

PT. SARANA INDUSTAMA PERKASA

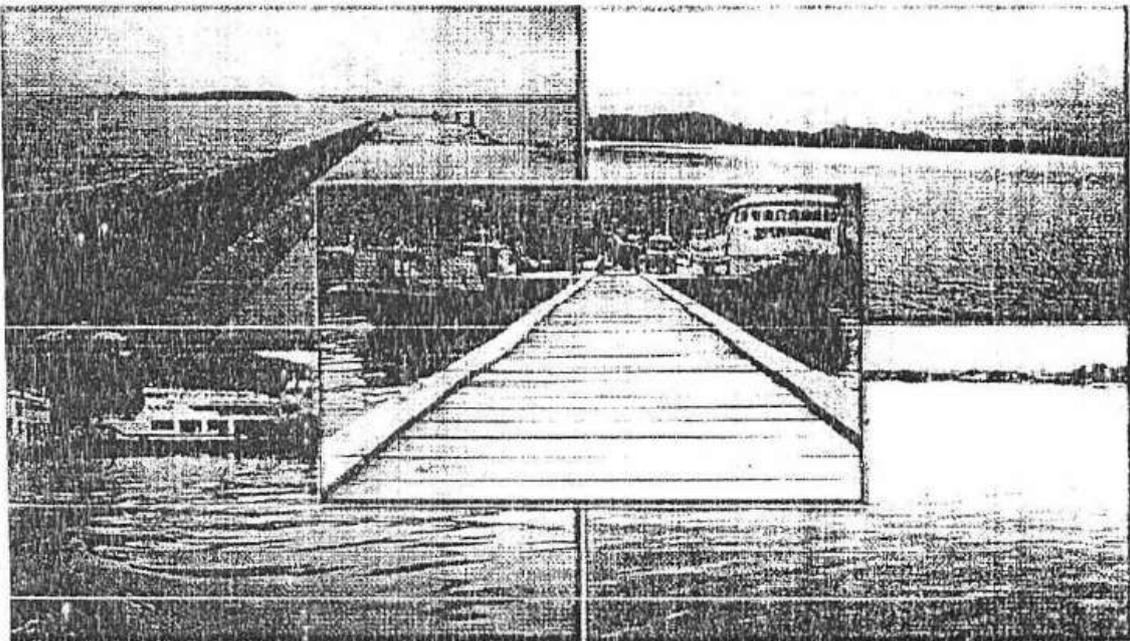
Jl. Desa Ujung Serdang Km 11.5 No. 60 T. Marawa - Deli
Serdang - North Sumatera. Telp/Fax: +62 - 61 - 7940033

ENVIRONMENTAL IMPACT ANALYSIS

(ANDAL)

DEDICATED PORT CONSTRUCTION IN THE LALANG VILLAGE - MEDANG

DERAS SUBDISTRICT - ASAHAN DISTRICT



LALANG VILLAGE

MEDANG DERAS SUBDISTRICT

ASAHAN DISTRICT

2006

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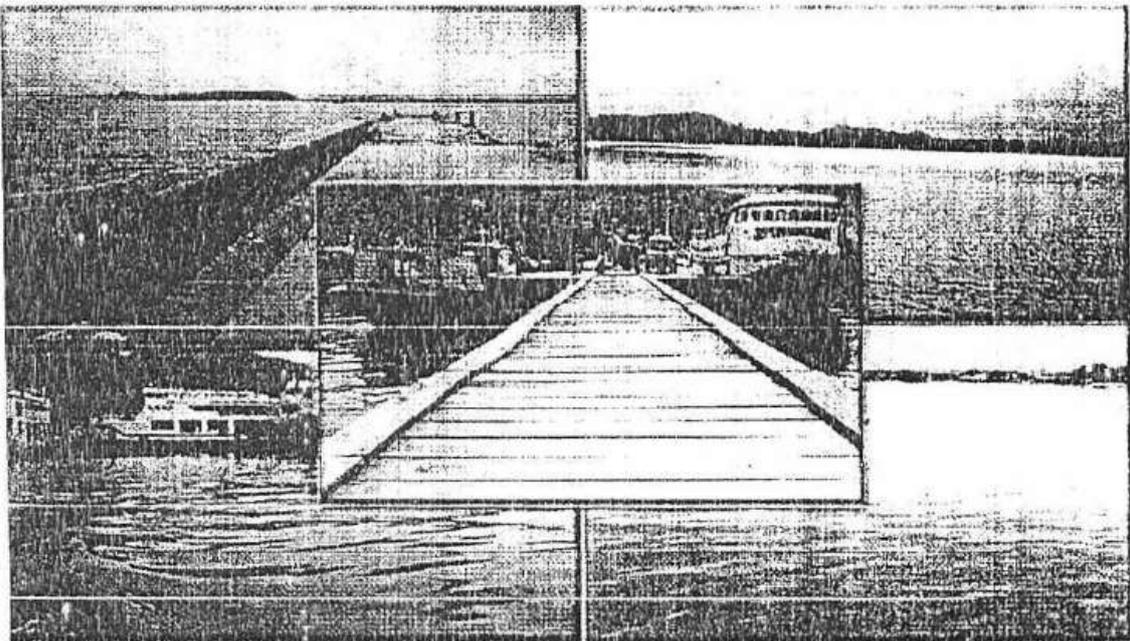
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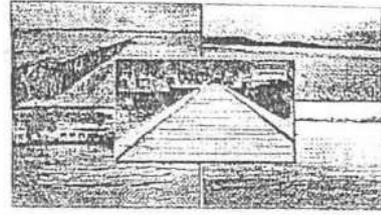


LALANG VILLAGE

MEDANG DERAS SUBDISTRICT

ASAHAN DISTRICT

2006



**MEETING MINUTES OF
ENVIRONMENTAL IMPACT ANALYSIS (ANDAL)**

PT. SARANA INDUSTAMA PERKASA

Response on the AMDAL Appraisal Commission Meeting Minutes

Discussion of ANDAL, RKL-RPL Documents

Dedicated port Construction Activities of PT. Sarana Industama Perkasa

Tuesday, 28 March 2006

No.	Suggestion and Feedback	Page	Proponent Response
1	2	3	4
A.	Drs. H. Taufan Gama Simatupang, MAP (Vice Regent of Asahan		
1.	Addition to item about PP as No. 8 ie.: GR. 16 of 1999 on the Hazardous And Toxic Waste Management (B3).	1-3 RKL	Has been added (Page : 1-3)
2.	Additional to item about Ministeral Decree as No. 22 and 23 ie.:	1-4 RKL	Has been added (Page : 1-4)

	<ul style="list-style-type: none"> - Decree of Environment Minister No. 51/MENLH/10/1995 on the Liquid Waste Quality Standard for Industrial Activities. - Ministerial Decree No. 45/ MENHL /10/1997 on the Air Pollution Standard Index 		
3.	<p>Additional to item on Decree of Head of Bapedal as No. 6 and 7 ie.:</p> <ul style="list-style-type: none"> - Environmental Impact Agency (Bapedal) Decree No. 225/BAPEDAL/08/1996 on the procedure and requirements for the storage and collection of waste oils and lubricants. 	<p>1-5 RKL</p>	Has been added (Page : 1-5)

	<p>- Environmental Impact Agency (Bapedal) Decree No. 01/BAPEDAL/09/1995 on the Procedures and technical requirements for the storage and collection of B3</p>		
4.	<p>Additional to item on the Regional Regulation and the Governor's Decree as No. 4 ie.:</p> <p>- Regional Regulation of Asahan district no. 9 of 2002 on the Waste Disposal Permits</p>		Has been added (Page : 1-6)
5.	<p>Additional to item on the Economic Social Approach as No. 1 ie.:</p> <p>The word of <i>kesalahan</i> becomes</p>	RKL : II-2	Has been added (RKL Page : 1-5)

	<i>kesalah pahaman</i> (misunderstanding)		
6.	The words of Department of Tourism and Environment (<i>Dinas Pariwisata dan Lingkungan Hidup</i>) was changed to Office of Environment and Tourism (<i>Kantor Lingkungan Hidup dan Pariwisata</i>).	RKL : II-2 to III-19	Has been added (RKL Page : II-2 to III-19)
7.	Need to be added about Community Development because it is very influential on the surrounding community environment.	III-13 to III-16	Has been added (Page : III-18,19)
8.	It should be explained on the item about safety of life at sea, who is responsible if there is an accident on the boat of fisherman due to the	III-16	The executive of the environmental management is the proponents of the Dedicated port construction of PT Sarana Industama Perkasa (has

	operation of this port.		described in page III-17) so that in the event of accident occurs due to the absence of management efforts by the proponents, then proponents automatically is responsible for it, but if the management effort has been executed and the accident is caused by other factors, then the proponents is not responsible for the safety of life at sea.
9.	In the Statement Letter shall be adjusted to the same proposal on RKL		Has been adjusted with RKL
10.	Additional to the provisions of the Laws and Regulations as in the RKL	1-3 RPL	Has been added and adjusted with RKL

	Documents.		
B.	Mimi Rahmayani (Investment and Promotion Agency of North Sumatera)		
1.	In the ANDAL, in the loading and unloading activities of the unloaded material ie. solid type, among others: coal, please explain whether this coal is used for plant activities in the region, because the plant in the area is only for the CPO processing plant and its derivatives (oleochem).	IV-18	In this place the coal is also used as fuel for plant activities in the region
2.	In the RKL matrix, there is a component of community perception.		Indicators in the form of presence or absence of the complaints and

	<p>On the benchmark there is a response given respondent to the activity plan is stated 100% of community agreed. What is the indicator and who the respondent is. Explain!</p>		<p>objections of the community to the dedicated port activity plans, respondents are community around the location of activities (has described on ANDAL page: V-38)</p>
3.	<p>In the RKL as well as construction, post construction phases of Sosekbud Kemas component, there is a impacts of security and order, but also on the effort of Environmental Management is not explained.</p>		<p>Has been adjusted</p>
4.	<p>In RKL and RPL in the safety of life at sea activities, does these</p>		<p>Due to the safety of life at sea activities in the construction phases</p>

	activities not separated during construction and post construction phases, explain!		the impacts to be managed and monitored are the same, so they are not separated.
5.	In the case of security and supervision of this dedicated port operational, whether a bonded zone is created so that in and out of goods for export and import there is a person in charge, explain in RKL and RPL as this is also useful for environmental monitoring.		Dedicated port activities are one of the facilities and activities of bonded industrial zones
6.	Whether on the construction phases in the Hydroceanographic component not studied, such as the environment and the seabed because		For hydroceanographic components such as the environment and the seabed has been explained in the document are summarized in the

	of whether there is a mangrove forest or coral reef, Explain!		description of the bathymetry survey results
C.	Ir. Eka Enha YuIia (Regional Environmental Impact Control Agency of North Sumatra Province)		
1.	In the construction of this dedicated port is certainly interfere/affect the activities of the fisherman around the location, please explain what will be done to overcome the impacts of port construction activities. It is estimated that the impacts around the catchment area of the fisherman		To overcome the impact due to the construction of this port in the form of socialization to the surrounding fisherman community to be careful that is by giving the navigation signs and warning signs so it can facilitate the passage of fishing boats passing around the location of activities.

	<p>can be well facilitated, what kind of compensation is given as the construction activities of this dedicated port will be continuous.</p>		<p>For compensation has been delivered by the proponents in this case PT Sarana Industama Perkasa, which has been discussed with the community around the location of activities.</p>
2.	<p>Explain at what distance the air sampling is taken, because air pollution has a important impact, especially during the construction phases the decrease in air quality will increase. How efforts are made to reduce the level of air pollution both in the pre-construction and construction phases.</p>		

3.	<p>Point 5 - ANDAL</p> <p>Waste management of the loading and unloading material activities to the place that is in the form of oil spilled, which is accommodated in the plant processing, what plant accompanies the construction of dedicated port and how about its ANDAL.</p>		<p>The plant here is a temporary waste storage place, before being transported to Waste Treatment Plant in Cileungsi - Bogor.</p>
D.	<p>Ir. Jaya ArJuna (Expert Staff of Regional Environmental Impact Control Agency of North Sumatra Province)</p>		
1.	<p>The location of dedicated jetty</p>		<p>In accordance with the dedicated port</p>

<p>activities located on a very potential and vulnerable route to smuggling. In this document is not listed at all the description of escort efforts to the smuggling cases. Smuggling will have a direct impact to the economy, social culture as well as the safety of country. Proponents shall include in advance the standard operating procedure (SOP) of the port and the administration system of in and out of goods and the presence of main duties and functions of the authorized/ approved supervisory</p>		<p>functions for sea transport for self-interest (in this case the activities of PT Sarana Industama Perkasa), where the operation is under the supervision of the Port of Kuala Tanjung and Pelindo, so the potential for smuggling is very small because it is not a public port. The port SOP will be adjusted to the regulations issued by the authorized institutions when a dedicated port license has been issued.</p>
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	institutions or reference to the rules issued by the authorities (migration, customs, police, etc.)		
2.	During the operational activities the potential impact is from loading and unloading activities from the ship. In this document there is no description of loading and unloading activities, unloading or filling of ballast water, filling the fresh water of its amount and source, solid waste management from ship (Decree of the Minister of Transportation No. KM.221/ AL.50b.Phb-87), management		Has been added

	of ship machine maintenance activities etc.		
3.	In the RKL stated that the source of impact to the changes of air quality is clearing and maturation of lands, supporting foundation building works, soil compaction, mobilization of heavy equipment that will have an impact to the air pollution. The impact sources should be individually specified and their impacts also managed in a specific way based on the details of impact source activities, and not in general as listed in	II-4	Has been deepened

<p>3.2.2.a1 are related to 3.2.2.a.4.</p> <p>Each impact shall be managed through an economic approach, engineering approach and institutional approach that will be different. The engineering, economic and institutional approach of the mobilization of heavy equipment will be different with the activities of clearing and maturation of land because the area sector also different. And so on for all activities are listed as sources of impact, management purposes and management efforts in</p>		
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<p>this document. The management activities should be relevant to the source of impact. For example, in the Environmental Management Matrix Table (V-2 and V-3) it is stated that the purpose of air quality environmental management is to reduce and minimize the levels of air pollutant parameters by benchmarking of SO₂, NO₂, Pb. The management plan is to flush the road, cover the truck, clean the wheels and limit the height of material stacking. Can the management plan are listed to</p>		
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	minimize and reduce the parameter levels of SO2, NO2, Pb?		
4.	The activities of management plan for maintaining sea water quality from impact sources includes of port operations should be described in more detail as these activities occurs continuously during this jetty is operating.		Has been corrected.
5.	In the RKL document there is no activity of river water quality management, there are only seawater quality, where as in the RPL document there is a monitoring of seawater quality. How to monitor to	III-8 to III-12	Has been adjusted

	<p>unmanaged. Should all activities suspected will reduce the quality of environment managed through engineering, economic and institutional approaches as well as monitored the results of its management. What is monitored is the parameter that becomes the management benchmark.</p>		
E.	Awaluddin (Representative of Affected Community)		
1.	<p>Opinion:</p> <p>We on behalf of the community of Lalang Village in principle support</p>		Suggestions accepted.

<p>the construction in our region, because we have felt the positive impact to us. among others, our local youth can work with a company that will be built later. Also do not rule out that its negative impact to the fishing community in particular has exist. The former we can catch fish not too far into the sea but now we have to catch fish sometimes until to pass the sea border of Indonesia. This is one of the perceived negative impacts, but we have a principles that the fisherman is not an inheritance</p>		
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	<p>expertise passed on by our parents.</p>		
	<p>Suggestion:</p> <p>For that we hope the fisherman can engaged in the industrial construction are exist in our region. In other words, which suits our capabilities. And also we suggest to the company later there is the installation of signs that can be guidance for sea peoples so there is no accident in the passing of fisherman. And in this occasion also I hope to the Local Government of Asahan can transfer the place of guesthouse and fish sales from</p>		<p>Suggestions accepted and followed up in accordance with regulations</p>

	<p>Rindam River to Padang River. With reason it is worried that passing of fisherman will be able to disrupt the jetty activities, because the distance is quite close to the Rindam River. It is only possible if Local Government can work together with the company to deepen the estuary of the Padang River and the hardening of roads leading to the Padang River. Because one obstacles in the Padang River is the siltation of estuary.</p>		
<p>F.</p>	<p>Azhari Hamidi (Department of</p>		

	Transportation of the North Sumatera Province)		
1.	The applicable laws and regulations should be added to Law No. 14 of 1992 on Road Traffic		Has been added (in the ANDAL RKL RPL documents)
2.	Government Regulation No. 41 of 1993 on Transportation.		Has been added (in the ANDAL RKL RPL documents)
3.	Government Regulation No. 42 of 1993 on Inspection of Vehicles on the Road.		Has been added (in the ANDAL RKL RPL documents)
4.	Government Regulation No. 43 of 1993 on Infrastructure and Road Traffic.		Has been added (in the ANDAL RKL RPL documents)
5.	Government Regulation No. 44 of 1933 on Vehicles and Drivers.		Has been added (in the ANDAL RKL RPL documents)

6.	The aforementioned is intended to regulate in the mobilization activities of heavy equipment, materials (sand, coral and cement) and labor and noise permitted for vehicles at construction phases.		Has been added (in the ANDAL RKL RPL documents)
G.	Danny Wira Basa, SP (National Land Agency (BPN) of the North Sumatra Province)		
1.	Created map of coastal border area, so it can be seen how area tthe coastal border affected by jetty construction and can be eliminated coastal border damages due to this		Has been added

	construction.		
2.	Also created a complete land use map so it can be seen what land use areas are affected by construction and this makes it easier for us to anticipate environmental damages and an ongoing strategy for dealing with environmental damage can be made.		Has been adjusted
3.	Map of RTRW shall be displayed so that it can be seen in conformity with RTRW.		Has been displayed
4.	In the ANDAL document is not attached a map of land area as shown in Appendix 2 but there is a		Map attached is not map of land area but the results of land investigations and its geological

	map of PKS construction and no titles.		profiles
5.	Regulation of the Minister of Agrarian Affairs/ Ka.BPN No. 2 Year 1999 is not applicable due to the location licenses has been submitted to the City/District Government in accordance with the regional economic principles.		Has been corrected
H.	Ruslan (Institute for Community Empowerment (LPM) Lalang Vilage of Medang Deras Subdistrict)		
1.	In principles, we and the community elements of the Lalang villages		Suggestions accepted.

	support the Plant construction plan in our village area and jetty construction and this will reduce the impact of the decrease in unemployment.		
2.	As a coastal area many fisherman's children are currently transfer employments from as fisherman to work in factory companies.		
3.	Please make signs around the jetty area to keep things undesirable for the fishing fisherman.		Suggestions accepted and followed up in accordance with regulations
I.	Linda K. Bangun, SKM (Department of Health of the North Sumatra		

	Province)		
1.	Well water quality must refer to the Health of Minister Regulation No. 416/ Menkes/ Per/ IX/ 1990		Has been corrected
2.	Preparation of AMDAL is already referring to Minister of Health Joint Decree and Minister of LP No. 183/ Menkes/ SKB/ II/ 1993 on Procedur for Environmental Health Impact.		Impact of health component has been added
4.	In the flow chart VI-4 Public health to be displayed.		Has been added
5.	In the matrix the public health also to be displayed.		Has been corrected
6.	In the legal foundations to be		Has been added

	considered Health-related Regulations		
J.	Lukman, SH (Village Head of Lalang of Medang Deras Subdistrict of Asahan district)		
1.	Please provide employment opportunities to local community seeking work		Suggestions accepted and followed up in accordance with regulations
2.	Please deepening the estuary of Sei Fadang of Lalang Village for the fisherman activities and not constrained in which until this time the fisherman go to sea from Sei Lindang of Lalang Village		Suggestions accepted and followed up in accordance with regulations

	adjacent to the port to be constructed which will result in disruption of sea transportation (fisherman)		
3.	Please the sea water quality can be maintained after the construction of DUKS building so the fisherman are not disappointed when go to the sea for a living.		Suggestions accepted and followed up in accordance with regulations
4.	Please during construction period of DUKS building to be made a signs around dredging so the fisherman do not have an accident.		Suggestions accepted and followed up in accordance with regulations
5.	The Community Development should be clear to the community in what		Suggestions accepted and followed up in accordance with regulations

	form.		
6.	if there is an accident around the port to the fisherman who is responsible.		Person in charge if there is an fisherman who have an accident during the construction until operation period is proponent parties
K.	Arifin Bangun (Research Center of SDAL USU)		
1.	The order of the year in the writing of the Law and Regulations should be written from the oldest year to the youngest year.		It has been fixed and arranged according to the lowest year to the highest year.
2.	If it is associated between the scope and the baseline (Chapter 5) of that data expressed only sourced		The questionnaire data has been tabulated.

	<p>from secondary data, why not expressed the results of the quisioner/ interviews distributed to respondent so we see the data is very less so that it is influence on the analysis and evaluation.</p>		
3.	<p>Whether the consultant has actually gone to the field to look for data, especially Public health data, because in the Medang Deras subdistrict it is not found the name of Pagurawan urban village and 11 village/ urban village name. Why not get data from the Lalang village itself. It is will affect</p>		<p>Public health data taken that is the nearest population data that will likely cause impact that is Pagurawan urban village.</p>

	to your data so that it influences to the impact estimation aspects to be studied.		
4.	Plan schedule is based on the schedule listed then this port has ± 6 months duration of commercial operation. The AMDAL itself is only discussed today at the commission hearing. Please clarify.		The schedule has been corrected, as the activity was temporarily suspended.
5.	Please be consistent does the labor is 60.58 or 88 as well as made the classification/ qualification of the needs for example how many employees, staff and etc.		The labor shown is in accordance with each phase of activity.
6.	From certification of biological,		Documents just discussed because

	<p>physical, chemical analysis was written on September 25, 2003, whether within 2 years, this is nothing has changed. This hearing may clarify whether this data is received or retested.</p>		<p>activities are temporarily suspended within 2 years so there is no continuity of activities and conditions have not changed much.</p>
7.	<p>In this document there is no discussion/ description on the wave analysis. We think this needs to be discussed mathematically (simulation), so that the impact of the wave can be estimated.</p>		<p>Hydrooceanography data have discussed waves, but modeling was not made because there is no reclamation and dumping activities that could importantly affect to the local sea bathymetry.</p>
8.	<p>Flowchart of the estimates of post-construction impacts whether there is a relation of the impacts of</p>		<p>Has been corrected</p>

	biota derived, waters with safety of life at sea, why not directly from the traffic flow.		
9.	Component of Sosekbud Kesmas (Matrix), Kesmas is not included whether this is not necessary because it is related to RKL/RPL later. We think this aspect needs to be included.		Has been corrected
10.	Images/maps in the RKL / RPL please adjust to the managed and monitored components.		Has been adjusted
11.	The data in ANDAL was less accurate so that this RKL would also affect what needs to be managed and		Has been added

	monitored.		
12.	Please include Cominunty Construction for the surrounding community of the company, because in the matrix or narrative also has not been described.	V-40	Has been added
13.	Images/maps displayed specifically for location, ecologic, region and administrative boundaries to be clearly shaded both in terms of sample locations.		Has been clearly adjusted to its boundaries
L.	Chairul Azhar (Expert Staff of Bapedalda Province of North		

	Sumatra)		
1.	Written Introduction is guided to the Law ... etc. Explain this activities in relation to the articles contained in Law No. 23 Year 1997, GR RI No. 27 Year 1999 and KEPMENLH No. 17 Year 2001 concerning Activity Plans shall be have AMDAL.	1-2	Has been completed
2.	Re-check the Rules have been withdrawn and what it is relation with the KEPMEN written in No. 5, No. 12, No. 13, No. 15. No. 16, No. 17 and No. 19.	1-6	Has been corrected
3.	The policy of implementing	1-8	Has been added

	<p>environmental management in accordance with this policy technical guideline explains that the policy, National, Provincial, Local government and the Proponent not seen in writing the policy other than national policy.</p>		
4.	<p>Basic issues do not include Community Health. Does it is not included in the issues, what is the reason, it is not sync with the V-36 and V-36.</p>	1-9	Has been corrected
5.	<p>Please write down the reasons for air sampling at each location, as well as for other location</p>	II-7	Because the determination of the sampling location is based on the possibility of an area or location of

	sampling.		impact spreading, such as at the location of activity and the nearest settlement.
6.	Write down on the what class water criteria the Quality Standard of the Sono River and Besar River, what is the base of the water class III for Sono River and water class I fir Besar River in accordance wit GR No. 82 Year 2001	III-14	For the classification of Class Water I Standard Quality shall be water can be used for raw water <i>(illegible)</i> require the same quality water as that purpose, while the Class Water III Quality Standard is water can be used for the cultivation of freshwater fish, farms, to irrigate agricultures, and other uses that require the same water quality as those uses.

