

MEGHALAYA CEMENTS LIMITED

KA SUMMARY JONG KA
RAPID
ENVIRONMENTAL IMPACT ASSESSMENT BAD
ENVIRONMENTAL MANAGEMENT PLAN

NA KA BYNTA KA
JINGPYNHEH IA KA KARKHANA DEWBILAT
(NA KA 900 TPD SHA KA 2600 TPD BAD CAPTIVE POWER PLANT BA 18 MW)

HA
SHNONG THANGSKAI, LUMSHNONG,
DISTRİK. JAINTIA HILLS, MEGHALAYA.

**LA PYNKHREH DA KA
MIN MEC CONSULTANCY PVT.LTD.**

JINGLAM KHMAT

1.0 Ka jingsdang. Ka Meghalaya Cements Limited (MCL) ka karkhana bala seng da ki nongseng bad nongkhahi ka don jingthmu ban pynheh ia kaba la don lypa ha Thangskai, Jaintia Hills na ka 900 TPD u klinkar sha ka 2600 TPD (0.858 MTPA) ryngkat bad ka jingpynmih bording ba 18 MW na ka par mawshun kaba ka jingheh jong ka ka long 33.45 ha ML. La shna ia kane ka karkhana ha kane ka jaka namar ka jingdon kyrhai u mawshun ha kylleng ki shnong ba marjan. Ia u dewiong bala tylliat bha la pyndonkam ban thang mawshun. Ka karkhana ka dei kaba la treikam lypa mynta pat kan shu pynheh ia ka jingpynmih dewbilat. Ka Techno-Economic Feasibility Report (TEFR) na ka bynta kane ka jingthmu la dep pynkhreh da ka Holtec Consulting Limited, Gurgaon. Ka jingpynlut na ka bynta kane ka jingpynheh ka long 15.105 lak tyngka na ka bynta ka jingpynmih dewbilat bad 8036.69 lak tyngka na ka bynta ka jingpynmih bording.

Kham mynshwa kane ka karkhana kala ioh ia ka jingithuh da kaba ioh pdiang ia ka shithi kaba kdew shai iaki kyndon treikam naka sorkar jylla. Ka shithi No.SEAC/MISC./29 dated 26th.Nov.2008 na ka bynta kane ka jingpynheh, shithi No.SEAC/1 dated 17th.Dec.2007 na ka bynta ka jingpynmih bording bad ka shithi No. SEAC/MISC/9 dated 15th.Jan.2008 jong kine baroh artylli ki kyndon treikam. Baroh ki mat treikam kila don lypa ha ka REIA ia kaba mynta la dep pynkhreh na ka bynta ka jingpynbna paidbah (public hearing).

Ia kine ki kyndon treikam la bsuh lang haka Environmental Impact Assessment Report bad ka Environment Management Plan (EIA/EMP). La bynrap lang ia kine ki kyndon haka dur bala pyni ha ka Appendix III bad Appendix III A jong ka EIA bala pyntip paidbah haka 14th.Sept.2006 bad bala pynmih da ka sorkar India. Kane ka jingthmu ka kynthup ia ka

bynta pdeng (core zone) bad buffer zone (impact zone) kaba jngai 10 Km naka pdeng jong ka core zone.

1.1 JAKA, LYNTI SYNGKIENG/LAD IOH BAD PHAH KHUBOR:

Ka map naka bynta ka jingheh kane ka jaka la pyni ha ka Fig 1.1. Kane ka jaka na ka bynta kane ka jingthmu ka hap ha ka jingpeit ka survey of India Toposheet No.83c/SW bala ker sawdong da u latitude 25° 11' 58.92" bad longitude E 92° 22' 47.64" E.

Surok: Kane ka karkhana ka jngai kumba 1 Km na ka NH-44, bad la pyniasoh iaka sha kiwei pat ki jylla ka northeast lyngba ki surok bah jong ka sorkar India bad ka jylla Meghalaya. Ka jingjngai kine ki shnong ba kham paw na kane ka karkhana ka long – Khliehriat (23Kms), Jowai (56Kms), Shillong (125Kms), Silchar (115Kms) bad Guwahati (250Kms).

Lynti Rel: Ka lynti rel ba jan tam na kane ka jaka ka dei ka Badarpur kaba jngai kumba 78Km da ka kali.

Lynti Suin: Ka kad leingsuin ba jan tam nangne ka dei ka Shillong kaba jngai 125Kms. Kawei pat ka kad ka liengsuin ka dei ka Guwahati kaba jngai kumba 250Kms ia kaba la pyniasoh sha kylleng ki nongbah ka ri India.

2.0 JINGBATAI BNIAH IA KANE KA JINGTHMU:

2.1 Karkhana pynmih dewbilat: Ka karkhana kala thmu ban pynheh iaka jingpynmih klinkar na ka 900 TPD sha ka 2600 TPD.

U klinkarisation phactor u long 1.545. U mawshun ba donkam u long 99.44% ka jingbha, ka jingdonkam dewbyrtha/dewsaw ka long 0.4%, u mawnar pat 0.16%/ . Ka jingdonkam dewiong pat ka long 850 K.cal ha man ka shi kilo u klinkar. Ka bor ba mih na u dewiong ban thang mawshun (calorific value) ka long 5800 K.cal/Kg. Na ka bynta 100% u klinkar donkam kumba 14.66% u dewiong. Ka jingdonkam ia u gypsum ha kaba pynmih OPC/PPC ka long 2%/1.5%.

Ka jingtih bad jingtylliat mawshun, ka kor tylliat dewiong kan treikam kumba 312 sngi. Ka kor tylliat bad thang ia u mawshun ban pynkylla powdar ka long 330 sngi.

Rukom buh (storage): Ia u mawshun yn buh kumba hynniew sngi, dewbyrtha/dewsaw laiphew sngi, mawnar laiphew sngi, powdar mawshun shisngi, klinkar khatlai sngi bad ia u dewiong pat khyndai sngi.

Jingheh (hadien ka jingpynheh):

Jingpynmih klinkar – 2600 TPD

Jingpynmih dewbilat (mynta) – 1200 TPD

Jingtylliat mawshun – 333 TPH kaba don mynta ka lah ban pynmih 350 TPH, kan lah ban pynbiang ia ka jingdonkam mawshun.

Ia u mawshun bala dep tylliat yn lum thup haka jaka lum (bunker) bala don lypa lane ha ka jaka lum ba thymmai (limestone pre blending stock pile) lyngba ki kor pyniaid ba long kum u belt ba jrong. Ka limestone bunker bala don lypa ka ngiam 4500 Ts yn pyndonkam ban lum mawshun ha baroh artylli ki raw mill (kor tylliat mawshun).

Ki marpoh khyndew kum ka dewbyrtha /dewsaw, mawnar la buh ha ka jaka lum thup ba heh kumba 5000 T bad 500 T hadien ba la ioh pdiang iaki. Ka jaka buh dewbyrtha bad mawnar kan biang wat hadien ka jingpynheh.

Ka ball mill jong ka raw mill kaba pynmih 120TPH kan biang na ka bynta ban tylliat bad ban pynrkhiang ia u powdar mawshun hadien bala dep pynheh.

Ki pla jiar pum pum (bag filter) jong ka raw mill yn sa pyndait lang bad ka reverse air jet type bag dust collector. Ki mar kum u mawnar dewbyrtha yn pyniaid na weigh feeder sha ka jingtylliat lyngba u belt conveyer (kynja belt).

