11. OPEN SPACES AND LANDSCAPING OF CHANDIGARH

11.1 INTRODUCTION

Chandigarh is known all over the world as an outstanding example of architecture, planning and landscaping. The seeds of extensive landscaping and verdure were embedded in the city layout plan by its architect-planner Le Corbusier right at the beginning, with the provision of large number of open spaces, green belts, city parks and neighborhood parks. Today, after nearly 60 years of its inception, the city stands out for its high quality of life and clean, relatively pollution free environment, unlike other growing urban areas in the country. Its citizens enjoy a direct relationship of the built-form with nature, and have abundant access to green spaces all over the city. Thus Chandigarh has been endowed with a great legacy of landscaping and greenery. The conservation of this green heritage in future is a major concern with regards to the rapid development of the city in the last few decades.

- Chandigarh - the ‘Green City’

It is important to view this aspect of the green city legacy of Chandigarh in the context of critical issues that need to be addressed and preserved as much as possible with the challenge of the rampant growth of the city and the resultant stress on its green component. Chandigarh, is perhaps one of the few cities of the world of the 20th century, whose original layout plan has a meticulously planned, hierarchy of open spaces, landscaped areas, recreational areas and tree-lined roads, avenues and gardens spread all over the city.

The intent of the founding fathers of the city was very clear-- that the new city would be a place where the buildings and the built form would nestle in close communion to the elements of nature, and the residents of the city would enjoy direct and immediate access to natural settings.

The city residents would be endowed with the joy of parks, gardens, neighborhood open spaces and tot-lots available in abundance and in close proximity to their door steps.
11.2 HIERARCHY OF OPEN SPACES

As mentioned above, there is a well structured and order in the hierarchy of open spaces in the city ranging from the neighbourhood level to the city level. As such, the city unlike traditional towns of India does not have any incidental or random left-over open spaces; but rather a well planned orderly structure. Over the last 60 years, this pronounced green aspect of the city has become its hallmark and a proud heritage and also taken root as something very dear and precious for its inhabitants, that not only needs to be protected carefully but also nurtured further.

The phenomenal growth and the population upsurge of the city far beyond its planned capacity, have been reasonably well absorbed, essentially because of the abundance of greenery and the rich tree foliage of the city.

The Urban Development (UDPFI) norms for open spaces recommend that the overall quantum of town level /city level parks should range between 10 sq. meter to 12 sq. meter per person, which would include parks, play fields, specified parks, amusement parks, maidans, multi-purpose open spaces, botanical garden, geological park and traffic park etc.

An analysis of such-like open spaces within the city brings out that in the first phase 1850.33 acre (19.69%) was planned as open spaces.

In the low density sectors developed in the first phase having large-sized plotted development with low ground coverage and FARs, the overall ambience is that of a lush green city interspersed with low rise buildings with generous presence of natural elements.

The building norms then also ensured that the boundary walls were very low which helped extend the city’s horizons visually as one continuous green area.

Also the huge chunks of land and open spaces allotted to the institutional areas in the first phase (which are nearly more than double the present norms in many cases) also well planted and green, enhance the overall open space quantum in the first phase of Chandigarh. As such the green open spaces available either in the form of private housing, schools, colleges or other institutional large campuses such as Punjab Engineering College, Panjab University; over and above the planned green areas in the city layout, contribute as much as the overall city greenery and open spaces.

Another very precious legacy of the city’s green identity is the establishment of long clear cut vistas available in the first phase of the city connecting the residents to the skyline of the hills through continuous green spaces such as sector greens, Leisure Valley, Sukhna Lake promenade etc. in conjunction with low-rise, built forms and low boundary walls - is now seemingly under threat in the second phase, where smaller and lesser plotted development took place. It is the least in the third phase essentially, because of housing blocks and apartments built more than plotted development.

