CIDCO
WE MAKE CITIES

CITY AND INDUSTRIAL DEVELOPMENT CORPORATION
OF MAHARASHTRA LIMITED

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY OF NAVI MUMBAI INTERNATIONAL AIRPORT

Volume - I

Executive Summary

June 2010

CENTER OF ENVIRONMENT SCIENCE & ENGINEERING,
INDIAN INSTITUTE OF TECHNOLOGY, MUMBAI.

CIDCO
WE MAKE CITIES

NAVI MUMBAI INTERNATIONAL AIRPORT

Volume - I

Executive Summary

ENVIRONMENTAL IMPACT ASSESSMENT STUDY OF NAVI MUMBAI INTERNATIONAL AIRPORT

June 2010

CENTER OF ENVIRONMENT SCIENCE & ENGINEERING,
INDIAN INSTITUTE OF TECHNOLOGY, MUMBAI

CIDCO

Executive Summary

dk;dkjh l{ki

1- iLrkouk %&

ecb egkuxj in'k vk|kfxd o r=Kkulc/kh m|kxkP;kn"Vhu vR;r ixr in'k vlu l/;k lnj in'kkr mRiUu o jktxkjkP;kl/kh ;ke/; y{k.kh; ok< gkr vkg- mRiknu {k=krhy jktxkjke/; ?kV gkÅu brj lok{k=kr jktxkjkP;k l/khr ok< gkr vlY;kp fnlr vkg- l/;kpk dy y{kkr ?krk vl Li"Vi.k fnlu ;r dh] ecb egkuxj in'k 0;kikj o lok{k=kr vxlj gkr vkg- 0;kikj] mnhe o vkfFkd lok ;kP;ke/; lkrR;ku ok< gkr vlu lnj m|kxkuk ijd vl mRre irhP;k ik;kHkr lfo/kk ijfo.k vko';d Bjr- in'kkph xjt y{kkr ?krk foeku okgrd {k=kdM rkrMhu y{k nÅu R;kr ok< dj.;kph xjt vkg dkj.k ecb egkuxj in'kkr l/;k vfLrRokr vlyY;k lkrkd> foekurGkoj foeku okgrdhph xjt i.k djrkuk vfr'k; rk.k ;r vkg-

mijkDr ckch fopkjkr ?kÅu o ecb egkuxj in'kkph nl&;k foekurGkph xjt y{kkr ?kÅu dnh; ukxjh gokb okgrd e=ky;ku uoh ecb ;Fk [kktxh xro.kdnkjkP;k lgHkkxku nljk foekurG mHkkj.;kP;k iLrkokl ty 2007 e/; rRor% etjh fnyh vkg- rlp egkjk"V 'kkluku n[khy uoh ecb ;Fk iLrkfor uoh ecb vkrjjk"Vh; foekurG idYikl ekU;rk nÅu lnj idYikP;k veyctko.khlkBh flMdkph ukMy ,tUlh Eg.ku ue.kd dyh vkg-

1-1 idYi iord %&

flMdk jkT; 'kklukP;k i.k ekydhph diuh vlu rh diuh dk;nk]1956 vrxr ukn.khdr vkg- egkjk"V 'kkluku] egkjk"V iknf'kd o uxjfu;ktu dk;nk]1966 e/khy rjrnhl vul:u flMdkph uoh ecb fodklklkBh uohu 'kgj fodkl ikf/kdj.k Eg.ku ue.kd dyh vkg- uohu 'kgj] uoh ecb fodklklkBh ,d.k 344 pkjl fdykfeVj {k= vf/klphr dj.;kr vky vkg- uoh ecb vf'k;krhy lokr ekB lfu;kftr o fodlhr 'kgj vlu 'kgjkpk fodkl 2 n'ky{k ykdl[;k o 0-8 n'ky{k jktxkjkP;k n"Vhu dj.;kr ;r vkg- uoh ecb gGgG Lor= egkuxj Eg.ku mn;kl ;r vlu uoh ecbph l/;kph ykdl[;k 1-5 n'ky{k brdh vlu toG toG 0-5 n'ky{k jktxkj ;Fk miyC/k vkgr- flMdk idYi iord

vlY;ku idYikp fu;ktu] vkj[ku b- ckch rlp vko';d lo et&;k feGfo.;klkBh i;Ru'khy vkg- vko';d et&;k iklr >kY;kurj t.k d:u idYi mHkkj.khlkBh [kktxh xro.kdnkjkP;k fuoMhlkBh fufonk ifd;k vkjHk djrk ;by- iLrkfor uoh ecb vkrjjk"Vh; foekurG idYikP;k mHkkj.khlkBh flMdk@Hkkjrh; foekurG ikf/kdj.k o [kktxh xro.kdnkjkP;k lgHkkxku fo'k"k mí'k diuh LFkkfir dj.;kr ;by-

1-2 gokb okgrd {k=kph :ij"kk %&

lu 2007&08 e/; ukn.;kr vkyY;k ,d.k vkrn'kh; ioklh okgrdhidh 60% i{kk vf/kd ioklh n'kkrhy 4 ie[k egkuxjke/ku vkgr- lnj egkuxj ecb] fnYyh] pUub o cxykj vlu ecb foekurG 23% iok';kph xjt Hkkxor vkg- R;k [kkyk[kky fnYyh 21%] pUub 9%] cxykj 8-7% iok'kkuk lok nr vkgr- g lo foekurG okf"kd ngk n'ky{kki{kk vf/kd iok';kuk lok ijforkr- lkrkd>]ecb gk foekurG n'kkrhy lokr tkLr dk;jr foekurG vlu ,d.k 23% ioklh okgrd] 31% ekyokgrd o 18% gokb mìk.k lnj foekurGko:u gkrkr- v|;kor vkdMokjhulkj lu 2001&08 njE;ku ecb foekurGkojhy vkrjjk"Vh; okgrdhr 47-65 y{k iklu 81-22 y{k brdh ok< >kyh vkg- rlp vkrn'kh; okgrdhr n[khy 65-27 y{k r 153-20 y{k v'kh ok< >kyh vkg- Eg.ktp vkrjjk"Vh; okgrdhrhy ok< ljkljh 8-78% njku rj vkrn'kh; okgrdhrhy ok< ljkljh 16-84% njku >kyh vkg- rlp lu 2001&08 njE;ku ecb foekurGko:u gokb ekyokgrdhr 293 y{k Vu r 530 y{k Vu v'kh ok< >kyh vlu ljkljh ok<hpk nj 10-11% brdk ;rk-

ecb foekurGkph ioklh o ekyokgrdhph {kerk vkrk vijh iMr vkg- o lnj ckc mPpre okgrdhP;k rklkr@dkGkr id"kku tk.kor- ecb foekurGkph {kerk ok<fo.;klkBh l/;k l: vlyyh dke rlp vk/kfudhdj.kkurjgh lnj foekurG 40 n'ky{k ioklh irho"kh brd ioklh gkrkG 'kdy- o lnj ioklhl[;k lu 2012&13 e/; vi{khr vkg- ojhy ckch y{kkr ?kÅu rlp ecb foekurG {k=kr tkxph miyC/krk ulY;ku o brj vMp.kh y{kkr ?kÅu ecb egkuxj in'kkr ecb toG nljk foekurG mHkkj.;kph xjt vkg-

1-3 /kkj.k] fo/kh o i'kkldh; :ij"kk %&

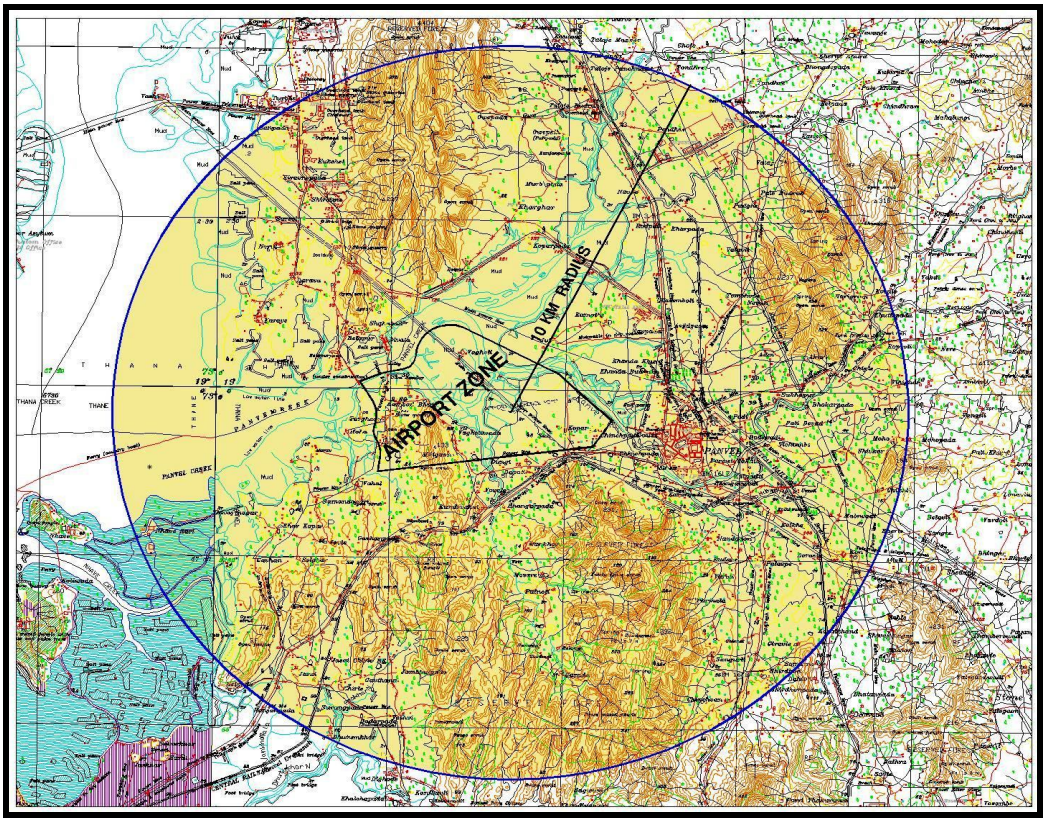
uoh ecb vkrjjk"Vh; foekurG idYi fnukd 14 llVcj]2006 jkth idkf'kr] i;koj.kkojhy iHkko iMrkG.kh] vf/klpuk]2006 o i;koj.k ¼lj{kk½ dk;nk]1986 vUo; l/kkfjr rlp fdukjiÍh fu;ked {k= vf/kfu;e]1991 15 e]2000 e/; l/kkfjr e/kh y rjrnhl vul:u iox & v ¼ckc & 7 v½ ulkj vulfpr vkg-

flMdku iLrkfor foekurG idYikpk i;koj.kkoj gk.kk&;k ifj.kkekpk ldy vH;kl dj.;klkBh vk;-vk;-Vh-]ecb ph ue.kd dyh vlu lnj vH;kl i;koj.k ou [kkR;kp o egkjk"V jkT; in"k.k fu;=.k eMG ;kP;k ekxn'kd lphrhy rjrnhl vul:u dj.;kr vkyk vkg-

1-4 **idYikph lf{kIr ekfgrh %&**

iLrkfor idYikp {k= egkjk"Vkrhy jk;xM ftYg;ke/kh y iuoy rkyD;kr ;r- o r iuoy 'kgjkP;k if'pel vlu uoh ecb o ecb egkuxj in'kkP;k Hkkxkfyd e/;koj fLFkr vkg- foekurG lnHk fcn ¼,vjikV jQjUl ikbV½ p v{kk'k 18° 59'33" o j[kk'k 73° 04'18" vkg- [kkyh fnyY;k rDR;kr (1.14) foekurG lnHk fcn ikslu 10 fd-eh- f=T;P;k orGkr ;.kk&;k vH;kl{k=kckcr (Fig 1) ekfgrh fnyh vkg-

vH;kl {k=


10 KM RADIUS
AIRPORT ZONE
PANVEL
PANVEL CREEK
THANE
THANA CREEK

rDrk & 1-14

foekurG vH;kl {k= ¼10 fd-eh- f=T;k½ ckcr Hkkxkfyd o i;koj.kkIc/kh ekfgrh &

v-d-	ckc	ri'khy
1	LFkG	iuoy rkydkjk;xM ftYgk]egkjk"V jkT;
2	v{kk'k	18° 59'33"
3	j[kk'k	73° 04'18"
4	lolk/kkj.k ikrGh	fdukjiÍh – RL 1.5 m, fdukjiÍh yxrp enku – RL 3 m, VdM;k & – RL 82 m,
5	Hkkjrh; lo{k.k foHkkxkp ikrGh o LFkGo.ku n.kkj 'khV d-	47-A/16, A/13, E/4, F/1
6	LFkGo.ku	Okk;0;dM mrkj
7	enpk idkj	Ekjhu Dy] e:e] [kMd
8	okrkoj.k	rkieku deky 36°c fdeku 17°c itU;eku & 2000 eh-eh- r 2500 eh-eh- goph fn'kk & ikolkG;kr u_R;dMu vkf.k brjoGh b'kkU;dMu vknrk & 61 r 86%
9	idYik[kkyhy tfeuhph l|fLFkrh	flMdk o 'kkIukP;k ekydhph (78%) o [kktxh tehu (22%) lkfnr d:u foekurG fodlhr dj.;kp iLrkfor djhr vkg-
10	toGpk egkekx	SH 54, NH 4 B, vkeekx ¼foekurG gíhl ykxu tkr vkgr½
11	toGp jYo LFkkud	e/;jYo@dkd.k jYooj 1-5 fd-eh- vrjkoj iuoy jYo LFkkud] miuxjh lolkBh [kkn'oj jYo LFkkud 1 fd-eh-
12	toGp foekurG	ecb lkrkd> iLrkfor foekurGkP;k mRrjl 35 fd-eh- vrjkoj
13	toGp ik.koB	iuoy [kkMh o xk<h unh] rGktk unh vkf.k myo unh g;k lo foekurG {k=kru tkr vkgr-
14	VdM;k	foekurG {k=kr myo VdMh RL – 82 Mts.
15	ijkru egRokp fBdk.k	if'pel 13 fd-eh- oj ,fyQVk@?kkjkijh y.kh
16	Hkdi {k=	{k= & III IS: 1893 (Part - I) 2002.

1-5 **lnfHk; eí ¼&**

flMdk egkeMGku fnukd 16-6-2009 p i= d-flMdk@Vh vM lh@,lhVhb@,eMh 2009@567 p lkcr ii=&1 o 'kD;k'kD;rk iMrkG.kh vgoky dnh; i;koj.k o ou e=ky;kr iLrkfor foekurG idYikl i;koj.k etjh feGfo.;klkBh lknj dyk gkrk- rnurj fdukjiÍhfu;ked {k=] ik;kHkkr lfo/kk

vkf.k brj idYi ;klkBhP;k rK ijh{kd lferhu frp 20&22 ty]2009 njE;ku >kyY;k 78 0;k cBdhr idYikp i;koj.kkojhy ifj.kkekpkh iMrkG.kh dj.;klkBh djko;kP;k vH;klkp lnHk eí i;koj.kkojhy ifj.kke iMrkG.kh vf/klpuk]2006 vUo; fuf'pr dj.;klkBh iLrko fopkjkr ?kryk gkrk- R;kulkj dnh; i;koj.k o ou e=ky;ku R;kp fnukd 4 vkxLV] 2009 p i= d-F.No.10-53/2009-IA.III }kj lnj cBdhr fuf'pr dyy idYikP;k ifj.kkekpk vH;kl dj.;klkBh lnfHk; eí dGfoy- rnurj rK ijh{kd lferhu fnukd 23 fMlcj]2009 jkth idYi{k=kl HkV fnyh o fnukd 8 Qcokjh]2010 jkthp i= d- F.No.10-53/2009-IA.III }kj idYikph i;koj.kkojhy gk.kk&;k ifj.kkekph iMrkG.kh dj.;klkBh vfrfjDr lnfHk; eí dGfoy-

dnh; i;koj.k o ou e=ky;ku vfre dyY;k lnfHk; e|kl vul:u i;koj.kkojhy ifj.kkekph iMrkG.kh vgoky ¼elnk½ tuluko.khlkBh r;kj dj.;kr vkyk- fnukd 5-5-2010 jkth idYi {k=kyxr vlyY;k vur ikMjx Hkkbj fo|ky; o dfu"B egkfo|ky;]ikjxko&nkikyh]rk-iuoy]ft-jk;xM ;Fk egkjk"V in"k.k fu;=.k eMGku tu luko.kh vk;kftr dyh gkrh- lnj tuluko.khp bfroRr ikIr >kY;kurj lnj i;koj.kkojhy ifj.kkekpk iMrkG.kh vgoky r;kj dj.;kr vkyk vlu dnh; i;koj.k o ou e=ky;kPkh uoh ecb vkrjjk"Vh; foekrG idYikl i;koj.klc/kh etjh feGfo.;klkBh lknj dj.;kr ;r vkg-