KA JINGKHEHLANG, RUKOM BUH BAD POWDAR MAWSHUN (KILNFEED):

Ka karkhana ka don kawei ka continuous blending – cum storage silo kaba 7500T ka jingngiam kumta ka don artylli ki raw mill hadien ka jingpynheh.

Ia u powder mawshun yn pyniaid sha ka pre heater (jaka thang) da ka bor ka lyer bad ki belt ba jrong. Ki air slide ban pyniaid ia u kilnfeed ba don mynta yn sa nang pynbun katkum ka jingdonkam.

Preheater, precalciner, kiln, cooler bad klinkar transport (rukom pyniaid): ka karkhana ka don saw kyrdan ki preheater (kor thang mawshun) ryngkat bad ka precalciner bad ka kiln kaba jrong 3.6m dia x 54m jingjrong. Ka kiln ka lah ban pynmih 2600 TPD u klinkar. Sa kiwei pat ki 5/4 kyrdan ki preheater bad precalciner la ai jingmut ban shna na ka bynta kane ka jingpynheh. Jaka pyndaithah ia u klinkar (clinker cooler area) yn sa pynheh na ka 36m² sha ka 59m². Ka don ka jingthmu ban pynheh ia ka cooler baroh kawei. Ka cooler ESP yn sa nangpynbha ban lum iaki.

JAKA LUM KLINKAR BAD RUKOM PYNIAID:

Ia u klinkar bala ioh hadien ka jingpynheh (2600-900 TPD = 1700 TPD) yn sa phah sha TOPCEM India Ltd, Guwahati bad khyndiat ha ka jaka lum bala don lypa. Ka MCL ka don ka jaka buh klinkar kaba ngiam 10000 T. bad kawei ka jaka buh klinkar ba thymmai kaba ngiam 25000 T ban buh naka bynta khatlai sngi. Ka rukom tylliat(grinding), lum(storage), song ne thep(packing) kan neh kumba ka long mynta.

DEWIONG:

Ka jingtylliat dewiong mynta kaba pynmih 50 TPH kala biang na ka bynta kane ka jingdonkam. Ka dpei kaba mih na CPP ka long kumba 1000 TPA yn pyndonkam ha ka jingshna dewbilat.

Ka ball mill (kor tylliat) kaba pynmih 13 TPH la pyndonkam ban pynrkhiani bad tylliat ia u dewiong. U dewiong bala tylliat ni la lum ha

ki pla jiar (bag filter). Ka shar lum dewiong (raw coal hopper) kaba 25 T yn sa shna. U dewiong bala tylliat ni bha yn lum ha ki jaka lum dewiong (fine coal bins). Ka jingthew ia u dewiong ba ni u ban sa pyniaid sha kiln bad precalciner yn sa shna. Ka jaka lum thup ia u dewiong na ka bynta khyndai sngi kan biang hadien ka jingpynheh.

Ka jingdonkam bording bad ka tynrai:

Ka jingdonkam bording ka karkhana hadien ka jingpynheh sha ka 2600 TPD la mang ba kan long 15 MVA. Mynta ka karkhana ka ioh bording na ka MESEB kumba 132 KV. Hadien ka jingpynheh ka jingdonkam bording kan kiew na ka 10 MVA sha ka 15 MVA. Ka jingduh ka bording man la ka por ka ktah ia ka jingpynmih dewbilat. Namarkata ka jingpynmih bording kaba 18 MVA kan lah ban pyndap iaka jingdonkam ka karkhana baroh kawei.

Ki hynriew tylli ki DG kiba don mynta ki pynmih 1.5 MVA. Ki sam bording ha ka por ba ym don bording elektrik.

Ka jingsam um:

Kumba ka long mynta ka jingdonkam um ka long 792.9 cum haka shisngi (680.6 cum na ka bynta ka karkhana + 105.6 cum shisngi sha ki iing ki sem + 6.7 cum shisngi sha kiwei pat ki jingdonkam). Kumta ka jingdonkam um naka bynta kane ka jingpynheh ia ka karkhana ka long 500m³ shisngi bad 2784m³ shisngi naka bynta ka CPP. Ka jingdonkam um baroh ka long 4076.9m³ shisngi. Ia kane ka jingdonkam yn sa lah ban pyndap naka tyllong um kaba la don lypa ka chynrynthong – umparti, kaba jngai 4.1 Km na ka karkhana.

Jingdonkam nongtrei:

Ka jingdon ki nongtrei mynta ha karkhana ka long shispah laiphewphra ngut. Yn donkam sa khyndaiphew saw ngut eiei ki nongtrei. Kumta ka jingdonkam nongtrei baroh ka long arspah laiphewar ngut.

2.2 Jaka sah:

La thmu ban ai 89% ka jaka sah ba biang iaki nongtrei. Kumba ka long mynta don kumba arphewsaw kynrad kiba don lai tylli ki kamra thiah,

arphewsaw kynrad kiba don kawei ka karma thiah, khatar kynrad kiba don lai tylli ki karma thiah bad lai jait kiwei pat ki jaka sah. Don lai tylli ki block (120 tylli ki kamra) kiba dang shna mynta. Ka block kaba arphewsaw kynrad na ka bynta ki ophisar rit. Ka jaka sah ki nongbylla ki don laispah tylli ki kamra. Ka guest house kaba khatphra tylli ki kamra na ka bynta ki samla shynrang ophisar bad ki nongwan kai dang shna mynta. Ka don ka community hall na ka bynta ka jingleh kmen leh sngewbha kaba ngiam hynriewspah ngut ki briew. Ka don ka jaka pynjahthait/pynbyrngia na ka bynta ki nongtrei kaba don ki jingialehkai tennis, carom, chess bad badminton. Ka don ruh ka jaka pule kotkhubor na ka bynta ka jingmyntoi ki nongtrei.

2.3 Par mawshun ba pyndonkam:

Ka par mawshun Khliehjari ba shathie bala shu shimwai ka don ka jingheh kaba 33.45 ha, ka dei shibynta jong kane ka jingthmu ban ioh ia ka jingmynjur na ka sorkar, ka don 3 Km na Thangskai. Ka don 17.77 million tonnes u mawshun.

Ka rukom don kine ki marpoh khyndew ka long kumne – 1m ka jingrben ka khyndew ba nalor (topsoil), 6 m ka jingrben ka dewshyiap (sand stone). Hapoh pat u don u mawshun uba rben kumba 28 m. Kumta ka jingdon kine ki marpoh khyndew ka long, dewbyrtha: mawshun ka long 1:4 TT.

Ha kine ki shiphew snem ki ban wan ka karkhana ka don ka jingangnud ban pynmih dewbilat 2800 TPD lane 924000 TPA. Ha ki khatwei –khatsan snem pat ka don ka jingthmu ban pynmih 2500 TPD lane 825000 TPA.

Ka rukom tih mawshun ka long kaba tang na sla khyndew, ki tiar ki ban pyndonkam ha kane ka jingtih ki long ka siang tih khyndew, kriaiah lum khyndew kaba ngiam 2-2.5 cum ryngkat bad ka trok tipper ba 10 T. Ha man la ka shi ton u mawshun ba la tih, 0.25 T ka khyndew ka long kaba sepei.

