	725	10.3%	653	9.3%	505	8.0%	242	6.6%	221	7.3%	603	8.9%	232	6.9%	497	8.6%
18-19	273	4.1%	292	4.4%	318	4.5%	289	4.1%	302	4.8%	214	5.8%	212	7.0%	295	4.4%	213	6.4%	271	4.7%
19-20	110	1.6%	94	1.4%	101	1.4%	116	1.7%	120	1.9%	93	2.5%	94	3.1%	108	1.6%	94	2.8%	104	1.8%
20-21	65	1.0%	64	1.0%	56	0.8%	96	1.4%	80	1.3%	64	1.7%	65	2.2%	72	1.1%	65	1.9%	70	1.2%
21-22	46	0.7%	53	0.8%	42	0.6%	121	1.7%	77	1.2%	58	1.6%	56	1.9%	68	1.0%	57	1.7%	65	1.1%
22-23	38	0.6%	42	0.6%	41	0.6%	73	1.0%	50	0.8%	47	1.3%	36	1.2%	49	0.7%	42	1.3%	47	0.8%
23-24	35	0.5%	26	0.4%	31	0.4%	38	0.5%	45	0.7%	44	1.2%	27	0.9%	35	0.5%	36	1.1%	35	0.6%

Peaks	Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count	
AM	07:00	803	07:00	816	07:00	815	07:00	825	07:00	644	11:00	282	12:00	239	07:00	781	11:00	247	07:00	611
PM	17:00	606	17:00	599	18:00	725	18:00	653	16:00	522	15:00	258	13:00	221	18:00	603	13:00	231	18:00	496

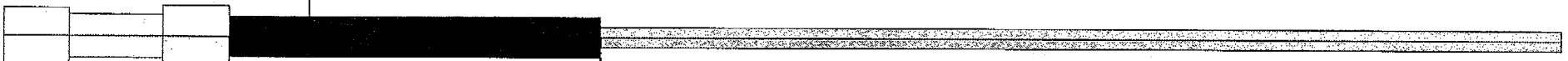
12-Hour	5,021	74.6%	4,941	74.1%	5,333	75.8%	5,118	72.9%	4,785	76.2%	2,793	75.9%	2,341	77.7%	5,039	74.7%	2,570	76.6%	4,334	75.0%
16-Hour	6,045	89.8%	5,968	89.5%	6,347	90.3%	6,276	89.4%	5,705	90.8%	3,232	87.8%	2,711	90.0%	6,068	89.9%	2,976	88.8%	5,185	89.7%
18-Hour	6,118	90.8%	6,036	90.5%	6,419	91.3%	6,387	90.9%	5,801	92.3%	3,323	90.3%	2,774	92.1%	6,152	91.2%	3,054	91.1%	5,267	91.2%
24-Hour	6,735	100.0%	6,670	100.0%	7,031	100.0%	7,023	100.0%	6,283	100.0%	3,679	100.0%	3,013	100.0%	6,748	100.0%	3,353	100.0%	5,778	100.0%

Avg Week Day		99.8%		98.8%		104.2%		104.1%		93.1%						100.0%		49.7%		85.6%
Avg Weekend Day												109.7%		89.9%		201.3%		100.0%		172.3%
Avg Day		116.6%		115.4%		121.7%		121.5%		108.7%		63.7%		52.1%		116.8%		58.0%		100.0%

Traffic Analysis and Reporting System
AADT Segment Analysis Report
District 6 - Central District
Road Section 181 - Gladstone - Mt Larcom Road
Traffic Year 2008

Site 60074. Point 260000134. G'stone-Mt Larcom Rd1km N Calliope River.
6.27 km

The width of each Road Segment is proportional to its AADT.



4.62 km
Start Point 260000135. Hanson Rd to Gladstone @ Pwr Stn Rd.

12.29 km
End Point 260000136. G'Stone-MtLrcom Rd to MtLrcom @ LandingR.

All Vehicles (00)

G	2,772	100%
A	3,175	100%
B	5,947	100%

Light Vehicles (0A)

G	1,960	70.70%
A	2,670	84.11%
B	4,630	77.86%

Heavy Vehicles (0B)

G	812	29.30%
A	505	15.89%
B	1,317	22.14%

This report shows Annualised Average Daily Traffic values (AADTs). Because the AADT values are converted to whole numbers, there will be occasional inaccuracies due to rounding. These inaccuracies are statistically insignificant.

Short Vehicles (1A)

G	1,960	70.70%
A	2,670	84.11%
B	4,630	77.86%

Trucks and Buses (1B)

G	504	18.17%
A	196	6.18%
B	699	11.76%

Articulated Vehicles (1C)

G	180	6.49%
A	171	5.38%
B	351	5.90%

Road Trains (1D)

G	128	4.64%
A	137	4.33%
B	266	4.48%

Short 2-Axle Vehicles (2A)

G	1,915	69.09%
A	2,616	82.39%
B	4,531	76.19%

Short Vehicles Towing (2B)

G	45	1.61%
A	55	1.72%
B	99	1.67%

2-Axle Trucks and Buses (2C)

G	453	16.35%
A	140	4.41%
B	594	9.98%

3-Axle Trucks and Buses (2D)

G	42	1.51%
A	45	1.43%
B	87	1.46%

4-Axle Trucks (2E)

G	9	0.31%
A	11	0.34%
B	19	0.32%

3-Axle Articulated (2F)

G	13	0.48%
A	2	0.07%
B	15	0.26%

4-Axle Articulated (2G)

G	7	0.24%
A	4	0.12%
B	11	0.18%

5-Axle Articulated (2H)

G	24	0.88%
A	31	0.99%
B	56	0.94%

6-Axle Articulated (2I)

G	136	4.89%
A	133	4.20%
B	269	4.52%

B Double (2J)

G	121	4.37%
A	137	4.31%
B	258	4.34%

Double Road Trains (2K)

G	5	0.19%
A	1	0.02%
B	6	0.10%

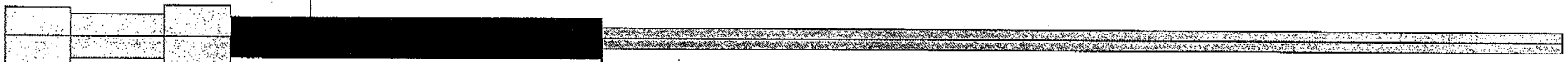
Triple Road Trains (2L)

G	2	0.08%
A	0	0.00%
B	2	0.04%

Site 60074. Point 260000134. G'stone-Mt Larcom Rd1km N Calliope River.

6.27 km

The width of each Road Segment is proportional to its AADT.

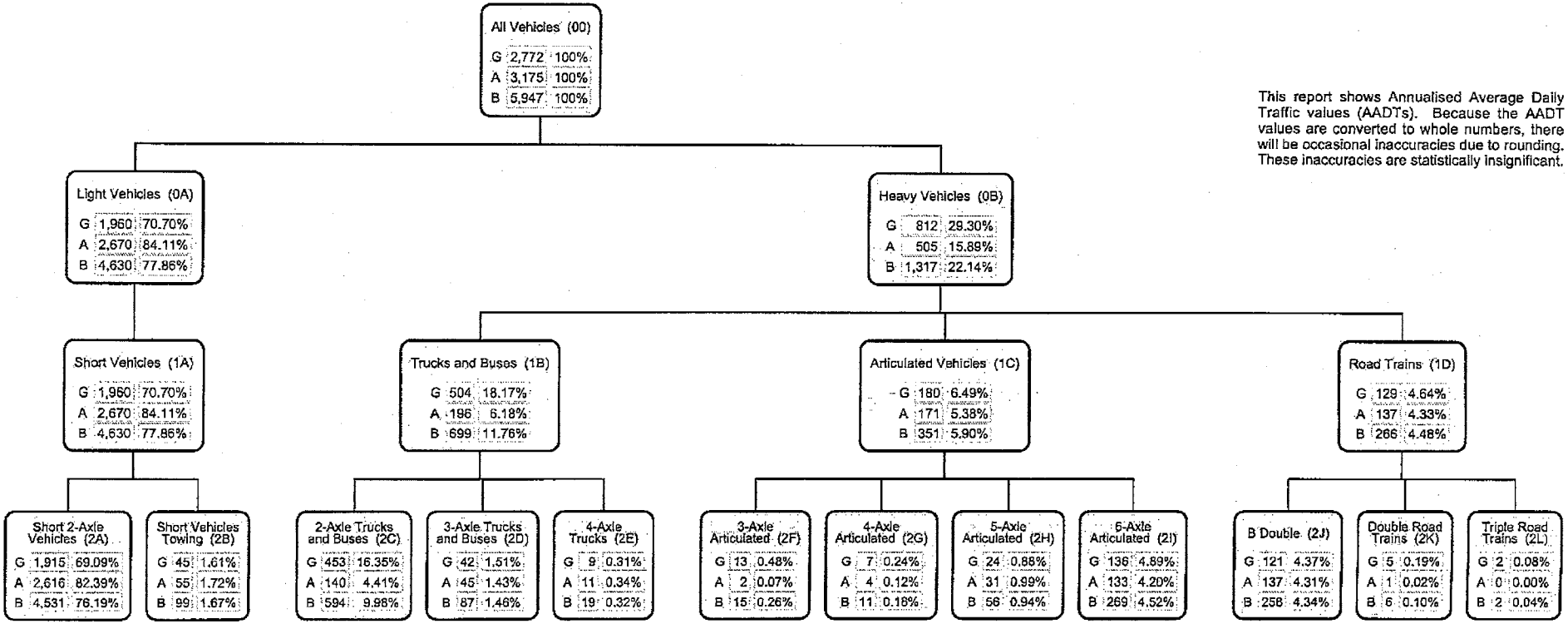


4.62 km

Start Point 260000135. Hanson Rd to Gladstone @ Pwr Stn Rd.

12.29 km

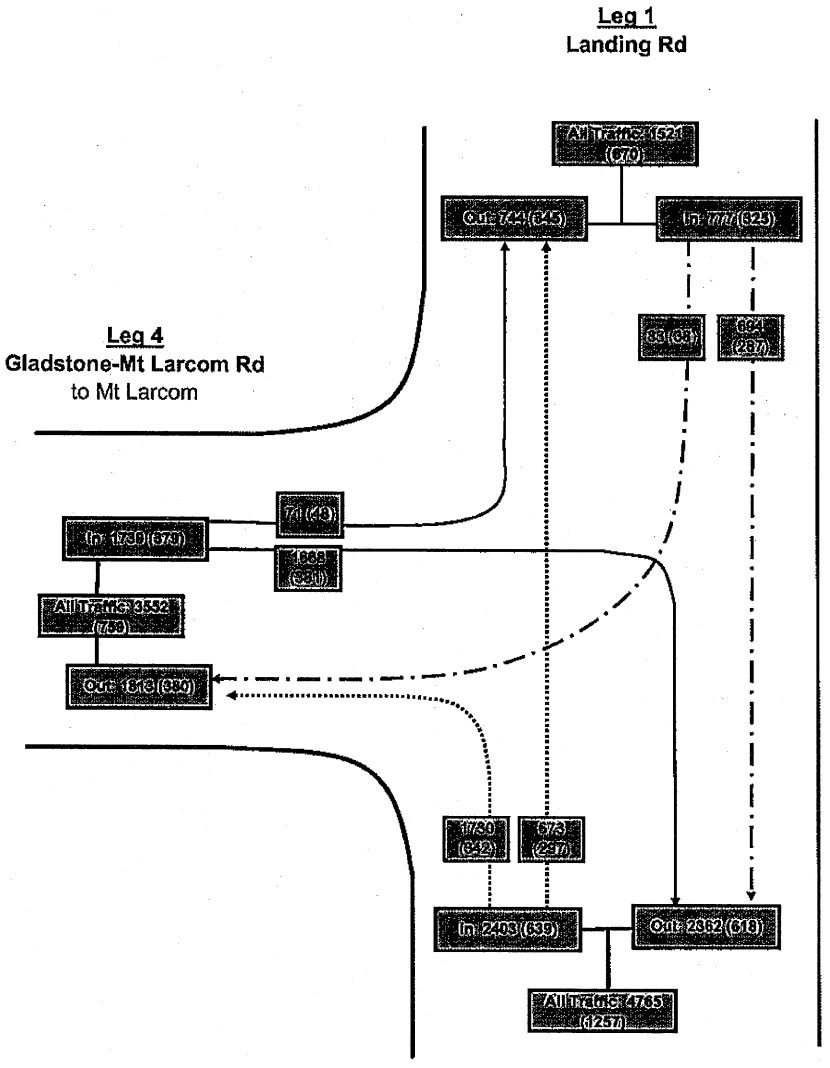
End Point 260000136. G'Stone-MtLrcom Rd to MtLrcom @ LandingR.



This report shows Annualised Average Daily Traffic values (AADTs). Because the AADT values are converted to whole numbers, there will be occasional inaccuracies due to rounding. These inaccuracies are statistically insignificant.

Queensland Government
Department of Main Roads

LOCATION: Intersection of Gladstone - Mt Larcom Rd & Landing Rd
ROAD No: 181 (Int. 1997 @ Tdist 12.292km)
DATE: Thu, 09/07/09
TIME: 06:00 - 18:00



Count Tally Sheet With Totals and Peak Flows.

Queensland Government
Department of Main Roads

LOCATION: Intersection of Gladstone - Mt Larcom Rd & Landing Rd
ROAD No: 181 (Int. 1997 @ Tdist 12.292km)
DATE: Thu, 09/07/09
TIME: 06:00 - 18:00

	Leg 1						Leg 3						Leg 4					
	Thru		Right		U-turn	Leg	Left		Thru		U-turn	Leg	Left		Right		U-turn	Leg
Time	*Light*	*Heavy*	*Light*	*Heavy*	*All*	Total	*Light*	*Heavy*	*Light*	*Heavy*	*All*	Total	*Light*	*Heavy*	*Light*	*Heavy*	*All*	Total
6:00 - 6:15	6	4	1	0	0	11	25	13	31	6	0	75	0	1	35	8	0	44
6:15 - 6:30	5	1	1	0	0	7	19	3	19	7	0	48	3	0	19	6	0	28
6:30 - 6:45	1	2	1	0	0	4	16	1	16	12	0	45	2	1	43	3	0	49
6:45 - 7:00	3	3	0	1	0	7	18	7	25	5	0	55	1	1	24	8	0	34
7:00 - 7:15	6	4	1	0	0	11	27	18	14	12	0	71	0	0	21	10	0	31
7:15 - 7:30	7	9	1	0	0	17	18	11	12	5	0	46	0	2	23	3	0	28
7:30 - 7:45	0	5	0	1	0	6	28	4	10	9	0	51	0	1	27	3	0	31
7:45 - 8:00	2	6	1	3	0	12	26	4	8	9	0	47	0	1	30	6	0	37
8:00 - 8:15	2	8	0	0	0	10	37	11	2	6	0	56	1	2	29	4	0	36
8:15 - 8:30	9	4	0	1	0	14	21	7	7	17	0	52	0	1	36	4	0	41
8:30 - 8:45	4	14	1	0	0	19	26	10	8	5	0	49	1	1	41	14	0	57
8:45 - 9:00	8	7	0	7	0	22	26	10	12	12	0	60	3	2	44	14	0	63
9:00 - 9:15	11	8	0	0	0	19	30	5	6	8	0	49	0	5	37	10	0	52
9:15 - 9:30	6	2	0	2	0	10	20	7	4	5	0	36	1	2	27	5	0	35
9:30 - 9:45	5	5	0	0	0	10	26	11	4	4	0	45	0	0	45	5	0	50
9:45 - 10:00	3	5	0	1	0	9	24	4	6	6	0	40	0	1	28	7	0	36
10:00 - 10:15	9	8	0	0	0	17	21	5	3	5	0	34	0	0	33	10	0	43
10:15 - 10:30	4	5	0	0	0	9	26	5	5	12	0	48	1	1	31	3	0	36
10:30 - 10:45	0	14	1	0	0	15	26	5	4	2	0	37	1	2	27	6	0	36
10:45 - 11:00	7	6	1	0	0	13	13	10	11	8	0	42	0	1	23	8	0	32
11:00 - 11:15	3	10	0	2	0	15	16	4	6	5	0	31	0	0	27	7	0	34
11:15 - 11:30	6	6	2	0	0	14	19	10	9	8	0	46	2	1	21	7	0	31
11:30 - 11:45	11	7	1	0	0	19	25	4	11	11	0	51	0	0	17	6	0	23
11:45 - 12:00	9	9	1	1	0	20	27	10	10	6	0	53	1	1	18	6	0	26

Data Collection Date: 09/07/09
Compiled by: CMD

Count Tally Sheet With Totals and Peak Flows.

Queensland Government
Department of Main Roads

LOCATION: Intersection of Gladstone - Mt Larcom Rd & Landing Rd
ROAD No: 181 (Int. 1997 @ Tdist 12.292km)
DATE: Thu, 09/07/09
TIME: 06:00 - 18:00

	Leg 1						Leg 3						Leg 4					
	Thru		Right		U-turn	Leg	Left		Thru		U-turn	Leg	Left		Right		U-turn	Leg
Time	*Light*	*Heavy*	*Light*	*Heavy*	*All*	Total	*Light*	*Heavy*	*Light*	*Heavy*	*All*	Total	*Light*	*Heavy*	*Light*	*Heavy*	*All*	Total
12:00 - 12:15	10	5	0	1	0	16	27	4	6	9	0	46	0	1	30	9	0	40
12:15 - 12:30	5	9	2	0	0	16	37	8	7	6	0	58	0	4	20	2	0	26
12:30 - 12:45	4	7	3	1	0	15	25	6	4	6	0	41	0	1	31	6	0	38
12:45 - 13:00	7	10	1	4	0	22	25	5	8	6	0	44	0	4	29	9	0	42
13:00 - 13:15	14	7	0	0	0	21	30	2	7	5	0	44	0	0	22	6	0	28
13:15 - 13:30	6	3	1	1	0	11	21	7	3	2	0	33	0	0	18	5	0	23
13:30 - 13:45	10	2	0	1	0	13	38	16	7	1	0	62	0	2	20	9	0	31
13:45 - 14:00	8	7	2	0	0	17	40	5	4	4	0	53	0	1	22	9	0	32
14:00 - 14:15	14	10	0	1	0	25	34	5	5	4	0	48	0	2	17	8	0	27
14:15 - 14:30	2	3	0	2	0	7	28	9	8	14	0	59	1	0	32	12	0	45
14:30 - 14:45	8	13	1	1	0	23	26	7	4	6	0	43	0	0	24	8	0	32
14:45 - 15:00	4	3	0	0	0	7	28	9	7	5	0	49	0	1	25	7	0	33
15:00 - 15:15	14	9	1	1	0	25	29	8	8	10	0	55	0	0	26	5	0	31
15:15 - 15:30	8	5	1	2	0	16	31	7	6	5	0	49	0	1	20	15	0	36
15:30 - 15:45	12	9	2	1	0	24	45	10	4	10	0	69	1	1	27	5	0	34
15:45 - 16:00	12	8	1	0	0	21	28	6	9	1	0	44	0	1	28	8	0	37
16:00 - 16:15	6	3	0	2	0	11	51	8	2	11	0	72	0	1	22	3	0	26
16:15 - 16:30	18	9	1	0	0	28	38	11	6	0	0	55	0	0	32	11	0	43
16:30 - 16:45	47	5	6	1	0	59	36	1	4	0	0	41	1	1	27	6	0	35
16:45 - 17:00	24	7	5	0	0	36	46	7	3	3	0	59	0	0	40	6	0	46
17:00 - 17:15	18	2	0	0	0	20	63	11	7	1	0	82	1	0	37	2	0	40
17:15 - 17:30	7	0	1	0	0	8	50	2	4	0	0	56	2	0	39	7	0	48
17:30 - 17:45	14	0	2	0	0	16	29	2	3	2	0	36	0	0	21	5	0	26
17:45 - 18:00	8	0	2	0	0	10	23	7	7	1	0	38	0	0	22	5	0	27
Total:	407	287	45	38	0	777	1388	342	376	297	0	2403	23	48	1337	331	0	1739
Peak Count:	107	35	12	9	0	143	195	40	91	42	0	240	6	10	158	43	0	213
Peak Hour:	16:15 to 17:15	10:30 to 11:30	16:00 to 17:00	08:30 to 09:30	06:00 to 07:00	16:15 to 17:15	16:30 to 17:30	06:45 to 07:45	06:00 to 07:00	08:15 to 09:15	06:00 to 07:00	15:30 to 16:30	06:00 to 07:00	08:30 to 09:30	08:15 to 09:15	08:30 to 09:30	06:00 to 07:00	08:15 to 09:15

Data Collection Date: 09/07/09
Compiled by: CMD

2.

Queensland Government

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Your reference TN140611
Our reference BNE 41765

Department of
Environment and Resource Management

18 December 2009

The Coordinator-General
C/- EIS Project Manager: Western Basin Dredging Project
Department of Infrastructure & Planning
PO Box 15009
CITY EAST QLD 4002

Attention: Mr Steve Alcock

Dear Mr Alcock

Port of Gladstone: Western Basin Dredging and Disposal Project

I refer to your letter of 10 November 2009 inviting comments on the environmental impact assessment (EIS) for the above. General comments follow with more specific comments in Attachment 1; Attachment 2 presents draft conditions suitable for ERA 16 Dredging; and Attachment 3 specifies conditions addressing coastal values that should be incorporated in any approval by the Coordinator General.

It should be noted that the adequacy of modelling undertaken by the proponent to support the EIS has not been reviewed by the Department of Environment and Resource Management (DERM), coastal engineering and modelling expertise within DERM is not currently available for the assessment of development projects. Should expertise in this area become available during the assessment period, DERM will undertake a review, which may lead to additional or amended advice being provided.

Although the EIS is adequate in some areas, there are significant gaps in the information provided that will need rectifying before DERM would be in a position to finalise relevant approvals.

2.1 1. Justification for the proposed methodology for dredging and transfer of dredge spoil to the reclamation area in terms of minimising sediment suspension in Port Curtis waters while maintaining a viable project;

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2.2 2. Demonstration that dredge spoil containing acid sulphate soils can be managed to prevent release of significant levels of acid to waters from dredging and spoil disposal in the short and long term;

2.3 3. Design and construction methodology for the reclamation area bund walls to minimise turbidity and sediment deposition over seagrass resulting from displacement of mud and increased tidal flow velocity during and following construction; and

2.4 4. Development of an offset proposal or strategy to compensate for the direct and indirect impacts arising from the project.

Detailed requirements for dredging and operational works permits can be resolved following applications for necessary permits under the *Sustainable Planning Act 2009* provided that DERM is the assessment manager. It is desirable that DERM be able to request further information to support assessment of an application for material change of use for ERA 16 (dredging) but this can only be forced if the Coordinator-General does not approve the dredging component. However, DERM can still address any deficiencies in information through the requirements for tidal works or Dredge Management Plan approval.

Capacity of the reclamation area

2.5 The EIS has provided inadequate information to demonstrate that the Western Basin reclamation area has the capacity to accommodate the volume of dredge spoil that might arise from all the possible port developments in the Western Basin together with adequate provisions for settlement ponds. The area's capacity needs to be demonstrated; if insufficient, the feasibility of off-shore sea disposal of part, and/or relocation of treated spoil to a land disposal site should be presented.

The executive summary indicates that the Fisherman's Landing Northern Expansion, with a footprint of 173.5 ha, will accommodate 10 million m^3 of dredge spoil. It seems unlikely that the Western Basin Reclamation Area, with a footprint of 235 ha could accommodate over four times this volume and also have capacity for adequate settling ponds, even with a substantial mound as proposed. Dredge spoil from Options 1B, 2A or both and maintenance dredging spoil would increase storage/treatment requirements.

DERM notes that there are compelling arguments in the EIS addendum and from APLNG briefing that support option 2A for access to Laird Point. If this option is accepted, there seems to be no justification for implementation of option 1B, given the master plan for the Western Basin does not provide for further port development north of the proposed Fishermans Landing Extension.

Alternative spoil disposal

2.6 The EIS offers little assessment of alternatives to disposal of spoil in the reclamation area, such as off-shore and/or land disposal, or a combination of options that could reduce the spatial extent of the reclamation area and therefore impacts on benthic communities. Table 1-4 *Alternative*

Dredged Material Disposal Options within the Port of Gladstone sets out options for disposal that were considered, but there is no detailed comparison of the relative impact of feasible options, especially sea dumping and partial removal of material from the reclamation area following initial draining. Information to support the position that the spoil material is unsuitable for any commercial use is unconvincing and needs to be reviewed and justified.

Acid sulphate soils

The information regarding acid sulphate material is inadequate, as is its proposed management.

27 The EIS proposes that material with the highest levels of acid-generating potential will be placed at the base of the reclamation area with lime dosing and measures to minimise redistribution of material. The main management strategy for the remaining dredge spoil relies on the excess acid-neutralising capacity of the dredge material to neutralise any acid produced. However, as there are only limited records of the grain size of shell fragments to support an assessment of their effectiveness, their acid neutralising capacity is likely to be less than that indicated by laboratory results. Also the technique of vertical mixing is considered a high risk strategy and would need intensive and careful management.

Dredging methods

Most of the suspended sediment is likely to result from overflow dredging. DERM is aware of no method to contain material dumped by a trailing suction hopper dredge (TSHD): the proposal that

28 dumping will only occur with 'adequate turbidity/siltation control' is not acceptable as DERM does not consider this is achievable. Also of concern is the lack of any measure to mitigate dispersal of acid sulfate soil fines from dredge overflow although this may disperse some 10 times the amount released by bottom dumping. Where two such units are operating simultaneously (Scenario 1 with Stages 1A and 1B), the sediment load at Fisherman's Landing due to dumping would be likely to be doubled.

The EIS states that spoil will be pumped directly from a CSD, or bottom dumped in proximity to the reclamation area by a TSHD and then pumped via a CSD into the reclamation area. However, the latter method will significantly increase sediment loading with consequent increased impacts on seagrass to the north and south of Fisherman's Landing. No modelling has been undertaken for the direct pumping method, although the reduction in turbidity levels can be inferred from other scenarios not involving use of a TSHD.

Although a TSHD operating in overflow mode is the most efficient means of dredging Targinie Channel, no justification has been provided for its use for the swing basin. Dredging of the northern expansion of the Fisherman's Landing berths (Stage 3) and the channel to Laird Point (Stage 2) is proposed to use a cutter suction dredge (CSD). Modelling of potential dredge plumes associated with Stage 1B did not address alternatives, such as pump-out from the TSHD rather

than dumping, or the use of a CSD for the swing basin dredging. The reduced turbidity associated with these options can be partly deduced by reviewing Scenarios 2 and 3 model outputs.

As none of the acid sulfate soil sampling meets the sampling intensity of the *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998*, verification testing will need to be stringent.

Location of drainage discharge

2.9 The discharge location for spoil drainage, and stormwater runoff prior to finalising the landform, is proposed on the north-west corner. Even at the much lower turbidity levels recommended in Attachment 2, discharge at this location would maximise impacts on seagrass communities due to the elevation of turbidity and scouring of soft sediments, particularly at low tide.

As the reclamation area is intended to join the Fisherman's Landing Northern Expansion, co or joint-location at the north east corner (eastern bund wall) would be highly desirable as it would direct turbid waters into the main channel and away from the seagrass communities and lessen the risk of scouring at the discharge point.

Modelling shows significant elevation of turbidity over seagrass to the north of the reclamation area as result of the discharge of high turbidity drain water. This would be exacerbated by the discharge point in the west rather than the eastern side of the reclamation area. Any location of the drainage discharge other than on the eastern side needs to be justified against the potential impact on seagrass communities.

Construction sequencing

2.10 Sequencing of construction may significantly influence the turbidity levels and sedimentation over seagrass to the north of the reclamation area, and the extent of scouring of bottom sediments north of the north east corner as shown in the modelling for the Fisherman's Landing Northern Expansion. However, no modelling of the effect of construction sequencing, which is proposed to occur simultaneously in three directions, has been undertaken. Seagrass also will be impacted by scouring of displaced mud ahead of the bund wall construction - east of the eastern bund and west of the western bund wall.

As large quantities of unconsolidated fine sediments from dredge plumes would be more readily resuspended than natural, partly stabilised bed material, the EIS should have discussed the likely extent of mud displacement based on sediment characteristics and depth of soft sediments derived from borehole data. Such assessment also should have addressed the practicality of preventing a 'mud wave', particularly in locations where such displaced mud is likely to be relocated by

currents e.g. west of the western wall and around the north east corner. The effect of various shapes/profiles of the north east corner of the reclamation area on tidal current velocity, and associated scouring of bottom substrate should be presented together with clear justification for a preferred design.

The statement that disturbance of soft sediments by bund wall construction will be limited to the first layer of rocks is misleading. The bund wall will displace the soft mud and the resultant 'mud wave' will have a varying impacts on water quality and benthic communities depending on the depth of soft mud and, therefore, volume displaced. This is particularly problematic in areas of high current velocity in the north and west. Nor is it clear that there is any way to mitigate such impacts, e.g. any attempt to remove the mud may increase sediment suspension, notwithstanding the necessity to remove it in proximity to sensitive communities, particularly seagrass. Moreover its impacts are likely to continue well beyond the construction stage.

Consequences of prolonged impacts

2.11 Prolonged elevation of turbidity and sedimentation around the reclamation area, and an unknown level of resuspension in shallow waters are likely to have significant adverse impacts, especially during bund wall construction and Stage 1A and 1B dredging, including:

- Loss of diversity and abundance of seagrass caused by impaired photosynthesis as a result of reduced water clarity (above natural variation) and smothering of leaves by settling-out of suspended sediments;
- Loss of macrobenthos through clogging of feeding apparatus by extraneous suspended matter; and
- Loss of habitat and food sources for fisheries' species and higher order species, such as dugongs and turtles.

Although the EIS shows the extent of potential increases in turbidity and sedimentation, it does not quantify the actual impact on seagrass. The modelling does not address resuspension and contains conflicting statements in relation to the potential for resuspension. Given that sedimentation in shallow waters may be up to 12 cm/year for the modelled scenarios, resuspension of these unconsolidated sediments may result in significant elevation of turbidity. If the deposited sediment is not resuspended, the smothering effect may be significant.

The proposed dredging/reclamation method, viz. overflow dredging, dump and re-dredge of spoil to the reclamation area, and by discharging drain water at 350 mg/l suspended solids - prioritises cost minisation. Impacts from the above would be additional to those from construction of the bund wall that has the potential to displace and disperse large quantities of soft mud, and from suspended ASS settling and oxidising on inter-tidal areas.

Turbidity objectives

2.12 The information is based predominately on dry season, continuous logger measurements and the EIS recommends wet season logger deployments in both deep and shallow waters to allow for the development of wet season turbidity objectives. However, as sufficient data are available to allow conditioning of the maximum turbidity in water discharged from the reclamation area, it is unclear how the water quality objectives for turbidity could be used to manage dredging operations as this would require ecologically significant limits, or trigger values to be defined for turbidity in specified areas to account for natural variation. Such limit, or trigger values would then need to be linked to changes to dredging activities that would reduce turbidity at the specified locations. The EIS contains no such detailed management information.

If it is proposed to use turbidity monitoring as a means of varying dredging activities, the EIS needs to state the ecologically significant trigger levels to be adopted at specified locations, the means by which monitoring will be conducted to determine whether a trigger level has been exceeded under all sea-state conditions during dredging operations, and the actions that must be taken to reduce sediment loading to waters while recognising natural variation due to wind, tide, and rainfall.