2- i;k;kckcr foopu %&

[kkyhy ckch fopkjkr ?kÅu tl & ifjljkr vlyY;k VdM;k] foekukP;k nG.koG.kkl vko';d vlyyk vMFkGk fojghr ekx] rkf=d o dk;i.kkyhl l;kX;] LFkkfud ifjljkrhy turl fdeku =kl] idYiklkBh tfeuhph miyC/krk] nhMrklkr foekurGkoj ikgkp.;klkBh vko';d ik;kHkkr o lkekftd lfo/kk b-ckchpk fopkj d:u i;k;kckcr vH;kl djrkuk ;kn"Vhu l;kX; v'kk jk;xM ftYg;krhy jol&ekMok o uoh ecb ;kP;kijrk flehr dj.;kr vkyk dkj.k ojhy ckchph irrk dj.kkj l;kX; idYi{k= ecb egkuxj in'kkr brj= miyC/k ukgh- i;k;h idYi{k=kpk vH;kl djrkuk R;kph 'kDrh] detkjh] l/kh o /kkdk (SWOT ANNYLISIS) rlp lond foopu (Sensitivity Analysis) dj.;kr vky-

lnj foopukurj vl fnlu vky dh] uoh ecb idYi{k= i;koj.kkPkk lerky jk[k.;kP;k n"Vhu jol&ekMok idYi{k=ki{kk vf/kd pkxy vkg- o Eg.kup uoh ecb ;Fkhy iLrkfor idYi{k= gk mRre i;k; vlu lnj {k= rkf=dn"V;k i;koj.kkP;kn"Vhu rlp vkfFkdn"V;k vf/kd lyHk vlY;ku nl&;k foekurGkP;k fodklklkBh l;kX; vkg-

3- idYikph ekfgrh %&

iLrkfor uoh ecb vkrjjk"Vh; foekurG idYikp {k= iuoy toG vlu jk"Vh; egkekx 4 B o vkeekx ;kp njE;ku jk;xM ftYg;krhy iuoy rkyD;kr ;r o uoh ecb o ecb egkuxj in'kkP;k Hkkxkfyd e/;koj fLFkr vkg- foekurG lnHk fcn ¼,vjikV jQjUl ikbV½ p v{kk{k 18° 59'.33" o j[kk'k 73° 0.4'.18" vkg- iLrkfor foekurG idYi{k= ecbrhy l/;k vfLrRokr vlyY;k lkrkd> foekurGkiklu vnkt 35 fd-eh- nj vkg-

3-1 idYi{k=kph nG.koG.k ;kX;rk %&

iLrkfor foekurG {k=kP;k iol l/;k vfLrRokr vlyyk pkinjh jk"Vh; egkekx 4 B, idYi {k=kP;k nf{k.klhel jkT; egkekx d-54 o if'pel pkinjh vkeekx vkg- l/;k vfLrRokr vlyyh eku[kn&cykij ioklh jYo ykbu idYikP;k b'kkU; fn'kl vlu R;kojhy [kkn'oj miuxjh; jYo LFkkud idYi {k=k iklu lokr toG Eg.kt 1 fd-eh- vrjkoj vkg- e/;@dkd.k jYo ykbu idYi{k=kP;k toGu tkr o R;kojhy iuoy jYo LFkkud idYi{k=kiklu vnkt 1-5 fd-eh- vrjkoj vkg- ojhy foopuko:u y{kkr ;by dh] idYi{k= jLr] egkekx o jYo ykbuyk tkMyy vkg o R;keG idYi{k=kl vko';d vl.kkjh nG.koG.k ;kX;rk mRre vkg-

3-2 idYi{k= %&

idYiklkBh fuf'pr dyY;k tfeuhp ,d.k {k=QG 2054 gDVj brd vlu R;kidh 1615 gDVj tehu foekurG {k=klkBh o mojhr tehu idYiklkBh vko';d ik;kHkkr lfo/kk] ioklh jYo ykbu] jLr brj lfo/kk rlp u|kp iokg oGfo.;klkBh mi;kxkr vk.kyh tkby-

3-3 idYik vrxr ckch %&

iLrkfor foekurG rlp R;k Hkkorkyp;k {k=kpk fodkl ;ke/; foekurGkpk VI;kVI;ku fodkl] xk<h unh o myo unhp iokg cny.k] oGfo.k] vfrmPp nkckP;k fo|r okfgU;kp LFkkukrj.k] idYi{k=kr ;.kk&;k idYick/khr xkoBk.kkp iuolu o iuLFkkiu rlp foekurG {k=kIkBh vko';d lk;hlfo/kkph dke ;kpk leko'k vkg-

3-4 idYi veyctko.khpk <kpk %&

dn 'kkluku inku dyY;k rRor% etjhl vul:u iLrkfor foekurG idYi [kktxh xro.kdnkjkP;k lgHkkxku jkcfo.;kr ;.kkj vkg o R;kIkBh fo'k"k mí'k diuhph LFkkiuk diuh dk;nk 1956 vrxr [kktxh diuh Eg.ku dj.;kr ;by-lnj diuhr flMdk o Hkkjrh; foekurG ikf/kdj.k ;kp feGu 26% HkkxHkkMoy vly o mojhr HkkMoy [kktxh xro.kdnkjkp vly- [kktxh xro.kdnkjkph fuoM fufonk ifd;}kj dyh tkby- fo'k"k mí'k diuh idYi mHkkj.khIkBh vko';d lo ckchph irrk djy rlp foekurG pkyfo.k rlp n:Lrh o n[kHkkyhph dke] 'kkluku fnyY;k fo'k"k gDd dkyko/khr djy o dkyko/kh liY;kurj idYi 'kkIukdM gLrkrjhr djy-

3-5 gokb okgrdhpk vnkt %&

uoh ecb vkrjjk"Vh; foekurGko:u i< uen dY;kiek.k iokIh okgrd vnkthr vkg- lu 2013&14 njE;ku 10-6 n'ky{k iokIh irho"k] lu 2017&18 ikIu 20-82 n'ky{k iokIh irho"k] lu 2022&23 ikIu 39-81 n'ky{k iokIh irho"k] lu 2027&28 e/; 59-84 n'ky{k iokIh irho"k rj 'koVP;k VIl;kr lu 2031&32 e/; 61-74 n'ky{k iokIh irho"k-

vnkftr iokIhI[;k fopkjkr ?kÅu uoh ecb vkrjjk"Vh; foekurGkp fu;ktu o ldYifp= 60 n'ky{k iokIh irho"k gkrkG.;kP;k n"Vhu r;kj dj.;kr vky vkg- foekurGkpk fodkl 4 VIl;kr dj.;kp iLrkfor vlu l:okrhl lu 2013&14 e/; 10 n'ky{k iokIh irho"k] lu 2017&18 e/; 25 n'ky{k iokIh irho"k] lu 2022&23 45 e/; n'ky{k iokIh irho"k o 'koVP;k VIl;kr lu 2030&31 e/; 60 n'ky{k iokIh irho"k iek.k iokIh I[;k fopkjkr ?kÅu vko';d lk;hlfo/kk fuek.k dY;k tkrhy- rlp gokb ekyokgrdhPkh

lfo/kk VI;kVI;ku fuek.k dj.;kr ;by- iFker% lu 2013&14 e/; 0-263 n'ky{k Vu] lu 2017&18 e/; 0-49 n'ky{k Vu] lu 2022&23 e/; 0-94 n'ky{k Vu vkf.k vfre VII;kr 1-59 n'ky{k Vu iek.k gokb ekyokgrdhlkBh lk;hlfo/kk fuek.k dY;k tkrhy-

gokb okgrdh'kh lc/khr lo lk;hlfo/kk foekurG{k=kr ,d.k 1615 gDVj {k=kidh 1200 gDVj {k=kr fuek.k dj.;kr ;rhy- mojhr 415 gDVj tehu gokb okgrdh'kh lc/khr ulyY;k ijr foekurGk'kh fuxMhr brj lk;hlfo/kk fuek.k dj.;klkBh okij.;kp iLrkfor vkg- lnj {k=kr e[;r% gkVyl] jLVgkÅll] VkU>hV ykt l] xknke] cdk] 0;kikjh lfo/kk] lHkkxg] in'ku dn] dje.kd dn b-pk leko'k vly-

3-6 ik.kh ijoB;kph ekx.kh %&

foekurG {k=kl l:okrhP;k VII;kr 9 n'ky{k fyVj irhfnu ik.kh ijoB;kph vko';drk vnkftr vkg- lnj ekx.kh nl&;k VII;kr 18 n'ky{k fyVj irh fnu brdh ok<y rj frl&;k vkf.k pkF;k VII;kr vude 30 n'ky{k fyVj irh fnu o 39 n'ky{k fyVj irh fnu brdh vi{khr vkg- lnj ekx.khph irrk flMdk egkeMG o uoh ecb egkuxj ikfydk ;kP;k tyL=krkru o idYi{k=kP;k toGp vlyY;k tyokfgU;kP;k tkG;kru dj.;kr ;by-

3-7 fo|r ijoB;kph ekx.kh %&

foekurG idYi{k=klkBh VIIkk 1 e/; 30 MVA fo|r ijoB;kph xjt ykxy- lnj xjt VIIkk 2 e/; 70 MVA, VIIkk 3 e/; 150 MVA o vfre VII;kr 190 MVA fo|r ijoB;kph xjt vnkftr vkg- lnj fotijoB;kph xjt jkT; 'kklukP;k fo|r forj.k diuhP;k forj.k dnk}kj i.k dyh tkby- mijkDr ckch 0;frfjDr fo|r ijoBk [kMhr >kY;kl fo|r ijoBk dj.;klkBh 5 fM>y tujVj] 500 K.V. {kerp LFkkfir dy tkrhy o xjtulkj {kerph ok< dj.;kr ;by-

3-8 eyfu%lkj.k ifd;k dn %&

gokb okgrdh'kh lc/khr idYi{k= o R;kyxrp lnj {k=kl ijd {k=kru 38 n'ky{k fyVj irhfnu lkMik.kh fuek.k gkby o R;koj ifd;lkBh SBR r=Kkukoj vk/kkfjr eyfu%lkj.k dn dk;kfUor dj.;kr ;by- gokb okgrdh'kh lc/khr

idYi{k=kr 15 n'ky{k fyVj irhfnu lkMik.;koj ifd;k dj.;klkBh vko';d ;=lkexh eyfu%lkj.k ifd;k dnkr LFkkfir dj.;kr ;by o mojhr {k=klkBh 30 n'ky{k fyVj irhfnu {kerp dn dk;kfUor dj.;kr ;by- lnj dnkru ckgj iM.kkj ifd;k dyy ik.;kpk iuokij ¶y'khx] ok'khx o fgjoGhyk ik.kh n.;klkBh dj.;kp iLrkfor vkg-

3-9 ?kudpjk %&

idYikP;k l:okrhP;k VII;kr vnkt 10 Vu irh fnu ?kudpjk fuek.k gkby o vfre VII;kr vnkt 40 Vu irh fnu ?kudpjk fuek.k gkby- lnj ?kudpjk flMdku pkG@rGktk ;Fk fodlhr dyY;k ?kudpjk ifd;k dnkr ifd;lkBh ikBfo.;kr ;by- lnj ifd;k dnkr tfod fo?kVu u gkÅ 'kdj.kkjk dpjk R;klkBh uxjikfydu mHkkjyY;k ifd;k dnkr ikBfo.;kr ;by-

3-10 idYikpk vnkftr [kp %&

iLrkfor foekurG idYikrxr fodlhr djko;kP;k gokb okgrdhlc/khr {k= o foekurGkl vko';d ijd {k= ;kp fodklklkBh ,d.k :-9625 dkVh [kp vnkthr vkg- lnj [kp Vl;kVl;ku djko;kp iLrkfor vkg- iR;d Vl;ke/; vnkthr [kp i<hy iek.k & Vlik 1&:-4952 dkVh] Vlik 2 & :-2159 dkVh] Vlik 3 & :-1878 dkVh] vfre Vlik & :-366 dkVh

3-11 idYi veyctko.kh dk;de %&

iLrkfor foekurG idYi mHkkj.khp Vlik 1 e/khy dke vkDVkcj 2010 e/; l:gkÅu lu 2013 v[kjhl i.k dj.;kp iLrkfor vkg- rnurj Vlik 2 p dke lu 2013&17 njE;ku i.k dj.;kp] Vlik 3 p dke lu 2017 & 21 njE;ku rj vfre VII;krhy dke lu 2022 & 26 njE;ku i.k dj.;kp ;kfty vkg-

3-12 ck/kdke lkfgR; %&

idYi mHkkj.khP;k l:okrhP;k VII;kr idYi{k=kr vko';d Hkjko rlp [kkndke d:u likVhdj.k dj.k xjtp vkg- foekurG idYikP;k mHkkj.khr vnkt 3-5 n'ky{k ?kuehVj [kMh] 1-72 n'ky{k Vu fleV] 1-72 n'ky{k ?kuehVj jrh] 20 gtkj Vu yk[kM] 80 gtkj Vu Mkcj] 16-15 n'ky{k ?kuehVj ekrh@e:e o

33-85 n'ky{k ?kuehVj nxM ykxy- lo vko';d ck/kdke lkfgR; idYi{k=kr fdok idYi{k=k toGp ¼15 fd-eh-½ miyC/k vkg-

3-13 ck/kdkekn jE;kup i;koj.k %&

idYikP;k ck/kdke VIl;kr ekB;k iek.kkoj LFkkfud rlp LFkykrjhr >kyy dkexkjkph xjt vly- lnj dkexkj l[;k l:okrhl ljkljh 500 irh fnu rj ck/kdkekph xrh ok<Y;kurj vnkt 3000 dkexkj irh fnu brdh vly- mijkDr dkexkj o brj depkjh ;kplkBh idYi{k=kr 2 r 3 fBdk.kh fuoklh olkgr mHkkj.;kr ;rhy- lnj fBdk.kh fi.;kP;k ik.;kph lk;] eyfuklkj.k b- ckch ijfoY;k tkrhy- R;k 0;frjDr dkexkjkuk b/ku xjtulkj ijfo.;kr ;by- rlp dkexkjkP;k vkjkX;klkBh vko';d lfo/kk ijfo.;kr ;rhy- iLrkfor rkRijR;k Lo:ikP;k olkgrhr lkotfud vkjkX; jk[k.;klkBh vko';d rjrnh dj.;kr ;rhy- t.k d:u dk.kR;kgh idkjph egkekjh iknHkko gkÅ u;-fu;feri.k dkexkjkP;k vkjkX;kph rikl.kh dj.;klkBh rlp ikFkfed mipkjklkBh idYi{k=kr o|dh; dn mHkkj.;kr ;by-

4- i;koj.kkph ekfgrh %&

foekurG lnHkfcn iklu 10 fd-eh- f=T;P;k orGkr ;.kk&;k vH;kl {k=krhy i;koj.kkph l|fLFkrh tk.k.;klkBh] ldy vH;kl dk;de gkrh ?k.;kr vkyk o R;klkBh vko';d ikFkfed rlp brj ekfgrh tek dj.;kr vkyh- lnj vH;kl dk;dek vrxr gokeku cny'kkL=] Hkidrho.ku] tyfuklkj.k] HkxHk'kkL=] tfeu o enph x.koRrk] ifjljkrhy ik.kh o goph x.koRrk] gokeku] /ouh] bdkykth] okgrd o ifjogu] ou] idYi{k=krhy ykdkph lkekftd & foRrh; l|fLFkrh] idYi{k=kr ;.kk&;k tfeuhph l|fLFkrh o idYi{k=krhy olkgrh] tfeuhpk okij] ,frgkfldn"V;k egRokph fBdk.k] fdukjiêh fu;ked {k= b- ckchpk vH;kl dj.;kr vkyk- iLrkfor foekurGkp {k= jk;xM ftYg;krhy iuoy rkyD;kr vkg- rj 10 fd-eh- f=T;rhy vH;kl{k=kr Bk.k o jk;xM ftYg;krhy HkHkkxkpk leko'k vkg-

4-1 gokekucny (gk;MkeVkykth) %&

vH;kl {k= m".kdfVc/kkr vlu lkxjh gokeku vkg o Eg.ku o"kHkj mPp lki{k vknrk vlr- lolk/kkj.ki.k idYi{k=kp gokeku o"kHkj m".k o neV vlr- deky rkieku 28°c & 36°c rj fdeku rkieku 17°c & 27°c njE;ku vlr- ljkljh lki{k vknrk o"kkrhy 8 efgU;ki{kk vf/kd dkG 50% i{kk vf/kd vlr- vH;kl{k= vf/kd ikolkP;k in'kkr ;r o o"kkr ljkljh 2000 mm r 2500 mm ikÅl iMrk-