7.	Add as a benchmark of the Shannon-Winner diversity index for plankton and benthos.	II-28	Has been added
8.	Titles of table 5.1 are added to the data in the last 10 years. Data source 1992-2001, what year the document was written.	V-3	It has been added to Measurement Data Results In the Last 10 Years.
9.	Check how the names of species are written incorrectly and are not appropriate.	V-28 Table 5.8	Has been corrected
10.	Security and order including which environment (see technical guidance)	V-37	Has been corrected
11.	What the criteria for benchmark of values of 1,3,5 for large impacts	VI-1	The assessment is an estimate criteria values of important impacts

	and the magnitude of their impact and application.		(Modified Leopold Method)
12.	Re-attach the potential impact interaction matrix of the pre-construction, construction and post-construction phases in order to identify potential impacts that will be estimated what it is large and important.	VI-2	Has been attached
13.	The opportunity to work and work is one not separated (see technical guidance). Table 6.5. there are 2 (two).	VI-18	Has been corrected
14.	Refer back to the applicable Laws and Regulations.		Has been adjusted

15.	<p>Environmental Supervisory Agency, not always Department of Tourism and Environment of Asahan District but depends on the impact that is managed and monitored.</p>		Has been adjusted
16.	<p>Environmental managements and environmental supervisory are carried out on activities that have a large and important impact to the environmental component. In the RKL/ RPL documents the impact is not large and important is also managed (see technical guidance) what is the reason because it is not appropriate it is writing with</p>		Has been adjusted

	technical guidance used.		
M.	Thamrin Tanjung (PT Pelindo - 1)		
1.	From the data submitted to be completed with Bathymetry Map and Topographic Map.		Has been completed
2.	Climatology data need to improvement/ update, should the data in Year 2005 and not data in year 2001.		Data has been updated with recent data.
3.	To be attached in the form of Map / LayOut that describes the companies around it.		It has been attached to the activity situation map
4.	From RPL document in the page 1-6 of section 1-3 of item 1 stating		It has been corrected, the true is a dedicated port activities.

	the existence of manufacturing activities, if it is true then this document should also discuss the fabrication within the project area, as well as how to overcome it.		
5.	The use of sea water surface should be coordinated with PT. Pelindo (Pelabuhan Indonesia - 1), because it is a DLKP port area, as is done by PT Multimas Nabati Asahan.		Suggestions accepted and adjusted by the regulations.
N.	Ir. Indra Wijaya, MM		
1.	From Curriculum Vitae data, team works estimated in January 2005.	Compiler Team	The compiler team is still same, it's just that when the document is

	<p>The function of team is to prepare KA-ANDAL, ANDAL, RKL and RPL</p> <p>Based on laboratory results issued in 2003. Which team is actually as compiler.</p>		<p>presented, the compiler's CV has been adjusted to the latest.</p>
2.	<p>Page 1-2, KA-ANDAL was approved by Head of Bapedalda of the North Sumatra Province No. 268/ BPD-L-SU/ BTL/ 2005 dated 26 April 2005.</p>		<p>Has been completed (ANDAL, Page 1-2).</p>
3.	<p>Item 4, as Quality Standard guideline, still listed Kep-02/ MENLH/ I/ 1998, it should have referred to the new regulation, ie. Ministerial Decree No. 51 Year 2004</p>	<p>Ministerial Decree (I-6)</p>	<p>Has been adjusted with new regulations</p>
4.	<p>Interview to the 50 residents</p>	<p>Public</p>	<p>It is the nearest residents of the</p>

		Perception (V-2)	activity location
5.	AF Climate Type	Climate (V-2)	AF Climate type is a climate determination based on rainfall and monthly temperature data according to Koopen;
6.	A Climate Type	V-2	A Climate type is based on the management of rainfall type according to Schmidt and Ferguson
7.	From two Climate types (AF and A) which is true.		AF Climate Type is a climate determination based on rainfall and monthly air temperature data according to Koopen. while A Climate Type is based on the type of rainfall according to Schmidt and Ferguson

	The maximum temperature written in December is 26.74°C	V-2	Has been corrected
8.	Maximum temperature according to table 5.1 is August at 27.61°C	V-3	Has been corrected
9.	Maximum written is 19.19 mPa.	Air Pressure (V-2)	Has been corrected
10.	In Table 5.1 is written 10.19 mPa.	V-3	Has been corrected
11.	It was written in October	Max. Air Pressure (V-2)	Has been corrected
12.	In Table 5.1 is written in March	V-3	Has been corrected
13.	It was written in July	Max. Air Pressure (V-2)	Has been corrected

14.	In Table 5.1 is written between April and August	V-3	Has been corrected
15.	The quality studied includes of quality for monitored COD 165 mg/L, Quality Standard 10-25 mg/L.	II-2	It has been discussed (item equal with BOD (page: V-13)
16.	Quality of river water in Table 5.3 for TSS, COD, BOO, PO4 Total. Nitrite, H2S and Fe have exceeded Quality Standard.	V-10	The existing river water quality as a parameter benchmark if in the future pollution occurs
17.	In laboratory results issued by Bapedalsu Laboratory that the sampling location is PT. Domba Mas Kuala Tanjung where as the decision of Bapedalda regarding KA-ANDAL approval issued by Bapedalda is PT.	Sampling Location	The correct proponents is PT Sarana Industama Perkasa (mistyping from the lab)

	Sarana Industama Perkasa.		
18.	The data taken is 2002, 2003, should the data taken is the latest data, in order to reflect the current conditions.	V-37	Data has been upgraded
19.	In the discussion there is a words of village area (<i>luas kelurahan</i>) and in the table there is no village area data (<i>data luas kelurahan</i>)	V-33 (Table 5.13)	Has been corrected
20.	In post-construction the seawater quality on loading and unloading activities will be a important negative impact.	Table 6.5	Has been adjusted
21.	In post-construction the seawater	Table 7.1	Has been adjusted

	quality on loading and unloading activities will be a important negative impact.		
22.	It is stated using Ministerial Decree No. 51 Year 2004 on Sea Water Quality Standard, but on the Laboratory results year 2003 in which the Minister of Environment Decree (Kepmen LH) No. 51 Year 2004 is used in the document.	I-5	Sampling is carried out when the regulation refers to KEPMENLH No. 02/1988, but on the study will adjust to the new regulations.
23.	In some discussions, the creation purposes of this ANDAL document is for the Dedicated Port Construction, but within the environmental monitoring purposes	I-6 Point 1.3	Has been corrected

	it is used to assess whether alternatives are selected in handling the impact of "fabrication activities"		
O.	Ir. Eddy Utama, SmHk (Bapedalda of the North Sumatra Province)		
1.	The Environmental Management Plan executed should be clear and gradually and do not be combined so it is clear, ie.: a. Pre Construction Phase b. Construction Phase c. Post-Construction Phase		Has been corrected
2.	The roads be passed through the Pre	RKL	Has been added

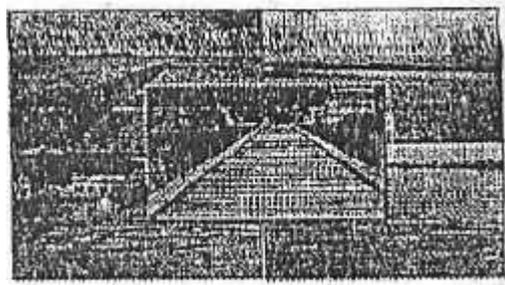
	<p>Construction to Post Construction Phases from Simpang Kuala Tanjung to Jetty is owned by PT. Inalum ± 50 km, the utilization of the road has not been described the form of cooperation executed between PT. Inalum and PT. Sarana Industama Perkasa, this is important and should be made in RKL.</p>	III-4	
3.	<p>The source of material is also not explained from where and how much the volume of sand, stone and other materials, it is important to be explained how the management!</p>		<p>It has been explained in ANDAL (pages IV-7)</p>
4.	<p>It is not explained the Management/</p>	RKL Matrix	<p>Has been corrected</p>

	Arrangement of sea transportation, starting from Pre-Construction, Construction and Post-Construction Phases, such as ship passing ships (Ship, Fisherman Ship/Boat and etc.)		
5.	The quality of aquatic biota, it is not clear what the management performed by the proponent. Then the work opportunity from Pre Construction to Post-Construction phases the its management is unclear, if the Labor is terminated/ laid off what to do with them? It is need to handling		

	of Labor that has expired their contract so that they become unemployed.		
6.	Pleas outline what activities around the jetty construction and explain how far it is distance and how it is relation to Jetty construction from the shipping activities data.	ANDAL	The relation of activity plan with surrounding activities has been described (ANDAL page IV-20)
7.	The questionnaire results is 100% of public community stated has agreed, attach the results and make in tabulation form.	ANDAL VI-6	Has been added
P.	Andika A. A. Nst (Department of		

	Fisheries and Marine Affairs of the North Sumatra Province)		
1.	Secondary data to be updated with the latest data.		It has been updated according to the latest data.
2.	Labor data is inconsistent, there is a 88 peoples, 60 peoples and 58 peoples.		Labor data is written in accordance with the activity phases (construction, post-construction)
Q.	Poppy Marullita Hutagalung (Regional Construction Planning Agency (Bappeda) of the North Sumatra Province)		
1.	Must see further to RTRU of Asahan District because the location has		The location is in accordance with the RTRU of Asahan district where

	<p>been more detail.</p> <p>Overlay should be made against land use due:</p> <ul style="list-style-type: none"> a. Direct border with coastline b. Regulations on coastal boundary areas 		<p>although the location of activities located in the coastal areas, but in the Regional Development Unit (SPW) that is have the potential as trade and service industry construction areas (ANDAL page IV-3)</p>
2.	<p>Consider/coordinate with the study of coastal management of the Asahan district have been prepared.</p>		<p>Locations have been considered and adjusted accordingly.</p>



FOREWORD

PT. SARANA INDUSTAMA PERKASA

FOREWORD

PT. Sarana Industama Perkasa plans to build a Dedicated Port located on the geographic coordinate position of 03°23'46'' NL - and 99°26'57" EL in Lalang Village, Medang Deras Subdistrict, Asahan District, North Sumatra province for the supply of raw materials and product marketing. This dedicated port is planned to be built with a length of 2.6 mm, 4.25 m width and ship visits with a maximum weight of 55,000 DWT. The dedicated port plan of PT. Sarana Industama Perkasa is located in Northwest from Jetty for Private Use Owned by PT. Multimas Nabati Asahan (Jetty KPN) with a distance of approximately 700 - 1200 meters.

In order to participate in the environmental friendly development with guidance to the Law No. 23 of 1997 on Environmental Management. Government Regulation No. 27 of 1999 on Environmental Impact Analysis and Decree of the Minister of Environment No. 17 of 2001 on Types of Business Plan and/or Activity that Must Complete With Environmental Impact Analysis, then PT. Sarana Industama Perkasa as the proponent of Industrial Area construction activities intends to prepare an Environmental Impact Assessment (AMDAL) consists of Term of Reference of ANDAL (KA-ANDAL), ANDAL, RKL and RPL.

The Study of Environmental Impact Analysis (AMDAL) of this Dedicated Port Construction refers to the Head of BAPEDAL Decision No. 09 of 2000 on Guidelines for Preparation of Environmental Impact Analysis and Terms of Reference that have been approved by the Commission Team of Amdal Appraisal and based on the decision of the Head of Environmental Impact Management Agency of North Sumatra Province No. 268/ BPDL-SU/ BTL/ 2005 dated April 26, 2005 on the approval of AMDAL terms of reference of Dedicated Port Activities of PT. Sarana Industama Perkasa. This study is also used to formulate an Environmental Management Plan (RKL) and an Environmental Monitoring Plan (RPL).

Thanks to PT. Kuala Biru Utama as compiler consultant of AMDAL and to all parties who have cooperated and assist in the preparation of AMDAL for Construction of Industrial Area of PT. Sarana Industama Perkasa. We expect advice and feedback from the Engineering Team and AMDAL Commission of the North Sumatra Province to perfect this AMDAL documents.

Medan, March 2006

Proponent

PT. INDUSTAMA PERKASA SANANA

(signed)

PT. INDUSTAMA PERKASA SANANA

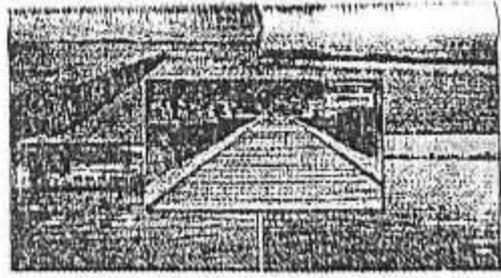


TABLE OF CONTENTS

PT. SARANA INDUSTAMA PERKASA

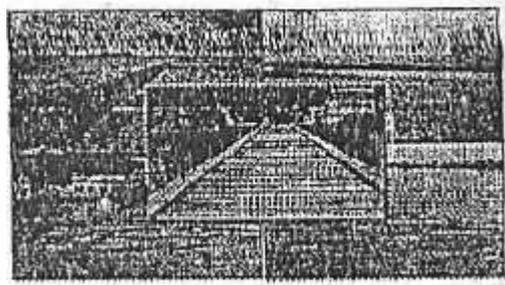
TABLE OF CONTENTS

FOREWORD.....	
TABLE OF CONTENTS.....	
LIST OF TABLES.....	
LIST OF FIGURES.....	
CHAPTER I INTRODUCTION.....	
1.1. Background.....	
1.1.1. Project Purpose and Benefits	
1.1.2. Laws and Regulations	
1.1.3. Environmental Management Implementation Policy	
1.1.4. Relation of Business / Activity Plan to the Environmental Impacts will be arised	
1.2. Purpose and Benefits of Study.....	
1.2.1. ANDAL Study Purposes	
1.2.2. ANDAL Study Benefits	
CHAPTER II SCOPE OF STUDY.....	
2.1 Large and Important Impacts Reviewed.....	
2.1.1. Activity plans have an Impacts	
a. Pre Construction Phase	
b. Construction Phase	
c. Post-construction phase	
2.1.2. Affected Environment Baseline	
a. Physical-Chemical Components	
b. Biological Components	

c.	Socio-Economic Components	
2.2.	Study Area	
2.2.1.	Project Area Boundaries	
2.2.2.	Ecological Area Boundaries	
2.2.3.	Administrative Boundaries	
2.2.4.	Social Area Boundaries	
	CHAPTER III METHOD OF STUDY	
3.1	Methods of Data Collection and Data Analysis..	
3.1.1	Data Collection and Secondary Data Analysis	
3.1.2	Data Collection and Primary Data Analysis ..	
a.	Physical-Chemical Components	
b.	Biological Components	
c.	Sosekbudkesmas Components	
3.2	Methods of Impact estimations and Determination of Large an Important Impacts.....	
3.2.1	Identification of Impacts	
3.2.2	Estimate of Impacts	
3.3	Methods of Impact estimation and Determination of Important Impacts.....	
3.3.1	Identification of Impacts	
3.3.2	Important Impact estimation.....	
3.4	Evaluation Methods of Important Impacts.....	
	CHAPTER IV BUSINESS AND/OR ACTIVITY PLAN	
4.1	Identity of proponent and compiler of AMDAL...	
4.1.1	Identity of Proponent	

4.1.2	Identity of Study Team.....	
4.2	Purposes of the Business and/or Activity Plan.	
4.3	Uses and Purposes.....	
4.3.1	Spatial Plan.....	
4.3.2	Description of Project Activity.....	
	a. Location and Area of Land.....	
	b. Activity Plan.....	
	c. Implementation of Construction.....	
4.4	Implementation Phase.....	
4.4.1	Pre-construction Phase.....	
4.4.2	Construction Phase.....	
4.4.3	Post-Construction Phase.....	
4.5	Other Activities Around Activity Plans.....	
	CHAPTER V ENVIRONMENTAL BASELINE.....	
5.1	Physical-Chemical Components.....	
	1. Climate, Air Quality and Noise.....	
	2. Physiography.....	
	3. Hydrology.....	
	4. River Water Quality.....	
	5. Well Water Quality.....	
	6. Sea Water Quality.....	
	7. Space, Land and Soil.....	
5.2	Biological Component.....	
	1. Vegetation.....	
	2. Terrestrial Animals.....	

3.	Plankton Aquatic Ecosystem.....
4.	Nekton and Benthos.....
5.3	Socio-Economic and Cultural Components.....
1.	Demographics.....
2.	Socio-Economic.....
3.	Socio-Culture.....
4.	Public Health.....
5.	Security and Order.....
6.	Public Perception.....
5.4	Community Development Program Plan.....
CHAPTER VI ESTIMATE OF LARGE AND IMPORTANT IMPACTS.	
6.1	Estimate of Impact At Pre-Construction Phase..
6.2	Estimate of Impact At Construction Phase.....
6.3	Estimate of Impact At Post-Construction Phase.
CHAPTER VII EVALUATION OF LARGE AND IMPORTANT IMPACTS	
7.1	Evaluation Criteria of Environmental Impact...
7.2	Impact Evaluation At Pre Construction Phase...
7.3	Impact Evaluation At Construction Phase.....
7.4	Impact Evaluation At Post-Construction/Operational Phase.....
CHAPTER VIII BIBLIOGRAPHY.....	
CHAPTER IX APPENDIX.....	



LIST OF TABLES

PT. SARANA INDUSTAMA PERKASA

LIST OF TABLES

Table 3.1 Analysis Methods of Air Quality Measurement.....

Table 3.2 Parameters and Quality Standard of Air Quality and Noise.....

Table 3.3 Parameter of Well Water Quality to be studied.....

Table 3.4 Methods of Surface Water Quality Analysis.....

Table 3.5 Parameter of Water Quality studied.....

Table 3.6 Parameter of Water Quality studied.....

Table 3.7 Methods of Data Collection and Analysis of the Sosekbud.....

Table 3.8 Matrix of Impact Magnitude Estimate....

Table 3.9 Matrix of Important Impact Estimate....

Table 3.10 Matrix of Important Impact Evaluation..

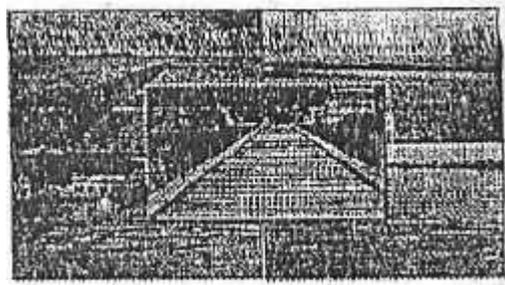
Table 4.1 Plan Schedule of Industrial Area Development

Table 4.2 No. and Position of Labor Required in Dedicated port Construction of PT. Sarana Industama Perkasa.....

Table 4.3 Use Plan of Equipment for Dedicated port Construction Project of PT. Sarana Industama Perkasa.....

Table 4.5	Use Plan of Material to be Used in Dedicated port Construction Project of PT. Sarana Industama Perkasa
Table 5.1	Climate Measurement Results In The Last 10 (Ten) Years
Table 5.2	Parameters and Quality Standards for Air Quality and Noise
Table 5.3	Analysis Results of River Water Quality
Table 5.4	Analysis Results of Well Water Quality.
Table 5.5	Tidal Constant
Table 5.6	Calculation Results of Mass Sediment Transport Around the Dedicated port Location
Table 5.7	Analysis Results of Sea Water Quality..
Table 5.8	Type of Vegetation Growing Around Dedicated Port Location
Table 5.9	Type of Terrestrial Fauna Around the Dedicated Port Location
Table 5.10	Analysis Results of Phytoplankton Laboratory
Table 5.11	Analysis Results of Zooplankton Laboratory
Table 5.12	Analysis Results of Benthos Laboratory.
Table 5.13	Population by Type of Age in Medang Deras Subdistrict

Table 5.14	Number of Population Mutation and Mutandis by Medang Deras Subdistrict ...
Table 5.15	Number of Educational Facilities in Medang Deras Subdistrict
Table 5.16	Livelihood Composition of Medang Deras Subdistrict
Table 5.17	List of 10 Major Diseases by Disease Type of Medang Deras Subdistrict on 1 (one) Last Year
Table 5.18	Security Level in Asahan District
Table 5.19	Knowledge of Respondents to the Activity Plan
Table 6.1	Matrix of Large and Important Impact Interactions
Table 6.2	Air Pollutant Emission from Heavy Equipment
Table 6.3	Noise Emission from Heavy Equipment and Genset
Table 6.4	Noise Levels from Equipment
Table 6.5	Contours of Noise Values
Table 6.6	Matrix of Impact Estimate
Table 7.1	Matrix of Impact Evaluation



LIST OF FIGURES

PT. SARANA INDUSTAMA PERKASA

LIST OF FIGURES

Figure 2.1 Map of Dedicated Port Situation of PT. Sarana Industama Perkasa

Figure 2.1 Map of Study Area Boundary

Figure 3.1 Systematic Methods of Data Collection and Analysis

Figure 3.2 Sampling Location of Air Quality, Noise, Well Water, River Water and Sea Water

Figure 3.3 Sampling Location of Terrestrial Biota and Aquatic Biota

Figure 3.5 Sampling Location of River Water Quality

Figure 3.6 Sampling Location of Seawater

Figure 3.7 Observation Location of Vegetation and Terrestrial Fauna

Figure 3.8 Observation Location of Aquatic Biota ..