Non-indigenous cultural heritage (shipwrecks)

2.13 Although the National Shipwreck Database (NSD) has been reviewed, its limitations must be recognised: e.g. the Gladstone area is reported to contain a number of shipwrecks but the location of some is not accurately known. The database provides a 'best guess' for many such locations and, in the absence of field survey of the marine component of the project area, a precautionary approach is necessary, i.e. unsurveyed areas should be approached from the perspective that artefacts or shipwrecks may occur and a specific process needs to be identified for such an eventuality. It needs to include details of mitigation measures to be used to prevent impacts on places that might be identified during dredging operations.

Environmental management

In the absence of adequate information on a number of elements that need to be addressed in a comprehensive environmental management plan, especially on the potential impact on seagrass and, therefore, the marine biodiversity of Port Curtis, a conservative approach to management of dredging and spoil disposal to minimise sediment loading will be necessary.

Offsets

2.14 As it is inevitable that unavoidable environmental impacts will occur, an offset proposal or strategy to compensate for the direct and indirect impacts arising from the project should be presented. Such a proposal must comply with the Queensland Government Environmental Offset

Policy 2008, the more specific Queensland Fisheries' Offset Policy (Fish Habitat Management Operational Policy (FHMOP 005) and the draft Commonwealth offset policy.

Negotiations are under way involving State agencies and Gladstone Ports Corporation regarding the development of an offsets package. However, currently priority is focussed on satisfying the outstanding offset obligations for Wiggin's Island reclamation and the 153ha reclamation project. The EIS should clearly define and quantify what unavoidable impacts will occur and present realistic/achievable options as to how they can be offset to meet a net gain of coastal resources.

Please direct queries regarding this project to Robyn Hesse at robyn.hesse@derm.qld.gov.au

Attachment 1 contains general comments and recommendations.

Attachment 2 contains recommended conditions of approval by the Coordinator-General (CG) relating to material change of use for Environmentally Relevant Activity 16 (extraction – dredging). Note that the CG report is the only concurrence agency response for an application for approval of material change of use under the *Sustainable Planning Act 2009*.

Attachment 3 contains recommended conditions of approval by the Coordinator-General (CG) relating to operational works (dredging and reclamation). Note that the CG report is not a concurrence agency response for an application for approval of operational works under the *Sustainable Planning Act 2009*.

Yours sincerely

S. D Cameron

Stuart Cameron
Director EIS Assessment

C/c Jacqueline Wirth
Principal Natural Resource Officer

Issue: Volume of dredge spoil to be accommodated by reclamation areas and extent of Western Basin Reclamation Area.

2.1 Page iii of the Executive Summary indicates that the Fisherman's Landing Northern Expansion, with a footprint of 173.5 ha, is to accommodate 10 million m^3 of dredge spoil. It seems unlikely that the Western Basin Reclamation Area could accommodate over four times this volume, with a footprint of 235 ha as well as retain capacity for settling of drain water, even with a substantial mound as proposed. Dredge spoil from Options 1B, or 2A, or both and maintenance dredging spoil may increase storage requirements.

The EIS offers little assessment of alternatives to disposal of spoil in the reclamation area such as sea disposal, land disposal, or a combination of options that could reduce the aerial extent of the reclamation area and therefore impacts on benthic communities. Table 1-4 *Alternative Dredged Material Disposal Options within the Port of Gladstone* sets out options for disposal that were considered, but there is no detailed comparison of the relative impact of feasible options, especially sea dumping and partial removal of material from the reclamation area following initial draining.

The EIS also provided no assessment of the material for commercial purposes, although at least some of it appears suitable for such purposes.

Recommendation
Confirm that the area shown on Figure E-1 is the full extent of the Western Basin Reclamation Area and that it has adequate capacity to contain the full volume of spoil, with adequate provision for the settlement of drain water prior to its discharge to meet limits consistent with maintaining the quality of Port Curtis waters.

In the event that the reclamation area does not have adequate capacity, the EIS should discuss the feasibility of sea disposal of part of the dredge spoil and/or relocation of material from the reclamation area to a land disposal area following draining.

Recommendation
Provide evidence on the quality/quantity of dredge spoil that is suitabile for commercial purposes.

Issue: Acid Sulfate Soil (ASS) Management. Inconsistency in statements regarding the effect of bund wall construction on Acid Sulfate Soil (ASS) disturbance.

2.2 Page x of the Executive Summary states that the sediments are not self-neutralising, but the statements of Chapter 5, page 5-18 contradict this.

Executive Summary: 'Based on laboratory testing the majority of the samples from the Reclamation Area do not appear to contain enough buffering capacity to self-neutralise.'

Chapter 5: 'In-situ, these samples contain enough buffering capacity to self-neutralise, however it is not known how effective this buffering capacity will be after dredging occurs.'

Recommendation
Clarify statements regarding reclamation area acid sulfate soil buffering capacity and the effect of bund wall construction.

Issue: ASS Management. Lack of borehole labels for Figures 3-12, 3-13, 3-14, 3-15, 3-16, 3-17, 3-18, 3-20 and 3-21 of Appendix I, and for Figures 5-8, 5-9 and 5-10 of Chapter 5.
A full and accurate assessment of borehole data requires borehole identification of the figures.

2.2
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Recommendation
Amend documents to include borehole labels on figures.

Issue: ASS Management. Appendix E of Appendix I. Borehole data not linked to site plan
Borehole data of Appendix E of Appendix I are not located on a site plan. DERM is unable to verify the accuracy of the information provided in the Acid Sulfate Soils Assessment report, and the summary results of acid sulfate soils investigations of Chapter 5.

Recommendation
Amend Appendix E of Appendix I to enable identification of borehole data on a site plan.

Issue: ASS Management. No borehole logs provided for the boreholes of Appendix E of Appendix I.
Information requirements for acid sulfate soil (ASS) investigations are outlined in Section 6 of the Guideline that accompanies State Planning Policy 2/02. The information provided in Appendix E of Appendix I does not meet these requirements.

Recommendation
Provide the borehole logs for boreholes of Appendix E of Appendix I.

Issue: Adequacy of proposed ASS Management.
Appendix I contains no estimate of the volume of dredge spoil containing potential acid sulfate soils (PASS) requiring treatment. An estimate of PASS for Laird Point dredge area options 1B and 2A is provided in the Addendum Report with corresponding volumes of 50 000m^3 and 800 000m^3 respectively. A conservative estimate of PASS material for dredge area Option 2A, with average 1% oxidisable sulfur, indicates a potential to generate around 24 000 tonnes of sulfuric acid from this dredge spoil alone. The recommended liming rates stated for dredge area Option 2A range from 20 to 150 kg of lime /m^3. This places the proposal in the 'Extra High' treatment category of the Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines.

2.2
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The single management option considered in Appendix I is placement within the reclamation area. The term 'strategic reburial', which is an acceptable management strategy for PASS, is not used throughout the EIS, presumably because the proposed disposal does not meet the requirements of a permanent watertable and supporting water column. Figure 004 of the Fisherman's Landing Northern Expansion EIS shows all of the reclamation area to be above lowest astronomical tide level (LAT) and about half of the reclamation area to be above the mean low water level. There is no guarantee that this reburial location will permanently exclude oxygen and thereby prevent acid production. The management approach relies on tidal influence to maintain the PASS material in a saturated condition.

Sulfidic fines from the dredge material <50 µm in size (*Dredging as a Management Tool for Acid Sulfate Soil: Limiting Factors and Performance Optimisation*, Dobos and Neighbour 2000) are unlikely to be retained by the geotextile fabric liner within the reclamation area since the smallest aperture of geotextile likely to be available is 80 µm.

The proposed management of acid sulfate soil is to place PASS material with the highest levels of acid generation potential within the base of the reclamation area with lime dosing and measures to minimise redistribution of material. The main management strategy for the remaining dredge spoil appears to rely on the excess acid neutralising capacity of the dredge material to neutralise any acid produced. There are limited records of the grain size of shell fragments to support an assessment of the effectiveness of self-neutralising capacity. The acid neutralising capacity of the sediments is likely to be less than that indicated by laboratory results (Appendix I page 39). The technique of 'Vertical Mixing' is considered a High Risk Management Strategy (Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines).

2.2
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The proposed (Chapter 19 Environmental Management Plan) management of dispersal of acid sulfate soil resulting from bottom dumping by the TSHD (Trailing Suction Hopper Dredge) - not dumping without adequate turbidity/siltation control, has no meaning. It is impossible to contain the material dumped – only pump out to the reclamation area would prevent dispersal of acid sulfate soil fines. No mitigation is proposed for dispersal of acid sulfate soil fines resulting from overflow on the TSHD even though this may disperse ten times the amount of acid sulfate soil fines than from bottom dumping. Most of the suspended sediment will result from overflow dredging.

As none of the acid sulfate soil sampling (Appendix I page 21, Addendum ASS reports) meets the sampling intensity of the *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998*, verification testing will need to be stringent.

The practicality and effectiveness of proposed management of acid sulfate soils has not been demonstrated. **The dredging and disposal project could result in costly remediation should the project proceed as currently proposed.**

Recommendation
Prior to any approval by the Coordinator General, a site-specific Acid Sulfate Soils Management Plan, consistent with Appendix 4 of the Guideline that accompanies State Planning Policy 2/02, should be developed to a standard acceptable to DERM.

Issue: ASS Mapping. Appendix I, Figures 3-1 and 3-2 Inconsistency with copyright agreement.

2.2
2.15

Section 4 of the DERM User Licence is quite clear as to the obligations and requirements for the reproduction and /or modification of the Department's data. Figures 3-1 and 3-2 of Appendix I are to contain the Department's copyright symbol and notices and not simply a reference to these in an appendix. Copyright details are not provided in the References section (page 59, Appendix I) as stated.

Recommendation
Amend Figure 3-1 and Figure 3-2 to include: © The State of Queensland (Department of Natural Resources and Mines 2004) and relevant notices.

Issue: 2.3.5 Filling and decant management
The EIS states that, in managing the turbidity of dredge spoil drain water at point of discharge to Port Curtis waters, slowing the pumping rate will be a last resort following all other management options. Conditions of approval (Coordinator General and DERM) will define the maximum

turbidity of discharge waters. The permit holder will need to take whatever action is needed to comply with these discharge standards, even if this means cessation of dredging. Contingency planning for use of additional measures such as baffles or increased settlement pond volume needs to be in place at the start of works to minimise the risk that dredging programs will be affected.

Detailed management planning for disposal of dredge spoil in the reclamation area to accommodate all rates of dredging (solids and water), spoil types, and potential acid sulfate soils under all weather conditions needs to be defined in a management plan (which may be a Dredge Management Plan as proposed).

Recommendation
A detailed plan for the management of disposal of dredge spoil in the reclamation area to accommodate the total volume of spoil and for all rates of dredging (solids and water), spoil types, and potential acid sulfate soils under all weather conditions needs to be defined prior to approval by the Coordinator General. The plan should demonstrate compliance with the discharge water quality limits specified in Attachment 2.

Issue: Chapter 7 Coastal Environment
Discharge of water drained from dredge spoil ('decant waters') and any stormwater runoff prior to final landform resulting from placement of dredge spoil in the reclamation area, is proposed to be located in the north west of the reclamation area. Discharge at this location would maximise impact on seagrass communities due to the elevation of turbidity (even at the much lower turbidities recommended by DERM as a condition of approval by the Coordinator General (Attachment 2)) and due to scouring of soft sediments, particularly at low tide.

2.16

The discharge point proposed for the Fisherman's Landing Northern Expansion Project is located at the north east corner of the reclamation area. Figure 2-8 *Reclamation Construction Staging Plan* indicates that the Fisherman's Landing Northern Expansion will become part of the Western Basin Dredging and Disposal Project reclamation area. Discharge of drain water from the latter at the north east corner of the Fisherman's Landing Northern Expansion (eastern bund wall) appears to be feasible and highly desirable as it will direct turbid waters into the main channel and away from the seagrass communities, and minimise scouring at the discharge point.

Recommendation
Amend reclamation construction plans to provide for discharge of all dredge spoil drain water and stormwater from any part of the reclamation area not fully stabilized, and with appropriate storm water quality management systems, at a suitably designed discharge point at the northern end of the eastern wall of the Fisherman's Landing Northern Expansion.

Issue: 7.1.2 Methodology for dredge plume dispersion simulation
Note: Table 1-2 *Project Timing* and Table 7-17 *Overview of the Four Hydrodynamic Modelling Scenarios* shows Stage 1A and 1B to be dredged concurrently over two years (2010 – 2012). This is inconsistent with Table 2-9 *Dredging Methodology Summary* which appears to incorrectly show stage 1A and 1B to be dredged consecutively over four years.

2.17

Very significant dredge plumes, potentially affecting seagrass to the north and south of Fisherman's Landing, are created by the use of a trailing suction hopper dredge (TSHD) to dredge Targinie Channel and Fisherman's Landing Swing Basin in stage 1B (assumed 2,160 tonnes of sediment loading to the water from the TSHD per day of operation). The proposal to dump the

spoil adjacent to the reclamation area and dredge this material with a cutter suction dredge (CSD) with pump out to the reclamation area will add substantially to the sediment loading (assumed 204 tonnes of sediment loading to the water per day of operation of the TSHD). Where two TSHD units are operating simultaneously, as with Scenario 1 combining Stages 1A and 1B, the sediment loading to waters at Fisherman's Landing (due to dumping) will be doubled.

Although it could be assumed that a TSHD operating in overflow mode is the most efficient means of dredging Targinie Channel, no justification has been provided for its use to dredge the swing basin. Dredging of the northern Expansion of the Fisherman's Landing berths (stage 3) and the channel to Laird Point (stage 2) is proposed to use a CSD. Modelling of potential dredge plumes
2.17 associated with stage 1B did not address alternatives such as pump out from the TSHD rather than dumping, nor the use of a CSD for the swing basin dredging. The reduced turbidity associated with these options can be partly deduced by review of scenario 2 and 3 model output.

Recommendation
Justify the use of TSHD overflow dredging, with associated impacts on water quality, for berth and swing basin dredging at Fisherman's Landing rather than non-overflow dredging or cutter suction dredging.

Justify bottom dumping by TSHD at Fisherman's Landing, with associated impacts on water quality, rather than pumping the material directly to the reclamation area.

Issue: 7.1.2 Marine Water Quality, Potential Impacts and Mitigation Measures, Construction of bund wall

The bund wall is proposed to be constructed on three fronts simultaneously. Sequencing of
2.2 construction may significantly influence the turbidity levels and sedimentation over seagrass to the north of the reclamation area, and the extent of scouring of bottom sediments north of the north east corner as shown in the modelling fro the Fisherman's Landing Northern Expansion.

Modelling of the effect of construction sequencing has been undertaken for neither this project's, nor the Fisherman's Landing Northern Expansion EIS. The seagrass will be impacted by scouring of displaced mud ahead of the bund wall construction, to the east of the eastern bund and to the west of the western bund wall. Potential scouring of the intertidal channel sediments is outlined in Chapter 9, 19.3.6 Schedule 6 – *Hydrology and Stormwater Management.*

The statement in Chapter 7 *Hydrodynamics*: *Potential Impacts Affecting Turbidity* that there will be little predicted impact to ongoing turbidity generation as a result of changes to current speeds in the inter-tidal and sub-tidal areas, which decrease with distance north from the reclamation area and proximity to the deeper channels may be correct but draws attention away from the potential short term scouring of bottom substrates around the north east corner and in the western intertidal channel.

Tidal current velocity elevation in the intertidal channel to the west of the reclamation area may result in scouring and subsequent elevated turbidity and sedimentation over seagrass. The EIS does not consider the potential for such impacts except in the environmental management plan and Chapter 20 *Summary and Conclusions*. The proposed temporary access across the channel could be utilised to manage flow velocity in the channel, provided that downstream scouring following construction is effectively controlled.

Construction of the northern wall prior to the outer wall may be effective in preventing significant scouring and deposition of sediment over the seagrass to the north. Consideration should also be given to the effect of the shape of the north east corner on current velocity and subsequent scouring which will impact directly on seagrass through removal of substrate and indirectly by raising turbidity and depositing sediment.

2.10

The statement that 'It is likely that any sediments disturbed by the construction of the bund wall that deposit over the seagrass beds will be remobilised and transported away from the tidal flats again during tidal movements and elevated wave conditions' does not adequately address the need to minimise impacts, and contradicts reasons stated in the EIS for not including resuspension in modelling of turbidity in Port Curtis waters resulting from the project. (Section 4.2.1 *General Assumptions* states: 'There was no provision for re-suspension of already deposited plume material in the dredge plume assessments. While there is the potential for re-suspension of the fine suspended load which does settle out, it will generally become mixed with and hence indistinguishable from the re-suspension of the natural bed material'). Large quantities of unconsolidated fine sediments from dredge plumes could be expected to be more readily re-suspended than natural bed material that is partly stabilised by microbial activity and benthic communities.

Based on sediment characteristics and depth of soft sediments derived from borehole data, the EIS also should discuss the likely extent of displacement of mud and the practicality of removing the 'mud wave' resulting from the bund wall construction in locations where this displaced mud is likely to be relocated by currents e.g. west of the western wall and around the north east corner.

Recommendation
Provide information on the effect on the seagrass of construction sequencing of the bund wall around the entire reclamation area (Western Basin and Fisherman's Landing Expansion) on tidal current velocities; scouring of bottom substrate (including mud displaced by the walls); turbidity levels over the seagrass communities to the north; and sediment deposition. Further modelling may be appropriate unless the sequencing of construction is changed to clearly minimise impacts.

Describe the effect of varying the shape of the north east corner of the reclamation area on tidal current velocity and associated scouring of bottom substrate. If alternative shapes reduce scouring, clearly justify the current, or alternative, design.

Issue: 7.1.2 Impact of decant waters (Alana Smith, Steve Elson)
The EIS states that a discharge limit for the turbidity of dredge spoil drain water of 100 NTU will be adopted. This equates to approximately 350 mg/l suspended solids and is not consistent with best practice or protection of the values of the receiving water. The proposed discharge limit for turbidity greatly exceeds established limits for other discharges to Port Curtis.

It is not clear whether modelling used 350 mg/l or 100 mg/l but Table 7-18 states 100 mg/l. This would make the actual turbidity elevation 3.5 times more than the modelling suggests.

Modelling shows significant elevation of turbidity over seagrass to the north of the reclamation area as result of the discharge of high turbidity drain water. This is made worse by location of the discharge point in the west rather than the eastern side of the reclamation (Fisherman's Landing Northern Expansion) area.

Recommendation
Recommended conditions of approval for discharge water quality and location of discharge are included in Attachment 3.

Location of the drain water discharge point other than on the eastern side of the Fisherman's Landing Northern Expansion must be justified against the potential impact on seagrass communities if drain water is discharged to the north.

Issue: Bottom dumping and rehandling of dredge material
The EIS states that placement of material into the bunded reclamation area will be achieved by either pumping directly (CSD), or bottom dumping in close proximity to the reclamation area (TSHD), and spoil rehandling using a CSD to pick up the material and pump it into the reclamation area. No modelling has been undertaken for the pumping of dredged material directly into the reclamation although the reduction in turbidity levels can be inferred from other scenarios not involving a TSHD.

Recommendation
Justify the proposed bottom discharge from the TSHDs and secondary dredging to place in the reclamation area, with associated significantly increased sediment loading to waters and consequent increased impacts on seagrass to the north and south of Fisherman's Landing against the practicality and cost of pumping spoil directly to the reclamation area.

Issue: Table 3-1 P 19 Incorrect guideline values stated
Total Phosphorus as P (µg P/L) for Enclosed coastal waters (QWQG 2006) is stated as 25. The figure should be '20'

Chlorophyll-a (µg/L) for Enclosed coastal waters (QWQG 2006) is stated as 4. This should be '2'.

Recommendation
Correct error.

2.17
Issue: Effect of persistently high turbidity/suspended sediment levels on marine environmental values: Dugongs, Turtles, Filter Feeders, Seagrass, and Fisheries
Prolonged elevation of turbidity and sedimentation rates resulting from several years of dredging and drain water discharge, scouring by increased tidal currents and of displaced mud around the reclamation area, and an unknown level of resuspension in shallow waters, is likely to have significant adverse impacts (especially during bund wall construction and Stage 1A and 1B dredging) including:

- Loss of diversity and abundance of seagrass owing to impaired photosynthesis as a result of reduced water clarity (above natural variation) and smothering of leaves by settling-out of suspended sediments;
- Loss of macrobenthos through clogging of feeding apparatus by extraneous suspended matter; and
- Loss of habitat and food sources for fisheries species and higher order species, such as dugongs and turtles.

Seagrass species identified in the EIS, *Zostera capricornia* and *Halophila ovalis* have critical threshold limits for light availability. Available studies indicate critical threshold limits of 30 % SI

(surface irradiance) [1] and 16 % SI [2] respectively. Projected reductions in light availability indicate seagrasses may be at risk given the drop in irradiance levels down to 1.6 % SI at 2 m depths in the Narrows and 2.6 % SI at 2 m depths at Wiggins Island (Table 6-7 of Appendix K of the EIS).

The importance of seagrass habitat of the Port Curtis estuary is well documented by Connolly (2006) in Technical Report 43 of the Cooperative Research Centre for Coastal and Estuarine Management. Total area of seagrass exposed to plumes of dredging is estimated at 1,406 ha.

Dugongs *Dugong dugon* rely on seagrass habitat. Three aerial surveys (25 Nov 2008, 17 Jul 2009) and monthly boat surveys between April and June 2009 recorded 81 sightings of dugong (Appendix R – Section 4.5). Dobbs (2007) noted the significance of the Gladstone Harbour/Rodds Bay Dugong Protection Area (DPA), despite being primarily within port limits.

A negative impact on dugongs in Gladstone Harbour is recognised in the EIS:
'The loss or reduction in quality of any areas of conservation value to dugongs may potentially have a negative impact on the Rodds Bay/Gladstone population. The spatial model of dugong population density suggests all of Rodds Bay and adjacent waters is (sic) of some conservation importance to dugongs, this is affirmed by the delineation of the Dugong Protection Area within the region and importance of other regional habitats, such as Shoalwater Bay.'

2.17

The green turtle *Chelonia mydas* (listed as endangered) also relies on seagrass habitat and boat-based and aerial surveys (as referred to above) recorded 522 sightings. The EIS in Chapter 9 Page 9-64; paragraph 1, line 6 states: *'Green turtles primarily feed on seagrass and as such, they have a predicted high association with seagrass beds and prevalence in this region."* and *"This Project identified a range of age classes of marine turtles using the Survey Area, suggesting that it is not only an important foraging area for adults but also for juvenile marine turtles.'*

Section 2.2.4 of Appendix Q of the EIS states:
'*Species targeted by the local commercial fishing industry include prawns, mud crab, mullet, shark, blue salmon, and barramundi. Additionally, the seagrass habitats available within and adjacent to the Project Area, in particular the Zostera capricorni meadows, are likely to provide nursery areas for other fish and crustacean commercial species (Rasheed et al. 2008).*'

As the seagrass communities are clearly important to marine biodiversity and populations of significant marine species using Port Curtis, and naturally vary in extent and density as a result of fluctuating light availability, any reduction in light availability over and above natural can be expected to have an adverse impact. When this light reduction, although varying, extends for a period of years, the impacts on seagrass could be expected to be significant. However, DERM is not aware of any clear correlation between time intervals of critical light availability and productivity of seagrass communities that could be applied to potentially affected seagrass. Critical thresholds for light availability correlating to productivity of the seagrass communities are known, but the period over which seagrass can survive below these thresholds is uncertain. Additionally, there is limited information about the likelihood of recovery of seagrass after long periods of reduced light.

[1] Abal, E.G., Dennison, W.C., 1996. Seagrass depth range and water quality in Southern Moreton Bay, Queensland, Australia. Marine and Freshwater Research 47, 763–771.; Longstaff, B.J., Lonerragan, N.R., O'Donohue, M.J., Dennison, W.C., 1999. Effects of light deprivation on the survival and recovery of the seagrass Halophila ovalis (R. Br.) Hook. Journal of Experimental Marine Biology and Ecology 234, 1–27

[2] Schwarz, A.M., Bjork, M., Buluda, T., Mtolera, H., Beer, S., 2000. Photosynthetic utilisation of carbon and light by two tropical seagrass species as measured in situ. Marine Biology 137, 755–761

Although the EIS contains information showing the extent of potential increases in turbidity and sedimentation, it does not quantify the actual impact on seagrass. Nor does the modelling include resuspension and contains conflicting statements in relation to potential resuspension. Given that sedimentation in shallow waters may be up to 12 cm/year for the modelled scenarios, resuspension of these unconsolidated sediments may result in significant elevation of turbidity. If the deposited sediment is not re-suspended, the smothering effect may be significant.

In the absence of adequate information on the potential impact on seagrass and therefore the marine biodiversity of Port Curtis, a conservative approach to management of dredging and spoil disposal to minimise sediment loading to water is appropriate. The methodology proposed in the EIS appears to prioritise cost minisation - by use of overflow dredging for all TSHD operations, by dump and re-dredge to transfer spoil from the TSHD to the reclamation area, and by proposing to discharge drain water at 350 mg/l suspended solids. This is in addition to proposed construction methodology for the reclamation area bund wall that has the potential to displace and disperse large quantities of soft mud that is not represented in modelling, and the potential impacts associated with suspended potential acid sulfate soils (mainly from TSHD and rehandling) settling and oxidising on inter-tidal areas.

The EIS offers no justification for the proposed construction and dredging methodologies, or clear commitment to mitigation strategies, such as non-overflow dredging under particular circumstances; direct pumping from the TSHD to the reclamation area; management of displaced mud; or alternative construction methodology for the reclamation bund walls.

In Chapter 2 it is stated that if the turbid water resulting from the TSHD overflow is likely to impact sensitive receptors, management of the dredger overflow to reduce it to acceptable levels can be considered. However, the EIS offers no basis for determining the conditions under which non-overflow dredging would be used.

In Chapter 7 it is stated that the option of pumping from TSHDs directly into the reclamation during the periods identified above. This should have been considered as TSHD bottom dumping events are predicted to produce elevated TSS (total suspended solids) levels for relatively short durations, and the alternative approach may benefit seagrass beds during dredging works.

Chapter 7 states that TSHD dumping during daytime flood tides should be minimised through programming, wherever possible (with emphasis on periods of large spring tides). The draft environmental management plan (Chapter 19) offers some potential mitigation strategies, but no commitment to any – this is deferred to development of a dredge management plan.

The EIS should contain sufficient information on feasible mitigation strategies to demonstrate effectiveness and practicality of the strategies, and clear commitments that can be reflected in conditions of approval. Mitigation strategies also will need to be defined at an early stage to inform contractual arrangements with dredge operators.

Schedule 9 of the draft environmental management plan (Chapter 9, 19.3.6 *Marine Ecology including Megafauna*) includes a mitigation strategy for bund design to reduce long term scouring potential. It is not clear whether this relates to design to reduce scouring of the wall itself, or design of the shape of the reclamation area to reduce scouring of soft bottom sediments and the implementation strategy is not supported by design guidelines.

Recommendation

Clearly state the options available to minimise sediment loading to Port Curtis waters, and justify use of methodology that is not best practice in achieving this. Options that should be considered include:

- minimising use of TSHD, especially near Fisherman's Landing;
- restricting use of overflow dredging by TSHD, especially near Fisherman's Landing;
- avoiding or reducing rehandling of dredge spoil in transfer to the reclamation area;
- reducing the number of TSHD operations at any one time;
- alternative bund wall design and construction sequencing;
- removal of mud displaced by the bund walls;
- flow velocity reduction in the western channel;
- reduced discharge limit for suspended sediment; and
- location of drain water discharge on the eastern side of the Fisherman's Landing Northern Expansion

2.18

Issue: Water quality objectives

The 95th percentile of background suggested in the EIS as a water quality objective is inappropriate given the approach is based on an overseas study of McArthur *et al.* (2004) that relates to corals and examines TSS concentrations < 20 mg/L. McArthur et al. (2004) based their approach on a 95th percentile of 3.1 mg/L. Corals live in waters with high clarity where changes to levels of TSS are very small compared to that seen in the project area. The 95th percentiles for TSS are not far removed from the 80th percentiles and medians in the coral study of McArthur et al (2004), in contrast to the project area where the 95th percentiles are considerably higher than the 80th percentiles and medians, e.g. 317 mg/L (91 NTU) for 95th percentile compared with 74 mg/L (25 NTU) for 80th percentiles in the same area (refer Table 5-29 of Appendix K of the EIS). Additionally, seagrass are plants that have very different physiology to corals (animals and algae).

Below is the list of 80th percentiles compared to the 95th percentiles for the specific sites.

		NTU	TSS (mg/L)
95th percentile	Decant environment	30	92
	Western basin	55	184
	Wiggins Is	91	317
	Deep channel	20	56
80th percentile	Decant environment	17	45
	Western basin	24	70
	Wiggins Is	25	74
	Deep channel	20	56

The effect of long term elevation above the natural levels of turbidity in waters over seagrass communities is not quantified. DERM is aware of no clear correlation between fluctuations of light availability and seagrass productivity at the Port Curtis estuary. Seagrass extent and productivity varies naturally due to seasonal conditions affecting light penetration and sedimentation. Any increase in turbidity due to the dredging and disposal project is likely to adversely affect seagrass communities in the area. However, as the degree to which seagrass will be affected has not been adequately predicted, the precautionary principle is best applied.

Recommendation

Base the water quality objective for suspended solids and turbidity for Port Curtis waters on the 80th percentile of natural background values, consistent with ANZECC guidelines and the Queensland Water Quality Guidelines.

Set discharge limits for turbidity of dredge spoil drain water to maintain receiving water quality below the water quality objective for turbidity and to limit the overall sediment loading to Port Curtis from the project.

Issue: Chapter 7. Mitigation Measures
The EIS states that the turbidity objectives are based, predominately, on dry season, continuous logger measurements, and recommends wet season logger deployments in both deep and shallow waters to enable wet season turbidity objectives to be developed.

2.18 However, as sufficient data are available to allow conditioning of the maximum turbidity in water discharged from the reclamation area, it is unclear how the water quality objectives for turbidity could be used to manage dredging operations as this would require ecologically significant limits, or trigger values, to be defined for turbidity in specified areas and to account for natural variations. Such limits/trigger values would then need to be linked to changes to dredging activities that would reduce turbidity at the specified locations. The EIS does not contain such detailed management information.

Recommendation
If it is proposed to use turbidity monitoring as a means of varying dredging activities in response to specified limits/trigger levels, the EIS needs to state the ecologically significant trigger levels to be adopted at specified locations; the means by which monitoring will be conducted to determine whether a trigger level has been exceeded under all sea-state conditions during dredging operations; and the actions that must be taken to reduce sediment loading to waters while recognising natural variation due to wind, tide, and rainfall.

Issue: Section 7.1.1 – Coastal Environment- Description of Environmental Values
The EIS states on p 7-63 that the '*median elutriate ammonia level is below the relevant NAGD (2009) guideline for direct toxic effects on the ambient water of the Project Area during overflow and rehandling operations.*' This guideline level is 910 ug N L^{-1} as per the NAGD (2009), which defaults to the ANZECC (2000) trigger value of 95% level of species' protection for marine waters. However, the EIS uses the **median** value that does not appropriately assess the potential ecological harm. The ANZECC guidelines recommend that the 95th percentile of test values be used to assess potential impacts (Refer Section 7.4.4.2 of ANZECC guidelines).

