GREATER MOHALI AREA DEVELOPMENT AUTHORITY PUDA BHAWAN, S.A.S. NAGAR

To,

Secretary, State Expert Appraisal Committee, Punjab, C/o Punjab Pollution Control Board, Vatavaran Bhawan, Nabha Road, Patiala.

Memo No. GMADA-DE(PH-2)-2016/ 1824 Dated: 25 5 2016

Subject: Reply of observation raised in the 145th SEAC meeting held on 11.05.2016 for the "Ecocity Phase-2" Project by Greater Mohali Area Development Authority.

This is in reference to the above mentioned subject, we are herewith submitting the point wise reply of the observations raised during the meeting.

Encl: As above

Divisional Engineer (PH-2) GMADA, SAS Nagar.

Reply of the Queries raised during 145th SEAC, Punjab meeting held on 11.05.2016 for "Ecocity Phase 2" Project located at Mullanpur, New Chandigarh

1. The SEAC observed that the project proponent has not clarified as to whether 17.22 acres area of Village Hoshiarpur falls under PLPA is a part of net planned area or not. To this observation of SEAC, project proponent replied that 17.22 acres of Vill. Hoshiarpur is not a part of net planned area of 312.22 acres. The project proponent has applied for Environmental clearance for an area of 467.56 acres with net planned area of 312.22 acres. The environmental clearance will be given only for net planned area and not for the total area. Further the project proponent will submit a written undertaking to the effect that application be considered only for net plan area i.e. 312.22 acres.

Reply: Undertaking regarding Environmental Clearance of Net Planned area i.e. 312.22 acres is enclosed as **Annexure I**.

2. Ground water usage figure needs to be corrected.

Reply: The total amount of water required during operation phase will be 4,094 KLD; which will be met by Bhakra mainline canal (Kajauli waterworks line) (3672.9 KLD) as well as tubewells (421.1 KLD) (or 1,53,701.5 KL/annum) as depicted in the Water balance diagram. Copy of revised water balance diagram is enclosed as **Annexure II**.

3. In the rainwater recharging figure, the quantity of water to be recharged has not been mentioned.

Reply: The amount of water recharged per year will be 2,65,763.76 KL/ annum (approx.), as per the calculations given below:

SI. No.	Type of Surface	Area (in m²) (A)	Run off Coeff. (C)	Average annual Rainfall (in mm) (I)	Annual Run off to be recharged (in m³/annum)
1.	Green Area	1,39,697.48	0.2	1061	29,643.81
2.	Paved Area	3,17,921.04	0.7	1061	2,36,119.95
	Total				2,65,763.76

Thus, the annual recharged water is more than the water being pumped out from groundwater aquifer, thus the project is not expected to cause any drastic negative impact on the aquifer system of the area.

4. The project proponent has not submitted the complete details of Storm water management system which should include existing drainage pattern, drainage after area development works are undertaken and measures to be taken to maintain the undisturbed drainage.

Reply: *Pre-construction:* The natural drainage of the district includes the Ghaggar River and its tributaries form the natural drainage system on Derabassi block of the district. While North-Eastern part is drained by Siswan Nadi, Jainti Devi Ki Rao and Patiali Ki Rao, which emerge from the Siwalik Hills. The Siswan Nadi drains the Northern part of the district and finally converges with Sutlej River in the Ropar district. While Jainti Devi Ki Rao and Patiali Ki Rao drains in NE-SW direction and joins the Ghaggar River. The Siswan Nadi flows along the project site. The area is almost flat with gentle slopes. Also, contour Plan with detailed natural ground level (NGL) in the Mullanpur area is enclosed as **Annexure III.**

A detailed topographical survey has been done for the project site to determine the existing ground levels. The contour map implies that there is very shallow fall from the North to the South of the area.

Consequently, following infrastructural components have been planned i.e. Water supply layout plan, Sewer layout plan & Storm water layout plan, etc. Copy of Water supply layout & sewer layout & storm water layout are enclosed as **Annexure IV.**

As per the rain water harvesting plan for Ecocity Phase-2; total 100 no. of rain water harvesting pits are being proposed for artificial rain water recharge within the project premises. In addition to this, an underground rain water harvesting tank of capacity 50 KL will be constructed in the downstream area; South East direction of the project site to ensure collection of overflow of the run off in the project site during peak rainfall hours. The development of the project site has been planned to contain all the run off within the site premises. The storm water drainage plan encircling the site in addition to the rain water harvesting plan will ensure the same. The storm water drainage plan will be connected with the main line of storm water drain running adjacent to the 200 m wide road in the South East direction.

It will be ensured in the terms & conditions of allotment letter of plots more than 500 m² in area that the owner of the plot will undertake roof top rain water recharging in the premises during the construction of the plot.

During Construction: The Cut and Fill Plan of the project site is as per the contour/ drainage of the site, with excavation work being done in the North West direction of the site and filling work being done in the South East direction, in line with the natural drainage of the area to minimize the impact on down slope area of the project. Further, during construction, all the components of the project have been planned viz-a-viz drainage pattern, and thus will be implemented accordingly. Water supply layout plan, Sewer layout plan & Storm water layout plan, etc. Also,

as boundary wall of the project will not be constructed; therefore, there will be no physical hindrance to the natural flow due to any civil construction or project related activity.

5. The project proponent has not mentioned any details about land environment and it likely impact as such Soil erosion on site as well outside the project site.

Reply: *Pre Construction:* The present site photographs as given below (**Fig. 1**) clearly indicate the presence of natural ground vegetation thus reducing impacts of soil erosion, and land degradation at the site under natural conditions.





Fig 1: Photographs of the Project Site (at present) depicting ground coverage with hedges and low height natural vegetation to curb soil erosion and degradation of land environment.

Further, the Detailed Geotechnical Investigation has been done at the site to investigate the Present Sub Soil Characteristics and other parameters. There is no filled soil at the site and the existing soil is largely compact sand, stiff clay and compact silt from 1 to 1.5 m depth from NSL (as given in Table 1 below). Thus, land is not prone to soil erosion.