Figure 4.1 Trestle of Dedicated Port (Jetty)

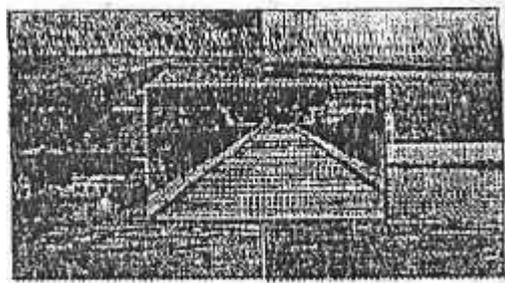
Figure 5.1 Map of Medang Deras Subdistrict

Figure 5.2 Geology Map of Asahan District

Figure 5.3 Map of River Watershed

Figure 5.4 Bathimetry of Dedicated Port of PT. Sarana Industama Perkasa

- Figure 6.1 Flow Chart for Impact Estimate of Pre-
Construction Phase
- Figure 6.2 Flow Chart for Impact Estimates of
Construction Phase
- Figure 6.3 Flow Chart for Impact Estimate of Post-
Construction Phase



CHAPTER I

INTRODUCTION

PT. SARANA INDUSTAMA PERKASA

CHAPTER I INTRODUCTION

1.1. BACKGROUND

PT. Sarana Industama Perkasa plans to build a Dedicated Port located on the geographic coordinate position of $03^{\circ}23'46''$ NL - and $99^{\circ}26'57''$ EL in Lalang Village, Medang Deras Subdistrict, Asahan District, North Sumatra province for the supply of raw materials and product marketing. This dedicated port is planned to be built with a length of 2.6 km, 4.25 m width and ship visits with a maximum weight of 55,000 DWT. The dedicated port plan of PT. Sarana Industama Perkasa is located in Northwest from Jetty for Private Use Owned by PT. Multimas Nabati Asahan (Jetty KPN) with a distance of approximately 700 - 1200 meters (Figure 1.1).

With the construction of Dedicated Port will cause an interaction between the activities within the environment of Dedicated port plan with surrounding activities, both covering the community socio-economic life and the sustainability of the surrounding environment.

Sustainable or environmental friendly development is a conscious and planned effort that integrates the environment, including resources into the development process to ensure the ability, welfare, and quality of life. Therefore, any business and or activity that could have large and important environmental impacts to the environment must have an AMDAL (Article 15 of Law No. 23/1997).

Business and/or activities that are likely to have large and important impacts to the environment includes of : the conversion of landform and landscapes, the exploitation of natural resources both renewable and non-renewable, processes and activities that potentially lead to waste, environmental destruction and pollution which can affect the natural environment, the artificial environment and the socio-cultural environment, which results will affect the conservation of natural resources.

The application of technology which is estimated to have large potential to have high risks and to influence the environment, the type of business

and/or activity must have an Environmental Impact Analysis (article 3 paragraph 1 GR. No. 27/1999).

In accordance with the Decree of Minister of Environment of the Republic of Indonesia No. 17/2001 on Types of Business Plan and/or Activity that Must Complete the Environmental Impact Analysis in item 5 of the transportation field states that the Jetty construction activities with massive construction magnitude ≥ 200 m and / area $\geq 6,000$ m² then the activity is required to prepare an AMDAL study.

This Dedicated Port construction activities has the potential to cause a large and important impact both on the physical, chemical, biological, socio-economic and socio-cultural components. These construction can change ecosystems, hydrological systems, coastlines and bathymetry as well as disrupt natural processes occurring in coastal areas. With regard to these matters it would be necessary to make a study of the possibility of environmental degradation due to construction that changes the environmental baseline.

Therefore, PT. Sarana Industama Perkasa as the proponent of Dedicated Port construction activities

will carry out the Environmental Impact Analysis Study (AMDAL) which includes the preparation of the ANDAL Terms of Reference document (KA-ANDAL), Environmental Impact Analysis (ANDAL), Environmental Management Plan (RKL) and Environmental Monitoring Plan (RPL).

The ANDAL document is prepared based on the approved ANDAL Terms of Reference (KA-ANDAL) which is based on the Decree of the Head of Environmental Impact Management Agency of North Sumatera Province No.: 268/ BPDL-SU/ BTL/ 2005 dated April 26, 2005 on the approval of ANDAL Terms of Reference of Dedicated Port Activities of PT. Sarana Industama Perkasa.

The Terms of Reference serve as a macro description of the activity development, both reviewed from the specification of location and the specification of activity, so that it can be formulated the main issues need to be studied more thoroughly in the ANDAL study, informing the scope/areas of study, scope of activities and environmental components as well as the main reference in the preparation of ANDAL. The AMDAL study can be useful for the proponents of PT. Sarana Industama Perkasa to take

decisions in the alternative selection of the feasible activities from the sides of environmental, technical and economical and the efforts to implement sustainable and environmental friendly development.

1.1. Project Purpose and Benefits

Purpose of the construction of dedicated port of PT. Sarana Industama Perkasa is one of marine transportation infrastructure especially in relation to facilitate the supply activity of raw materials and product marketing from companies located in industrial area of PT. Sarana Industama Perkasa.

While the benefits, among others:

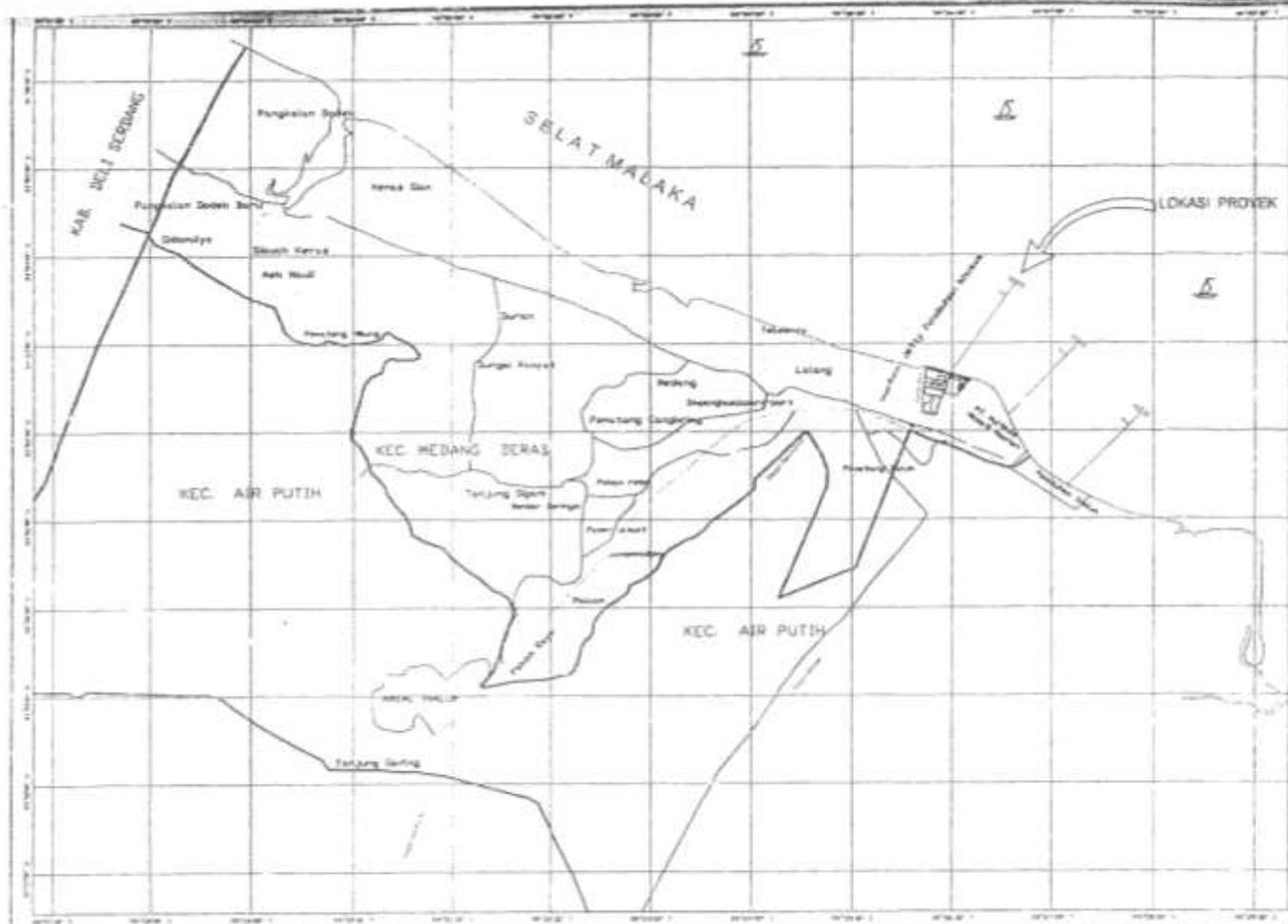
- 1) Assist government, especially the Asahan District Government in providing employment, increasing the economy and regional income.
- 2) Placing dedicated port construction activities on strategic area construction efforts to improve business activities are developing.

1.2. Laws and Regulations

The preparation of this Study is based on laws and regulations in relevant natural resource and environmental management efforts, as follows:

Laws :

1. Law of the Republic of Indonesia No. 1 of 1990 on Occupational Safety.
2. Law of the Republic of Indonesia No. 5 of 1990 on Conservation of Living Resources and their Ecosystem.
3. Law of the Republic of Indonesia No. 14 of 1992 on Road Traffic
4. Law No. 21 of 1992 on Shipping.
5. Law No. 24 of 1992 on Spatial Planning.



PT. SARANA INDUSTAMA PERKASA
 Jl. Da Ujung Serang Km. 11,5 No. 80 T. Medan
 Deli Serdang - Sumatera Utara - Indonesia
 Telp. (061) 7441111, Fax. (061) 7441112

GAMBAR : 1.1
PETA SITUASI

- PETERANGAN :**
- Batas Kabupaten
 - Batas Kecamatan
 - Batas Wilayah administratif
 - Jalan Proposed
 - Akses Road
 - Jalan Konkrit
 - Sungai
 - Deraga Jetty



SUMBER GAMBAR :
BAKOSURTANAL

SKALA :
 1 : 5000

PT. KUALA BIRU UTAMA
 BERKAS NG (MOMSA) PERKASA
 Jl. CIBINAY NO 22 MEDAN 45116
 Telp. (061) 4511111 - 4511112

KEC. MEDANG DERAS - KAB. ASAHAN

6. Law of the Republic of Indonesia No. 5 of 1994 on Ratification of the United Nations Convention on Biological Diversity
7. Law No. 6 of 1996 on Indonesian Waters.
8. Law No. 23 of 1997 on Environmental Management.
9. Law No. 18 of 1999 on Construction Services.
10. Law of the Republic of Indonesia No. 20 of 2002 on Electricity.
11. Law of the Republic of Indonesia No. 32 of 2004 on Regional Government
12. Law of the Republic of Indonesia No. 33 of 2004 on Fiscal Balance between Central Government and Regional Government.

Government regulations

1. Government Regulation No. 41 of 1993 on Transportation.
2. Government Regulation No. 42/1993 on Inspection of Vehicles on the Road.
3. Government Regulation No. 43/1993 on Infrastructure and Road Traffic.
4. Government Regulation No. 44 of 1993 on Vehicles and Drivers.

5. Government Regulation no. 18 of 1999 on the Hazardous And Toxic Waste Management (B3).
6. Government Regulation No. 19 of 1999 on Control over Marine Contamination and/or Damage.
7. Government Regulation No. 27/1999 on Environmental Impact Analysis.
8. Government Regulation No. 41 of 1999 on Control of Air Pollution.
9. Government Regulation No. 25 of 2000 on Authority of the Central Government and Provincial Authority as the Autonomous Regions.
10. Government Regulation No. 82 of 2001 on Water Quality Management and Water Pollution Control.
11. Government Regulation of the RI No. 69 of 2001 on Port.
12. Government Regulation of the RI No. 82 of 2001 on Water Quality Management and Water Pollution Control.

Presidential decree

1. Presidential Decree No. 65 of 1980 on Ratification of International Convention for the Savety of Life at Sea 1974
2. Presidential Decree of the Republic of Indonesia No. 46 of 1986 on Ratification of International Convention for the Prevention of Pollution from Ship 1973 and The Protocol of 1978 Relation to the International Convention for The Prevention Pollution from Ships 1973.
3. Presidential Decree No. 32 of 1990 on Management of Protected Areas.
4. Presidential Decree No. Kep. 48/11/1996 on Environmental Quality Standards.

Ministerial decree

1. Decree of the Minister of Transportation No. KM 173/ AU403/ Phb-80 on entry into force of The IALA Maritime Bouyage System for Region A.
2. Decree of the Minister of Transportation No. Km.167/ IIIIVi.207/ Phb-86 on International Certificate of the Pollution Prevention by Toxic Gas Liquids.

3. Decree of the Minister of Transportation No. KM.215/ AL.50b / Phb-87 on Procurement of Waste Container Facilities from Ships.
4. Decree of the State Minister of Environment No. Kep-02/ MENLH/ I/ 1988 on Guidelines for Establishment of the Environmental Quality Standards.
5. Regulation of the Minister of Health No. 416/ Menkes/ Per/ IX / 1990 on Water Quality Standards.
6. Decree of the State Minister of Environment of the Republic of Indonesia No. KEP-13/ MENLH/ 3/1995 on Emission Quality Standard for Non-Moving Facilities
7. Decree of the Minister of Environment No. 51/ MENLH/ 10/ 1995 on Liquid Waste Quality Standard for Industrial Activities
8. Decree of the State Minister for the Environment No. Kep-48/ MENLH/ 11/1996 on Noise Level Quality Standards.
9. Decree of the State Minister of Environment No. Kep-49/ MENLH/ 11/1996 on Vibration Level Quality Standards.

10. Decree of the State Minister of Environment No. 50 of 1996 on Offensive Odor Quality Standards.
11. Decree of the State Minister of Environment No. 45/ MENLH/ 10/1997 on Air Pollution Standard Index.
12. Regulation of the Minister of Transportation No. KM 26 of 1998 on Implementation of Sea Ports.
13. Regulation of the State Minister of Agrarian Affairs of the RI/ Head of BPN No. 02 of 1999 on Location Permit for Business Conducted by Private Sector.
14. Decree of the State Minister of Environment of the RI No. 2 of 2000 on Guidelines for Appraisal of AMDAL Documents.
15. Decree of the State Minister of Environment No. 41 of 2000 on Guidelines for Establishment of District/City AMDAL Appraisal Commissions.
16. Decree of the Minister of Energy and Mineral Resources No. 1455.K 40/ MEM/ 2000 on Electricity Supply For Own/ Public Interests

17. Decree of the State Minister of Environment No. 17 of 2001 on Types of Business and/or Activities are Required Equipped With Environmental Impact Analysis.
18. Decree of the State Minister of Environment of the Republic of Indonesia No. 110 of 2003 on Guidelines on the Determination of Capacity of Water Pollution at Water Source.
19. Decree of the State Minister of Environment of the Republic of Indonesia No. 112 of 2003 on Domestic Waste Quality Standards.
20. Decree of State Minister of Environment of the RI No. 115 of 2003 on Determination of Water Quality Status.
21. Decree of the State Minister of Environment of the RI No. 51 of 2004 on Sea Water Quality Standards.
22. Decree of the State Minister of Environment of the RI No. 142 of 2003 on Guidelines for Terms and Procedures of Licensing And Guidelines for Study of Waste Disposal to Water or Water Source.
23. Decree of the Minister of State of Environment of the Republic of Indonesia

No. 49 of 2004 on Delegation of Authority To sign the Decision Letter of Term of Reference of Environmental Impact Analysis (KA ANDAL).

24. Decree of the State Minister of Environment of the RI No. 179 of 2004 on Correction of Decree of the State Minister of Environment RI No. 51 of 2004 on Sea Water Quality Standards.

Decree of the Head of Bapedal (*Environmental Impact Management Agency*)

1. Decree of the Head of Bapedal No. 056 of 1994 on Guidelines about the Important Impact Size;
2. Decree of the Head of Bapedal No. 299/11/1996 on Technical Guidelines of Social Aspect Study in Preparation of Environmental Impact Analysis.
3. Decree of the Head of Bapedal No. 124/12/1997 on Guidelines for study of the Public Health Aspects in the Preparation of Environmental Impact Analysis.
4. Decree of the Head of Bapedal No. 08 of 2000 on Community Involvement and

Information Disclosure In Process of Environmental Impact Analysis.

5. Decree of the Head of Bapedal No. 09 of 2000 on Guidelines for the Preparation of Environmental Impact Analysis

Regional Regulations and Governor Decrees

1. Regulation of the North Sumatra Province No. 2 of 1985 on Environmental Management and Maintenance.
2. Decree of the Governor of North Sumatra Province No. 660.31/ 1096/ K/ 1992 on Classification of Water Quality Standards in North Sumatera Province.
3. Regional Regulation of the Asahan district No. 3 of 1995 on General Plan of Spatial Planning of the Asahan district

Policy of the Environmental Management Implementation

Policies related to the environment at the national level are outlined among others:

The environment is the gift and blessing of the Almighty God to mankind. Therefore, the existence of a good environment should be grateful and sustained. Environmental management is an integrated efforts to preserve the

environmental function which includes the policy of structuring, utilizing, developing, maintaining, restoring, monitoring and controlling the environment (Law No. 23/1997)

Sustainable or environmentally development is a conscious and planned effort which integrates the environment, including resources into the development process to ensure capability, welfare, and quality of life. Therefore, any business and or activity that could have important environmental impacts on the environment must have an AMDAL (Article 15 of Law No. 23/1997).

Environmental Impact Analysis is a requirements shall be met to obtain a license to conduct business and/or activities issued by authorized officers (Article 7 Paragraph 1 GR 27/1999) and Environmental Impact Analysis is a part of feasibility study of business and/or activity plan (Article 2 Paragraph 1 GR 27/1999)

Observing the above activities and the provision stated that one of types of businesses and/or activities required to prepare Environmental Impact Assessment (AMDAL) is a Jetty construction activity with massive construction magnitude: length ≥ 200 m or area $\geq 6,000$ m² . Therefore,

the construction of this jetty has the potential to impact on hydrology, social impact, ecology, then it is necessary to conduct an Environmental Impact Analysis study (Kep-MenLH No. 17 of 2001).

As for the implementation of environmental friendly construction. The Government of the Republic of Indonesia has outlined the policy of environmental management implementation which principally covers:

- 1) To preserve and maintain the existence of environmental components such as:
 - a) Water resource
 - b) Land / soil resources.
 - c) Biological resources.
 - d) Air quality.
 - e) The carrying capacity of the surrounding environment (Hinterland)
 - f) Health and comfort of the development environment.
 - g) Natural and cultural heritage.

- 2) Make efforts to minimize the negative impacts of the components of infrastructure construction activities can be prevented and/or minimized as well as possible as well as developed of positive impacts, as for the components are:

- a) Community life standard.
- b) Employment opportunities for community.
- c) Utilization of natural and biological resources.
- d) Capital development.
- e) Institutional and future image of human life and environment.

In order to implementation of environmental friendly construction, the Government of the Republic of Indonesia has outlined the policy of environmental management implementation, with the above policy basis in the construction of Dedicated Port built by PT. Sarana Industama Perkasa shall prepare an advanced document on Environmental Impact Asesement (AMDAL) which is part of feasibility study of an activity. In the implementation of these activities PT. Sarana Industama Perkasa will pay attention to the matters as follows:

- 1) Pay attention to the environmental components can still be maintained according to their functions includes of: water resources, land resources and carrying capacity of the land and water environment.
- 2) Ensure that negative impacts can be prevented or minimized as much as possible and develop positive impacts.

1.4. Relation of business and/or activity plan with impacts will be arised

Construction project plan of Dedicated Port by PT. Sarana Industama Perkasa located in Lalang Village, Medang Deras Subdistrict, Asahan District, both at port pre-construction phase, construction phase and post construction/ operational phase is estimated to have an impact on the environment.

In overall the construction of Dedicated Port raises the important impact issues as follows:

PRE-CONSTRUCTION PHASE:

- **Public Perception.**

Public perceptions arise in the pre-construction phase are usually related to the public curiosity towards the Dedicated Port construction plan. However, if socialization/announcement has been done through village, sub-district or mass media then the perception will be subsided.

CONSTRUCTION PHASE:

- **Air Quality**

Air quality inside and outside the project site during construction will decrease. At the construction phase the decrease of air quality is

caused by the transportation activity of building materials and heavy equipment mobilization and construction of Dedicated Ports.

- **Noise**

The intensity of noise generated around the Dedicated Port will increase. In construction phase, the increase of noise intensity is caused by transportation activity of building materials, heavy equipment mobilization and loading and unloading.

- **Water Quality**

Dedicated Port Activities at the time of potential port construction affect the water quality, sea water quality. This is derived from port construction activity is estimated to contribute water contamination around the activity, especially to the turbidity parameters of seawater.

- **Safety of life at sea**

The passing barges and vessels working on pole erection and jetty construction and trestle

existence as long as 2.5 km and adequate navigation facilities at dedicated ports have an effect on the safety of life at sea at the location and around it. Therefore, at the construction phase of dedicated ports required signs and navigation means to avoid the occurrence of accidents in the waters.

- **Traffic Generation**

Activities of heavy equipment mobilization and dedicated port construction materials potentially raise the impact of land traffic generation, especially during heavy traffic.

- **Aquatic Biota Quality**

Dedicated Port Activities at the time of potential port construction also affect the aquatic biota quality, namely Diversity and Variety Index. This is derived from port activity is estimated to contribute to water pollution in waters. With the decrease the sea water quality it will contribute to the exist aquatic biota life.

- **Employment Opportunities and Business Opportunities**

Dedicated Port activities at the construction phase estimated to provide employment opportunities and business opportunities for community around the activity area (Medang Deras Subdistrict), because at the phase of activity required a relatively large the number of labor, among others in the activities of equipment mobilizations and construction materials.

- **Increased Income / Economy**

With the opening of employment opportunities and business opportunities for the community subdistrict in the construction phase of Dedicated Port will increase the level of income/economy for the community, especially for those who are accepted as workers and who open a business around the location of activities.

- **Public Perception.**

Public perception data was obtained from interviews with 50 respondents who live in the nearest village of the activity location (10% of

the total population), to know whether the community assumes that the existence of this Dedicated Port (at construction phase) is causing negative perception or not for the local community.

- **Public Health**

- Public health impact is a derived impact, where if the air quality and water quality components have poor environmental quality scale, it has the potential to affect public health, especially the community living around the study sites. although this impact is temporary at the time of dedicated port construction.

POST CONSTRUCTION / OPERATIONAL PHASE:

- **Air Quality**

In the operational phase the decrease of air quality is caused by the mobilization of freight ships in the Dedicated Port and freight vehicles entering to jetty area.

- **Noise**

The noise intensity generated around the Dedicated Port will increase. At the operational phase, the increase of noise intensity is caused by goods loading and unloading activities from and to the ship.

- **Water Quality**

Dedicated Port Activities at the time of potential port operations affect water quality, sea water quality. This is derived from ship loading and unloading activities, ship cleaning and crew activity is estimated to contribute to water contamination around the activity, especially to sea water turbidity parameters.

- **Safety of life at sea**

The passing barges and ships are working on loading and unloading activities at the port and the adequacy or not of navigation facilities at the dedicated port have an effect on the safety of life at sea at the location and around it. Therefore, at the operational phase of dedicated ports required signs and navigation means to avoid the occurrence of accidents in the waters.