4-2 Hkidrh o.ku %&

vH;kl{k=kr vkcM/kkcM@mpl[ky VdM;k o fduk&;kyxrph enku vkgr- vH;kl{k=krhy /kjrhP;k i"BHkkxkpk o ik.kFkG tehuhpk vH;kl djrkuk vl fnlu ;r dh] vH;kld{k=kr fduk&;kyxrph enku] m?kM;k ckMD;k rlp vkdrhc/k VdM;k vkf.k iBkjkpk leko'k vkg- idYi{k= lolk/kkj.kr% if'pedM mrkjkp vkg o lnj mrkj 1&3% brdk vkg rj vH;kld{krhy mrkj dkgh fBdk.kh 35 % i;r vkg-

4-3 HkxHkkph tM.k?kM.k %&

vH;kl {k=kph tM.k?kM.k Tokyke[khru fu?kkyY;k xMn jxkP;k yk0gkjlku >kyh vlu R;ke/; ekB;k iek.kkoj ?kGh@pj fnlu ;rkr- lnj clkYVP;k cukoVhl n[[kupk dkjnxM Eg.ku lck/ky tkr- vH;kl{k=kP;k iol lnj clkYVP;k Fkjkph tkMh@mph toGtoG 760 feVj brdh vk<Gr- o lnj dBh.k o ?ku clkYV cukoVhr lolk/kkj.ki.k mHk] frjd] ykydkdrh] [kkckdrh] tkM vk<Gu ;rkr- o R;kph :nh 2&4 feVj brdh vk<Gr- idYi{k=kr iuoy ¶yD>jph ukn >kyh vkg- ijr vudkuh lnj iuoy ;Fkhy vkdrhc/kkl ¶yD>j Eg.ku eku.;kckcr 'kdk mifLFkr dY;k vkgr-

4-4 tyfu%lkj.k %&

vH;kl {k=krhy tfeuhpk ulfxd mrkj u_R;l ¼nf{k.k&if'pe½ vlu ik.;kpk fupjk R;k fn'kl gkrk- vH;kl {k=kr mRrjdMu rGktk o dklkMh] iodMu dkGnh o xk<h rj nf{k.kdMu myo ;k 5 u|k okgrkr- lnj 5 u|kP;k lxekru iuoy [kkMhph fuferh >kyh vlu g ik.kh i< Bk.k [kkMhl feGr-

4-5 Hkeh okrkoj.k %&

vH;kl {k=krhy enP;k x.koRrph iMrkG.kh dj.;kIkBh vH;kl {k=kr 10 dn fuoM.;kr vkyh gkrh- o rFku tek dyY;k enp ueu x.koRrP;k iMRkkG.khIkBh [kkyhy ckchIkBh rikl.;kr vky- lnj ckch pH, fo|r ogu {kerk dVku fofue;] ikr] enrhy lkMh;e] dyf'k;e] eXuf'k;e] ikVf'k;ep iek.k] lkfM;e vMIkl'ku x.kkRrj] f>jin.;kph {kerk] ik.kh /kkj.k dj.;kph {kerk o lfPNnrk] vH;kl {k=kr vk<GyY;k enph ikrkiek.k irokjh i< uen dY;kiek.k xkGkph ekrh] jrhfeJhr xkGkph ekrh] fpd.k ekrh] jrhfeJhr fpd.k ekrh b- enp 3 eklekr Eg.kt ikolkG;kioh] ikolkG;kr o ikolkG;kurj tek dyY;k ueU;kph oj uen ckchIkBh iMrkG.kh dY;koj ikIr >kyy fu"d"k [kkyhy rDR;kr uen dy vkgr-

ckc	ikolkG;kurj		ikolkG;kioh		ikolkG;kr	
	deky	fdeku	deky	fdeku	deky	fdeku
pH	7.4	6.8	7.4	6.5	6.3	5.1
fo|r ogu {kerk	1.63	0.65	1.67	0.35	0.06	0.02
dVku fouhe; {kerk	6.41	0.70	6.41	0.70	2.38	1.56
lkMh;e	836	18	266	32	203	9.8
dyf'k;e	257	87	174	37	110	27
eXuf'k;e	154	21	90	26	110	41.2
ikVf'k;e	87	5	109	9	62.3	6.6
lkfM;e vMIktu x.kkRrj	24.5	2.1	27.5	3.5	20.5	1.7
f>ji n.;kph {kerk	$2.8 X10^{-4}$	$0.8 X10^{-4}$	$1.9 X10^{-4}$	$1.1 X10^{-4}$	$3.17 X10^{-5}$	$1.42 X10^{-4}$
ik.kh /kkj.k dj.;kph {kerk	70	40	66.6	28.4	54.4	18
lfPNnrk	54	33	56	32	54	36

okf?koyh o okf?koyhokMk ;Fkhy enk vkEy;Dr vlu brj vH;kl {k=krhy iMrkG.kh dnkoj tek dyyh enk {kkj;Dr ulY;kp vk<Gy-

idYikph rkf=d rlp vkfFkd 'kD;k'kD;rk iMrkG.kh djrkuk rlp lfoLrj idYi vgoky r;kj djrkuk enkvUo"k.k dj.;kr vky- lnj vUo"k.kkr vl

vk<Gu vky dh] l[ky Hkkxkr enp rhuFkj vk<Grkr- tl lenfdukjP;k fpd.k ekrhpk ,d feVj tkMhpk Fkj] tfeuhP;k[kkyh 2-75 r- 4-1 feVji;r e:e vkf.k lnj Fkj tkLrhr tkLr 13-5 feVj tkMhpk vlY;kp fnlu vky vkg o rnurj dBh.k nxM-

okf?koyh cVko:u tk.kk&;k mRrj juo [kkyh 2 feVj r 8 feVji;r jrh o xkGkP;k ekrhpk Fkj] rnurj 0-5 r 5 feVj tkMhpk e:e@>h> >kyY;k nxMkpk Fkj o R;ki< dBh.k nxMkpk Fkj tk tfeuhiklu 4-4 r 12 feVji;r fo/kukr vk<Gu vkyk vkg-

4-6 tyi;koj.k %&

vH;kl {k=krhy [kkMhP;k ik.;kph x.koRrph iMrkG.kh dj.;klkBh ,d.k 13 dn fuoM.;kr vkyh gkrh- rFku tek dyY;k ik.;kP;k ueU;kph Hkkfrd] jklk;fud tfod x.k/kekph pkp.kh dj.;kr vkyh-

xk<h unhrhy [kkMhP;k ik.;kp ikolkG;kurj] ikolkG;kioh o ikolkG;kr ?kryY;k ueU;kph pH eY; 7-2&7-5] 7-4&7-8 o 7-1&7-3 vk<Gy- myo unhrhy [kkMhP;k ik.;kp ikolkG;kurj] ikolkG;kioh o ikolkG;kr ?kryY;k ueU;kph pH eY; 7-5] 7-8 o 7-5 vk<Gy- iuoy [kkMhrhy ik.;kp ikolkG;kurj] ikolkG;kioh o ikolkG;kr ?kryY;k ueU;kph pH eY; 7-5] 7-8&8 o 7-6&7-4 vk<Gy- vH;kldkyko/khr Hkkfrd&jklk;fud fud"kkph dyY;k iMrkG.khr vl vk<Gu vky dh] tfod ik.kok;ph ekx.kh (BOD) ik"Vhd ?kVdkp eY; oxGrk brj lo ckchph eY; vi{khr ntk'kh feGrhtGrh vkgr- ,u,l,Q ik.kh x.koRrk fun'kkdkp fo'y"k.kkvrh vl fnlu vky dh] xk<h unhrhy ik.;kph x.koRrk ikolkG;kiohP;k rlp ikolkG;kr pkxyh o ikolkG;kurj mRre vlY;kp fnlu ;r- myo unh o iuoy [kkMhrhy ik.;kpk x.koRrk fun'kkd n[khy xk<h unhiek.kp vlY;kp fnlu vky vkg-

Hktykp Hkkfrd] jklk;fud o tfod fud"kkoj x.koRrk fo'y"k.k dj.;klkBh ,d.k 10 iMrkG.kh dnko:u Hktykp ueu tek dj.;kr vky-

Hktykp ik.;kp ikolkG;kurj] ikolkG;kioh o ikolkG;kr ?kryY;k ueU;kph pH eY; 7-15&8-29] 6-9&7-9 o 6-7& 7-7 vk<Gy- okf?koyh ;Fkhy ik.;kp pH eY; ½8-29½ brj fBdk.kki{kk vf/kd vlY;kp fnlu vky- lo dnkojhy Hkty

dnh; in"k.k fu;=.k eMGkP;k fud"kk'kh ryuk djrk fi.;kl ;kX; vlY;kp vk<Gu vky- lo Hkkfrd o jklk;fud fud"kkoj iMrkG.kh dyh vlrk Hktykpk ntk foghr ntkllkBh fu;r fud"keY;kP;k vkr vlY;kp vk<Gu vky- c&;kp dnkoj BOD eY; fud"kki{kk fdfpr tkLr vk<Gu vky- cg/kk lkMik.kh felGY;ku] er ik.kh] ouLirh dtY;ku fdok ulfxd tfod inkFk felGY;ku BOD eY; ok<y vlko- Hkty x.koRrk fun'kkd 75&91 njE;ku vkg- o ,u,l,Q tyx.koRrk fun'kkdkulkj 9 dnkojhy Hktykph x.koRrk pkxyh vlY;kp rj rj?kj ;Fkhy ik.;kph x.koRrk mRre vlY;kp fnlu ;r- Eg.ku idYi{k=krhy Hktykph x.koRrk pkxyh vkg vl ,u,l,Q tyx.koRrk fun'kkdko:u fnlu ;r-

4-7 ok; i;koj.k %&

ok;P;k x.koRrph iMrkG.kh dj.;kllkBh ok;in"kdkp ueu xkGk dj.;kllkBh 10 ok; x.koRrk iMrkG.kh dn fuoM.;kr vkyh gkrh o ok; x.koRrk i<hy fud"kkoj iMrkG.;kr vkyh- ,d.k /kyhd.k ¼VkVy lLiMM ikVhD;yV eVj & TSP½] 'olukokV tkÅ 'kdrhy vl /kyhd.k ¼jLihjcy iVhD;yV eVj & RSPM or **PM_{10}**½] uVkstuph vkDlkbM **(NO_x)**] lYQj Mk; vkDlkbM **(SO_2)** o vekfuvk **(NH_3)**] dkcu ekukDlkbM **(CO)** o gk;Mk dkcul (HC)

vH;kl{k=kr TSP, PM_{10}, NO_x, SO_2, NH_3, CO o HC ;kph ljkljh frork vude i<hy iek.k vk<Gu vkyh- 88&1184 µg/m3, 32-411 µg/m3, 9-1&32 µg/m3, 2.3 – 12.3 µg/m3, 17-37.6 µg/m3, 0.18 – 0.8 µg/m3, 1-2.54 µg/m3

vk|kfxd o lehJ {k=kr TSP ph deky frork vude 843 µg/m3, 1317 µg/m3, 746 µg/m3 o 245 µg/m3 vk<Gu vkyh rj fuoklh o xkeh.k {k=kr lnj frork ikolkG;kurj] ikolkG;kioh o ikolkG;k njE;ku vude 511 µg/m3, 756 µg/m3, 558 µg/m3 o 174 µg/m3

vk|kfxd o lehJ {k=kr TSP ph fdeku frork vude 289 µg/m3, 326 µg/m3, 106 µg/m3 o 31 µg/m3 vk<Gu vkyh rj fuoklh o xkeh.k {k=kr lnj frork ikolkG;kurj] fgokG;kr] ikolkG;kioh o ikolkG;k njE;ku vude 225 µg/m3, 363 µg/m3, 117 µg/m3 o 22 µg/m3

vH;kldkyko/khr ok;x.koRrk fun'kkd eY;kr cjkp cny vk<Gu vkyk-vk|kfxd o lehJ {k=kr ok;x.koRrk fun'kkdkp ljkljh eY; ikolkG;kurj] fgokG;kr] ikolkG;kioh o ikolkG;k njE;ku vude i<hy iek.k vk<Gu vkyh-0-37&0-83] 0-51&1-37] 0-24&0-81 o 0-09&0-21 fuoklh o xkeh.k {k=kr ok;x.koRrk fun'kkdkp ljkljh eY; ikolkG;kurj] fgokG;kr] ikolkG;kioh o ikolkG;k njE;ku vude i<hy iek.k vk<Gu vkyh- 0-68&1-4] 1-21&1-83] 0-71&1-18 o 0-2&034

4-8 gokeku %&

3 eklekr Eg.ktp ikolkG;kurj] fgokG;kr o ikolkG;kioh njE;ku gokekukph ukn dj.;klkBh uohu iuoy ;Fkhy flMdk dk;ky;kr dn mHkkj.;kr vky gkr o rFk okjk] ok&;kph fn'kk] rkieku] lki{k vknrk] ikÅl] e?kkPNknu o lk; fdj.kkRlkj ;kph nj rklkyk ukn dyh xyh- [kkyhy rDR;kr iR;d ckchp uknyYk ekfld ljkljh deky o fdeky eY; n'kfo.;kr vky vkg-

ckc	ikolkG;kurj			fgokG;kr			ikolkG;kioh		
	deky	fdeku	ljkljh	deky	fdeku	ljkljh	deky	fdeku	ljkljh
Wind Speed, m/s	9.2	0	0.2	6.6	0.0	0.06	8.6	0	0.7
Temperature, °C.	37.4	14.5	28.5	38.6	10.4	25.3	40.2	17.1	30.5
Relative Humidity, %	99.9	17.2	73.9	94.5	33	59.1	99.9	36.3	70.7
Rainfall, mm	1.0	0.5	0.1	0	0	0	0	0	0
Solar Rad., W/m^2	1026.7	0.0	204.2	863.7	0	177.9	1028.2	0	226.5
Cloud Cover, oktas	8	0	Fine*	8	0	Fine*	8	2	Over-cast

4-9 /ouhi;koj.k %&

vH;kl {k=kr /ouhP;k ikrGhph iMrkG.kh dj.;klkBh 12 dn fofo/k /ouh fuek.k dj.kkj L=kr o ijhljkph xg.k {kerk ;koj vk/kkjhr fuf'pr dyh gkrh- lnj dnkoj ikolkG;kurj] ikolkG;kioh o ikolkG;k njE;ku 24 rkl uknh ?k.;kr vkY;k- t.k d:u l/;kph /ouhikrGh fuf'pr dj.k 'kD; gkby-

vH;kl {k=kr ikolkG;kurjP;k njE;ku eklekr fofo/k dnkoj fnolk ¼ldkGh 6 r jk=h 9½ o jk=h ¼jk=h 9 r ldkGh 6½ L_{eq} eY;kP;k uknh vude i<hy iek.k & 48.7 dB (A) r 72.2 dB (A) o 46.4 dB (A) r 72.4 dB (A) rj ikolkG;kiohP;k eklekr lnj eY; fnolk o jk=h vude i<hy iek.k ukn.;kr vky 54-2 dB (A) r 74.3 dB

(A) 0 49.2 dB (A) r 74.9 dB (A). ikolkG;k njE;ku L_{eq} eY; fnolk o jk=h vude i<hy iek.k ukn.;kr vky 49-3 dB (A) r 78.8 dB (A) 0 46.0 dB (A) r 66.3 dB (A). ikolkG;kurj] ikolkG;kioh o ikolkG;k njE;ku ;k 3 eklekr vk|kfxd {k=kr ljkljh /ouhph ikrGh fnolk o jk=h vude i<hy iek.k & 34-8 dB (A), 36.8 dB (A), 35-1 dB (A) 0 35.0 dB (A), 35.7 dB (A) 0 33.9 dB (A) ikolkG;kurj] ikolkG;kioh o ikolkG;k njE;ku ;k 3 eklekr okf.kT; {k=kr ljkljh /ouhph ikrGh fnolk o jk=h vude i<hy iek.k& 44-4 dB (A), 43.5 dB (A), 45.9 dB (A) 0 43.3 dB (A), 44.7 dB (A) 0 42.4 dB (A).

ikolkG;kurj] ikolkG;kioh o ikolkG;k njE;ku ;k 3 eklekr fuoklh {k=kr ljkljh /ouhph ikrGh fnolk o jk=h vude i<hy iek.k& 43 dB (A), 42.5 dB (A), 45.4 dB (A) 0 42.4 dB (A), 40.3 dB (A) 0 40.9 dB (A).