2.18

Using the trigger value of 95th percentile, even a single observation greater than this value warrants consideration. Given the information provided in the EIS (Appendix K, Section 5.4.2): '*Ammonia elutriate measurements at 33 sites had a median of 783 µg/L, well in excess of the QWQG (2006) guideline level of 8 µg/L and the ANZECC (2000) toxicant guideline of 910 µg/L. The largest ammonia concentrations recorded was 8,680 µg/L*', it would appear that there are very high elutriate values - above the ANZECC guidelines -, which warrant further consideration of potential impact on aquatic ecosystems.

Section 7.1.2 *Coastal Environment -Potential impacts and mitigation measures* states that a conservative approach indicates that the QWQG (2006) guideline for ammonia will be exceeded during rehandling and overflow activities except during elevated currents (i.e. > 1 m/s) for both

overflow and rehandling operations. In contrast, because of the much smaller dilution volume during low slack tide currents, ammonia levels of 3 – 4-fold over the guideline values are estimated in this situation.

The EIS states that there are no mitigation measures proposed for the predicted changes in water quality associated with elutriate inputs or sediment mobilised into the water column as a result of the dredging operations other than to monitor ammonia and manganese periodically in the locale of dredging operations. This approach is not adequate to ensure the adverse effects of spoil rehandling and over flow activities do not negatively impact upon the local marine environment.

Recommendation
Provide further information on potential levels of ammonia in the water column, which could result from overflow dredging of sediments containing high levels of ammonia in elutriate, having particular regard for the ANZECC toxicant guideline.

If potential ammonia levels and/or extent of high levels is determined to be unacceptable for protection of marine biodiversity, mitigation strategies should be defined. Strategies for sediments with high ammonia content could include use of a cutter suction dredge rather than trailer suction hopper dredge (TSHD), or non-overflow dredging by TSHD with direct discharge to the reclamation area.

Issue: Non-Indigenous cultural heritage (Chapter 12) / Historic Cultural Heritage Investigation (Appendix V)
2/13
Although the National Shipwreck Database has been reviewed, the limitations of this data must be recognised, e.g. the Gladstone area is reported to contain a number of shipwrecks but the location of some of them is not accurately known. The database provides a 'best guess' for many such locations. Also, in the absence of field survey of the marine component of the project area, the precautionary principle must be adopted.

The unsurveyed areas should be approached with caution as there artefacts or shipwrecks may occur in the project area and dredging operations and reclamation have the potential to impact on artefacts or shipwrecks that may occur. A specific process needs to be specified to address this potential and how it will be managed/mitigated to prevent impacts on places that might be identified during dredging operations.

Recommendation:
The environmental management plan must include appropriate mitigation measures for any cultural heritage artefacts or shipwrecks that may be discovered during dredging and reclamation operations.

Issue: 19.3.14 Environmental Management Plan. Schedule 14 Cultural Heritage (Non-Indigenous)
2/13
The EMP makes no reference to dredging in this section. Dredging, particularly in areas not previously worked has the potential to impact on shipwrecks/archaeological artefacts in the marine environment. Measures to ensure compliance with State and Federal legislation relating to the discovery and management of shipwrecks and archaeological material should be in place to mitigate against such potential impact, including mitigation against such potential impacts.

Section 89 the *Queensland Heritage Act 1992* requires that DERM be advised of the discovery of an archaeological artefact that may be an important source of information about an aspect of

Queensland's history. Section 90 relates to offences for interfering with any such discovery and Section 91 relates to offences for interfering with shipwrecks.

The draft EMP commits only 'to develop cultural heritage policies for management of potential cultural heritage sites or finds (if required).' Such policies are necessary to mitigate against unexpected discoveries and need to be included in the EMP. This is particularly important considering that there has been no archaeological survey of the marine component of the project.

Recommendation:
Amend the environmental management plan to accord with requirements of Federal and State legislation relating to archaeological artefacts and shipwrecks (*Queensland Heritage Act 1992* and *Historic Shipwrecks Act 1976).*

Define a clear process for managing potential discoveries of historic heritage artefacts and shipwrecks, including for example, stopping work in the vicinity of any discoveries of archaeological artefacts or shipwrecks; a process of assessment of significance (e.g. will there be an archaeologist 'on-call' to assess any discoveries); temporary conservation and storage of any finds; reporting to the appropriate authority (DERM or Queensland Museum); etc.

It is recommended that, if the Coordinator General's report approves an application for material change of use for dredging (Environmentally Relevant Activity (ERA) 16) that is subject to the Western Basin Dredging and Disposal Project Environmental Impact Statement (EIS), the following conditions must be imposed:

1. Dredging activity must only be carried out within the site shown on Map1 - *Extent of Dredging Approval* (to be provided).

2. Placement of all dredge spoil must occur within the area shown on Map 2 - *Extent of Approved Dredge Spoil Disposal Area* (to be provided).

3. Dredging shall be carried out in accordance with a dredge management plan approved by the DERM using equipment and methodology which results in suspended sediment loading to waters no greater than the levels adopted for modelling in the Western Basin Dredging and Disposal EIS.
   3.1. Dredging of the shipping berths and swing basin at Fisherman's Landing must be carried out using a cutter suction dredge, or a trailing suction hopper dredge operating without overflow with spoil pumped from the dredge to the reclamation area.
   3.2. Transfer of dredge spoil from trailing suction hopper dredges to the reclamation area shall be achieved by pumping direct from the dredges. Bottom dumping and subsequent dredging by cutter suction dredge must not be used to transfer material to the reclamation area.

4. Dredging and disposal of sediments containing acid sulfate soils shall be in accordance with a acid sulfate soil management plan (ASSMP) approved by DERM.

5. Prior to the commencement of dredging activities, a monitoring program to assess the impacts from the dredging on ecological health and water quality must be developed in consultation with, and approved by, DERM.
   5.1. The approved monitoring program must be implemented over the full period of dredging, and for a period prior to and after dredging as defined by the monitoring program.
   5.2. Information obtained from the monitoring program must be made available to the DERM within 28 days of survey, or data acquisition.

6. Contaminants resulting from dredge spoil disposal (drain waters and stormwater) must only be released to surface waters at Release Point W1 shown on Map2 (location to be provided).

7. Water discharged from the dredge spoil disposal area must comply with the release limits listed in Table 1 - *Contaminant release limits to water*.

8. Monitoring must be undertaken, and records kept of contaminant releases to waters from the discharge location for the quality characteristics, and not less frequently than specified in Table 1 - *Contaminant release limits to water*.
   8.1. DERM must be notified by telephone, email, or fax of any exceedence of the release limits stated in Table 1 within 24 hours of becoming aware of an exceedence.

Table 1 - Contaminant release limits to water

Monitoring Point(s)	Discharge Location	Quality Characteristics	Type of Release Limit			Monitoring Frequency
			Minimum	80th Percentile	Maximum	
W1	Port Curtis Outfall	Suspended Solids	-	-	To be confirmed by DERM	Weekly
W1	Port Curtis Outfall	Turbidity	-	30 NTU 15 NTU	40 NTU (Oct-April) 20 NTU (May-Sept)	Continuously
W1	Port Curtis Outfall	pH	6.5	-	9.0	Continuously
W1	Port Curtis Outfall	Ammonia			1 mg/L	Weekly
W1	Port Curtis Outfall	Cadmium (filtered)	-	-	0.7 µg/L(Note 1)	Fortnightly
W1	Port Curtis Outfall	Chromium (filtered)	-	-	4.4 µg/L(Note 1)	Fortnightly
W1	Port Curtis Outfall	Copper (filtered)	-	-	1.3 µg/L(Note 1)	Fortnightly
W1	Port Curtis Outfall	Lead (filtered)	-	-	4.4 µg/L(Note 1)	Fortnightly
W1	Port Curtis Outfall	Mercury (filtered)	-	-	0.1 µg/L(Note 1)	Fortnightly
W1	Port Curtis Outfall	Nickel (filtered)	-	-	7.0 µg/L(Note 1)	Fortnightly
W1	Port Curtis Outfall	Silver (filtered)	-	-	1.4 µg/L(Note 1)	Fortnightly
W1	Port Curtis Outfall	Zinc (filtered)	-	-	15 µg/L(Note 1)	Fortnightly

Note1. These maximums are trigger values only. Exceedence of these limits triggers an investigation as per ANZECC/ARMCANZ (2000) Section 3.4.3.2

Noise Nuisance

9. All noise from activities must not exceed the levels specified in Schedule E, Table 1 - *Noise Limits* at any nuisance-sensitive, or commercial place.

Schedule E, Table 1 - Noise limits

Noise Level at a Nuisance sensitive place Measured as the Adjusted Maximum Sound Pressure Level L Amax adj,T	**Period**
Background noise level plus 5 dB(A)	7 am - 10 pm
Background noise level plus 3 dB(A)	10 pm - 7 am
Noise Limits at a Commercial Place Measured as the Adjusted Maximum Sound Pressure Level L Amax adj,T	**Period**
Background noise level plus 10dB(A)	7 am - 10 pm
Background noise level plus 8 dB(A)	10 pm - 7 am

Noise Monitoring

10. In the event of a complaint, the holder will:
    - in the first instance, change procedures to reduce the noise that is the cause of the nuisance complaint; and
    - liaise with the administering authority and/or complainant over remedial action

10.1. Where the above actions do not resolve the noise issue, and when requested by the administering authority, noise monitoring will be undertaken to investigate any complaint of environmental noise nuisance and the results notified within seven days to the administering authority. Monitoring must include:
   a) LAmax, adj T;
   b) LAN, T (where N equals statistical levels of 1, 10, and 90);
   c) the level and frequency of occurrence of impulsive or tonal noise;
   d) atmospheric conditions including temperature, relative humidity and wind speed and direction; and
   e) effects due to extraneous factors such as traffic noise.

10.2. The method of measurement and reporting of noise levels must comply with the latest edition of DERM's *Noise Measurement Manual.*

MAP 1 – *Approved Dredging Area*

(Map to be provided with application)

Map 2 - Extent of Approved Dredge Spoil Disposal Area. ***(Map to be provided with application)***

Issue: Construction of outer walls for the reclamation area.
The proposed construction materials and construction methodology outlined in the EIS are considered to be appropriate and should be reflected in any approval. Further consideration of the shape of the reclamation is recommended (Attachment 1) to reduce scouring of bottom substrate around the north east corner.

Recommendation
If the Coordinator General's report approves the reclamation component of the EIS, the following conditions need to be imposed in relation to construction of the containment area:

1. The design, construction materials, and construction methodology for the outer wall of the reclamation area shall be generally in accordance with the details provided in Chapter 2 of the EIS.
   1.1. Only clean rock with fines (<12 mm) removed shall be used for the revetment and breakwater walls;
   1.2. All material used for walls and capping shall be free from contaminants consistent with the *Queensland Draft Guidelines for the Assessment and Management of Contaminated Land Environmental Investigation Levels (1998)*;
   1.3. No excavation of sediments within the reclamation area is permitted, except in accordance with an Acid Sulfate Soil Management Plan approved by the Department of Environment and Resource Management (DERM);
   1.4. A geofabric liner shall be applied to the internal side of the wall to minimise release of fine sediments from the reclamation area other than through the designated discharge point in accordance with specified discharge limits;
   1.5. Outer rock armour for the reclamation bund walls must be in place within 28 days of completion of bund walls and not more than 100 metres of unprotected bund wall is to be exposed to prevailing winds at any time;
   1.6. The outlet of the intertidal channel on the western side of the reclamation area shall be designed to prevent scouring of bottom sediments due to increased tidal flow velocities and mitigation measures shall be constructed prior to completion of the western bund wall; and
   1.7. Capping of the reclamation area shall be profiled such that stormwater drains to internal collection and treatment prior to discharge to waters.

Issue: Management of Acid Sulfate Soils
The EIS commits to development of an acid sulfate soils management plan for the reclamation area construction and dredging subject to this EIS. This commitment must be reflected in any approval.

Recommendation
If the Coordinator General's report approves the reclamation an dredging subject to the EIS, the following conditions need to be imposed:

1. Prior to commencement of any part of the construction of the reclamation area or dredging, an acid sulfate soil management plan (ASSMP) shall be prepared in consultation with, and subject to approval by DERM.
2. The management of acid sulfate soils must be consistent with the Queensland Acid Sulfate Soil Technical Manual 'Soil Management Guidelines' Version 3.8 November 2002, or more recent editions or supplements to these guidelines.
3. The approved ASSMP shall be implemented over the full period of dredging and reclamation, and for a period after completion of the dredging and reclamation as defined by the ASSMP.

4. Any material excavated from within or adjacent to the reclamation area must be managed in accordance with the approved ASSMP.
5. No material containing actual ASS may be placed in the reclamation area.
6. Material containing PASS may only be placed in the reclamation area if located entirely below the level of Mean Low Water Springs and submerged at all times, unless otherwise provided by the ASSMP.

Issue: Land contamination – reclamation area
The EIS commits to assessment of dredged material to be placed in the reclamation area and effective management of any contaminants. This commitment should be reflected in any approval.

Recommendation
If the Coordinator General's report approves the reclamation component of the EIS, the following conditions must be imposed in relation to placement of dredge spoil in the reclamation area.

1. All dredge spoil proposed to be placed in the reclamation area shall be sampled and analysed for contaminants in accordance with the Draft *Guidelines for the Assessment and Management of Contaminated Land* (EPA 1998), or as agreed by DERM, prior to dredging.
   1.1. Any material that exceeds these guidelines shall be subject to a risk assessment to determine the likelihood that contaminants will be mobilised into the surrounding environment and any management and monitoring that is required.
   1.2. Placement of material that exceeds these guidelines in the reclamation area shall be subject to approval by DERM.

Issue: Stormwater management – reclamation area
The EIS proposes installation of stormwater management measures and capping and grassing of the final reclaimed surface to minimise impacts on surrounding waters from contaminated stormwater discharge. The construction and final reclamation area design is critical to achieving desired water quality outcomes in the long term. In the absence of detailed design information, it is desirable to impose general conditions of approval to ensure that stormwater will be appropriately managed.

Recommendation
If the Coordinator General's report approves the reclamation component of the EIS, the following conditions must be imposed.

1. Prior to application for operational works approval, or approval of a Dredge Management Plan, for the reclamation area, detailed design drawings shall be provided to DERM demonstrating that appropriate stormwater management will be applied during construction and post-construction such that stormwater discharges will have no adverse impact on receiving water quality Design drawings must demonstrate that:
   a) all stormwater from the reclamation area will be adequately contained and treated before discharge, including gross pollutant removal;
   b) sedimentation ponds must be of sufficient capacity to contain the run-off expected from a 24 hour storm with an average recurrence interval of 1 in 10 years; and
   c) the discharge points include appropriate structures to prevent erosion.

Issue: Discharge water quality – reclamation area
DERM considers the discharge water quality for turbidity proposed in the EIS to be inconsistent with best practice in protecting receiving water quality. (See comments in Attachment 1.) An

approval by the Coordinator General should ensure that the requirements for discharge water quality from the disposal of dredge spoil from any dredging project into the reclamation area are clearly stated.

Recommendation
If the Coordinator General's report approves the reclamation component of the project, the following conditions must be imposed in relation to placement of dredge spoil in the reclamation area.

1. Water discharged from the reclamation area (drain waters and stormwater) must only be released to surface waters at the eastern side of the combined reclamation area.
2. Water discharged from the reclamation area must be in compliance with the release limits listed in Table 1 - *Contaminant release limits to water* included in Attachment 2.
3. Prior to, or as part of, an application for operational works approval or for approval of a Dredge Management Plan, for each dredging project proposing to dispose of dredge spoil within the reclamation area subject to this approval, detailed design drawings shall be provided to the DERM demonstrating that the system of cells, baffles and weir boxes within the outer bund wall of the reclamation area will be effective in ensuring that discharge water will meet the limits specified for suspended sediment and turbidity, taking into account the specific dredge spoil characteristics.
4. Monitoring must be undertaken, and records kept, of contaminant releases to waters from the discharge location for the quality characteristics, and not less frequently than, specified in Table 1 - *Contaminant release limits to water*.
5. DERM must be notified by telephone, email, or fax of any exceedence of the Release Limits stated in Table 1 within 24 hours of becoming aware that an exceedence has occurred.

Issue: Management of turbidity resulting from clearing of mangroves and temporary access works
Clearing of mangroves and construction of temporary access for bund construction has the potential to mobilise acidic sediments into the water column. Suitable design and management is required to prevent significant adverse impacts.

Recommendation
If the Coordinator General's report approves the reclamation component of the EIS, the following conditions must be imposed to minimise sediment release during clearing of mangroves and construction of temporary access:

1. A suitably designed barrier must be erected immediately seaward of the area of mangroves to be cleared as part of the reclamation works such that sediment released during clearing is effectively contained.
2. Any access constructed across the western channel for bund wall construction must be designed to prevent scouring of sediments on the ebb tide following construction of the western wall. Design drawings shall be provided to DERM for approval prior to construction.

Issue: Ecological Monitoring
A monitoring program is needed to confirm the accuracy of information contained in the EIS in relation to water quality and ecological impacts.

Recommendation
If the Coordinator General's report approves the reclamation and/or dredging component of the project, the following conditions must be imposed in relation to dredge spoil placement in the reclamation area:

1. Prior to the commencement of dredging activities, a monitoring program to assess the impacts from the dredging on ecological health and water quality must be developed in consultation with, and approved by, DERM.
   1.1. The approved monitoring program must be implemented over the full period of dredging, and for a period prior to and after dredging as defined by the monitoring program.
   1.2. Information obtained from the monitoring program must be provided to DERM within 28 days of its collection.

Issue: Management of dredging to minimise harm to turtles.
The EIS outlines appropriate measures to minimise risk to turtles. These measures should be reflected in conditions of approval.

Recommendation
If the Coordinator General's report approves the dredging component of the EIS, the following conditions must be imposed in relation to minimising risk to turtles:

1. Where a trailer suction hopper dredger is used, the drag heads of the dredge vessel shall be fitted with a turtle exclusion device for the duration of the dredging.
   1.1. Operation of the trailer suction hopper dredger shall be in accordance with a written operational procedure forming part of the approved Dredge Management Plan which ensures that the amount of off-bed suction time is minimised to reduce the risk of turtle capture.
   1.2. Any marine fauna captured by the dredge head shall be recorded and reported to DERM and Gladstone Ports Corporation within 30 business days of the event.

Issue: Management of construction of the reclamation area to minimise risk to marine fauna
The EIS identifies the risk to marine fauna of entrapment when the bund wall is closed. Appropriate conditions of approval need to be imposed to ensure risks are minimised and appropriate actions taken.

Recommendation
If the Coordinator General's report approves the reclamation component of the EIS, the following conditions must be imposed in relation to construction of the containment area to minimise entrapment of marine fauna and manage release of any trapped fauna.

1. The proponent must prepare, in consultation with DERM , a management plan to minimise the risk of entrapment of mobile marine fauna, especially turtles, dugong and cetaceans, and to define the actions to be taken in the event of capture.

From: Robyn Hesse [mailto:robyn.hesse@derm.qld.gov.au]
Sent: Monday, 21 December 2009 12:09 PM
To: Steve Alcock
Subject: FW: Attachment 2 of the WBD conditioning

Steve

The table as sent indicated that DERM would advise what should be inserted in this table at the two columns shown highlighted in yellow. Steve has advised as indicated that nothing needs to be inserted: it is to be monitored. So please show blank.

Cheers Robyn

Robyn Hesse

Manager Impact Assessment

DERM

07 3330 5608

From: Steve Elson

Sent: Monday, 21 December 2009 8:50 AM

To: Robyn Hesse

Cc: Angela Hendy

Subject: RE: Attachment 2 of the WBD conditioning

Robyn

If you are referring to Suspended Solids, we are not setting limits – only asking for monitoring for data acquisition purposes. Control will be Turbidity. Any other concerns please refer to Arthur Dahl.

Steve

Steve Elson

Principal Planning Officer

Regional Service Delivery Central West Region

Department of Environment & Resource Management

Phone: (07) 4936 0506

Fax: (07) 4936 0508

E-mail: steve.elson@derm.qld.gov.au

www.derm.qld.gov.au

Department of Environment and Resource Management

25 Yeppoon Road PARKHURST 4702

PO Box 3130 RED HILL ROCKHAMPTON QLD 4701

From: Angela Hendy

Sent: Friday, 18 December 2009 3:23 PM

To: Steve Elson

Subject: Attachment 2 of the WBD conditioning

Hi Steve

Robyn Hesse called re: the attachment 2 of the WBD conditions.

In table 1 (below) there are no values for the 80th percentile and the maximum of the first WB1.

Monitoring Point(s)	Discharge Location	Quality Characteristics	Type of Release Limit Minimum	80th Percentile	Maximum	Monitoring Frequency
W1	Port Curtis Outfall	Suspended Solids	-			Weekly
W1	Port Curtis Outfall	Turbidity	-		30 NTU	
					15 NTU	
					40 NTU (Oct- April)	
					20 NTU (May- Sept)	Continuously
W1	Port Curtis Outfall	pH	6.5	-	9.0	Continuously
W1	Port Curtis Outfall	Ammonia			1 mg/L	Weekly
W1	Port Curtis Outfall	Cadmium (filtered)	-	-	0.7 µg/L (Note 1)	Fortnightly
W1	Port Curtis Outfall	Chromium (filtered)	-	-	4.4 µg/L (Note 1)	Fortnightly
W1	Port Curtis Outfall	Copper (filtered)	-	-	1.3 µg/L (Note 1)	Fortnightly
W1	Port Curtis Outfall	Lead (filtered)	-	-	4.4 µg/L (Note 1)	Fortnightly
W1	Port Curtis Outfall	Mercury (filtered)	-	-	0.1 µg/L (Note 1)	Fortnightly

W1	Port Curtis Outfall	Nickel (filtered)	-	-	7.0 µg/L[Note 1]	Fortnightly
W1	Port Curtis Outfall	Silver (filtered)	-	-	1.4 µg/L[Note 1]	Fortnightly
W1	Port Curtis Outfall	Zinc (filtered)	-	-	15 µg/L[Note 1]	Fortnightly

Can you please give her a call ASAP (!!) as she is wanting to know what this means/what to put.

Gladstone Office
101 Goondoon Street, Gladstone
PO Box 29, Gladstone Qld 4680
Phone (07) 4970 0700 Fax (07) 4972 3381
Email info@gcc.qld.gov.au Website www.gladstonerc.qld.gov.au
Please address all correspondence to The Chief Executive Officer

GLADSTONE
REGIONAL COUNCIL

3

Contact Officer: Mrs Krebs
Your Ref: TN140611

18 December 2009

The Coordinator-General
C/- EIS Project Manager: Western Basin Dredging Project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
CITY EAST QLD 4002

Attention: EIS Project Manager – Western Basin Dredging and Disposal Project

Dear Sir

RE: ENVIRONMENTAL IMPACT STATEMENT FOR THE WESTERN BASIN DREDGING AND DISPOSAL PROJECT

I refer to the Environmental Impact Statement (EIS) for the **Western Basin Dredging and Disposal Project**, a copy of which was provided to Council for review and comment on 17 November, 2009.

I can now advise that a report on the EIS was considered by Council at its meeting held on 15 December, 2009, and that Council resolved to provide to you a submission on the EIS. I advise that Council has centred its comments on those aspects of the Project that are generally within local government jurisdiction. As a consequence, it is to be expected that other agencies will be providing comment on matters within their specific field upon which Council has not provided a response. It is on this basis that Council requests that the Coordinator-General takes the following into consideration when carrying out the assessment of the EIS:-

Environmental Values

The EIS outlines what are obviously significant environmental impacts from the project including:

- Direct impact from permanent loss of 259 hectares of seagrass communities (stated as 5.4% of Port seagrass and 1.2% of region's seagrass)

3.1

- Indirect impact on other areas of seagrass exposed to turbid plumes during dredging and reclamation activities (those most at risk are immediately to the north of the proposed reclamation – 278 hectares)
- The total area of seagrass exposed to dredge plumes is estimated at 1,406 hectares (29.4% of Port seagrass and 6.7% of region's seagrass)
- Removal of 902 hectares of benthic habitat (including the 259 hectares of seagrass)

The level of uncertainty in the prediction of impacts from dredge plumes and whether or not the seagrass exposed to these plumes can survive is of concern to Council. If only the area to the north of the proposed reclamation dies, then the total lost would represent 11.2% of Port seagrass.

This issue alone warrants the most careful consideration by the Coordinator General before any determination on this application is made. In fact, Council would contend that the potential for environmental impact on this scale should have been identified and considered in advance of the Curtis Island Precinct of the Gladstone State Development being declared.

Transport

3.2 Road Impacts

It is understood that impacts from the transportation of rock armour and core material is being addressed through a separate approvals process.

Airport Impacts

Page 1-68 of the EIS states that "While the reclamation area is under the flight path of the proposed Kangaroo Island airport it is not envisaged that development will project into the flight plane". It should be noted that the Obstacle Limitation Surface (OLS) for the proposed Kangaroo Island Airport in the vicinity of the proposed reclamation ranges from 53 to 70m AHD. Perusal of Figure 2-8 Reclamation Construction Staging Plan indicates that the proposed mound upon the reclamation is at 70m Port Datum (67.72mAHD). This will therefore intrude up to 14.732 metres into the OLS for Kangaroo Island Airport.

The State must address the loss of the Kangaroo Island Airport site if this project is to proceed. The value of Kangaroo Island lies not just in the theoretical value of the land as a Council reserve, but as an allocated future airport site. The economic value of the loss of a reserved airport site needs to be included in the compensation value of the asset. This loss also directly relates to the cost of investigating alternate locations for a future airport site.

Marine Transport 3.3

The disruption to use of the area for marine craft relates to the social impacts discussed below.

The proposal through its reclamation area and exclusion zones represents a significant loss of public access both temporarily during dredging and permanently through berth locations. The passage of marine craft through the Narrows is significantly hindered by certain options for LNG berth locations presented in the EIS. If Stage 1b or Stage 2 locations are used for the berth location for LNG projects, then the passage of marine craft through the eastern section of The Narrows will be impossible because of exclusion zones surrounding the LNG loading pipeline and ships at berth.

From a long term use perspective Option 2a would seem preferable to the other options presented for the Australia Pacific LNG berth facilities. It is understood from the EIS addendum that for Option 2a, an LNG ship can be berthed and loading LNG while small vessels can pass the ship outside of the proposed 250m exclusion zone. From a dredging perspective this option appears to present greater environmental impacts.

Visual Impacts 3.4

Given that the reclamation mound provides capacity for future maintenance dredging, it is not clear when the reclamation area will be revegetated. It is assumed that with a capacity of 55 million m^3 and up to 48.8 million m^3 of capital dredge material it will be an extended length of time before the reclamation mound is vegetated. The only indicator found in the EIS is at page 14-20 which states that *"The impact on the visual amenity will occur over an extended timeframe with the reclamation mound likely to only be required to be constructed at a timeframe greater than 3 years."*

Annual maintenance dredging is said to be 255,000m3 per year. Therefore it could be up to 24 years before the reclamation mound is created and then revegetated.

Council considers that the proposed design must allow for progressive capping and revegetation of the outer side walls of the mound as it is being created. Otherwise the reclamation will be a prominent visual scar on the Gladstone landscape for an unacceptable length of time.

Social Impacts 3,5

GRC recognizes the importance of expansion of port facilities to facilitate industrial expansion and economic growth for the State and Nation, and that some areas of the Queensland coast will be sacrificed in order to achieve this expansion. However, this should not be 'at any cost' or without appropriate compensatory measures to the community and environments that 'wear' that cost. The need for **balance** forms the basis for Council's comments on the social impacts of the project.

It is obvious from a review of the EIS that there will be no 'balance' between the needs of industry and port development and community values of the harbour's natural environment and recreational assets.

The consultation outcomes and documents detailed in the EIS (Corporate Plans and Gladstone Region 2028 Vision Project) clearly show the attachment that this community has to the Gladstone Harbour and the western basin in particular. The EIS recognises the importance of the western basin for recreational fishing, crabbing and prawning both through boat access and land access. The passages to be dredged and areas to be occupied by loading berths are also an important link to recreational areas in The Narrows. The increased population that this expansion project will facilitate risks having diminished, restricted and/or degraded recreational boating areas as a result..

The Social Impact Assessment appropriately identifies that the loss of natural and recreational areas will have a 'high' likelihood/consequence rating. The fact that the spatial extent is the 'site' doesn't really reflect the extent of the impact of the project. Given that the 'site' is a much larger area than just the reclamation, the spatial scale is really at least 'local' having an impact over much of the harbour.

The EIS also fails to mention the loss of an existing 'unofficial' but utilised boat ramp immediately adjacent to the western perimeter of the proposed reclamation. Existing access tracks to this naturally 'stoney' break between the mangroves indicate its use as a boat ramp and access point to the harbour.

Council questions some of the mitigatory ratings presented in the SIA (section 3.3 pages 61 to 74. At "*Loss of natural and recreational areas*" and "*Reduced viability of commercial fishing*" the Mitigatory rating is shown as "Low". "Low" is defined by "*Limited mechanism for the Project Team to mitigate the negative social impact. Mitigatory measures could involve 100% responsibility of another entity or group of entities (e.g. local, State or Commonwealth Government). Little or no mechanism for the Project Team to enhance positive social impact, could involve 100% responsibility of another entity or group of entities e.g. local, State or Commonwealth Government).*" (Table 28, SIA)

Responsibility for the impacts of the project lie with the project proponent and the State, if it approves the project. The Coordinator-General has responsibility for ensuring that appropriate mitigation actions are required of the proponent to account for the environmental and social impacts of the project.

Offsets 3.6

Environmental offsets need to be locally based and not simply the payment of monetary compensation to the State's consolidated revenue. If the Gladstone community and its future generations are expected to pay the price for a net benefit to the State, appropriate compensation should appear at the local level and in the local area. An example of a locally based environmental offset would be elsewhere within the harbour.

The commitments and proposed recreational use, and recreational and commercial fishing offsets should be outlined in the EIS or through some other public consultation process. Then at least the community can provide comment on what it sees as the best overall compensation for the loss of the use of the harbour.

Recreational offsets should include as a minimum the provision of additional all tide access boat ramps to support recreational fishing as well as provision of areas for off-bank or equivalent fishing access for those members of the community who do not have access to a boat. These boat ramps and bank access areas should be supported by appropriate vehicular access and parking. Recreational offsets could also include the provision of additional boating facilities such as a marina at the Boyne River mouth (subject to appropriate environmental assessment). These social offsets need to be of a quantum that adequately compensates from the permanent loss of a valuable recreational and natural asset to the community. Population growth of the region will already place pressure on existing facilities if they are not expanded, let alone replacing existing access that is lost.

Monetary compensation for the loss of productive fishing areas to commercial fishermen should form part of the Coordinator-General's conditions of development. Transparent mechanisms for quantifying these impacts should be outlined in these conditions.

Council is willing to work with GPC and the State Government with a view to negotiating an appropriate range of offsets for impacts of this project.