- **Traffic Generation**

At the operational phase of dedicated ports, the mobilization of material/ product freight vehicles to be exported to and from ship transport may cause inland traffic generation, especially at the entrance to dedicated port location.

- **Aquatic Biota Quality**

Dedicated port Activities at the time of potential port operations also affect the aquatic biota quality namely diversity and variety index. This is derived and the activity/ mobility of ships at the time of operation, it is estimated to contribute to water pollution in the waters. With the decreasing of sea water quality it will affect the aquatic biota life.

- **Employment Opportunities and Business Opportunities**

At the operational phase, the absorption of labor occurs in loading and unloading activities at dedicated ports. While the business is possible from the business opportunity of providing food

(canteen, coffee shop) and lodgings (rent of house / boarding house).

- **Increased Income / Economy**

With the opening of employment opportunities and business opportunities for the community subdistrict at the operational phase of Dedicated port will increase the level of income/ economy for the community, especially for those who are accepted as workers and who open businesses around the activity location.

- **Public Perception.**

The data of community perception at the time of port operational obtained from the result of interview with the respondent to the residents who live in the nearest villlage, to know whether the community assumes that the existence of this Dedicated Port made a complaint or not for local community.

- **Public Health**

At the operational of dedicated port, the activities carried out potentially have a

negative impact, such as a decrease of air quality, increase of noise intensity, decrease of sea water quality, especially if at the time of the operation the impact is not well managed, it will cause side effects of decreasing the health of local community.

1.2. PURPOSE AND BENEFITS OF STUDY

a. ANDAL Study Purposes

1. Identify the plans for activities of the Dedicated Port Construction project and its facilities at the pre-construction, construction and operational phases, especially those that are estimated to have large and important impact on the environmental components;
2. Identifies the initial environmental baseline especially those estimated to be affected by the large and important impacts of the activities;
3. To estimate and evaluate the large and important impacts to the environmental component due the Dedicated Port Construction plan and its facilities;

4. Mitigate the large and important impacts of the environmental components at each phase of the activities;
5. Selecting appropriate and realistic environmental management and monitoring efforts to be implemented in order to minimize negative impacts so it can increase positive benefits to the activities and surrounding communities.

b. ANDAL Study Benefits

Benefits of the ANDAL study of Dedicated Port Construction, namely:

a. For Proponents

- o Fulfill applicable laws and regulations in the territory of the Republic of Indonesia.
- o To know more deeply the important impacts arising from the Dedicated Port construction plan so that appropriate management and monitoring efforts can be determined.
- o As a Guidelines for environmental management and monitoring activities in addressing future environmental problems.

- o As a source of basic data and environmental information about the environmental status and conditions around the activity locations.
- o As the baseline of recommendation for the construction activity plans of Dedicated Port of PT. Sarana Industama Perkasa.

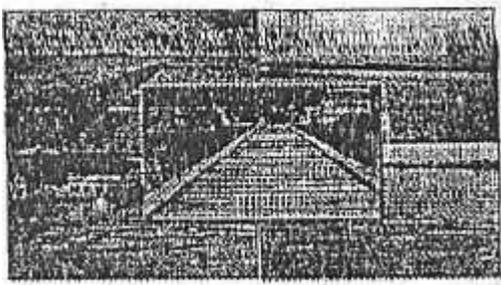
b. For Government

- o As environmental planning and monitoring material as well as a reference material in allocating the appropriate space and natural resources for regional development.
- o As a reference in appraisal to the feasibility of the Dedicated Port construction plan.

c. For Community

- o As important information to know the existence of a dedicated port on the environment quality around the activity locations.

- o Become a tool for community to know the importance of environmental management for the common interest.
- o Know early on the changes to be faced of the dedicated port activities ranging from the pre-construction to post construction / operation phases.
- o Include the role of community around the activities on the construction plan of Dedicated Port of PT. Sarana Industri Perkasa.



CHAPTER II

SCOPE OF STUDY

PT. SARANA INDUSTAMA PERKASA

CHAPTER II SCOPE OF STUDY

2.1 LARGE AND IMPORTANT IMPACTS REVIEWED

2.1.1 Activity plans have an Impacts

Construction activities of Dedicated Port of PT. Sarana Industama Perkasa in Lalang Village, Medang Deras Subdistrict, Asahan District, North Sumatra are estimated to have an important impact on the environment around the activities in accordance with the phases of implementation, namely pre-construction, construction and post-construction / operational phases to the components of the physical-chemical environment, biology and socio-economic and culture of public health where the description of activity phases is as follows:

A. PRE-CONSTRUCTION PHASE

Pre-construction phase activities is the activity prior to commencement of construction activities of Dedicated Port, with sub-activity as follows:

1. Land Acquisition
2. Preliminary Survey
3. Bathymetry Survey & Land Investigation
4. Preparation of Engineering Design

B. CONSTRUCTION PHASE

1. Mobilization of Labor
2. Mobilization of Heavy Equipment
3. Material Transportation
4. Foundation Work
5. Soil Compaction Work
6. Port Construction
7. Operational Support Facilities
8. Material Transportation
9. Construction Supervision
10. Mechanical and Electrical
11. Utilities
12. Commissioning
13. Operator Training

C. POST CONSTRUCTION PHASE

1. Recruitment of Operational Labor
2. Port Operational
3. Shipping Traffic
4. Loading and Unloading Activities
5. Waste management

2.1.2 Affected Environment Baseline

The environmental baseline to be affected in the ANDAL study includes 3 (three) key environmental

components consisting of physical-chemical components, biological components, and socio-economic and cultural components that will be used to assess the initial environmental baseline circumstances. Of the three environmental components, the sub-components reviewed in the ANDAL study consists of:

a. Physical-Chemical Components

Physical-Chemical Environmental Components to be reviewed includes of:

- 1) Climate, includes of: climate type, temperature, rainfall, wind speed, and air humidity.
- 2) Air Quality and Noise
- 3) Physiography, includes of topography and geology
- 4) Hydrology, includes of water quality (water/river body, groundwater, seawater) ie. physical parameters
- 5) Space, land and soil
- 6) Hydrooceanography, includes of Topography and bathymetry, tides, current patterns, waves, abrasion and sedimentation.

b. Biological Environment Components

The Biological Environment component to be reviewed includes of:

- 1) Terrestrial biota includes of: flora (vegetation) and fauna
- 2) Water biota includes of: plankton, benthos and nekton

tides based on the ratio between the number of amplitude of the diurnal components of K1 and O1 with the number of amplitude of semidiurnal components of M2 and S2 which in relation in formzahl number are as follows:

$$F (K 1 + O1) / (M2 S2)$$

Tidal type classification based on F value is:

- | | |
|-----------------|---------------------------------------|
| F < 0.25 | : tidal of pure double type |
| 0.25 < F < 1.50 | : tidal of mixed type tends to double |
| 1.50 < F < 3.00 | : tidal of mixed type tends to single |
| F > 3.00 | tidal of pure single type |

- b) The direction and velocity of current analyzed to obtain the current pattern within the lagoon and in the surrounding waters.
- c) Bathymetry was analyzed from existing ocean maps compared to field measurements for cross check.
- d) Waves is analyzed by the SMB formula as follows:

$$H^{1/3} = 0.3 * U^2 * \left(\frac{1 - 1}{1 + 0.004 * (g * F / U^2)^{1/2}} \right)^2 / g$$

$$T^{1/3} = 8.61 * 1.1 * \left(\frac{1 - 1}{1 + 0.08 * (g * F / U^2)^{1/3}} \right)^5 / g$$

Where:

$H^{1/3}$ is the Main Wave Height

$T^{1/3}$ is the Main Wave Period

U is Wind Speed

F is the Fetch Length

G is the Gravity Speed

- e) Abrasion and sedimentation were analyzed using the CERC formula as follows:

$$Q = 6.8P$$

Where:

Q = Mass transport sediment (m^3/day)

6.8 = Constant

6.9 P = Flux energy

The p value is a function of wave energy,
wave phase velocity and water depth.

$P = E C_n \cos \alpha$

Where:

P = Flux energy

E = Wave energy

C = Wave phase velocity

n = Constant of depth function

α = Wave incidence angle

The E value is approximated by the equation:

$$E = 1/8 [\rho g H^2]$$

Where:

E = Wave Energy

ρ = Sea Water Density

g = Gravity Velocity

H = Wave Height

The C value is approximated by the equation

$$C = (g h)^{1/2}$$

Where:

C = Phase Velocity

g = Gravity Velocity

h = Waters Depth

d. Sampling location

The location of sampling is at the location of jetty plan.

B. Biological Components

1. Vegetation

b. Parameters Studied

The components studied are the type and distribution of the flora habitat in the location and surrounding areas.

c. Data Collection

Information on terrestrial flora can be obtained through plant inventory either directly, interview. Primary data collection is done through the roaming method with sampling at the location / habitat of the area around the construction of dedicated port of PT. Sarana Industama Perkasa.

d. Data Analysis

Species analysis is done to know the existence of plant species that are economic, rare and protected by laws in Indonesia.

e. Observation Location

Observation conducted at the location of Dedicated Port of PT. Sarana Industama Perkasa and surrounding areas with coverage within

ecological boundaries. The observation location map is shown in Figure 3.3.

2. Terrestrial Animal

a. Parameters Studied

The parameters studied are the type and distribution of terrestrial fauna habitat in the location and surrounding areas.

b. Data collection

The data collection of terrestrial animals is carried out on observation lines that are also used for observation of vegetation and in the place animals is found. Animals observed primarily domestic animals and non-domestic animals are only inventoried through field findings as well as population information.

c. Data analysis

Data was recorded then matched to the list of animal species, both economic and protected by laws in Indonesia.

d. Observation Location

Location is done in the Dedicated Port of PT. Sarana Industri Perkasa and surrounding areas with coverage according to ecological boundaries. The observation location map is shown in Figure 3.3.

3. Plankton Aquatic Ecosystem

a. Parameters studied

Plankton is a micro organism floating in the water column and its movement is affected by the movement of water. Plankton consists of vegetable plankton (phytoplankton) and animal plankton (zooplankton). Vegetable plankton is the primary producer in most waters, while animal plankton is the first consumer which to transfer energy from producer to higher level consumer such as shrimp and fish. As primary producer and consumers, plankton is strongly influenced by changes in water quality through assessment of stability and quality of aquatic environments by looking at the composition and abundance of plankton types.

b. Data Collection Method

The method is carried out by taking samples of water from each observation points using Kemmer Water Sampler or Nansen Bottle, taking samples carried out from various water depths or composites. The water samples then filtered on a standard plankton net which is attempted to make as little as possible the Number of plankton left in the plankton net. Plankton collection can also be performed using Kitahara net with mesh size of 0.119 mm for phytoplankton and NORPAC (North Pacific Standard Net) net or Juday/Napsen nets.

An plankton samples and water samples will be collected in a collector bottle and then transferred into plankton sample bottles are well known its volume. The plankton samples then given plankton preservative by using a pipette. So it is calculated the level of preservative solution (formalin or MAF) in the plankton sample bottles to 4%. Give label each plankton bottle containing the sampling location, amount of filtered water, preservatives used and the date of sampling.

c. Data Analysis Method

All obtained plankton organisms identified under a monocular microscope and further processed to obtain data on abundance, diversity and dominance. The abundance is expressed as the number of individual planktons per unit of water volume.

The method used to calculate abundance of plankton is Microtransect method with the test phase as follows:

- (1) Examples of plankton water are shaken slowly until they are homogeneous;
- (2) Using a dropper pipette, take one drop of the water sample and record its volume, then place it on top of the object glass and cover it with a glass cover;
- (3) Further examined under the microscope 10 times of transect, and recorded the species and number of individuals.

- **Total Individual / Liter (N)**

$$N = O_i / O_p \times V_r / V_o \times I / V_s \times n / p$$

Where:

O_i = Area of glass cover (mm^2)

O_p = Area of one transect (mm^2)

V_r = Volume of sample water filtered in the collector (ml)

V_o = Volume of one drop of sample water (ml)

V_s = Volume of water filtered with plankton net (l)

n = Total Number of individual planktons in the entire transect

p = Number of transect.

- **Species Diversity (H)**

The diversity realized in Shannon Wiener's Diversity Index (H) is a description on the organism's structure in the form of type assemblages in the community:

$$H = \sum p_i \log_2 p_i \text{ or } \sum \frac{n_i}{N} \log_2 \frac{n_i}{N}$$

The H value above when transformed in the basic logarithm 10 becomes:

$$H = 3.322 \sum \frac{n_i}{N} (\log N - \log n_i)$$

Where H is the Diversity Index, n_i is the number of species individual 1 and N is the total number of individuals of all species.

$$D_i = \sum n_i (n_i - 1) / N (N - 1)$$

Where D_i is the Domination Index, n_i is the number of species individual and N is the total number of individuals of all species.

d. Observation Location

Sample of aquatic biota is taken at 3 (three) point location that is:

1. Point I at the farthest coastal boundary location on the west side
2. Point II at the farthest sea boundary location on the north side, and
3. Point III at the farthest sea boundary location on the east side.

The sampling map is presented in Figure 3.3

- c. The components of socio-economic, socio-cultural environment and the public security and order includes of:

- 1) Demography: population number and density, labor mobilization, population composition.
 - 2) Social - Economic, includes of : employment opportunities and business opportunities, livelihoods, community economic structures around the project.
 - 3) Socio - Cultural: cultural acculturation, customs and culture.
 - 4) Public Perception.
- d. Public Health Environment Components includes of : disease pattern, health service infrastructures and environmental health infrastructures.

2.2. STUDY AREA

Study area at Dedicated port of PT. Sarana Industri Perkasa is the resultant results between the project area boundary which is the plan space of activity, the ecological area boundary is the affected ecological area, the administrative area boundary is the administrative government boundary and the social area boundary which is the boundary of various socio-economic activities affected. This is in accordance with the provisions applicable in KEP-14/ MENKLH/ 3/1994 with pay attention and considering the

distribution area of impact and each chemical physical parameter/ component, biological component and socio-health components of each ecosystem in the project site area and surrounding. (Figure 2.1)

2.2.1. Project Area Boundaries

The project area boundary is the space of an activity plan for preparatory, operational and post-operational activities. From this space the source of the impacts resulted on the environmental components is reviewed. The project area plan of Dedicated Port of PT. Sarana Industama Perkasa on the breadth of 1.344 m² with land physical boundaries of:

- North: Malacca Strait
- South: Industrial Area
- East : Malacca Strait
- West: DUKS of PT. Multimas Nabati Asahan

2.2.2. Ecological Area Boundaries

Ecological area boundary are areas that are ecologically impacted by various interrelated forms of natural processes, dependence and equilibrium by taking into account the spread of impact. It is based on the observation of

physical-chemical and biochemical factor, socio-economic and cultural as well as public health. In this case the ecological boundary is the location of the Dedicated Port which is administratively located in Lalang Village.

2.2.3. Administrative Area Boundaries

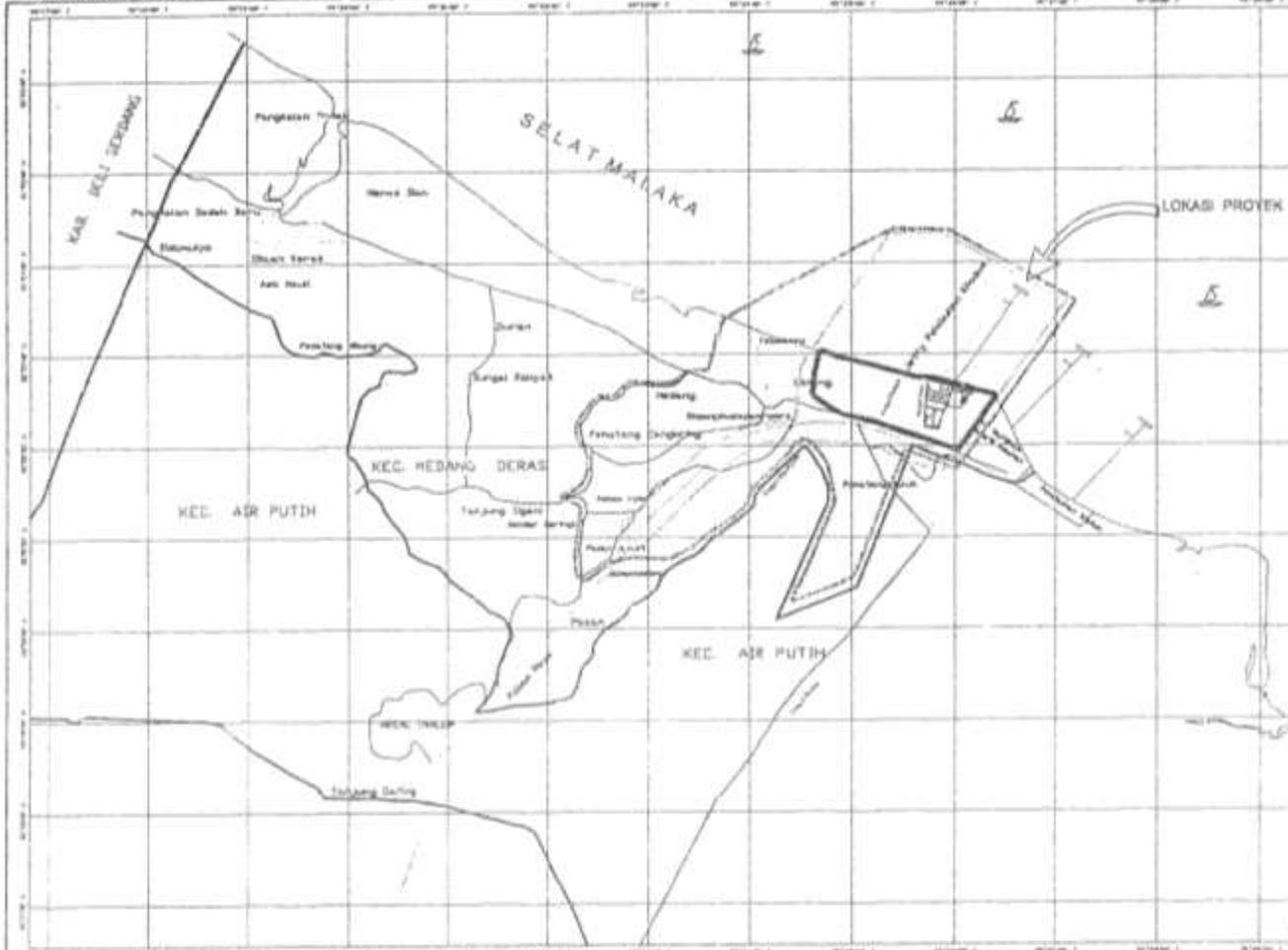
The administrative boundary in question is a space where people can freely engage in socio-economic and socio-cultural activities in accordance with the applicable laws and regulations in that area. For the administrative boundaries of the study area of the Environmental Impact Analysis, this includes the administrative government boundary estimated to be impacted by the construction of Dedicated Ports. The administrative area for this project is the Asahan Subdistrict, Medang Deras District.

2.2.4. Social Area Boundaries

The social area boundary is the boundary of activity which is the place for various socio-economic and cultural interactions that

are estimated to changes due to the construction activities of Dedicated Port, ie. the part of the Lalang Village, Medang Deras Subdistrict.

RUMAH LINGKUP STUDI



KEC. MEDANG DERAS - KAB. ASAHAN

PT. SARANA INDUSTAMA PERKASA
 Jl. Di Ujung Siding Km. 11,5 No. 50 1. Merowe
 3rd Siding - Simala Jay/Fas. 402 - 24 - 740033

UANGBAR : 2,1
BATAS WILAYAH STUDI

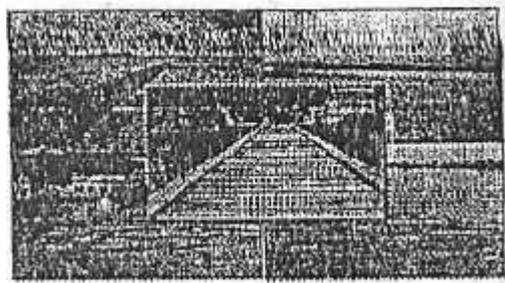
- KETERANGAN :**
- Batas Kabupaten
 - Batas Kecamatan
 - Jalan Trotoar
 - Access Road
 - Jalan Kecamatan
 - Sungai
 - Dermaga Jetty
- Batas Wilayah Studi :**
- Batas Wilayah Kabupaten
 - Batas Wilayah Kecamatan
 - Batas Wilayah Desa
 - Batas Wilayah Industri



SUMBER PETA :
BAKOSURTANAL

SKALA :
 1 : 50.000

PT. KUALA SIRU UTAMA
 ENVIRONMENTAL ENGINEERING CONSULTANT
 No. 11/2019
 14/11/2019



CHAPTER III

METHOD OF STUDY

PT. SARANA INDUSTAMA PERKASA

CHAPTER III METHOD OF STUDY

3.1. METHODS OF DATA COLLECTION AND DATA ANALYSIS

Based on the scoping results, the environmental components estimated to be affected by the construction of Dedicated Port of PT Sarana Industri Perkasa including the space environmental components, physical-chemical, biological environmental components and socio-economic and cultural environmental components. For purposes of identification, impact and impact estimates of project activities will be performed relevant data collection and analysis (can assure reliability and validity) of each parameter studied. So that the identification, estimation and evaluation of data can be used as the basis for the preparation of environmental management and monitoring plan and construction project of Dedicated Port of PT. Sarana Industri Perkasa will be implemented.

In the ANDAL Study the construction of Dedicated Port of PT. Sarana Industri Perkasa, data collection is performed directly or indirectly. Direct collection is performed by sampling, while data collection indirectly is performed by collecting secondary data

from the results of study that have been implemented in the project site area or through the data collection from relevant institution/ agencies. The sampling technique of the components/ parameters of physical-chemical and biological environments in general consists of two phase, namely the determination of sampling sites and taking/measuring of samples as well as preservation for further analysis in the laboratory.

The sampling location of physical-chemical and aquatic biota (plankton and benthos) parameters are carried out on the same location. While the sampling for other environmental parameters is determined based on the impact distribution area with sampling points determined by stratification ranging from the nearest area to the source of impact to the furthest area from the source of impact.

For the purposes of control or comparison, sampling is taken at locations estimated not be affected.

The collected data will be analyzed so that it can be input into the analysis system on the environmental

impact trends. The analysis is performed by 2 (two) ways, namely:

1. Quantitative Analysis Method

That is the method used for quantitative magnitudes or which can be qualified. Data is processed by using tabulation or using mathematical formulas.

2. Qualitative Analysis Method

That is the method used to analyze data that can not be qualified. The approach taken by tracing the causation or interaction of each problem qualitatively, then concluded by analogy or by expert estimation.

The purpose of sampling and data analysis in this ANDAL study among others (1) to identify the source of impact (followed by the type of impact). (2) environmental quality assessment as a short-term correction process; and (3) the characterization of environmental quality as an element of a long-term monitoring program. These three purposes are fundamental in determining sampling techniques as realizing of space, biophysical-chemical and socio-

economic data collection as well as the method of analysis. Systematics order of the data collection method in ANDAL study of the construction of Dedicated Port of PT. Sarana Industama Perkasa is illustrated in the flow chart of Figure 3.1.