The zoning plans of group housing mandates 15% of community open spaces within campuses to maintain closeness with nature and for outdoor activities.
CHILDREN PLAY EQUIPMENT WITHIN PARKS

WAR MEMORIAL WITHIN BOUGAINVILLA GARDEN SECTOR 3

MARTYRS’ PILLAR IN TERRACE GARDEN SECTOR 32
MEMORY PARK

In order to safeguard Le Corbusier’s concept of green parkland on the north of the Uttar Marg, the area between the High Court and the Sukhna Lake, the Memory Park was created. It was felt that institutionalising the area was necessary to keep it green and free from encroachments. The area, however, needs to be properly maintained and citizens be made aware of its presence.

REVIVAL OF THIS PROJECT WOULD ADD TO THE REVITALISATION OF THE CAPITOL COMPLEX SURROUNDINGS.

Butterfly Park in Sector 26 is one of the most beautiful landmarks of the City Beautiful - a befitting example of biodiversity from which students and teachers alike could learn highly stimulating lessons to cultivate love for Mother Nature. It should be conserved in its original form and maintained with care warranted by a Heritage site.
11.3 MAJOR OPEN SPACES IN THE CITY

• **Rose Garden**

Named after India’s former President Dr. Zakir Hussain, the Rose Garden is the largest of its kind in Asia and is spread over an area of 27 acres. Built as a part of the green belt, the garden has a large variety of roses and a fountain to relax the soul.

**This park has been recommended for the heritage status and further interventions should be made strictly as per heritage regulations and approval of the Chandigarh Heritage Conservation Committee.**

• **RAJENDRA PARK**

Spread over a sprawling area of 400 acres, the Rajendra Park adjacent to the Secretariat building is designed by Le Corbusier himself as part of the Capitol Parc. Trees with round canopies and evergreen foliage have been planted here. The plantation has not followed the original plan.

**The park is presently being used as a helipad and is an out of bound area for the city residents. This park has been recommended for the heritage status and needs to be completed as per the original plan in consultation with the Chandigarh Heritage Conservation Committee.**

The proposals should include:

- Shifting of the helipad to an appropriate site in consultation with airport and security officials
- Removal of security tents and barbed wire fencing along the Uttar Marg.
- Defining the edge of the park towards village Naya Gaon, Punjab side which is presently littered with garbage and presents a very shabby appearance.
• Sukhna Lake – an inseparable part of city’s life

Located on the North Eastern part of the city, the Sukhna Lake forms part of the Capitol Park designed by Le Corbusier and was a gift to Chandigarh citizens for peace and tranquility. The area was declared as a ‘Silence Zone’. It is a major recreation zone of the city and offers water sports, pedestrian promenades and various other sports activities.

It is fed by water from the catchment area of the seasonal rivulets on the foot hills of the Shivaliks. The lake is on the list of Heritage Precincts shortlisted for heritage status.

Recommendations:
- Shortlisted as heritage precinct.
- No intervention without the approval of the Chandigarh Heritage Conservation Committee.
- Sukhna Management Plan advocated.

The threats to the survival of the lake and recommendations have been dealt in detail in Chapter – Ecology and Environment.

Chandigarh Sukhna Lake is an inseparable part of the city’s life. The lake promenade which is the longest vehicle free area is actively used by the residents for long walks during the day. There is attraction for all visitors, depending on the time and season of the year. Boating, rowing, sculling, sailing can be enjoyed throughout the year. The lake has the longest channel for rowing and yatching events in Asia.

The lake is also the venue for many festive celebrations including food festivals & cultural performances.
Garden of Silence at Regulator End, Sukhna Lake

The regulator end has recently been landscaped. The area on the lower end of the bandh has been developed as the Garden of Silence.

A Nature Interpretation Centre is also being developed in a beautiful earth sheltered structure.

Source – Drawings & 3d views by the Department of Urban Planning, UT
Source – Drawings & 3d views by the Department of Urban Planning, UT
TOURIST INFORMATION CENTRE - SUKHNA LAKE

NATURE INTERPRETATION CENTRE AT THE REGULATOR END SUKHNA LAKE
• THE OTHER MAJOR WATER BODIES IN CHANDIGARH

LAKE SECTOR 42
Spread over three acres, the Sector 42 lake falls within the green belt adjoining the Beant Singh Memorial. The lake is fed by two tubewells.