Yours faithfully

CALE DENDLE
ACTING CHIEF EXECUTIVE OFFICER

Australian Government
Department of the Environment, Water, Heritage and the Arts

Our reference: EPBC2009/4904

4

Mr Steve Alcock
Project Manager
Significant Projects Coordination
Department of Infrastructure and Planning
Queensland Government
PO Box 15009
CITY EAST QLD 4002

Dear Mr Alcock

Thank you for the opportunity to comment on the Environmental Impact Statement (EIS) prepared by the Gladstone Ports Corporation (GPC) for the Western Basin Strategic Dredging and Disposal Project (the Western Basin Project).

As indicated previously, in my email of 9 November 2009, the Department reviewed the EIS and believes it is suitable for publication. We have, however, identified a number of issues which, in our view, should be addressed in the Supplementary EIS. The majority of these issues have been previously identified in our meetings with GPC and their consultants, GHD. Specifically, we note the following:

- The EIS should address the consequential impacts of potential developments related to the Western Basin Strategic Dredging and Disposal Project, including, but not limited to, increased shipping activity and the various proposals for the linear infrastructure across 'The Narrows' to Curtis Island. An understanding of the impacts of the Western Basin project within the broader regional development context will be critical for assessing cumulative and consequential impacts. 4.1 4.2
- Offsets against permanent habitat removal should be more clearly developed and described, and demonstrate coordination of objectives with management authorities and strategic plans and policies. 4.3
- Clear conclusions should be drawn on the impacts of sediment plumes and increases in turbidity on seagrass beds, including their duration, and a clear indication should be made as to how water quality trigger levels will be established and how they will enable adjustment of dredging works before sensitive habitats are negatively affected. Additional information is required on both dredge disposal during flood tides and use of overflow dredging. 4.4
- The EIS 'addendum' notes the potential for an additional 12 million cubic metres of dredge material requiring disposal. Further information is required on the capacity of the proposed reclamation site to encompass this extra material. 4.5
- Further detailed consideration is required for alternative dredge disposal options, including sea disposal and a combination of sea disposal/land reclamation. 4.6 4.7

The EIS needs to more explicitly address:

4.8 • the noise impacts of pile driving, and evidence to support the proposed exclusion zones for pile driving, to avoid impacts on marine megafauna; and

4.9 • the potential impacts of dredge vessel artificial lighting on marine megafauna.

4.10 The Department notes that insufficient sediment sampling had been undertaken for Stage 4 of the project, at the time of publication of the EIS. We understand the work has since been undertaken. The results of the sampling and analysis for Stage 4 should be presented in the Supplementary EIS.

4.11 The Department commissioned an external review of the hydrodynamic modelling. While the reviewer did not indicate the modelling was unsuitable, a number of recommendations were made regarding clarification of the potential limitations to the investigation. I have attached the reviewer's report for your consideration. Please note, the additional modelling included in the EIS Addendum (Appendix C) was not received in time to form part of the review. If the proponent does not refine the model, the limitations of the model should be noted and/or discussed.

4.12 The National Ocean Disposal Guidelines for Dredged Material 2002 (NODGDM) were superseded in February 2009 by the National Assessment Guidelines for Dredging (NAGD). Any further discussions should reflect this point.

4.13 Please note that the *Environment Protection (Sea Dumping) Act 1981* does apply within three nautical miles of the coast in many circumstances, including at Gladstone. Any further discussions of the Act should reflect this point (see section 1.10.2 – Commonwealth Legislation).

If you require any additional information, please contact Leo Rose on (02) 6274 1605 or email at Leo.rose@environment.gov.au.

Yours sincerely

Matt Johnston
Director
Ports and Marine Section
17 December 2009

CC: Mr Lee Warren, Gladstone Ports Corporation

WorleyParsons
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Appendix 1 - DEWHA

4 November 2009

Ref: lt1081-15prh_td0911104-WBDP_Modelling_Review.doc

Mr Leo Rose
Ports & Marine Section
Environment Assessment Branch 1
Approvals & Wildlife Division
(sent by email only to Leo.Rose@environment.gov.au)

4.11

Dear Leo

MODELLING REVIEW OF DRAFT EIS FOR WESTERN BASIN DREDGING PROJECT

As requested, WorleyParsons has undertaken an independent expert review of the hydrodynamic modelling and coastal environment sections presented in the Draft EIS Report for the Western Basin Dredging Project (namely Chapters 6 and 7 and Appendix J).

Although we do not consider that there is necessarily a requirement for additional modelling to be undertaken, clarification of the following potential limitations to the investigation are recommended:

- Given that the hydrodynamic model mesh covers a large area, an additional (finer) mesh at the key locations of interest (in the Western Basin of Port Curtis) would be advantageous in obtaining a more accurate resolution of key hydrodynamic components in the study area.

- A more detailed wave model mesh (say 20mx20m rather than 50x50m as used) would provide more reliable computed results. Alternatively, given the complex terrain of the study area, an unstructured grid, or (if applicable) a similar model mesh used in the TUFLOW model, could be applied for the SWAN wave modelling.

- The phase-decoupled method employed in SWAN does not rigorously handle wave diffraction/refraction in the harbour basin or in front of reflecting obstacles. These obstacles include numerous islands in the basin and existing port structures.

- There was limited information provided on wave-induced currents and the physical processes that generate them, and no calibration or validation of these processes against field data. Wave-induced currents and wave impacts are particularly important to take into account in the case of a storm surge approaching the region during a high spring tide period.

- The SWAN wave model does not calculate wave-induced currents. As stated in the model manual (SWAN User Manual version 40.72ABCD, 2009), such currents should be provided as input to SWAN, for example from a circulation model which can be driven by waves from SWAN in an iterative procedure. As noted above, wave-induced currents could be a matter of concern during extreme conditions.

- Wave-induced (bottom) orbital velocities play a key role for sediment plume modelling. This bottom orbital velocity is a function of the wave height, wave period and the water depth. Given the complicated bathymetry/geometry of the harbour basin, a more advanced wave model could be considered (rather than SWAN) for modelling of the nearshore and inner

harbour areas. Without inclusion of this process the extent of plumes could be underestimated, for example.

- Since the tidal range within Port Curtis is relatively large (varies between 4.7m and 6m depending on location), the hydrodynamic modelling could have been improved with simulation of several scenarios of water levels that could occur during the dredging period (for each bathymetry scenario).
- In the extreme wave condition impact assessment, only two water levels of 3.3m and 3.5m AHD were considered. It could be argued that higher water levels would be associated with say 50 year ARI and 100 year ARI wave conditions and should be considered for wave modelling.
- Given the limitations of the SWAN wave modelling and other limitations as noted above, it is possible that impacts of changing wave and current patterns have been understated, and secondary impacts such as effects on bank erosion and stability of batter slopes have not been fully considered.
- Evidence of verification/validation of the sediment transport module that was used, and discussion on its suitability and limitations, would be beneficial.
- There was only limited discussion on the simulated results for each scenario.
- The structure of the reporting was complicated and could be improved. For example, a table containing input and output data for each scenario could be provided in order to compare, analyse and study the results of each case.

The following matters are also noted:

- There is a typographic error in Figures 7-28, 7-39 and 7-40 where the units of the Sand Transport Potential (header of the legend) should read as "m^3/yr" instead of "m^2/yr".
- In computed wave height plots (eg Figure 7-26), it would be clearer to display wave height contours to enable assessment and determination of wave height at any specific location.

We trust our comments will be of assistance to the Ports & Marine Section. Please do not hesitate to call the undersigned or Ali Watters if you require any further advice or clarification of any of our comments.

Yours faithfully,
WorleyParsons

Review / Verification by — Date

..... 4/11/09

Peter Horton, Principal Engineer

Toan Dam, Principal Engineer

Greg Britton
Select **Manager Marine & Coastal (Southern Operations)**
WorleyParsons
Tel: +61 2 8456 7250

coffey natural systems
SPECIALISTS IN PEOPLE AND PLACE

50 YEARS AN EXTRAORDINARY JOURNEY

Shell 5

10 November 2009

Manager Environment Services, Gladstone
GHD
2/100 Goondoon Street
Gladstone QLD 4680

Attention: Joanna Lee

Dear Joanna,

RE: Draft Western Basin Dredging and Disposal EIS

We refer to the request for Curtis Island LNG proponents to provide comments on the draft Western Basin Dredging and Disposal EIS by COB Tuesday 10 November 2009. Shell's comments on the draft EIS are set out in this letter. As a consequence of the short timeframe, the comments principally relate to issues about scope and key issues of concern to Shell.

Shell is anxious to ensure the Western Basin Dredging and Disposal EIS accurately describes their proposal and that relevant elements are assessed as part of the EIS. Shell's proposal is described as follows:

5.1 Shell CSG (Australia) Pty Ltd, a wholly owned subsidiary of Royal Dutch Shell plc (Shell), is investigating the development of an LNG facility on Curtis Island. The Shell Australia LNG Project will comprise four trains with a combined output of up to 16 Mtpa. Located at the southern end of the Curtis Island Industry Precinct of the Gladstone State Development Area, the proposed LNG plant will export product through loading facilities to be constructed in North China Bay adjacent to Santos' proposed loading facilities. Up to two berths will be required to enable efficient loading of LNG product at full capacity. It is anticipated Shell will use the common user materials offloading facility (MOF) proposed to be constructed on Hamilton Point, currently identified as GLNG MOF in the draft EIS.

An Initial Advice Statement has been prepared and submitted and on 12 June 2009, the Queensland Coordinator-General declared the project to be a significant project for which preparation of an EIS is required. Draft Terms of Reference have been exhibited. The closing date for submissions was

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2 November 2009. The Australian Government Department of the Environment, Water, Heritage and the Arts has determined the proposed development is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1993* (Cwlth) (EPBC Act). The EIS process under the Queensland *State Development and Public Works Organisation Act 1971* (Qld) has been accredited as the appropriate level of assessment under the EPBC Act.

Relevant aspects of Shell's proposal that should be addressed in the Western Basin Dredging and Disposal EIS include channels and berth pockets (two pockets) for the proposed LNG loading facilities in North China Bay and a channel to the proposed MOF on Hamilton Point.

Shell comments are grouped under the headings scoping issues and general issues.

Scoping Issues

- Shell is concerned that the timing of Stage 4 may be inconsistent with their development timeframe. Stage 4 permits access to the proposed site of Shell's loading facility (jetty and berth pockets). Stage 4 should be timed to occur concurrently or immediately following Stage 1A dredging.
- The location of Shell's jetties should be included in the project description in Chapter 2 and addressed in the impact assessment.
- The EIS needs to be updated to incorporate Shell's project specifications and status (as described above), particularly in Tables 13.5, 12.12 and 15.1.
- Shell and Arrow Energy projects need to be accurately described. Shell Australia's LNG Project on Curtis Island is up to 16 Mtpa. Arrow Energy/LNG Limited's Gladstone LNG Project on Fisherman's Landing is up to 3 Mtpa. There is no Arrow Energy 10 Mpta project.
- The depth of the dredged channels is not consistent throughout the EIS. Stage 1A is discussed variously as having a design depth of -13 m LAT and -13.5 m LAT. The maintained water depth needs to be clarified.
- While development of LNG projects on Curtis Island may facilitate dredging, the impacts of LNG developments are not part of the scope of the Western Basin Dredging and Disposal EIS and such references should be removed (e.g., Chapter 14 Landscape and Visual Character, Chapter 15 Economic Impact, Chapter 15 Health and Safety).

General Comments

- The EIS should reflect the multiple reasons for dredging despite LNG being the immediate catalyst. This should include expansion of Fisherman's Landing facilities etc.
- The criteria used for the assessment of reclamation site options (Figure 1-6) should be listed and described including how they were applied to the nominated options. This would ensure a better understanding of the process of identifying, assessing and rejecting alternatives.
- The timing required to obtain operational works approval needs to be addressed in the indicative dredging program i.e., what lead times are required to obtain these approvals and how do they relate to the overall dredging program.
- The impacts of the project on seagrass meadows should be rigorously assessed. Rather than consider the losses in relation to the overall area of seagrass, the assessment should consider the

impact of the losses on Port Curtis seagrass communities and their role in ecosystem function. This should consider issues such as displacement of dugong and other species dependent on seagrass beds. This issue is fundamental to the assessment of potential impacts on World Heritage Area values.

Please do not hesitate to contact me if you have any queries regarding Shell's comments.

For and on behalf of Coffey Natural Systems Pty Ltd

Barton Napier
Senior Principal

cc Roger Bounds, VP New Business Development, Gas & Petroleum, Asia Pacific, Shell

Submission on the environmental impact statement for the Western Basin Dredging project

6

Name: Winston Harris
Chief Executive Officer

Organisation (if applicable): Queensland Seafood Industry Association

Address: Suite 12, 699A-700 Sandgate Road, Clayfield
PO Box 392
Brisbane, Queensland 4011

Contact details: Phone: (07) 3262 6855
Mobile: 0414 841 532
Submission Contact: Eric Perez - Climate Change and Fisheries Liaison Officer
Email: eperez@qsia.com.au

Section(s)	Describe the issue	Suggested Solutions
Executive Summary - Project Description (p.iii). 6.1	Reclamation Area • The environmental impact statement (EIS) notes that the total Western Basin Reclamation Area (WBRA) with a footprint of 235 ha and volume accommodated of 45 million m^3. • The Fisherman's Landing project has a footprint 173.4 ha and 10 million m^3 for a grand total of 408.4 ha and 55 million m^3 in the reclaimed area.	• The Queensland Seafood Industry Association (QSIA) recognises the significance of the project for the Port of Gladstone Corporation (PoGC) and the Gladstone region more broadly. • From a seafood industry perspective the best solution would be to have the reclaimed area well away from prime fishing and breeding areas. This is most likely not going to be the case. Under this scenario industry will need to be consulted with respect to: ▪ Environmental offsets; and/or ▪ Compensation, structural adjustment and other possible mitigation.
Executive Summary - Social (p. xxxiii - xxxvi). 6.2	Social • Key themes identified are (1) economic growth and employment, (2) equitable social outcomes and (3) natural assets and recreation.	• In terms of economic growth and employment the commercial fishing sector in Gladstone has been a stable employer for decades and also supplies local seafood wholesalers and retailers.

Section(s)	Describe the issue	Suggested Solutions
Executive Summary - Social (p. xxxiii - xxxvi); continued. 6.2	• In terms of this submission the key areas of impact for the seafood industry involve: ▪ Economic growth and employment with an industrial focus only; and ▪ Natural assets and recreation with a focus on recreational uses of the proposed project.	• Whilst acknowledging the future economic impacts in the region, the immediate and long-term impact on commercial seafood operators should be acknowledged and compensation paid for loss of access. • In terms of natural assets and recreation the QSIA acknowledges that the resource is shared with recreational fishers but solely noting the level of boat registrations suggests that recreational fishers will suffer loss should the project achieve the required approvals is only one component of impacts that will be felt across recreational and commercial interests.
Appendix F - Consultation Activities (pp.7-9). 6.3	Table 3 consultation meetings and community engagement activities • This table notes that the QSIA was consulted in the development of the EIS document.	• There was no formal consultation process undertaken by the PoGC with industry. The QSIA conducted industry port visits to determine key fisheries issues. PoGC and QGC LNG project proponents were invited to provide details regarding their respective projects. The QGC LNG proponents also attended the port visits. • At no stage did any PoGC representative offer a formal consultation session before or after the port visit held on 29th July 2009.
Chapter 7 - Coastal Environment (pp.99 -101). 6.4	Sediment quality risk assessment • The majority of the table notes medium level risk in terms of sediment quality.	• What are the medium to long-term implications for the marine environment beyond the project boundary? • What are the medium to long-term implications for marine species such as crab and prawn due to sediment quality? • What compensation and/or mitigation measures are available to the commercial seafood industry?
6.5	Loss of Habitat • The area identified for reclamation in the EIS document has been identified by local QSIA members as prime breeding ground for prawn, crab, salmon, shark and mullet.	• That the PoGC consider the potential ecological damage the project will have on the local and regional marine life. • That the PoGC provide compensation to affected commissarial fishers.

Section(s)	Describe the issue	Suggested Solutions
Chapter 7 - Coastal Environment; continued. 6.6	Loss of Commercial Fishing Access • The area identified for reclamation in the EIS document has been closed to trawlers for years because it was recognised early as a prawn and crab habitat. • Catch for the area is mainly: crab, salmon, shark and mullet. • As noted in the QSIA's Fisherman's Landing EIS document the disadvantages of the current location from an ecological, commercial fishing and recreational fishing perspective have been significantly understated by the PoGC.	• That the PoGC and State Government meet with the Queensland Seafood Industry Association to discuss and clarify the impacts on the local commercial fishing sector. • Reclamation area issue, the QSIA would like to see added solutions of dredged materials deposited on land and wharves constructed on pylons. • Compensation for local fishers.
	Displaced Effort • Local fishers will be forced to move to other fishing grounds. • This movement will cause additional fishing effort in those locations and restrict the income of fishers as a result.	• Consideration of methods to address displaced effort by the project proponents. • Compensation for local fishers.

For further information regarding this submission please con Eric Perez (eperez@qsia.com.au), Climate Change and Fisheries Liaison Officer on (07) 3262 6855 or 0414 841 532.

Signature:

Winston Harris
Chief Executive Officer
Queensland Seafood Industry Association

Submissions must be received by **5 pm on Friday 18 December 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Western Basin Dredging project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
fax +61 7 3225 8282
wbdp@dip.qld.gov.au

This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3224 5004.

Submission on the environmental impact statement for the Western Basin Dredging project

7

Name: Wiggins Island Coal Export Terminal Pty Ltd (WICET)

Organisation (if applicable):

Address: C/- Blake Dawson
PO Box 7074
Riverside Centre
Brisbane
QLD 4001

Contact details: John Briggs - Partner

Section	Describe the issue	Suggested solution
Chapters 1-20 7.1	The Wiggins Island Coal Export Terminal project within Gladstone Harbour is in its early works stage and is described in the WICT EIS and SEIS. This WICT project will have a range of impacts, as described in its EIS & SEIS, some of which will be similar to those of the Western Basin Dredging project, particularly those arising from dredging, reclamation and construction of marine structures. The EIS for the WICT project provided for dredging for an arrival/departure channel, swing basin and berth pockets, creating up to approximately 6.64Mm3 of dredge material. All dredge material will be disposed of onshore by pumping to three different reclaim areas.	The environmental impacts of the WICT project have already been fully assessed. We note these impacts have been included as part of the base case (existing conditions) for the Western Basin Dredging project. We also note that the Draft Port of Gladstone Western Basin Master Plan requires that projects in the Western Basin are investigated from a cumulative perspective. Compared to when planning commenced for the project, there are now a large number of projects planned for the Western Basin and the Port of Gladstone generally. The cumulative impacts of all such projects can be better assessed as part of the Western Basin Dredging project assessment now that they are more advanced.
Chapter 11 - Transport 7.2	Possible impacts of road and shipping movements on the construction and operation of the project.	Liaise and reach agreement with WICET for the purpose of ensuring that the construction and operation of the project is not unduly affected by road and shipping movements associated with the Western Basin Dredging project and that at all times the terminal has sufficient port capacity to enable it to operate in accordance with its Terminal Master Plan.

Signature: John Briggs

Submissions must be received by 5 pm on Monday date 2009 and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Western Basin Dredging project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
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This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3224 5004.

Reference: APLN-APLN-QDIP-L-00002

18 December 2009

Steve Alcock
Project Manager
Significant Projects Coordination
Department of Infrastructure & Planning
PO Box 15009
City East QLD 4002

Dear Mr Alcock,

Subject: Submission on the Environmental Impact Statement for the Western Basin Dredging Project

Thank you for our meeting of 11 December 2009 where we discussed further data which has become available since the lodgement of the Addendum to the Gladstone Ports Corporation's Environmental Impact Statement for its Western Basin Dredging Project.

A similar presentation was made to Stuart Cameron and other representatives of the Department of Environment and Resources Management on 8 December 2009.

Australia Pacific LNG (APLNG) has also briefed the Department of the Environment, Water, Heritage and the Arts on the additional data, on 16 December 2009.

The briefings were initiated to address concerns raised about the differences in dredge spoil volumes in Options 1B and 2A as identified in the Addendum and to explain why 2A is Australia Pacific LNG's preferred option.

Australia Pacific LNG has continued to investigate technical and operational issues since completion of the Addendum Report of the EIS. Additional design studies have been undertaken to address any issues and mitigate potential environmental impacts, in particular dredge material volume and benthic habitat. Social impacts, in particular harbour access for recreational and commercial vessels has also continues to be assessed. The following provides a summary of the information recently presented at the meetings referenced above.

Australia Pacific LNG has a preference for the Option 2A configuration due to ease of manoeuvring, less impact on recreational and commercial vessels and consistency with the plans of other LNG proponents in the Curtis Island Industry Precinct. Ongoing design work is targeting a reduction in the difference in capital dredged material volume between Option 2A and Option 1B. Further details are outlined below.

commercial-in-confidence
Australia Pacific LNG Pty Limited ABN 68 001 646 331
Reception Ground Floor, North Tower, 339 Coronation Drive, Milton, Qld, 4064
GPO Box 148, Brisbane, Qld, 4001 • Telephone (07) 3858 0280 • Facsimile 1300 863 446 • www.aplng.com.au

Dredged Material Volumes

The Addendum of the Western Basin EIS reports the following capital dredged material volumes:

- Option 2A 12.8 million m3
- Option 1B 6.0 million m3

Recent design work has targeted a reduction in footprint of the Option 2A dredged area compared to that assessed in the EIS due to the following changes:

- one turning circle versus two to access the two berths
- reduction in MOF size
- MOF berth pocket depth reduced to 7.5m from 8.5m
- Reduction in construction barge and ferry berth pocket depth

8.2 In addition, the revised footprint allows for staging of the dredging as only one berth is required for the initial two LNG trains. This reduces impacts from the dredging program through delaying a portion of the dredging and reducing the maximum time of a dredging campaign.

While similar features have been included in the design for Option 1B, the approach channels have had to be widened based on results of the manoeuvring simulations (refer below). Additionally, the new Option 1B footprint does not allow for staged dredging due to the location of berths and the requirement to minimise trestle length.

Design capital dredged material volumes for the new footprints are still being calculated, but it is expected that the volume will reduce for Option 2A compared with volumes detailed in the Addendum Report of the EIS and that the difference in volume between Option 1B and 2A will be reduced.

Vessel Manoeuvrability

APLNG has conducted a navigational simulation study to assess the ease of marine access associated with option 1b and option 2a. This study was conducted in October 2009 by BMT SeaTech and is documented in the report "Navigational Simulations for APLNG Terminal, Gladstone for ConocoPhillips."

8.3

While it was possible to access berths for both option 1b and option 2a, a key finding from the study was as follows:

> "The scenarios simulated, covering a range of moderate and extreme wind and current conditions proved to be more difficult with layout Option 1B than the equivalent for layout Option 2A. This result is primarily due to the 'double bend' in the approach channel as designed for option 1B, which forces the pilot to align the ship in the channel in a non-optimum position due to the need to consider the position for the next bend and ultimately the position and vessel speed when entering the turning basin. Also of importance to this result is that the currents in proximity to the turning basin are stronger in Option 1B than the equivalent location for Option 2A."

Furthermore, a recommendation was made to alter the footprint associated with option 1b, so as to promote easier marine access for the LNG ships. The recommendation results in an increased dredge footprint as shown below:

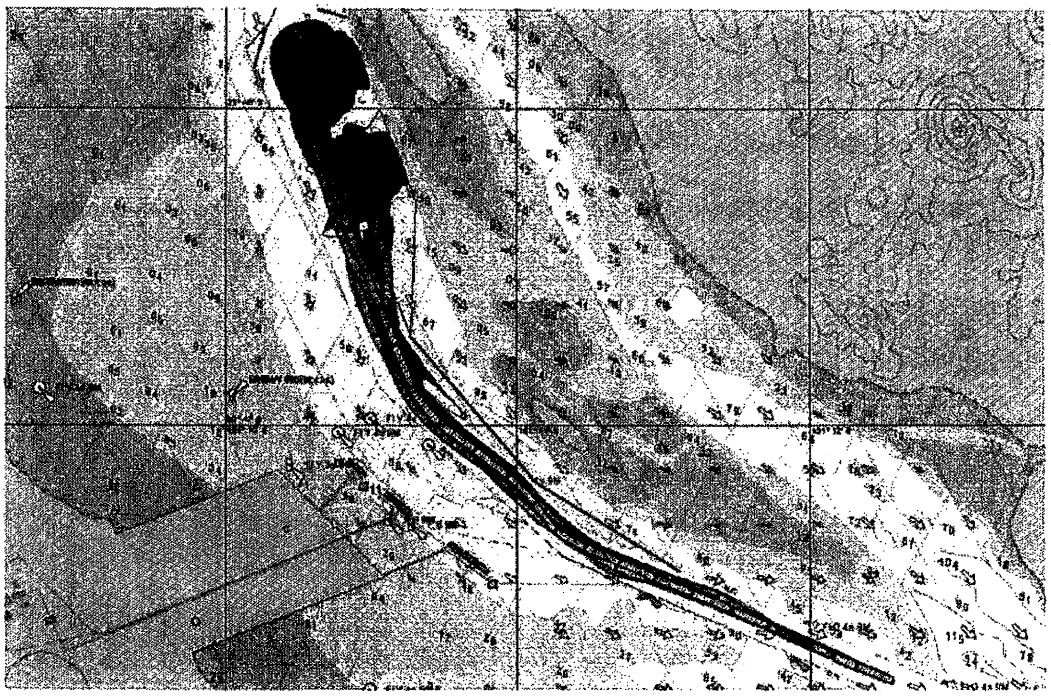

Figure 6.4: Suggested Changes to Dredging Plan for Option1B
(red lines indicate proposed modifications to dredging plan)

8.4 A copy of the study has been provided to the Gladstone Regional Harbourmaster and the results have been discussed. Given that marine access is "easier" for option 2a than for option 1b, the overall risk of interference with the facility is lower and therefore, option 2a should be preferred.

Stakeholder Impacts

Potential impacts to harbour access resulting from the operation of the LNG facility at Laird Point were briefly discussed in the Western Basin EIS Addendum Report. Operational access issues for LNG facilities is essentially outside of the scope of the Western Basin EIS, but this issue will be detailed in the Australia Pacific LNG's Environmental Impact Statement for its CSG to LNG project will project. However, it is important to note that this is a key consideration in the selection of marine facility location for the LNG plant. Importantly, Option 1B will restrict access to Graham Creek and The 8.4 Narrows via the passage between Curtis Island and North Passage Island. This is due to the LNG loading pipe trestle that will extend from the Laird Point site to the loading berths on the southern side of North Passage Island. Access will be restricted for safety and security concerns. Additionally, access by tall boats / yachts will be physically constrained. Access via this passage is not however restricted in the case of Option 2A, even while an LNG ship is loading at berth.

Other Environmental Impacts

85 Option 1B requires a longer trestle than Option 2A; hence, the associated environmental impacts from pile driving are greater. North Passage Island will be directly impacted for Option 1B as the trestle extends over it to the berths and the existing mangroves in that location will need to be disturbed.

APLNG appreciates your acceptance of this submission.

Should you wish to discuss any of the issues raised in this submission please contact me on 3858 0281.

Yours sincerely,

Richard A. D'Ardenne, PE PMP
Deputy Project Manager
Australia Pacific LNG

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18 December 2009

Mr Colin Jensen
Coordinator-General
Department of Infrastructure and Planning
PO Box 15009
Brisbane City East QLD 4002

Attention: EIS Project Manager
Western Basin Dredging Project
Significant Projects Coordinator

Colin
Dear Mr Jensen

Western Basin Dredging and Disposal Project

GLNG welcomes the opportunity to comment on the Gladstone Port Authority's Environmental Impact Statement.

The proposed dredging project that is the subject of the Western Basin Dredging and Disposal Project is a critical foundation step for the Queensland LNG industry. Without appropriate shipping access this Industry will fail to commence, removing the potential for a substantial export and job creation opportunity.

9.1 An integrated solution for all industry has the potential to reduce the environmental impact of a multitude of smaller individual facilities, and also ensure the construction time and its associated impacts are minimised.

I commend this project to you as a well designed and integrated facility that will provide an important and necessary service to the port users of Gladstone and enable our Project to proceed.

Thank you for the opportunity to comment on this EIS. Should you require any further information please do not hesitate to contact Mr Steve Schoemaker of this office on 3838 3528.

Yours sincerely

James Purtill
Manager Community & Environment

Santos | PETRONAS

QER Pty Ltd
ABN 48 072 908 966

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18 December 2009

The Coordinator-General
c/-EIS Project Manager: Western Basin Dredging Project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009 City East Qld 4002

By Email: wbdp@dip.qld.gov.au

Submission: Gladstone Ports Corporation (GPC) Environmental Impact Statement (EIS) for the Western Basin Dredging and Disposal Project

This submission is made in response to the Environmental Impact Statement (EIS) as issued by the Coordinator-General for Gladstone Ports Corporation's proposed Western Basin Dredging and Disposal Project (WBDP). This submission addresses issues for the proposed development and the proposed haul route corridor across and adjacent to the Stuart oil shale deposit.

GPC's WBDP project disposal area traverses the State's oil shale deposit under tenements EPM3215, MDL 225, MDL 177, ML(A) 80081 and ML 80003 (Stuart oil shale deposit) held by Queensland Energy Resources Limited and its related entities (QER).

QER is presently developing the mining and process technology to secure the economic and sustainable development of new fuels for Australia, based on the Stuart oil shale deposit commencing with QER's technology demonstration plant at QER's new fuels development centre at Yarwun.

QER is looking to develop the State's oil shale deposit within the Stuart area and potentially within the WBDP project disposal area proposed by GPC.

10.1

The WBDP EIS identifies that there could be a potential impact on the State's oil shale deposit and the impact on the Stuart Oil Shale deposit as identified in Chapter 1, being triggered under both the *Mineral Resources Act 1989* and the *Petroleum and Gas (Production and Safety) Act 2004*. Chapter 2 further identifies that "the proposed development has to be assessed against the outcomes of SPP2/07." The EIS again briefly discusses the impact on QER's the Stuart Oil Shale deposit in Chapter 5, noting that the WBDP impacts and overlaps the proposed development site of the Stuart Oil Shale Project.

Notwithstanding that the WBDP project overlies QER's MDL 225 and EPM3215, which has been granted and renewed to 31 December 2013; there is no discussion as to any implications of the WBDP project under the *Mineral Resources Act 1989,* other to state that "*On advice from DEEDI, DERM will detail the prescribed process to determine the impact of the*

development on the future use of the oil shale deposit as a strategic resource to assist the Minister in deciding the proposed development."

Consequently QER considers the potential sterilisation of the underlying oil shale as material to the strategic resource development economics and strongly requests that the Coordinator-General and relevant Ministers considering the WBDP project preserve the potential to develop the Stuart Oil Shale resources notwithstanding the development of the WBDP disposal area.

Consequently QER believes that no supplementary EIS work is required in relation to the Stuart oil shale deposit provided that the resource underlying the WBDP disposal area is not inadvertently extinguished through the approval and development of this important project.

QER is strongly supportive of GPC endeavours to develop the WBDP project and will be a customer of GPC's Fisherman's Landing facility, abutting the WBDP. To this end QER is actively engaged with GPC in progressing the preferred WBDP haul route 3, and notes that although this haul route is described in the WBDP EIS, the assessment and approval for the haul rote will be subject to a separate process.

QER suggests that the Coordinator-General considers a conditional requirement on GPC, in the approval of this important project, that GPC consult with QER during the construction of the WBDP project given the proximity of each projects development.