ikolkG;kurj] ikolkG;kioh o ikolkG;k njE;ku ;k 3 eklekr lonu'khy {k=kr ljkljh /ouhph ikrGh fnolk o jk=h vude i<hy iek.k& 44-2 dB (A), 44.2 dB (A), 44.8 dB (A) 0 40.2 dB (A), 43 dB (A) 0 40.8 dB (A). ikolkG;kurj] ikolkG;kioh o ikolkG;k njE;ku ;k 3 eklekr ,df=r fopkjdjrk ljkljh /ouhph ikrGh fnolk o jk=h vude i<hy iek.k& 34-3 dB (A), 34.4 dB (A), 35 dB (A) 0 33.5 dB (A), 34.2 dB (A) 0 33.4 dB (A)

vk|kfxd] okf.kT;] fuoklh o lonu'khy {k=kr uknyyh ljkljh /ouhikrGh fofo{kh r e;knP;k vkr vkg- fofo/k dnkoj uknyY;k /ouh ikrGhp **LEQ** eY; vf/kd fnlr dkj.k LFkkfud okgu /ouh fuek.k dj.kkj ie[k L=kr vkgr o R;keG fuek.k >yyk /ouh iMrkG.kh dnkijrk e;kfnr vkg o iljr ukgh-

4.10 bdkykth %&

vH;kl{k=kph bdkykth tk.ku ?k.;klkBh 21 LV'ku fuoM.;kr vkyh gkrh- vH;kl {k=kr i{;kP;k ¼ik.ki{kh feGu½ 58 itkrh] tfeuhojhy ik.;kP;k 46 itkrh] ik.;krhy ik.;kP;k ¼tyt½ 23 itkrh o 198 idkjP;k ouLirh vH;klknjE;ku vk<GY;k o ukn.;kr vkY;k- vH;kl {k=kr 1797 gDVj {k=koj iljyyh vkB jk[kho ou vkf.k 1417-21 gDVj {k= 0;ki.kkjh 24 ljf{kr ou vkgr- ijr idYi{k=kr ,dgh ou ukgh- vH;kl {k=kr ik.kouLirhP;k 24 itkrh rj

cuFkkP;k 12 itkrh vk<Gu vkY;k- vH;kl {k=kr vk<GyY;k ik.kh] i{kh o ouLirh ;kidh ,dgh itkrh uke'k"k gk.;kP;k ekxkoj fdok nfeG vlyY;kidh ukgh-

4-11 okgrd o ifjogu %&

iLrkfor foekurG idYi{k=kdM tk.kk&;k jLR;kP;k tkG;kojhy l/;kph onGhph ekfgrh n¸;e L=krk}kj feGu frP;kr okf"kd ok< d:u lu 2030&31 lk;r vi{kh okgrdhpk vnkt dj.;kr vkyk vkg- o jLR;kph i;kIrrk] jLR;kph ogu {kerk o iLrkfor :nhdj.k y{kkr ?kÅu lu 2010&30 lkBh rikl.;kr vky vkg- lnj vH;kllkvrh vl y{kkr vky dh] jLR;kp tkG l;kX; vlu lu 2025 i;r R;kph lok & c ntkph o R;ki< frpk ntk deh gkÅu lok & d oxkr ekMy-egRokP;k pkdkrhy okgrdhpk n[khy vH;kl dj.;kr vkyk vlu fo'y"k.kkvrh vl y{kkr vky vkg dh] dGckyh tD'ku ;Fk okgrd ljGhr Bo.;kllkBh lu 2030&31 e/; xM liVjph vko';drk Hkkly-

4-12 tfeuhph l|fLFkrh o olkgrh %&

idYikllkBh ,d.k 2054 gDVj tfeuhph xjt vlu R;kidh 1615 gDVj tehu foekurG {k=kllkBh rj mojhr tehu idYikllkBh vko';d brj ik;kHkr lfo/kk tl u|k oGo.k] jLr] iy b- o brj lfo/kkllkBh okij.;kp iLrkfor vkg- ,d.k 2054 gDVj tfeuhidh 1154 gDVj tehu egkeMGkP;k rkC;kr vkg- rj 443 gDVj 'kkldh; tehu 'kklu flMdkdM ox djhr vkg vkf.k mojhr 457 gDVj [kktxh tehu vf/kxghr dj.;kr ;r vkg- lkr xkokrhy ngk ikM foekurG {k=kr ;r vlu R;kp iuolu ogkG] nkikyh o oM?kj ;Fk dj.;kp iLrkfor vkg- lnj ikM;ke/; 3113 ?kj vlu ykdl[;k 15]000 i{kk vf/kd vkg-

4-13 ykdl[;k o lkekftd&vkfFkd l|fLFkrh %&

lu 2001 P;k tux.kuulkj vH;kl {k=kph ,d.k ykdl[;k 5-68 y{k vlu R;kidh 4-8 y{k ykdl[;k 'kgjh Hkkxkr rj mojhr ukxfjd xkeh.k Hkkxkr jkgrkr-'kgjhHkkxkrhy ukxfjdkP;k lkekftd&vkfFkd l|fLFkrhpk vH;kl djrk i<hy ckch lekj ;rkr & 90% ykd fgn] R;kidh 70% ykd lolk/kkj.k tkrhp vkgr-

62% ykdkph ekrHkk"kk ejkBh vkg] dVckr ljkljh 3-8 ek.kl vkgr] lk{kjrp iek.k 98% vlu 74% ykd Lor¼P;k ekydhP;k ?kjkr jkgrkr- dVckp ljkljh ekfld mRiUu :-12]700@& vlu dke dj.kk&;k ykdkph l[;k 32% vkg- 10% ykdkdM Lor¼ph dkj vkg- njgtkj i:"kkekx 851 efgyk vl iek.k vkg- xkeh.kHkkxkP;k ykdl[;Pkk lkekftd&vkfFkd l|fLFkrhpk vH;kl djrk i<hy ckch lekj ;rkr & 98% ykd fgn] R;kidh 90% ykd brj ekxkloxh; tkrhp vkgr- 97% ykdkph ekrHkk"kk ejkBh vkg] dVckr ljkljh 5-74 ek.kl vkgr] lk{kjrp iek.k 86% vlu 50% ykd iDD;k ?kjkr jkgrkr- dVckp ljkljh ekfld mRiUu :-5]499@& vlu dke dj.kk&;k ykdkph l[;k 37% vkg- 10% ykdkdM Lor¼ph dkj vkg- 45% npkdh okgu] njgtkj i:"kkekx 924 efgyk vl iek.k vkg-

4-14 tehuhpk okij %&

vH;kl{k=krhy tfeuhpk l| okij tk.k.;kIkBh mixgk}kj ikIr >kyY;k ekfgrhp fo'y"k.k djrk vl fnlu ;r dh] ,d.k 31429 gDVj vH;kld {k=krhy tfeuhidh 20.64% tehu ukxjh olkgrhuh 0;kiyh vkg] 35-79% xkeh.k {k=kp 'kgjhdj.k gkr vkg] 19-82% {k=koj VdM;k vlu 2-75% {k= [kkjQVh[kkyh] 2% {k= [kk.kh] 3-82% {k= xkGtehu ¼eM¶yV½] 3-02% {k= vk|kfxd okijk[kkyh vkf.k 0-63% {k= 'krtehu ;kuh 0;kiy vkg-

idYi {k=krhy tfeuhP;k okijkpk vH;kl djrk vl fnlr dh] 38-47% [kyh ¼ukxjhdj.kkIkBh iLrkfor½] 26-77% {k= eM¶yV] 9-29% {k= [kkjQVh] 6-5% {k= 'krtehu] 3-9% {k= olkgr] 4-11% {k= [kk.kh] 2-85% {k= VdM;k vkf.k 8-83% {k= [kkMh o unh

4-15 bdkykftdy] ,frgkfld o lkLdfrdn"V;k egRokph fBdk.k %&

vH;kl {k=kP;k ckgj ijr foekurG lnHk fcn iklu 20 fd-eh- f=T;P;k orGkr bdkykftdy] ,frgkfld o lkLdfrdn"V;k i<hy 3 egRokph fBdk.k Eg.kt ?kkjkijh y.kh] dukGk i{kh vHk;kj.; vkf.k ekFkjku bdk lUlfV0g {k= vkgr- ?kkjkijh y.kh idYi{k=kiklu 13-5 fd-eh- vrjkoj vlu] rh foeku mìk.kkP;k ekxkr vkg- ijr lnj fBdk.kh foeku fdeku 700 ehVj mphoj vly-

R;kpiek.k dukGk i{kh vkHk;kj.; o ekFkjku bdk lulfV0g >ku o:u tk.kkj foeku fdeku 500&750 ehVj mphoj vly-

4-16 fdukjiêh fu;ked {k= %&

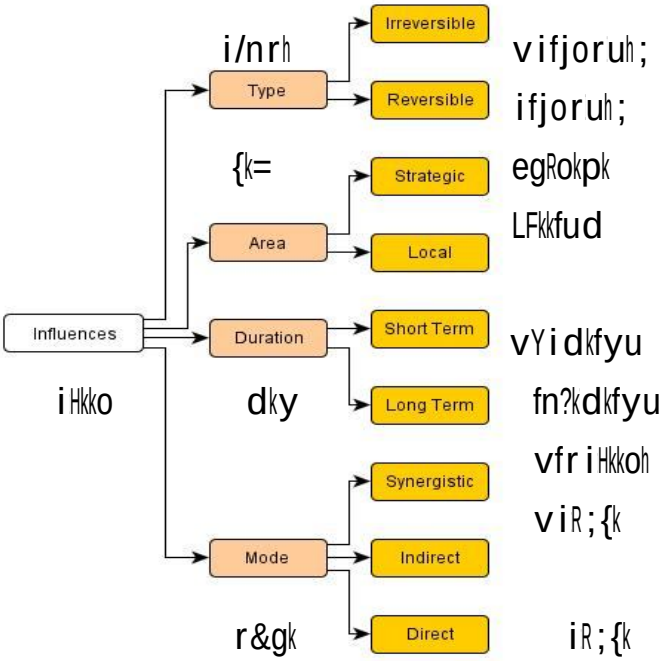
foekurG {k=kIkBh vko';d ,dl/k tehu miyC/k gk.;kIkBh xk<h unhpk ekx cny.;kp rlp myo unhpk iokg oGo.;kph xjt vkg- R;keG uoh ecbP;k etj fdukjiêh fu;ked {k= 0;oLFkkiu vkjk[kM;kr FkkM;k Qjcnykph vko';drk vkg- egkjk"V fdukjiêh {k= 0;oLFkkiu ikf/kdj.kku lnj Qjcnykl ekU;rk n.;kckcrpk iLrko etjhIkBh dnh; i;koj.k o ou [kkR;kdM f'Qkj'khlg ikBfoyk vkg-

5-0 i;koj.kkojhy iHkko o fuokj.k rjrnh %&

idYi veyctko.khP;k fofo/kLrjkoj l|i;koj.kkoj gkÅ 'kd.kk&;k foijhr ifj.kkekpk l[kky vH;kl d:u i;koj.kkoj gk.kk&;k ifj.kkekp fuokj.kkIkBh l;kX; i;k; lpfo.;kr vky vkgr- lnj vH;kIkBh idYikP;k i< uen VIl;kpk fopkj dj.;kr vkyk vkg- uoh ecb vkrjjk"Vh; foekurG idYikp LFkku] idYi vkjk[kMk] ck/kdke o foekurG dk;kfUor >kY;kurj i;koj.kkrhy fofo/k ?kVdkoj gk.kk&;k ifj.kkekph iMrkG.kh d:u ;kioh uen dY;kiek.k lnj ifj.kkekP;k fuokj.kkIkBh ;kX; i;k; vrHkr dj.;kr vky vkgr-

idYi mHkkj.khP;k fofo/kLrjkoj] VIl;kr gkrh ?k.;kr ;.kk&;k fofo/k dkeknjE;ku i;koj.kkojrh ifj.kke dj.kk&;k ckch fuf'pr dY;k vkgr- i;koj.kkojhy ifj.kkekp eY;ekiu idYikrxr jkcoko;kP;k ckchuk l;kX; Bjy v'kkfjrhu iujfpr fyvkikYM efVDlp vk/kkj dj.;kr vkyk vkg- lnj efVDl i;koj.kkrhy iR;d ckchoj@?kVdkoj gk.kk&;k vudy o ifrdy ifj.kkekph vi{khr frork n'kor- i;koj.kkojrh iHkko ikM 'kd.kk&;k ckchpk vnkt] oxokjh vkf.k xkfHk; ;kpk mi;kx foopuklkIkBh [kkyh n'kfo.;kr vkY;kiek.k dj.;kr vkyk vkg-

iR;d iHkkokIkBh 2&6 njE;ku x.k R;kP;k egRokulkj o xkfHk;@frorulkj ;kt.;kr vky vkgr- ?kVdkph okjokfjrk y{kkr ?kÅu R;kP;k iHkkokp oxhdj.k deh] e/;e] mPp vkf.k vfrmPp ;kiek.k dj.;kr vky vkg-



iHkkokp ,d.k egRo [kkyhy uen lehdj.kku 'kk/ky vkg-

iHkkokp ,d.k egRo ¾ ¼r&gk $ dky $ {k= $ idkj½ x okjokfjrk

mijkDr lehdj.kkpk okij d:u i;koj.kkP;k fofo/k ?kVdkoj gk.kk&;k ifj.kkekp oxokjhulkj ifj.kke tkLr] fopkj dj.k vko';d] y{k.kh; vkf.k lgt VkG.;ktkxk ;k fjrhu n'kfo.;kr vkyk vkg- gok] tfod ofo/; o ou] vkjkX; o lj{kk] tfeu] vkokt ¼/ouh½] lkekftd & lkLdfrd] dpjk] ik.kh o lkMik.kh vkf.k bdk flLVe ;k ulfxd lk/kuiRrhoj gk.kk&;k ifj.kkekpk fopkj dj.;kr vkyk vkg o vko';drulkj foijhr iHkkokP;k fuokj.kklkBh fdok iHkko deh dj.;klkBh mik; lpfoy vkgr-

6-0 i;koj.k 0;oLFkkiu ;ktuk %&

i;koj.kkph l|fLFkrh o idj.k 5 e/; ppk dY;kiek.k i;koj.kkoj gkÅ 'kd.kk&;k ifj.kkekpk fopkj d:u lfoLrj i;koj.k 0;oLFkkiu ;ktuk vk[k.;kr vkyh vkg- t.k d:u i;koj.kkrhy fofo/k ?kVdkojhy foijhr ifj.kke deh d:u fud"kkulkj vif{kr Lrjkoj vk.k.;klkBh mik; lpfo.;kr vky vkgr- foekurGkp ck/kdkek njE;ku vkf.k foekurG dk;kfUor >kY;kurj i;koj.k ljf{kr o vkjkX;dkjd ntkp jk[k.;klkBh i;koj.kkph oGkoGh iMrkG.kh dj.;klkBh midj.k idYi{k=kr o ckgj Bo.;kr ;rhy- [kkyhy rDR;kr n'kfoY;kiek.k okrkoj.kkP;k fofo/k ?kVdkph iMrkG.kh R;k lekj uen okjokfjrhu dj.;kr ;by- lnj i;koj.k iMrkG.kh ;ktur dnh; i;koj.k o ou [kkr rlp jkT; 'kklukP;k vVh@fud"kkulkj cny dj.;kr ;by-

idYi mHkkj.kh njE;ku i;koj.k iMrkG.kh ;ktuk

S.No.	Component	Parameter	Locations	Frequency
1.	Ambient Air	TSPM, RSPM, SO_2, NO_x, CO	4 locations at the boundary and inside the Airport premises.	24 hourly samples, twice in a week.
2.	Water / ground water / waste water / marine water / storm water	pH, TDS, SS, BOD_5, COD, Oil & grease and Heavy metals.	2-3 locations at the source point	Once in a month.
3.	Noise Level	Hourly Leq.	3 locations within the Airport premises.	Once in a month.

idYi dk;kfUor >kY;kurjP;k dkyko/kh lkBh i;koj.k iMrkG.kh ;ktuk

S.No.	Component	Parameter	Locations	Frequency
1.	Ambient Air	TSPM, RSPM, SO_2, NO_x, CO	4 locations at the boundary and inside the Airport premises.	24 hourly samples, twice in a week.
2.	Stack	pH, SO_2, NO_x, CO	Stacks attached to DG sets.	Once in a six months.
3.	Noise Level	Hourly Leq.	3 locations within and outside the Airport premises.	Once in a month.

4.	Water / ground water / waste water / marine water / storm water	pH, TDS, SS, BOD_5, COD, Oil & grease and Heavy metals.	2-3 locations at the source point	Once in a month.