The lake, which was inaugurated in October 2008, to provide a site to perform religious ceremonies like Chhat Puja and Ganesh Puja which were earlier performed in the Sukhna Lake.

It is one of the main attractions for the residents of the southern sectors too. The Chandigarh Administration is developing a Garden of Palms and a Tourists Reception Centre here.

• The area is thus developing into a major cultural hub of the city.
• **THE LEISURE VALLEY**

The Leisure Valley is a continuous 8 km parkland with various theme gardens, extending from the north-eastern tip of the city to its south-western tip, and further extending to Mohali in the Punjab region. This parkland was developed as one of the original landscape features of the Plan by Le Corbusier converting an existing eroded valley along the seasonal rivulet of N-Choe.

On one hand it ensured the preservation of an existing ecological feature of the site, and on the other provided an opportunity enabling the city residents to move through the heart of the city in a continuous band of various theme gardens. Also this provided an un-obstructed vista of the Shivalik foothills and Kasauli peaks to even the residents of the south-western end of the city.

As such, the significance of this parkland is not only of environmental and ecological values, but of enormous aesthetic value also. **It also provides a unique opportunity for a possible pedestrian link to the Capitol Complex of the city from its south-eastern end.**

However, this potential has not been fully fulfilled, in the absence of the pedestrian underpasses existing beneath the V4 and V3 road links of various sectors interrupting its continuity on surface level.

Similarly, in the original concept, a canal had been proposed to run along Uttar Marg-- extending from the Rajendra Park to the Sukhna Lake, however the same is not viable now, because of the vast changes and intrusions that have been already made there, and that cannot be undone now.

The 8 km long Leisure Valley provides unique opportunity for a possible pedestrian link to the Capitol Complex of the city from its south-eastern end as part of the Green Corridor 5 if the green stretches are interconnected through pedestrian cycle underpasses (see Chapter 10 on Traffic and Transportation)
• **THE ROCK GARDEN**

Spread over several acres, this fantasy land designed by Padam Shri Nek Chand is a vast open-air museum that showcases a vast array of natural rock forms and stones.

The layout of the garden is based on the fantasy of the lost kingdom. Rock Garden, by its organic forms and non-geometric layout, offers an apt counterpoint to Chandigarh’s stylised architecture and has also been recommended for heritage status.

The Rock Garden was not a part of the original Plan as conceived by Le Corbusier and was considered as a violation to the same.

The Chandigarh Master Plan 2031 proposes to legalize the area in view of the creative excellence displayed which has earned the place and the creator world wide recognition.

Further interventions shall be strictly as per the recommendation of the Expert Heritage Committee which have been elaborated in detail in the Chapter on Chandigarh Heritage.

The broad recommendations are:
- According Heritage Status to the Rock Garden
- No further expansion of the area.

*Source: Google map - Location of The Rock Garden*
11.4 TREE PLANTATION HERITAGE AND RELATED ISSUES

It needs to be re-emphasized that Chandigarh has the unique distinction to be one of the few cities in the world with a thorough planned tree plantation system, along its varied hierarchy of roads and open spaces. A Landscape Advisory Committee headed by Dr. M S Randhawa, and with Le Corbusier as its member, was established at a very early stage of the city’s development.

Accordingly, Le Corbusier had prepared very detailed road sections for a systematic, functional and aesthetic tree plantation with environment value along various types of roads and in the different hierarchy of open spaces existing in the city. These concepts were carried out in full earnest and sincerity at least upto the first phase. All decisions, pertaining to the nature and type of tree plantation to be undertaken along all roads and open spaces were taken by the Landscape Advisory Committee in consonance with the concepts and visions of the planners of the city. However, this wonderful practice has not been carried forward with the same sincerity and methodology in the phase II and phase III of the city.