Don sa laitylli ki par mawshun barat kiba donmarjan bad kane ka karkhana. Ka jingheh kawei pa kawei ka long 5 ha ml. Ka jingdon ki mawshun ha kane ka par ki long – Khliehjari(4.9 hect) – 1.33 million ton, mooing block – 1(4.80 hect) – 2.88 million ton, Ka east Kheljari (4.88 hect) – 2.9 million ton.

2.4 Ka jingpynmih bording:

Ka MCL ka don jingthmu ban pynmih bording kumba 18MW ha kaban pyndonkam ha kane ka karkhana. Kane ka jingpynmih kan pynbiang lut iaki jingdonkam baroh khlem da shaniah na kiwei pat ki thymmei bording.

Ka MCL kan sa thied da ka (high efficiency circulating fluidized boiler) kaba 70 TPH kaba treikam haduh 88 bar (g) bad 540+/-50C.

Ka jingdonkam jaka na ka bynta kane ka jingthmu ka long 20 acres. Donkam jaka ban buh dewiong, kor pynkhluit um, jingtei TG (turbine generating), ki kamra pyniaid ia kine ki kor bad rukom pyniaid ia u dpei ba mih nangne.

Ka MCL ka lah ban ioh dewiong na kylleng ki jaka ka jylla Meghalaya. U don kynrei la jan man ki distrik khamtam ha ki bynta ba shathie ka jylla. U dewiong u pynmih khyndiat eh ka dpei bad ka bording ba mih na ka jingthang ia u ka long 5200-6700 K.cal/Kg, haba khein kyllum ka bor kan mih 6000 K.cal/Kg. Ha ka shisnem ka jingdonkam dewiong kan long 63072 T.

U dpei ba mih na ka kor shet um CFBC yn sa pynrkhiang ha ka kor pynrkhiang ka juk mynta. Ka dpei ba mih na u dewiong ka long 20%, Kumta ka jingpynmih dpei ha ka shisnem ka long 12615 MT kata ka long kumne:

*Bottom ash: 2523 MT shisnem

*Flyash : 10092 MT shisnem

Ka bed ash kaba mih nangne yn sa pyndonkam ha ka par mawshun, katba u flyash pat yn pyndonkam ha kaba shna dewbilat.

Ki tiar ba donkam ban pynmih bording ki long kumne: Boiler, fuel feeding bad firing system, turbo generator system, electrostatic precipitator, chimney, preserve storage (CPP), raw water system (116 m³ shikynta ka um) DM plant (jingheh 5m³ shikynta) cooling tower, air conditioning bad ventilation system, power evacuation system, fire protection alarm bad cantonment system.

3.0 Rukom long ka jaka /puta mynta:

Ban batai ia ka jaka ne u pud/sam la shim ia ka jaka ba don ka karkhana ba kan long kum ka pdeng(core zone) kaba jngai 10 km sawdong ka core zone la khot ka buffer area, kine baroh ar, ka core zone bad buffer zone ki dei ki jaka ban pyndonkam na ka bynta kane ka jingthmu.

3.1 Jingbatai kyllum ia ka dur /ka dar ka par maw:

U mawshun ha kine ki par u long shi bynta na u lum Shillong (shillong plateau) u ba don ka dur lum khohruh. Ka kynjang kane ka jaka baroh kawei ka long 754m RL. Ka parmaw ba donkam ha kane ka jingpynmih bording kaba don ka jingheh 5 ha ka don hajan ka karkhana. Ka ML ba la mang ka long 33.45 ha ka don 3 KM ka jingjngai ba 694 m-742m RL ka kynjang jong ka.

3.2 Jinglong ka suinbneng:

Ka jinglong ka suinbneng ha ri khasi bad jaintia ka long kaba pher bad sngewtyinnad bha. Ka long kaba syaid bad sngem lait noh ha ka por tlang. Haba khein kyllum ka jingshit ba duna ha ka shi bnai ka long 5.77°C ha u bnai January bad 18.15°C ha u bnai July kat kum ka jingkhein ba la ioh na 1MD stashon Shillong range. Haba khein kyllum pat ia ka jingshit ba kham heh ha ka shibnai ka long 15.13°C ha u bnai kyllalyngkot bad 24.38°C ha u bnai june. Ka jingkhein kyllum ia ka jinghap u slap ha u snem 1996-2006 ka long 2044.64 mm, bad ka jinghap slap ba duna eh ka long ha u snem 1999 ka long 1019.7 mm, bad kaba heh duh ka long ha u juh u snem 1999 kata ka long 2444.1 mm. Ka jingsngem pat ka suinbneng ka iapher na ka 52-85% ha ka

0830 hrs bad 65-90% ha ka 1730 hrs. Ka jingbeh sted ka lyer ka duna 19 Km shikynta.

3.3 Jingbuh kynmaw barat eh ka jinglong ka suinbneng:

Ka jinglum jingtip ba bniah la wad da ka Min Mec R&D laboratory, New Delhi katkum ki kor ka juk mynta (automatic weather station) ha ka por tlang – 01/11/07 haduh 31/01/08 la lap ba ka long kumne –

- Kaba duna eh – 3.0°C
- Kaba heh eh – 27.20°C

Jingsngem:

- Kaba duna eh – 33.90%
- Kaba heh – 79.90%

Ka jingbeh sted ka lyer ka iapher hapdeng 25.37 Km/hr bad ka jingbeh lyer ba paw shai bha ka long na sha sepngi (W) ka beh haduh 20.54%

3.4 Ka jinglong ka lyer ha kine ki jaka:

Ia ka jinglong ka lyer ha kine ki jaka la wad bniah naki phra tylli ki jaka ba marjan kita ki long Wahiajer (0.5Km shathie), Umrasian (4.5Km sepngi), Chiehruphi (1.3Km shatei), Thangskai (2.0Km mihngi), Musniang (3.0Km shatei sepngi), Umtyra(5.2Km shatei mihngi) bad Mynkre(3.2Km shatei sepngi).

Kumba arphewsaw kynta la shim sample (lyer) arsien shitaiew na kine ki jaka ban ioh jingkhein ia ka jingdon kine ha ka lyer kita ki long ki Suspended Particulate Matters(SPM), Respirable Particulate matters(RPM), Oxides of Nitrogen(NOX) bad Sulphur Dioxide(So₂). Ka jingpule ba bniah ia ka jinglong ka lyer la leh katkum ka jingkdew haka IS: 5182.

Ka jinglong ka lyer ka pyni ba ka SPM ka iapher hapdeng 45 bad 80 Kg/m³. Ka RPM ka iapher hapdeng 25 Bad 44 Kg/m³. Ka NOX duna ia kaba lah ban tip ne ithuh kata ka long 11.8Kg/m³ katba ka lyer So₂ pat kaba heh tam ka long 8.3Kg/m³. Ka jingdon ka lyer CO barabor ka duna

iaka 1000 kg/m³. Ka jingdon kine ki lyer sniew/ jakhlia kam don jingktah ei ei.

3.5 Ka Tyllong um:

Kane ka karkhana ka long shi bynta jong ka Wah Meghna na shatei. Na kane ka jaka la jiar ia ka um da shibun ki jingjiar bad rukom ringum kiba ia iaaid synrap lang. Kiba khampaw ki long ka Lyber bad lum Lunat. Ka rukom ring um ka long da ki por aiom,ha ka por slap kine ki wah ki shlei bad la khynniat ia ki um ban tuid sha ki nur ring um. Ki don ki umpohliw kiba mih na sharing jong ki lum kiba pynmih ia ki wahduid. La pyndonkam ia kine ki um da ki shnong ba marjan kane ka jaka. Na kata ka daw ym don tyndong ne ktang um ha kine ki jaka.