<u>Table 1: Details of the nature of strata encountered in the boreholes during Geotechnical Investigation</u>

BH No.	Nature of strata	Depth from N.S.L.
BH-1	ML-CL (Stiff clay)	NSL to 1.5 m
BH-2	CL (Stiff Clay)	NSL to 1.5 m
BH-3	M (NP) (Loose silt)	NSL to 3.0 m
BH-4	CL (Soft Clay)	NSL to 3.0 m
BH-5	SM-SP (Compact Sand)	NSL to 1.5 m
BH-6	SM-SP (Compact Sand)	NSL to 1.5 m
BH-7	SM (Medium Compact Sand)	NSL to 1.5 m
BH-8	ML (Loose Silt)	NSL to 2.0 m
BH-9	ML (Medium Compact Silt)	NSL to 3.0 m
BH-10	ML (Medium Compact Silt)	NSL to 2.0 m

SOURCE: GEOTECHNICAL INVESTIGATION REPORT OF THE PROJECT

During Construction: The impacts due to construction activity include soil erosion, solid waste generation from labor settlements, debris and construction waste.

All measures for protection of land environment due to the impacts arising during construction activities have been planned. Thus, plans have been developed for management of construction waste and waste debris, details of earthwork plan, establishment of labor hutments have been submitted which is according to the contour and drainage plan of the area.

The Cut and fill plan has been prepared for minimizing the risks on land environment in the project site. The area for earthwork cutting, area of earthwork filling and areas for labor hutments has been demarcated to utilize the existing drainage and minimize the impacts of storm water flooding (enclosed in the EIA report D 13).

During Operation: Only 16 trees are existing at present at the project site. Nearly 34.52 acres/139697.48 sq.m. (or 34.52 acres) of green belt will be provided in the project area with 7034 Trees, 5924 Shrubs and 1240 Specimen plants. A detailed list of indigenous species with potential to adsorb air pollutants has been planned for landscpaing in the project area. The detailed estimates/ and quantities of various plantations in the project have been planned & is attached as **Annexure V**.

This will ensure increase in the aesthetic value of the project area and land environment during operation of the project.

6. The demographical features/ analysis have not been given in the EIA report.

Reply: The population of the GMADA area in 2001 was 711,210 persons, with 38.9% of the population classified as urban. The urban population of the GMADA area is highly concentrated in the city of S.A.S Nagar (44.6%), with the remaining 55.4% spread across nine other towns. Mullanpur village accounts for approximately 2.2% of the urban population in the GMADA area. As of 2001, the population of Mullanpur was 6,147 in 1,171 households (Source: 2001 Census of India) (Source: Punjab Urban Development Authority, 2001).

Mullanpur is largely a rural area. The prevailing predominant land use (75.5%) is agriculture. The main settlements are the 32 villages (250 ha) scattered throughout the area. In total, there are 25,937 persons living in the villages. The largest of these is the historic Mullanpur Village with a Gurudwara complex which houses facilities like a primary school, a college, a hospital and temple. Also, local people commute daily to Chandigarh and other areas of Tricity to find alternative sources of income.

Thus, the township has been planned as per the demographic requirement of the area and to cater to the regional requirements of the area development in future, as per the Designed Master Plan of Mullanpur and Mohali at large, principally approved by the Punjab State Development Authorities, and to be implemented by GMADA. Thus as per the Master Plan of the area, the

present project activities have been planned in consequence to the detailed study of the demographic data and projected housing requirements in the area, in future.

However, with the development of the area, people can undertake temporary income generation activities like establishing food stalls/vegetable hawkers, electronic shops, grocery shops, etc., other vocational options like maid services, street sweepers and other miscellaneous activities. Also this will indirectly increase the business of shops existing near the project site. Further villagers supplying vegetables, milk, milk products etc. will get a new market to sell their products. Skilled villagers of the nearby villages will get job in plumbing maintenance, landscaping and security services. The institutional areas which will come up in the project will also increase the job opportunities for villagers. Thus, project may also lead to minor negative impacts of sprawling & mushrooming of such temporary habitations around the area to provide support service to a population of 28,367. Further, there might be development of slum dwellings around the area thus, local authorities must ensure to curb these negative impacts of the project.

Hence, the project will led to overall economic development of the area, fulfill housing requirements and increase in the income generation opportunities for the local community. The shopping complexes, community centers etc. will generate employment opportunities for the local youth and overall progress of the area.