Preserve the Tree Heritage of the City

In order to preserve and enhance the great tree heritage of the city, systematic plantation in the remaining open spaces roads and avenues or for undertaking substitute tree plantation of the old and dying species should be undertaken with the same analytical and systematic methodology, as followed earlier.

With the increase in built volumes and nature of residential accommodation changing from plotted development to group housing, especially in Phase-III; even greater significance for carefully planned tree plantation cover and foliage in the precious little remaining open spaces and roadsides available needs to be followed. All feature replacement tree plantation should be taken only through revived Landscape Advisory Committee.
11.5 DIVERSE OPEN SPACES IN CHANDIGARH GREEN BELTS ALONG MAIN AVENUES

Besides the dedicated gardens and parks, green belts have been provided along the main avenues of the city like Mango Garden belt along the Purv Marg which also acts as a buffer between the Industrial Area and the residential area. Maintenance of the road side berms and green spaces shall be institutionalized, since the unkempt look presents a poor image of the city while travelling along the important avenues of the city. Street furniture, signage, light fixtures and fitting shall be comprehensively planned in keeping with the character of the city in view of the Heritage status being accorded to the V2/V3 and V4 roads (See Chapter --- on Chandigarh Heritage)

**Roundabouts**

City residents have a strong affinity with the city’s beautifully landscaped roundabouts and have opposed removal of the same on occasions when replacing roundabouts with the ATC lights was considered to ease out traffic congestion at the intersections.

Roundabouts are not considered viable for traffic volumes beyond 3600 pcu on peak hours if the diameter is upto 90 m with four arm rotary as per Indian Road Congress guidelines. In order to continue to retain the roundabouts, the residents shall have to reduce use of personalised modes and adopt mass rapid public transport – Metro/BRTS as well as Non Motorised Transport (NMT) systems which is being introduced in a big way in the city. (See Chapter 10 on Traffic and Transportation).

**Matka Chowk**

The roundabout beautifully landscaped shall be the major interchange node for the metro corridors.

The proposal needs to modulated so as not to have an overpowering structure. The structure proposed by DMRC needs to be reviewed so as not to be overbearing.
11.6 RECOMMENDATIONS OF THE EXPERT HERITAGE COMMITTEE ON OPEN SPACES / GREEN AREAS

The Expert Heritage Committee on Preservation and Conservation of Chandigarh has recommended preserving certain green areas of the first phase, for declaration as ‘Heritage Status’.

Open Spaces, in terms of the original concept of the Green City, are the Soul of Chandigarh, and must never be stifled by thoughtless additions of buildings in the future. The three planning postulates of Sun, Space, and Verdure should always remain our directive principle. Verdure or Greenery is where Space is and Space comes alive only when it is bathed in Sun!

Management plan for regular upkeep of the Leisure Valley, city greens and parks is absolutely necessary.
ANALYSIS - AVAILABILITY OF GREEN/OPEN SPACES

- Green area available within the sectoral grid = 2342 acres.
- Green area available in Manimajra = 71 acres.
- Botanical Garden = 180 acres.
- Total planned green area = 2593 acres.
- Required green area (2031) @ 12 sq.m/person = 2616.55 acres.
- Shortfall = 23.55 acres.
- Forest Area in U.T. Chandigarh=3436Ha.
- Total Green Area including Forest = 3828 Ha. (9455 acres).
- Green/Open Spaces (percentage) = 33.5% of the total area

ANALYSIS OF OPEN SPACES WITHIN THE SECTORAL GRID

- Average green available in 2001 (sqm/person)=17 sqm/person.
- Average green available in 2031 (sqm/person)=10.7(sqm/person).
- Sectorwise percentage of open spaces has been shown below.
- The availability of green/forest area in the city has been shown at ANNEXURE-O-3.
11.7 PRESSURES ON GREEN HERITAGE OF CHANDIGARH

Besides the city’s rapid natural growth over the years, the tremendous urbanization on its periphery falling in the states of Punjab and Haryana poses a huge pressure on its environment and even ecological sustainability in the coming years. Another very big environmental pressure is the **phenomenal growth of vehicles plying within the city**. Chandigarh is having the highest ratio of per capita ownership of cars in the country. Moreover, the city’s environment is also strained with conspicuous energy consumption, production of garbage and increased volume of built-forms using highly glossy, energy consuming materials like steel and glass.