Ka jingdonkam um mynta ka long 792.9 cum ha ka shisngi (680.6 cum ha karkhana + 105.6 cum sha ki jaka sah + 6.7 cum kiwei pat ki jingdonkam). Ka jinglah ban ioh um ha ka shisnew ka long 23.32 MCM. Shiphew tylli ki sample (um) la shim na kylleng ki jaka ba marjan ka karkhana ban pule bniah la ka long ne em kaba biang ban pyndonkam. Kine ki jaka ki long ka MCL, Wah sonapur, Lumshnong, Lumbahdoh, Wahiajer, Thangskai, Mynkre, nur Laphyrwi, nur Mynkre bad Chiehruphi umdih. La lap ba ka um ka long kaba biang ban pyndonkam.

3.6 Jingkhlain ka jingsawa bad jingngiam ka iaaid ka ieng:

Ka jingngiam bad jingkhain ka jingsawa la wad jingtip na ki phra tylli ki jaka ba marjan bad lai ki tylli ki jaka hapoh MCL. Kine ki long ka Lumbadoh, Thangskai, Chiehruphi, MCL plant, Wahiajer, Mynkre, Umtyra bad Umrasong. La lap ba ba ka jingsawa ba mih na kine ki jaka kim don jingktah ei ei ia kiba shong hapoh karkhana bad ki shnong ba marjan. Ka jingbuh jingkhein ba 24 kynta ka bynta pdeng (core zone) na ki lai tylli ki jaka (Lynti ba pyrshah ka raw mill, hapdeng ka sem kor tyllait mawshun bad sem dewbyrtha hapdeng cement mill bad elect SS) la lap ba ka jingkhlain ka long hapdeng 73.39-67.65, 57.5-56.93 bad 68.06-67.03 d B (A).

Iaid Ieng :

Ia ka jingkhlain ne jingkylluid ka iaid ka ieng la khmih bniah naduh ka 18.12.07 haduh ka 19.12.07 ka NH-44 (Shillong – Silichar surok) hajan ka jaka lane point ba ka karkhana ka ia kynduh ia ka NH-44.1802 HMVS, 1002 LMVS bad 21 tylli ki kali ar/ lai shaka la lap,baroh ki long 2825 tylli ki kali. La wad jingtip ruh na ka surok ba pyniasoh ia ka karkhana sha ka NH-44 bad la lap ba ka jinglah ban don kali ka long 154 (140HV+142V)

3.7 Jingkhmih Jumai:

Kane ka jaka ka don ha kawei na ki bynta ne syrtap bajur eh u jumai ha ka ri. Ka don ha ka syrtap (zone) kaba V katkum ka map jong ka ri India ba la pynkhreh da ka BIS (BIS code :IS 1893: part1:2002

3.8 Khyndew ba pyndonkam:

Bynta pdeng (core zone)- La pyndonkam ia kane ka bynta pdeng (core zone) ban shna karkhana kaba heh kumba 59.269 ha.Na kane ka jaka 20.07% la shna ia ki iing ki sem, 1.24% la shna office bad store, 1.62% jaka maramot bad buh kali,6.75% pat kan long ka jaka ba jyrngam (green belt) bad ka jaka ba dang sah ka long 45.35 %. Na kane ka jaka ba dang sah 26.896 ha yn pyndonkam ban pynmih (CPP) bad ban pynjyrngam ia ka mariang.

33.45 ha ka jaka ba hap ha ka par mawshun bym shym pyndonkam shuh la shim da ka office na ka bynta ki kam jong ka.

Buffer zone:

Ka jingbatai ia kane ka syrtap la pynshong nongrim katkum ka jingtip ba la ioh lum na ki met bneng. La lap ba don 77.92% ka khyndew ba don ki jingthung jingtep,3.68 % pat ka madan khlaw,13.06% ka khyndew ba la pyndonkam ban thung ban tep, kumjuh ruh ka hap ha ka jaka bym don jingthung jingtep.3.58% pat ka don ka um,1.75% ka hap ha ki parmaw.

Don artylli ki khlaw sorkar kita ki long Narpuh RF Block I kaba jngai 12.5 km na karkhana bad ka Narpuh RF Block II ba jngai 11.3km.Kine ki jaka khlaw ki don marsyndah

3.8.3 JINGLONG KA KHYNDEW

Artylli ki sample (khyndew) la lum, kawei na ka bynta pdeng (core/zone) bad kawei pat na ka jaka ban pule ia ka jinglong ka khyndew. Ka don ka khyndew sboh/dewbyrtha bad dewshyiap. Ka rong jong ka khyndew ka long lam byrsaw. Ka jingsngem ka khyndew ka long 3.1%-12.5%, Ka jingkhia ka long 2.15 km^3 - 2.55 g/cm^3 bad ka jingdon kiwei pat ki jait met ka long 0.12%-0.35%

3.9 Ka jingiadei hapdeng ki kynja baim bad ka mariang:

Ki jingthung ha ki bynta pdeng (core/zone)-Don kumba 29 jait ki dieng, 9 jait ki diengrit, 44 jait ki kymbat, 7 jait ki phlang rit bad lai jait ki phlang, ba shu pur. Ym don kano kano ka jingma ia ki jingthung ha kane ka bynta.

Haduh kumba 697 tylli ki dieng la dep thung na ki 21 tylli ki jait dieng bapher bapher.

Jingthung ha ka Buffer zone: Ki jingthung jingtep ha kine ki jaka ki long kum ki jingthung ba lah ban shem ha ka bynta ba shatei ba la khot ka Nothern West Evergreen Forest (ki khlaw ki btap ba jyrngam sah). Nalor ka study area ka khlaw ka long kaba rben. Ki jait jingthung ba lah ban shem ha kane ka jaka ki long Castonopies, indica, Castonopeis hyrtrix, Derris robusta, Macaranga denticulate, schima, wallichii bad Musa superba .Ka jingjrong ki dieng ba kham paw ki long naduh 4m-9m. Ban sngewthuh bha ia ka jinglong bad jingiadei ki jingthung hangne la pule bniah na ki saw tylli ki jaka.

Mrad ha ka core zone:

La lap ba don ki mrad kum ki shrieh, miaw khlaw, ka skei bad kiwei pat. Ki kynja sim ki khynthup ia u moina khlaw, tyngap khlaw, u sim tuta bad kiwei kiwei de, bad ki kynja mrad ba par pat kum ka niangbsiah bad kiwei kiwei de.

Mrad ha ka jaka: Kane ka jaka kaba bun jingthung jingtep don shibun kiwei pat ki jait mrad, u bsein, ka dngiem, ki khnai, ka miawkhlaw, Risang ba heh, shrieh bad sim iong, dkhoh, sim rit etc. Ki sim ba kham paw bha ha kane ka jaka ki long ka tyngab khlaw, u moina khlaw, u lyntriang bthuh pat u kynrei ha ki jaka khlaw ba rben bad ba sngem . ki jait mrad bala buh ha ka kyrdan-1 kim don satia hangne

3.10 Ka ioh ka kot: Don ki iing sah briew ha ka core zone. Don kumba 27 tylli ki shnongrit kiba hap ha kane ka jaka lum jingtip. Ka jingbun briew ha kine ki shnong ka long 9105 ha kaba 49% ki dei ki khynthei bad 50% ki shynrang. Ka jingnang jingstad ka long kat ban biang.