6-1 i;koj.k 0;oLFkkiu ;ktup vnkti=d %&

idYi mHkkj.khP;k njE;ku rlp idYi dk;kfUor >kY;kurj i;koj.kkP;k fofo/k ?kVdkoj gkÅ 'kd.kk&;k foijhr ifj.kkekP;k fuokj.kk lkBh djko;kph dk;okgh o R;kph iMrkG.kh ;klkBh vnkti=d r;kj dy vlu foekurG mHkkj.khP;k VII;kr mDr ckchoj :-400@& dkVh [kp vnkftr vkg- foekurG dk;kfUor >kY;kurj i;koj.k iMrkG.kh lkBh njo"kh :-20 y{k [kp vnkftr vkg- i;koj.k jk[k.;klkBh djko;kP;k mik;;ktulkBh vnkftr [kpkph ekfgrh [kkyhy rD;kr n.;kr vkyh vkg-

idYi mHkkj.kh njE;kuP;k dkyko/kh lkBh i;koj.k 0;oLFkkiu ;ktupk vnkftr [kp

Sr. No.	Item	Rate	Amount (Rs. In Lakhs)
1	Provision of sanitation at construction site	Lump sum	100.00
2	Plantation around the parking area	Lump sum	50.00
3	Plantation /Replantation around the boundary wall	Lump sum	500.00
4	Barrier around the construction yard	Lump sum	50.00
5	Procurement of monitoring and laboratory equipment	Lump sum	500.00
6	Rehabilitation and Resettlement	As per details in section 2.1.1	36985.00
7	Effluent treatment plant and disposal arrangement	Lump sum	400.00
8	Compensatory mangrove plantation	Lump sum	500.00
9	Firefighting equipment	Lump sum	500.00
10	Landscaping	Lump sum	300.00
11	Air and noise pollution safety gadgets	Lump sum	25.00
12	Water quality monitoring	Lump sum	25.00
13	Solid waste management (Dust bins and incinerators)	Lump sum	20.00
14	Mobile health unit	Lump sum	25.00
15	Accidents/Safty	Lump sum	20.00
Grand Total			40000.00
Total		**: Rs. 400.00 Cr**	

idYi dk;kfUor >kY;kurjP;k dkyko/kh lkBh i;koj.k 0;oLFkkiu ;ktuoj vnkftr [kp

Sr. No.	Parameters to be monitored	Rate	Amount (Rs. Lakhs)
1	Air pollution monitoring & control	Four locations	6.0
2	Noise level monitoring & control	Three locations	2.0
3	Water quality monitoring & control	Three locations	1.50
4	Meteorological monitoring	One location @ L.S	1.50
5	Miscellaneous	L.S	9.0
Total		**Rs. 20 lakhs**	

7-0 vkirdkfyu 0;oLFkkiu vkjk[kMk %&

Mk;jDVj tujy ukxjh okgrd ¼Mhthlh,½] vk;dko (ICAO)] ukxjh okgrd lj{kk ekukdu ;kPk dk;n] fu;e o fu;ekoyhP;k vu"kxku uoh ecb vkrjjk"Vh; foekurGkoj ;.kk&;k vkdfLed ldVkyk rkM n.;klkBh fuokj.k 0;oLFkkiu vkjk[kMk r;kj dj.;kr vkyk vkg- lnj vkirdkfyu 0;oLFkkiu vkjk[kM;kr foekurG lnHkku ;Å 'kd.kk&;k rkf=d rlp brj ¼ulfxd½ vk.khck.khP;k ifjfLFkrhpk lkeuk dj.;klkBh dk;i.kkyh] lk/kulkexh] djko;kP;k dk;okghckcr lfoLrj [kyklk dj.;kr vkyk vkg vkf.k R;kl tckcnkj 0;oLFkkiu lfeR;kpk fun'k vkg-

8-0 vfrfjDr vH;kl %&

8-1 fdukjiêh fu;=.k {k=kr dke d: 'kd.;kckcr dk;n'khj er %&

fdukjiêh fu;=.k {k=kr [kkjQVh rkM.kh] NVkb] ulkp iokg o ekx cny.k] nxM[kk.kh rlp tehuhp mR[kuu] Hkjko] Hkjrh o vkgkVhP;k vkdrhc/kkr cny bR;knhl fdukjiêh {k= fu;=.k fu;eu]1991 P;k fnukd 15-5-2009 P;k l/kkfjr vf/klpuulkj ijokuxh vkg- rFkkfi uoh ecb vkrjjk"Vh; foekurGkp [kkjQVh vlyY;k {k=kr dnh; i;koj.k o ou e=ky;ku i;koj.k etjh fnY;kurj dke dj.;kioh ek-ecb mPp U;k;ky;kph ijokuxh ?k.k vko';d vkg-

8-2 u|kp ekx o iokg cny.kckcr vH;kl %&

nku u|kp ik= vkg R;k fLFkrhr BÅu 1615 gDVj {k=kr foekurGkPk dke gkrh ?krk ;by fdok dl \ ;kckcr vH;kl dj.;kr vkyk vkg- ;ke/; foekurGkph ck/k.kh iy ln'; ck/kdkekoj] /kkoiêh fofo/k dkukr] ljf{krrk] n[kHkky o vnkt ;.kkjk [kp ;k ckchpk leko'k gkrk- ;k Ik;k;kIkBh ,d.k 16 gtkj dkVh vf/kd [kp vnkftr vkg- vH;kIkvrh vl fnlu vky dh] myok unhpk iokg o xk<h unhP;k iokgkpk ekx cnyY;kf'kok; rkf=dn"V;k foekurG fodlhr dj.k 'kD; gk.kkj ukgh o rl ykHkdkjdgh ukgh- rlp ;keG u|kph Hki"Brk rlp u|kph ltyrk] [kkjQVhp j{k.k gk.kp mfí"V lk/; gkr ukgh Eg.ku uoh ecb vkrjjk"Vh; foekurG mHkkj.khIkBh xk<h o myok unhpk iokg cny.k xjtp vkg o R;keG [kpkr cpr gkÅu i;koj.kkph n[khy dehr deh gkuh gkby o lnj ck/kdke n[kHkkyhl lyHk vl gkby-

8-3 /kkoiêh iuiokfHke[krk vH;kl %&

,d.k 60 n'ky{k iokIh irho"k {kerk] vfLrRokr vlyY;k lkrkd>]ecb ;Fkhy foekurGk'kh llxrrk ifjljkrhy VdM;k o ok&;kph fn'kk ;kckch fopkjkr ?kÅu iLrkfor uoh ecb vkrjjk"Vh; foekurGkP;k /kkoiê;kph iokfHke[krk gh 83^0 & 263^0 dkukr o nku /kkoiê;krhy vrj 1-854 fd-eh- ;k iek.k Bjfo.;kr vky vkg- ijr ;k jpur /kkoiêh xk<h o myo unhP;k ik=kr vlyY;k [kkjQVho:u tkr- [kkjQVhl dehr deh gkuh ikpkoh ;k mfí"Vku /kkoiêhp dku ¼$½@¼&½ 10^0 cnyu rlp nku /kkoiê;krhy vrj 1-525 fd-eh- d:u n[khy vi{khr mfí"V lk/; gkr ulY;kp o r v0;ogk; vlY;kp fnlu vky dkj.k foekurGkdM ;.;kpk ekx vMFkGk fojghr vl.;kp mfí"V lk/; dj.;kIkBh i;koj.kn"V;k lonu'khy ekFkjku VdMhP;k dkgh Hkkxkr mph deh dj.k vko';d gkr rlp [kkjQVh lj{k.kkP;kn"Vhu dkgh Qk;nk gkr ukgh- R;keG lnj i;k; mi;Dr ukgh-

8-4 Hktykpk vH;kl %&

iLrkfor xk<h unhpk ekx cny.k o myo unhpk iokg cny.;ku iHkko {k=kr Hktykp;k x.koRroj o lkB;koj ifj.kke gkrk dk; ;kpk vH;kl dj.;kr vkyk- lnj vH;klkr iuoy] rGktk] myo ;k {k=krhy 49 ik.kh x.koRrk

vH;kldnkojhy ik.;kP;k ueU;kr foj?kGyY;k ?ku inkFkkp iek.k 2000 ppm – 14000 ppm vk<Gy- rj rHk] dkekB o [kkj?kj {k=kr Dykjkb Mp iek.k vR;kf/kd vlY;kp fnlu vky- vH;klkvrh fu"d"k dk<.;kr vkyk vkg dh] xk<h unhpk ekx cny.;ku fdok myo unhpk iokg oGoY;ku Hktykp;k x.koRrr rlp lkB;kr dk.kR;kgh idkj cny gkr ukgh-

8-5 okf?koyh cV o fdukjiêhpk vH;kl %&

l0g vkQ bfM;kpk udk'kk ¼1970½ lu 1992] 1995] 2001] 2006 o 2009 ph mixg Nk;kfp= ;kpk vH;kl okf?koyh cVkP;k vkdkjekukr cny >kyk vkg fdok dl \ rlp fdukjiêhph /ki >kyh vkg dk; g tk.ku ?k.;klkBh g iMrkG.;klkBh dj.;kr vkyk- vH;klkvrh vl fnlu vky dh] okf?koyh cVkP;k vkdkjekukr o fLFkrhr Qjd >kyyk ukgh- idYi{k=k lHkkorkyh fdukjiêhph /ki >kY;kpkgh dk.krkgh ijkok lekj vkyk ukgh-

8-6 xf.krh o Hkkfrd ifrdrh vH;kl %&

dnh; ty o fo|r l'kk/ku dn (CWPRS), i.k ;kp ekQr dj.;kr vkyY;k 1D o 2D xf.krh irhdrh vH;klkvrh vl y{kkr vky dh] foekurGkP;k mRrj flel vlyY;k iuoy [kkMhP;k o myok unh oxGrk brj Hkkxkrhy ijikrGhr iLrkfor foekurGkeG dk.krkgh cny gkr ukgh- xk<h o rGktk u|kpk lxe r cykij & myo jLR;kojhy iy ;k njE;kuP;k iuoy [kkMhP;k {k=kr ijikrGhr 0-15 & 0-2 ehVj ,o<h vYi ok< vi{khr vkg- ijr lnj ikrGh Hkjrh P;koGl vR;r vYidkG vly- brj oGl ik.;kph ikrGh lolk/kkj.ki.k rhp fdok deh vlY;kp fnlu ;r- myok unhpk iokg cny.;ku jkT; egkekx 54 ojhy iykik'kh ik.;kP;k ikrGhr 1-6 ehVj ok< lgk rklknjE;ku iM 'kd.kkjk egRre ikÅl o myok unh oGfo.;klkBh 120 feVj :nhpk dkyok ;k fLFkrhr gkÅ 'kdr- ;k lo ckch y{kkr ?kÅu foekurGklkBh vko';d Hkj.khlkBh 6 & 8-5 RL lpfo.;kr vkyh vkg-

ecb cnj ifrdrh oj iLrkfor foekurGkph ifrdrh Bo.;kp dke ixrhiFkkoj vlu l/;k dyhc'kup dke ¼ektekiu iMrkG.kh½ l: vkg- dnh; ty o fo|r l'kk/ku dn (CWPRS), i.k ;kuh fnyyk xf.krh ifrdrh ojhy vgoky DHI ;k

lYykxkj lLFku iMrkG.kh dyk vkg o R;kP;k er ty o fo|r l'kk/ku dn (CWPRS), i.k ;kuh dyyk vH;kl l[kky o l;kX; vkg-

8-7 [kkjQVhp fo'y"k.k] jki.k o 0;oLFkkiu vH;kl %&

ifjljkrhy [kkjQVhpk vH;kl djrk vl vk<Gu ;r dh] ifjljkr ike[;ku frojkph (Avicennia Marina) >Mi vkgr o R;k [kkyk[kky lkyonkjk ilh;k ;k itkrhp [kkjQVh ike[;ku vk<Gr- vnkt 161-50 gDVj {k=koj iljyyh [kkjQVh iLrkfor foekurG idYiku ck/khr gk.kkj vkg- lnj [kkjQVhph 0;kIrh mixgk}kj dk<.;kr vkyY;k lu 1995] 2001] 2006 vkf.k 2009 P;k Nk;kfp=kP;k vH;klkvrh fnlu vkyh- o lnj ck/khr [kkjQVhP;k cnY;kr i;k;h tkxr [kkjQVhp jki.k o lo/ku dj.k xjtp vkg- ek-ecb mPp U;k;ky;kP;k fu.k;kulkj idYixLr [kkjQVhP;k 0;kIrhP;k nliV {k=kr [kkjQVhp jki.k o lo/ku iLrkfor vkg- R;kllkBh Bk.k ftYg;krhy Mgk.k rkyD;krhy vnkt 350 gDVj {k= 'kk/k.;kr vky vkg- Mgk.k ;Fk [kkjQVhp iLrkfor jki.k o lo/kuklkBh 0;oLFkkiu ;ktuk vk[k.;kr vkyh vkg- o R;kulkj [kkjQVh jkiokfVdk] tutkxrh] ykdf'k{k.k o ykdkP;k lgHkkxku lnj ;ktuk jkcfo.;kr ;.kkj vkg-

8-8 goph x.koRrk vkf.k vkokttkph iMrkG.kh %&

iLrkfor foekurGkeG jLR;kojhy okgrdhr gk.kk&;k ok<heG gorhy in"kd tl] lYQjMk; vkDlkbM] uk;Vktuph vkDlkbMl vkf.k dkcu ekukDlkbM b-P;k tfeuLrjkojhy frorr gk.kk&;k ok<hpk R;kP;k gorhy ,d.k ek=pk vnkt dj.;kllkBh f0g>he lk¶Vovj ekMy okij.;kr vky vkg- R;kp fu"d"k [kkyhy iek.k &

lolk/kkj.k okgrdhr ok<heG lYQjMk; vkDlkbMP;k tfeuLrjkojhy frorr gk.kkjh ok< /k:u R;kph gorhy ,d.k ek=k 7-2 µg/m3 – 16.8 µg/m3 njE;ku vlu r ueu fnyY;k 80 µg/m3 fud"kkP;k e;knP;k vkr vkg-

lolk/kkj.k okgrdhr ok<heG uk;Vktu P;k vkDlkbMlP;k tfeuLrjkojhy frorr gk.kkjh ok< o R;kph gorhy ,d.k ek=k 64 µg/m3 – 78 µg/m3 njE;ku vlu r ueu fnyY;k 80 µg/m3 fud"kkP;k e;knP;k vkr vkg- okgrd ok<heG ok< 1 µg/m3 – 2.7 µg/m3 njE;ku vkg-

lolk/kkj.k okgrdhr ok<heG dkcu ekukDlkbMP;k tfeuLrjkojhy frorr gk.kkjh ok< /k:u R;kph gorhy ,d.k ek=k 0-9 mg/m3 – 1.28 mg/m3 njE;ku vlu r ueu fnyY;k 2 mg/m3 fud"kkP;k e;knP;k vkr vkg- foekurG okgrd ok<heG ok< 0.1 mg/m3 vkg-

iLrkfor foekurGkeG jLR;kojhy okgrdhr gk.kkjh ok< o gokb okgrdheG gorhy in"kd tl] lYQjMk; vkDlkbM] uk;Vktuph vkDlkbMl vkf.k dkcu ekukDlkbM b-P;k tfeuLrjkojhy frorr gk.kk&;k ok<hpk vnkt dj.;klkBh ,vjekM lk¶Vovj ekMy okij.;kr vky vkg- R;kp fu"d"k [kkyhy iek.k &

jLR;kojhy okgrdhrhy ok< o gokb okgrdheG dkcu ekukDlkbMP;k tfeuLrjkojhy frorr ok< /k:u R;kph gorhy ,d.k ek=k 1-40 mg/m3 – 1.89 mg/m3 njE;ku vlu r ueu fnyY;k 2 mg/m3 fud"kkP;k e;knP;k vkr vkg-

jLR;kojhy okgrdhrhy ok< o gokb okgrdheG uk;Vktuph vkDlkbMlP;k tfeuLrjkojhy frorr gk.kkjh ok< /k:u R;kp gorhy ,d.k ek=k 72 µg/m3 – 79 µg/m3 njE;ku vlu r ueu fnyY;k 80 µg/m3 fud"kkP;k e;knP;k vkr vkg-