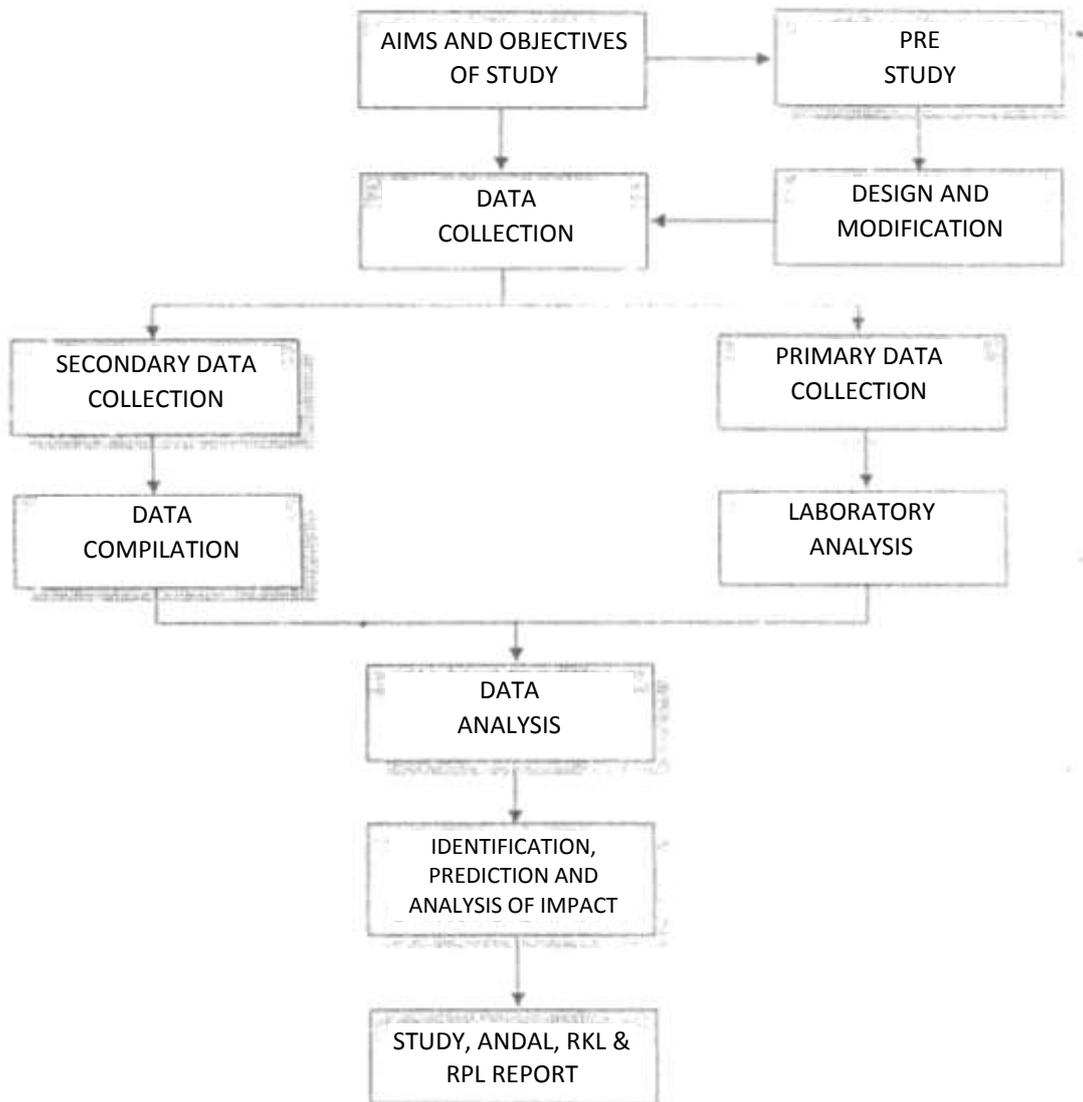


Figure 3.1.

Flow Chart of Data Collection And Analysis Method
 Study of Environmental Impact Analysis of the Dedicated
 Port Construction of PT. Sarana Industama Perkasa

3.1.1.1. Data Collection and Secondary Data Analysis

Secondary data obtained through previous study results which have relevance regarding data on climate, physiography, hydrology, spatial, flora and fauna, social, economic and cultural aspects, and others related to this study. List of environmental components obtained from secondary data includes of:

a. Climate

Climatic parameters includes of: data of rainfall, temperature, humidity temperature, wind direction and speed as well as climate conditions at the worst climate. Climate data collected is secondary data taken from Meteorology and Geophysics Agency Center of the Sampali Medan. It will be tabulated to determine the average and percentage of the quantities.

b. Physiography

Data on physiography includes of: topography, geological stability and soil uniqueness, privileges, geographical disruption of landforms and rocks. Secondary data on

physiography is obtained from Department of Mining and Energy of the North Sumatera Province, National Land Agency (BPN) of Asahan district and relevant institution or research results which has been done previously.

c. Hydrology

Hydrological data includes the characteristics of the recipient river/water body around the study location. Secondary data on hydrology obtained from Department of Irrigation of the Asahan District, other and a relevant institution or research results which has been done previously.

d. Space, Land and Soil (RLT)

Secondary data relating to Space, Land and Soil include the General Spatial Plan (RUTR) of the Asahan district. Status of land ownership managed by PT. Sarana Industama Perkasa as a Dedicated Port construction sites. This data is obtained from the National Land Agency (BPN) of Asahan district, Bappeda of Asahan district, Department of City Planning and Spatial Plan of the Aahan District and other agencies.

e. Demographic, Socio-Economic, Socio-Cultural Aspects

Referring to the decree of the Bapedal No. 299/II/ 1996 on Technical Guidelines of Social Aspect Study in Preparation of Environmental Impact Analysis, secondary data on socio-economic and cultural aspects among others:

1) Demographics

Demographics includes of population structure ie. population composition according to age, sex, livelihood, population density, population process, labor. This data is obtained from the Central Statistical Agency of Asahan district regarding Asahan District, Medang Deras Subdistrict and Lalang Village.

2) Socio-Economics

Socio-economic includes of: household economy, natural resource economy, local and regional economy. This data was obtained from the Central Statistical Agency of Asahan district regarding Asahan district, Medang Deras Subdistrict, Lalang village and the questionnaire results.

3) Socio-Cultural

Socio-Cultural includes of culture of the customs and cultural norms, social processes, social institutions, culture, social stratification, power and finance.

This data is obtained from literature study data related to socio-culture, also from Tourism Office of Asahan district, Medang Deras Subdistrict, Lalang Village and the questionnaire results.

4) Public Health

In the preparation of KA-ANDAL, this refers to the decree of the Bapedal No. 124/12/1997 o on Guidelines for study of the Public Health Aspects in the Preparation of Environmental Impact Analysis. Public health includes of: environmental parameters estimated affected, process and potential diseases, specific characteristics of the population at risk, health resources, environmental sanitation conditions, nutritional status, environmental conditions that may cause illness.

This data was obtained from Central Statistical Agency of Asahan district regarding Asahan District, Health Department of Asahan District, Data of Community Health Center (*Puskesmas*) and health facilities from Medang Deras Subdistrict and Lalang Village.

3.1.2. Data Collection and Primary Data Analysis

Primary data collection was performed in the study location through the field survey, where the data collected related with estimated parameters affected, with criteria for determining the possibility of impact spreading areas. Determining the location of measurement or sampling according to technical and ecological considerations and field conditions. Where as the methods used are based on references from various literatures that have been standardized as a standard for chemical, biological, socio-economic and public health analysis.

A. Physical-Chemical Components

1. Air Quality and Noise

Ambient air quality measurements are based on wind direction to determine the impact of air pollution resulted during construction and post construction. The noise measurement will be based on the estimates generated by the project activity during the construction and post construction period.

a. Parameters studied:

The parameters studied included dust content. SO_2 , NO_2 , CO, Hydrocarbon, NH_2 , H_2S , Pb, and noise (source and its intensity).

b. Collection Data Method

The primary data collection of air quality is performed by using Multiple Impinger with Colorimetric method with Spectrophotometer equipments. Noise measurement is conducted with Sound Level meter or Noise Logging, Parameter, observation time and the methods used for data collection of air

quality and noise in the study area are presented in Table 3.1.

Table 3.1 Analysis Methods of Air Quality Measurement

NO	Parameter Kualitas Udara	Waktu Pengukuran	Metode Anallsa	Peralatan
(1)	(2)	(3)	(4)	(5)
1	Temperatur Udara	setiap jam	Pemuaian	<i>Thermometer</i>
2	Kelembaban Udara	setiap jam	Penyusutan	<i>Hygrometer</i>
3	Arah angin	setiap jam	Gerak alir	Kompas
4	Kecepatan angin	setiap jam	Laju alir	<i>Anemometer</i>
5	Karbon Monooksida (CO)	8 jam	1205-KI	<i>Spectofotometer</i>
6	Nitrogen Oksida (NOx)	8 jam	Saltzman	<i>Spectofotometer</i>
7	Sulfur Dioksida (SO ₂)	8 jam	-	<i>Spectofotometer</i>
8	Amoniak (NH ₃)	8 jam	Nessler	<i>Spectofotometer</i>
9	Timbal (Pb)	8 jam	Absorption Automatic spectrometric	AAS-Flameless
10	Debu	Setiap jam	Gravimetri	<i>High V Sampler</i>

c. Data analysis method

Data analysis method used is comparative analysis method, ie. air quality data of measurement results compared to air quality standard according to Government Regulation of the R.I. No. 41 of 1999 on Air Pollution Control and Decree of the State Minister of Environment No.: Kep.48/ MENHL/ II/ 1996 on Noise Level Standards, as presented in Table 3.2.

Table 3.2 Parameters and Quality Standard of Air Quality and Noise

No	Parameter / Variabel	Satuan	Baku Mutu
(1)	(2)	(3)	(4)
1	Debu (TSP)	Ug/Nm ³	230
2	Sulfur Dioksida (SO ₂)	Ug/Nm ³	165
3	Carbon Monoksida (CO)	Ug/Nm ³	10.000
4	Nitrogen Dioksida (NO ₂)	Ug/Nm ³	150
5	Timah Hitam (Pb)	Ug/Nm ³	60
6	Kebersihan	dBA	70

Data Source: Government Regulation of the R.I. No. 41 of 1999 on Air Pollution Control and Decree of the State Minister of Environment No.: Kep.48/ MENHL/ II/ 1996 on Noise Level Standards.

d. Measurement and Sampling Location

The location of ambient air quality measurement is based on the wind direction to determine the impact of air pollution resulted during construction and post construction period, with 2 point sampling, ie. at the location of project and the location of nearest settlement. As for the noise location will be based on the estimated generated by the project

activity during construction and post construction. The determination of the location is based on the estimated exposed noise and nearest settlement areas by taking samples of 2 (two) points. The sampling location of the air quality and noise can be seen in Figure 3.2.

2. Well Water Quality

Sampling for well water analysis is based on environmental consideration as monitor/ indicator wells in case of groundwater pollution, by water sampling for 2 (two) samples, ie. well water of project location and well water of population.

a. Parameters studied

The parameters studied according to the Minister of Health No. 416/ Menkes/ Per/ IX/ 1990, as presented in Table 3.3.

Table 3.3. Parameter of Well Water Quality to be studied

No.	Parameter	Satuan	Baku Mutu Permenkes Nomor 416/Menkes/Per/IX/1990
A.	FISIKA :		
1.	Bau	-	Tak berbau
2.	Zat padat terlarut	mg/lit	1500
3.	Kekeruhan	NTU	25
4.	Rasa	-	tak berasa
5.	Suhu	0 C	udara 30C
6.	Warna	Pt-Co	50
B.	KIMIA :		
1.	PH	mg/lit	6.5 -- 9.0
2.	Air raksa (Hg)	mg/lit	0.001
3.	Arsen (As)	mg/lit	0.05
4.	Besi (Fe)	mg/lit	1.0
5.	Fluorida (F)	mg/lit	1.5
6.	Kadmium (Cd)	mg/lit	0.005
7.	Kromium (Cr +6)	mg/lit	0.05
8.	Kesadahan total	mg/lit	500
9.	Klorida (Cl)	mg/lit	600
10.	Mangan (Mn)	mg/lit	0.5
11.	Nitrit (NO2)	mg/lit	1.0
12.	Nitrat (NO3)	mg/lit	1.0
13.	Selenium (Se)	mg/lit	0.01
14.	Seng (Zn)	mg/lit	15

b. Collection Data Method

The primary data collection of well water quality is carried out by sampling the water in composite inserted to the sample bottle, preserved for testing in the laboratory. Some parameters such as pH, temperature, and some parameters are rapidly changes and measured immediately insite, soil quality measured including the groundwater quality parameters in accordance with Permenkes No. 416/ Mekes/ Per/ IX/ 1990.

c. Data Analysis Method

The analysis method used is comparative analysis method, that is by using the examination results of ground water quality in the laboratory to the ground water quality standard according to Permenkes No. 416/ Menkes/ Per/ IX/ 1990, with test analysis method according to the decree of the State Minister of Environment of the RI No. 37 of 2003 on Surface Water Quality Analysis Methods and Surface Water Sampling, as tabulated in Table 3.4.

d. Sampling Locations and Sample Analysis

Sampling for water analysis is based on environmental considerations as monitor/ indicator wells in case of groundwater pollution, by water sampling for 2 (two) samples, ie. the well water of project location and well water of population. The location of water sampling is shown in Figure 3.2. Then the sample analyzed at Environmental Laboratory of Bapedalda of North Sumatra Province.

Table 3.4. Methods of Surface Water Quality Analysis

Kelompok	Parameter Yang Diukur	Seorang	Satuan	Teknik Pengujian	Spesifikasi Metode Pengujian	
(1)	(2)	(3)	(4)	(5)	(6)	
Kimia Anorganik	Aluminium	0,02-1,0	mg/l	Spektrofotometri dengan aluminat	SNI 19-14-1991	
	Amonium	5-60/30	mg/l	Kolorimetri dengan testkit	SNI 19-1405-1991	
		0,05-0,25	mg/l	Kolorimetri dengan perak dieterokarbamat	SNI 19-2607-1991	
	Barium	1-20	mg/l	Spektrofotometri serapan atom secara langsung	SNI 06-2467-1991	
	Besi	0,22-4,0	mg/l	Kolorimetri dengan Fenantroin	SNI 06-1130-1991	
	Boron	0,1-10	mg/l	Spektrofotometri dengan Curcumin	SNI 06-2451-1991	
	Bromida	0-2,5	Mg/l	Kolorimetri dengan skatol	SNI 19-1503-1991	
	Kalsium	0,05-2,0	mg/l	Spektrofotometri serapan atom secara langsung	SNI 06-2468-1991	
		0,001-0,01	mg/l	Kolorimetri dengan Orlon	SNI 06-1130-1991	
	Kalsium	0,5-2	mg/l	Spektrofotometri serapan atom langsung	SNI 06-2467-1991	
	Kalsium	0,02-2,00	mg/l	Spektrofotometri serapan atom secara langsung	SNI 06-2011-1991	
	Karbon organik total		mg/l	Spektrofotometri secara NDIR	SNI 06-2506-1991	
	Kebutuhan oksigen Kimiawi (BOD)		mg/l	Inkubasi pada temperatur 20° C, 5 hari	SNI 06-2005-1991	
	Kimia Organik	Kebutuhan Oksigen Kimiawi (COD)	5-50	mg/l	Reduksi secara tertutup	SNI 06-2504-1991
Tesadahan total		1,0-300	mg/l CaCO ₃	Titrimetri dengan EDTA	SNI 05-4161-1991	
Klorida (Cl ⁻)		3-500	mg/l	titrimetri secara Argentometri	SNI 06-2437-1991	
Klorin bebas		0,011-4,0	mg/l	Spektrofotometri dengan dietilfenildiamin	SNI 06-4824-1991	
Kobalt		0,5-10	mg/l	Spektrofotometri serapan atom secara langsung	SNI 06-2471-1991	
Krom		0,01-0,1	mg/l	Kolorimetri dengan Dietil Karboda	SNI 06-1130-1991	
Magnesium		100-1000	mg/l	titrimetri dengan EDTA	SNI 06-2455-1991	
Mangan		0,05-2	mg/l	Spektrofotometri serapan atom secara langsung	SNI 06-2497-1991	
Merkuri		0,1-10,0	µg/l	Spektrofotometri serapan atom dengan Mercury Analyzer	SNI 05-2912-1991	
Nikel		0,01-5,0	mg/l	Spektrofotometri dengan dietilglisarat	SNI 19-1412-1991	
Nitrat (NO ₃ -N)		0,1-2,0	mg/l	Spektrofotometri dengan busin sulfat	SNI 06-2480-1991	
Nitrit		0,001-0,5	mg/l	Spektrofotometri dengan asam sulfanilat	SNI 06-2488-1991	
Oksigen terlarut			mg/l	Titrimetri	SNI 06-2434-1991	
Perak		1-25	µg/l	Spektrofotometri serapan atom dengan tungku karbon	SNI 06-4162-1991	
pH		1-14	satuan pH	Elektrometri	SNI 06-1540-1991	
Selenium		0,005-0,1	mg/l	Spektrofotometri serapan atom dengan tungku karbon	SNI 06-2475-1991	
Seng		0,001-0,005	mg/l	Kolorimetri dengan Orlon	SNI 06-1130-1991	
Sianida		0,05-10	mg/l	ion selektif meter	SNI 06-2474-1991	
Silika		1-50	mg/l	Spektrofotometri dengan metilodal siklat	SNI 06-2477-1991	
Sulfat		1-40	mg/l	Turbidimetri	SNI 06-2426-1991	
Sulfida		0,02-20	mg/l	Kolorimetri dengan para Amsyadmetil Amino	SNI 06-1468-1991	
Tembaga		0,2-10	mg/l	Spektrofotometri serapan atom secara langsung	SNI 06-2514-1991	
Timah		20-300	µg/l	Spektrofotometri serapan atom dengan tungku karbon	SNI 06-4833-1991	
Timbal		0,002-0,015	µg/l	Kolorimetri secara Orlon	SNI 06-1130-1991	
Mikro biologi		Koli tinja	20-60 koloni/100 ml	Jml/100 ml	Saringan membran	SNI 19-3954-1991
		Koli total		Jml/100 ml	Tabung fermentasi	SNI 19-4150-1991
Kualitas Fisika Air		Residu terlarut (TDS)		mg/l	Gravimetri	SNI 06-1136-1991
		Residu tersuspensi (TSS)		mg/l	Gravimetri	SNI 24-1135-1991
		Temperatur		°C	Termometer	SNI 06-2472-1991
		Turbiditas		NTU	Nephelometri	SNI 06-2473-1991
Warna		1-500	TCU (mg/l Pt Ca)	visual atau Spektrofotometri	SNI 06-2475-1991	
Kimia Organik		Deterjen	0,01-2	µg/l	Spektrofotometri dengan bus metilana	SNI 06-2476-1991
	Fenol	0,005-0,1	mg/l	Spektrofotometri dengan amina anilamin	SNI 06-4823-1991	
	Residu Fisik organik	0,1-10	mg/l	Kromatografi Gas (GC)	SNI 06-2469-1991	
	Minyak dan lemak	1-50	mg/l	Ekstraksi dengan Petroleometer	SNI 06-4826-1991	

Data Source : Decree of the State Minister of Environment of the RI No. 37 of 2003 on Surface Water Quality Analysis Methods and Surface Water Sampling

3. River Water Quality

Sampling for water analysis is based on the existing river/ drainage system within the study area, by taking 2 (two) samples of water, ie. at the Besar River 1 (one) point and Sono River 1 (one) point.

a. Parameters studied

Parameters studied according to Government Regulation No. 82 of 2001 on Water Pollution Control with the criteria of class I Standard Quality for Besar River, which shall be used as a source of operational water for Dedicated Ports and Class III for Sono River, designated as receiving water bodies as presented in table 3.5.

Table 3.5. Parameters of Surface Water Quality and Quality Standard

No.	Parameter	Satuan	Baku Mutu *
A.	FISIKA :		
1.	Temperatur	°C	Deviasi 3
2.	Residu Terlarut	mg/l	1000
3.	Residu Tersuspensi	mg/l	400
B.	KIMIA ANORGANIK :		
1.	pH	-	6-9
2.	BOD ₅	mg/l	6
3.	COD	mg/l	50
4.	DO	mg/l	3
5.	Total Phosphat sbg P	mg/l	1
6.	NO ₂ sbg N	mg/l	20
7.	Arsen	mg/l	1
8.	Boron	mg/l	1
9.	Kobalt	mg/l	0,2
10.	Selenium	mg/l	0,05
11.	Kadmium	mg/l	0,01
12.	Khrom (VI)	mg/l	0,05
13.	Tembaga	mg/l	0,02
14.	Timbal	mg/l	0,03
15.	Air Raksa	mg/l	0,002
16.	Seng	mg/l	0,05
17.	Sianida	mg/l	0,02
18.	Fluorida	mg/l	1,5
19.	Nitrit sbg N	mg/l	0,06
20.	Klorida Bebas	mg/l	0,03
21.	Belerang sbg H-S	mg/l	0,002
C.	MIKROBIOLOGI		
1.	Fecal Coliform	jm/100 ml	2000
2.	Total Coliform	jm/100 ml	10000
D.	KIMIA ORGANIK		
1.	Minyak dan Lemak	mg/l	1000
2.	Deleagen sbg MBAS	mg/l	200
3.	Senyawa Fenol sbg Fenol	mg/l	1

Data Source : Government Regulation No. 82 of 2001 Water Quality Management and Water Pollution Control of Class III

b. Collection Data Method

The primary data collection of river water quality is done by taking samples of water in vertical composite inserted in to sample bottle using a water sampler, preserved for testing in laboratory. Some parameters such as pH, temperature, and some

parameters are rapidly changes and immediately measured insite.

c. Data Analysis Method

The analysis method used is comparative analysis method that is by comparison of the examination results of water quality of recipient water body in the laboratory to the quality standard of recipient water body according to the Government Regulation No. 82 of 2001 on Water Quality Management and Water Pollution Control, with testing analysis method according to Decree of the State Minister of Environment of the RI No. 37 of 2003 on Surface Water Quality Analysis Methods and Surface Water Sampling, as tabulated in Table 3.4.

e. Sampling Locations and Sample Analysis

The sampling location is in the Besar River of 1 (one) point and Sono River of 1 (one) point. The location of water sampling is shown in Figure 3.2. Then the sample analyzed at Environmental Laboratory of Bapedalda of North Sumatra Province.

4. Seawater Quality

Determination of sampling location of seawater quality is based on estimation order of potential impact, ie. as recipient water body of waste water and surface water coming from activities of dedicated port of PT. Sarana Industama Perkasa.

a. Parameters studied

Parameters studied according to Kep.Men.KLH No.: kep 51 of 2004 Appendix I on Sea Quality Standard for Port Waters with parameters such as: Brightness, Offensive Odor, TSS, Waste, Temperature, Oil Spill, pH, Salinity. $\text{NH}_3\text{-N}$, H_2S , Total HC, Total Phenol Compound, PCB, Detergent, Fat. Dissolved Metal and Coliform Total. The Parameters of seawater quality with specified quality standards are presented in Table 3.6.