A major response to these challenges and environmental pressures, strategies for mitigating the ill effects of these factors will be necessary in the coming years.

The city has not only to adopt the best environmental management practices but also continuously enhance its green cover and other natural elements on one hand, and on the other regulate stringently its unbridled consumption and growth.

11.8 PROBLEMS FACED BY OPEN SPACES IN CHANDIGARH

The open spaces in Chandigarh face number of problems which interrupt proper functioning. These are broadly:

Building byelaws, zoning regulations and boundary walls stipulations should be synchronized and effectively implemented to ensure that encroachment by way of unauthorised projections, courtyards, opening of doors, putting up fencing etc. do not blemish the quality and nature of open spaces.

The catchment area of Sukhna Lake is under tremendous pressure due to which silt flows down and settles in the lake bed.

Due to tremendous rise in the ownership of cars and shift from plotted development to group housing, multiple families inhabiting per plot -- **large number of open spaces between clusters have been encroached upon for parking of cars.**
11.9 MASTER PLAN PROPOSALS FOR OPEN SPACES

• Open/Green spaces in the city should be recognized as inviolable open spaces to prevent them from being diverted to other land uses.

• **Develop an open space system of pedestrian greenways and nature walking systems** which link existing and future open spaces, parks and forest areas.

• **Twelve longitudinal Green Corridors** have been proposed connecting the greens of the city in the North South direction which will offer diverse experiences as one moves across them.

• While some will cut across the sectoral grid of the city connecting sector level greens eg Shanti Path with Rose Garden and Leisure Valley, others will move at the city fringe exposing unknown natural areas.

• The natural rivulets of the Sukhna Choe, Patiali ki Rao , the three lakes in Dhanas, the forest areas, the hilly terrain of the lower Shivaliks will offer new opportunities for adventure and ecotourism. Sensitive and appropriate interventions will need to be made for enabling uninterrupted movement of the pedestrians and cyclists for which a detailed corridor wise survey /analysis will need to be carried out.

• Connecting with these corridors will help sensitise the residents towards the city’s assets and generate better participation in the preservation and conservation of the city’s greens. Refer Chapter 12 on Traffic and Transportation for details.

• Protect, manage and enhance areas of significant biodiversity and natural resources.

• **Designate eco-sensitive areas around the Sukhna Wildlife Sanctuary and the Patiala-ki-Rao, Sukhna Choe** and the Natural choe as per recommendations in Chapter 17 on Ecology and Environment.

• Ensure public participation in the development and maintenance of parks and open spaces/green belts and in organizing community events. This will give the citizens a sense of belongingness and pride of achievement and persuade them to look after such spaces.

• The zoning plans of sectors to be rectified so that no other land use except those associated with the parks come up in the open spaces.

• Area along both sides of the railway line wherever cutting across the city plan to have thick plantation on both sides.
11.10 MAINTAINING THE MAN-COSMOS RELATIONSHIP ENSURING UNINTERRUPTED VIEWS AND VISTAS

Conservation of natural areas

The site of the city of Chandigarh has many natural features which make them suitable for conservation on account of their environmentally significant nature and scenic beauty besides their geographical history.

The conservation of the natural areas is recommended which include:
Shivalik Hills, Sukhna Lake and its catchment area, Patiali-ki-Rao Choe, Sukhna Choe, Leisure Valley with its 8 km long monsoonal gorge and further extending into the state of Punjab, Sukhna Wildlife Sanctuary, N-Choe, Protected Forests, Forest Areas, Green belts, Neighbourhood/Sector greens, ‘No Construction Zone’ on the North of the Capitol Complex.