8-9 iuolu o iuolkgr ;ktuk %&

lkr xkokrhy ngk olkgrh foekurG {k=kr vlu R;kp iuolu R;klkBh fuoM.;kr vkyY;k oM?kj] nkikyh vkf.k ogkG xkokrhy {k=koj dj.;kp iLrkfor vkg- dnkP;k rlp jkT; 'kklukP;k iuolu o iuolkgr /kkj.kkl vul:u iLrkfor iuolu o iuolkgrhlkBhpk elnk /kkj.k r;kj dj.;kr vky vkg-

lnj iuolu o iuolkgr /kkj.kkph BGd of'k"V i<hy iek.k &

idYikeG iuolu djko;kP;k olkgrhrhy fuoklh o okf.kT; mi;kxk[kkyhy Hk[kMkikVh R;kp vkdkjkekukP;k fodlhr Hk[kMkp fu'kYd okVi] foHkDr dVcklkBh vfrfjDr tehu] lkeku okgrdhlkBh vFklgk,;] lo uk ijrkok Bo] 'kYd b-jDdekpk ijrkok] fu'kYd 0;olk; f'k{k.k o jktxkjklkBh ik/kkU;] l/;kP;k ?kjkp@ck/kdkekp iuolkgr fBdk.kh R;kp ntkp o vkdkjekukP;k okLrP;k iuck/k.khlkBh ipfyr njku udlku Hkjikb] ekMyY;k ?kjkrhy iuokijkl ;kX; lkfgR; ?kÅu tk.;kl ekydkl ijokuxh] xgck/k.khlkBh ,djDdeh vFklgk,;] 1-5 pVb {k= fun'kkd o Hk[kMkP;k {k=QGkP;k 15% {k= okf.kT; i;ktuklkBh

okijko;kP;k ijokuxhlg fQ gkYM Hk[kM] dVckl ,d o"k mnjfuokg HkRrk] vd'ky o v/kd'ky ioxkrhy jktxkjklkBh vkj{k.k vkf.k ik/kkU;ku HkkxHkkMoykp okVi-

lnj iuolu o iuolkgr /kkj.kkckcr idYixLr xkeLFkk'kh oGkoGh ppk dj.;kr vkyh vlu R;kP;k lpukph ukn ?k.;kr vkyh vkg- lnj lpuk l;kX;fjrhu fopkjkr ?kÅu jkT; 'kklukP;k ekU;ru /kkj.kkl vfre Lo:lk n.;kr ;by- iuolu o iuolkgrhlkBh :-370@& dkVh [kp vnkftr vkg-

9- **lYykxkjkckcr ixVu %&**

uoh ecb vkrjjk"Vh; foekurG idYikP;k i;koj.kkojhy iHkko iMrkG.kh vH;klklkBh vk;-vk;-Vh-]ecbp i;koj.k 'kkL= o vfHk;kf=dh dn g ie[k lYykxkj vlu ;k lLFk 0;frjDr R;k R;k {k=krhy vkrjjk"Vh; o jk"Vh;Lrjkojhy ukoktyY;k brj ckjk lYykxkjkpk i;koj.k 0;oLFkkiu ;ktuk r;kj dj.;kP;k dkekr lgHkkx vkg-

&&&&&&&&&

Executive Summary

1.0 INTRODUCTION :

Mumbai Metropolitan Region (MMR) is the largest industrially and technologically advanced region and experiencing a significant growth in income and employment. The share of employment in manufacturing sector is declining, whereas the share in tertiary sector in increasing. This trend clearly indicates that the region is emerging in trading and services activities. The ever increasing trend of activities such as, Trading, Business and Financial services, demands a highest order of infrastructure. One of the major infrastructure in the region need immediate attention to enhance the capacity of airport as the existing airport in Mumbai is experiencing tremendous pressure for meeting the air traffic demands.

Realizing the needs of a second airport for Mumbai, the Ministry of Civil Aviation granted “In Principle” approval in July, 2007 for the development of second airport at Navi Mumbai on public-private partnership basis. Accordingly, Govt. of Maharashtra also granted approval in 2008 for the development of Navi Mumbai International Airport and appointed City & Industrial Development Corporation of Maharashtra Limited (CIDCO) as a Nodal Agency for implementation.

1.1 PROJECT PROPONENT:

City & Industrial Development Corporation of Maharashtra Limited (CIDCO), a Company incorporated under the Companies Act, 1956 is wholly owned by the Govt. of Maharashtra and designated as a New Town Development Authority under the Maharashtra Regional & Town Planning Act, 1966 for development of New Town of Navi Mumbai covering an area of 344 Sq.Km. Navi Mumbai is the Asia’s

largest planned and developed city for a population of 2 million and 0.8 million jobs. The present population of the city is about 1.5 million with a job of about 0.5 million and slowly becoming as independent metropolis. CIDCO being the project proponent is in the process of Planning, Design, Project formulation and obtaining necessary clearance to enable to invite public bid for selection of strategic partner/developer for the development of Navi Mumbai International Airport. A Special Purpose Company (SPC) will be finally incorporated by CIDCO/AAI and strategic partner, who in-turn will take up implementation of Navi Mumbai International Airport.

1.2 AIR SECTOR PROFILE:

Air Travel Demand in the country is greatly tilted towards four major metropolis i.e. Mumbai, Delhi, Chennai and Bangalore, each handles more than 10 million passengers and an amount of more than 60% of national passenger traffic, during the year 2007-2008. Mumbai handles (23%) caters for the highest air passenger followed by Delhi 21%, Chennai 9% and Bangalore 8.7%. Mumbai airport at Santacruz is the busiest airport in the country and handles approx. 23% of total passengers, 31% of Cargo traffic and 18% of aircraft movement in the country. Based on the latest statistics during the year 2001-2008, the international traffic at Mumbai airport has increased from 47.65 lakhs to 81.22 lakhs. Whereas, the domestic traffic has increased from 65.27 lakhs to 153.20 lakhs recording an average growth rate of 8.78% international and 16.84% for domestic. Similarly, the total Cargo traffic during the period 2001-2008 at Mumbai airport has increased from 293 lakhs Tones to 530 lakhs Tones recording an average growth rate of 10.11%.

Mumbai airport is experiencing congestion at the present level of traffic and the same becomes more visible during the peak hours indicating airport is reaching saturation. With the ongoing expansion and modernization, the airport can handle 40 MPPA which is expected to reach by 2012-13. Keeping in view the space and airfield constraints at Mumbai, there is a need to develop the second airport for Mumbai.

1.3 POLICY, LEGAL AND ADMINISTRATIVE FRAME WORK:

The Navi Mumbai International Airport (NMIA) project is designated to be developed under the Environment Impact Assessment (EIA) Notification, 2006 published on 14th September, 2006 and amended under Environment (Protection) Act, 1986 as well as Coastal Zone Regulation, 1991 amended as on 15th May, 2009. The project falls in "Category A" (Activity 7a). as per the above EIA Notification.

The Centre of Environment Science and Engineering, Indian Institute of Technology, Mumbai (CESE) has been engaged by CIDCO to carry out the comprehensive Environment Impact Assessment study in accordance with the guidelines of Ministry of Environment & Forest and Maharashtra State Pollution Control Board (MPCB).

1.4 PROJECT BRIEF:

The proposed site falls in Panvel Taluka of Raigad Dist. of Maharashtra State located west of Panvel City in the Geographical centre of Navi Mumbai and MMR with a longitude of 73°.04'.18" and latitude of 18°.59'.33". The following Table gives the Environmental setting along with the topographical features of study area within the 10 kms. stretch from the Airport Reference Point (ARP) is shown in Fig.1.1.

Fig 1.1
Study Area

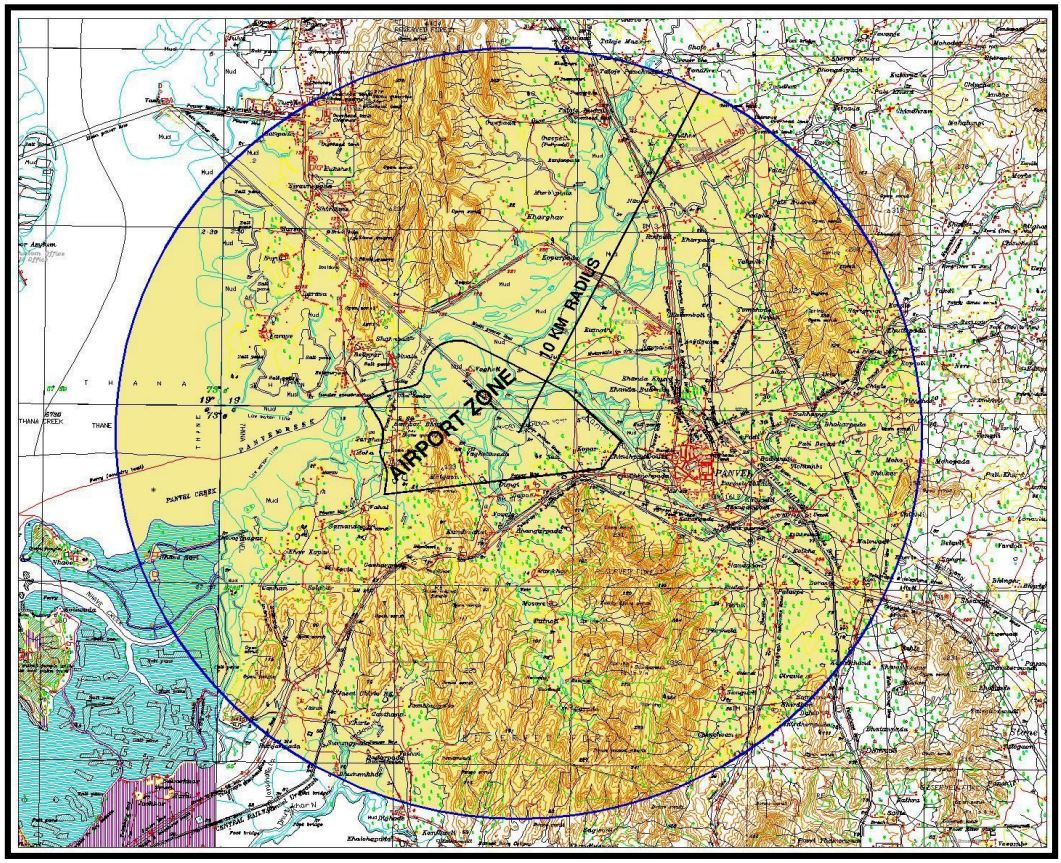


Table1.1

Geographical & Environmental Setting of the Airport Site (10 Km Radius)

Sl.No.	Item	Details
1.	Location	Panvel Taluka, Raigad Dist., Maharashtra State.
2.	Latitude	18°.58'.44.61" to 19°.0'.57.16"
3.	Longitude	73°.02'.54" to 73°.05'.39.61"
4.	General Elevation	Coastal (RL 1.5 mts.), Plain (RL 3.0 mts) Hills (RL 82 mts.)
5.	Survey of India Topo Sheet No.	47-A/16,A/13, E/4,F/1
6.	Topography	Sloping towards north west
7.	Soil type	Marine, Murum, Rocks
8.	Climatic conditions	Temperature – Max.36° Min.17° Rainfall 2000 mm to 2500 mm Wind Direction – South-West in monsoon & Rest of North-East, Humidity 61-86%
9.	Present site land status	CIDCO owned and private land to be acquired for airport development.
10	Nearest Highways	SH54, NH4B, Aamra Marg (Running on the Boundary of Airport site).
11.	Nearest Rly. Station.	Panvel 1.5 kms. on Central Rly./Konkan Rly. Khandeshwar – 1 km. suburban Rly.
12.	Nearest Airport	35 Kms. North Santacruz, Mumbai.
13.	Nearest Water Bodies.	Panvel creek, Gadhi river, Taloja river and Ulwe river running along & through the boundary of the airport.
14.	Nearest Hill	Ulwe hill – RL 82 Mts. within the site.
15.	Archeologically Important place.	Elephanta at a distance of 13 Kms. West
16.	Seismic zone	Zone-III as per IS: 1893 (Part-I) 2002.

Source : CESE., IIT Mumbai.

1.5 TERMS OF REFERENCE (TOR) :

The Corporation submitted an application along with filled-up "Form-I" in the prescribed format and Pre-feasibility Report to MoEF for seeking Environment Clearance for its proposed project vide letter No.CIDCO/T&C/ACTE/MD/2009/567 dtd. 16th June, 2009. Subsequently, the proposal was considered by the "Expert Appraisal Committee on CRZ, Infrastructure and Miscellaneous Projects" in its

78th Meeting held on 20-22 July, 2009 to finalize the TOR for undertaking the detailed EIA study for Environment Clearance in accordance with the provision of EIA Notification, 2006. Accordingly, MoEF issued a letter F.No.10-53/2009-IA.III dtd. 4th August, 2009 mentioning the finalization of TOR. Subsequently, the Expert Appraisal Committee undertook the site visit on 23rd December, 2009 and suggested the Additional TOR vide their letter F.No.10-53/2009-IA.III dtd. 8th February, 2010.

The environmental impact assessment study termed as draft is prepared based on the Terms of Reference prescribed by the MoEF for conducting public hearing. The public hearing was conducted by Maharashtra Pollution Control Board (MPCB) on 5th May, 2010 at Anant Pandurang Bhoir Vidhyalaya & Kanistha Maha Vidhyalaya, Pargaon, Dapoli, Tal:Panvel, Dist: Raigad located in close proximity of project area. On receipt of proceedings of Public Hearing Report, this comprehensive EIA Study Report is prepared for submission to MoEF for consideration and grant of Environment Clearance for Navi Mumbai International Airport.

2.0 ANALYSIS OF ALTERNATIVE :

Keeping in view, presence of hills in the region, obstruction free approach, technical and operation suitability, minimum disturbance to population, availability of land, ground access time of one and half hour and presence of physical and social infrastructure, the exercise for analysis of alternative sites are restricted only two available sites, i.e. Rewas-Mandwa and Navi Mumbai in Raigad District as there is no other suitable site in the region.

Analysis of alternative sites is carried out based on strength, weaknesses, opportunity and threat (SWOT) and site sensitivity analysis. The SWOT analysis reveals that Navi Mumbai site is preferred site in terms of higher strength, less weaknesses, no threat

and viability point of view when compared to Rewas-Mandwa. The site sensitivity analysis clearly establish that Navi Mumbai site is better choice with moderate environment impact score compared to Rewas-Mandwa site with high environmental score. Thus, the Navi Mumbai site is technically, environmentally and financially viable site for development of 2nd airport for Mumbai.

3.0 PROJECT DESCRIPTION:

The Navi Mumbai International Airport is located near Panvel between the existing National Highway 4B and Aamra Marg in Panvel Tahasil of Raigad Dist. in the geographical centre of Navi Mumbai having longitude of 73°.04'.18" and latitude 18°.59'.33" at a distance approx. 35 kms. from the existing airport at Santacruz.

3.1 Project Accessibility:

The airport site is accessible by existing 4 lane road called NH4B from the east side, State Highway 54 running on south boundary and 4 lane concrete road called Aamra Marg from the west side. The existing Mankhud-Belapur commuter Rly. Line passes on the north-east and the nearest suburban station is Khandeshwar at a distance of 1 km. The Central/Konkan railway line passes at a distance of 1.5 km. from the airport site and the nearest Rly. Station is Panvel. With the above rail and road net-work, the site is well connected with the region and country in terms of State & National Highways and railway.

3.2 Project Area:

The total area earmarked for airport zone is 2054 Ha. for area development consisting of 1615 Ha. as an airport zone and remaining for off-site infrastructure such as diversion, training of rivers, approach road, commuter railway line, interchanges and utility lines.

3.3 Project Activities:

Various project activities involved in the development of airport and its surrounding are development of airport in phases, training and diversion of Gadhi & Ulwe rivers respectively . Shifting of EHT line, development of off-airport site, off-site physical and social infrastructure, re-settlement and re-habilitation and utility lines required for airport zone.

3.4 Project Structure:

In accordance with the " In principle" approval obtained from the Union Govt., the project is proposed to be executed on the basis of public-private-partnership (PPP). Accordingly, a Special Purpose Company (SPC) will be incorporated under Companies Act, 1956 as private limited company, in which 26% equity will be held by CIDCO/AAI and the rest with the strategic partner to be selected through the public bidding process. The SPC will raise the required resources, design, build, market, operate and maintain the airport during the concession period. The project will be transferred back to the Govt. on expiry of the concession period.

3.5 Air Traffic Forecast:

The Traffic Forecast for NMIA for passenger in 2013-14 is 10.6 MPPA, 2017-18 is 20.82 MPPA, 2022-23 is 39.81 MPPA and 2027-28 is 59.84 MPPA and finally in 2031-32 is 61.74 MPPA.

Keeping above in view, the airport is being developed for ultimate designed capacity of 60 MPPA and the development of airport will be done in 4 phases starting with 10 MPPA in 2013-14, 25 MPPA in 2017-18, 45 MPPA in 2022-23 and finally 60 MPPA in 2030-31. Similarly, the facilities for Cargo is planned initially 0.263 million tones in 2013-14, 0.49 million tones in 2017-18, 0.94 million tones in 2022-23 and ultimately 1.55 million tones.