Should there be any requirement to follow up on this submission QER requests that contact be made with Richard Seton, Manager Infrastructure on 07 3222 0610 in the first instance.

Yours faithfully

Pearce Bowman
Chief Executive Officer, QER Group

CC: Mr Gary Carter, Port Infrastructure Planning Manager, Gladstone Ports Corporation Ltd
Mr Dan Hunt, Associate Director-General, Queensland Mines and Energy
Mr Donn Berghofer, Executive Director, Department of Infrastructure and Planning

11.

Fitzroy Basin Association
PO Box 139
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Ph: 07 4999 2800
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FITZROY BASIN ASSOCIATION

18th December 2009

The Coordinator-General
C/- EIS Project Manager – Western Basin Dredging project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
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wbdp@dip.qld.gov.au

Dear Sir/Madam,

Re: Western Basin Dredging Project – submission and comment on the Environmental Impact Statement

Thank you for the opportunity to comment on the Environmental Impact Statement (EIS) for the above mentioned project. Please find attached our submission.

The Fitzroy Basin Association (FBA) is a community-based organisation committed to long term sustainable regional development, and values healthy ecosystems, a strong regional economy, and prosperous communities. FBA's members represent a broad cross section of the community including representatives from sectors of mining, conservation, education, research, Landcare, and agriculture as well as representatives from Indigenous groups, and local and Queensland Government agencies.

FBA and the regional community have developed a regional natural resource management plan, *Central Queensland Strategy for Sustainability – 2004 and Beyond* (*CQSS2*). The plan has been accredited through four ministers by the Queensland and Australian Governments. In partnership with the regional community and other stakeholders, FBA has invested over $36 million of Australian and Queensland government program funds in meeting CQSS2's targets for condition of our natural assets.

In the process of implementing the *CQSS2*, FBA has invested in studies of our natural resources to improve management in a focussed and informed manner. These studies include assessment of

salinity risk, water quality, and ground cover, various studies on biodiversity, and investment in improved modelling to project impact of management actions. These studies can be made available to the consultants/project proponents on request.

As the Western Basin Dredging Project is likely to affect the condition of regional assets and therefore also impinge on meeting targets within the plan, we request that the EIS include consideration of impacts (negation or delivery) on *CQSS2* targets and that the likely effect documented in the EIS.

Our concerns and comments relate to the following impacts or issues that are likely to result from the Project:

- Impacts to marine water quality in the project area, The Narrows and the broader Port Curtis region, as a result of the proposed dredging and reclamation works;
- Impacts upon marine and terrestrial vegetation communities, flora and fauna – including dugong, dolphins, turtles, seagrass and mangrove communities –particularly those that are Endangered, Vulnerable or Threatened;
- Providing adequate offsets for areas of high ecological significance;
- Impacts to migratory bird species who utilise the coastal areas of proposed dredge spoil dumping and reclamation;
- Impacts on Wetlands of National Significance, the Great Barrier Reef Marine Park (GBRMP) and GBRMP Habitat Zone from proposed dredging and reclamation works;
- Impacts to water quality, marine flora and fauna from the disturbance of Acid Sulfate Soils through the proposed dredging and disposal works;
- Cumulative impacts on land use, marine water quality and sediment, coastal processes and nature conservation; and
- How the Project addresses or negates the protection of assets and delivery of targets in the *CQSS2*.

Further to our comments, FBA would like to provide support for the comments and submission made from the Capricorn Conservation Council (CCC) on the Western Basin Dredging Project. CCC have provided a comprehensive assessment on Chapters 1, 2, 4, 8, 9, 17, 18, 19 and 20 of the EIS, and we support and agree with their comments and conclusions. This also includes the comments provided by Allan Briggs regarding the migratory shore birds.

A copy of the *CQSS2* and *"Assigning Local Water Quality Trigger Values to Coastal and Marine Assets" (van Nunen, Johnston, & Westley 2008)* are available for download on the FBA website at www.fba.org.au. If you have any questions regarding our comments, please contact Chantelle James on 4999 2814 or 4999 2800 or Chantelle.James@fba.org.au .

Yours faithfully

S Christens

Suzie Christensen
Chief Executive Officer

Submission on the environmental impact statement for the Western Basin Dredging project

Name: Suzie Christensen, CEO
Chantelle James
Shane Westley
Shannon van Nunen

11

Organisation (if applicable): Fitzroy Basin Association Inc.

Address: Level 4, 34 East St,
Po Box 139
ROCKHAMPTON, QLD 4700

Contact details: (07) 4999 2800 – Main office number
(07) 49992814 – Chantelle James

Section	Describe the issue	Suggested solution
All sections 11.1	No reference in the EIS as to how regional NRM targets (Resource Condition Targets Management Action Targets and Actions) of the Central Queensland Strategy for Sustainability (CQSS2) will be addressed, delivered or impacted upon (i.e. if there will be any negative impacts to the achievement of NRM targets) as a result of the proposed activities of the Western Basin dredging project.	Address relevant sections of the CQSS2 and identify the relevant targets that will be implemented or negated as a result of the Western Basin Dredging project, especially the following sections: 3.4.1 Sustainable landscapes 3.4.5 Climate change 3.4.6 Air quality 3.4.8 Acid Sulfate Soils 3.5.2 Conserving species 3.5.3 Coasts and estuaries 3.5.4 Marine, reef and island habitat 3.6 Water 3.7 Cultural Heritage and Native Title 3.8 Economy 3.9 Social
Ch 1 page 28 to 29	No statement of how many hectares or species of sea grass to be lost.	Please state how many hectares and the species of sea grass beds to be lost by the project proposal.
1.6.4 11.2	This sub-section titled *'influence of project on demand for natural resources'* makes comment that *'the development of the LNG industry within the port will help provide for a worldwide demand for a new energy*	Provide a new statement that identifies the gas as a fossil fuel. Address how the port will also be providing for a net increase of coal export and the demand for the utilisation and consumption of coal in the world.

	is flawed because gas is also a fossil fuel. Furthermore, the port will be increasing its export of coal to the world, which is increasing the reliance of world upon coal.	with the expansion and how many tonnes of carbon emissions this equates to once it is 'burnt'.
1.7.4 11.3	Statement that potential impacts upon the adjacent mangrove and saltpan areas were considered in the options for location and design of the reclamation area, however the potential impacts on seagrass beds are not mentioned or considered for location and design.	Consider and include the potential impacts to the seagrass beds in the location and design of the reclamation area.
Figure 1-6 11.4	Whilst this figure and the listing of the disadvantages and advantages of each option is very useful, the sub-figures or maps for each option fail to include environmental values and assets of the marine environment that will be impacted by the proposal. Reference is made to an 'environmentally sensitive area to the north' however there is no description of what or why this area is sensitive, nor is it drawn on the maps.	Reproduce the figure, with full page maps for each of the 5 options and include the environmental values of the area; mangrove, seagrass and saltpan communities and their extent and any other relevant values. Also denote the 'environmentally sensitive area' on each map and describe what it is that is sensitive. Provide real hectare values of the impacts to and loss of marine and terrestrial communities, particularly seagrass beds, for each of the 5 options.
Ch 5.2.2 11.5	Change of land use to 'potential industrial land' will prevent current uses – marine habitat, recreational and commercial fishing. The ability of these uses to occur in areas directly adjacent to the WBRA (Western Basin Reclamation Area) may also be reduced. Preventing these uses on reclamation is a given if project progresses as described in this EIS however information is vague with respect uses for marine habitat, recreational and professional fishing adjacent to WBRA. States that adjacent areas may also be reduced – what does this mean?	Clarify extent to which adjacent areas will be restricted for recreational and professional fishing or any other activities that may be effected.
Ch 5.2.2 11.5	Also stated that dredging activities may impact on recreational uses in the area, this impact will be transient – what does this mean? How long and why will these activities be effected?	Clarify why recreational or any other activities will be restricted and for how long.
Figure 5-4 11.6	Figure 5-4 shows 2 fault lines east and west of the proposed WBRA and one fault line intersecting the proposed reclamation area.	Clarify and describe the mitigation steps to be undertaken by GPC for slumping and damage to WBRA resulting in an effect on water quality from a potential seismic event.
Ch 5.4.2 11.7	A stormwater drainage system will be constructed on the final reclamation area which will direct runoff and discharge stormwater from the area. This will reduce soil erosion from water. What about during construction? What measures will be undertaken to stop	Describe mitigation for erosion of reclamation area while under construction and detail how quality of stormwater leaving the site will have sediment reduced/removed.

Ch 5.5.1 11.8	Methodology for Acid Sulfate Soils Analysis – Methodology used for this EIS was a pilot study resulting in decreased number of samples as specified by a draft SAP (GPC). Given that this dredging is a significant project on the boundary of a World Herritage area and the potential for effects of ASS may be of concern then should the SAP support full range of sampling as set out in the National Assessment Guidelines for Dredging (NAGD)?	Undertake full range of sampling and analysis as outlined in the national guidelines (NACD)
Ch 5.5.1 11.9	Sampling did not include any portion of Fishermans landing reclamation area – given that there may be some disturbance of this area as a result of the adjacent reclamation being an extension then some survey work should be included in EIS to ensure risk of ASS exposure is properly managed	Undertake ASS sampling and analysis of adjacent areas to understand extent and potential for disturbance of ASS. Provide information on mitigation should ASS occur directly on boundary of reclamation footprint
Ch 5.5.3 11.9	Dredging Activities have a risk of redistributing PASS material as a result of dredge overflow. There is a lack of mitigation information for management of this known issue	Provide detailed information on how this issue will be mitigated during dredging operation
6.8.2 to 6.8.8 11.10	Separating of dredging activities (i.e. 1-4) is important to get thorough information but a cumulative result should also be modelled to make results more meaningful. Cumulative water quality impacts are more important than ever to demonstrate.	Calculating results from hydrodynamic model to demonstrate cumulative impact/levels to water quality parameters.
Ch 7 11.11	Capital and maintenance dredging to be undertaken over several years will have a drastic effect on areas of High Ecological Significance as turbidity and potential contaminating materials including effects from ASS are delivered into the aquatic environment as a result of this project being allowed to progress. Close proximity to World Heritage valued assets such as the GBR & GBRMP & GBRCMP & Fish Habitat Areas & Dugong Protection Areas at Rodds bay will be effected particularly in the Narrows and Graham Creek areas but also to the mouth of the Fitzroy and potentially beyond Government is on the one hand advocating sustainable use of natural resources and bargaining for a reversal in water Quality decline while on the other hand allowing activities that cause irreversible damage to the natural ecosystems	Provide detailed information about how this project contributes to the goals of the Reef Water Quality Protection Plan 2009 for the Great Barrier Reef World Heritage Area and adjacent Catchments
Ch 7 11.12	There is the option to pump from the TSHDs directly into the reclamation area instead of bottom dumping at rehandling site. This will reduce TSS levels and a significant reduction in turbidity resulting in least impact on seagrass beds	This should not be an option but rather mandatory if it reduces turbidity during the dredging operation. All TSHD dredging to be pumped into the reclamation where possible.
Ch 7.1 11.13	Turbidity guidelines are set at 6 NTU and 20 NTU respectively for the QWQG and ANZECC. Page 7-33 states the baseline median result for surrounding receiving waters is 9 NTU therefore why has the adjacent decant receiving [illegible]	Ensure required number of decant cells to produce decant/effluent with turbidity discharge value of <20 NTU entering the receiving waters.

	objective should be to deliver water of similar quality back into the environment	
Ch 7.1 11.13	Sampling and analysis of decant water is at the adjacent receiving waters. There is no indication how far from the decant delivery source therefore depending on where sample is taken may get a lower than reality result	Sample decant water at point of decant delivery source (discharge) to ensure accuracy of receiving water turbidity (<20 NTU)
Ch 7, page 47 11.14	This project will directly and indirectly disturb a significant percentage of sea bed within this wetland. The effects it will cause are not appropriately described and should never be described as "minor predicted changes" as this is highly subjective.	Removal of this sentence from the EIS or revision of the language used. Provide evidence as to how the subjective statement was concluded. i.e. what are the scientific results and evidence that support and provide reason to conclude and predict 'minor' changes?
Ch 7 11.15 Table 7-24 Table 7-31	Risk assessment – some impacts and consequences listed are not risks as they will occur therefore rating is irrelevant. Residual risk should increase if no additional control strategy this is not reflected in table	Revisit risk assessment and provide realistic risk assessment information
Ch 7, page 75 11.16	There is an inconsistency when discussing the projects effect on turbidity. The area is described as a 'well mixed body of water' yet on page 75 it mentions turbidity will mostly affect deep channels.	Removal of sentence or revision of language used. Clarify the projects net effect on turbidity in the project area.
Ch 7, page 77 Table 7-25 11.17	Difficulty experienced using document to compare findings against the allocated/stipulated guideline values.	Revise table layout to make more user friendly and easy to interpret.
Ch 7, page 93 11.18	Intention to monitor 'natural' levels of manganese. Is this a case of monitoring for monitoring sakes?	Review purpose of monitoring of this element or explain its importance better in the document.
Ch 7, page 95 11.19	PAH and PCB testing - discrepancy in sample results	Perform testing again on samples to gain accurate results
Ch 7, page 97 11.20	There is a concern about resuspending contaminants in the project area and the effects on ecological processes.	Rather than just following NAGD perhaps showing greater commitment to prevention of environmental damage by including this in the monitoring of the project site and surrounds.
Ch 7, page 98 11.21	There is a fundamental contamination that occurs by building a bund wall out of quarry overburden material in an aquatic environment.	Identify this fundamental contamination in the EIS. This material was not a direct part of the wetland system and will impact upon ecological processers.
Ch 7.3.2 11.22	Scouring at the northern end corner of the reclamation would appear to be a risk	Risk assessment for this issue needs to be undertaken and mitigation decided in case of bund wall collapse
Ch 7, page 118, Figure 7-31 11.23	There is a concern for seagrass adjacent to reclamation area (particularly in the north). The new construction will drastically alter the wave climate especially in extreme events. Climate change is predicted to result in larger extreme events which would cause greater sedimentation events periodically and this structure would prevent natural processes causing isolated areas being severely affected.	Identify this issue in the EIS and provide solid explanation as to why the walls angles were selected to reduce the impact on natural ecological processes of this area.
Ch 7, page 125, Figures 7-36 & 7-41 11.24	Post constructing the model suggests a significant increase in velocity around Hamilton Point (on SW corner of Curtis Island). Therefore, an increase in bed shear pressure would resuspend and transport sediments with potential flow	Identify this as an issue in the EIS and provide a mitigation strategy.

Ch 7, page 133 & 134, Figures 7-43 & 7-42	The model suggests there will be a significant change in the deposition regime of the area. This issue has potential to stress current seagrass beds which would then have flow on effects and significant changes in bathymetry.	Identify this as an issue in the EIS and provide a mitigation strategy.
Ch 8, page 6, Figure 8-2 11.25	There is a concern with the change in stormwater flow. This could potentially increase the erosion of mangrove habitat in storm events. The western bund wall could also increase sedimentation rates during ambient conditions. These two influences will alter the community's structure by favouring some species and not others.	Identify this as an issue in the EIS and provide include as a reason to monitor the mangrove community in the EMP.
Ch 8, page 11	An increase in groundwater could expose vegetation communities to higher levels of salt stored in the old marine exposed soils.	Identify this as an issue in the EIS and provide a mitigation strategy that includes offsetting of the affected community.
Ch 9 Table 9-8	Risk assessment – some impacts and consequences listed are not risks as they will occur therefore rating should be high/red.	Revisit risk assessment and provide realistic risk assessment information
Ch 9, page 101 11.26	The sentence justifying the loss of seagrass as minimal because there are similar communities across the entire Fitzroy region of differing sizes and composition. This sentence is using a scale that is not relevant to the project area. These communities are not directly affected by one another. Removal of 11.2% of seagrass from Gladstone Port area is very significant and is the scale this should be discussed at.	Provide more local Removal of sentence or revision of language used.
Ch 9, page 113 11.27	"Positive benefit" should not be in a risk analysis if there is not risk. Poor analysis of ecological processes within the marine environment. Altering an existing system and then describing the changes as a benefit is a misguided view. This project will require maintenance dredging every 3-4 year (or less as has happened many times before) constantly disturbing any species that settle in the new channels. This will favour shorter life cycle species often providing a monoculture with poor biodiversity values compared to those that form and sustain themselves naturally.	Removal of item from table.
Ch 9 & Other sections throughout EIS 11.28	Continual reference to offsets for removal of significant habitat without detailed information about types and area of offsets. Also lack of understanding of full effects of habitat removal and specific requirements to be able to offset. Reference to offsets against Queensland policy however no detail or demonstration of policy understanding	Provide detailed stand alone section in EIS describing proponents commitment to offsets and how they satisfy requirements of existing habitat values that will be lost as a result of project. Describe how offsets will satisfy Queensland policy for offsets.
Ch 9.2.2 11.29	The Gladstone area including the proposed project area is within a wetland of National significance (Port Curtis Wetland – QLD019) and adjacent to the Narrows wetland of National significance (QLD 021). This area is also covered by international treaties such as CAMBA & JAMBA for migratory shorebirds. There is mention in this EIS that the proposed project area is not significant for	Provide a detailed evaluation against the criteria for the Directory of Important Wetlands (DIWA) and CAMBA & JAMBA treaties

Ch 9.4.3 11.30	Describes that there will be impacts to marine species and biodiversity (however detailed extent of impacts is not discussed) The conclusion as stated by the proponent is that there will be loss of habitat, food resource, local species and use by transient species	Negate impact
Appendix R 5.2 11.31	Rodds Bay Dugong reserve of 512 km2 will have a minimum of 3 km2 of seagrass habitat removed which will impact on dugong food resources	Provide detail in EIS on seagrass to be removed as a percentage of same seagrass species found in the region and available for dugong requirements. Detail proposed offsets to mitigate impact.
Appendix R 11.32	Boat surveys over several months at one per month. Arial surveys of 6 days in a 3 month period would suggest that the Mega Fauna Survey undertaken may grossly under estimate the numbers of maga fauna utilising the area	Undertake and provide long term survey information
Ch 10.4 11.33	Refer above for pile driving for beacons – there is no mention under this section 10.4 (vibration) for mitigation of vibration effects. This section should also include soft start procedure for pile driving as a mandatory procedure	As Above Change all sections of EIS to read that soft start during pile driving is mandatory and that process to be undertaken during low tide
Ch 10, page 19 & 20 11.34	The migratory bird feeding area will be exposed to noise >30Db during daytime while feeding exposed tidal areas.	Identify this as an issue in the EIS and provide a mitigation strategy including avoidance of noisy activities during low tide (bird feeding) times.
Ch 10, page 19 11.35	What is the "natural" underwater noise for this area?	Removal of sentence or revision of language used.
Ch 14 11.36	This section of the EIS states there is no current established methodology for landscape and visual impact. The Queensland draft coastal plan 2009 released prior to this EIS contains a section including detailed methodology for determining visual and landscape impacts as a result of development	Develop an assessment of visual and landscape impact as determined by the draft Queensland coastal protection plan 2009
Ch 14, page 17 11.37	There was no mention of significant increase in vessel traffic.	Identify this as an issue in the EIS and provide a mitigation strategy that includes 'go-slow' areas to reduce the possibility of boat strikes.
11.38 Ch 19, page 18 & 19, Table 19-11	Disturbance to migratory shorebirds during feeding times from construction activities not mentioned.	Identify this as an issue in the EIS and provide a mitigation strategy.
Ch 19, page 28 11.39	For the pile driving risk assessment words such as "small" should not be used when the derived risk level says that it is "High". This contradiction wouldn't happen if the author allowed the risk matrixes results speak for themselves.	Removal of sentence or revision of language used.
Ch 19, page 31 11.40	"Creation of interstitial habitat". Please read comments for 9, page 113 above.	Removal of item from table.
Ch 19, page 33 11.40	"Creation of interstitial habitat". Please read comments for 9, page 113 above.	Removal of item from table.
Ch 19, page 32 & 29 11.41	Vibration and noise. During and after project completion there will be a significant increase in traffic noise and in more of the surrounding area than ever before. This means that areas that may have been used by mega fauna as	Identify this as an issue in the EIS and provide a mitigation strategy including monitoring of mega fauna surveys to determine changes in habits and abundance throughout area

	refuge are now exposed to more stressors.	
Ch 20 11.42	There is a mention of monitoring but not when, where or how.	To show GPC's commitment to monitoring the 10 loggers mentioned in the EIS should be reinstalled in the same location (to allow accurate comparison to baseline information gathered) and maintained during and after completion of work to provide invaluable information of water quality parameter concentrations. This would also provide excellent and accurate information for adaptive management if certain parameters exceed water quality guidelines.
Appendix L & Ch 5 & Ch7 & Adendum 11.43	If full range of sampling is not to be undertaken – has the Draft SAP (GPC) that describes the reduced sampling regime been accepted and approved by government agencies for implementation?	Provide sampling and sediment analysis information as outlined in an approved SAP
Executive Summary EIS Addendum 11.44	Accumulative dredging extended to 16 months – this will have additional impact on state of the environment particularly water quality, effects on habitat such as seagrass and also recreational activities such as boating	Provide modelling for predicted impacts and resulting mitigation measures to be undertaken to lessen impacts particularly for dredging plume from additional dredging.
Ch 2 2.3.2 2.3.3 11.45	Methods used for dredging particularly double handling of dredged material by bottom dumping and then picking up off sea floor for CSD pumping into reclamation area appears to be inefficient and will cause resuspension of dredged material resulting in high levels of turbidity	Remove the need to bottom dump dredged material
Ch 19 11.45	EMP needs to reflect issues raised in this submission and outline proposed mitigation strategies	Include issues from submission that will impact on EMP
Ch 19 11.45	Additional control strategies as outlined in the risk assessment are inadequate in some instances and need more detail	Revisit risk assessment and thoroughly detail control strategies and how they will mitigate issues

CH19	EMP inadequate many issues addressed do not have mitigation strategies. Statements such as monitoring to be carried out and management plans then developed is inadequate to address potential issues	Revisit EMP and ensure real and controllable management strategies are developed and in place prior to progress of project

Signatures:

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Submissions must be received by **5 pm on Friday 18th December 2009** and be addressed to:

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This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3224 5004.

Submission on the environmental impact statement for the Western Basin Dredging project

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Section	Describe the issue	Suggested solution
Chapter 1: Introduction		
1.7.3 Table 1.4 12.1	**Alternatives for disposal of dredged material** The unsuitability of alternative dumping sites does not make the Western Basin area any more suitable. The assessment rationale used in Table 1.4 is based on false logic. Terrestrial dumping sites within the GSDA (an area of 28,000ha) could be found, negating the need to destroy a vibrant marine area; it's a matter of values – economic versus environment. Assessment contained in the *Western Basin Master Plan* (GPC 2009, p.28) reinforces this point: *'... an area suitable for the deposition of dredge materials was not available without using multiple sites. However multiple sites would increase the cost of spoil disposal...'*	Reconsider terrestrial (mainland) dumping sites within the GSDA.
1.10.5 Table 1.8 12.2	**Local government planning controls, local laws and policies** CCC questions the relevance of this assessment table. The reclamation area is not within Gladstone State Development Area (GSDA) boundaries. Therefore these comments are not relevant, no matter how consistent they are with GSDA objectives.	Delete this table as it is a misleading evaluation.
1.3 12.3	**Project Description** The EIS in key areas (such as ss. 1.3, 2.1.1, 9.4.3, 19.1.3) lacks acknowledgement of the fact that the harbour is not a natural deep-water port and that continual dredging maintains its depth. Tables containing large amounts of quantitative data from hydrodynamic and bathymetric modelling do not convey this in understandable terms to the public. Even the dumping site is extremely shallow	Communicate this more openly to the public to correct the misconception that Gladstone is a deep water harbour.

	dredge spoil, on that basis alone it is not a sound choice for a disposal site. (NB. This fact was more openly conveyed in the GPC's *Western Basin Master Plan*.)	
Chapter 2: Description of the Project		
2.1.1 / 2.1.3 / 2.3.4 12.4	**Key project components & environmental design features of the reclamation area** The EIS gives little relational detail about the intended topography of the Reclamation Area with issues such as slope, runoff, erosion, capping, decant ponds, high water content, stabilising structures, and vegetation. In Section 2.1.3 *'a mound of material on the landward side of the reclamation'* is mentioned. The 'mound's dimensions are ~2km X 4km and 70 metres in height. The term 'mound' is misleading and downplays its substantial size. In CCC communications with GPC, staff have indicated a 'hill' will be constructed from the dredge spoil.	Review the terminology used to communicate the topography of the Reclamation Area. CCC suggests the use of the term 'hill' is more in line with the intended dimensions.
---	**Reclamation Area** The term 'reclamation' implies this area will be reclaimed and used in some industrial form in the future. This is not GPC's intention. It is a dumping area for dredge spoil and terminology should reflect this.	Change the terminology to reflect the nature of land use.
2.3.3 12.5	**Proposed Dredging Methods** GPC's intention to double-dump dredge material when discharging from the Trailing Suction Hopper Dredgers (TSHD's) is a concern, especially when a single-handling option is given. Bottom-dumping the dredge discharge first, to be followed by another pickup for CSD pumping into the reclamation area, not only seems inefficient and more costly but increases the risk of mobilising sediment plumes in a sensitive marine environment.	Pump discharge straight into the Reclamation Area and reduce risk – use single-handling option whenever possible.
2.3.3	**Proposed Dredging Methods** Overflowing the hopper with dredge material may increase carrying capacity and improve cost and time efficiencies, but the risk of turbid water impacting marine species and water quality is very high. At peak operation there will be four dredgers working together and the risk increases exponentially with each added dredger. The EIS states that reducing the hopper volume in order to manage the release of any turbid overflow *'can be considered'*. This is not convincing and the reality	Given the high marine values in Gladstone Harbour, the non-overflow mode should be TSHD's preferred standard of operation.

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	reinforced by the EIS which states that the *'non-overflow mode reduces the efficiency of the dredging operation'*. Economic efficiency needs to be balanced with the ecological functioning of systems being impacted by dredging and sediment; and it clearly is not.	
2.3.4 12,6	**Proposed Reclamation Area Design and Bund Wall Construction Method** The retention of a mangrove intertidal channel along the rear of the Reclamation Area is noted. Its stated objective being to allow the maintenance of mangroves and to assist with overland flows. But its capacity to be maintained is questionable as the large raised reclamation mound will significantly impede tidal movements and flushing of stormwater contaminants. The stated width of this channel *'may be approximately 40 m'* – hardly convincing language.	CCC suggests the width of the intertidal channel to the rear of the Reclamation Area be increased if GPC is serious about maintaining the mangrove communities in that location. Minimum flow to the mangrove area should be guaranteed by the proponents.
Chapter 4: Climate and Climate Change		
4.1.1 12,7	**Current and historical climate for the Gladstone region** The EIS states that no data is available for temperature inversions in the Gladstone area. This is a concern because inversions from cooler onshore flows (and Highs) can lead to industrial pollutants becoming trapped close to the Earth's surface. The document, *Public Summary Report: Air dispersion modelling and health risk assessment study for the Queensland Alumina Ltd Gladstone Refinery* (Pacific Air & Environment, 2009, p.11) states, *'During winter, anticyclones linger over Gladstone, producing clear skies and light winds – conditions which lead to strong surface temperature inversions. These conditions generally bring about poor dispersion and higher pollution concentrations.'* Therefore further analysis is needed, and while the project is unlikely to contribute significantly to the Gladstone 'airshed', it supports the development of industry that will.	Undertake the collection of localised temperature inversion data to ascertain frequency and severity (this should be part of the project's Cumulative Impact Assessment).
4.1.2 12,8	**Extreme weather events** **Floods:** A couple of 'minor' overland flow paths exist in the project area and although their catchments are small, these will be remediated near the project area. Hence flow regimes may be different and/or greater than anticipated. Climate change will increase the number of extreme weather events. Two catchments (5 and 6) have discharge anomalies. It is stated that the mangrove fringe around Fisherman's Landing will serve to	Consider if the modified nature of the overland flow paths within the project area will adequately drain during episodes of high and sustained rainfall. Increase the 40m width and drainage pattern of the mangrove fringe to dissipate

	dissipate any overland flow, however this is at best a 40m wide channel with indirect access to the harbour. Depending on tides, this narrow tidal channel may back-up into Boat Creek and other minor creeks during floods. **Storm tides (Figure 4-7):** This figure only allows for the impact of storm surge and tidal height during cyclonic events. It does not take into account cyclonic wave setup (which appears separately in Figure 3-6, Appendix M). It is difficult to assess the full impact if all three interrelated components are not modelled together. Storm surge incidents are expected to increase with climate change and these may breach bund walls in rare situations (noted in Section 4.2.4 as *'in exceptional circumstances or not in the next 25 years'*). At these times, contamination from pond inundation and overflows, leaks, and erosion to the Reclamation Area would be significant. (Level of impact would also depend on the type of industry placed in this area.)	Combine modelling for storm surge, tide and wave setup to ascertain the full extent of intensity and impact.
12.8		
4.2.2 12.9	**Summary of climate change projections for the Gladstone region:** There is loud criticism by climatologists and scientific bodies (eg. NCAR), of the continued usage of the outdated 2001 SRES climate scenarios. The 18 models used as a platform by the IPCC for its climate recommendations in the AR4 are now very deficient. However this EIS does go some way in recognising the fact that CO_2 levels, temperature and sea level rise are already tracking at the upper reach/or beyond the SRES scenario projections, and predictions based on the A1FI (worst case, 'fossil intensive') are more likely.	Modelling should only use the A1FI scenario until the release of updated climate data.
4.2.4	**Assessing the level of risk from potential impacts:** Because the IPCC's AR5 is not due until 2014 with updated climate data, does the GPC's risk matrix and interpretational methodology similarly acknowledge the tracking of key climate indicators in the upper extremes?	
Chapter 5: Land		
5.2.2 12.10	**Potential Impacts and mitigation measures** Apparent contradiction of the function of land uses (marine habitat, recreational/commercial fishing) in the adjacent areas. It is stated that they will be reduced, so how can they be then termed 'compatible' with port facilities?	Explain how land uses will be reduced, particularly for recreational and commercial fishing and how port facilities will impact their function.