GREATER MOHALI AREA DEVELOPMENT AUTHORITY PUDA BHAWAN, S.A.S. NAGAR

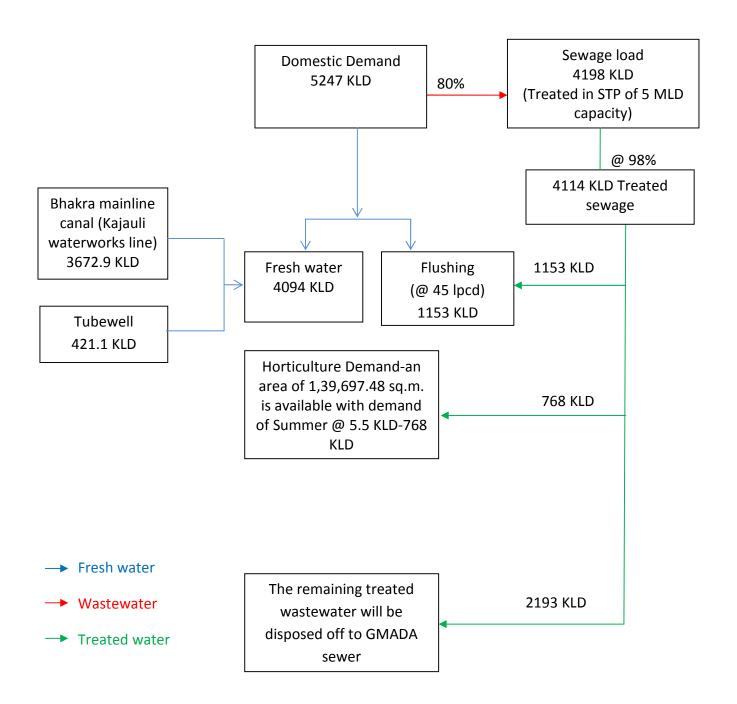
Date: 25-5-2016

UNDERTAKING

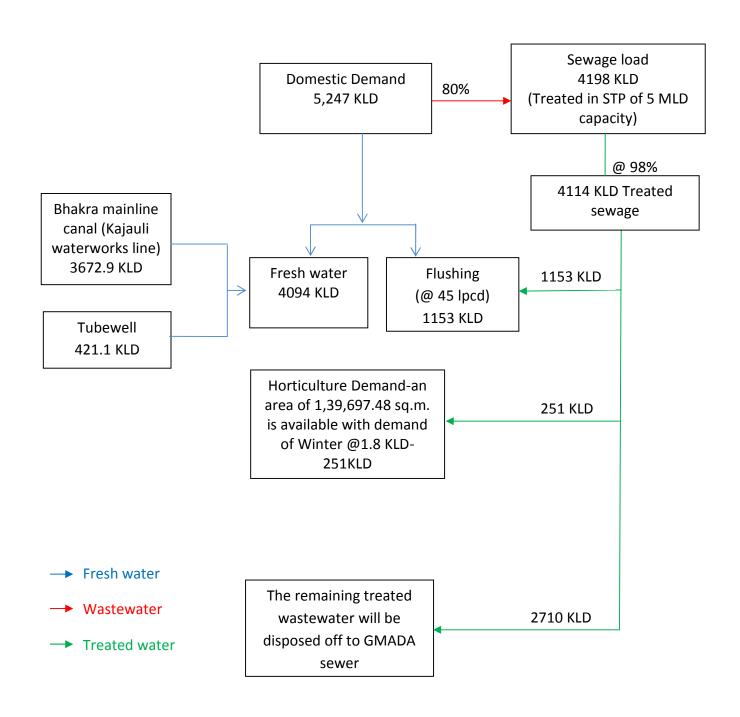
I, Dharam Pal, Divisional Engineer (PH-2) of Greater Mohali Area Development Authority for the Area Development Project "Ecocity Phase 2" located at Mullanpur, SAS Nagar, Punjab hereby declare that we have total site area of 467.56 acres; out of which net planned area is 312.22 acres thus, Environmental Clearance may be issued for the net planned area of 312.22 acres.

Divisional Engineer (PH-2) GMADA, SAS Nagar.