Enhancing the qualitative and quantitative green of the city

The pioneers of Chandigarh laid down a fine blue print not only for the layout of the city but also for a green Chandigarh. In the coming years, the city will not only have to conserve what it has but also to make up both in qualitative and quantitative manner its wealth of nature. The thrust in the coming years would be on increasing its green cover and also to enhance the density and hardiness of the tree-canopies and their foliage content. This will ensure a greater ecological stability and sustainability amidst the sea of built-forms and building blocks all around.

The state governments of Punjab and Haryana shall be requested to actively participate in enhancing the qualitative and quantitative green of the city since many areas fall within their respective territories.

Sensitive handling of the open spaces are required to ensure that interventions blend with nature.
A few illustrations of projects where earth sheltered structures, organic forms have been used are placed as reference.
ENHANCING THE QUALITATIVE AND QUANTITATIVE GREEN OF THE CITY THROUGH SENSITIVE INTERVENTIONS

EARTH SHELTERED STRUCTURE OF THE TOURIST INFORMATION CENTER  PALM GARDEN, SECTOR 42

PLAN OF TOURIST INFORMATION CENTRE

LANDSCAPE PROJECT EXEMPLIFIES SENSITIVE INTERVENTIONS THROUGH USE OF EARTH SHELTERING

ELEVATIONS & SECTION

Design – Department of Urban Planning, UT, Chandigarh
ENHANCING THE QUALITATIVE AND QUANTITATIVE GREEN OF THE CITY THROUGH SENSITIVE INTERVENTIONS

TOURIST INFORMATION CENTRE BOTANICAL GARDEN, SARANGPUR

Design – Department of Urban Planning, UT, Chandigarh
ENHANCING THE QUALITATIVE AND QUANTITATIVE GREEN OF THE CITY THROUGH SENSITIVE INTERVENTIONS

GARDEN OF SPRINGS, LEISURE VALLEY, SECTOR 53

WATER BODY

Design – Department of Urban Planning, UT, Chandigarh
ENHANCING THE QUALITATIVE AND QUANTITATIVE GREEN OF THE CITY THROUGH SENSITIVE INTERVENTIONS

GARDEN OF CONIFERS, SECTOR 52

BUILT FORM SENSITIVELY BLENDED INTO THE LANDSCAPE SO AS NOT TO BE OVERBEARING

ENTRANCE GATE OF THE GARDEN
Underground Parking and Revitalization of Green Areas (Sector 15 as an illustration)

Ensuring that greens are not compromised for parking

- Community parking can be planned below green belts
- Using the continuous green for creating parking facilities underground

LANDSCAPE PROPOSALS AT SUB-SECTOR LEVEL

- REVITALIZATION OF SMALL PARKS
  Similar to the idea of sector level garden, a string of small parks in the sub-sector level can work much better than small parks.
  A string of greens in the sector can be connected by paths to create longer tracks which can create a promenade for walks for sector residents. Intersecting paths and tracks can be provided within the greens.
Many parks, gardens and green belts in the city have been approved by GoI for heritage status and further interventions to be strictly as per heritage regulations and with the approval of the Chandigarh Heritage Conservation Committee.
PLAN P3 LOCATIONS FOR TOURISTS INTEREST IN CHANDIGARH

Rock Garden
Sukhna Lake
Capitol Complex
Martyrs’ Memorial
Leisure Valley
Commemoration Stone, Sector 9
Botanical Garden
Nature Interpretation Centre
Panjab University
Rose Garden
City Centre, Sector 17
Le Corbusier Centre
Housing cluster Sector 22
Sub City Centre, Sector 43
Nehru Center for Performing Arts, Sector 34
Beant Singh Memorial, Sector 42
Palm Garden, Sector 42
Tourist Information Centre
Lake Sector 42
Manimajra Fort, Manimajra,
Kalagram, Manimajra