Figure 5-4 12.11	Geology of the Western Basin Reclamation Area One fault line in the Western Basin is described as 'major' with increased seismic velocities. Does this mean there is the potential for seismic activity in this area? If so, the EIS does not consider any mitigation measures.	Convey to the public the potential for seismic activity in the harbour and Reclamation Area and any mitigation measures necessary if an event should occur.
Chapter 7: Coastal Environment		
7.1 12.12	There is no consideration of the impacts of floods on the water quality in the channel. The EIS mentions that the flow is x in Chapter 6 but that this does not consider flood events – these should be incorporated into the impact assessments and mitigated against – i.e. no dredging during floods and later; water quality to be monitored during flood events. CCC also has concerns about the distribution of sediment plumes north of the Gladstone area. The models do not extend north of the GDA and they should. The prevailing coastal winds push sediments north along the coast and there is a general sediment drift from offshore to inshore (Ozcoasts). This will cause sediment to accumulate on the northern shores of beaches along the Gladstone coast and may extend north of the GDA, possible even to the Keppels. The hydrodynamic models (chapter 6) do not go far enough in assessing the sediment flow to the coral reefs north of Gladstone. It will be too late once the dredging has been completed to find out that there is an impact on reefs in the marine park.	Possible re-assessment of dredging effects on water quality with flood events considered. Remodel sediment plumes north of the project area (i.e. Keppel Bay impacts).
Chapter 8: Water Resources		
8.1.2 12.13	**Surface water and watercourses** **Potential impacts and mitigation measures** The narrowness of the intertidal mangrove channel to the rear of Bund03 in the Reclamation Area is of concern, particularly as six catchments have been identified as carrying possible stormwater discharges to it. Also the Reclamation Area adjoining it will have significant settling, runoff and sediment risks associated with it during construction. CCC is not convinced this intertidal channel will have the ability to receive adequate daily tidal flushing. This will affect water quality and the health of the fringing mangrove community. No mention is made of Graham Creek, a major tidal estuary of high	Increase the width of the intertidal mangrove channel to allow for certainty of daily tidal flushing which will maintain water quality. Assess the dredging impacts on Graham Creek.

	environmental and recreational value adjacent to the Reclamation Area. It will be indirectly impacted from dredging works with risk of increased sedimentation and plumes.	
Figure 8-2 12.14	**Flood Model Setup** Cross-section channel lines (in fluro green) are illustrated draining past the western bund wall. Once Bund03 is constructed, no channels will exist beyond it.	Redraw channel lines to stop at Bund wall.
Table 8-10 12.15	**Summary of Potential Cumulative Impacts** This table indicates only one of four LNG pipeline routes that have the potential to impact groundwater supplies. There are four proposed pipelines that will be constructed in the Western Basin.	Update this data to reflect the cumulative impact of four Curtis Island LNG pipelines on groundwater, particularly during the construction phase.
8.2.3 12.16	**Groundwater** **Potential impacts and mitigation measures** The EIS needs to state a timeframe for the post-construction monitoring of groundwater. This should occur regularly for the duration of industries located in that area.	State groundwater monitoring timeframe.
Chapter 9: Nature Conservation		
9.1.1 12.17	**Sensitive Environmental Areas** **Description of environmental values: other important habitats** Essential habitat for koalas does occur in the study area. In saying that they would occur in 'low densities' does not justify clearance/disturbance of their known habitat (RE 11.3.29/12.3.3). Habitat destruction is the biggest factor in any species' decline.	
9.2.2 12.18	**Terrestrial flora and fauna** **Description of environmental values (flora):** Has the Qld Herbarium confirmed that the mapping of the endangered RE 12.3.3 in the study area is incorrect as stated on p. 9-21? Regarding the correct representation of RE 12.3.3 being RE 11.3.29., if 2a (refer Figure 9-6) provides a more accurate location of RE 12.3.3., the study area still has an area with significant *E. tereticornis* in open woodland. The areas of 2a and 2r in Figure 9-7 provide essential habitat for koalas so [illegible]	Questions exist over this mapping issue and CCC wants to ensure that obligations with offsets are met for all impacts to endangered RE's.

9.2.2 12.19	Terrestrial flora and fauna **Migratory and marine bird species** The following statement (p. 9-39) is quite untrue: '*While intertidal flats within the study area appear to provide suitable foraging and roosting habitat for a range of shorebirds, the Gladstone region is not recognised as an area of national or international significance for migratory shorebirds.*' It is difficult to understand where the basis for this statement has been derived. For detailed comments refer attached supporting document– Briggs, A 2009, 'Section 1: migratory shorebirds', *WBD EIS submission December 2009,* pp. 1-2.	Delete the assumption that Gladstone region does not support significant numbers of migratory shorebirds.
9.2.3 12,20	**Terrestrial flora and fauna** **Operational impacts** There is a complete lack of understanding about the feeding requirements of migratory shorebirds in the statement (p. 9-45), '*The project design includes a retention pond in the north-west corner of the footprint that is a permanent feature... this area has the potential to provide habitat for migratory shorebirds.*' They feed on aquatic marine life in intertidal areas that are subject to regular inundation by tidal flows. A retention pond that receives tailwater is likely to contain pollutants and while it may ultimately provide habitat for water birds if correctly managed, it is unlikely to provide suitable shorebird habitat. Migratory shorebirds need a natural healthy environment that is free from pollution and to suggest that a man made habitat can replace the intertidal mudflats that will be destroyed by this development is misleading. (Source: Briggs, 2009)	Remove this statement and reconsider the purpose of the retention pond with regard to avian species.
Table 9-8 12,21	**Risk Assessment for Terrestrial Flora and Fauna** CCC queries the risk assessment methodology that measures the risk of the following potential impacts in Table 9-8: • the fourth potential impact (Direct loss of habitat in the footprint of the Project...) is given as 2,5 - medium. • the fifth potential impact (Indirect degradation or change in adjacent and surrounding intertidal habitats... water quality.) is rated as 2,3 – low risk. For detailed comments please refer attached supporting document – Briggs, A 2009, 'Section 2: risk assessment and offsets', *WBD EIS Submission December 2009*, pp. 2-3.	It is not acceptable to merely say that offsets will be developed. A comprehensive description is required.

	The disturbance to shorebirds due to noise, vibration and light will occur during the construction *and* operation phases.	Add operational phase for this impact to Table 9-8.
12.22	Shorebirds are susceptible to visual disturbance caused by the movement of plant, people and vehicles. A bund wall will not screen activities from shorebirds on the intertidal mudflats.	Add a specifically-designed sound barrier at least 5m high that will act as a buffer both visually and audibly for wildlife. A dense structure will minimise the impact of vibration.
Table 9-15 12.23	**Marine Ecology Risk Assessment (Table 9-15)** **Dredging of Material:** • Removal of damage to benthos, seagrass species, algae, macrobenthos and associated taxa (p. 9-112): the 2nd control strategy states that, *'dredge activities are to be restricted to agreed footprint of channel works'* but the 3rd control strategy contradicts this by stating, *'where alteration of dredging footprint is desired....'*	Correct this apparent contradiction.
	• Water quality impacts from overflow (p. 9-115): there is no listed intention to use the non-overflow method for TSHD's as referred to in s. 2.3.3. of the EIS.	The non-overflow method for TSHD's would reduce turbid dredging plumes in the harbour and lessen impact on water quality.
	• Direct impacts by dredge plant on marine megafauna (p. 9-115): a fauna spotter will not be able to spot turtles resting on the seabed 50m ahead. The notion that if one is spotted the dredge will cease operations until it moves away is nonsensical. Turtles are going to be at high risk of impact and a genuine consolidated effort needs to be made to lessen this risk.	Improve this strategy to protect turtle species.
	Reclamation of Land: • Removal of seagrass species, algae, macrobenthos, including fish and crab species (p. 9-116): the control strategy stated here reads as offhanded disregard for the level of localised biodiversity impacted.	Reword this control strategy to improve its interpretation.
	• Removal of damage to megafauna habitats (p. 9-116): seagrass is acknowledged here as high conservation value to marine megafauna and yet it states that 'implementation of like- for-like offsets will be considered.' Offsetting should be more than a consideration. As per assessment provisions in the Fisheries Act 1994 (for loss of marine fish habitat and protected marine plants), the proponent is strongly encouraged to negotiate offsets in the local vicinity and not to offset by paying their way out.	

9.3.1 12.24	**Marine megafauna (cetaceans)** The reduced quality of dolphins' habitat in Gladstone Harbour *will* have (not *may* have) a negative impact on their numbers. And while dolphins show no clear preference for clear or turbid water, reduced water quality will impact their food sources. A recent WWF report finds dolphins are crucial 'top-down' drivers of food chain dynamics. They have slow rates of population growth and are vulnerable to rapid population decline and are keystone species for the health of coastal marine environments. (Source: Nias, RC, Lawrence, A and Mustoe, S 2009, 'Conserving Australia's unique coastal dolphins', WWF Australia). They will also impacted by stranding (noise interference), ship collisions, and contamination. **Dugong: distribution and abundance** The EIS needs to acknowledge that a more likely scenario for the 'dramatic decline' of dugong in Gladstone harbour in the 1990s was industrial growth at the port and associated dredging activities, and not just movement of the species between regions. The EIS states quite emphatically that dugong numbers decrease with the decline of seagrass areas. The correlation between this dredging project and what it will actually mean to the population of local dugongs (i.e. human-induced mortality) is not clearly expressed. Habitat conservation is critical for this species.	Incorporate their importance as top predators to the marine foodchain in the Gladstone area. Acknowledge that further industrial development will cause further decline in dugong numbers through loss of habitat Acknowledge the impact that harbour expansion and dredging had on the 'dramatic decline' in dugong numbers in Gladstone Harbour in the 1990s. Acknowledge that further industrial development will therefore cause further decline in dugong numbers through loss of habitat Explain potential for population decline of harbour dolphins in context with this dredging project.
Figure 9-11 12.25	**Distribution of Snubfin and Humpback Dolphins in Australian Waters** The same WWF study found the distribution of Humpback Dolphins occurs in several locations along the Queensland coast, including the Fitzroy River and Gladstone. These locations are described as 'important habitats'. Figure 9-11 does not show this distribution at all.	Update Figure 9-11 to incorporate the current distribution of this species (based on WWF 2009 research).
9.4.3 12.3	**Impacts on World Heritage Properties:** **Impact to habitats** In referring to the harbour, it is misleading to isolate the channels adjacent to	Explain that the harbour is not a natural deep water harbour and include the terms

	water harbour. Depth is maintained only by continual dredging and its shallowness and narrowness should be more fully stated at this juncture. **PASS** Is it likely that all the sediments within the Reclamation Area will self-neutralise?	amount of future maintenance dredging in this World Heritage area.
Chapter 17: Hazard and Risk		
Table 17-8 12.20	**Summary of Mitigation Measures Identified for High Risks** **Items 28, 29** Consideration of offsetting destroyed seagrass and mangrove habitats needs to extend to a commitment to offset. This intention should be communicated to the public.	Move from considering offsetting to committing to offsets.
Chapter 18: Sustainable Development		
18.4	**Sustainable development** (Comments relate to ESD as defined by the *National Strategy for Ecologically Sustainable Development)*. CCC believes the economic cost of choosing an alternative dumping area does not exceed the environmental, social and moral costs of dumping millions of tonnes of dredge spoil on an expansive and long-standing seagrass meadow - a food source and habitat for diverse avian and marine species? In relation to intergenerational equity – GPC's intention to offset the loss of mangrove and seagrass areas has only been communicated as a 'consideration' in this EIS. GPC should commit to offsetting in order to meet ESD objectives and to leave a positive ecological legacy for future generations while protecting biological diversity.	
18.5.3 12.21	**Conformance to the NSESD Sustainable Development Objectives** Not enough allowance is made here for importance of the ecological functioning of marine systems, and the amount that will be destroyed to advance the economy of Gladstone and the state. Any developer can justify their position but the environment cannot. This is purely an economic exercise and the environment bears the brunt of its substantial impacts. Objective 2: How does this EIS consider future protection and the enhancement	Improve the rationale for compliance with ESD as it has not been demonstrated in this EIS.

	of environmental opportunity? Objective 3: CCC queries how the Precautionary Principle has been used to assess the environmental harm that this project will do? The 'PP' term is easy to quote but the EIS has not demonstrated how it will be applied (e.g. a 'consideration' of offsets is not applying the PP; the assessment of alternative dumping sites does not apply the PP; ongoing maintenance dredging and constant disruption to marine species does not apply the PP).	
Chapter 19: Environmental Management Plan		
19.1.4 **Table 19-9**	**Water Quality Risk Assessment (Table 19-9)** **TSHD Dredging:** • Increased turbidity in vicinity of TSHD overflow **Water Quality Impacts and Maintenance Dredging:** • Movement of sediment plumes into Keppel Bay which may impact the Great Barrier Reef. The SE to SW flow pattern of sediment-laden seawater from The Narrows or Port Curtis area may reach the Keppels and impact corals.	Use non-overflow method for TSHD operation
Table 19-11 12.28	**Terrestrial Flora and Fauna Risk Assessment (Table 19-11)** For threatened birds including the Eastern Curlew (mentioned on p. 19-19), please refer to supporting document: Briggs, A 2009, 'Section 3: Impacts and actions required for specific threatened species', *WBD EIS Submission December 2009,* pp. 5-16.	
Table 19-12 ?	**Marine Ecology Risk Assessment (Table 19-19)** GPC appears to be unable to control many of these impacts. Offsets should not be seen as a control strategy for habitat destruction.	
19.3.2 12.29	**Schedule 2 – Acid Sulphate Soils (Implementation, p. 19-49)** During maintenance dredging, the risk of oxidation of PASS is more likely due to the spoil being above the water table. The EMP gives a timeframe of up to 6 months for an ASS assessment to be carried out in an area to be dredged. This period seems excessively long. Are there not factors that might occur within this time that would increase the potential risk for acid sulphate	Justify the 6 month time period for PASS assessment.

Signature: _J.Barrett (hardcopy in mail)_____

Submissions must be received by **5 pm on Monday 18 December, 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Western Basin Dredging project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002
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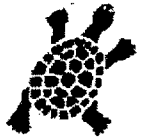
CAPRICORN CONSERVATION COUNCIL



This form is the preferred format for a submission. Please use additional pages if there is insufficient space. Submissions will be treated as public documents and copies will be provided to the project's proponent. For further information please contact the Infrastructure and Economic Development Group on (07) 3224 5004.

12.

CAPRICORN CONSERVATION COUNCIL

A voice for the environment

Appendix A

12.19

12.20

Gladstone's Western Basin Dredging Project: EIS submission

Supporting documentation for Section 9, Nature Conservation

By Allan Briggs, December 2009

1.0 Migratory shorebirds

In Chapter 9 under Fauna Species page 9.39 the following statement is made;

"While intertidal flats within the study area appear to provide suitable foraging and roosting habitat for a range of shorebirds, the Gladstone region is not recognised as an area of national or international significance for migratory shorebirds."

This is quite untrue and it is difficult to understand where the basis for this statement has been derived. The following data (Table 1) for migratory species has been obtained from the Birds Australia Shorebirds 2020 project.

Table 1

Species	1% trigger for Important Bird Area based on global population	Number sighted in the Gladstone region
Bar-tailed Godwit (*Limosa lapponica)*	1500	1996 – 956 1997 – 1509 1998 – 826
Eastern Curlew (*Numenius madagascariensis)*	380	1996 – 409 1997 – 515 1998 - 220
Grey-tailed tattler (*Heteroscelus brevipes)*	400	1996 – 496 1997 – 378 1998 - 198
Whimbrel *(Numenius phaeopus)*	550	1996 – 393 1997 – 450 1998 - 81

The first three species have been seen in numbers that exceed the 1% global population threshold and would qualify Gladstone as being an important bird area under the Birdlife International

convention. The third species has been recorded in numbers approaching the threshold and a number of other species have been observed with similar numbers approaching threshold levels. The Eastern Curlew is listed as Rare under the Nature Conservation Act and as a migratory shorebird under the EPBC.

Unfortunately survey work has been interrupted in recent years but the data does show that the Gladstone area is indeed of international significance for shorebirds. There is no reason to assume that the numbers seen in the past do not continue to use the area, every reason to assume that they do and that they use the intertidal mudflats of the proposed development site for feeding and roosting.

1.1 Shorebird habitat

In Chapter 9 under Construction Impacts/Creation of new habitat page 9.45 there is a statement that says;

"The project design includes a retention pond in the north-west corner of the footprint that is a permanent feature. ..... This area has the potential to provide habitat for migratory shorebirds "

This statement shows a complete lack of understanding about the feeding requirements of migratory shorebirds. They feed on aquatic marine life in intertidal areas that are subject to regular inundation by tidal flows. A retention pond that receives tailwater is likely to contain pollutants and while it may ultimately provide habitat for water birds, if correctly managed, it is unlikely to provide suitable shorebird habitat.

Migratory shorebirds need a natural healthy environment that is free from pollution and to suggest that a man made habitat can replace the intertidal mudflats that will be destroyed by this development is misleading.

2.0 Risk assessment and offsets

In Chapter 9 under Table 9.8 Risk Assessment for Terrestrial Flora and Fauna the following table identifies the direct loss of habitat in the footprint of the project and recommends that the control strategy is the 'implement offset program'.

Activity Description	Potential Impacts and their Consequences	Preliminary Risk Assessment (C, L) Score	Additional Control Strategy	Residual Risk with Control Strategies Adopted (C, L) Score
	Indirect degradation of habitats due to pollution, weed and pest species, and acid sulphate soils.	(3, 4) Medium	Refer to Acid Sulphate Soils technical report. Install appropriate rubbish disposal facilities on site (including recycling option). Include a weed and pest management plan as part of the EMP for the Project. Management plan will include procedures for managing the spreading of weeds from construction vehicles.	Refer to Acid Sulphate Soils technical report.
Operation Phase – Disposal of dredged material and general port activities	Direct loss of habitat in the footprint of the Project. The footprint will replace an area of intertidal flats considered foraging and roosting habitat for EPBC migratory shorebird species including the rare NC Act-listed *Numenius madagascariensis* (eastern curlew).	(2, 5) Medium	Implement offset program in accordance with conditions. No ability to control impact. Habitat and communities represented elsewhere in the region.	(2, 5) Medium
	Indirect degradation or change in adjacent and surrounding intertidal habitats as a result of changes in coastal processes. This includes potential for scour and/or sediment deposition changing suitability for existing benthic (fauna forage resource) and marine plant communities and reduction in tidal flushing within proposed channel.	(4, 3) Medium	Design of the Reclamation Area will need to consider widening of the entrance to the retained channel or other measures to guard against scour. Monitor the distribution and health of the intertidal habitats and report findings regularly. Develop a management plan to assess cause of impacts and potential mitigation measures.	(4, 3) Medium

The risk assessment for this item is given as 2.5 where 2 is moderate level of threat and 5 is an almost certain level of likelihood. This illustrates a serious weakness in the risk assessment methodology since the total destruction of intertidal marine mudflats with an absolute certainty of occurrence is only given a medium level of risk assessment. It reveals that the risk assessment process and rating system is all about the risk to the project and not to the environment. Since the primary function of the EIS is to report on the impact of the project on the environment it is quite obvious that the risk assessment methodology is seriously flawed and should be re-designed to provide an accurate, unbiased assessment of environmental impacts.

To make a vague statement that the control strategy will be to 'implement offset program' is not satisfactory. The offset measures should be clearly identified and under the Vegetation Management Act 1999 and the State Policy for Vegetation Management it states that;

The proposed offset must become ecologically equivalent to the area proposed for clearing. Ecological equivalence must be demonstrated using all of the following factors:

a) Location

b) Strategic position

c) Area

d) Comparable vegetation community attributes

e) Condition of vegetation

f) Regaining remnant status

g) Landscape context attributes

It is not acceptable to just say that offset measures will be established but it is necessary to describe that offset in each of the factors above and that is what we require the proponent to do.

2.1 Degradation of intertidal habitat

In Chapter 9 under Table 9.8 Risk Assessment for Terrestrial Flora and Fauna the following table identifies the degradation of intertidal habitats in adjacent areas and gives this a low risk assessment. Again the risk assessment is flawed because the impact on surrounding habitat adjacent to the proposed development will be high. It is unacceptable to say 'management of tailwater outputs to reduce potential for continuing negative water quality impacts on the adjacent area' because this implies that management will only 'reduce' the potential for impacts on water quality . The control strategy should be to remove altogether the potential for impacts on water quality in the adjacent area and the methods how this will be achieved should be clearly stated.

Activity Description	Potential Impacts and their Consequences	Preliminary Risk Assessment (C. L) Score	Additional Control Strategy	Residual Risk with Control Strategies Adopted (C. L) Score
	Indirect degradation or change in adjacent and surrounding intertidal habitats as a result of changes in water quality. This may change suitability for existing benthic (fauna forage resource) and marine plant communities.		Use appropriate construction of bund and management of tailwater outputs to reduce potential for continuing negative water quality impacts to the adjacent area. Use geofabric in bund construction. Manage tailwater decant to maintain water quality within approved conditions, either within the decant pond and/or within an approved mixing zone.	

In Chapter 9 under Mitigation Measure, page 9.51 it says;

"If impacts to the adjacent intertidal habitats do occur, develop a management plan to assess cause of impacts and potential mitigation measures." There is no doubt that there will be sedimentation and water quality impacts on intertidal habitats so a management plan should be developed from the outset and monitoring activities conducted at regular intervals (weekly) to determine the effectiveness of mitigation measures.

2.2 Disturbance to shorebirds

In Chapter 9 under Table 9.8 Risk Assessment for Terrestrial Flora and Fauna the following table identifies the disturbance to shorebirds due to noise, vibration and light. This will occur both during the construction phase and the operation phase.

Activity Description	Potential Impacts and their Consequences	Preliminary Risk Assessment (C, L) Score	Additional Control Strategy	Residual Risk with Control Strategies Adopted (C, L) Score
Construction Phase - Building of bund and reclamation	Disturbance to wildlife (mainly birds and bats) behaviour due to noise, light and vibration. Potential to disturb EPBC listed migratory shorebird species during critical phase of life-cycle, e.g. roosting, or limit access to food resources.		If possible, minimise construction of the northern bund wall during critical migratory bird visitation periods (March- April and September-October). Employ directional lighting pointed towards Project area and away from surrounding habitat. Use low wattage lights and glare guards in vicinity of the important shorebird habitat in the north-west of the Project area. Ensure plant and equipment are maintained. Monitor abundance and diversity of avifauna species for signs of impact to allow for adaptive management where possible.	

While directional lights and guards will reduce the glare of the project area during the night nothing has been said about mitigating disturbance caused by the movement of plant and equipment during the day. Shorebirds are particularly susceptible to visual disturbance caused by the movement of plant, people and vehicles. Mention is made of a bund wall on the north western side of the project area but this is to be constructed of large rock materials and will not screen activities from shorebirds on the intertidal mudflats.

What is needed is a specifically designed sound barrier, such as those used at airports constructed at a height (at least 5 metres) that will also provide a visual barrier for site activities. This should be constructed around the north western side of the site so that both noise and visual impacts on shorebirds are minimised. Constructing a sufficiently dense structure will also minimise the impact of vibration.

3.0 Impacts and actions required for specific threatened species

The following tables provide information about the threatened bird species most likely to occur either in or adjacent to the development. The method used to determine these species was by reference to the Birds Australia Atlas http://www.birdata.com.au/ These species will be impacted by this development and the actions that should be taken to minimise those impacts are provided.

Little Tern *(Numenius miniatus)* – **Status under the Qld Nature Conservancy Act: Endangered**

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
Threats known to affect the little tern include coastal recreational activities such as 4WD vehicles on the beach, trail bike riding and walking that can crush eggs and chicks. Foxes, wild dogs and uncontrolled pet dogs are the most serious predators, along with cats, rats and silver gulls. Human disturbance is also a major cause of nest failure. Loss of suitable nesting habitat occurs because of recreational use or development. Little terns are potentially susceptible to pesticides and contamination of estuaries by oil spills and heavy metals.	Beaches and intertidal sand and mud flats	Items as listed on the Qld Government web site at http://www.epa.qld.gov.au/nature_conservation/wildlife/az_of_animals/little_tern.html • *Major breeding sites in Queensland need to be identified or verified.* • *Feral animals, including cats and foxes, need to be controlled at known sites.* • *Education (including signage) at known sites is essential so that visitors aware of the impacts of their activities. Drivers of vehicles on beaches are requested to stay clear of nesting areas.*	• Identify and relocate any nests within the proposed site • Prevent access to beach during construction and during facility operation • Implement control measures to ensure there is no impact on water quality at locations adjacent to the development project • Construct a sound, visual and vibration barrier at the north western end of the site to minimise disturbance • Rehabilitate any disturbance to beaches and intertidal sand and mud flats to pre-development conditions • Monitor the impact of the development on species use of the location • Avoid construction work at the north western end of the site during the summer breeding period (September to January)

Beach Stone-curlew *(Esacus neglectus)* – Status under the Qld Nature Conservancy Act: Vulnerable

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
Loss of habitat and pollution due to residential and industrial development. Feral cats, dogs and pigs are also a threat due to predation of adults, chicks and eggs. Boats, off-road vehicles and beach-combing can also severely impact on the natural behaviour of beach stone-curlews (Qld Govt 2009). As the species occurs at a low density in an essentially linear habitat, local extinctions could easily become regional ones, although the historical expansion of range south suggests that such extinctions do not represent genetic barriers (Garnett, 1992).	Mangrove communities, beaches and intertidal sand and mud flats.	Item 1 as listed on the Qld Government web site at http://www.epa.qld.gov.au/nature_conservation/wildlife/az_of_animals/beach_stonecurlew/ *Protect important habitat areas from urban and industrial development, and pollution.*	• Prevent access to beach and mangroves during construction and during facility operation • Monitor the impact of the development on species use of the location • Minimise removal of mangroves to the absolute minimum required for site construction • Rehabilitate any disturbance to beaches and intertidal sand and mud flats to pre-development conditions • Implement control measures to ensure there is no impact on water quality at locations adjacent to the development project • Construct a sound, visual and vibration barrier at the north western end of the site to minimise disturbance

Sooty Oystercatcher *(Haematopus fuliginosus)* – Status under the Qld Nature Conservancy Act: Rare

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
Most of this species population occurs on islands where they breed and are not greatly affected by human disturbance. The presence of this species in the development area indicates that it is using the area for feeding and disturbance needs to be minimised.	Beaches and intertidal sand and mud flats	None	• Prevent access to beach and mangroves during construction and during facility operation. • Monitor the impact of the facility on species use of the location • Rehabilitate any disturbance to beaches and intertidal sand and mud flats to pre-development conditions • Implement control measures to ensure there is no impact on water quality at locations adjacent to the development project • Construct a sound, visual and vibration barrier at the north western end of the site to minimise disturbance • Monitor the impact of the development on species use of the location

Eastern Curlew *(Numenius madagascariensis)* – Status under the Qld Nature Conservancy Act: Rare

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
Shorebirds are very easily disturbed by activity that can interrupt their breeding, feeding or resting. For example, causing an Eastern curlew to take flight represents a significant disturbance as they use critical energy that is required for migration and breeding. Disturbances, particularly repeated disturbances that occur before or after migration, are particularly damaging because, without sufficient energy reserves, they may be unable to complete their migration or breed. The main disturbances to eastern curlews are from human activities such as driving on beaches and sand dunes, and unrestrained domestic dogs.	Beaches and intertidal sand and mud flats	Items as listed on the Qld Government web site. • *Protect important habitat areas (wetlands and sand dunes) from urban and industrial development and pollution* • *Restrict or control access to areas utilised by these birds*	• Prevent access to intertidal mudflats during construction and operation • Implement control measures to ensure there is no impact on water quality at locations adjacent to the development project • Construct a sound, visual and vibration barrier at the north western end of the site to minimise disturbance • Rehabilitate any disturbance to beaches and intertidal sand and mud flats to pre-development conditions • Monitor the impact of the development on species use of the location • Avoid construction work at the north western end of the site during the summer migration period (September to April)

Powerful Owl *(Ninox strenua)* - Status under the Qld Nature Conservancy Act: Vulnerable

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
Although the population size and area occupied by Powerful Owls have declined as a result of widespread clearance for agriculture and pastoralism (Debus and Chafer, 1994, Webster *et al.*, 1999a), over half the habitat remains intact, with population densities probably little different from the pre-European times. Similarly, although intensive forestry practices remove old-growth forest, and owl densities in remaining forest may eventually be affected by a reduction in the availability of suitable nest hollows and den sites for prey (Kavanagh *et al.*, 1995, Gibbons and Lindenmayer, 1997, Webster *et al.*, 1999a), studies in New South Wales suggest Powerful Owls can persist in logging mosaics, by nesting in un-logged patches and hunting in logged areas. There was no difference in frequency of owl detection between heavily logged, lightly logged and un-logged forest (Kavanagh *et al)*,	Construction activities will cause considerable disturbance to nearby habitat used by the Powerful Owl for hunting and for nesting.	None	• The Powerful Owl roosts by day and hunts at night and there is far more likelihood of disturbance at night when prey may be disturbed by light and noise. Forested areas to the west of the site should be protected from the glare of lights by shielding and directional management. Construction activities that involve high levels of noise should not be carried out at night. • Population monitoring should be undertaken to determine the impact of site construction and operation on this species. • Mitigation measures undertaken to minimise the impacts.

Glossy Black Cockatoo *(Calyptorhynchus lathami)* – Status under the Qld Nature Conservancy Act: Vulnerable

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
The northern subspecies of Glossy Black-Cockatoo is likely to be sensitive to any habitat clearance or fragmentation that exposes the birds to competition for nest hollows from open-country cockatoos, such as Galah *Eolophus roseicapilla*, Little Corella *Cacatua sanguinea* or Sulphur-crested Cockatoo *C. Galerita* (Crowley *et al.*, 1998, Garnett *et al.*, 1999). The northern subspecies of the Glossy Black- Cockatoo lives in eucalypt forests and woodlands that have a sub-canopy of their major food plants *Allocasuarina littoralis* or *A. torulosa.* They lay a single egg in a large hollow in a live or dead tree (Garnett *et al.*, 1999).	Construction activities will cause some disturbance to nearby habitat used by the Glossy Black Cockatoo for feeding.	None	• Conduct a survey to determine the distribution of *Allocasuarina littoralis* or *A. Torulosa* that occur in the forested area to the west of the site. This will clearly indicate the likelihood of the presence of this species. If a sub-canopy of these tree species is present then the following actions should be taken. o A survey undertaken to determine if the Glossy Black Cockatoo is breeding in the area (breeds March – August). o Population monitoring should be undertaken to determine the impact of site construction and operation on this species. o Mitigation measures undertaken to minimise the impacts.

Square-tailed Kite *(Lophoictinia isura)* – Status under the Qld Nature Conservancy Act: Rare

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
Much of the native vegetation in the south and east of the species' range has been cleared for agriculture (Debus and Czechura, 1989, Olsen, 1998). While this is still considered to be the major threat, in places, the species may have benefited from partial clearance (G. Czechura). Illegal egg-collecting and shooting constitute threats at the distribution's margins (Jolly, 1989). An apparently low recruitment rate means that recovery from any losses is likely to be slow (Debus and Czechura, 1989, Jolly, 1989). However, there is little evidence of a decline, and anecdotal reports of the reverse. There is also an assured supply of passerines in those places where it hunts around towns (e. g. Queensland; Debus and Czechura, 1989), and it can tolerate routine human activity, when nesting (Bischoff *et al.*, 2000).	Construction activities will cause some disturbance to nearby habitat used by the Square-tailed Kite for breeding and feeding. However, this species is quite tolerant of human activity and this disturbance is not considered to pose any substantial threat.	None	• Population monitoring should be undertaken to determine the impact of site construction and operation on this species. • Mitigation measures undertaken to minimise the impacts.

Cotton-pygmy Goose *(Nettapus coromandelianus albipennis)* – Status under the Qld Nature Conservancy Act: Rare

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
Cotton Pygmy-Geese are found on freshwater lakes, swamps and large water impoundments. They congregate in flocks on permanent water-bodies during the dry season. They lay 6-9 eggs in the hollows of trees that stand in or beside water (Beruldsen, 1977, G. Beruldsen). Principal foods are Pondweed *Potamogeton* seeds and other aquatic vegetation (Frith, 1982).	Construction activities will cause some disturbance to nearby habitat used by the Cotton-pygmy Goose for breeding and feeding. However, they inhabit inland freshwater bodies that are likely to be some distance from the development site although there may be some dams in the vicinity that could provide suitable habitat.	None	• A survey should be undertaken to determine if any suitable dams or water bodies exist within the flora and fauna study area boundary and if they do then the following actions should be taken. o Population monitoring should be undertaken to determine the impact of site construction and operation on this species o Mitigation measures undertaken to minimise the impacts.