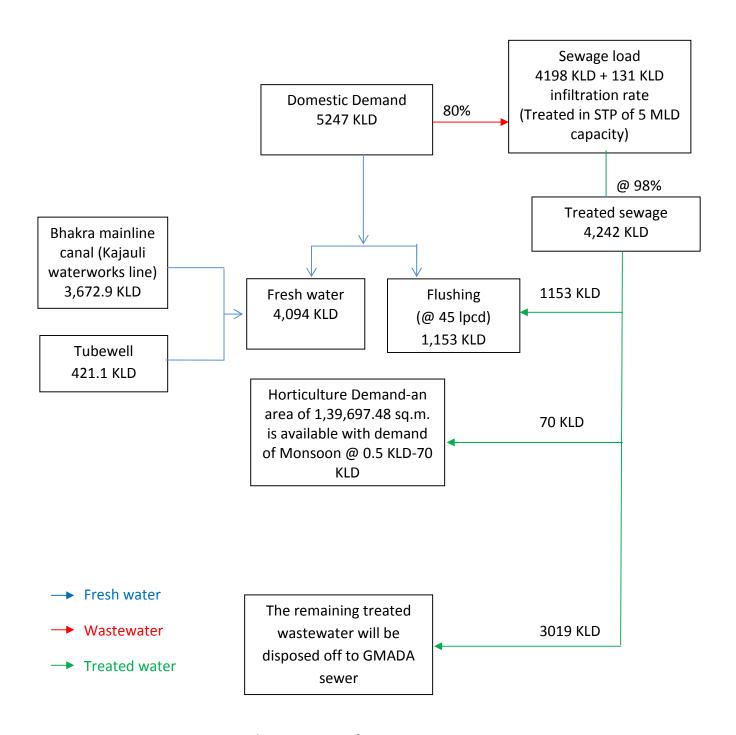
REVISED WATER BALANCE



Water Balance Diagram for Summer Season

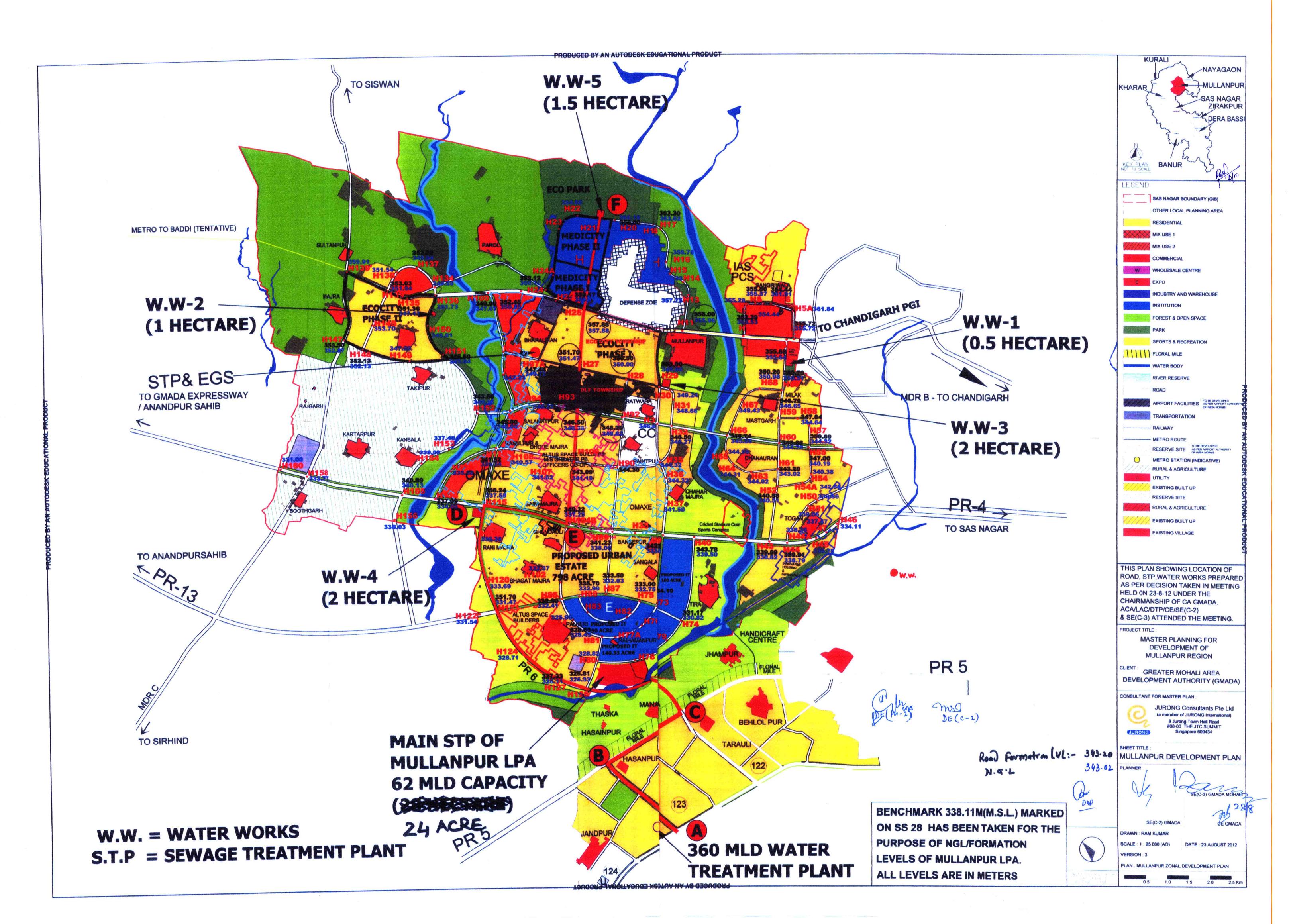


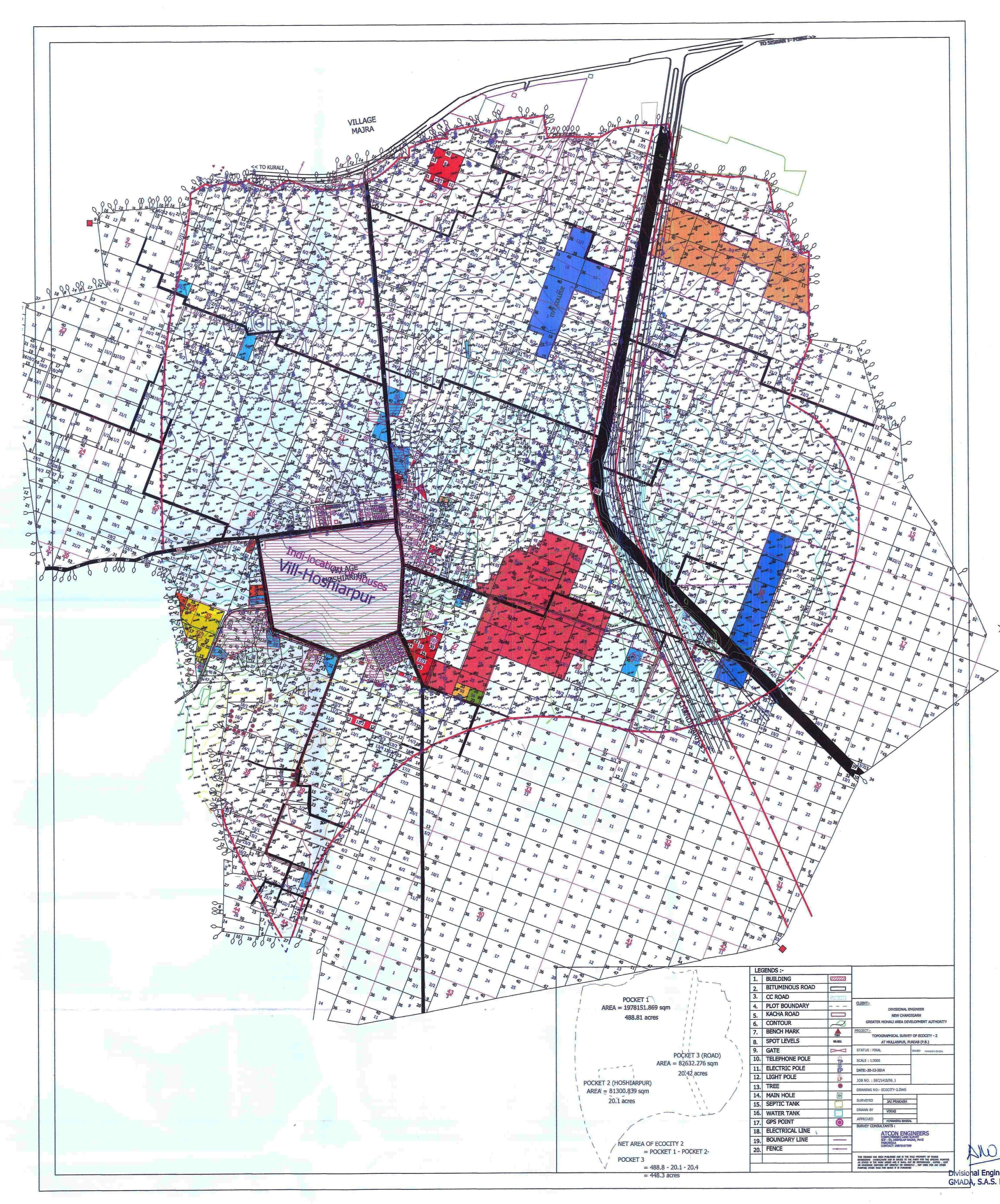