Ka rep ka riang ka long u metbah ka ioh ka kot ha kine ki jaka. Katkum ka jinglum jingtip shaphang kane ka rukom trei la shem ba 82% ki nongtrei ba kham donkam 71% pat ki nongtrei ba kham biang. Kiba trei ha ki karkhana rit pat ki long 4.06%

3.11 Karkhana ha kine ki jaka : Don hynniew tylli ki karkhana ha ka 10km, kita ki long ki CMCL, JUD Cement, Adhunik Cement, Hill Cement, Green Valley Cement, Meghalaya Mines & Mineral LTD. bad ka ML.33.45 ha ka MCL.

3.12 Jaka Jngoh kai /jaka mane Blei / jaka sah jingkynmaw

Ym don National Park, Wild life Sanctuary ne Reserve Forest (khlaw sorkar) ha ka 25 Km.kine ki jaka ki don ki khalw ba rben. Don ki krem bala rim ba la tip kum ka ‘Krem Lumshong’.”Lumshnong Cave” ha ki bynta ba shathei kumba 5km na ka karkhana (MCL) bad ka kynjang jong ka ka long 225m (sha trai ka MCL).

3.13 Jinglum jingtip ia ka jingkylla ha ka mariang:

Ka jingwad bniah shaphang ka jingktah ia ka mariang la leh da ka GIS ha kine ki phang.

Air Dispersion Sensitivity Analysis:

Kane ka batai ia ka jinglah ka lyer ban saphriang ban pynkhuid ia ka lyer jakhlia namar ka jinglah jong ka ban beh shajrong bad ka jingdon ki jingthung jingtep.

Aerial Land Use Sensitivity: Ka jingpyndonkam ia ka khyndew kan wanrah ka jingjaboh ia ka lyer. La pynbynta ia ka lyer jakhlia (air pollution) ha ki lai bynta, ka high, medium bad low. Kane jaka lum jingtip ka hap ha ka medium ia kaba ym don than ka jingktah.

Ground Water Potential Delineation

Ia ka jingmih ka um napoh khyndew lah ban tip na ka ground water map. Ia kane ka map lah ban bynta ha ki lai bynta high, medium, low.

Jingjylliew Ka Um: Ka jingjylliew ka um ka don ka bynta ba khraw ban tip ia ka jingjakhlia jong ka. Kane ka um ka mih napoh khyndew bad la bynta ha ki lai bynta:- High (duna 5.0m bgl), medium (5-15m bgl) low (kham bun 150m bgl) kane ka jaka ka hap ha ka medium groundwater category.

Infiltration Rate: Ka jinglah ban jiar ia ka um kan ai jingtip ba ka um ka long kaba khuid ne kaba jakhlia. Katkum ka jinglah ban jiar lah ban bynta ia kane ha ki lai bynta- High, Medium bad Low Zone. Kane ka jaka ka hap ha ka low Filtration Zone.

Jingktah Ia Ka Umdih: Kane ka kdew ia ka jingpynkhlia ia ka um kaba wan na ki jingtrei kam bapher bapher kum ki jingbret ia ka jakhlia, tiar bym pyndonkam shuh ha khyndew. La iohi ba hapoh 3kms na ka karkhana lah ban iada ia ka um namar ba ym don jakhlia, tiar jot ne tiar pei ban bret sha lyndet na ka core zone (bynta pdeng) kumba ka long mynta ym don ki jakhlia ba pynmysaw ba mih nangne.

Surface Water use Sensitivity map:- kane ka mut haduh katno ka um ba don ha sla khyndew ka lah ban jakhlia na ki jaboh ba mih na karkhana. Kane ka jakhlia ka hap ha ka low water use zone ia kaba ym don jingktah ei ei.

Surface Water Quality Regime: Ia ka jingkhuid jong ka um ha kane ka karkhana lah ban ioh lada ka tyllong um ka jngai na kane karkhana . Kane ka hap ha ka high water quality (bym don jingma).

Surface Water Flow Regime: Ka jingtuid jong ka um ha ki wah ka iarap ban pynduna ia ki jakhlia bad kane ka long kum ka jingpynkhuid lade. Kane ka hap ha ka medium water flow zone.

Surface Water Pollution Sensitivity Regime:-Kane ka kdew ia ka jingma jong ka mariang na ka jingkhlia jong ka um. Kane ka jaka ka hap ha ka high surface water pollution sensitivity.

4.0 Jingtah iaka mariang bad ki lad jingiada:

4.1 General aspects- Da kaba buh jingmut iaka mariang bad kane ka jingthmu la pyrshang ban khmih bniah haduh katno ka don jingtah iaka jingkoit jingkhiah bad kiei ki lad jingiada lah ban wanrah.

4.2 KA LYER SAWDONG JONG NGI:

4.2.1 Jingtah iaka jinglong:

Construction phase (por shna):

Ki thymmei pynjakhlia iaka lyer ha ka por ba dang shna ki long – ka tdem iong ba mih na kali, pum pum ba mih na surok ba iaaid kali etc., ka jingkyndria ia ki tiar ki tar(dewbilat, shyiap, tiar nar etc.), jingiaid kali na ki jaka bym pat siang surok.

Operation phase (por treikam):

Ka jingtah iaka lyer ha kine ki por treikam la khmih bniah bad la lap ba ki mih na kine –

1. **Fugitive emissions (kynja jingmih):** Kine ki mih haka por ba kit iaki tiar ki tar ha kaba ki phngiat barat ki her na ki kali. Ki pum pum ba mih na ki taiar kali haki jaka bym don surok rong, haka por ba wankit iaki shyiap ki maw etc..
2. **Process of emission (rukom pynjakhlia):** Ka jingpynjakhlia kaba kongsan tam eh ka dei ka suspended particulate matter (SPM) ha kaba shibynta na kane ngi ring bad pynher mynsiem. Kiwei pat ki kynja lyer ba jakhlia ki mih na cooler ESP, primary crusher, secondary crusher, RABH(Kiln bad Raw mill), coal mill, cement mill, packing plant bad power plant.

Air pollution dispersion modeling and prediction of ground level concentration (Ka jingsaphriang ki lyer jakhlia bad ka jingkhein antad iaka jingdon jong ki:

Kane ka jingkhein la ioh naka jingiit bniah iaka lyer ha man laka kynta hapoh karkhana haka por tlang. Ban tip haduh katno ka jingdon ka lyer ba jakhlia la shim sample arphew saw kynta bad la pule bniah iaki haki kor ki bor ba khlain ka juk mynta. La lap ba ki lyer ba jakhlia ba kham kongsan ki dei ka SPM, SO₂, NOX bad CO. Ki lai tylli ki jingkdew ne jingbeh lyer ba kham paw la peit thuh bad kita ki long shaphang E, ENE bad WSW haka jingkdew ba 19.52%, 19.47% bad 8.52%.Ka paw ba ka jingbeh ka lyer sniew kaba kham heh ha ka arphewsaw kynta katkum ka GLC's ka long 17.38, 10.43, 11.07 bad 0.03 Kg/m³.