Lewin's Rail *(Rallus pectoralis)* – Status under the Qld Nature Conservancy Act: Rare

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
Lewin's Rails inhabit permanent to ephemeral, fresh to saline wetlands that have dense emergent or fringing vegetation. They also use artificial habitats with similar structural features. Avoiding exposure, they generally skulk in the vegetation, taking a range of invertebrates, and, occasionally, birds eggs and frogs. Their cup nests are usually well-hidden within low vegetation, above water, or on or near the ground; 3-5 eggs are laid in spring or summer (Marchant and Higgins, 1993).	Construction activities will cause some disturbance to nearby habitat used by the Lewin's Rail for breeding and feeding. However, they inhabit inland freshwater bodies that are likely to be some distance from the development site although there may be some dams in the vicinity that could provide suitable habitat.	None	• A survey should be undertaken to determine if any suitable dams or water bodies exist within the flora and fauna study area boundary and if they do then the following actions should be taken. o Population monitoring should be undertaken to determine the impact of site construction and operation on this species o Mitigation measures undertaken to minimise the impacts.

Radjah Shelduck *(Tadorna radjah)* – Status under the Qld Nature Conservancy Act: Rare

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
Radjah Shelduck occupies terrestrial wetlands, estuaries and the littoral zone of monsoonal regions. It nests in tree hollows in the wet season, forming flocks near the coast during the dry season. It feeds on small invertebrates and a few seeds, taken from shallow wetland edges (Marchant and Higgins, 1990, Morton *et al.*, 1990).	Construction activities will cause some disturbance to nearby habitat used by the Radjah Shelduck for breeding and feeding. They use both wetland and estuary habitats so the impact in both of these areas needs to be assessed.	None	• Population monitoring should be undertaken in intertidal areas to determine the impact of site construction and operation on this species. • Mitigation measures undertaken to minimise the impacts. • A survey should be undertaken to determine if any suitable dams or water bodies exist within the flora and fauna study area boundary and if they do then the following actions should be taken. o Population monitoring should be undertaken to determine the impact of site construction and operation on this species o Mitigation measures undertaken to minimise the impacts.

Black-breasted Button Quail *(Turnix melanogaster)* – Status under the Qld Nature Conservancy Act: Vulnerable

Threats	Impact of construction of the Western Basin Dredging and Disposal project	Qld Government recommended recovery actions	Recommended actions
In Queensland, Black-breasted Button-quail are most frequently reported in vine thicket rainforest that receives 800-1200 mm annual average rainfall, and have a largely closed canopy and deep litter layer. They also occur in softwood scrubs in the brigalow belt, vine scrub regrowth, mature Hoop Pine *Araucaria cunninghamii* plantations, especially where there is *Lantana camara*, dry sclerophyll forest adjacent to rainforest and *Acacia* and *Austromyrtus* scrubs on sandy coastal soils (Bennett 1985, Hughes and Hughes, 1991, Marchant and Higgins, 1993, Hamley *et al.*, 1997, Smyth, 1997, Smith *et al.*, 1998, R. Hobson).	The highly specialised habitat of this species would mean that it is only the *Acacia* and *Austromyrtus* scrubs on sandy coastal soils that are possible within the flora and fauna study area.	Item 1 as listed on the Qld Government web site at http://www.derm.qld.gov.au/wildlife-ecosystems/wildlife/az_of_animals/blackbreasted_button_quail.html • *Habitat loss and fragmentation through timber harvesting, other forestry-related practices, agriculture, infrastructure construction and urban development*	• A survey should be undertaken to determine if any suitable habitat exists within the flora and fauna study area boundary and if they do then the following actions should be taken. o Population monitoring should be undertaken to determine the impact of site construction and operation on this species o Mitigation measures undertaken to minimise the impacts.

QGC
A BG Group busines

22 December 2009

13

The Coordinator General
c/-EIS Project Manager: Western Basin Dredging Project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009 City East Qld 4002
By Fax: +61 7 3225 8282

Dear Sir,

Western Basin Dredging & Disposal (WBDD) Project EIS

QGC appreciates the opportunity to respond on the above project proposal EIS and provides the following comments.

Background

- The QCLNG Project requires ship and barge access to Gladstone Harbour and Curtis Island during construction and operations and seeks as an ancillary component of the project the development of a new channel and swing basin extending from existing channels in Gladstone Harbour to the LNG Facility. In addition, the Project requires development of several other minor marine components or activities in Gladstone Harbour which also involve dredging and spoil disposal.
- The QCLNG Project Shipping Channel and Swing Basin constitutes part of Stage 1(a) of the overall WBDD Project.

Specific Comments

Support for the WBDD Project

13.1

- QGC supports the WBDD Project in principle and believes the project can be sustainably developed with appropriate technical dredging and engineering innovation, environmental planning and management, and an innovative offsets program. We look forward to continuing to work with GPC on achieving these outcomes.

Dredging works scheduling as an impact management tool

13.2

- Chapter 19, (and in particular Table 19-9) of the WBDD Project EIS, outlines risks and potential mitigation of dredging impacts. In particular, the measures it recommends to mitigate the intensity of impacts from potentially concurrent dredging include scheduling so as to require sequential dredging programs. QGC believes that the principle used in management of impacts should be one of overall intensity (and duration) and predetermined unacceptable impact

thresholds. Therefore, dredging can be done – whether as concurrent or sequential programs – as long as the set environmental thresholds are not exceeded. QGC believes that the objective should be to establish a technically innovative and scientifically credible dredge management plan which seeks to manage all of the proposed dredging in the most economic way (duration and intensity) without exceeding set thresholds designed to minimise environmental impact.

Yours faithfully,

David P. Maxwell
Senior Vice President

Submission on the environmental impact statement for the Western Basin Dredging project

Name: Colin Dale

Address: 77 Beak Street
Gladstone QLD 4680

Organisation (if applicable): Col Dale Fishing

Contact details: Phone: (07) 4978 2206

14

2 PAGES INCLUSIVE.

Section	Describe the issue	Suggested solution
Chapter 7 – Coastal Environment (pp.99 – 101). 14.1	Table 7-13 sediment quality risk assessment. Medium level risk of sediment quality is too great a burden to be placed on the marine life in the area.	The PoGC need to take measures to ensure the long term viability of the sea grass beds that dugong feed on. Dugong are a listed threatened species
Chapter 7 – Coastal Environment; continued 14.2	Loss of Habitat The area to be reclaimed is vital to the Gladstone harbour marine life ecology. This area is the breeding ground for mud crab, prawn, salmon, shark, mullet and dugong. When the mangroves and sea grass beds are destroyed they will be gone forever.	The PoGC investigate alternative sites in the Gladstone harbour for their development or build a jetty and pump the sediment onto dry land and not cover mangroves and wet land areas. The PoGC has a duty of care to the marine life that will be severely damaged in the long term by the loss of their habitat.
14.3	Loss of Commercial Fishing Access The proposed reclaim area will have a severe impact on my livelihood. I am a commercial fisherman catching mud crabs in this area that will not exist if the development goes ahead.	The PoGC build a jetty so as to cause a lot less damage to the marine life.

Signature: [redacted]

Submissions must be received by **5 pm on Monday [redacted] 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Western Basin Dredging project
Significant Projects Coordination
Department of **Infrastructure and Planning**
PO Box 15009 City East QLD 4002

Submission on the environmental impact statement for the Western Basin Dredging project

Name: 15

Organisation (if applicable):

Address:

Contact details:

Section	Describe the issue	Suggested solution
	ISSUE RE NORTHERN LNG PLANT ACCESS TO SHIPPING CHANNEL	IT APPEARS THAT THE CHANNEL TO BE DREDGED BESIDE CURTIS ONLY GOES HALFWAY UP THE PREUNCT
15.1		DOES THIS MEAN THAT ORIGIN WILL BE REQRD TO CONSTRUCT A JETTY ACROSS THE EASTERN CHANNEL BLOCKING OFF PASSAGE THRU TO NARROWS VIA THIS ROUTE? IF SO THIS IS UNACCEPTABLE. VESSELS NEED TOTAL ACCESS VIA THIS ROUTE AS IT PROVIDES SHELTER FROM PREVAILING WINDS.

Signature:

Submissions must be received by ~~5 pm on~~ Monday date 2009 and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Western Basin Dredging project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009 City East QLD 4002
fax +61 7 3225 8282
wbdp@dip.qld.gov.au

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Submission on the environmental impact statement for the Western Basin Dredging project

Name: Jennifer Holland

Address:

12 Parksville Dr
Gladstone Q 4680

Organisation (if applicable): **AJ & JL Holland**
Commercial Fishermen

Contact details: Email: mmcholland@dreamtilt.com.au
Ph: 07 4978 3564

16

Section	Describe the issue	Suggested solution
Appendix G (3) 16.1	Impacts on national heritage places – this area identified as being 1 of only 5 such areas in Australia (ie intertidal estuarine passages)	I would suggest that as 1 of only 5 such intertidal estuarine passages in the whole of Australia that this area is relatively unique and irreplaceable. Suggest the relocation of the proposed industry or at the least a less destructive method of storing dredged sediment. Sediment could be stored on existing land and wharves built using pylons.
Appendix F - Consultation Activities 16.2	Statement that commercial fishermen were consulted on 2 July 2009 and a consultative meeting held on 29 July 2009.	This statement is fabricated and unsupported. **No consultation has ever been initiated by the GPC** with commercial fishermen who rely on this area for a substantial portion of their earnings. As fisherman who crab and fish in the Targinie & Narrows area on a daily basis, neither ourselves or the other fishermen who also work regularly in this area were approached by GHD or GPC for consultation. When asked which fisherman had been consulted, GPC representatives were unable to provide an answer. Our representative body Queensland Seafood Industry Association (QSIA) independently arranged to meet local fisherman for a general port visit on July 29th and invited the GPC to attend to discuss the reclamation plans. None of the fishermen at the meeting had been consulted by the GPC previously. The GPC did not enter into any further consultation with the QSIA It would not be difficult for representatives to meet both commercial and recreational users at the Targinie boat ramp which is the primary access to this area. Suggest that the GPC make more of an effort to consult with stakeholders prior to publicising the EIS and not include unfounded statements in their EIS.

Section	Describe the issue	Suggested solution
Chapter 13 pgs 13-12 to 13-14 16.3	Commercial Fishing in the Gladstone Area • Consultation • Reported numbers of fishermen • Trawling operations • Net fishing in the area	Refer to comments above for Appendix F regarding purported level of consultation with commercial fishers. Data reported regarding numbers of fishers is understated. Within subgrid 12 of Logbook grid S30, there have been 12 commercial fishers operating in the week ending 12 December 2009. Subgrid 12 is the area directly affected by this project. Trawlers are not allowed to currently trawl this area however the area is a breeding ground for the prawn that they catch in other parts of the harbour. Therefore the lack of trawlers operating in this area does not mean that they will not be significantly affected by the reclamation. Restrictions are in place regarding net fishing in this area. The restrictions exist because the area is designated by the Qld Government as a Dugong Protection Area. If the area is crucial to the preservation of dugong, the planned substantial eradication of sea-grass beds is hypocritical. • **Sediment to be deposited onto existing land** • **Wharves to be built on pylons** • **Compensation to be made available to commercial fishers who regularly work in this area**
Chapter 13 pgs 13-19 to 13-21 16.4	The significant impact on recreational fishing activities	Recreational fishing is an important lifestyle factor for the Gladstone population. The EIS acknowledges that this area is important to local recreational fishers. Suggest find an alternative sediment disposal area.
Chapter 19 Table 19-10 etc 16.5	Impact of activities on sea-grass beds and marine environment	No similar marine environment exists in this area. No "offsets" or "mitigation" can replace what is proposed to be reclaimed. Suggest find an alternative sediment disposal area.

Section	Describe the issue	Suggested solution
Appendix G (3) 16.6	Potential risks resulting from dredging acid sulphide soils.	We believe the threat from this issue is understated. Anecdotal evidence from local fishermen indicates that mud crabs have developed ulcers on their shells during times of significant dredging in the Gladstone Harbour. Whilst we recognise that dredging is inevitable, we would like to see on-going assessment of crab and fish stocks and consultation with the commercial fishing fleet who are in the best position to comment on the quality of marine product caught.
16.7	Loss of Commercial Fishing Access • The disadvantages of the current location from an ecological, commercial fishing and recreational fishing perspective have been significantly understated by the GPC. • Both commercial and recreational fishers use the proposed reclamation area to catch mud crab, mullet, salmon, shark GPC has a well-established history of reclaiming the foreshore areas in the Gladstone Harbour area to "create" land which it then leases to industry and enterprises.	While large-scale reclamation may have been acceptable 40 and 50 years ago, it should no longer be viewed as the "easy answer". Other established industries in Gladstone are successfully storing their sediment waste on land. Gladstone has been a fishing port for many many years and the local commercial fishing industry should not be sacrificed because it is expedient for the State Government to fill in the harbour rather than pursue a more environmentally acceptable waste disposal method. If the Government chooses to sacrifice our local marine environment, they should compensate the local fishermen who for many years have derived their income from this are.

Submission on the environmental impact statement for the Western Basin Dredging project

Name:

Address:

17

Organisation (if applicable): Recreational Fisherman

Contact details:

Section	Describe the issue	Suggested solution
15.4 17.1 17.2	Results of Cost Benefit Analysis. The cost benefit analysis is not correct. The 1,000 acres has been valued at between $1.4 and $2.4 million per acre i.e. the environmental dis-benefits., This figure is not correct as it is the value that is attributed to this environment for a life of 20 years only.	The more accurate value to use is one that is comparable to at least the life of the projects or longer. A value of environmental dis-benefit over 100 years would be a more accurate value to use. A value of $7 to $12 million per acre is the true value of this environment. It could be argued that this could be extrapolated over a lifetime of 1,000 years. If a true dis-benefit value is used then other disposal options become viable and should be considered in more depth. No where in the EIS are other options considered. There is considerable hard-stand land which is currently Aldoga or Government land that is set aside for industrial development but due to its topography is unsuitable. This dredge spoil could make that land more valuable and useful. Any pipelines or pumps that are required to do this would be useful permanent enhancements as most industry would have need of them. Gladstone needs win, win solutions to its development issues.
17.3	Too much of Gladstone has been sacrificed to industrial development; already 1,200 acres of mudflats and 600 acres of mangroves. Another 1,000 acres of seagrass beds on top of this will not be accepted by the public.	The public has not been told this fact. The consultation process has been improper. In the print media there has been no mention of the exact area of seagrass that will be lost forever. The 1,000 acre figure has not been in the media. It will become a major issue when people find this out.

Signature: _____

Submissions must be received by **5 pm on Monday date 2009** and be addressed to:

The Coordinator-General
C/- EIS Project Manager – Western Basin Dredging project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009 City East QLD 4002
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0/49/65/16

Please quote: MNxxxxx/TN140611
Contact officer: Lara Tabua
Contact telephone: (07) 3224 4671

DEEDI

18

Mr Colin Jensen
Coordinator-General
C/- EIS Project Manager: Port Of Gladstone Western Basin Dredging project
Significant Projects Coordination
Department of Infrastructure and Planning
P O Box 15009
City East QLD 4002

Thank you for the opportunity to provide comment on the Environmental Impact Statement (EIS) for the Port Of Gladstone Western Basin Dredging project.

The Department of Employment, Economic Development and Innovation recognises the potential benefits of the project to the regional development of Queensland. The proposed development will allow for port expansion and provide significant additional employment and flow on economic benefits in the Gladstone region by enabling export for the LNG industry. However, to gain support for the proposed development, further justification is required to demonstrate that all viable alternatives have been fully investigated for dredge spoil disposal that would minimise adverse impacts on fisheries resources and impacts of dredging activities have been compressively addressed.

Based on the information provided in the Environmental Impact Statement, the Department of Employment, Economic Development and Innovation recommends issues raised in **Attachment 1** are addressed in any supplementary Environmental Impact Statement for the Port Of Gladstone Western Basin Dredging Project. A copy of the comments will also be provided electronically for the Project Manager's convenience.

In preparing any supplementary Environmental Impact Statement, it is recommended that the proponents contact Ron Weatherall, Regional Director, Central Queensland Region on (07) 4938 4821 or ron.weatherall@deedi.qld.gov.au on employment issues.

If you have any queries relating to economic, investment and industry issues, please contact Lara Tabua, Project Development and Facilitation on (07) 3224 4671 or lara.tabua@deedi.qld.gov.au.

Executive Building
Level 6, 100 George Street
PO Box 15168
City East QLD 4002

Telephone +61 7 3224 4009
Facsimile +61 7 32251671
Website www.dtrdi.qld.gov.au
ABN 97 406 359 732

If you have any queries relating to extractive resources, please contact Ms Siobhan Bourne, Queensland Mines and Energy on (07) 3247 5432 or siobhan.bourne@deedi.qld.gov.au.

The Queensland Primary Industries and Fisheries division will provide a separate response on some specific issues in regards to fisheries, bio-security and rural cultural heritage issues. If you have any queries relating to these issues, please contact Mr Michael Ross, Policy Officer on (07) 3247 5545 or email michael.ross@deedi.qld.gov.au.

Detailed comments in relation to the EIS are included as **Attachment 1**. We look forward to working closely with the Department of Infrastructure and Planning to maximise the regional development benefits and minimise any negative impacts from the project.

If you require further information on DEEDI's response please contact Ms Lara Tabua, Senior Industry Development Officer, Project Development and Facilitation Unit on telephone (07) 3224 4671.

IAN FLETCHER
Director-General

Submission on the environmental impact statement for the Western Basin Dredging project 18

Name: Ricky Garbutt (Eli)		**Organisation:**	**Department of Employment, Economic Development and Innovation**
Address: 75 William Street, Brisbane		**Contact details:**	**3225 2580**

Thank you for the opportunity to comment on the Environmental Impact Statement (EIS).

DEEDI notes that Ports capacity within the Western Basin is currently being utilised by a range of industries and that the LNG industry will be the primary driver for the increased demand in the port.

DEEDI notes that the EIS for the Western Basin Dredging project contains references to labour market issues including:

- An analysis of the direct economic impacts on industry and the community, including employment (Chapter 13 and Appendix W)
- Labour force statistics for the area (13.1.6)
- An analysis of the impacts on local, regional and state labour markets, with regard to the source and occupational groupings of the workforces (13.2.3 and Appendix W)
- That the project will prioritise local employment in recruitment, including appropriate levels of local recruitment as a condition for engaging contractors, where possible. (13.2.12 and 20.4)
- The required workforce during the dredging and construction phase of the project (15.5)
- That you will provide a higher rating for contractors who commit to higher local spend when engaging contractors (20.4)

18.a.1

DEEDI is assisting local disadvantaged jobseekers, under-employed people and working age people who are currently not in the labour force, into employment and training through the *Skilling Queenslanders for Work* initiative.

Employment and Indigenous Initiatives also encourage that the workforce is sourced locally where possible, including Indigenous people. Employment and Indigenous Initiatives is keen to assist the proponents of the project to maximise employment opportunities for local people, including local Indigenous people. For further information, contact Ron Weatherall, Regional Director, Central Queensland Region on (07) 4938 4821 or ron.weatherall@deedi.qld.gov.au

1

Section	Describe the issue	Suggested solution
18a.1	The EIS does not mention any strategy for Indigenous Employment.	Although compliance with the Indigenous Employment Policy for Queensland Government Building and Civil Construction Projects (20% Policy) is not compulsory outside designated Indigenous communities, an attempt to comply will create considerable goodwill with local Indigenous people at a time when 'closing the gap' is high priority.

Submission on the environmental impact statement for the Western Basin Dredging project

Name:	Siobhan Bourne Senior Geoscientist, Statewide Services	**Organisation (if applicable):**	Queensland Mines and Energy, Department of Employment, Economic Development aand Innovation
Address:	Level 16, 61 Mary Street Brisbane PO Box 15216, CITY EAST QLD 4002	**Contact details:**	Ms Siobhan Bourne Phone: 324 75432 Email: Siobhan.Bourne@deedi.qld.gov.au

Section	Describe the issue	Suggested solution
1.10.3 *Page 1-61* 18.b.1	**State Legislation** *Relevance to Project* Bullet point 2 states that EPM 3215 expired on the 31st of December 2008 `and that *"it is not clear whether this permit has been renewed"*. A 5 year renewal application was lodged in August 2008 and the EPM has since been renewed with an expiry date of 31 December 2013.	The new expiry date should be reflected in the EIS

Name	Position	Location	Phone	Email
Jane Morton	Senior Project Officer (Biosecurity Qld)	Brisbane, Mineral House	07 3247 5552	jane.morton@deedi.qld.gov.au
Dan Mayer	Manager, Planning and Assessment	Southern Fisheries Centre, Deception Bay	07 3817 9505	dan.mayer@deedi.qld.gov.au
Michael Ross (Coordinator)	**Policy Officer (Strategic Directions)**	**Brisbane (PIB)**	**07 3247 5545**	**michael.ross@deedi.qld.gov.au**

Fisheries Queensland

Attached are the Queensland Primary Industries & Fisheries (QPIF) comments on the Environmental Impact Statement (EIS) for the proposed Gladstone Ports Corp. Western Basin Dredging and Disposal Project. QPIF advises that a site inspection has not been conducted for the purpose of this response. Comments outlined below have been compiled on the basis of information provided.

Comments have previously been provided on the draft Terms of Reference for the above mentioned proposal.

Background

Gladstone Ports Corporation has two proposals being separately developed in the immediate area of Fisherman's Landing. There is the Northern Expansion Project which is the subject of a separate EIS released for public and stakeholder comment by the Coordinator General on 3 October 2009, and the proposal the subject of this EIS, the Western Basin Dredging and Disposal Project.

In line with the Draft Master Plan, two areas of development are required for the long term strategic development of the Port and are subject of this EIS:

1. The inner harbour dredging associated with deepening and widening existing channels and swing basins and the creation of new channels, swing basins and berth pockets, and,
2. The disposal of dredged material from the above works in the Western Basin Reclamation Area, which is located north of Fisherman's Landing and immediately west of the proposed Fisherman's Landing Northern Expansion.

Specifically, the EIS addresses the following activities:

1. Construction of the outer bund rock wall
2. Capital and maintenance dredging, including
    a. Access channels, swing basins and ship berths

b. Marine offload facilities on Curtis Island
3. Placement of dredge spoil in the Reclamation Area and management of decant waters
4. Final capping, surface stabilisation and stormwater management upon completion of the reclamation.

The Reclamation Area will cover 235ha and have a capacity for 45 million m^3 of material. It is anticipated that 36 million m^3 will be dredged from Areas 1A, 1B, 2, 3, and 4. An additional volume of 12.8 million M^3 from Option 2a, or 6.0 million m^3 from Option 1b, identified in the Addendum to this EIS discussed below, may be placed there and within the Northern Expansion Area, (which is subject to a separate EIS).

The Addendum to this EIS has been prepared to provide additional information on the potential cumulative impacts of the dredging component (berth pockets, Marine Offload Facility (MOF), access channel and swing basins) of a proposed LNG facility to be located near Laird Point on Curtis Island. The purpose of the Addendum is to address the cumulative impact assessment resulting from this incremental change to proposed dredging and disposal for each of two options, 1b and 2a.

Option 1b involves dredging in the Targinie Channel area and covers an additional area of approximately 80ha to a depth of RL-13.3m lowest astronomical tide (LAT) in swing basins and approach channel and RL-9.5m LAT in all other areas. Option 2a is proposed within an approximate 108ha footprint, located northwest of the Stage 1A dredging works described in Section 2.1 of the EIS. Dredging is proposed to the same depths as described for Option 1b. Both areas are located within the Project Area.

The key potential impacts for the additional dredging of the options include:

- Increased dredging with the estimated quantity of dredge material for Option 2a being 12.8 million M^3 and for Option 1b being 6.0 million m^3;
- Possible extension of the accumulative dredging of time up to 16 months across the duration of the Project;
- Loss of existing benthic habitat, of approximately 75ha for dredge Option 1b to 105ha for Option 2a, from the seabed in the additional dredged areas;
- Adverse impacts on the marine water quality, by extending the period of elevated turbidity due to dredging with backhoes or cutter suction dredgers;
- Increase in sedimentation, of approximately 60,000m^3/year or 105,000m^3/year for dredge Option 1b and Option 2a respectfully, within the Western Basin, leading to increase of annual maintenance dredging;
- Increase in capital dredge material to be placed in the reclamation Area, and;
- Access impacts for recreational and commercial fishing in the Fisherman's Landing, Passage Islands and Laird Point areas.

This project does not address any dredging associated with the LNG pipelines.

General

Reclamation

To gain support for the proposed development, further justification is required to demonstrate that all viable alternatives have been fully investigated for dredge spoil disposal that would minimise adverse impacts on fisheries resources and impacts of dredging activities have been compressively addressed.

18.c.1 Fisheries Queensland could not support the reclamation component of the proposal on the basis of information submitted within the EIS.

18.c.2 Fisheries policies do not support the deposition of dredge spoil on tidal lands. A substantiated assessment of alternative dredge spoil disposal options with lesser impacts is not provided. Fisheries Queensland is concerned that the impacts to tidal fish habitats from the proposal have not been adequately avoided or minimised. The 'trigger' to undertake reclamation of tidal lands with dredge spoil was stated in Table 2-3 of Chapter 2 as 'there are no current disposal sites available with the overall capacity to accept material from the Project Area should all of the developments proceed'.

18.c.3 Fisheries Queensland is currently working with Gladstone Ports Corporation in developing a suitable Offsets package to account for the extent of impacts to tidal lands and fish habitats. However, Offsets are only a part of Fisheries requirements in considering impacts proposed. The disturbances must first be justified, with impacts minimised, mitigated and then Offsets delivered to provide a no net loss outcome.

An alternative design of the reclamation area, with a reduced footprint on tidal lands and the remainder on adjacent terrestrial land would appear to be a lesser impact option, considering the likely damaging impacts of altered tidal regimes in the proposed channel along the western boundary of the reclamation area. Proposed dredging of shallow channels in the northern embayment to alleviate the impacts on the channel would create further disturbance and would have a compounding effect, and would most likely require ongoing maintenance dredging to remain effective.

Dredging - Main EIS General

This is a very large dredging program with continuous dredging over multiple years. It will have significant impacts on seagrass resources and fisheries in the region. Some of these impacts could be effectively mitigated but others will result in permanent seagrass loss.

18 Seagrasses in Gladstone may be particularly vulnerable to increases in turbidity (reduction of light) associated with dredge plumes as they are already growing in a naturally turbid environment and likely rely on limited windows of opportunity for effective growth and photosynthesis

The EIS has acknowledged most of the seagrass issues raised in preliminary discussions between Fisheries Queensland and the port/consultants. The 2 key issues for seagrasses are outlined below with specific comments in dot points:

The EIS has identified an expanded scope of direct and indirect impacts to seagrasses that includes some potential impacts to seagrasses from dredge plumes and changes to hydrology and bank topography.

Fisheries Queensland assumes that if the reclamation and channels proceed as outlined in the EIS their loss will be subject to appropriate offsets including some investment in Fisheries Queensland seagrass priorities to improve seagrass management and protection. The major concerns then are centred on the mitigation strategy to ensure indirect plume related impacts to seagrasses are effective.

The capacity for mitigation strategies to be implemented during dredging to limit turbidity related losses to seagrasses (outside the direct development footprint) has been recognised in the EIS.

EIS Addendum

The addendum to the EIS identifies two options for berth pockets, marine offload facility, access channel, and swing basins for an additional LNG facility at Laird Point, not included in the main EIS.

While many issues are covered in the main EIS these additions have the potential to have increased impacts on seagrasses. The development options potentially include wharves and facilities and dredging around North Passage Island. The intertidal banks around the islands contain seagrass meadows but from the maps provided in the addendum it is difficult to ascertain if the footprint of developments will directly impact on the meadows as they are not included in the maps.

In Section 3.5.1 Marine Flora and Fauna on page 21 it is suggested that seagrass was found by Fisheries Queensland around the passage islands in 2002 but not in 2004-2008. This is not the case. The passage Islands were only surveyed for seagrass in the 2002 baseline. All subsequent surveys (2004-2008) only looked at a subset of meadows and did not include the Passage Islands. Fisheries Queensland has recently completed field work for an updated baseline (November 2009) and seagrass was still located around these Islands.

16f.10

In Section 3.5.2 Impacts and Mitigation on page 22 it is suggested that there may be an increase in the northward propagation of the dredge plume over the main EIS model into Graham Creek and the narrows. This has the potential to further impact on seagrasses as meadows are located in both these locations.
It is assumed that the location and design of the LNG facilities to be supported by this dredging will be different with each of the dredge options. The impacts of these options could be markedly different if the impacts of the facilities that the dredging will support are considered as a package. For example product offloading The overall impacts of the options with the facilities that the dredge options will support

Recommendations

Reclamation
EIS Chapter 2 Table 2-3

18.c.2 The 'trigger' to undertake the reclamation of 235ha tidal lands for dredge spoil disposal is identified as the lack of current disposal sites available with the overall capacity to accept material from the Project Area should all of the developments proceed. Fisheries Queensland is concerned that the impacts to tidal fish habitats from the proposal have not been adequately avoided or minimised.

Recommendation:
- Please provide a detailed assessment of the process undertaken to identify suitable terrestrial sites, their suitability weightings and any considerations of using several terrestrial sites, or a reduced tidal lands site extending onto terrestrial land adjacent to Fisherman's Landing.

Appendix M – Coastal Processes Assessment
4.9.1 Water Level Plots

18.c.4 The plots in Figure 4-30 identify that the flattening of the water level response in the 40m channel west of the reclamation, due to the reclamation, will cause incomplete tidal water drainage from the southern end of the western channel, and to lesser degrees along the channel in a northerly direction.

5 Cumulative Impacts and Mitigation Strategies

This section proposes, if required, consideration could be given to dredging one or more shallow channels connecting the channel between the reclamation and the western foreshore through the northern embayment to the main eastern channel.

There appears to be no discussion on alternative designs or methodology to identify the construction of the western channel as the best environmental option. It would appear to be an unworkable longer term option with high potential for siltation and drownout of existing marine plants. As a precautionary action to ensure impacts to tidal lands and marine plants located west of the Reclamation Area are minimised, the dredging of 'one or more shallow channels' proposal through the northern embayment should be thoroughly explored. It is assumed that ongoing maintenance dredging would also be required of these shallow channels.

Recommendations:
- Please provide clarification of the potential for dredging one or more shallow channels as proposed in 5 to accommodate deficiencies identifies in 4.9.1.

- Please undertake modelling of the above mentioned channel/s and provide details of performance in delivering more effective draining of the western channel. Please also include details of the impacts upon marine flora, fauna and bare substrate. Please also discuss the potential for maintenance dredging of the channels.

- Please provide details of the potential impacts to marine plants and tidal lands, including saltmarsh, within and adjacent to the portion of channel subject to incomplete drainage, for a scenario where no additional drainage is undertaken.

Appendix Q Marine Ecology Report
2.2.4 Fisheries, Regional Context

18.C.5

Port Curtis is identified as an important resource for recreational fishers as it offers protected waters that support a variety of edible and sportfish species. The shoreline adjacent to the protected area is an important crab fishing site as it can be safely accessed from the shore.