All the Aeronautical activities will be located in the aeronautical area of the airport zone admeasuring 1200 Ha. out of 1615 Ha. of airport zone. The remaining area of about 415 Ha. of airport zone will be utilized for non-aeronautical use related to airport activities to support the operation and functioning of airport. This non-aeronautical area mainly accommodate airport related activities such as; Hotel, Rest House, Transit, Lodge, Warehousing, Banking, Shopping, Convention & Exhibition Centre, Leisure and entertainment, Water front development, etc.

3.6 Water Requirement:

The expected water requirement for the airport zone in the initial phase will be 9 mld, which will increase to 18 mld in the second phase. Thereafter, 30 mld in 3rd phase and finally 39 mld in phase-IV. The above water requirement will be met from the water mains of the Corporation and Navi Mumbai Municipal Corporation, as both have their own source & water distribution system in Navi Mumbai.

3.7 Power Supply Requirement:

The expected power requirement for the airport zone in the Phase-I is 30 MVA increasing to 70 MVA in Phase-II, 150 MVA in Phase-III and finally 190 MVA.

The power supply requirement will be met through the State Grid in addition to this stand-by 5 DG Set (4 working and 1 standby) of 500 KV capacity each will be provided to meet the power requirement in the event of power failure, which will be subsequently augmented in phased manner.

3.8 Sewage Treatment Plant:

The total sewage generated from the aeronautical as well as non-aeronautical area is to the tune of 38 mld will be treated in the sewage treatment plant based on the SBR technology in the respective area. The aeronautical area will have 15 MLD capacity,

whereas non-aeronautical area 30 MLD installed capacity. The treated sewage water from the STP will be re-used for flushing, irrigation of horticulture, washing of floors, spraying water on the road, etc.

3.9 Solid Waste Generation:

The solid waste generated to the tune of 10 tones/day initially and finally 40 tones/day will be treated at plant at Chaal, Taloja. The non bio-degradable waste will be disposed in the Municipal incinerator.

3.10 Project Cost:

The total cost of the development of airport zone consist of aeronautical and non-aeronautical activities works out to Rs.9625 Cr., spread over in four phases i.e. Phase-I: Rs.4952 Cr., Phase-II Rs. 2159 Cr., Phase-III Rs.1878 Cr. and finally Rs.366 Cr.

3.11 Implementation Programme:

The implementation of project will commence from October, 2010 and will be completed by the end of 2013 for the Phase-I. Thereafter, Phase-II will commence and completed in 2013-17, Phase-III in 2017-21 & final phase in 2022-26.

3.12 Construction Material:

During the construction phase, cutting and filling for leveling of the project area will be required. As per the estimate, about 3.5 million cum. stone aggregates, 1.72 million tone Cement, 1.72 million cum. sand, 20,000 tone steel, 80000 tone asphalt, 16.15 million cum. of engineering soil and rock fill of 33.85 million cum. will be required for construction of the airport. Most of the materials required is available within the airport zone and rest of the material will be brought from outside within the radius of l5 kms.

3.13 Construction Environment:

During the construction stage, a large number of local & migrating workers approx. at an average 500/day and peaking to the level of 3000/day will be working on site. A temporary hutments at 2-3 locations would be earmarked within the airport area with an adequate facilities such as drinking water, sanitation, fuel and health check-up, proper hygiene and sanitation would be provided & maintained in and around the workers hutments to avoid spread-up any epidemic. Regular Medical Camp for health check-up would be established for the workers with a facility for on site primary treatment.

4.0 DESCRIPTION OF ENVIRONMENT:

To assess the baseline environmental status of the study area (an area covered within 10 kms. radius around the airport site), a comprehensive primary and secondary data collection programme was undertaken with respect to hydrometrology, physiography, drainage, geology, land & soil quality, ambient water quality, air quality, metrology, noise, ecology, traffic and transportation, forest, socio-economic profile of people, land status and settlement, land use, places of historical importance and coastal zone regulation. The project location falls in Panvel Taluka of Raigad District, whereas the study area covers the district Thane and Panvel.

4.1 Hydrometrology:

The climate of the study area is tropical maritime with high relative humidity throughout the year. Generally, hot & humid climate is experienced throughout the year. The maximum temperature ranges between 28° C. to 32° C. and the minimum fluctuate between 17° C. to 27° C. The relative humidity remains above 50% for more than 8 months. The study area experience a very high rainfall ranging from 2072 mm to 2741 mm.

4.2 Physiography:

The physiography of the study area is a combination of rugged hills and coastal plains. Based on the geomorphology, the hydromorphic units identified in the study area consists of coastal plains, denuded hills, structural hills and plateau. The slope of the area is due west ranging from 1-3% in the project site and increasing upto 35% in the study area.

4.3 Geology:

The geological formation in the study area consisting of dark coloured volcanic lava flows, basaltic in composition and is intruded by large number of dykes. The basaltic composition is also known as “Deccan Traps” attain a thickness of nearly 760 m. in the East of study area, vertical, inclined, prismatic and columnar jointing are commonly found in the hard and compact basalts. A large number of dykes are found in the range of width 2 to 4 mt. in Panvel area. Panvel Flexure are also reported in the project area. However, many have doubted the very nature of this Panvel structure as a flexure.

4.4 Drainage:

The drainage pattern in the study area is in accordance with the natural slope towards the north-west. The five rivers drains through the study area, viz. Taloja and Kasadi in the north, Kalundri and Gadhi in east and Ulwe in South. All the five rivers joins together to form a Panvel creek, which ultimately meets the Thane creek.

4.5 Land Environment:

A total of Ten soil quality monitoring stations in the study area were selected to collect the soil sample for assessment of soil quality in terms of pH, electrical conductivity, cation exchange capacity, texture, sodium, calcium, magnesium, potassium, sodium adsorption ratio, permeability, water holding capacity and porosity. The texture

of all the soil samples in the study area varies from loam, sandy loam, clay loam, sandy clay loam, loamy sandy, silt loam to clay. The results of these parameters are indicated below:

Parameters	Post Monsoon		Pre-Monsoon		During Monsoon	
	Max.	Min.	Max.	Min.	Max.	Min.
pH	7.4	6.8	7.4	6.5	6.3	5.1
Electrical conductivity mS/cm or dS/m	1.63	0.65	1.67	0.35	0.06	0.02
Cation Exchange Capacity, mEq/100gm	6.41	0.70	6.41	0.70	2.38	1.56
Sodium, (mg/g)	836	18	266	32	203	9.8
Calcium, (mg/g)	257	87	174	37	110	27
Magnesium, (mg/g)	154	21	90	26	110	41.2
Potassium, (mg/g)	87	5	109	9	62.3	6.6
Sodium Adsorption Ratio	24.5	2.1	27.5	3.5	20.5	1.7
Permeability (cm/sec)	$2.8 X10^{-4}$	$0.8 X10^{-4}$	$1.9 X10^{-4}$	$1.1 X10^{-4}$	$3.17 X10^{-5}$	$1.42 X10^{-4}$
Water holding capacity %	70	40	66.6	28.4	54.4	18
Porosity %	54	33	56	32	54	36

The soil at all the monitoring stations in the study area are of non-saline expect Vaghvili and Vaghviliwada were the soil is sodic.

Based on the soil investigation carried out during techno-economic feasibility and DPR stage, shows that the sub-soil in the low lying area consists of three layers i.e. soft marine clay of around 1 mt. residual soil (soft to hard murum) extend between 2.75 to 4.1 mts. below ground surface and found continuous upto maximum drilled depth upto 13.5 mts.

The sub-soil profile under northern runway falling on the Waghivili island consists of sand and silty layer bedding from 2 mts. and extending upto 8 mts. followed by murum/weather rock/soft rock of

about 0.5 mts. to 5 mts. and finally the hard rock varying from 4.4 mts. to drilled depth of 12 mts. from the ground.

4.6 Water Environment:

A total of thirteen water quality monitoring stations for marine water were selected to collect the water samples for assessment of marine water quality in terms of physical, chemical and biological properties.

The value of pH of marine water of Gadhi River was in the range of 7.2 - 7.5, 7.4 - 7.8 and 7.1 – 7.3 during post monsoon, pre monsoon and monsoon season respectively. The value of pH of marine water of Ulwe River was 7.5, 7.8 and 7.5 during post monsoon, pre monsoon and monsoon season respectively. The value of pH of marine water of Panvel Creek was 7.5, 7.8 – 8.0 and 7.6 – 7.4 during post monsoon, pre monsoon and monsoon season respectively. The physico-chemical parameters monitors during the study period reveals that all of them having range of value within the prescribed standard except the BOD and nutrients. The NSF water quality index analysis shows that the quality of water in Gadhi river is good, excellent during post monsoon and pre-monsoon respectively and during monsoon, it is good to excellent. Similar observation is also found in other two rivers i.e.Ulwe and Panvel creek.

A total of ten water quality monitoring stations for ground water were selected to collect the water samples for assessment of ground water quality in terms of physical, chemical and biological properties.

The pH of ground water was in the range of 7.15 - 8.29, 6.9 - 7.9 and 6.7-7.7 during the post monsoon, pre monsoon and monsoon season respectively. pH of ground water at Vaghvli was slightly high (8.29) compared to pH at other location in the project area. Ground water at all water quality monitoring stations was found well within

the limits prescribed by CPCB for drinking purpose. All physico-chemical parameters monitored for the ground water quality show that all values observed are within their prescribed standards. Values of BOD were slightly high at many locations and this could be due to infiltration of sewage, decay of dead organisms or natural organic matters. The WQI calculated for ground water was in the range of 75 – 91. According to NSF Water Quality Index (WQI), the quality of ground water at nine locations in the project area was *good* whereas ground water quality at Targhar was found *excellent*. The overall quality of ground water in the project area was found "*Good"* based on NSF Water Quality Index. The quality assessment based on index method was done considering only five above said parameters.

4.7 Air Environment:

A total of ten air quality monitoring stations were selected to collect the pollutants samples for assessment of air quality, total particulate matter (TSP), respirable particulate matter (RSPM or PM_{10}), oxides of nitrogen (NO_x), sulfur dioxide (SO_2) and ammonia (NH_3), Carbon Monoxide (CO) and Hydrocarbons (HC).

The overall average concentrations of TSP, PM_{10}, NO_x, SO_2, NH_3, CO and HC in the study area were found to be in the range 88 to1184µg/m^3, 32 to 411 µg/m^3, 9.1 to 32 µg/m^3, 2.3 to 12.3 µg/m^3, 17 to 37.6 µg/m^3, 0.18 to 0.8 µg/m^3, 1.0 to 2.54 µg/m^3 respectively.

The maximum concentrations of TSP for industrial and mixed area were found to be 843 µg/m^3, 1317µg/m^3, 746µg/m^3 and 245 µg/m^3 whereas in residential and rural areas it was found to be 511 µg/m^3, 756µg/m^3, 558 µg/m^3 and 174 µg/m^3 during post monsoon, winter, pre monsoon and monsoon season respectively.

The minimum concentrations of TSP for industrial and mixed area were found to be 289 µg/m^3, 326µg/m^3, 106µg/m^3 and 31µg/m^3 whereas in residential and rural areas it was found to be 225 µg/m^3, 363µg/m^3, 117µg/m^3 and 22µg/m^3 during post monsoon, winter, pre monsoon and monsoon season respectively.

The Air quality index values showed significant variation during study period. The average value of air quality index observed for industrial and mixed areas was in the range, 0.37 to 0.83, 0.51 to 1.37, 0.24 to 0.81 and 0.09 to 0.21 during post monsoon, winter, pre monsoon and monsoon season respectively. The average value of air quality index observed for residential and rural areas was in the range, 0.68 to 1.4, 1.21 to 1.83, 0.71 to 1.18 and 0.2 to 0.34 during post monsoon, winter, pre monsoon and monsoon season respectively.

4.8 Meteorology:

A weather station was installed at New Panvel, CIDCO Office to record hourly data of winds, wind direction, temperature, relative humidity, rainfall, cloud cover and solar radiation during the post monsoon, pre-monsoon and during monsoon. The maximum, minimum monthly average value recorded in three seasons is given below:

Parameters	Post Monsoon			Winter Season			Pre-Monsoon		
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
Wind Speed, m/s	9.2	0	0.2	6.6	0.0	0.06	8.6	0	0.7
Temperature, °C.	37.4	14.5	28.5	38.6	10.4	25.3	40.2	17.1	30.5
Relative Humidity, %	99.9	17.2	73.9	94.5	33	59.1	99.9	36.3	70.7
Rainfall, mm	1.0	0.5	0.1	0	0	0	0	0	0
Solar Rad., W/m^2	1026.7	0.0	204.2	863.7	0	177.9	1028.2	0	226.5
Cloud Cover, oktas	8	0	Fine*	8	0	Fine*	8	2	Over-cast

**Predominant type.*

4.9 Noise Environment:

A total of twelve noise monitoring stations were selected in the study area based on different noise generating source and type of receptors environment in the study area. Measurements were taken for 24 hrs. during the post-monsoon, pre-monsoon and monsoon to establish the representative existing noise level.

L_{eq} values recorded for various stations in study area during daytime (6.00 AM and 9.00 PM) and nighttime (9.00 PM and 6.00 AM) were observed to be in the range of 48.7 dB(A) to 72.2 dB(A) and 46.4 dB(A) to 72.4 dB(A) respectively during post monsoon season whereas during pre monsoon season it was observed to be in the range of 54.2 dB(A) to 74.3 dB(A) (daytime) and 49.2 dB(A) to 74.9 dB(A) (nighttime) wherwas during mansoon season it was observed to be in the range of 49.3 dB(A)to 78.8 dB(A) (daytime) and 46.0 dB(A) to 66.3 dB(A) (nighttime). The average noise levels calculated for industrial area during daytime were were 34.8 dB(A), 36.8 dB(A) and 35.1 dB(A) whereas during night time it were 35.0 dB(A), 35.7 dB(A) and 33.9 dB(A) during post monsoon, pre monsoon and monsoon season respectively. The average noise levels calculated for commercial area during daytime were were 44.4 dB(A) , 43.5 dB(A) and 45.9 dB(A) whereas during night time it were 43.3 dB(A), 44.7 dB(A) and 42.4 dB(A) during post monsoon, pre monsoon and monsoon season respectively.

The average noise levels calculated for residential area during daytime were 43.0 dB(A), 42.5 dB(A) and 45.4 dB(A) whereas during night time it were were 42.4 dB(A), 40.3 dB(A) and 40.9 dB(A) during post monsoon, pre monsoon and monsoon season respectively.

The average noise levels calculated for residential area during daytime were 42.5 dB(A), 43.0 dB(A) and 45.4 dB(A) whereas during night time it were 40.3 dB(A), 42.4 dB(A) and 40.9 dB(A) during post monsoon, pre monsoon and monsoon season respectively.

The average noise levels calculated for sensitive area during daytime were 44.2 dB(A), 44.2 dB(A) and 44.8 dB(A) whereas during night time it were 40.2 dB(A), 43.0 dB(A) and 40.8 dB(A) during post monsoon, pre monsoon and monsoon season respectively. The overall average noise level during daytime in the project area was 34.3dB(A), 34.4 dB(A) and 35.0 dB(A) and during nighttime it was 33.5 dB(A), 34.2 dB(A) and 33.4 dB(A) during post monsoon, pre monsoon and monsoon season respectively.

The average noise levels for industrial, commercial, residential and sensitive areas are well within the limits though L_{eq} values recorded at individual stations showed high noise levels. This could be due to the fact that the main noise generating sources were local vehicles and these sources were not free to radiate sound in all direction but localized at monitoring stations only.

4.10 Ecology:

To study the Ecological status of the study area. 21 stations were selected. A total of 58 species of birds including aquatic birds, 46 animals, 23 aquatic animals and maximum of 198 plant were encountered and recorded from the study area. There are 8 reserved forests covering 1797 Ha. and 24 protected forests with total area of 14.17.21 Ha. within the study area. However, there is no forest area in the project area. The maximum number of Phytoplankton species are 24 and Benthos numbers are 12. There are no endangered or rare species of birds and animals in the study area.

4.11 Traffic & Transportation:

The traffic volume on the road network leading to the airport site were obtained from secondary source and projected using growth rate upto 2030-31. The adequacy of the road network was tested between 2010 to 2030 with planned widening and projected traffic

volume and the carrying capacity. This exercise reveal that the road network is adequate and will operate at the level of service B upto 2025 and beyond that the level of service will drop to C. The intersection analysis reveal that the Kalamboli junction will need a grade separation beyond 2030-31.