Table 3.6 Parameters of Seawater Quality Analyzed

No.	Parameter	Satuan	Kadar Maksimum Yang Diperbolehkan
A.	FISIKA :		
1.	Kecerahan	-	> 3 (a)
2.	Kebauan	-	tidak Berbau
3.	Padatan Tersuspensi (TSS)	mg/l	40 (b)
4.	Sampah	-	Nilai (1)(4)
5.	Suhu	°C	Alami (3(c))
6.	Lapisan Minyak	-	Nilai (1)(5)
B	KIMIA :		
1.	pH	-	6,5 – 8,5 (d)
2.	Salinitas	%	Alami (3(e))
3.	Ammonia (NH ₃ -N)	mg/l	0,3
4.	Sulfida (H ₂ S)	mg/l	0,03
5.	Hidro Carbon Total	mg/l	1
6.	Senyawa Fenol Total	mg/l	0,002
7.	Poly Chlor Biveril (PCB)	mg/l	0,01
8.	Surfatan (Detergen)	mg/l	1
9.	Minyak dan Lemak	mg/l	5
10.	Tri Butil Tin (TBT)	ng/l	0,01 (6)
11.	Logam Terlarut :		
	- Raksa (Hg)	mg/l	0,003
	- Cadmium (Cd)	mg/l	0,01
	- Tembaga (Cu)	mg/l	0,05
	- Timbal (Pb)	mg/l	0,05
	- Seng (Zn)	mg/l	0,1
C.	BIOLOGI :		
1.	Coliform Total	Mpn/100 ml	1000 (5)

Data Source : Decree of the State Minister of Environment of the RI No. 51 of 2004 Appendix I on Sea Water Quality Standards for Port Waters

Remarks:

1. Nil is the undetectable with the detection equipments used in accordance with the method used
2. The method used refers to the method of analysis *(illegible)* international/national

3. Natural is the normal conditions of an environment varies during the day, night, season.
4. observation By humans (Visual).
5. Observation by human (visual) oil spill referred to is thin layer with thickness of 0.01 mm.
6. TBT is an anti-fouling agent commonly found on ships.
 - a. It is allowed to change up to <10% into Euphotic.
 - b. It is allowed to change up to <10% of the season's average concentration.
 - c. It is allowed to change up to <20°C of the natural temperature.
 - d. It is allowed to change up to <0.2 pH unit.
 - e. It is allowed to change up to <5% of the season's average salinity.
 - f. It is allowed to change up to <10% of the season's average concentration.

b. Collection Data Method

The primary data collection of the sea water quality is carried out by sampling the water in vertical composite inserted to sample bottle by using a water sampler, preserved for testing in the laboratory. Some parameters such as pH, temperature, and some parameters are rapidly changes and measured immediately insite.

c. Data Analysis Method

The analysis method used is comparative analysis method, that is by comparison the results of sea water quality examination with Kep.Men.KLH No.: Kep 51 of 2004, Appendix I on Sea Water Quality Standards for Port Waters, with test analysis method according to the Decree of the State Minister of Environment of the RI No. 37 of 2003 on Surface Water Quality Analysis Methods and Surface Water Sampling, as tabulated in Table 3.4.

d. Sampling Location and Sample Analysis

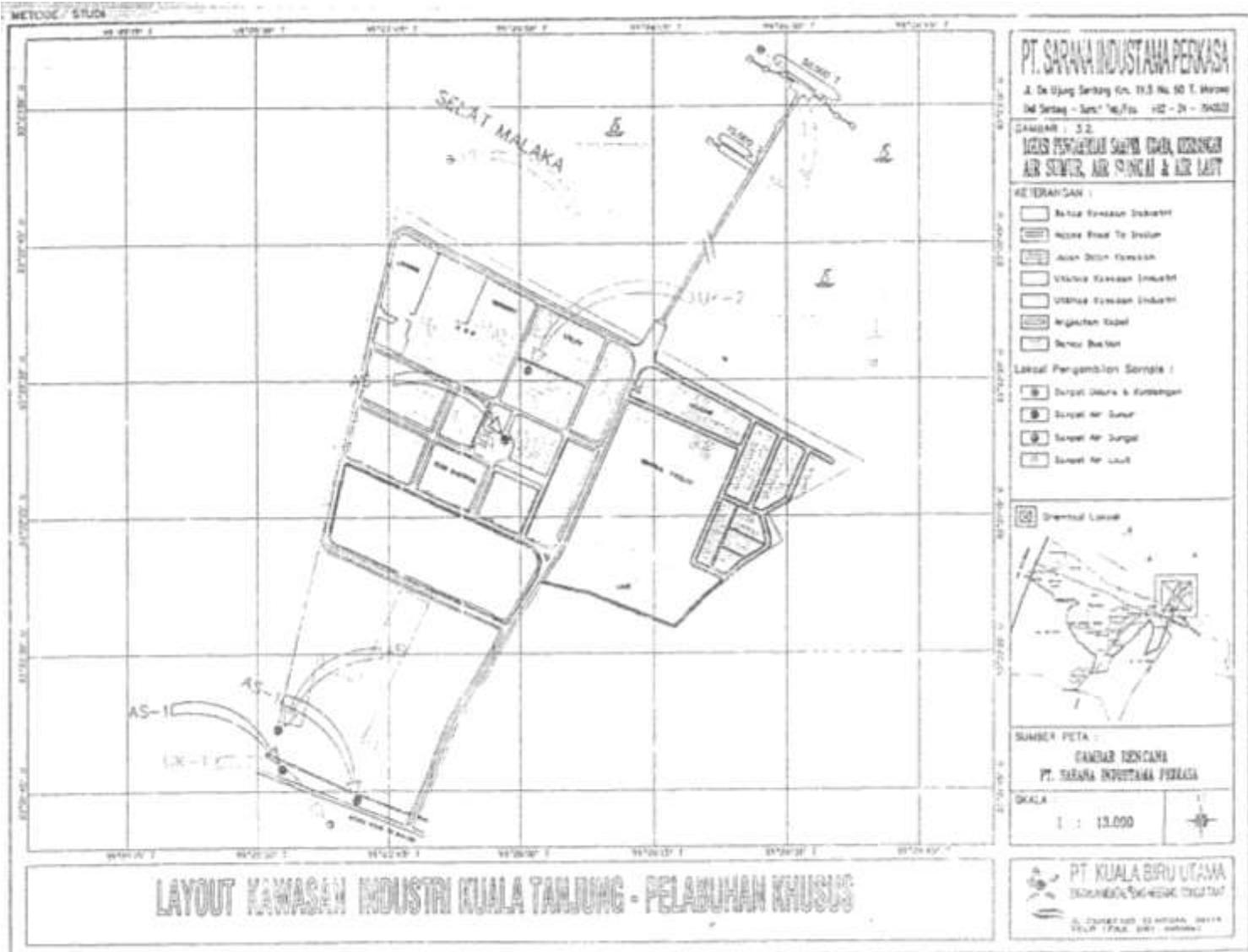
Location of sea water sampling is taken at 3 (three) points, that is:

1. Point I at the farthest coastal boundary location on the west side
2. Point II at the farthest sea boundary location on the north side, and
3. Point III at the farthest sea boundary location on the east side.

Determination of the sampling location based on the estimates of the distribution of potential impacts, namely as the recipient water body of waste water and surface water coming from the dedicated port

activities of PT. Sarana Industama Perkasa. Then the samples analyzed at Environmental Laboratory of Bapedalda of the North Sumatera Province.

The location of the water sampling is shown in Figure 3.2.



5. Hydrooceanography

a. Parameters observed

The hydrooceanography parameters observed in this study are water depth (bathymetry), tidal, current pattern (direction and velocity), wave and sediment quality.

b. Data collection method

a) Bathymetry data will be studied through ocean maps and sounding results performed by Geometra Intl (PTE) LTD Singapore.

b) Tidal is known from the results of secondary data of the analysis results and the data of measurement results of the Hydrooceanography of TNI - AL (NAVY). Parameters analyzed among others tidal type, tidal range and level water sea (LWS).

c) The direction and velocity of currents and waves using secondary data ie. from the Department of Transportation are also obtained from field measurement results.

d) Waves using SMB (Sverdraft-MunkBretscheider) method with basic of transfer energy.

e) Abrasion and Sedimentation estimated with CERC empirical formulas where the required data are

data about waves covering the incidence angle, height, depth of water and sea water density. The data collection is performed by field measurement and wave estimation by SMB methods.

c. Data analysis method

Tidal type is determined by calculating its form number using Admiralty method (as recommended the Dishidros TNI Angkatan Laut (Navy) of the RI, 1965) or by visual means. Tidal harmonic analysis using admiralty method is used to obtain the amplitude harmonic constant (A) and phase difference (g) from seven components ie. M2, S2, K2, N2, O1, K1 and P1. This method also provides a average sea level altitude of a specified datum. P. Vander Stok (1897) classifies the type

4. Nekton and Benthos

a. Parameters Studied

Nekton is the types of fish that exist in the waters. Benthos consists of fitobenthos and zoobenthos, both macro and micro. The environmental indicator generally present macrozoobenthos. With its sedentary nature then the macrozoobenthos organism community is the organism most suffering by the pressure of aquatic environment. Therefore the community structure is a good indicator for the impact of waters environment.

b. Data Collection Method

The macrobenthos biota live on the top layer of bottom water by the name epifauna or slightly below it (infouna). Therefore, to be able to guess the species and amount in the bottom of waters the sediment sample is not only taken the surface only. The equipment used is Ekman Grab when the waters are soft and slow-moving and Peterson Grab or Smith-McIntyre Grab when deep water or rip current. The sample was taken quickly separated with the assist of Sieve Set. To assist the filtration, a sugar solution is used in the sample. Filtered samples can be readily analyzed or

preserved with MAF material. Nekton data collection is carried out by recording the catch of fisherman in the Medang Deras subdistrict. This will be done with visual observations in the field, interviews with fisherman, and tracking secondary data including statistical, scientific publication and other reports.

c. Data Analysis Method

Organisms of identified results further processed to obtain quantitative variables such as abundance of diversity, dominance or equity index.

The abundance expressed as the number of individual / unit area of the transect/equipments is calculated from the average number of individuals on some sampling by the formula:

$$X = \sum x_i / n,$$

Where:

X = Average number of individuals on sampling to n.

x_i = Number of individuals on sampling to I

N = Number of sampling

To know the abundance distribution of macrozoobenthos species in relation to the organism spatial adaptation strategy can be used Frontier Succession Graph Method (Frontier, 1977). The parameters used are the number of taxa and abundance of macrozoo benthos.

The diversity realized is the Shannon Weaver diversity index (H) is a description on the organism's structure in the form of type assemblages in the community, this is calculated by the formula:

$$H = - \sum p_i \log_2 p_i \text{ or } \sum \frac{n_i}{N} \log \frac{n_i}{N}$$

$$H = -3.322 \sum \frac{n_i}{N} (\log N - \log n_i)$$

Where:

H = Diversity index

n_i = Number of species individual of i

N = Total Number of individuals of all species.

The dominance realized in the Domination Index (g) of Srpmpson is a description on the dominance of species in the community calculated by formula:

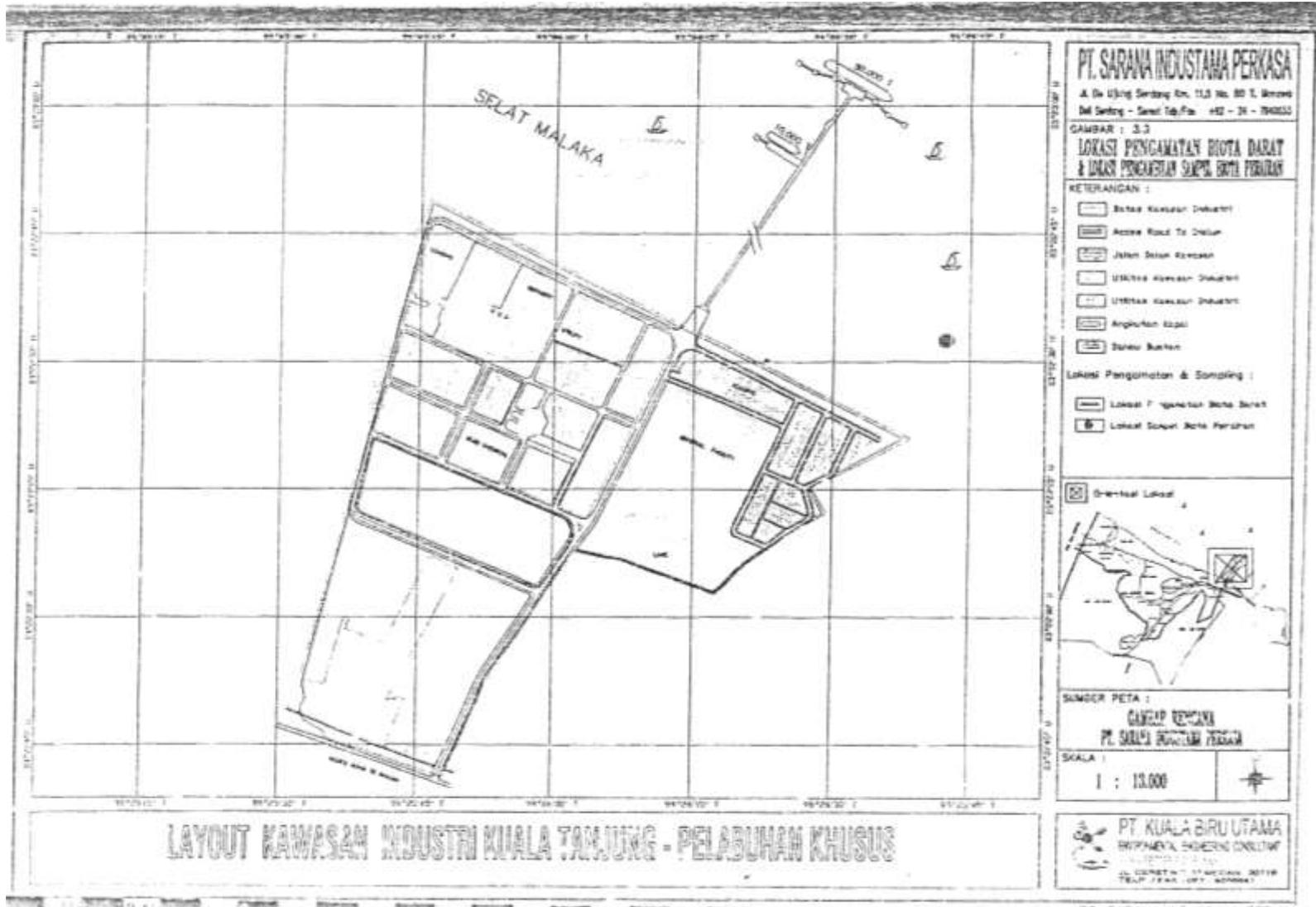
$$g_i = \frac{\sum n_i (n_i - 1)}{N (N - 1)}$$

d. Sampling Location

Sample of aquatic biota is taken at 3 (three) point location that is:

1. Point I at the farthest coastal boundary location on the west side
2. Point II at the farthest sea boundary location on the north side, and
3. Point III at the farthest sea boundary location on the east side.

The sampling map is presented in Figure 3.3



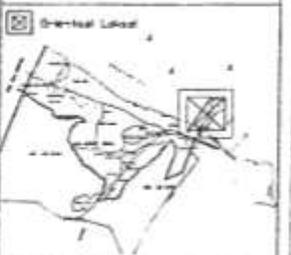
PT. SARANA INDUSTAMA PERKASA

Jl. Da Ujung Serang Km. 11,5 No. 88 T. Merang
 Da Serang - Serang Tel. Fax : 422 - 31 - 790333

CAMBAR : 3.3
**LOKASI PENGAMATAN BIOTA DARAT
 & LOKASI PENGAMATAN SAMPAH BINTI PERUBAH**

- KETERANGAN :**
- [Symbol] Batas Kawasan Industri
 - [Symbol] Access Road To Dalam
 - [Symbol] Jalan Beton Kawasan
 - [Symbol] Utilitas Kawasan Industri
 - [Symbol] Utilitas Kawasan Industri
 - [Symbol] Angkutan Kapal
 - [Symbol] Dangkal Kuchan

- Lokasi Pengamatan & Sampling :**
- [Symbol] Lokasi Pengamatan Biota Darat
 - [Symbol] Lokasi Sampah Binti Perubah



SUMBER PETA :
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 PT. SARANA INDUSTAMA PERKASA

SKALA :
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 10, JALAN KUALA BIRU UTAMA, KUALA BIRU, MELAKA
 TELUK ANSON, MELAKA

LAYOUT KAWASAH INDUSTRI KUALA TANJUNG - PELABUHAN KHUSUS

C. Components of the Social, Economic and Cultural Environment

Variety of data grouped as social, economic and cultural impacts may arise that outlined in the parameters and variables along with the source. The collection and analysis data method to be used in Component analysis of environmental, social and cultural is described in Table 3.7.

Table 3.7. Methods of Data Collection and Analysis of Social, Economic & Cultural Components

No.	Parameter	Situasi	Metode	Analisis
A.	DEMOGRAFI.			
1.	Struktur Penduduk.	Jiwa	Wawancara/data sekunder	deskriptif/
2.	Angkatan Kerja Produktif.	Orang	Wawancara/data sekunder	universal
B.	SOSIAL EKONOMI			
1.	Pendapatan Masyarakat.	-	Wawancara/data sekunder	
2.	Kesempatan Kerja dan Berusaha.	-	Wawancara/data sekunder	
3.	Mata Pencaharian.	-	Wawancara/data sekunder	
4.	Penggunaan Lahan.	-	Wawancara/data sekunder	
C.	SOSIAL - BUDAYA.			
1.	Persepsi Masyarakat.	-	Wawancara/data sekunder	
2.	Pendidikan.	-	Wawancara/data sekunder	
3.	Agama.	-	Wawancara/data sekunder	
4.	Organisasi-organisasi Sosial.	-	Wawancara/data sekunder	
D.	KESEHATAN MASYARAKAT DAN LINGKUNGAN.			
1.	Ketersediaan Air Bersih (Sanitasi lingkungan)	-	Wawancara/data sekunder	
2.	Fasilitas Kesehatan.	-	Wawancara/data sekunder	

a. Data Types and Data Collection Methods

Based on the source, the socio-economic and cultural data collected includes both primary and secondary data. The data are quantitative and qualitative. All data collected will be obtained by triangulation approach (all-round three), which includes the activities of observation, interviews and secondary data.

Primary data will be collected through observation and structured interviews for the respondents, based on the random being stratified in addition to the purposive approach. They will be interviewed about the norms, local customs and their views on the construction plan of the dedicated port of PT. Sarana Industama Perkasa.

Secondary data is collected from various government agencies and administrative levels such as Central Statistical Agency, Lalang Village, Medang Deras Subdistrict and in offices of government agencies related to the issues to be studied.

b. Processing and analysis of data

The quantitative data obtained will then be processed and analyzed by means of cross tabulation, while the

qualitative data will be analyzed in descriptive qualitative.

c. Study location

The study location is emphasized on the settlement area located in Dusun Sei Suka in Lalang Village and Pagurawan Village which is nearest to the construction plan location of the dedicated port of PT. Sarana Industama Perkasa.

Interviews and questionnaires distributed with pay attention to the heterogeneity and social strata of the community and to see the distance of the residence from source of impact. The number of respondents is 10% of the population nearby. Respondents are community members especially those who live around the construction of dedicated port of PT. Sarana Industama Perkasa.

3.2. METHODS OF IMPACT ESTIMATION AND DETERMINATION OF LARGE AND IMPORTANT IMPACTS

For the environmental impact estimation, there are several steps to identify the impact and to estimate the impact

3.2.1. Impact identification

To identify impact implemented by using interaction matrix and flow chart.

a. Interaction Matrix and Impact Identification

By way of an inventory of environmental components that have potential impacts, a vertical list will be obtained whereas in the same way, potential activities as a source of impact can be labeled horizontally. From both lists then an interaction matrix is performed.

b. Identification of Important Impacts

The results of interaction and the identification of impacts that have been obtained need to be tested whether the interactions are important impacts or not. The test is conducted using 7 (seven) important impact criteria that have been set in Government regulation No. 27 of 1999.

3.2.2. Estimated Impact

The estimated impact is a study of the changes caused by activity on the environment. The method used in the estimated impact is the formal method. These formal methods include mathematical, analogy methods and professional judgments.

a. Mathematical Method

This method uses mathematical formulas for impact estimates. In this method the causal relationship describes the magnitude of the impact caused by the activity on the environment as follows:

- The estimated impact of sound level is estimated by the formula:

$$SL_1 - SL_2 = 20 \text{ Log } (r_1 / r_2)$$

Where:

SL1: Sound level of point 1

SL2: Sound level of point 2

R1: Distance point 1 to sound source

r2: Distance of point 2 to sound source

From the calculation will be described the distribution area of the sound impact (dBa)

- Estimated impact of Employment Opportunities

$$\mathbf{Ksk = (STK / \sum Prod) \times 100\%}$$

Where:

Ksk = Employment Opportunities (%)

STK = Labor Absorption (person)

\sum Prod = Number of productive population (person)

b. Analogy Method

Environmental activity and studies on Dedicated Port have been widely practiced and analyzed by experts, so that the estimated impacts resulted of the activities on other location with similar environmental conditions are taken into consideration in formulating the magnitude of impact.

c. Professional judgment method

Is a method based on professional judgment. This method is used to assist estimate environmental parameters whose nature of systems is difficult to be

understand or estimated by model approach, such as socio-cultural system.

3.2. METHODS OF IMPACT ESTIMATION AND IMPORTANT IMPACT DETERMINATION

For the environmental impact estimation, there are several steps to identify the impact and make impact estimates.

3.2.1. Identification of Impact

Implementing the impact identification is a very important initial stage in ANDAL. The environmental impacts arising from the activity can be known from scoping. From this scoping can be seen the main problem that is estimated to appear. By using scoping results it can be made in detailed identification. To perform the identification then the flow chart method and the interaction matrix to be used.

a. Flow Chart Method

This method is prepared by making impacts arising, as well as listed the activities and their effects and impacts on environmental components. Whether or not the impact can be followed by the flow of

impact. The resulting impacts can be listed sequentially in the order of 1, 2, 3, as primary, secondary and tertiary impacts.

b. Interaction Matrix Method

This method is prepared by inventory of environmental components that have the potential impact, a vertical list will be obtained, while the same way, the activities potentially as a source of impact can be labeled in the horizontal direction. From both lists then an interaction matrix is made. The interaction results of the activity component with the environmental component is an impact arising. All impacts arising then added information about the nature of positive or negative impacts. If the impact is positive, then marked + (positive). If the impact is negative, then marked - (negative) and if there is no impact then it is left empty or given the symbol 0 (zero). Furthermore, the results of impact

interaction and identification that have been obtained need to be tested whether the interactions are important impacts or not. The test is conducted by using 7 (seven) important impact criteria that have been stipulated in the Bapedal Decree No. 56 of 1994.