EIS Chapter 20 Conclusions and Recommendations
Table 20-1 Proponent Commitments, Social

The Table states that the proponent may consider measures that offset/minimise impacts on recreational fishers based on the likely loss of recreational fishing sites associated with the Project.

20.3.9 Social Impact

One of the most significant Social negative impacts identified is the reduced viability of commercial crab and net fishers. The likely loss of recreational fishing sites has also been identified.

The proponent will participate in any future negotiations lead by the State Government as part of the management of recreational fishing impacts in the Western Basin of the Port.

Recommendations:
- A condition of any approval requiring the proponent to contribute, either financially or in kind, to the management and/or any alternative options developed in consultation with Government, in response to impacts to recreational fishing, rather than simply committing to participate in negotiations.

- A condition of any approval requiring the proponent to contribute, either financially or in kind, to the management and/or any alternative options developed in consultation with Government, in response to the reduced viability of impacted commercial fishers currently using the site.

9

Dredging - EIS

18.c.6 An appropriate dredge mitigation strategy will be essential in ensuring that there are not widespread losses of seagrasses outside of the direct dredge footprint. This would require specific information on the light requirements and tolerances for the different species that occur in Gladstone combined with good modelling of plume propagation under different conditions. As well as an ability to effectively measure light stress at a sub-lethal level in seagrasses to implement appropriate dredge mitigation during the program.

Fisheries Queensland has concerns that the indirect impacts from the actual dredge plume may be more extensive than that modelled in the EIS. Fisheries Queensland's recent experiences with major dredging at Dalrymple Bay/Hay Point of the actual plumes being far more extensive than the modelled ones are cause for concern/caution.

Recommendations:

- Fisheries Queensland would request that an appropriate dredge mitigation strategy be developed to ensure that there are not widespread losses of seagrasses outside of the direct dredge footprint. Specific information should be included in the strategy, including:
    - the light requirements and tolerances for the different seagrass species that occur in Gladstone,
    - good modelling of plume propagation under different conditions, and,
    - an ability to effectively measure light stress at a sub-lethal level in seagrasses to implement appropriate dredge mitigation during the program.

18.c.7 - Fisheries Queensland would request that the dredge plume model be reviewed by an independent expert. The model is a critical component in determining the scale of impacts to marine plants/seagrass/fisheries habitat as well as developing an effective strategy to mitigate impacts. Consideration should be given to the possible improvement of the model by using a 3 dimensional rather than 2 dimensional model. The robustness of the assumptions of turbidity created by the various combinations of dredge types and methodology should be tested by a specialist in that field, and a report of findings made available.

Chapter 9 Nature Conservation - Table 9-14 Areas of Benthic Habitat Expected to be Directly and Indirectly Impacted by Construction and Operational Works

18.c.8 The summary of areas of benthic habitat and seagrass potentially impacted in table 9-14 identifies 258.8 ha direct impact to seagrass (Reclamation or removal from channels) and 1,406ha indirectly from water quality issues or changes to bank topography/hydrology.

Fisheries Queensland is of the view that the 274.6ha that makes up the balance of the bank to the north of the reclamation (western Basin residual area) should be re-categorised as a direct rather than indirect impact (ie total direct impact 533.4 ha). It would be reasonable to expect that seagrass loss here would be permanent as the changes to bank topography (deposition) and hydrology (bed shear stress) will be

seagrass could reasonably be expected to recover from these losses over a period of time after dredging has been completed (approx 3 years based on seagrass findings from other Queensland locations).

Recommendation:
Please re-categorise the 274.6ha that makes up the balance of the bank to the north of the reclamation (western Basin residual area) as a direct rather than indirect impact (ie total direct impact 533.4 ha).

9.3.2 Potential Impacts on Marine Communities

The EIS comments about potential studies/ information required on seagrass to build an effective dredge mitigation strategy to protect seagrasses from turbidity impacts (last 3 paragraphs pg 9-103). This is a good recognition of the potential impacts outside of the reclamation but would require the commitment towards a range of studies on the local seagrass community to ensure effectiveness.

Key information required includes a thorough understanding of the light requirements of the various seagrass species in Gladstone, their resilience to lower light levels as well as an effective toolkit of morphological/physiological indicators of light stress. Good robust hydrodynamic and plume modelling and real-time monitoring of light levels at key seagrass locations before, during and after dredging to assist in implementing any proposed dredge mitigation actions would be required for effective mitigation planning.

Note : *Fisheries Queensland has been working with the Port Curtis Integrated Monitoring Program (PCIMP/Vision Environment) to begin some of this preliminary experimental work and to establish a set of monitoring locations to build up a baseline of seagrass information that can be used to assess potential impacts during dredging and post dredge recovery, as well as assessment sites during dredge mitigation. There is no guarantee that this work will continue beyond February and should potentially be part of CoG conditions to ensure protection of seagrasses.*

18.c.9

Recommendations:
- Please condition any approval to require significant pre-development baseline sampling to ensure the range of seasonal and interannual changes are captured to put changes during dredging into perspective.

- Please condition any approval to require post dredge recovery monitoring for at least 3 years based on recovery times recorded for light related loss of seagrass in other Queensland locations.

- Please condition any approval to require robust hydrodynamic and plume modelling including real-time monitoring of light levels at key seagrass locations before, during and after dredging, to assist in implementing a proposed dredge mitigation plan.

Section 3.5.1 Marine Flora and Fauna

18.c.10 On page 21 it is suggested that seagrass was found by Fisheries Queensland around the Passage Islands in 2002 but not in 2004-2008. This is not the case. The Passage Islands were only surveyed for seagrass in the 2002 baseline. All subsequent surveys (2004-2008) only looked at a subset of meadows and did not include the Passage Islands. Fisheries Queensland has recently completed field work for an updated baseline (November 2009) and seagrass was still located around these Islands.

Section 3.5.2 Impacts and Mitigation

On page 22 it is suggested that there may be an increase in the northward propagation of the dredge plume over the main EIS model into Graham Creek and The Narrows. This has the potential to further impact on seagrasses as meadows are located in both these locations.

General

Fisheries Queensland interest with all proposals in this area is the reduction of impacts to fisheries resources, fish habitats and fishers. Fisheries Queensland would promote the least impact options to achieve the proposals if these are to proceed.
Options 1b and 2a are to support the location and design of facilities which are currently part of a separate EIS. The impacts of the location and design of these facilities and options of least impact should have a major bearing on the decisions regarding these options.

Recommendations:
- Please amend Section 3.5.1 Marine Flora and Fauna on page 21 to include 'The Passage Islands were only surveyed for seagrass in the 2002 baseline. All subsequent surveys (2004-2008) only looked at a subset of meadows and did not include the Passage Islands. Fisheries Queensland has recently completed field work for an updated baseline (November 2009) and seagrass was still located around these Islands'.

- Please undertake further modelling of the potential dredge plume extending into Graham Creek and The Narrows, generated by dredging of Options 1b or 2a, and provide a report of the findings.

- The impacts of each dredge option with the LNG proposal facilities to be supported by that dredging should be identified and discussed.

Section	Describe the issue	Suggested solution
Reclamation EIS Chapter 2 Table 2-3	The 'trigger' to undertake the reclamation of 235ha tidal lands for dredge spoil disposal is identified as the lack of current disposal sites available with the overall capacity to accept material from the Project Area should all	Please provide a detailed assessment of the process undertaken to identify suitable terrestrial sites, their suitability weightings and any considerations of using several terrestrial

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	impacts to tidal fish habitats from the proposal have not been adequately avoided or minimised.	adjacent to Fisherman's Landing.

	18.C.4 **Appendix M**	
Coastal Processes Assessment 4.9.1 Water Level Plots	The plots in Figure 4-30 identify that the flattening of the water level response in the 40m channel west of the reclamation, due to the reclamation, will cause incomplete tidal water drainage from the southern end of the western channel, and to lesser degrees along the channel in a northerly direction.	Please provide clarification of the potential for dredging one or more shallow channels as proposed in 5 to accommodate deficiencies identifies in 4.9.1. Please undertake modelling of the abovementioned channel/s and provide details of performance in delivering more effective draining of the western channel. Please also include details of the impacts upon marine flora, fauna and bare substrate. Please also discuss the potential for maintenance dredging of the channels. Please provide details of the potential impacts to marine plants and tidal lands, including saltmarsh, within and adjacent to the portion of channel subject to incomplete drainage, for a scenario where no additional drainage is undertaken.
5 Cumulative Impacts and Mitigation Strategies	This section proposes, if required, consideration could be given to dredging one or more shallow channels connecting the channel between the reclamation and the western foreshore through the northern embayment to the main eastern channel. There appears to be no discussion on alternative designs or methodology to identify the construction of the western channel as the best environmental option. It would appear to be an unworkable longer term option with high potential for siltation and drownout of existing marine plants. As a precautionary action to ensure impacts to tidal lands and marine plants located west of the Reclamation Area are minimised, the dredging of 'one or more shallow channels' proposal through the northern embayment should be thoroughly explored. It is assumed that ongoing maintenance dredging would also be required of these shallow channels.	

	18.C.5 **Appendix Q**	
Marine Ecology Report 2.2.4 Fisheries, Regional Context	Port Curtis is identified as an important resource for recreational fishers as it offers protected waters that support a variety of edible and sportfish species. The shoreline adjacent	A condition of any approval requiring the proponent to contribute, either financially or in kind, to the management and/or any alternative options developed in consultation with Government,

	be safely accessed from the shore.	committing to participate in negotiations.
EIS Chapter 20 Conclusions and Recommendations Table 20-1 Proponent Commitments, Social	The Table states that the proponent may consider measures that offset/minimise impacts on recreational fishers based on the likely loss of recreational fishing sites associated with the Project.	A condition of any approval requiring the proponent to contribute, either financially or in kind, to the management and/or any alternative options developed in consultation with Government, in response to the reduced viability of impacted commercial fishers currently using the site.
20.3.9 Social Impact	One of the most significant Social negative impacts identified is the reduced viability of commercial crab and net fishers. The likely loss of recreational fishing sites has also been identified. The proponent will participate in any future negotiations lead by the State Government as part of the management of recreational fishing impacts in the Western Basin of the Port.	

Dredging EIS 16.c.6	An appropriate dredge mitigation strategy will be essential in ensuring that there are not widespread losses of seagrasses outside of the direct dredge footprint. This would require specific information on the light requirements and tolerances for the different species that occur in Gladstone combined with good modelling of plume propagation under different conditions. As well as an ability to effectively measure light stress at a sub-lethal level in seagrasses to implement appropriate dredge mitigation during the program. Fisheries Queensland has concerns that the indirect impacts from the actual dredge plume may be more extensive than that modelled in the EIS. Fisheries Queensland's recent experiences with major dredging at Dalrymple Bay/Hay Point of the actual plumes being far more extensive than the modelled ones are cause for concern/caution.	Fisheries Queensland would request that an appropriate dredge mitigation strategy be developed to ensure that there are not widespread losses of seagrasses outside of the direct dredge footprint. Specific information should be included in the strategy, including; • the light requirements and tolerances for the different seagrass species that occur in Gladstone, • good modelling of plume propagation under different conditions, and, • an ability to effectively measure light stress at a sub-lethal level in seagrasses to implement appropriate dredge mitigation during the program.

Chapter 9 Nature Conservation - Table 9-14 Areas of Benthic Habitat Expected to be Directly and Indirectly Impacted by Construction and Operational Works 18.c.9	The summary of areas of benthic habitat and seagrass potentially impacted in table 9-14 identifies 258.8 ha direct impact to seagrass (Reclamation or removal from channels) and 1,406ha indirectly from water quality issues or changes to bank topography/hydrology. Fisheries Queensland is of the view that the 274.6ha that makes up the balance of the bank to the north of the reclamation (western Basin residual area) should be re-categorised as a direct rather than indirect impact (ie total direct impact 533.4 ha). It would be reasonable to expect that seagrass loss here would be permanent as the changes to bank topography (deposition) and hydrology (bed shear stress) will be permanent. This is different to the other indirect impacts listed in the table associated with deterioration in water quality during dredging, seagrass could reasonably be expected to recover from these losses over a period of time after dredging has been completed (approx 3 years based on seagrass findings from other Queensland locations).	Please re-categorise the 274.6ha that makes up the balance of the bank to the north of the reclamation (western Basin residual area) as a direct rather than indirect impact (ie total direct impact 533.4 ha).
9.3.2 Potential Impacts on Marine Communities	The EIS comments about potential studies/ information required on seagrass to build an effective dredge mitigation strategy to protect seagrasses from turbidity impacts (last 3 paragraphs pg 9-103). This is a good recognition of the potential impacts outside of the reclamation but would require the commitment towards a range of studies on the local seagrass community to ensure effectiveness. Key information required includes a thorough understanding of the light requirements of the various seagrass species in Gladstone, their resilience to lower light levels as well as an effective toolkit of morphological/physiological indicators of light stress. Good robust hydrodynamic and plume modelling and real-time monitoring of light levels at key seagrass locations before, during and after dredging to assist in implementing any proposed dredge mitigation actions would be required for effective mitigation planning. ***Note :*** *Fisheries Queensland has been working with the Port Curtis Integrated Monitoring Program (PCIMP/Vision Environment) to begin some of this*	Please condition any approval to require significant pre-development baseline sampling to ensure the range of seasonal and interannual changes are captured to put changes during dredging into perspective. Please condition any approval to require post dredge recovery monitoring for at least 3 years based on recovery times recorded for light related loss of seagrass in other Queensland locations. Please condition any approval to require robust hydrodynamic and plume modelling including real-time monitoring of light levels at key seagrass locations before, during and after dredging, to assist in implementing a proposed dredge mitigation plan.

	preliminary experimental work and to establish a set of monitoring locations to build up a baseline of seagrass information that can be used to assess potential impacts during dredging and post dredge recovery, as well as assessment sites during dredge mitigation. There is no guarantee that this work will continue beyond February and should potentially be part of CoG conditions to ensure protection of seagrasses.	

EIS Addendum		
Section 3.5.1 Marine Flora and Fauna	On page 21 it is suggested that seagrass was found by Fisheries Queensland around the Passage Islands in 2002 but not in 2004-2008. This is not the case. The Passage Islands were only surveyed for seagrass in the 2002 baseline. All subsequent surveys (2004-2008) only looked at a subset of meadows and did not include the Passage Islands. Fisheries Queensland has recently completed field work for an updated baseline (November 2009) and seagrass was still located around these Islands.	Please amend Section 3.5.1 Marine Flora and Fauna on page 21 to include 'The Passage Islands were only surveyed for seagrass in the 2002 baseline. All subsequent surveys (2004-2008) only looked at a subset of meadows and did not include the Passage Islands. Fisheries Queensland has recently completed field work for an updated baseline (November 2009) and seagrass was still located around these Islands'. Please undertake further modelling of the potential dredge plume extending into Graham Creek and The Narrows, generated by dredging of Options 1b or 2a, and provide a report of the findings. The impacts of each dredge option with the LNG proposal facilities to be supported by that dredging should be identified and discussed.
Section 3.5.2 Impacts and Mitigation 18.c.10	On page 22 it is suggested that there may be an increase in the northward propagation of the dredge plume over the main EIS model into Graham Creek and The Narrows. This has the potential to further impact on seagrasses as meadows are located in both these locations.	
General	Fisheries Queensland interest with all proposals in this area is the reduction of impacts to fisheries resources, fish habitats and fishers. Fisheries Queensland would promote the least impact options to achieve the proposals if these are to proceed. Options 1b and 2a are to support the location and design of facilities which are currently part of a separate EIS. The impacts of the location and design of these facilities and options of least impact should have a major bearing on the decisions regarding these options.	

Biosecurity Queensland

General Comments

The mitigation and management of Biosecurity risks (weeds, pest animals, contaminants, diseases, pathogens) is a high priority for the protection of Queensland's economy, environment, social amenity and human health.

Invasive species have major impacts on natural resources, the environment and conservation of biodiversity, and the economic and social benefits (way of life) from their use. They destroy the functioning of terrestrial, freshwater and marine ecosystems through competition, predation, contamination, spread of diseases and erosion. Successful invasive species management will depend on shared ownership and responsibility for action across government, stakeholders and the community.

According to the Queensland Biosecurity Strategy 2009-14 Biosecurity means mitigating the risks and impacts to the economy, the environment, social amenity or human health associated with pests and diseases. Biosecurity deals with the risks from pests and diseases that impact on:

18.d.1

- Plant and animal industries including agriculture, horticulture, aquaculture, fisheries, forestry and racing
- Biodiversity and the natural environment (terrestrial and aquatic)
- Cultural heritage, recreation, sport and social amenity
- Infrastructure and service industries, including power, communication, shipping and water supplies
- Tourism, lifestyle and pleasure industries
- The built environment
- Human health through the transfer of diseases from animals to humans

The goals for biosecurity in Queensland are to:

- Prevent exotic pests and diseases from entering, spreading or becoming established in Queensland
- Ensure significant pests and diseases are already in Queensland are contained, suppressed or managed
- Contribute to the maintenance of Australia's favourable national and international reputation for freedom from many pests and diseases, market access for agricultural commodities, product safety and integrity, and diverse ecosystem sustainability.

Preventative measures need to be put in place to reduce the Biosecurity risk of the spread of weeds, pest animals including marine pests, contaminants, plant pest diseases and animal pest diseases as part of the Port of Gladstone Western Basin Dredging and Disposal Project.

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Corridors, be they roads, easements, channels, railroads or utility rights of way can act as conduits to the movement of pest species (including weeds, introduced animals such as foxes and plant diseases such as *Phytophthora cinnamomi*).

The Port of Gladstone Western Basin Dredging and Disposal Project EIS does discuss at length marine pests and to some extent weed and pest animal impacts in Section 9 - Nature Conservation. To ensure all Biosecurity risks are considered it would be strategic for the proponent to develop an overarching Biosecurity Management Plan to provide guidance to address potential impacts to the Port of Gladstone project site and surrounding areas. Such a plan should encompass preventative measures to reduce the Biosecurity risk of the spread of weeds, pest animals including marine contaminants, plant pest diseases and animal pest diseases in this precinct.

18.0.1

Recommendation:
The development of a Biosecurity Management Plan for all terrestrial invasive species be developed for the Port of Gladstone Western Basin Dredging and Disposal Project EIS.

The following information may assist in the development of the Plan and mitigation plans referred to in Recommendation 2.

- The use of Biosecurity Queensland's Annual Pest Distribution Survey 2008 data and predictive pest maps available on the DEEDI website. This data shows predictive maps as well as extent of species - Class 1 species are often in very low numbers and subject to eradication programs, Class 2 and 3 species are often established species and the focus should be on preventing their further spread or mitigating their risks to primary industries, the environment and our way of life
  - ⇒ http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/4790_9824_ENA_HTML.htm
  - ⇒ http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/4790_9827_ENA_HTML.htm

- Plant and animal diseases information available on the DEEDI website. Biosecurity Queensland officers mainly do surveillance, however this information will assist the proponent with current restricted area information to address potential risks to agricultural areas. Also who should be contacted if officers come across anything unusual
  - ⇒ Emergency animals diseases http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/4790_127_ENA_HTML.htm
  - ⇒ Plant health diseases http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/4790_113_ENA_HTML.htm

18.0.2

Recommendation:
Undertake a risk assessment for high biosecurity risk species and sites (eg current location) and develop threat mitigation plans for them (eg clean down and inspections at high risk sites). There is a duty of care obligation to prevent the establishment or spread of plant and animal diseases during the development of the Port of Gladstone Western Basin Dredging and Disposal Project.

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Local Government Areas

There is one Local Government Area within the Port of Gladstone Western Basin Dredging and Disposal Project Site. The *Land Protection (Pest and Stock RouteManagement) Act 2002* (The Act) specifically requires local governments to coordinate the development, implementation and periodic review of pest management plans for their areas as part of an integrated planning framework for managing pest plants and animals across the state. Local governments can also declare and prioritise under their local laws pest species not listed in the Act and these species are often included in the LGAPMP.

Any assessment of the weed and pest animals within the Port of Gladstone Western Basin Dredging and Disposal Project Site should include the priority weed and pest animal species listed in the Local Government Pest Management Plan and the locally declared weed and pest animal species under the Local Government model laws.

18.d3

Recommendation:
All priority weed and pest animal species listed in the Local Government Pest Management Plan and the locally declared weed and pest animal species under the Local Government model laws must be considered in the Weed and Pest Animal Management Plans for each existing or proposed operational area in the Port of Gladstone Western Basin Dredging and Disposal Project Site.

Marine Pests

There is a duty of care obligation to prevent the establishment or spread of marine pests in the Port of Gladstone Western Basin Dredging and Disposal Project as discussed in Section 9.3 & 9.4 of the EIS. Biosecurity Queensland, in the Department of Employment, Economic Development and Innovation is the lead agency in ensuring marine pests do not become established in Queensland.

Two infestations of Asian green mussel (*Perna viridis*), have been detected and eradicated in the Gladstone harbour area in the recent past. Asian green mussel (*Perna viridis*) is a declared pest under the *Fisheries Regulation 2008*. This species is one of a number of biosecurity risks to this region and consequently mitigation of spread and raising awareness of these and other marine pest species will reduce the threat.

There are potentially about 80 marine pest species that could be inadvertently introduced to the Port of Gladstone Western Basin. If any of these species became established their eradication would be problematic because of the associated environmental impact and the scale of the marine geography involved. Marine pests are most likely to come through ship movements, either from other states or territories or overseas. Marine biosecurity is focused on the prevention of pests reaching Queensland and early detection. The prevention of marine pests entering Queensland is achieved by control of their movement by ships and other vessels. This is achieved

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the water and by management of biofouling (organisms attached to the hull and other places in contact with water). These techniques limit the likelihood of a pest incursion but do not totally eliminate the risk. Best practice is to have both effective ballast water and biofouling management programs in place, along with a marine pest monitoring program to facilitate early detection and eradication of any incursions before they establish.

Ensuring that the management of ballast water takes place on trading vessels is the responsibility of the Australian Quarantine and Inspection Service. Effective biofouling management on trading vessels has commercial advantages for the operator and the short anchorage times for such vessels limits their potential to translocate pests. Bigger risks are associated with infrastructure and non-trading vessels brought into the location either for construction or servicing of the facility.

To prevent marine pests establishing in the location the following steps should be taken:

The development and implementation of a marine pest monitoring plan for the location consistent with the most recent version of the marine pests 'Monitoring Guidelines and Manual' (Department of Agriculture, Fisheries and Forestry).

All dredges and associated vessels, tugs and other infrastructure vessels need to:

- have their hulls and associated internal seawater systems inspected and if need be treated to ensure no marine pest species are present on or in the vessel,
- maintain an effective antifouling coating appropriate to the vessel's operating profile and docking cycle, including regular inspection, scheduled drydockings, and cleaning and maintenance as necessary to ensure hulls are free of biofouling and associated marine pests.
- anchors and cables are cleaned after use and checked clear of mud, sediments, biofouling or entangled biofouling (such as seaweed) before stowage
- cable lockers are checked and if necessary cleaned clear of mud, sediments, and entangled biofouling before transit of the dredge to another area
- internal seawater system strainers are inspected and decantation tank/s (if fitted) are emptied prior to transit to Abbot Point to insure that these areas are free from marine pests.

18.0.4

Recommendation:
The development and initiation of a Marine Pest Management Plan to monitor for marine pests and mitigate the risk of spread into and within the Marine facilities of the site.

TO: The Coordinator General c/ EIS Project Manager

FROM: Western Basin Dredging Project

DATE: 15-1-2010

FACSIMILE NO: 07 32258282

NUMBER OF PAGES: (including this page) 5.

14 January 2010

The Coordinator General
c/-EIS Project Manager: Western Basin Dredging Project
Significant Projects Coordination
Department of Infrastructure and Planning
PO Box 15009
City East Qld 4002

By Fax: 07 3225 8282

Dear Coordinator-General

Re: Port of Gladstone Western Basin Dredging and Disposal EIS

I refer to the Port of Gladstone Western Basin Dredging and Disposal Project (WBDD Project) proposed by the Gladstone Ports Corporation currently undergoing an environmental impact statement (EIS) in accordance with Part 4 of the State Development and Public Works Organisation Act 1971 (SDPWOA) (Qld) and pursuant to the Environment Protection and Biodiversity Conservation Act 1999 (Cwlth). I note that on 18 June 2009 when you determined the project constitutes a 'controlled action' the controlling provisions noted in the decision were: world heritage area (sections 12 and 15A); national heritage places (sections 15B and 15C); listed threatened species and communities (sections 18 and 18A); and listed migratory species (sections 20 and 20A).

I make this submission as a citizen concerned about coastal development in Australia and Queensland, as a regular visitor to Gladstone and the adjacent Great Barrier Reef, and as an academic. I therefore provide the following comments in the hope of improving the environmental outcomes for coastal development in Queensland and Australia. In making these comments I have sought professional legal advice and assistance and this letter has also been copied to the Queensland Coordinator-General as a formal submission on the EIS process being administered on behalf of both governments by the Queensland Department of Infrastructure and Planning.

19.1

1. The WBDD Project is being undertaken primarily to facilitate shipping channel development required for the development of the LNG industry in Gladstone. Whilst in principle I have no objections to properly managed industrial development and the development of LNG industry in Gladstone, the issue of this submission is the scale of the project, potential impact on the marine environment of Port Curtis, the piecemeal and inadequate environmental impact process and the poor quality assessment documentation produced by the proponent.

2. Concurren: to the WBDD Project EIS, there are several other State/Commonwealth environmental assessment processes being undertaken for the LNG developments in Gladstone but the issues of channel development and dredging and spoil disposal for each of projects appears to be dealt with separately (in sometimes, only some parts) in each project EIS. However, the WBDD Project scope is meant to cover all the channel development required for the LNG industry, but also appears to cover only some parts. The overall approach appears to be very piecemeal with no EIS document appearing to cover all the channel works currently under consideration, the dredging and disposal options available and other development actions which may have synergistic impacts to those created by the dredging works (e.g. sewage and brine plume discharges).

19.2

3. The total volume of dredging contemplated under the WBSDD Project is approximately 36 million m^3 making it the largest dredging campaign ever undertaken in Australia. In addition, the Wiggins Island Coal (WICT) Project has approval to dredge an additional 6.3 million m^3 but has not yet been commenced. Furthermore, the Port of Gladstone Western Basin Master Plan indicates that 'GPC shall initiate the preparation of an EIS for outer channels to ensure that port capacity is maintained for existing industry and can readily be upgraded should additional demand occur'. [1]

19.3

4. The total planned capacity of the Western Basin Reclamation is 60 million m^3 which may cover over 300 hectares of intertidal and sub-tidal lands.

19.3

5. In addition, the proponent has also lodged a State-only EIS for the Fisherman's Landing Northern Extension (FLNE) Project, a proposed 150 hectare expansion of the existing Fisherman's Landing reclamation. The proponent has attempted to separate the FLNE Project which is subject only to Queensland government assessment processes from the WBDD Project (and joint Queensland/State EIA processes). However, it is obvious from the WBDD EIS documentation that they are clearly the one project. In fact it is obvious that the FLNE Project and WBDD Project are extensions of the original Fisherman's Landing reclamation. Nonetheless, whilst the WBDD Project was considered a controlled action by you, the original Fisherman's Landing reclamation and the more recent FLNE Project were not deemed controlled actions. I contend that the FLNE Project can not be considered in isolation of the WBDD Project impacts and that the Minister should reconsider his original decision on the FLNE Project not being a controlled action and the development proposed be considered under the framework of the WBDD EIS. The separation of the two projects would appear prima facie to contravene the intent of s74A of the EPBC Act regarding 'split referrals' of a larger action. Failure to correct this original decision – in light of the recent knowledge regarding the WBDD Project – would appear to be an administrative error which may be vulnerable to legal challenge.

19.4

6. The WBDD EIS considers no alternatives other than reclamation of intertidal and sub-tidal lands for disposal of the dredged material. The EIS briefly discusses the potential option for ocean disposal but rejects it on the basis of it not being consistent with the Port of Gladstone Western Basin Master Plan. However, upon review of the

19.5

19.5 Master Plan the potential option for oceanic disposal of dredged material from new channel development receives the scantest of discussion and is dismissed on grounds which are not supported by any analysis.[2] I therefore contend that the draft WBDD EIS is inadequate, does not address the terms of reference for the EIS and requires a much more comprehensive discussion and assessment of options and their relative impacts and merits.

19.6 7. The potential impacts on marine habitat, communities and a number of critical species as detailed in WBDD EIS are considerable and unacceptable. The EIS predicts impacts on seagrass beds and communities over large areas of Port Curtis with about a quarter of the only recently monitored and mapped seagrasses being assessed as 'at risk'. In the risk assessment section of the EIS, the risks to seagrasses were rated as 'high'. However, even after the application of mitigation measures, the risk was still rated as 'high'.[3] In a World Heritage Area this is an unacceptable level of risk. Furthermore, the described mitigations for these risks often included statements regarding the implementation of offset programs. However, no substantial detail on these offset programs was provided and a review of the scientific literature would indicates little experience and even less success in proven seagrass bed re-planting/reinstatement programs.

19.7 8. Finally, the most alarming part of the WBDD EIS is the statements regarding the potential impacts on dugong and coastal dolphin populations as a result of the loss of the seagrass habitat. The EIS indicates that the dugong (listed on the IUCN Red list as 'vulnerable to extinction') and Snubfin dolphin (listed on the IUCN red list as 'near threatened') in particular have reproductive feeding and migration habits along with a history of population decline that make them susceptible to local extinction. Furthermore, the EIS contains statements indicating that a loss of just 5 percent of these endemic populations could result in a local extinction event! Again, this is an unacceptable risk and surely a contravention of State and Commonwealth wildlife management and conservation policies and moreover World Heritage values and protection obligations.

19.8 Coordinator-General, I urge you to intervene in this matter and ensure that the people of Gladstone Queensland and Australia are given the assurance of a comprehensive and proper environmental assessment process that addresses the multitude of development proposals currently being considered for Gladstone. In particular, the potential cumulative impacts of these developments on the marine environment in a World Heritage Area and adjacent the Great Barrier Reef Marine Park have not been adequately addressed in either the WBDD EIS nor any other impact assessment or planning document.

19.9 In addition, each of the multitude of EISs are massive in volume (the Gladstone LNG Project draft EIS (was over 10,000 pages) which makes the ability of local interested parties to read – let alone comment on them – virtually impossible. Residents of Gladstone and even the Gladstone Regional Council have recently complained of EIS fatigue and overload resulting in inadequate assessment and softened criticism of the

projects. In my opinion this represents not only a problem for assessment of each EIS, but more worryingly, a systemic failure in the overall environmental impact assessment process which in the absence of more strategic Queensland Government action, can only be redressed by the Commonwealth.

Yours sincerely

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1 See Port of Gladstone Western Basin Master Plan 2009, Department of Infrastructure & Planning, section 5.3, p29 at http://www.dip.q d.gov.au/resources/gladstone-western-basin_/western-basin-master-plan-study-the-master-plan-elements.pdf

2 See Port of Gladstone Western Basin Master Plan 2009, Department of Infrastructure & Planning, section 3.7, p23 at http://www.dip.q d.gov.au/resources/gladstone-western-basin_/western-basin-master-plan-study-the-master-plan-elements.pdf

3 See WBDD EIS, Chapters 18 and 19.