Ka jingmih ki lyer jakhlia haba ianujor bad kaba mynta ka don jingtah tang khyndiat eh ia ka mariang. Kumta la pynkut ba ka jinglong ka lyer kam don jingtah shibun bad kan iaidon ha kaba la mang ba kan long 80 micron gram/cum.

Air emission due to transportation:

Ka jingdon ki lyer jaboh kum ka SPM, SO₂, NOX bad CO la dep khein katkum ka tiar fugitive dust model bad la lap ba ka jingdon jong ki ka long 0.023, 4.2, 46.62 bad 17.73 Kg/m³ haka jingjingai ba 25m na surok bad ka hiar sha ka 0.0006, 1.15, 12.77 bad 4.85 Kg/m³ haka jingjingai ba 75m na surok.

4.2.2 KI LAD IADA:

Construction phase (haka por shna): Ha ka por ba dang shna dei ban synreit da ka um ia ka surok ban duna ka jingpum pum. Ki kor ki bor dei ban sumar bha man ka por khnang ba kin nypynmih ka lyer pum pum.

Operation phase (por ba pyniaid): La ai jingmut ban tap da ki jri tarpolin iaki trok ba kit jingkit ba kin pynduna iaki lyer pum pum. La ai jingmut ruh ban synreit um iaki surok ba khohruh khnang ba kin

pynduna iaka lyer tдем kaba mih haba ka taiar kali ka iatyngkhuh bad ka khyndew.

Dei ban buh ki pla lum pum pum ha ki jaka ba pyniaid iaki mar na kawei ka jaka sha kawei pat hajan ki air slide, bucket elevators etc.. yn pyndonkam daki kynja belt ban pyllang ia u mawshun ba – 80mm jingheh ban pynduna iaka jinghap na jrong bad ban pynduna iaka jingmih u pum pum. Ia u gypsum (kynja shun ba rkhiang) bad dewiong la ioh haka dur ba sngem bad ym donkam ban khuslai. Baroh ki tiar ki tar (raw materials) bad u belt conveyors yn sa tap.

Ki bag house (jinglum pum pum yn sa buh ha primary bad secondary crusher (kor tylliat mawshun), RABH (kiln bad raw mill, coal mill, cement mill bad packing plant). Ka power plant (kor pynmih bording) bad klinkar kin don ka electro static precipitation (ESP) ka kor ban pynduna ia ka jingbun ki pui pui.

Kumta da ka jingiarap ki kor ki bor kan pynduna iaka jingkynei ki jingpynjaboh ia ka lyer kumba la pynshisha da ka dispersion modeling study. Ha kane ka rukom la lah ban ong ba ka jingpynjakhlia ia ka lyer katba ka karkhana ka dang treikam ka long kaba rit hapoh u pud ka CPCB/SPCB katkum ka stack emission standard kumjuh ruh ka ambient air quality standard(ki kor kiba thew iaka jingmih bad jinglong ka lyer).

4.3 Ka jingsawa haka mariang bad ka jingsawa kali:

4.3.1 Ka jingktah ka jingsawa:

Construction phase (por shna): Ka jingsawa ha ka jaka trei karkhana ka long kaba jur. Ka jingktah ba kham kongsan eh ka long iaki nongtrei ba trei da ki tiar ba pynmih jingsawa. Tangba ym don iing briew hajan, Kumta kam don jingktah eiei.

Operation phase (por treikam): Haba khein kyllum ka jingmih ka jingsawa hapoh ka core zone la khmih lynti ba kan long hapoh ka 75d B(A). Hynrei ka jingsawa kan sa phriang shabar ka core zone bad ka khmih lynti ba kan nym palat iaka 60d B(A) hapoh ka jaka ba la buh. Ka

nuksa ka jingsawa ka sngi bad miet hapoh ka core zone haki lai tylli ki jaka la lap ba ka long 73.39-67.65, 57.5-56.93 bad 68.06-67.03d B(A). Haden ka jingshna pynheh iaka karkhana kine kin ym kiew palat iaka 3d B(A).

4.3.2 Lad iada: Ka jingmih ka jingsawa na ka jaka trei lah ban pynduna da kaba buh iaki tiar ba kjit iaka jingsawa, da kaba sumar bha iaki, kum kaba theh grease man la ka por. Iaki kali dei ban buh iaki tiar pynduna jingsawa(silencers). Ha ki kor ki bor yn sa pyndait da ki tiar pynduna jingsawa ban pynduna iaki jingsawa hapoh karkhana. Ki tiar mynta kila don lypa ia kane. Baroh ki nongtrei kiba trei ha kum kine ki jaka yn sa ai jingiada iaki shkor kum ki muffers/plugs. Ka jingdon ki dieng ki siej ba mynta bad ki ban sa thung kan iarap ban pynduna iaki jingsawa ba mih napoh karkhana bad ka jingsaphriang sha lyndet kane ka karkhana.

4.3.3 Jingktah iaka jingngiam kali:

Namar ba bun bah ki tiar ban pynpoi bad shalan, ki kali ki nangbun na kawei ka por sha kawei pat. Kumba ka long mynta iaki mar ba la dep tylliat ki phah da ki kynja belt ba la pyniaid da ki bor elektrik hapoh karkhana. Iaka dewbilat bala dep shna la shalan shabar da ki trok shaduh Silchar (115 Km), Shillong (125 Km), Guwahati (250 Km) etc..ka jingkhia ki trok ba wan kit tiar nabar bad kumjuh ruh ba kit dewbilat sha kiwei pat ki jaka ka long 20 ton. Ki kali ba bun ki long ki kali kit dewbilat ban shalan sha bar bad kali kit dewiong ban pyndonkam haka captive power plant.

La khmih lynti ban don 322 tylli ki trok haka shisngi. Ka jinglah ban pynmih mynta ka long 900 TPD ia kaba yn sa pynkiew sha ka 2600 TPD hadien ka jingpynheh. Kata ka mut ka jingbun ki kali kan long $(900/2600) \times 322 = 111$, Kumta yn sa nang bun kali kumba $322 - 111 = 211$ hadien ka jingpynheh.

Mynta lah ban iaaid artylli ki kali ha ka NH-44. Ka jinglah ban iaaid ki kali ha kane ka surok mynta ka long 2823 tylli bad kane kan sa nang kiew

sha ka (211/2823) 100 = 7.46%. Kane ka jingkiew ka long kaba rit eh bad ym don jingtah ia ka iaid/ieng na ka jingtrei kam jong ngi wat hadien ka jingpynheh iaka karkhana.

4.3.4 Lad iada: Ki lad iada yn sa pyntreikam ban pynduna iaka jingdon bun bad jingngiam ki kali. Yn sa buh iaki signal haki jaka ba biang, pyndonkam iaki nongniah kali bala shemphang, ai jinghikai iaki nongniah, da kaba maramot iaki surok na kawei ka por sha kawei pat, ban peit bha la ki draibar ki long kiba tbit ne em.

4.4 Ka Um sawdong jong ngi:

4.4.1 Jingtah iaka thymmei um:

Ym shym la thmu ban tan iaka um napoh khyndew bad kumta ym don kano kano ruh ka jingtah. Ka jingtan um na Chynryntong-lumpathi kan ym ktah iaka um ba don ha sla khyndew namar ba u slap u kynrei bad ka umslap kan sa tuid sha ki wah ia kaba yn sa pyndonkam pat.