4.12 Land Status & Settlement:

The total land requirement for the project is 2054 Ha. consisting of 1615 Ha. land for airport zone and the rest for the development of diversion and training of the rivers, interchanges, connectivity, laying of utility line, etc. Out of 2054 Ha. of land, 1154 Ha. is in the possession of the Corporation, 443 Ha. Govt. land is being transferred to CIDCO and 457 Ha. of private land is being acquired. 10 settlements of 7 villages falling in the airport zone and having population of 15000 spread in 3113 households are proposed to be re-settled in three re-settlement colony viz. Vahal, Dapoli and Wadghar.

4.13 Demographic Socio-economic:

The total population under the study area is about 5.68 lakhs based on 2001 census consisting of urban as 4.8 lakhs and rest rural. In the urban area demonstrates, 90% Hindu population, 70% General Caste, 62% Marathi, family size 3.8, literacy 98%, household ownership 74%, average monthly income Rs.12,700/- working population 32% and 10% Car ownership. The rural area demonstrates 90% Aagri population belonging to OBC, 97% Marathi family size of 5.4, 52% males, effective literacy rate 86%. 50% lives in pacca house, average monthly income Rs.5499/-, working population 37%, 45% owns two wheelers motorcycle/scooter/moped, 10% Car ownership and 50% individual tap water facility.

4.14 Land use Pattern:

The land use pattern of the study area has been analyzed on the satellite data for land cover analysis and the same reveals that out of 31429 Ha. 20.64% is urban, 35.79% urbanizable (rural) area, 19.82% hills, 2.75% mangroves, 2% quarry, 3.82% mud flats, 3.02% industrial and 0.63% agricultural land.

The project area land cover analysis reveals that 38.47% open (urbanizable) area, 26.77% mud flats, 9.29% mangrove, 6.5% agriculture, 3.9% built-up (urban), 4.11% quarry, 2.85% hills and 8.83% creek & river.

4.15 Ecological, Historical & Cultural Importance Places:

Three sites viz. Elephanta, Karnala Birds Sanctuary and Matheran Eco-Sensitive Zones falls outside the study area, but within the radius of 20 kms. from the airport reference point. The Elephanta Caves falls in the landing and take off funnel of airport, located at a distance of 13.5 kms. where the aircraft position will be always at the altitude more than 700 mts. Similarly, is the situation of Karnala Bird Sanctuary and Matheran Eco-sensitive zone, in which the position of aircraft will be in the range of 500-750 mts. above.

4.16 Coastal Zone Regulation:

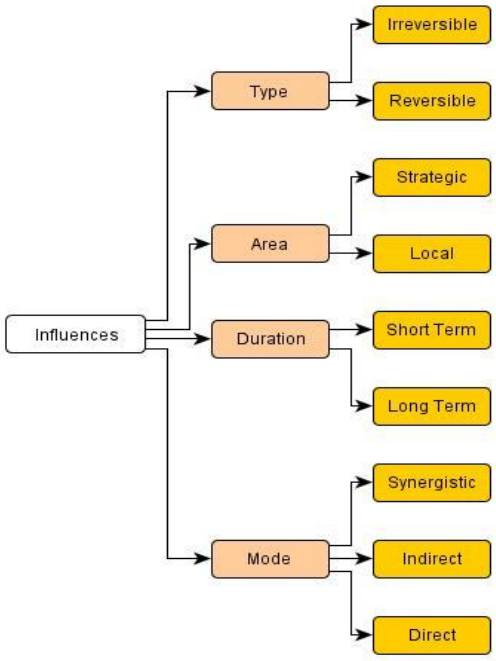
Training of Gadhi river and diversion of Ulwe river proposed is essential for making available the land for airport zone resulting in minor changes in the approved coastal zone management plan of Navi Mumbai. The Maharashtra Coastal Zone Management Authority has recommended the proposal for CRZ clearance to Ministry of Environment & Forest (MoEF).

5.0 Environment Impact & Mitigation Measures:

Environment Impact at various stages i.e. NMIA location, NMIA project design, NMIA construction phase, NMIA operation phase, its

linkage across activities with respect to impact and classification and evaluation of impacts across the affecting environmental components with the various mitigation options have been comprehensively dealt with.

Various activities having impact on environment for each stage has been identified. The evaluation impact has been carried out using modified Leopold matrix created to suit the NMIA activities. The matrix portrays the anticipated intensity of positive and negative impact for each of the activity. To estimate/classify, and prioritize severity of impact a multi-criteria analysis based on influences of the activity on the environment have been used as shown below:
Each influence were assigned weightage ranging from 2 to 6 depending upon the severity. Probability of occurrence, of impact such as low, medium, high and extremely high were assigned the value of 2,4, 6 & 8 respectively.



Overall significance of impact is calculated using formula:
Overall significance of impact = [Mode + Duration + Area + Type] x frequency or probability of occurrence.

The impact arrived for the various components of environment were categorized based on the number arrived using above formula into severity legend of massive, substantial, significant and tangible. The various natural resources which have been identified to be likely affected are air, bio-diversity & forests, ecosystem, health and safety, land, noise, socio-cultural, waste and water & wastewater. Various mitigation measures to minimize the environment impact have been arrived.

6.0 Environment Management Plan:

A Comprehensive Environment Management Plan (EMP) is evolved based on the existing environmental condition and impact assessed in the Chapter-5 Environment Impact & Mitigation Measures, enumerating the set of measures to be taken during construction and operation period to eliminate or offset adverse environmental impact or to reduce them to acceptable level. The EMP document provides various compliances using an appropriate combination of portable and stationery sampling and monitoring instruments for meeting the prescribed standards and regulatory requirement for keeping the healthy and hygienic environment during construction & operation. The recommended frequency and parameter of environment monitoring for proposed project is given below for construction and operation. This monitoring plan may undergo modification to meet the stipulated requirement of MOEF and State Govt.

Environment Monitoring Plan during Construction

S.No.	Component	Parameter	Locations	Frequency
1.	Ambient Air	TSPM, RSPM, SO_2, NO_x, CO	4 locations at the boundary and inside the Airport premises.	24 hourly samples, twice in a week.
2.	Water / ground water / waste water / marine water / storm water	pH, TDS, SS, BOD_5, COD, Oil & grease and Heavy metals.	2-3 locations at the source point	Once in a month.
3.	Noise Level	Hourly Leq.	3 locations within the Airport premises.	Once in a month.

Environment Monitoring Plan during Operation

S.No.	Component	Parameter	Locations	Frequency
1.	Ambient Air	TSPM, RSPM, SO_2, NO_x, CO	4 locations at the boundary and inside the Airport premises.	24 hourly samples, twice in a week.
2.	Stack	pH, SO_2, NO_x, CO	Stacks attached to DG sets.	Once in a six months.
3.	Noise Level	Hourly Leq.	3 locations within and outside the Airport premises.	Once in a month.
4.	Water / ground water / waste water / marine water / storm water	pH, TDS, SS, BOD_5, COD, Oil & grease and Heavy metals.	2-3 locations at the source point	Once in a month.

6.1 Budget for Environment Management Plan

The budget of monitoring, implementation of mitigation and environment management plan to mitigate the potential adverse impact during construction and operation phase has been worked out. The approximate budgetary estimates for environmental measures during construction phase of NMIA will be Rs. 400.00 Crores. The annual budgetary estimate for environmental monitoring during operational phase of NMIA will be Rs. 20 lakhs The detail of the expenditure on environmental measures is presented in the table below:

EMP cost during construction phase

Sr. No.	Item	Rate	Amount (Rs. In Lakhs)
1	Provision of sanitation at construction site	Lump sum	100.00
2	Plantation around the parking area	Lump sum	50.00
3	Plantation /Replantation around the boundary wall	Lump sum	500.00
4	Barrier around the construction yard	Lump sum	50.00
5	Procurement of monitoring and laboratory equipment	Lump sum	500.00
6	Rehabilitation and Resettlement	As per details in section 2.1.1	36985.00
7	Effluent treatment plant and disposal arrangement	Lump sum	400.00
8	Compensatory mangrove plantation	Lump sum	500.00
9	Firefighting equipment	Lump sum	500.00
10	Landscaping	Lump sum	300.00
11	Air and noise pollution safety gadgets	Lump sum	25.00
12	Water quality monitoring	Lump sum	25.00
13	Solid waste management (Dust bins and incinerators)	Lump sum	20.00
14	Mobile health unit	Lump sum	25.00
15	Accidents/Safty	Lump sum	20.00
Grand Total			40000.00
Total : Rs. 400.00 Cr			

EMP cost during operational phase

Sr. No.	Parameters to be monitored	Rate	Amount (Rs. Lakhs)
1	Air pollution monitoring & control	Four locations	6.0
2	Noise level monitoring & control	Three locations	2.0
3	Water quality monitoring & control	Three locations	1.50
4	Meteorological monitoring	One location @ L.S	1.50
5	Miscellaneous	L.S	9.0
Total 20 lakhs			**Rs.**

7.0 Disaster Management Plan:

A Disaster Management Plan (DMP) for Navi Mumbai International Airport Plan has been evolved to tackle the emergency at airport in accordance with the Act, Rule and Codal provision of DGCA, ICAO, Bureau of Civil Aviation Security. The DMP describe the technical as well as non-technical emergency at the airport and the organizational set-up for emergency response, resources and applicable response actions.

8.0 Additional Studies

8.1 Legal Opinion on Permissibility of Activities in CRZ Area

Various activities, such as, mangrove cutting/destruction, diversion and training of rivers, quarrying and cutting of mountain and earth, reclamation, alteration in tidal pattern, are permissible in CRZ area based on CRZ Regulation, 1991 Notification as amended upto 15th May, 2009. However, it is mandatory to approach the Hon. Bombay High Court for obtaining Leave of the Court before implementing the Navi Mumbai International Airport project in the mangrove area after obtaining the environment clearance from the competent authority i.e. Ministry of Environment & Forest.

8.2 Training & Diversion of Rivers Study

A study was carried out to examine the airport development in an area of 1615 Ha. by retaining both the rivers as it is. The various factors related to this option, such as, construction of airport on stilt, runway orientation, security, operation & maintenance and cost implication, were examined in detail and it is concluded that the development of airport without diverting the Ulwe river and training of Gadhi river is not technically feasible and viable as this option cost about Rs.16000 cr. and defeat the very purpose of retaining the geomorphology of rivers and, its aquatic life and mangroves. The training of Gadhi river and diversion of Ulwe river for development of airport is essential, cost effective, less environmentally damaging, hydraulically efficient and easy for construction, maintenance and operation point of view.

8.3. Reorientation of runways Study

The Navi Mumbai International Airport runway orientation and the spacing between the runways has been arrived as 83° - 263° and 1.854 kms. respectively based on the criteria such as; prevailing wind direction, presence of hills in and around the sites compatibility with Mumbai airports for the designed capacity of 60 MPPA. The orientation of runway so arrived falls on the mangrove area along the Gadhi & Ulwe rivers. An exercise was carried out by re-orientation of runway within (+)/(-) 10° with a minimum spacing of 1.525 kms. to minimize the disturbance to mangrove presence and the same was found infeasible due to the presence of hill in the approach requiring savings in the eco-sensitive area of Matheran as well as there is no relief to the area of mangrove present.

8.4 Ground Water Study

A ground water study was carried out to examine the quality and quantity of ground water in the impact zone due to proposed training

of Ulwe and diversion of Gadhi rivers respectively. The study reveals that the high TDS ranging from 2000 ppm to 14000 ppm in 49 water quality network in Panvel, Taloja & Ulwe areas where as high concentration of chloride is found near Turbhe, Kamothe & Kharghar areas. The hydrogeological study concluded that the diversion of Ulwe river near the creek and training of Gadhi river have no adverse effect on ground water régime, as the drainage is not controlled by the structures.

8.5 Vaghvli Island & Coastal line Study

A study was carried out to examine the geomorphology of Vaghvli island as well as the erosion of soil/coastal line in last 50 years using the Survey of India map (1970) and Satellite Imagery of 1992, 1995, 2001, 2006 & 2009 and the same reveals that the shape and status of Vaghvli island remains more or less same. There is no evidence of soil erosion and change in the coastal line in and around the project area.

8.6 Mathematical & Physical Model Study

The Central Water & Power Research Station, Pune has completed the 1D & 2D studies and the studies have shown that the flood levels in these river channels except Ulwe and in the Panvel creek channel along north boundary of airport area were more or less unaffected. In the Panvel creek reach between Gadhi-Taloja confluence to Belapur-Ulwe bridge, a marginal rise in the flood levels of about 0.15 to 0.20 m was predicted for a very short duration at the time of high water. For remaining period, the water levels were more or less same or even slightly lower as a result of channelization of flow, reduced tidal prism and diversion of Ulwe river. Along Ulwe river, due to diversion of river the rise in water level at location of diversion (Panvel - Ulwe road bridge on SH54) will be about 1.6 m for 6 hour duration PMP rainfall and 120 m wide Ulwe diversion channel. The safe-grade

elevation of the proposed level of airport has been suggested in the range of RL 6 to RL 8.5.

The laying of physical model has been completed on the Mumbai Port Model and presently its calibration is in progress at CWPRS, Pune. The CWPRS's reports on 1D & 2D model was also reviewed by the DHI Consultant, who in turn opined that the study carried out by CWPRS is thorough and in competent manner.

8.7 Mangrove Analysis, Plantation & Management Study

The study of Mangrove reveals that the Avicennia Marina is the dominant plant in the project area followed by Salvadora Persica based on the field observation and Importance Value Index (IVI). An area of 161.50 Ha. of mangrove area is found to be affected due to the airport project as worked out based on the Satellite Remote Sensing Study using the Imagery of 1995, 2001, 2006 and 2009 warranting compensatory aforestation. Double the area of 161.50 Ha. of Mangrove need to be planted in accordance with the Order of Hon. Mumbai High Court. Accordingly, an area of 350 Ha. has been identified for plantation of Mangroves at Dhanu Taluka of Thane Dist. Management of mangrove in an around of the airport area and at Dhanu has been evolved by way of conservation and management, establishment of mangrove nursery, public awareness, participation & education, as well as research and resource management.

8.8 Air Quality & Noise Assessment:

The Prediction of incremental Ground Level Concentration (GLC) of $S0_2$ and NO_x and CO with the project is carried out by using VISSIM Software Model. The output of the Model is described below:

- The incremental GLC value for SO_2 due to the normal traffic ranges between 7.2 µg/m^3 to 16.8 µg /m^3 which is well within the prescribed limit of 80 µg/m^3. The addition due to the airport traffic is marginal.

- The incremental GLC value for NO_x ranges between 64 µg/m^3 to 78 µg/m^3 due to the normal traffic which is well within the prescribed limit of 80 µg/m^3. The addition due to airport traffic is in the range of 1 µg/m^3 to 2.7 µg/m^3.
- The incremental GLC value for CO ranges between 0.9 mg/m^3 to 1.28 mg/m^3 due to the normal traffic which is well within the prescribed limit of 2 mg/m^3. The addition due to airport traffic is less than 0.1 mg/m^3 .

The Prediction of incremental Ground Level Concentration (GLC) of CO and NO_x with the project is carried out by using AERMOD MODEL software. The output of the Model is described below:

- The incremental GLC value for CO ranges between 1.40 mg/m^3 to 1.89 mg/m^3 with the project which is well within the prescribed limit of 2 mg /m^3.
- The incremental GLC value for NO_x ranges between 72 µg/m^3 to 79 µg/m^3 due to the normal traffic which is well within the prescribed limit of 80 µg/m^3.

8.9 Rehabilitation & Re-settlement (R & R) Plan:

Ten settlements of seven villages falls in the airport zone and required to be rehabilitated and resettled in the three identified re-settlement sites at Vadghar, Dapoli and Vahal villages. A comprehensive draft of R & R Policy has been formulated for the airport project based on the R & R Policies of State & Nation.

The salient features of the R & R entitlements are allotment of developed plot free of cost, for residential and commercial settlement, additional developed land to nuclear family, financial assistance towards transport cost, reimbursement of non-refundable fee, charges, duties, free vocational training and preferential placement to project affected people, compensation at replacement value of existing settlement, right to collect salvage structural

material, one time financial grant of construction of house, free hold ownership with FSI 1.5 with 15% commercial, subsistance allowance for one year, reservation for job in unskilled and semi-skilled workers category and allotment of preferential equity

The above draft policy has been discussed number of times with the villagers and their suggestions are noted. The suggestions would be suitably incorporated while finalizing the policy with due consultation of the concerned department of Govt. of Maharashtra. The estimated cost of R & R is about Rs.370 Cr.

9.0 Disclosure of Consultants:

Centre of Environmental Sciences & Engineering at IIT., Bombay is the main EIA Consultant to prepare Environment Impact Assessment Study for Navi Mumbai International Airport project. Besides this, there are 12 other international & national of repute consultants who have contributed in their respective field for preparation of Environment Management Plan.