Water Balance Diagram for Winter Season

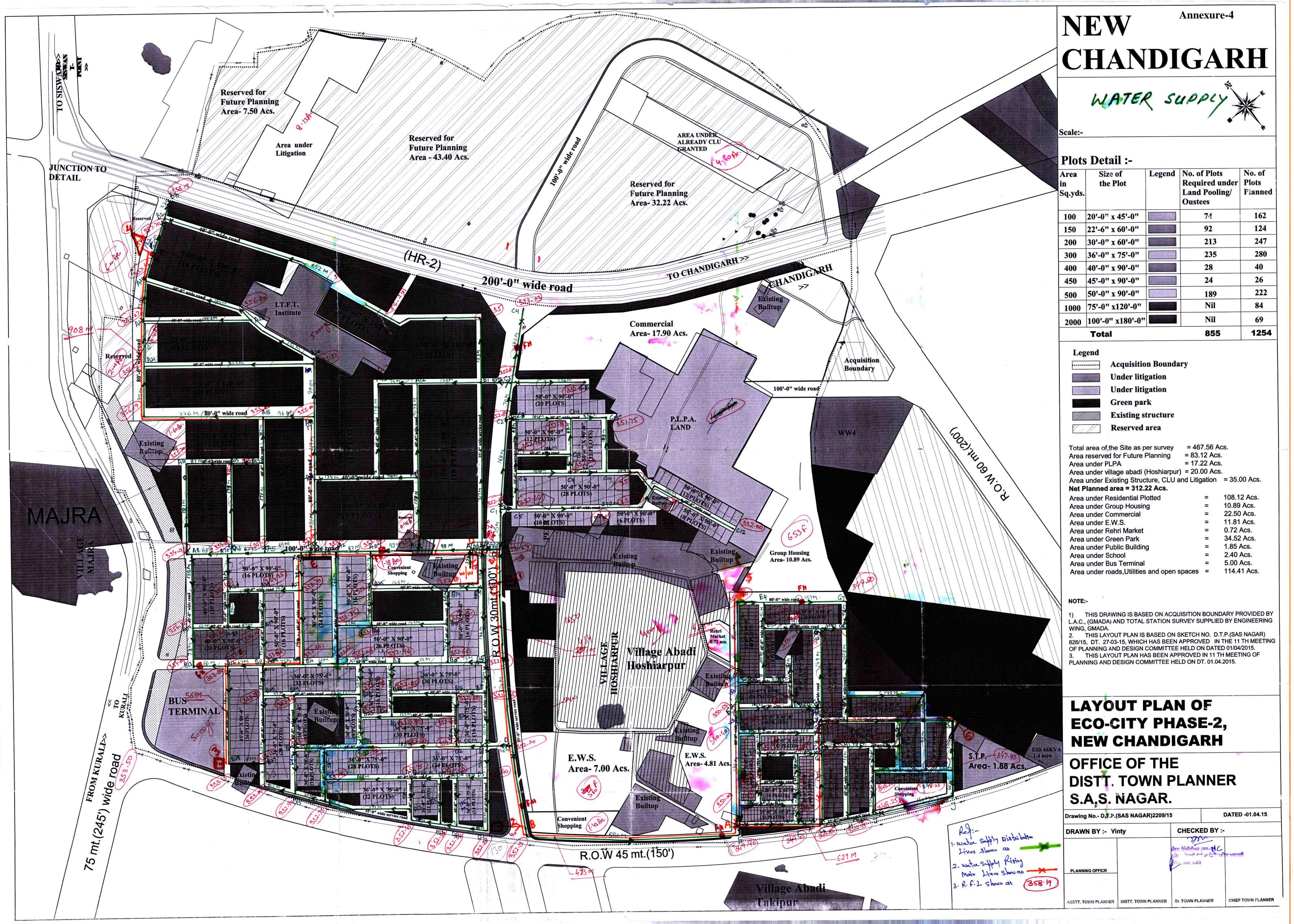


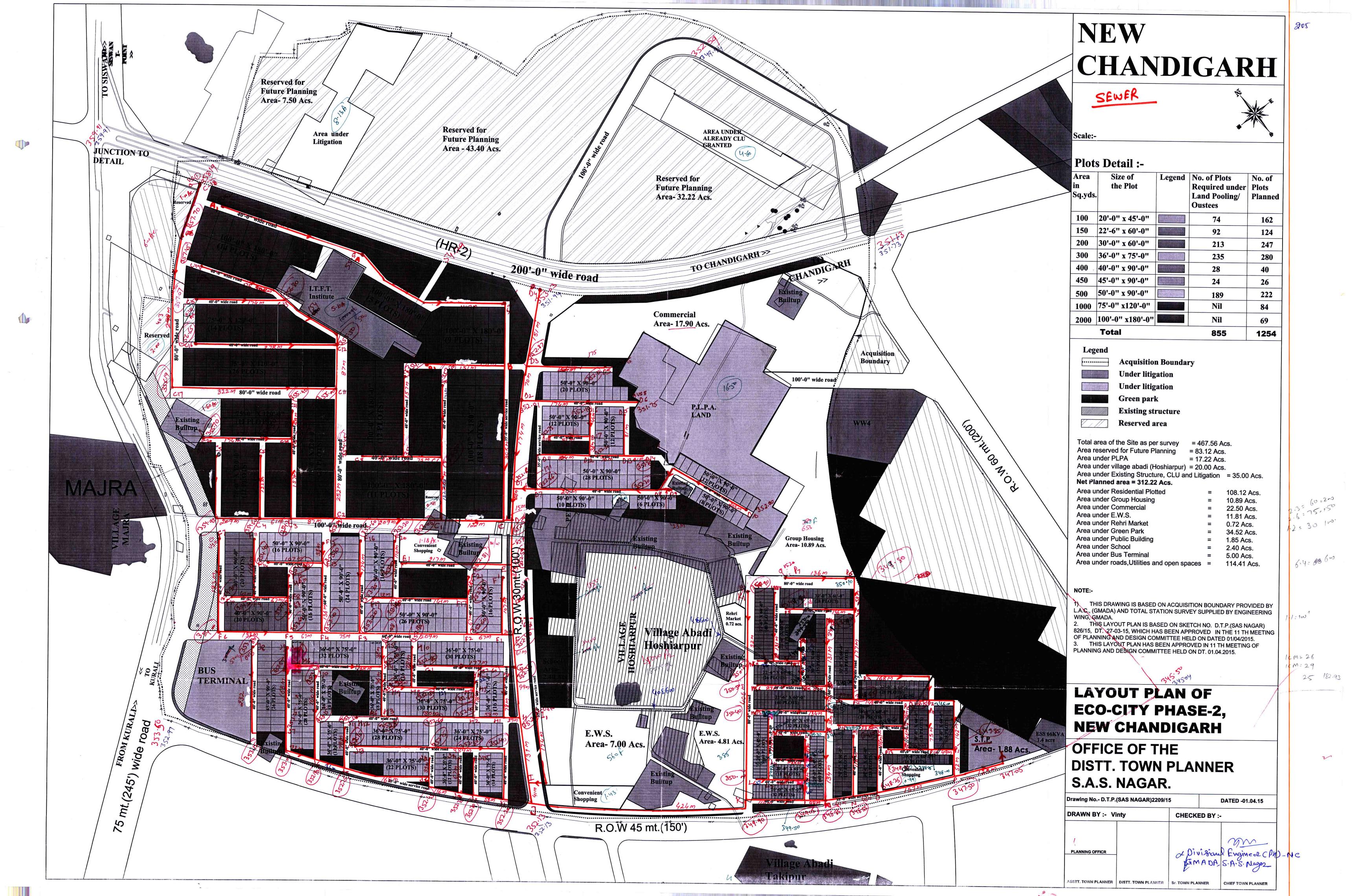
Water Balance Diagram for Monsoon Season