Construction phase(por shna): Ha ka por ba dang shna ka jingdonkam um ka long ha kaba khleh dewbilat, pyndaitthah iaki kor ki bor, ha kaba synreit ban pynduna ia u pump um, ha kaba thung jingthung bad ban pynitynnad iaki lynti bad synkieng yn don kumba shispah ngut ki nongtrei ki ban wan na ki shnong ba marjan. Haba khein kyllum ia baroh kine ki jingdon ka jingdonkam um kan kiew sha ka 100 cum haka shisngi.

Operation phase (por treikam): Ka jingdonkam um haka jingtrei karkhana mynta ka long 792.9m³ shisngi. Yn sa donkam tam hadien ka jingpynheh bad la khmih lynti ba kan long 500m³ shisngi (TEFR) na ka bynta ka karkhana dewbilat bad 2784m³ shisngi (116m³ shikynta) na ka bynta ka 18MW CPP. Ia kine ki jingdonkam yn lah ban pynbiang naka tyllong tan um ba mynta.

Ka um ban donkam sha ki iing/sem hadien ka jingpynheh kan long 150m³ shisngi ha kaba 120m³ shisngi na kane ka long ka umktieh ban sa mih bad ki lad jingiada yn sa leh.

4.4.2 Lad iada: Don tang ka um jakhlia ba tuid na ki iing ki sem bad na kaba sait kali kaba kot sha ka jingthew ba 120m³ shisngi. Ia kane ka umjakhlia yn sa pynkhuid haka sewage treatment plant (jaka pynkhuid katkum ki rukom ka juk mynta. Ka um bala dep pynkhuid yn sa pyndonkam na ka bynta ka jingpynitynnad bad jingthung syntiew.

Ka karkhana ka don ha kata ka '0' jingpynmih jakhlia. Kumta ym don um jakhlia ban mih nangne. Ia ka um jakhlia ba mih la pynkhuid bad pyndonkam biang.

4.5 Khyndew ba pyndonkam:

Ka khyndew ba pyndonkam ka MCL mynta ka long 59.269 hectares. Ia kane ka khyndew ba la pyndonkam la pyni ha ka section 3. Ka khyndew ba donkam kan don jingkylla ha kaba plant building (jingtei kumba 20.07%, surok 13.09%,jaka sangeh trok 0.38%, stok mawshun 3.79%, iing 7.68%, office bad store 1.24%, jaka sangeh kali bad maramot kali 1.62%, jaka ba thmu pynmih bording (CPP) 7.59% jaka ba long jyrngam 33.99% bad ka jaka ba dang sah ka long 10.55%.

Kane ka khyndew yn sa ker sawdong da ki dieng ki siej bad ki syntiew ba bun jait kaba long 1/3 naka jaka baroh. Kumba 4.5 ha yn sa pyndonkam na ka bynta ka CPP.

Ka par mawshun ba shu shim wai kan don jingkylla hadien ka jingtih maw na kane ka jaka. Ym don jingktah iaki nar um namar ba don tang ka 1st order drainage channel ha ka ML, tangba ka dur ka dar ka par kan kylla na ka jingtih bad jingbret mawshun. Ka don ka jingthmu ban pyndap biang iaki thliew ba la dep tih mawshun hadien bala dep pyndonkam. Kane kan pynduna iaka jingbret khyndew shabar. Ha kajuh ka rukom ka jingthung dieng ruh yn sa leh. La khmih lynti ba 20% ka jaka bala dep tih maw yn sa pyndap pat. Ka thliew ba dang sah yn sa pyndonkam ban thung dieng. Ka syrtap khyndew ruh ka long kaba synjor ha kaba ka umslap ka lah ban sam shapoh ka ban pynmyntoi ia ka khyndew. Ha kaba kut ka jingtih maw na kine ki par, kine ki thliew

kin tap 29.20 ha, surok par 1.5 ha bad khyndew bym pyndonkam kan long 2.75 ha.

Ka dur ka dar jong ka karkhana bad iing sah yn sa pynbha da kaba buh jingmut ia kitei bad ban lum um slap. Ki iing shong la shna da kaba peit bha ia ka jingbeh ka lyer khnang ban iada ia ka jingwan u pum pum haba beh lyer. Yn sa thung dieng ha ki lynti kylleng sawdong ka karkhana.

4.6 Nuit ba lang tylli:

Ka jingpynkhuid bad jingbret ia kine kam don jingeh namar lah ban pynkhuid bad pyndonkam pat ia ki. Ym don jaboh ba lang tylli ban leit bret. Katto katne kitnuit ba tylli ba khleh lang bad ka khyndew lah ban lum hadien ba la dep sar pyjkhuid bad yn sa leit pyndap ha ki jaka them.

Ki nuit ba mih na karkhana bad iing sah briew yn sa pyniakhlad kum kiba lah ban thang bad bym lah ban thang. Ia kiba lah ban thang yn sa thang hapoh kiln. Kane kan iarap ia ki ban pynduna ia ki nuit tylli bad pyndonkam dewiong hapoh kiln. Ka kiln kan long kum ka nongiarap ha kane ka bynta. Ki nuit ba tylli bym lah thang yn sa pyndonkam ban pyndap ia ki jaka them bad pynkylla sboh bad ia ki bym lah pynkylla sboh yn sa die sha ki nongthied ban shna tyymmai pat ia ki. Kumta la khmih lynti kan ym don jingktah ia ka khyndew na kine kiei kiei baroh.

Ki jakhlia ba kham dan jingma kum ka umphiang ba mih na transformers, umphiang bala dep pyndonkam yn sa pyndonkam hapoh kiln ban ban pynduna ia ka jingdonkam umphiang diesel bad iarap ia ka jingeh ban bret ia ki. Namar kata ka daw ym don jingma ia ka khyndew ha kane ka bynta.

4.7 Jingtip kyllum ia ka sawdong jong ngi:

4.7.1 Jingktah

Ha kane ka jigshna, ym don jingktah namar ba ka karkhana la dep tei bad trei kam lypa. Ha kawei pat liang katba ki jingthung ba jyrngam ki nangsang ka jingdon phlang/mrad kan nang iai bun bad iarap ia ka

jingiadei jong ki. Ha ka por jingtrei kam ka karkhana, kiba bun ki jingjakhlia ki wan na kali, ki kor ki bor etc. kan ym don jingktah ei ei ia ki jingthung jingtep namar ba ka jingmih jong ki ka kham duna ban ba la buh pud ia ki karkhana .Ka um jakhlia na ki iing sem bad kiwei pat ki jingtrei kam yn sa pyllait ne bret hadien ba la dep pynkhuid ia ki bad pyndonkam pat sha ki jaka rep ban thung jingthung.

Ka jingktah pat ia ki mrad ba shong hapoh um kan ym don jingma ei ei namar ba ym don um jakhlia ba tuid sha kine ki jaka. Baroh kawei ka karkhana la pynshong nongrim ha kata ka 'O' water discharge concept (O jingktah ka jingbret).