3.2.2. Large and Important Impact Estimation

The estimated impact is a study of the changes caused by activity on the environment. The method used in the estimated impact is the formal method. These formal methods include mathematical, analogy methods and professional judgments.

a. Mathematical Method

This method uses mathematical formulas for impact estimates. In this method the causal relationship describes the magnitude of the impact caused by the activity on the environment as follows:

- The estimated impact of sound level is estimated by the formula:

$$\mathbf{SL_1 - SL_2 = 20 \text{ Log } (r_1 / r_2)}$$

Where:

SL1: Sound level of point 1

SL2: Sound level of point 2

R1: Distance point 1 to sound source

r2: Distance of point 2 to sound source

From the calculation will be described the distribution area of the sound impact (dBa)

- Estimated impact of Population Growth

$$P_1 = P_0 (1+r)^t$$

Where:

P1 = Total Population in year 1

P0 = Population

r = Average rate of population growth

t = Term of relationship

$$DK = \frac{\text{Total population}}{\text{Wide area}}$$

- Estimated impact on load dependency ratio

$$RBT = \frac{B+T}{P}$$

Where:

RBT = Load Dependency Ratio

B = Number of Unproductive Population
(0 - 14 years)

T = Number of Not Productive
Population (> 65 years)

P = Number of Productive Population
(14 - 65 years)

- Estimated impact to the Income

$$Y = C + I + S$$

Where:

Y = Income

C = Consumption

I = Investation

S = Saving

- Estimated impact of employment opportunities

$$Ksk = (STK / \sum Prod) \times 100\%$$

Where:

Ksk = Employment Opportunities (%)

STK = Labor Absorption (person)

$\sum Prod$ = Number of productive
population (person)

b. Analogy Method

Environmental activity and studies on Dedicated Port have been widely practiced and analyzed by experts, so that the estimated impacts resulted of the activities on other location with similar environmental conditions are taken into consideration in formulating the magnitude of impact.

c. Professional judgment method

Is a method based on professional judgment. This method is used to assist estimate environmental parameters whose nature of systems is difficult to be understand or estimated by model approach, such as socio-cultural system.

The estimated magnitude impact is done using the modified Leopold method. This method is designed to analyze environmental impacts on various construction projects within a region. This method is very good for providing information on the causal

relationships and effect of an activity, as well as to show the results quantitatively and to communicate the results. This method has the following steps:

- i. Create a matrix by determining the impact of each project activity on the environmental component. If it is suspected that there will be an impact on an environmental component resulting from an activity then the meeting box or cell in the matrix table is marked diagonally.
- ii. In each box there is a diagonal, will determined the magnitude of environmental quality and the importance level of its impact based on the quality standard of the environment according to KepMENLH No. 02/1988 and other environmental quality standard.
- iii. Make scale the magnitude and importance of environmental impacts or the magnitude of the environmental component importance to the project, sector and region.

The magnitude of impact is calculated by the way of future environmental quality and project minus the future environmental quality without project, with the formula as follows:

$$\text{Estimated Magnitude Impact} = \text{SKL}_{(dp)} - \text{SK}_{(tp)}$$

Where:

SKL_(dp) : The future environmental quality scale and project

SK_(tp) : The future environmental quality scale without project

Environmental quality when the activity takes place obtained from mathematical calculations and professional judgment. based on a description of the activity plan and linked to 6 important impact criterias in accordance with Government Regulation No. 27 of 1999 (article 5, paragraph 1) as well as relevant environmental quality standards. The estimated matrix of impact magnitudes is presented in Table 3.8.

Table 3.8. Matrix of Estimated Magnitude Impact

Environmental components	SKL RLA	SKL (_{tp})	Pre- Const ructi on	Construc tion	Post- Construc tion	Estimated Magnitude Impact		
						Pre- Construc tion	Construc tion	Post- Construc tion
Physical- chemical components								
Biological components								
Sosekbudkesm as components								

Remarks :

SKL RLA: Environmental Quality Scale of the Initial Environment Baseline

SKL (_{dp}): Future environmental quality scale and Dedicated Port operations

SKL (_{tp}): Future environmental quality scale without Dedicated Port operation

The environmental quality scale on the Initial Environment Baseline (RLA) and when the activity takes place (each phase) is shown in numerical scales (1 to 5). that is:

<u>Scale</u>	<u>Environmental Quality</u>
1	Very Poor
2	Poor
3	Average
4	Good
5	Very Good

3.2.3 **Estimates of Important Impact**

Estimates of important impacts are made by linking each magnitude of impacts with 6 important impact criterias set as forth in Government Regulation No. 27 of 1999, ie.:

1. Number of human to be affected
2. Area of impact spreading
3. Intensity and duration of impact
4. Number of other environmental components that will be affected
5. The cumulative nature of impact
6. Reversed or not reversed of impact

As presented in Table 3.9 on the Matrix of Important Impact Estimates.

Table 3.9. Matrix of Important Impact Estimates

Activity Plan	Magnitude of Impact	Impact Criteria						Criteria of Important Impact
		a	b	c	d	e	f	
Pra- Constructio n phase								
Constructio n phase								
Post- Constructio n phase								

Remarks:

- a. Number of human to be affected
- b. Area of impact spreading
- c. Intensity and duration of impact
- d. Number of other environmental components that will be affected
- e. The cumulative nature of impact
- f. Reversed or not reversed of impact

Large and important impacts determined based on the criteria as follows:

1. If magnitude of estimate impacts ≥ 2 and the number of criteria P (important) ≥ 3 . then the impact estimates is **large and important**.
2. If magnitude of estimate impacts ≥ 2 and the number of criteria P (important) < 3 , but if one of P is the criteria of the number of affected human, then the impact estimate is **large and important**.
3. If magnitude of estimate impacts < 2 and No.? ≥ 3 . then the impact estimates is **Small but important**
4. If magnitude of estimate impacts < 2 and the number of P < 3 then the impact estimates is **large but not important**.
5. If magnitude of estimate impacts = 1 and total P < 3 . then the impact estimates is **small and not important**.

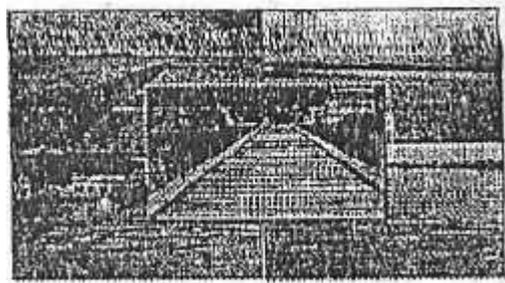
3.3 IMPORTANT IMPACT EVALUATION METHOD

The impacts caused by a dedicated port activity plan owned by PT. Sarana Industri Perkasa to the environment are evaluated by describing the overall impact that occurs by using the Decree of the Head of Environmental Impact Management Agency (Bapedal) no. Kep. 056 of 1994 on Guidelines about the Important Impact Size. The important impact measurement are based on the criteria as follows:

1. Number of human to be affected
2. Area of impact spreading

3. Duration of impact
4. Intensity of impact
5. Number of other environmental components that will be affected
6. The cumulative nature of impact
7. Reversed or not reversed of impact

In addition to the magnitude of impact, the nature of importance impact is classified into two categories, namely important or unimportant. then the environmental component is then evaluated by making an matrix of impact evaluation as tabulated in table 3.10.



CHAPTER IV

BUSINESS AND/OR ACTIVITY PLAN

PT. SARANA INDUSTAMA PERKASA

CHAPTER IV BUSINESS AND/OR ACTIVITY PLAN

4.1 IDENTITY OF PROPONENT AND COMPILER OF AMDAL

a. Identity of Proponent

Name : PT. Sarana Industama
Perkasa

Address : Jl. Ds Ujung Serdang Km.
11.5 No. 60 Jl. Morawa -
Deli Serdang Sumut

Tel / Fax: +62 - 24 -
7940033

Person in charge : Harianto L

Title : Director

b. Identity of Compiler

Company Name : PT. Kuala Biru Utama

Business Services : Consultant

Office Address : Jl. Ceret No. 33 Madan
20118

Person in charge of : Ir. Husaini Rahman
the Company

a. Team Leader : Ir. Wahyudin

b. Sub-Team of Ir. Suhardjono MSc

Physical-

Chemical

c. Sub Team of : Ir. Suhendi

Biology

d. Sub Team of : Ir. Dina Iriana

Environmental

Engineering

e. Sub Team of : Ir. Seven Syafril

Social, Economic Simbolon

and Cultural

f. Sub Team of : Ir. Husaini Rahman

Environmental

Engineering

g. Sub Team of : Ir. Tama Sena Tarigan

Civil Work

h. CAD / Drafter : Ir. M. Imaanudin Hanggi

4.2 PURPOSES OF ACTIVITY PLAN

The purpose of the construction of Dedicated Port of PT Sarana Industama Perkasa are:

- 1) As one of marine transportation infrastructure especially in relation to facilitate the supply activity of raw materials and product marketing from companies located in industrial area of PT. Sarana Industama Perkasa.
- 2) Assist government, especially the Asahan District Government in providing employment, increasing the economy and regional income.
- 3) Placing dedicated port construction activities on strategic area construction efforts to improve business activities are developing.

4.3 BENEFITS AND PURPOSES

With the construction of Dedicated Port of PT. Sarana Industama Perkasa will provide transportation services that indirectly support various activities, especially to the economy and business sector, also to the culture, social and political. Thus the activity has the benefit and benefits to:

1. Develop investment and diversification of business

2. Realizing the purpose of regional development policy by involving private parties to invest in port infrastructures
3. Creating employment;
4. Encourage economic growth and foreign exchange income

4.3.1 Spatial Plan

The criteria framework for selection of spatial planning of the dedicated port construction is as follows:

1. It will not realized as an isolated facility building, but as an integral part of continuity and part of integration with other parts of other regions;
2. The period of building construction is adapted to the concept of environment-oriented, so that the form of construction made effective, safe and simple.

The development of selected spatial of the activities of Dedicated Port of PT. Sarana Industama Perkasa still follow the spatial layout that has been established, ie. for the waters as a dedicated port operational

activities within the Public Environment Port of Kuala Tanjung as the port area of Belawan Port. Meanwhile, according to Regional Regulation of Asahan No. 3 of 1995 on General Plan of Spatial Planning of the Asahan district, the study area is included in the Regional Development Unit (SPW) 1, namely the potential as a development area of industry, trade and service

4.3.2 **Description of Project Activity**

a. Location And Area of Land

The construction of Dedicated Port to be built by PT. Sarana industama Perkasa is located in Lalang Village, Medang Deras Subdistrict, Asahan District, with total land area of 18,344 m² (Appendix 2). The physical boundaries of land as follows:

- North: Malacca Strait
- South: Industrial Area
- East : Malacca Strait
- West: DUKS of PT. Multimas Nabati Asahan

b. Activity plan

The construction activities of Dedicated Port by PT. Sarana Industama Perkasa planned as follows:

- Construction of Sheet Pile, ie. construction of retaining wall. Have the serves as withstand of horizontal load both the load from the ground surface and from the pressure of sea water waves. The dimension of Sheet Pile covering a length of 10m, thick of 10cm and width of 0.9m.
- Construction of Port Foundation, using pile foundation that serves to withstand the vertical load of Sub Structure (top load of construction) includes live load (from transport activity mobility), dead load (plate trestle and pile cap) and horizontal load (sea wave pressure).
- Trestle construction is the transportation path from platform (land runway construction) towards main Jetty (ship jetty for large

tonnage) and secondary jetty (ship jetty for medium tonnage).

- Lay Bay construction serves as a temporary stop path for the transport vehicle in the event of a trajectory of two vehicles traveling from different directions, It is due the track path is only 1 (one) path. The structure is part of the construction of trestle structures.
- Main Jetty Construction: is a platform construction located at the end of trestle structure that serves as a jetty for ships with large tonnage (55,000 DWT). The surface area of main jetty (platform) construction is 1080 m² or (70 m x 24 m)
- Secondary Jetty Construction: is a platform construction located at the end of trestle structure that serves as a jetty for ships with medium tonnage (10,000 DWT). The surface area of secondary jetty construction is 72 m² or (12 m x 6 m)

- **Mooring Dolphin Construction:** is a construction used to withstand horizontal loads as well as withstanding the construction sliding load of the platform structure. This horizontal load is not only caused by pressure from sea water waves as well as from berthing ship condition (pressure from berth or tug of ship) this structure also serves as a mooring construction of ship to a bollard.
- **Catwalk Construction:** serves as track for people to berth the ship's rope. The width of this trajectory is 1.5 m and the construction of symmetrical catwalk structure (same width and length) on the left and right side of Main Jetty construction.

c. Implementation of Construction

As follow up of the dedicated port construction plan and based on the existing technical limitations, the construction of dedicated port will always

refer to the basic concept of existing site plan and the continuation of the construction phase will be completed in the year of 2006. The schedule of the Dedicated Port construction plan implemented are presented in Table 4.1.

Tabel 4.1. Schedule of Dedicated Port Construction

No	Uraian Pekerjaan	Waktu Pelaksanaan
1	Penyediaan Lahan	Oktober 2001 - Tahun 2002
2	Perijinan	Masih dalam proses
3	Pembersihan / penimbunan	Tahun 2002 - 2003
4	Rancang Bangun / desain	Tahun 2003
5	Investigasi Kepadatan Tanah	Tahun 2003
6	Kaji Ulang Rancang Bangun	Tahun 2003
7	Pemancangan pondasi	Tahun 2004
8	Konstruksi (Sipil, M.E.I & utilitas)	Tahun 2004 - Tahun 2006
9	Pemakaian komersial	Tahun 2006

Source Data: PT. Sarana Industama Perkasa, 2005

4.4 ACTIVITY IMPLEMENTATION PHASE

The Construction activities of Dedicated Port of PT. Sarana Industama Perkasa can be detailed in several phases:

A. Pre Construction Phase

1. Acquisition of Land

Land Acquisition Activities, ie. the land prepared for the construction of Dedicated Port. Total land area used 18,344 m² (Appendix 2) with facilities such as Trestle, Lay Bay, RoRo Jetty, Secondary jetty, Main Jetty, Moring Dolphin and Catwalk. At the time the documents are prepared, Land Ownership Certificate (Proof of Rights) including to the industrial area No.: 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, and 102 are still in the process of transferring the name to the name of PT. Sarana Industama Perkasa, at the Land Office of Asahan District in Kisaran, but the land used has been obtain approval from the Regent of Asahan District, namely by the issuance of the Decree of the Regent of Asahan No.: 102/ BPN/ 2003 dated 11 March 2003 on the granting of location permits for the construction of palm kernel industries. Oleochemical and Jetty on behalf of PT Sawit Mas Agro Tama (to be changed name to PT Sarana Industama Perkasa). Details of land use of the Dedicated Port can be seen in the plan drawing was attached.

2. Preliminary Survey

Survey activities aimed to:

- To know the clear and definite land boundaries
- To know the initial condition of physical condition of land and environment
- To know the plan and the feasibility of Site plan. Utilities (water, electricity).

3. Soil Investigation and Bathymetri

Soil Investigation is intended to determine the condition of the soil/ seabed where the jetty will be constructed so that technically it is estimated to the type of construction needed. Bathymetry survey is intended to know the depth of the sea in the area of the jetty construction plan so it can be known the length of trestle required to get the depth of jetty pool required to berth the ship with a draft of 14 meters. Soil Investigation and Bathymetry Survey was conducted in May 2002 by Geometra INTL (PTE) LTD. Singapore.

4. Preparation of Engineering Design

Preparation of detailed construction design of Dedicated Port of PT. Sarana Industri Perkasa is used as a reference in the implementation of the Dedicated Port construction. In the preparation of detailed construction design it has been considered factors:

- Natural conditions at the site of port construction design:
- The size and type of ship will be anchored
- Vertical and horizontal loading
- Material will be used
- Treatment and standards used.

The selection of this type and system of construction is also to be considered in order not to disturb the area environmental around the dedicated port plan. Preparation of port construction details implemented by contractor of PT. SAC Nusantara Konstruksi, this jetty is designed to berth ship with specifications as follows:

- o Characteristics: 55,000 DWT

- o Length Overall: 230.00 m
- o Width: 36.00 m
- o Depth: 16.6 m
- o Draft (full): 11.3 m
- o Displacement Tonnage / DT: 55,000 tons
- o Berthing speed: 0.76 Knot

B. Construction Phase

The technical data of dedicated port will be built:

- o Jetty Type: Jetty type T
- o Size: (70 x 24) m²
- o Trestle: (2,600 x 4.5) m²
- o Construction: Steel piles of Concrete floor
- o Fender: Rubber
- o Bolder: Steel
- o Depth: -14 m LWS
- o Used for Ship: maximum of 55,000 DWT

The port construction phase includes: recruitment and labor mobilization activities, labor mobilization, material transportation, foundation works, construction signs, trestle construction, platform construction, mooring dolphin, catwalk, operational support facilities, material

transportation for jetty construction, construction supervision activities, mechanical and electrical works and utilities.

1. Recruitment and Mobilization of Labor

The activity of Recruitment and Mobilization of Labor, which is sub activity of employment/recruitment of labor and bring it for the implementation of physical construction of Dedicated Port of PT. Sarana Industama Perkasa, both experts (*professional*), middle and rough worker.

Generally non-skilled labor is taken from the surrounding area, while the skilled labor comes from outside the area, the Number of worker required at this phase of construction amounted to 88 peoples. In detail the amount and job positions required in the construction phase are presented in table 4.2.

Table 4.2: Number and Position of Labor Required in the Construction of Dedicated Port of PT. Sarana Industama Perkasa

No	Jabatan	Jumlah	Asal
1.	<i>Project Manager</i>	1 orang	Luar Daerah
2.	MK (Manajemen Konstruksi)	1 orang	Luar Daerah
3.	<i>Site Manager</i>	1 orang	Luar Daerah
4.	Perencana Teknik (Desain, Struktur, ML)	5 orang	Luar Daerah
5.	Pelaksana Lapangan	50 orang	Lokal
		30 orang	Luar Daerah
	<i>Jumlah Total</i>	88 orang	

Data Source: PT. Sarana Industama Perkasa, 2005

2. Mobilization of Heavy Equipment

Heavy equipment used in the construction of Dedicated Port of PT. Sarana Industama Perkasa includes of: Crawler Crane, Crane Car, Diesel Hammer, Erection Barge, Tug Boat, Panton Transport, Plate Tank and others. Some heavy equipment imported from Jakarta and around Medan conducted by contractors. The mobilization of equipment is carried out by road using trucks and containers and by sea using ships. The details of heavy equipment are presented in the Table 4.3. below:

Table 4.3. Use Plan of Equipment for Dedicated port Construction Project of PT. Sarana Industama Perkasa

No.	NAMA ALAT	JUMLAH DIPERLUKAN
1	Crawler Crane	2
2	Mobil Crane	2
3	Hidraulic Hammer	1
4	Tongkang Pancang	1
5	Tug Boat	1
6	Ponton Transport	2
7	Tangki Plat	5
8	Plat Tebal 16 m/m 120 x 140	4
9	Tepat Peluncuran Pipa d/H Beam	2
10	Compressor Selam	1
11	Peralatan selam	2
12	Power Winch	3
13	Theodolit	2

14	Waterpass	2
15	Tangki Fiber	1
16	Genset 150 KVA	2
17	Mesin Las 500 W	3
18	Trafo Las THF - 400	3
19	Trafo Las LHE - 400	1
20	Mesin Las Taiyo	3
21	Grenda Slep	4
22	Blender P'otong Besar/Kecil	3
23	Bekisting Besar/Kecil	8
24	Lampu Halogen 1000 W dan Sorot	4
25	Genset 15 KVA	2
26	Genset 2 KVA	2
27	Liyer, Chain Blok, Level Blok	5
28	Bar Bender	1
29	Beton Molen	2
30	Mobil Pick Up	2
31	Truck	1
32	Tracklor Head	1

Sumber Data : PT. Sarana Industriama Perkasa, 2005

3. Material Transportation

The activity of Material Transport that is sub activities preparing materials/ building materials and equipment construction and its transportation from original place to the location of project site of

Dedicated Port of PT. Sarana Industama Perkasa such as iron, cement, stone, sand and others.

The building materials are taken from the nearest area to the location of activities, for example from the Kuala Tanjung and Asahan areas. The type of Material in the construction of Dedicated Port of PT. Sarana Industama Perkasa as presented in Table 4.4. The mobilization of materials by roads that is Inalum Roads to the location of study (cooperation).

Table 4.4. Use Plan of Material to be Used in Dedicated port Construction Project of PT. Sarana Industama Perkasa

No	Jenis Material	Tahap Kegiatan
1.	Semen (PC)	Konstruksi
2.	Pasir Beton	Konstruksi
3.	Pasir Pasang	Konstruksi
4.	Pasir Urug	Konstruksi
5.	Batu Kali	Konstruksi
6.	Batu Pecah / Split	Konstruksi
7.	Besi Tulangan	Konstruksi
8.	Besi Siku / WF	Konstruksi
9.	Batu Bata	Konstruksi
10.	Papan Kayu Beganing	Konstruksi
11.	Kayu untuk Cetakan	Konstruksi
12.	Permanah	Konstruksi

4. Foundation Work

The foundation used is a pile foundation type. Installation of piles to the ground using the Diesel Hammer system, the duration of piling about 2 (two) months. The number of foundation pile required as many as 2500 points with depth approximately of 55 meters, and diameter 60 cm and 80 cm.

5. **Installation of Construction Signs**

Installation of signs at the construction phase is very important because the project location is in the waters of the public port of Kuala Tanjung and is located facing the public shipping leading to the Public Port of Kuala Tanjung. Installation of construction work signs intended to:

- Safeguard the safety of life at sea for ships pass the project area.
- Protect the project activities from irresponsible person.

In the installation of construction work signs, the proponent may coordinate with Port Administration of Kuala Tanjung and Pelindo - I,

6. Construction of Trestle

From the bathymetry survey conducted by Geometra Intl (PTE) LTD. Singapore obtained data that the condition of seabed of Dedicated Port of PT. Sarana Industri Perkasa is very sloping. The depth required for the largest ship draft of 55,000 DWT is - 14m LWS, so to reach that depth, the jetty must be located

approximately 2.6 km from the coastline as shown in Figure 4.1.