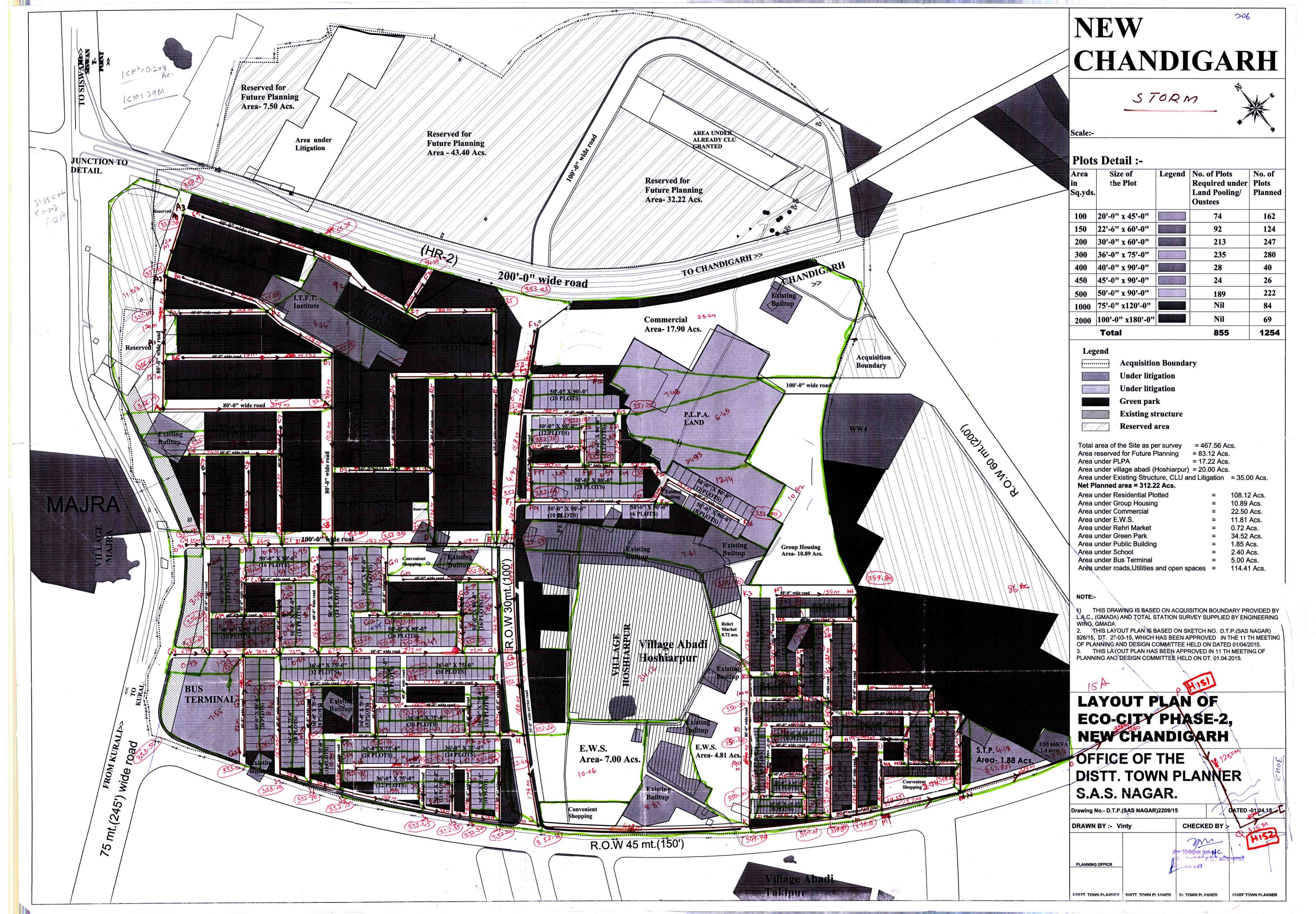
➤ Infiltration rate = 131 KLD {655 manholes × 200 lt./manholes/day}