4.7.2 Lad Jingiada:

Ban pynduna ia ka jingktah ia ka lyer khamtam eh ka Suspended Particulate Matter, (kynja met ba lang) la ai jingmut ban wanrah iaka jingjyrngam ka jaka ha ka karkhana. Ka jaka ban pyndonkam ka long 20.143 ha naka 4 ha kaba la dep thung jingthung. Ka jingthung dieng kan long ha kylleng ki jaka hapoh karkhana. Ki kper syntiew bad lynti rit yn sa thaw hajan office, canteen, jaka sangeh kali etc..

Yn sa thung dieng 1500 tylli ha ka shi hectare ha ka jaka ba la buh bad ha ki lynti kum kawei na ki prokram jingthung dieng. Shibun kiwei pat ki syntiew bad dieng rit yn sa thung haki kper bad lynti rit.

4.8 Ka ioh ka kot:

Ka jingioh kam haka por ba shna bad pyntreikam iaka karkhana kan iarap bad kyntiew iaka ioh ka kot ki briew kane ka jaka.

4.9 Ka koit ka khiah ki nongtrei bad lad jingiada:

Ka jingphah examin iaki nongtrei ba don jingpang yn sa leh da ki doctor bala tbit.

Ka jingleit ai dawai ba man la ka por yn sa leh ban lap laki nongtrei ki don jingpang ne em ha ki shnong ba marjan bad ka karkhan,ha kaba ki nongshong shnong kin ioh iaka jingsumar bad dawai khlem da siew pisa. Yn ai jingsumar iaki jingpang khrew khlem da siew dor haki hospital babha ryngkat bad ka jingiarap pisa.

4.10 Ka jingiathuh lypa iaka jingktah katkum ka GIS technique:

Ka jaka ba kham don jingktah antad kadei kaba don 1 Km jngai naka karkhana. Kata ruh ka GLC's kam da kam shabar ka ba la buh da ka NAAQ (NAAQ prescribe standard) wat laka map ka pyni baki jingmih bapher bapher ha ka khyndew kim don jingktah bad la ong baki dei kiba don kiba ktah hynrei ki long hapoh u pud bala ai ka NAAQ bad kam don jingma eiei ruh.

4.11 Katno ka jingktah iaka mariang:

Ka Bettelle Environmental Evaluation System (BEES) ka la dep jied/pdiang iaka jingai jingkhein iaka jinglong ka mariang na kane ka jingpynheh karkhana. Ka jingkheinlang baroh da kaba pyndonkam ia ka Environmental Impact Units (EIU) bad ka jingpynheh kumjuh ruh khlem ka jingpynheh la dep nujor kyllum lang ka jingktah ka don bad ka jingkhein ka long 10 na kane ka jingpynheh karkhana. Kumta ka karkhana kan wanrah jingroi bad kan kyntiew iaki shnong ba marjan bad ki briew jong ka.

5.0 Ka jingbatai ia kiwei pat:

Namar ba ka dei ka jingpynheh ia kiwei pat ki jaka ym shym la jied shuh. La jied ia ka dry process ban shna dewbilat ia kaba la pyndonkam ha Ri India baroh kawei.

6.0 Ka jingkhmih bniah, jingpynbha bad jingkhein jingdiah:

Ka tnad ba dei peit iaka mariang kala don lypa. Kan don ka laboratory ia kaba yn sa pynbiang iaki tiar ka juk mynta ban iit bad pule iaki bynta ka mariang kum ka lyer, um, khyndew. Lada donkam ban tip kham bniah yn sa phah sha ki laboratory bala ithuh da ka sorkar.

Ban peit bniah iaka jingtreikam jong ka tnad environment (mariang), bad ia kine kiei kiei kiba don ha ka mariang, ka prokram, por, la bishar bniah bad la pyni ha ka EIA report.

Ka jingiohnong naka jingpynbha ia ka mariang la mang ba kan long 2109.52 lak bad ka jinglut ha kaba pyntreikam ka long 493.45 lak shisnem.

7.0 Ka rukom treikam haba wan ka jingjia ba sngewsih:

Baroh ki jait karkhana ki iakynduh bun jait kijingmysaw kaba pynthut ia ka jingtrei kam kum kaba kem ding, jingshlei um, jingthut ki kor ki bor, jingbthei etc..Ka buit treikam la dep pynkhreh da ka jingthmu ban pynduna ia ka jingma/jingmysaw bad pynduh ia ka jingjia ba sngewsih bad ki lad ban ai jingiarap hadien ba la wan ki jingjia ba sngewsih.

8.0 Jingioh myntoi na kane ka jingthmu:

Ka jingtreikam kane ka jingthmu ryngkat bad kiwei pat ki jingtreikam kan iarap iaka ioh ka kot ki briew kane ka jaka ha baroh ki liang. Kan don ka jingiohnong ia ka sorkar India bad sorkar jylla da kaba siew khajna kum ka cess, khajna mawshun, excise duty, VAT, da kaba regitar iaki trok, tax sha ka Jylla, income tax na ki nongtrei bad kiwei pat ki jait khajna.

Kiba bun ki kam ban trei ha ka por ba dang shna bad ba la treikam yn sa trei na ki briew ha kine ki shnong ba marjan. Ha kane ka por shna ym donkam ban kynriah na ka core zone (bynta pdeng).

Ka jingioh kam na kane ka jingthmu la mang ba kan long 159 ngut(na kiba la don lypa 138 ngut) bad ki briew na kane ka thain kin don shibun. La ong ba ka direct ioh kam kan long shibun shah ban iaka indirect iohkam. Da ka jingdon bun ki iing ki sem, ka jingdonkam iaka bam ka dih, ki nongbylla kum ki shakri, nongsumar kper, nongsar iing etc..kan iai kiew. Ki ban ioh myntoi na kane ka jingpynheh ki long ki trai shnong kiba pynbiang iaki mar ki mata bad ki trai shnong ba trei hangne.

Kumta la khmih lynti ba ka jingioh kam bad jingtreikam kan long kumba la thmu.

Ban shu ong kyllum ka jingroi haka imlang ka sah lang ha kine ki thain la khmih lynti ba kan nang kiew ha baroh ki liang kum ka nuksa, ka jingphah khubor, ka iaaid ka ieng etc.. Ka karkhana kan bei tyngka ban pynbha iaka bha ka miat, ka imlang ka sahleng ha kine ki shnong ba marjan nuksa, ban pynbha shuh shuh iaki iingskul, jaka ai jingsumar,

iing dorbar, ban wanrah iaki prokram ai jinghikai shaphang ka bha ka miat iaki kynthei bad ki khynnah, jingai sumar ei, ki jingialehkai bad jingsam buskit, ka jingiarap ha ka ban pynbiang umdih lada donkam.

9.0 Ka jingpynithuh iaki nongiarap ha kane ka kam:

Ia ka MIN MEC Consultancy Pvt.Ltd. la dep ithuh ha u bnai July 1983 da u registrar ka company, Delhi bad Haryana, India. Ha u snem 1994 ka MIN MEC ka la shna ia ka R & D laboratory ha ka dur kaba thymmai mynta ha kaba la dep ithuh da ka Environment Protection Act (EPA) da ka min jong ka environment bad forest, jong ka sorkar India. Ha ka 02/02/2003 ka MIN MEC ka la ioh iaka jingmynjur naka ISO: 9001-2000 hapoh ka ANZ-JAS. Ha ka 25/07/2006, MIN MEC R & D laboratory ka la ioh iaka jingithuh naka NABL (National Accreditation Board for Calibration and Testing Laboratories).