As the consequence, required the connection between the land and Dedicated Port in the form of trestle that extends along that distance. The largest cost and time allocation in the construction of this Dedicated Port is on the work of pile-making. To overcome this problem, then on planning of trestle should be make efforts to minimize the number of piles while still considering the planning of beam to remain economical both in terms of dimensions and practices in the field. At a glance, it is can be mentioned the material used in the trestle structure is as follows:

Pile

The pile is planned to vary according to the needs of the structure due to the depth in which:

Depth of seabed 0.00 - 1.50 m : CSP pile Φ 600, t = 100 mm

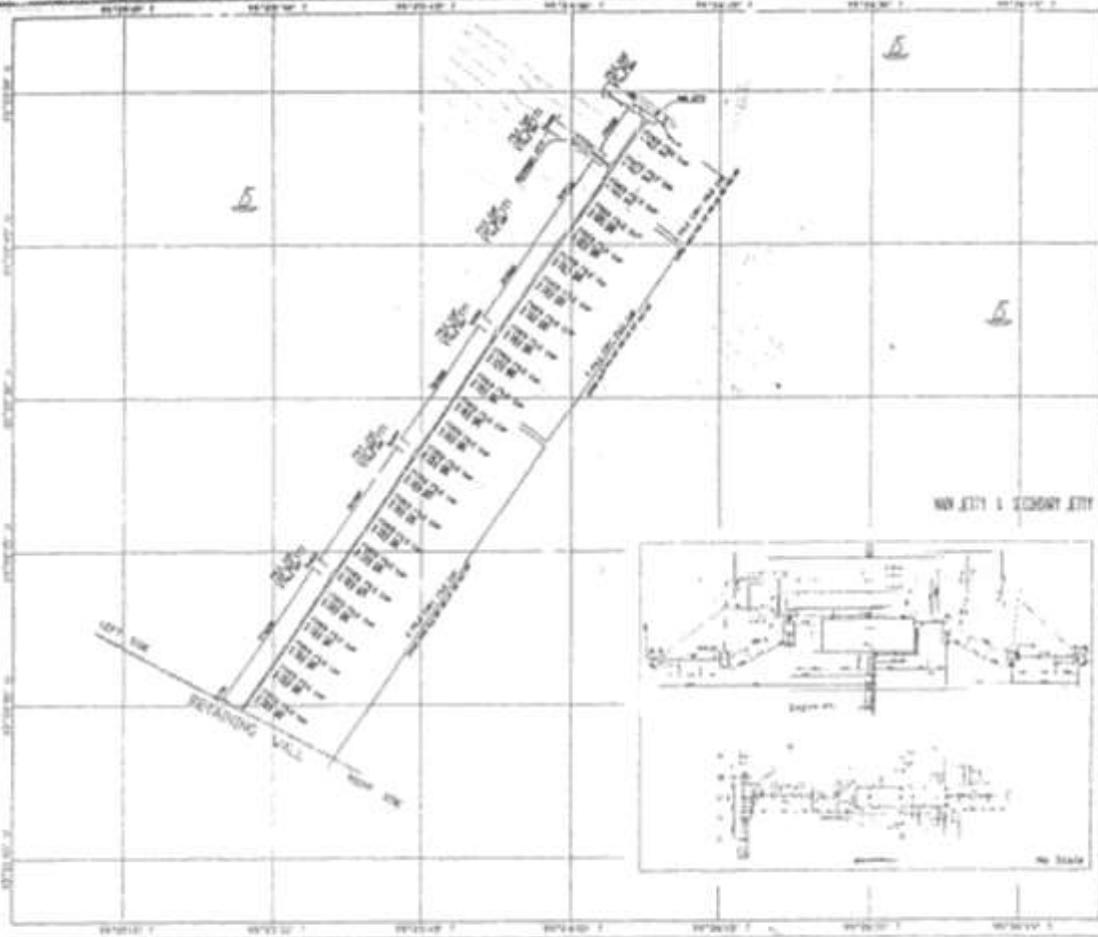
Depth of seabed 1.50 - 8.00 m CSP pile Φ 600, t = 100 mm

Depth of seabed 1.50 - 8.00 m: CSP pile Φ 600, t = 120 mm

Depth of seabed 8.00 - 14.00 m: CSP pile Φ 600, t = 120 mm

Pile Cap

Pile cap is planned for distance from axis to axis 12.0 meters. Pile cap consists of several types depending on the number of piles. In general, the pile cap binds 2 (two) piles except in the widening location of the trestle which is useful as a temporary stop for the passing cargo transport vehicles. Pile caps for these needs are made of special types with the number of tied piles varying depending on the structure requirements for stiffness and strength.



PT SARANA INDUSTRIAL PERKASA

Jl. No 1000 Gedung No. 11.5 No. 80 1. Maroon
Bd. Selayang - Selayang, Pin. 46 - 28 - 70000

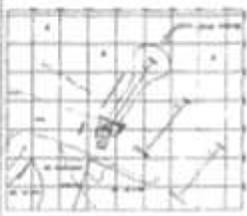
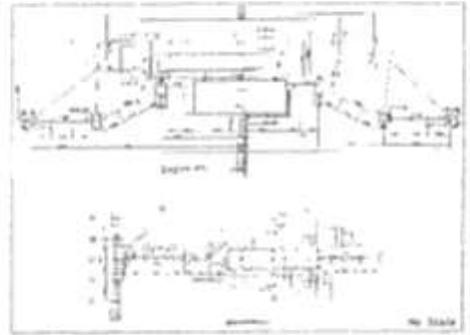
DAFTAR : 4.1

GAMBAR PERENCANAAN TRUSTLE

KETERANGAN :

- JETTY-Pelabuhan Khusus
- Eperbur
Survey Geometri Dik. P.T. 110
- Ekspat

NOV JETTY & SIGORNY JETTY



SUMBER PETA :

GAMBAR RENCANA
PT. SARANA INDUSTRIAL PERKASA

SKALA :

1 : 12.000



PELABUHAN KHUSUS (JETTY)

PT KUALA SRI UTAMA
INTEGRATED ENGINEERING CONSULTANT

Jl. KEMENYAN No. 1000, 11110
KEMENYAN, PINANG LINGGAY

Sheet Pile

In carrying out the sheet pile on the seafront and left right along the boundary of the location of the project seafront of PT. Sarana Industama Perkasa in Lalang Village, the proponents plans to build the sheet pile with the technical specifications as follows:

1. Concrete material is 22 cm X 50 cm with length of 12.000 m K 500.
2. There will be provided a strong enough guide rail for 2 sets @ length 6 - 12,0 meter, in order to continue to be moved to continue the next works.
3. Implementation of the concrete sheet pile erection is carried out with a vibro system, and is fully connected to the nut that is available tightly, so as not to penetrate the water, where at each erection is locked on the guide rails.
4. If there is a concrete sheet pile that is not tight fully to rail, then the sheet pile will be revoked and the next erection is carried out.
5. If there is an angle-shaped area, a concrete sheet pile column material may be used to connect with a subsequent concrete sheet 22 cm X 50 cm X 12 m which become sheet corner pile column.
6. 30 cm high concrete sheet pile head will be cut, reinforcement extended to the cap concrete beam K

225 size 40 cm X 30 cm with reinforcement steel U
24 5 Φ 16 beugle Φ 8 - 100 mm.

7. Formwork of cap concrete beam made strong, straight, both plywood of 9 mm, meranti wood of 2 "X 3", 2 "X 2" and 1 "X 2".
8. Concrete next to a little hard will be watered 2 X 24 hours, new formwork will be opened.
9. The concrete joints giving comparison and the reinforcement joints cm Φ 16 of 65 cm does not include the haak.
10. Edge beams are trimmed/stamped after formwork is finished opened, straight and good.

Longitudinal Beams

Longitudinal beam in the form of precast prestress beam with the same dimension (cross section) for each location, while the length of the span is adjusted to the pile cap type that is supported. The beam supports are planned longitudinal at both ends of placement except for dilation. In dilatation the shape of placement is one side of roller where as the other is longitudinal. For the roller placement, the longitudinal beam is mounted on the bearing pad and the end of the beam is mounted by the diaphragm plate. In the longitudinal placement system (non-dilated) the

beam placed directly above the pile cap (without bearing pad).

Trestle Plates

The trestle plate consists of precast plates with thickness of 100 mm and concrete cast toppings in place with thickness of 100 mm, thickness of concrete topping taken 50 mm. The plates are placed between the main girder with a span length of 1,400 mm and width of 1,000 mm except for the plates around the pile cap made of special type according to the remaining width.

7. Construction of Platform

Given the platform construction load are relatively large and planned received ship's berthing load (platform structure receiving docking impact due to berthing ship) as well as the unloader and loader loads, the platform structure is planned:

Top structure

- Pile cap of cast reinforced concrete in place.
- Beams from precast and cast concrete in place.
- Platform floor plates sized of 70 x 24 m² made of reinforced concrete with a thickness of 300 mm. which consists of 150 mm of precast and 150 mm cast in place

Lower structure

- Spun pile (steel pipe) diameter 800 mm with thickness of 14 mm which is piled upright and with a slope of 1: 5.

8. Construction of Mooring Dolphin

The mooring dolphin construction is planned from the concrete block casted in place and supported by a sloping from steel pipe. The steel pipe used has a diameter of 800 mm with a thickness of 14 mm. The slope of pile is 1: 3 except for the center pile is upright. The selection of piles with a slope of 1: 3 and steel pipe is based on the dominant load that works is the horizontal load due to ship collision and tug of shop.

9. Construction of Catwalk

Catwalk construction is a connecting path for people who tie the rope to the bollard. This catwalk construction is planned from steel beams with floor plates from cast concrete in a place supported by Hi-ten bondek of 1.00 mm. To design this composite plate used table issued by PT. BHP Steel Building Products Indonesia. By considering the live load for the catwalk

is 150 kg/m² and the catwalk span is 1.50 meters then the thickness of the plate used is 100 mm.

10. Operational Supporting Facilities

The supporting operational facility of Dedicated Port includes of offices, storages, employees mess, warehouses, canteen, fuel tank, parking facilities and toilet/bathroom for employees merges with factories less than 250 meters from shoreline. To accommodate the waste from employee toilet then was built septic tanks. And to accommodate the water from bathroom and the rest of the needs of other dedicated ports then built a reservoir before the water is flowed into the sea.

11. Material Transportation For Jetty Construction

The material source for the construction of this Dedicated Port comes from the Medan city. Asahan District and some imported from Jakarta. In order to reach the location of project then required transportation means for the material. Material transportation for the construction of Dedicated Port is planned to be done by land and sea. For materials imported from Jakarta transported by sea to Belawan Port of Medan. From Belawan leading to the construction material location of Dedicated Port then transported by

land using a truck through Inalum Roads to the project site (cooperation).

12. Supervision During Construction Activities

During the implementation of the construction of Dedicated Port supervision is taken to the value construction process of the pile erection until catwalk-making related to the position between planning and execution in the field. It is aims to minimize the occurrence of construction deviations from the planned with the implementation in the field. The supervisor in the field is PT. Sarana Industama Perkasa or supervisor consultants appointed by involving Port Administration of Kuala Tanjung and PT. Pelindo I as an institution are responsible for safety of life at sea.

AS for the purpose of such supervision is to ensure a sufficient level of security to avoid technical abnormalities that can be fatal.

13. Mechanical and Electrical Works

Mechanical and electrical installation works includes the installation of electrical installation, and pipelines.

14. Utility Works

This work consists of several parts of the work, among others:

a. Lighting

For the purposes of lighting use electrical energy source of the industrial area by using generator of 6 (six) units with capacity of 2,800 KVA / Unit.

b. Clean Water Supply

The use of clean water required during the construction period of the Dedicated Port based on the number of construction worker employed is 88 persons with the use of worker of 50 Lt./person so that the total net use of $\pm 4 \text{ m}^3$ per day obtained from the wells around the industrial area location.

While for the water needs in the operational activities of the Dedicated Port is estimated at $\pm 50 \text{ m}^3$ (estimated to be calculated and the need for clean water of the number of employees, assuming the number of Ships and utilities) used for toilet and utility usage. Water demand plan at this post-construction phase activities is fulfilled from the Water Row Water Treatment Plan (RWTP) of Besar River with a distance of approximately of 7 Km

which is managed by an industrial area of $\pm 4,000$ m³/day, for toilet needs, and utility usage. RWTP management system used is conventional system.

C. Post-Construction Phase

1. Dedicated Port Operation

The Dedicated Port of PT. Sarana Industama Perkasa used to berth the ships carrying raw materials and production resultd from factories in the industrial area of PT. Sarana Industama Perkasa. Estimated with the amount of production of 500,000 tons per year or 40,000 tons per month then estimated the Number of ships visiting the Dedicated Port of PT. Sarana Industama Perkasa to transport the raw material of factories in industrial area is 2 (twice) in a week with maximum capacity 55.000 DWT and product transport ship 3 times per month with maximum capacity of 55.000 DWT. The raw materials for the factory activities imported from within the country. The results of its production will be marketed to foreign countries. Location of Dedicated Port of PT. Sarana Industama Perkasa itself is located in the territorial waters of public port of Kuala Tanjung and is located facing the public shipping path leading to the Public Port of Kuala Tanjung.

2. Installation of Navigation Signs

The existence of the Dedicated Port itself must be equipped with a means of navigation to avoid the occurrence of accidents at sea, although the location of Dedicated Port is far from the population and fishing activities and does not interfere with the smooth of general shipping traffic for ships that will to/ from public port of Kuala Tanjung. For the installation of these navigation signs the proponent will coordinate with the Navigation District.

Some samples on safety of life at sea includes of light buoy, spare buoy. light house, leading light, sector light. approach meter, load monitoring system. The arrangements of SBNP special safety of life at sea will be adjusted to KepMenhub No.KM 173/AL/403 /Phb-80 on entry into force of The IALA Maritime Bouyage System for Region A.

3. Loading and Unloading Activities

Loading and unloading activities at the Dedicated Port related to the operation of factories located in industrial area of PT. Sarana Industama Perkasa

with material unloaded and loaded in the form of solid and liquid:

1. Solid type: Palm Kernel Meal, Coal and Palm Kernel, these materials are transported by truck;
2. Liquid type: CPO, Refinery oil, PFAD, CPKO, Faty acid, Faty alcohol, glycerine, methanol, air and water. These materials are channelled through pipe, with a diameter between 3-12 inches.

4. Labor Needs

Labor needs is intended for the purposes of loading and unloading activities of the raw materials and products from factories in the industrial area of PT. Sarana Industama Perkasa. The amount required is quite large, which is about 60 persons who work in 3 (three) shifts. The labor is prioritized from the area around location activities and coordinated in the form of Cooperatives Loading and Unloading Labor (TKBM).

5. Waste Management

a. Types of waste and contamination

- Gas Waste and Noise

At the Operational phase, ie. on the mobility of vehicles and heavy equipment of goods loading and unloading to and from the port, causing air pollution in the form of dust particles (TSP), gas (such as SO₂, NO₂) and noise.

- Liquid waste

Dedicated port operational activities also have the potential to produce waste water discharges, both from ship ballast water washing activities or from bathroom/ toilet activities. Liquid waste generated from domestic/ toilet activities is a type of non-B3 waste water with an average waste discharge per 0.2 m³/day.

- Solid waste

Solid waste generated from port operational activities in the form of non-B3 solid waste/ organic and anorganic waste derived from ship clearing activities that anchored, waste the rest of goods loading and unloading and the office with volume per day ± 3 m³/month.

b. Management of industrial waste and contamination

- Gas Waste and Noise

Air pollution resulting from the transportation activities in the port environment is managed by means of: spraying the road body and parking area passed by vehicle, slowing down the vehicle as it passes the road area to minimize the quantity of dust and required the unloading workers to wear helmet and mask when working on goods loading and unloading.

- Liquid waste

Domestic liquid waste derived from office activities, ie. the bathroom and sink channeled directly to the drainage channel. While the waste from the closet/ toilet is channeled into septic tanks with an average discharge of 0.2 m³/day. The rest liquid waste of ship cleaning will be managed in a manner that provides the terms of disposal, such as the collection of residual waste of oil, fuel, etc. then localized to a particular container. The management of each ships shall be charged to the ship owners.

Liquid waste generated from the material loading and unloading activities to the ship in the form of oil spilled, channeled through pipes or accommodated in drums to be reprocessed at the factory. And if there is a leakage of raw material pipes and in case of a shipping accident that causes oil spills in the water, it will be anticipated by providing oil sucking and oil dispersant.

- Solid waste

Solid waste in the form of domestic waste from office activities such as paper scrap, food rests and plastic packaging is managed by accommodated, at the waste temporary dump (TPS), then periodically every day transported to landfill (TPA). For solid waste the rest of process of loading and unloading activities after collecting is taken by a third party/ vendor to be recycled for economic value.

4.5 ACTIVITIES THAT EXIST AROUND THE ACTIVITY PLAN LOCATION

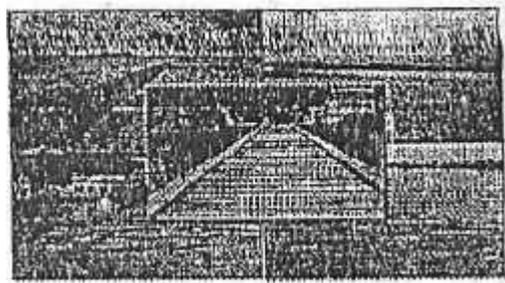
a. Fisherman's Activities

Fisherman activities that exist around the waters of PT. Sarana Industri Perkasa is to catch fish with equipment using a basic net (shrimp net) or with fishing rod. Usually done by using a canoe that can contain 2 (two) people. While fishing activities that use large boats carried out in Pagurawan with distance about of 5 km. In such area is also a Fish Auction Place (TPI). The existence of dedicated port construction plan owned by PT. Sarana Industri Perkasa has no important impact on fisherman's activities, only when construction activities carried out, but it is only temporary. In the fact it is expected with the presence of dedicated port activities of PT. Sarana Industri Perkasa will give positive impact in the form of Community Development from proponents.

b. Activities of Jetty for Private Use (DUKS) PT. Multimas Nabati Asahan

This port is located at the coordinates of 03°23'46" NL and 99°26'57" EL with a length approximately of 2,500-3,000 meters and, the depth of the pool port is 14 meters. This port is used for the transporting activities of private

use of palm oil processing of PT Multimas Nabati Asahan. By the presence of dedicated port construction by PT Sarana Industama Perkasa then it will not affect the activities of DUKS owned by PT multimas Nabati Asahan, even it is expected the business cooperation can be established in such region.



CHAPTER V

INITIAL ENVIRONMENTAL BASELINE

PT. SARANA INDUSTAMA PERKASA

CHAPTER V INITIAL ENVIRONMENTAL BASELINE

The discussion of environmental baseline to provide an overview of the environmental conditions at the time of the study was conducted so that the impacts of the dedicated ports construction activities by PT. Sarana Industama Perkasa located in Lalang village, Medang Deras Subdistrict, Asahan District, can be identified and estimated and evaluated its impact. The studies outlined mainly affected environment components, ie. the physical-chemical, biological and socio-economic and health culture components of the public, as follows :

5.1. PHYSICAL CHEMICAL COMPONENTS

Physical chemical components are detailed in group: 1) Climate, Air Quality and Noise; 2) Physiography; 3) Hydrology; 4) Space, land and soil; and 5) Hydrooceanography.

1) Climate, Air Quality and Noise

1.1) Climate

In general, the study areas includes of tropical climates that have 2 (two) seasons, ie dry season and rainy season. The dry season and the rainy season are marked by the number of rainy days and the volume of

rainfall during the season. Tropical climate types have high rainfall and occur approximately 6 (six) months in a year. However, in the study area the tropical climate has unique that is rains almost occurs in year-round, with concentrations from September to March (Data: Evaluation of the General Spatial Plan (RUTRW) of Asahan District 2002-2011). Based on rainfall and monthly air temperature data then can be determined local climate type according to Koopen climate type classification is included AF type climate that is type of tropical rain climate where month rain driest area is larger than 60 mm.

Climatic parameters include temperature, humidity, rainfall and rainy days. Air Pressure as well as the duration of average sun irradiance of data for last 10 (ten) years obtained from Meteorology and Geophysics Agency Center of Belawan in 1996 - 2005.

a. Air Temperature

The monthly temperature of the study area each year is based on the data of the last ten years is 26,870⁰C. It is known that fluctuation air temperature are not too large. Minimum temperature was reached in December at 25.94⁰C, and the maximum temperature reached in August was 27.6⁰C. Air temperature data in the study area is presented in Table 5.1.

b. Humidity

Average monthly air humidity in the average annual study area ranged between 82.96%, minimum average in March and maximum humidity in November. Data is presented in Table 5.1.

c. Rainfall and Rain Days

Average annual rainfall for last 10 (ten) years ranged from 61 mm per year to 238 mm per year with an average values of 127.92 mm per year. The highest rainfall occurred in October by 305.75 mm and the lowest rainfall of 46

mm occurred in March. The wet season occurs from April to December. According to Schmidt and Ferguson, the study area is included in A type climate with the reason that average dry month ratios (rainfall <60 mm/ month) with, wet months (rainfall > 100 mm/ month) ranging from 0 - 14.3% (Table 5.1).

d. Air Pressure, Length of Sun Irradiance and Wind Speed

The air pressure in the study area ranged from 10.09 to 10.19 mPa with an average air pressure of 10.10 mPa. The highest air pressure occurred in March and the lowest in March - August. The average sun irradiance per month ranged from 29.44% - 51.00% where maximum sun irradiance occurs in July and minimum sun irradiance occurs in October.

Average wind speeds ranged from 4 to 6 knots with a percentage of 70.8%: 5.0% of the North wind; 11.6% Northeast wind; 12.5% East wind; 8.3% Southeast wind:

9.2% South wind: 6.7% Northwest wind. And known dominant wind direction is the Northeast wind and the East wind. In detail the data is presented in table 5.1.

Table 5.1. Data of Climate Measurement Results In The Last 10 (Ten) Years

Bulan	Temperatur (°C)	Tekanan Udara (mPa)	Intensitas Hujan (mm)		Kelembaban Udara (%)	Lama Penyinaran (%)
			Curah Hujan	Hari Hujan		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Januari	26,17	10,10	89,5	5,8	83,9	34,89
Februari	26,74	10,11	95,5	4,0	81,3	17,89
Maret	27,10	10,19	46	5,4	80,6	41,44
April	27,34	10,09	72,75	4,1	82,0	44,78
Mei	27,51	10,09	130	5,1	82,4	42,33
Juni	27,19	10,09	122,75	5,2	81,7	49,44
Juli	27,11	10,09	140,75	7,2	81,1	51,00
Agustus	27,61	10,09	91,75	6,0	81,5	41,11
September	26,50	10,10	135,5	10,2	84,6	32,11
Oktober	26,96	10,10	305,75	9,8	85,0	29,44
November	26,24	10,10	182,25	5,7	85,8	36,56
Desember	25,94	10,10	135,25	6,1	85,6	33,44
Total	322,41	121,25	1547,7	74,6	995,5	490,43
<i>Rata-Rata</i>	<i>26,87</i>	<i>10,10</i>	<i>128,9</i>	<i>6,2</i>	<i>82,96</i>	<i>40,87</i>

o Kecepatan angin rata-rata : 4 – 6 knot dengan prosentase 70,8 % : 5,0 % angin Utara; 11,6 % angin Timur Laut; 12,5 % angin Timur; 8,3 % angin Tenggara; 9,2 % angin Selatan; 6,7 % angin Barat Laut.

o Arah angin dominan adalah angin Timur Laut dan angin Timur

o Merupakan hasil rata – rata data iklim dalam 10 (sepuluh) tahun terakhir (1996 – 2005)

Data Source : Meteorology and Geophysics Agency Center of Belawan in 1996 – 2005

1.2) Air Quality and Noise

Measurement and examination of air quality and noise by the Environmental Laboratory Officer of Bapedalda of North Sumatra Province in 17 September 2003 at 10.00 - 18.00 WIB at 2 (two) different locations according to the wind direction at that time, ie at the location of project site and at the location outside the planned location activity (settlement), with the results of Measurements in Table 5.2.