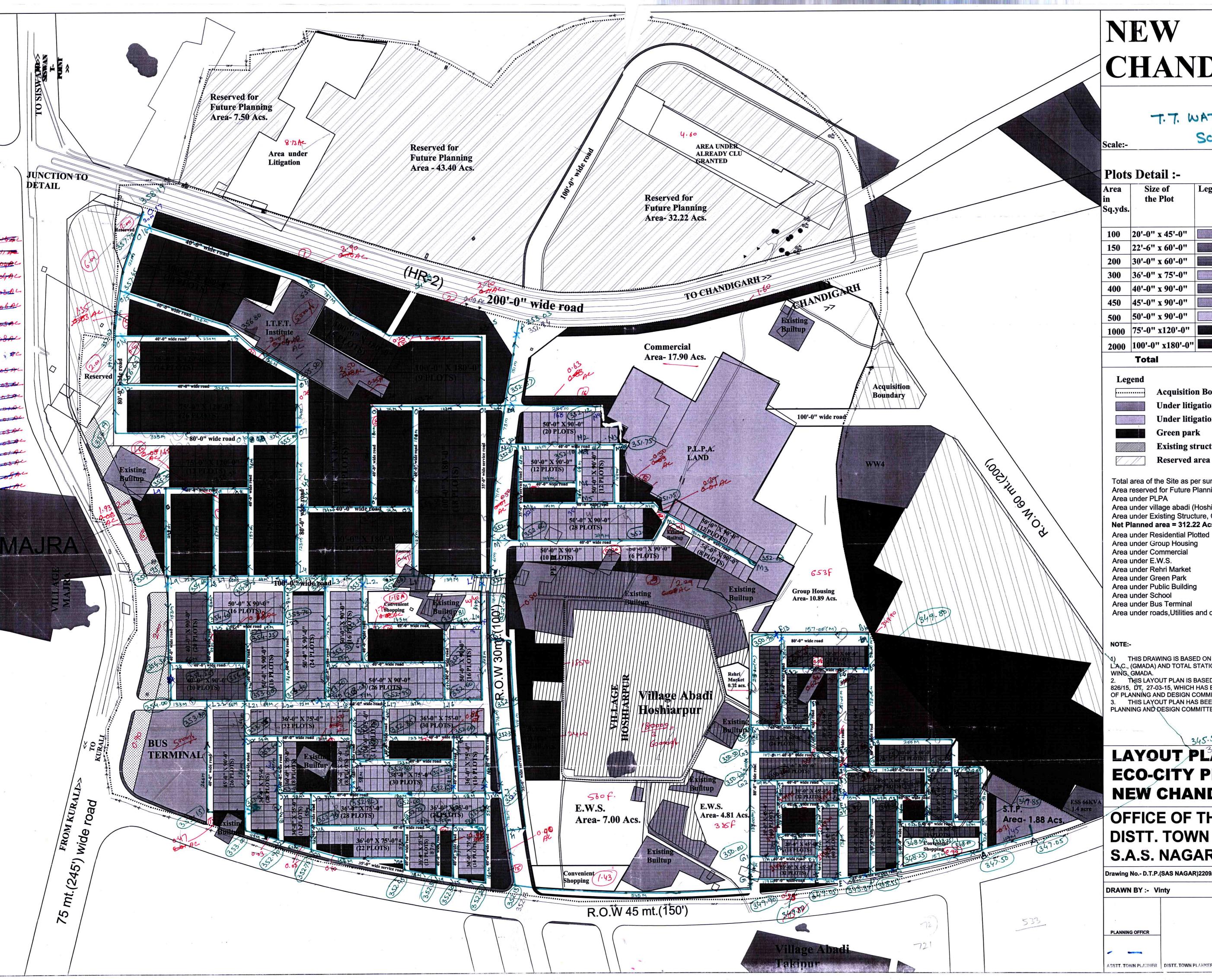












NEW **CHANDIGARH**

T. T. WATER Sulphly
Scheme

Area n Sq.yds.	Size of the Plot	Legend	No. of Plots Required under Land Pooling/ Oustees	No. of Plots Planned
100	20'-0" x 45'-0"	A BUT I	74	162
150	22'-6" x 60'-0"		92	124
200	30'-0" x 60'-0"		213	247
300	36'-0" x 75'-0"	HORE	235	280
400	40'-0" x 90'-0"	The leave person with	28	40
450	45'-0" x 90'-0"	Florida Ar	24	26
500	50'-0" x 90'-0"		189	222
1000	75'-0" x120'-0"		Nil	84
2000	100'-0" x180'-0"		Nil	69
	Total	855	1254	

Acquisition Boundary **Under litigation Under litigation**

Existing structure

= 467.56 Acs. Total area of the Site as per survey Area reserved for Future Planning = 83.12 Acs.

= 17.22 Acs. Area under village abadi (Hoshiarpur) = 20.00 Acs. Area under Existing Structure, CLU and Litigation = 35.00 Acs.

Net Planned area = 312.22 Acs.

108.12 Acs. 10.89 Acs.

Area under Residential Plotted

22.50 Acs. 11.81 Acs. 0.72 Acs. 34.52 Acs. 1.85 Acs. 2.40 Acs.

Area under Bus Terminal 5.00 Acs. Area under roads, Utilities and open spaces = 114.41 Acs.

OF PLANNING AND DESIGN COMMITTEE HELD ON DATED 01/04/2015 3. THIS LAYOUT PLAN HAS BEEN APPROVED IN 11 TH MEETING OF PLANNING AND DESIGN COMMITTEE HELD ON DT. 01.04.2015.

LAYOUT PLAN OF **ECO-CITY PHASE-2, NEW CHANDIGARH**

OFFICE OF THE **DISTT. TOWN PLANNER** S.A.S. NAGAR.

Drawing No D.T.P.(SAS NAGAR)2209/15 DATED -01.04.15
DRAWN BY :- Vinty	CHECKED BY :-
PLANNING OFFICR	ਮੇਲਜ ਵਿੰਜੀਗੀਅਰ (ਜਸ-14 C ਗਰੇ ਪਸੈਂਟ ਅਥਾਰਟੀ ਮੇਤ ਹਹਾਰ
ASSTT. TOWN PLANNER DISTT. TOWN P	ANNER SI. TOWN PLANNER CHIEF TOWN PLANNER

DETAILED COST ESTIMATE FOR DEVELOPMENT OF HORTICULTURE WORK IN ECO-CITY PHASE -D IN NEW CHANDIGARD

DETAIL OF QUANTITIES

S. No.	7,000	- Constitution	Description of its	ms	Quantity	*****
J	PROVIDIN A. Planting			SAPLING OF TREES	7034 Nos.	
\$3	I, planting sa	pling of t		@ 25 feet plant to plant ter roads as per		
	The state of the s	10 (5) (1) (1) (1) (1)	trees in school =1	00 Nos		İ
	E:	pling of t nnex-2; 1	rees in green park	s @ 60 Nos of trees per		
			veloned true of mir	imum height 8' having	702 ()	
		ss of 1" tl	ickness at 4'6" nhe	ight from ground level in	7034 Nos.	2
2	Providing an 1. Providing a distance in tw	nd planti	ng of shrubs @ 3	feet plant to plant	5924 Nos.	
ļ	Sr no. Ros		Length of road 1800 feet	No. of shrubs 600 X 2 =1200		
	2 46		1800 feet	600 X 2 =1200		İ
ĺ	TOTAL ™ 120	0+1200 =	2400 Nos.			
ŀ	2. Providing a	nd plantir	ng of shrubs in sch	ool: 200 Nos.		
İ	3. Providing as acre as per An	nd plantin	ng of shrubs in gre	en parks @ 100 nos per		
			g of specimen pla	nts:	1240 Nos	1 0
].				nts on central verge		
samurodia				distance:	3.2-0zrehamennemektettetingilei	rejaván
	Length of rea	nd == 1800	feet +1800 feet **	3600 feet		-

Divisional Engineer (PH-2)

GMADA

компосиональная

Marjor C

	-3*	
	i.e. 3600 feet/15 fcct = 240 nus.]
	Providing and planting of specimen plants in green belts: 1000 Nos	
4	Providing and fixing of tree guards:	7034 Nos
S	Providing and planting of selection no. 1 grass:	128310,56 sqm
	Providing and planting of selection no.1 grass in green parks as per Annex-	эди
	Area of green parks = 33.24 acres or 134517.50 sqm	
	1. Less area of trees in parks @ 2 sft per tree, 1994 X 2 sft = 3988 sft or 370.48 sqm	
	2. Less area of shrubs in parks @ 1 sft per shrub, 3324 X 1 sft = 3324 sft or 308.80 sqm	a
	3. Less area of specimen plants in parks @ 2 sft per tree, 1000 X 2 sft = 2000 sft or 185.80 sqm	
	4. Less area of ground covers (rare and specimen) =2670.93sqm 5. Less area of seasonal flower beds = 2670.93 sqm	
	Total Less = 6206.94 sqm Balance area = 128310.56 sqm	
6	Providing and planting of ground covers (rare and specimen) in green parks: Providing and planting of ground covers (rare and specimen) in 2	2670,93 sqm
	percent of total area of green parks i.e. 33.24 acres X 2 % = 0.66 acres or 2670.93 sqm	
77	Providing and planting of scasonal flower beds in green parks:	2670.93
	Providing and planting of seasonal flower beds in 2 percent of total area of green parks i.e. 33.24 acres X 2 % = 0.66 acres or 2670.93 sqm	sqm

CMQ.

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DETAIL OF PLANTS TO BE PLANTED AT ECOCITY PHASE -H AT NEW CHANDIGARH

UST OF TREES:

- Chakrasia
- 2. Moulsari
- 3. Koelreuteria
- 4. Putran-Jiva
- 5. Sukh Chain6. Ficus Microcarpa
- 7. Ficus Benjamin
- 8. Neem
- Arjun
 Bahera
- 11. Amla
- 12. Jamún
- 13. Pilkhan 14. Harar
- 15.Mahagni 16.Amaltas
- 17.Gulmohar 18.Butea monosperma 19.kachnar
- 20. Agathus robusta

L IST OF SHRUBS: 1. Hamelia patens

- 2. Yellow kaner
- 3. Pink kaner
- 4. Teccoma gaudichaudi
- 5. Hibiscus
- Plumeria alba
- 7. Single chandni
- Double chandni
 Jhumka vel
- administration 1.0 Galden abatella formation and a company and a company and a company and a company and a comp
 - !1.Chlorodendron splendens

12.varigated chandni

Divisional Engineer (PH-2) GMADA, S.A.S. Nagar

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L IST OF SPECIMEN PLANTS:

- 1. Pine tree
- 2. Agathus robusta
- Washintonia palm
- 4. Bismarkia
- 5. Arica plam
- 6. Cycas revoluta
- 7. Royal palm
- 8. Date palm
- 9. Phoenix palm

ਅਰ (ਬ) ਗਮਾਡਾ, ਏ:ਐਸ: ਨਗਰ

Divisional S.A.S. Pagar

DETAIL OF PLANTS PLANNED FOR MEDICINAL AND FRAGRANCE GARDEN IN ECO-CITY PRASE-II AT NEW CHANDIGARII

Sr. No.	MEDIO	CINAL PARK	FRAGRANCE PARK		
	Trees	Shrubs	Trees	Shrubs	
1	Aegle marmelos	Neriam Oleander	Eucalyptus	Pulmeria Alba	
2	Terminalia chebula	Aloe vera	Magnolia grandiflora	Gardenia jasminoides	
3	Terminalia chebula	Adhatoda vasica	Magnolia champaca	Cestrum nocturnum	
4	Phyllanthus emblica	Bep turmeric	9999 100 KL	Cestrum diurnum	
5	Terminalia arjuna	Stevia	Base or	Rose (pink,red)	
6	Azadirachta indica	Lawsonia Intermis	68 64 64 64 64 64 64 64 64 64 64 64 64 64	Jasmine	
7	Syzygium cumini	Ocimum tenuiflorum	to the sec	Rajnigandha	
8	Clnnamomum camphora	Withania somnifera		Chameli	
9	Casurina	Clove	844-4	Madhu malti	
1.0	FF at a common or or or or or or or or or or or or or	Cinnamomum - zeylanicum		Golden champa	
11		Nyctanthes arbor-tristis		Lemon	

NN.

ਮੰਡਲ ਇੰਜੀਨੀਅਰ (ਬ) ਗਮਾਵਾ, ਐਸ:ਏ:ਐਸ: ਨਗਰ Divisional Engineer (PH-2) Divisional S.A.S. Nagar